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


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,

[Signature]

Patty Wagner
Manager

Enclosure

cc: See Page 2
Mr. John E Kieling

cc w/enclosure:
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Laurie King, EPA, Region 6 (via Certified Mail)
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Carolyn Holloway, SSO/ESH, MS-0184
Michael McFadden, SSO/FP, MS-0184
Joe Estrada, SSO/FP, MS-0184

AUG 11 2011
CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS


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

Date: 8/3/11

and

Signature: Kimberly A. Davis, Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Owner and Co-Operator

Date: 8/11/11
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.
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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

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<td>Corrective Measures Implementation</td>
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<td>CMIP</td>
<td>Corrective Measures Implementation Plan</td>
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<td>CMS</td>
<td>Corrective Measures Study</td>
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<tr>
<td>CQA</td>
<td>Construction Quality Assurance</td>
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<td>CQC</td>
<td>Construction Quality Control</td>
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<tr>
<td>cy</td>
<td>cubic yard(s)</td>
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<td>EPA</td>
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<td>Evapotranspirative</td>
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<td>Kirtland Air Force Base</td>
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<td>LTMMMP</td>
<td>Long-Term Monitoring and Maintenance Plan</td>
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<td>Mixed Waste Landfill</td>
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<td>URS</td>
<td>URS Group, Inc.</td>
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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 bioinvasion 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

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Comment/Location in CQA Report Appendix A</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMIP Appendix B, Construction Quality Assurance Plan (SNL/NM November 2005)</td>
<td></td>
</tr>
<tr>
<td>Quality control data generated by the construction contractor</td>
<td>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</td>
</tr>
<tr>
<td>Quality assurance data generated by the CQA contractor</td>
<td>Described in Sections 2.5, 2.6, 2.7, and 4.1–4.5; see below for information regarding specific CQA documentation and data</td>
</tr>
<tr>
<td>Daily summary reports</td>
<td>Section 4.1 and Attachment 3</td>
</tr>
<tr>
<td>Inspection checklists</td>
<td>Section 4.2 and Attachments 4–6</td>
</tr>
<tr>
<td>Nonconformance and corrective action reports</td>
<td>There were no nonconformances – all design changes are documented in Chapter 7.0 and Table 14</td>
</tr>
<tr>
<td>Field test results (in-place density and moisture tests)</td>
<td>Section 4.3.2 and Table 11 and Attachment 7</td>
</tr>
<tr>
<td>Laboratory test results (Standard Proctor, Gradation, Classification, and Saturated Hydraulic Conductivity)</td>
<td>Section 4.3.1 and Tables 4–8, and Attachment 7 (CQC data collected and/or overseen by CQA Contractor)</td>
</tr>
<tr>
<td>Photographs and photograph logbook</td>
<td>Section 4.5; Photographic logs included in tabbed section at end of report</td>
</tr>
<tr>
<td>As-built drawings</td>
<td>Section 4.4; As-built drawings included in tabbed section at end of report</td>
</tr>
<tr>
<td>Internal CQA memoranda or reports with data interpretation or analysis</td>
<td>Chapter 3.0; Quality Resolution Meeting minutes in Attachment 1; data submittals and Cover Layer Approval Forms in Attachment 2</td>
</tr>
<tr>
<td>Design changes</td>
<td>Chapter 7.0, Table 14</td>
</tr>
<tr>
<td>SNL/NM Part B Permit, Section V, Corrective Measures for the Mixed Waste Landfill</td>
<td></td>
</tr>
<tr>
<td>A summary of the work completed</td>
<td>Chapter 5.0</td>
</tr>
<tr>
<td>A statement signed by a registered professional engineer, that the remedy has been completed in full satisfaction of the specifications in the CMIP</td>
<td>Chapter 9.0</td>
</tr>
<tr>
<td>As-built drawings and specifications signed and stamped by a registered professional engineer</td>
<td>As-built drawings included in tabbed sections at end of report</td>
</tr>
<tr>
<td>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</td>
<td>Chapter 4.0, Tables 4–12, and Attachment 7</td>
</tr>
<tr>
<td>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”</td>
<td>Included as part of formal submittal package to NMED</td>
</tr>
<tr>
<td>SNL/NM Compliance Order On Consent, Section VII (NMED April 2004)</td>
<td></td>
</tr>
<tr>
<td>Items 1, 2, 3, 4, and 6 are identical to requirements of the Part B Permit presented above.</td>
<td></td>
</tr>
<tr>
<td>5. Copies of all waste disposal records, if not already submitted in a progress report</td>
<td>The only waste disposal records associated with cover construction were presented in the MWL Quarterly Progress Report, May–July, 2009 (SNL/NM September 2009)</td>
</tr>
</tbody>
</table>

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 (Bioinvasion, 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

<table>
<thead>
<tr>
<th>Data Requirement</th>
<th>Location in the MWL Alternative Cover CQA Report (Appendix A)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CQA Data</td>
<td>CQC Data</td>
</tr>
<tr>
<td>Laboratory Testing Data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Proctor (ASTM D698)</td>
<td>NA</td>
<td>Described in Section 4.3.1 Results in Tables 4–5</td>
</tr>
<tr>
<td>Laboratory Testing Data Gradation (ASTM C136) and Classification (ASTM D2487 and D4318)</td>
<td>NA</td>
<td>Described in Section 4.3.1 Results in Table 4 (4th column), Tables 6–7, and Attachment 7</td>
</tr>
<tr>
<td>Laboratory Testing Data Saturated Hydraulic Conductivity (ASTM D5856-95 [2007])</td>
<td>NA</td>
<td>Described in Section 4.3.1 Results in Table 8</td>
</tr>
<tr>
<td>Field Testing Data In-place density and moisture (ASTM D2922 and D3017)</td>
<td>CQA field testing for 2009 Subgrade surface and Native Soil Layer only Described in Section 4.3.2 Results in Table 11</td>
<td>Described in Section 4.3.2 Results in Tables 9–10</td>
</tr>
<tr>
<td>Land Survey Data</td>
<td>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</td>
<td>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</td>
</tr>
</tbody>
</table>

ASTM American Society for Testing and Materials (ASTM International)  ET Evapotranspirative
CMI Corrective Measures Implementation  MWL Mixed Waste Landfill
CQA Construction Quality Assurance  NA Not applicable
CQC Construction Quality Control  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

<table>
<thead>
<tr>
<th>Documentation Requirement</th>
<th>Location in the MWL Alternative Cover CQA Report (Appendix A)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily reports of construction activities</td>
<td>Described in Section 4.1 Reports in Attachment 3</td>
<td>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.</td>
</tr>
<tr>
<td>Documentation of equipment used</td>
<td>Described in Chapter 5.0, Table 13, and Daily Reports See comments for additional information</td>
<td>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.</td>
</tr>
<tr>
<td>Inspection checklists/forms¹</td>
<td>Described in Section 4.2 Forms in Attachments 4-6</td>
<td>NA Receiving, Construction, and Testing Inspection Forms and related documentation were completed by the CQA Team.</td>
</tr>
<tr>
<td>Supporting documentation for laboratory and field testing¹</td>
<td>Described in Section 4.3 Supporting documentation in Attachment 7</td>
<td>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.</td>
</tr>
<tr>
<td>As-Built Drawings</td>
<td>Described in Sections 2.5 and 4.4</td>
<td>Described in Section 2.5 and 4.4 Results in Table 12 and 2006 Subgrade As-Built Drawings 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.</td>
</tr>
<tr>
<td>Photographic records</td>
<td>Described in Section 4.5</td>
<td>NA Photographic Logs for both 2006 and 2009 phases included in a tabbed section at end of the CQA Report.</td>
</tr>
<tr>
<td>CQA Engineer Approval of all Cover Layers, Design Changes, and Final Construction</td>
<td>Described in Sections 3.4, Chapters 7 and 9, and Tables 3 and 14</td>
<td>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.</td>
</tr>
</tbody>
</table>

¹ 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
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


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

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One Park Square
6501 Americas Parkway NE, Suite 900
Albuquerque, NM 87110
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MIXED WASTE LANDFILL
ALTERNATIVE COVER
CONSTRUCTION QUALITY ASSURANCE REPORT

JANUARY 2010
Revision 1
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<td>Mixed Waste Landfill 2006 Subgrade Construction Standard Proctor CQC Laboratory Results</td>
</tr>
<tr>
<td>5</td>
<td>Mixed Waste Landfill 2009 ET Cover Construction Standard Proctor CQC Laboratory Results</td>
</tr>
<tr>
<td>6</td>
<td>Mixed Waste Landfill 2009 ET Cover Construction Native Soil Layer Gradation and Classification CQC Laboratory Results</td>
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<td>Mixed Waste Landfill 2009 ET Cover Construction Topsoil Gradation and Classification CQC Laboratory Results</td>
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<td>Location of Technical Areas 3 &amp; 5 and the Mixed Waste Landfill</td>
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<td>Mixed Waste Landfill 2006 Existing Surface Map</td>
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<tr>
<td>6</td>
<td>Mixed Waste Landfill Subgrade Lift 1 Map</td>
</tr>
<tr>
<td>7</td>
<td>Mixed Waste Landfill Subgrade Lift 2 Map</td>
</tr>
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<td>8</td>
<td>Mixed Waste Landfill Subgrade Lift 3 Map</td>
</tr>
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<td>9</td>
<td>Mixed Waste Landfill Subgrade Lift 4 Map</td>
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<tr>
<td>10</td>
<td>Mixed Waste Landfill Subgrade Lift 5 Map</td>
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<tr>
<td>11</td>
<td>Mixed Waste Landfill Subgrade Lift 6 Map</td>
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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)

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### List of Abbreviations/Acronyms

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<th>Full Form</th>
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<tr>
<td>AMEC</td>
<td>AMEC Earth and Environmental, Inc.</td>
</tr>
<tr>
<td>ASTM</td>
<td>American Society for Testing and Materials (ASTM International)</td>
</tr>
<tr>
<td>CD</td>
<td>compact disc</td>
</tr>
<tr>
<td>CMI</td>
<td>Corrective Measures Implementation</td>
</tr>
<tr>
<td>CMIP</td>
<td>Corrective Measures Implementation Plan</td>
</tr>
<tr>
<td>cm/s</td>
<td>centimeter(s) per second</td>
</tr>
<tr>
<td>CQA</td>
<td>Construction Quality Assurance</td>
</tr>
<tr>
<td>CQC</td>
<td>Construction Quality Control</td>
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<tr>
<td>cy</td>
<td>cubic yard(s)</td>
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<tr>
<td>DOE</td>
<td>U.S. Department of Energy</td>
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<tr>
<td>EDi</td>
<td>Environmental Dimensions, Inc.</td>
</tr>
<tr>
<td>EPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
<tr>
<td>ES&amp;H</td>
<td>Environment, Safety, and Health</td>
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<tr>
<td>ET</td>
<td>Evapotranspirative</td>
</tr>
<tr>
<td>IR</td>
<td>Ingersoll-Rand</td>
</tr>
<tr>
<td>JD</td>
<td>John Deere</td>
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<tr>
<td>KAFB</td>
<td>Kirtland Air Force Base</td>
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<tr>
<td>LTMMP</td>
<td>Long-Term Monitoring and Maintenance Plan</td>
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<td>MKM</td>
<td>MKM Engineers, Inc.</td>
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<tr>
<td>MWL</td>
<td>Mixed Waste Landfill</td>
</tr>
<tr>
<td>NMED</td>
<td>New Mexico Environment Department</td>
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<td>QA</td>
<td>Quality Assurance</td>
</tr>
<tr>
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<td>Quality Control</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation and Recovery Act</td>
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<td>Sandia</td>
<td>Sandia Corporation</td>
</tr>
<tr>
<td>SCR</td>
<td>Sandia Construction Representative</td>
</tr>
<tr>
<td>Shaw</td>
<td>Shaw Environmental, Inc.</td>
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<tr>
<td>SNL/NM</td>
<td>Sandia National Laboratories/New Mexico</td>
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<tr>
<td>SWPPP</td>
<td>Storm Water Pollution Prevention Plan</td>
</tr>
<tr>
<td>TA</td>
<td>Technical Area</td>
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<tr>
<td>URS</td>
<td>URS Group, Inc.</td>
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Mixed Waste Landfill Alternative Cover CQA Report - Volume 1  
January 2010

Executive Summary


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
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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 (Bioinursion, 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.
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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.
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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 premobilization 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.
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 ± 3 millimeters horizontal and ± 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.
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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:
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- 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, recompacted, 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 LTMMP 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 LT MMP.
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.
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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).
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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, 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
Title: CQA Certifying Engineer
URS Group. Inc.
Date: July 12, 2011

State: New Mexico
Registration No. 5122
10.0 References


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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Start</th>
<th>Finish</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2005 and 2006 Preparation Activities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biointrusion Rock Delivery</td>
<td>October 4, 2005</td>
<td>November 14, 2005</td>
<td>Approximately 8,100 tons (6,000 cubic yards) of biointrusion rock delivered to the Bulk Waste Staging Area.</td>
</tr>
<tr>
<td>Preconstruction Land Survey</td>
<td>May 10, 2006</td>
<td>May 10, 2006</td>
<td>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.</td>
</tr>
<tr>
<td>MWL Borrow Pit Activities</td>
<td>June 14, 2006</td>
<td>July 17, 2006</td>
<td>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.</td>
</tr>
<tr>
<td>Hauling Soil for Subgrade</td>
<td>July 31, 2006</td>
<td>November 5, 2006</td>
<td>Screened soil fill stockpiled at the MWL Borrow Pit was hauled and stockpiled at the MWL site for Subgrade construction.</td>
</tr>
<tr>
<td><strong>2006 Subgrade Construction Activities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Land Surface Preparation</td>
<td>October 2, 2006</td>
<td>October 26, 2006</td>
<td>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.</td>
</tr>
<tr>
<td>Subgrade Construction</td>
<td>October 27, 2006</td>
<td>December 21, 2006</td>
<td>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.</td>
</tr>
<tr>
<td>Subgrade Protective Measures</td>
<td>April 3, 2007</td>
<td>April 11, 2007</td>
<td>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.</td>
</tr>
<tr>
<td><strong>2009 ET Cover Construction Activities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobilization and Training</td>
<td>May 11, 2009</td>
<td>May 18, 2009</td>
<td>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.</td>
</tr>
<tr>
<td>Subgrade Layer</td>
<td>May 20, 2009</td>
<td>May 22, 2009</td>
<td>Cleared vegetation, watered and compacted surface, and performed field testing and verification survey. Subgrade approved on May 22.</td>
</tr>
<tr>
<td>Activity</td>
<td>Start</td>
<td>Finish</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Biointrusion Layer</strong></td>
<td>May 26, 2009</td>
<td>June 16, 2009</td>
<td>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.</td>
</tr>
<tr>
<td><strong>MW4 Extension</strong></td>
<td>May 27, 2009</td>
<td>August 13, 2009</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Native Soil Layer</strong></td>
<td>June 15, 2009</td>
<td>August 4, 2009</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Borrow Pit Area Activities</strong></td>
<td>June 12, 2009</td>
<td>July 24, 2009</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Soil-Vapor Monitoring Points</strong></td>
<td>August 6, 2009</td>
<td>August 7, 2009</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Topsoil Layer</strong></td>
<td>August 3, 2009</td>
<td>August 12, 2009</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Seeding and Mulching</strong></td>
<td>August 19, 2009</td>
<td>September 2, 2009</td>
<td>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.</td>
</tr>
</tbody>
</table>
# Table 1 (cont’d.)

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Start</th>
<th>Finish</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2009 ET Cover Construction Activities (cont’d.)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplemental Watering</td>
<td>August 12, 2009</td>
<td>October 20, 2009</td>
<td>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.</td>
</tr>
<tr>
<td>Administrative Fence</td>
<td>August 31, 2009</td>
<td>September 2, 2009</td>
<td>Perimeter administrative security fence installed around MWL.</td>
</tr>
<tr>
<td>Grading and Revegetation of the Borrow Pit</td>
<td>August 18, 2009</td>
<td>August 24, 2009</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

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

CQA = Construction Quality Assurance
ET = Evapotranspirative
<table>
<thead>
<tr>
<th>Date</th>
<th>Meeting/Form</th>
<th>Topic</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/22/2009</td>
<td>Quality Resolution</td>
<td>Approval of Subgrade</td>
<td>Quality Assurance and Quality Control (Q&amp;A) and Quality Control (Q&amp;C) testing results and QA survey reviewed and approved by the CQA Engineer. Subgrade approved - construction of the Biointrusion Layer may proceed.</td>
</tr>
<tr>
<td>5/22/2009</td>
<td>APPROVAL FORM</td>
<td>Subgrade Approval Form AP# 001</td>
<td>Subgrade surface approved. See approval form in Attachment 2 for additional information.</td>
</tr>
<tr>
<td>5/26/2009</td>
<td>Quality Resolution</td>
<td>Construction field tests and thickness verification</td>
<td>Biointrusion Layer installation method determination and decision to place all of rock prior to adding dry, loose soil to surface to fill voids.</td>
</tr>
<tr>
<td>5/26/2009</td>
<td>APPROVAL FORM</td>
<td>Biointrusion Rock, Installation Procedure, andThickness Verification Approval Form AP# 002</td>
<td>Biointrusion rock, installation procedure, and thickness verification requirement approved. See approval form in Attachment 2 for additional information.</td>
</tr>
<tr>
<td>6/1/2009</td>
<td>Quality Resolution</td>
<td>QC survey and QA verification survey coordination</td>
<td>50-foot verification grid system established.</td>
</tr>
<tr>
<td>6/4/2009</td>
<td>Quality Resolution</td>
<td>Rock volume and thickness issues</td>
<td>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.</td>
</tr>
<tr>
<td>6/5/2009</td>
<td>Quality Resolution</td>
<td>QA verification survey and approval for soil placement on the Biointrusion Layer surface</td>
<td>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.</td>
</tr>
<tr>
<td>6/5/2009</td>
<td>APPROVAL FORM</td>
<td>Biointrusion Thickness Approval Form AP# 003</td>
<td>Biointrusion Layer thickness approved (South). See approval form in Attachment 2 for additional information.</td>
</tr>
<tr>
<td>6/8/2009</td>
<td>APPROVAL FORM</td>
<td>Additional Biointrusion Rock Approval Form AP# 004</td>
<td>Additional Biointrusion Layer rock approved. See approval form in Attachment 2 for additional information.</td>
</tr>
<tr>
<td>6/9/2009</td>
<td>Quality Resolution</td>
<td>QA verification survey and approval for soil placement on the Biointrusion Layer surface</td>
<td>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.</td>
</tr>
<tr>
<td>6/9/2009</td>
<td>APPROVAL FORM</td>
<td>Biointrusion Thickness Approval Form AP# 005</td>
<td>Biointrusion Layer thickness approved (Northwest and South corrections). See approval form in Attachment 2 for additional information.</td>
</tr>
<tr>
<td>Date</td>
<td>Meeting/Form</td>
<td>Topic</td>
<td>Comments</td>
</tr>
<tr>
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<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>6/10/2009</td>
<td>Quality Resolution</td>
<td>Biointrusion Layer east-to-west surface design slope</td>
<td>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.</td>
</tr>
<tr>
<td>6/15/2009</td>
<td>Quality Resolution</td>
<td>QA verification survey and approval for soil placement on the Biointrusion Layer surface</td>
<td>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.</td>
</tr>
<tr>
<td>6/15/2009</td>
<td>APPROVAL FORM</td>
<td>Biointrusion Layer Approval Form AP# 006</td>
<td>Biointrusion Layer (Northeast and Northwest corrections) approved. Entire Biointrusion Layer approved, see approval form in Attachment 2 for additional information.</td>
</tr>
<tr>
<td>6/16/2009</td>
<td>Quality Resolution</td>
<td>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</td>
<td>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.</td>
</tr>
<tr>
<td>6/17/2009</td>
<td>Quality Resolution</td>
<td>QC survey of thin soil layer overlying the Biointrusion Layer and 2% surface design slope correction.</td>
<td>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.</td>
</tr>
<tr>
<td>6/17/2009</td>
<td>APPROVAL FORM</td>
<td>Biointrusion Layer/Thin Soil Layer Approval Form AP# 007</td>
<td>Thin soil layer overlying the Biointrusion Layer approved. See approval form in Attachment 2 for additional information.</td>
</tr>
<tr>
<td>6/22/2009</td>
<td>APPROVAL FORM</td>
<td>Wedge Lifts 1 and 2 Approval Form AP# 008</td>
<td>Wedge Lifts 1 and 2 approved. See approval form in Attachment 2 for additional information.</td>
</tr>
</tbody>
</table>
## Table 3 (cont’d.)
### Mixed Waste Landfill 2009 ET Cover Construction
#### Quality Resolution Meetings and Cover Layer Approval

<table>
<thead>
<tr>
<th>Date</th>
<th>Meeting/Form</th>
<th>Topic</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/30/2009</td>
<td>Quality Resolution</td>
<td>QC survey results for Polishing Lifts 3 and 4</td>
<td>QC survey results reviewed and Native Soil Polishing Lifts 3 and 4 approved. Installation of Native Soil Lift 5 approved.</td>
</tr>
<tr>
<td>6/30/2009</td>
<td>APPROVAL FORM</td>
<td>Polishing Lifts 3 and 4 Approval Form AP# 009</td>
<td>Polishing Lifts 3 and 4 approved. See approval form in Attachment 2 for additional information.</td>
</tr>
<tr>
<td>7/1/2009</td>
<td>Quality Resolution</td>
<td>Lift 5 low area</td>
<td>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.</td>
</tr>
<tr>
<td>7/14/2009</td>
<td>Quality Resolution</td>
<td>Soil fill material shortfall for Native and Topsoil Layers addressed - QA review of EDi soil volume estimates for additional material needed</td>
<td>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.</td>
</tr>
<tr>
<td>7/30/2009</td>
<td>Quality Resolution</td>
<td>Native Soil Layer QA and QC verification surveys</td>
<td>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.</td>
</tr>
<tr>
<td>7/30/2009</td>
<td>APPROVAL FORM</td>
<td>Native Soil Layer Approval Form AP# 010</td>
<td>Native Soil Layer thickness approval except for 9 locations requiring adjustment. See approval form in Attachment 2 for additional information.</td>
</tr>
<tr>
<td>8/4/2009</td>
<td>Quality Resolution</td>
<td>Native Soil Layer Final QA and QC verification surveys</td>
<td>Corrections at the 9 grid points that required correction reviewed and verified.</td>
</tr>
<tr>
<td>8/4/2009</td>
<td>APPROVAL FORM</td>
<td>Native Soil Layer Approval Form AP# 011</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Topsoil Layer</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6/25/2009</td>
<td>Quality Resolution</td>
<td>Review of sieve results for available 3/8-inch crushed gravel to admix with topsoil fill material</td>
<td>No available aggregate met specifications for percent passing through the #4 sieve. Aggregate approved by the CQA Engineer in the formal submittal process.</td>
</tr>
<tr>
<td>8/12/2009</td>
<td>Quality Resolution</td>
<td>Topsoil Layer QA and QC verification surveys</td>
<td>QA and QC verification survey results reviewed and the Topsoil Layer approved.</td>
</tr>
<tr>
<td>8/12/2009</td>
<td>APPROVAL FORM</td>
<td>Topsoil Layer Approval Form AP# 012</td>
<td>Topsoil Layer approved. See approval form in Attachment 2 for additional information.</td>
</tr>
<tr>
<td><strong>Reclamation Seeding and Mulching</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/19/2009</td>
<td>Quality Resolution</td>
<td>Seed and mulch material inspections and elimination of starter fertilizer</td>
<td>Seed was visually inspected, labels checked, and approved. Mulch also approved. Elimination of fertilizer approved.</td>
</tr>
<tr>
<td>Date</td>
<td>Meeting/Form</td>
<td>Topic</td>
<td>Comments</td>
</tr>
<tr>
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<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>8/25/2009</td>
<td>Quality Resolution</td>
<td>Increased seeding rate and application method</td>
<td>Approval of increased seeding rate (from 20 to 80 pounds per acre) and placement method (hand-broadcasting combined with drill-seeding).</td>
</tr>
<tr>
<td>8/25/2009</td>
<td>APPROVAL FORM</td>
<td>Seed, Fertilizer, and Mulch Approval Form AP# 013</td>
<td>Increased seeding rate and method, elimination of starter fertilizer, and mulch approved. See approval form in Attachment 2 for additional information.</td>
</tr>
<tr>
<td>9/2/2009</td>
<td>Quality Resolution</td>
<td>Inspection and approval of the seeding and mulch</td>
<td>QA approval of seed and mulch as placed on Topsoil Layer.</td>
</tr>
<tr>
<td>9/2/2009</td>
<td>APPROVAL FORM</td>
<td>Reclamation Seeding and Mulching Approval Form AP# 014</td>
<td>Seed and mulch placement approved based on visual inspection. See approval form in Attachment 2 for additional information.</td>
</tr>
</tbody>
</table>

1 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>
<thead>
<tr>
<th>Test Number</th>
<th>Date Sampled</th>
<th>Description</th>
<th>Gradation/Classification Meet Specification</th>
<th>Maximum Dry Density (lb/ft³)</th>
<th>Optimum Moisture Content (%)</th>
<th>Testing Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>MWL-ES-001</td>
<td>10/2/2006</td>
<td>Existing Surface</td>
<td>NA</td>
<td>115.5</td>
<td>13.4</td>
<td>AMEC</td>
</tr>
<tr>
<td>MWL-ES-002</td>
<td>10/27/2006</td>
<td>Existing Surface</td>
<td>NA</td>
<td>116.5</td>
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1 Gradation and Classification results are on same laboratory cover sheet with Standard Proctor results in Attachment 7.  
2 Testing laboratory is AMEC Earth & Environmental, Albuquerque, New Mexico (AMEC).  
3 NA = not applicable; there was no gradation specification for the existing surface.  
4 These samples were collected from TA-3 soil that was stockpiled at the MWL prior to Subgrade construction activities. 
5 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.  
6 The soil was excavated and screened along with the initial subgrade material but was not hauled to the MWL until needed.  
7 These samples were collected and used as Proctor not used; soil volume related to Proctor not used until 2009 ET Cover construction. 

CQC = Construction Quality Control  
lb/ft³ = pounds per cubic foot
### Table 5
Mixed Waste Landfill 2009 ET Cover Construction
Standard Proctor CQC Laboratory Results

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Date Sampled</th>
<th>Description</th>
<th>Gradation/Classification Meet Specification</th>
<th>Maximum Dry Density (lb/ft$^3$)</th>
<th>Optimum Moisture Content (%)</th>
<th>Testing Laboratory</th>
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### Table 5 (cont’d.)

**Mixed Waste Landfill 2009 MWL ET Cover Construction**

**Standard Proctor CQC Laboratory Results**

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<th>Gradation/Classification Meet Specification¹</th>
<th>Maximum Dry Density (lb/ft³)</th>
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¹ 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.

² Testing laboratory is AMEC Earth & Environmental, Albuquerque, New Mexico (AMEC).

³ Sample identification number on laboratory data sheet in Attachment 7 incorrectly spells ‘berm’ as ‘burm’ for these samples.

CQC = Construction Quality Control
ET = Evapotranspirative
lb/ft³ = Pounds per cubic foot
MWL = Mixed Waste Landfill
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<th>#40</th>
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### Table 6 (cont’d.)
**Mixed Waste Landfill 2009 ET Cover Construction Phase CQC**
**Native Soil Layer Gradation and Classification Laboratory Results**

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<th>Soil Classification</th>
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1. Native soil excavated, screened to 2-inch minus, and stockpiled in 2006.
2. Sample identification number on laboratory data sheet incorrectly spells ‘berm’ as ‘burn’ for these samples.
3. 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**

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¹ 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*

<table>
<thead>
<tr>
<th>Sample Description</th>
<th>Location</th>
<th>Date Sampled</th>
<th>Sample Compaction</th>
<th>Average Saturated Hydraulic Conductivity(^1) (K(_{sat})) in cm/s(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Soil Wedge Lift 1</td>
<td>Grid Block 8</td>
<td>6/19/2009</td>
<td>90.0%</td>
<td>4.02E-04</td>
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<tr>
<td>Native Soil Wedge Lift 2</td>
<td>Grid Block 11</td>
<td>6/22/2009</td>
<td>89.0%</td>
<td>3.58E-05</td>
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<tr>
<td>Native Soil Lift 3-1</td>
<td>Collected Prior to Placement</td>
<td>6/17/2009</td>
<td>90.2%</td>
<td>1.59E-06</td>
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<tr>
<td>Native Soil Lift 3-2</td>
<td>Collected Prior to Placement</td>
<td>6/17/2009</td>
<td>89.7%</td>
<td>1.81E-06</td>
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<tr>
<td>Native Soil Lift 3-3</td>
<td>Collected Prior to Placement</td>
<td>6/17/2009</td>
<td>91.0%</td>
<td>1.98E-06</td>
</tr>
<tr>
<td>Native Soil Lift 4</td>
<td>Grid Block 2</td>
<td>6/30/2009</td>
<td>84.6%</td>
<td>2.52E-04</td>
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<tr>
<td>Native Soil Lift 4</td>
<td>Grid Block 6</td>
<td>6/30/2009</td>
<td>81.2%</td>
<td>1.87E-04</td>
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<tr>
<td>Native Soil Lift 4</td>
<td>Grid Block 9</td>
<td>6/30/2009</td>
<td>89.8%</td>
<td>2.14E-04</td>
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<tr>
<td>Native Soil Lift 5</td>
<td>Grid Block 1</td>
<td>7/9/2009</td>
<td>90.0%</td>
<td>2.66E-04</td>
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<td>Native Soil Lift 5</td>
<td>Grid Block 4 Retest</td>
<td>7/8/2009</td>
<td>95.3%</td>
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<td>Grid Block 8 Retest</td>
<td>7/8/2009</td>
<td>94.6%</td>
<td>1.63E-04</td>
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<tr>
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<td>Grid Block 3</td>
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<td>3.05E-04</td>
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<td>Grid Block 6</td>
<td>7/16/2009</td>
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<td>3.51E-04</td>
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<td>2.55E-04</td>
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<tr>
<td>Native Soil Lift 7</td>
<td>Grid Block 1 Retest</td>
<td>7/20/2009</td>
<td>94.8%</td>
<td>2.18E-04</td>
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<td>Native Soil Lift 7</td>
<td>Grid Block 5 Retest</td>
<td>7/20/2009</td>
<td>94.8%</td>
<td>1.87E-04</td>
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<td>Grid Block 13</td>
<td>7/22/2009</td>
<td>89.5%</td>
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<td>Native Soil Lift 8</td>
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<tr>
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<td>1.23E-06</td>
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<tr>
<td>Native Soil Lift 8</td>
<td>Grid Block 9</td>
<td>7/27/2009</td>
<td>90.0%</td>
<td>1.36E-06</td>
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</tbody>
</table>

| Average  | 90.2%  | 1.62E-04 |
| Geometric Mean | 90.2%  | 4.72E-05 |
| Median   | 90.0%  | 1.87E-04 |

\(^1\) Maximum Value is 4.6E-04.

\(^2\) 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

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Date of Field Test</th>
<th>Description</th>
<th>Location</th>
<th>Standard Proctor Maximum Density (lb/ft³)</th>
<th>Standard Proctor Optimum Moisture Content (%)</th>
<th>Percent of Maximum Density Required</th>
<th>Percent Compaction Achieved</th>
<th>Moisture Content Achieved</th>
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<th>Meets Moisture Specification</th>
<th>Testing Laboratory</th>
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<td>Figure 5</td>
<td>115.5</td>
<td>13.4</td>
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<td>90.1</td>
<td>13.8</td>
<td>NA</td>
<td>NA</td>
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<td>Existing Soil Surface</td>
<td>Figure 5</td>
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<td>13.4</td>
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### Table 9 (cont’d.)
**Mixed Waste Landfill 2006 Subgrade Construction**  
**In-Place Density and Moisture Content CQC Field Results**

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Date of Field Test</th>
<th>Description</th>
<th>Location</th>
<th>Standard Proctor Maximum Density (lb/ft³)</th>
<th>Standard Proctor Optimum Moisture Content (%)</th>
<th>Percent of Maximum Density Required</th>
<th>Percent Compaction Achieved</th>
<th>Moisture Content Achieved</th>
<th>Meets Density Specification</th>
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<th>Testing Laboratory³</th>
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**Mixed Waste Landfill 2006 Subgrade Construction**

**In-Place Density and Moisture Content CQC Field Results**

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¹ lb/ft³ = Pounds per cubic foot.
² NA = Not applicable; there were no Maximum Density and Moisture Content specifications for the existing surface.
³ 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

<table>
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<th>Percent of Maximum Density Required</th>
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### Table 10 (cont’d.)
#### Mixed Waste Landfill 2009 ET Cover Construction
#### In-Place Density and Moisture Content CQC Field Results

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

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### Table 10 (cont’d.)

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

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<tr>
<th>Test Number</th>
<th>Date of Field Test</th>
<th>Description</th>
<th>Location ¹</th>
<th>Standard Proctor Maximum Density (lb/ft³)²</th>
<th>Standard Proctor Optimum Moisture Content (%)</th>
<th>Percent of Maximum Density Required</th>
<th>Percent Compaction Achieved</th>
<th>Moisture Content Achieved</th>
<th>Meets Density Spec?</th>
<th>Meets Moisture Spec?</th>
<th>Testing Laboratory³</th>
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<td>NA</td>
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</table>

¹ Locations shown for all CQC field tests, except Topsoil Layer tests, in Figures 21 through 29.  
² lb/ft³ = Pounds per cubic foot.  
³ AMEC = AMEC Earth and Environmental, Albuquerque, New Mexico.  
⁴ Location incorrectly referred to as ‘Grid Line’ instead of Grid Block on laboratory data sheet.  
⁵ 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.  
⁶ All retests were performed at the same location as the original test.  
⁷ This location is labeled “EDi-NS-L5-GB7A” in Figure 26 and is located on the northeastern boundary of Grid Block 6.  
⁸ Topsoil Layer density and moisture testing were performed but not required. These test locations were not surveyed.  
⁹ 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

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Date of Field Test</th>
<th>Description</th>
<th>Location¹</th>
<th>Standard Proctor Maximum Density (lb/ft³)²</th>
<th>Standard Proctor Optimum Moisture Content (%)</th>
<th>Percent of Maximum Density Required</th>
<th>Percent Compaction Achieved</th>
<th>Moisture Content Achieved</th>
<th>Meets Density Spec?</th>
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#### Mixed Waste Landfill 2009 ET Cover Construction

In-Place Density and Moisture Content CQA Field Results

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<th>Test Number</th>
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<th>Standard Proctor Maximum Density (lb/ft(^3))(^2)</th>
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<th>Percent of Maximum Density Required</th>
<th>Percent Compaction Achieved</th>
<th>Moisture Content Achieved</th>
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<th>Meets Moisture Spec?</th>
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\(^1\) Locations shown for all CQA field tests in Figures 21 through 29.

\(^2\) lb/ft\(^3\) = Pounds per cubic foot.

\(^3\) AMEC = AMEC Earth and Environmental, Albuquerque, New Mexico.

\(^4\) 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.

\(^5\) 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.
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### Table 12 (cont’d.)

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

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Depth: (ft)
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| Average Depth = 1.25 | Average Depth = 0.25 | Average Depth = 2.85 | Average Depth = 1.02 |

Note: The location of verification survey grid points is shown in Figure 18.
# Table 13
Mixed Waste Landfill 2009 ET Cover Construction Equipment Summary

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Make/Model</th>
<th>Gross Weight (lbs)</th>
<th>Tire Size</th>
<th>Tire Pressure (if applicable)</th>
<th>Specific Application</th>
<th>Other Pertinent Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Grader</td>
<td>JD 670 D</td>
<td>37,790</td>
<td>14.00-24 12PR</td>
<td>55</td>
<td>Place, process and grade native soil and topsoil</td>
<td></td>
</tr>
<tr>
<td>Dozer</td>
<td>JD 650 J</td>
<td>18,598</td>
<td>NA</td>
<td></td>
<td>Spread and grade biointrusion layer rock and soil</td>
<td>Shoe size 18 in., track length (on ground surface) 7.25 ft</td>
</tr>
<tr>
<td>Vibratory Roller</td>
<td>IR SD100</td>
<td>22,490 Total Drum 13,320</td>
<td>23.1 x 26-8PR</td>
<td>35</td>
<td>Proof roll subgrade, compaction of native soil lifts</td>
<td>Drum; 84”W x 59”Dia., 52,520 lbs max centrifugal force</td>
</tr>
<tr>
<td>Wheel Loader</td>
<td>JD 644 J</td>
<td>40,620</td>
<td>23.5 R25</td>
<td>40</td>
<td>Placement of biointrusion rock, material loading</td>
<td></td>
</tr>
<tr>
<td>Wheel Loader</td>
<td>JD 544 J</td>
<td>28,534</td>
<td>20.5 R25</td>
<td>40</td>
<td>Material loading, grading on landfill cover</td>
<td></td>
</tr>
<tr>
<td>Skid Steer Loader</td>
<td>CAT 242B</td>
<td>6,914</td>
<td>12-16.5</td>
<td>50</td>
<td>T-post removal, site grading, transport jumping jack compactor</td>
<td></td>
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</tbody>
</table>

## Secondary Vehicles

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Make/Model</th>
<th>Gross Weight (lbs)</th>
<th>Tire Size</th>
<th>Tire Pressure (if applicable)</th>
<th>Specific Application</th>
<th>Other Pertinent Information</th>
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</thead>
<tbody>
<tr>
<td>Water Truck</td>
<td>4000 Gallon</td>
<td>46,000</td>
<td>11R-22.5</td>
<td>110</td>
<td>Material processing, dust suppression</td>
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<tr>
<td>Water Truck</td>
<td>2000 Gallon</td>
<td>29,000</td>
<td>11R-22.5</td>
<td>110</td>
<td>Material processing, dust suppression</td>
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</tr>
<tr>
<td>Dump Truck, Tandem (3)</td>
<td>12 Cu. Yd.</td>
<td>46,000</td>
<td></td>
<td></td>
<td>Haul biointrusion rock</td>
<td></td>
</tr>
<tr>
<td>Bottom Dump Truck (4)</td>
<td>20 Cu. Yd.</td>
<td>80,000</td>
<td>11R-22.5</td>
<td>110</td>
<td>Haul and place native soil and topsoil</td>
<td>Dumps with 8-ft axle spread Max 86,000 G.V.W.</td>
</tr>
<tr>
<td>Ag Tractor</td>
<td>KUBOTA M7040</td>
<td>4,608</td>
<td>Front 9.5-24 Rear 16.9-30</td>
<td>Front 45 Rear 25</td>
<td>Tilling , drill seeding and crimping straw mulch</td>
<td></td>
</tr>
<tr>
<td>Dump Truck Single Axle</td>
<td>GMC Top Kick</td>
<td>26,000</td>
<td>19.5 R-20</td>
<td>100</td>
<td>Haul straw bales, tow straw blower</td>
<td></td>
</tr>
</tbody>
</table>
### Table 13 (cont’d.)
**Mixed Waste Landfill 2009 ET Cover Construction Equipment Summary**

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

*ET = Evapotranspirative*

*NA = Not applicable*
### Table 14

#### Mixed Waste Landfill Subgrade and ET Cover Design Change Summary

<table>
<thead>
<tr>
<th>CMIP Specification</th>
<th>Description</th>
<th>No Adverse Quality Impact Summary</th>
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<tr>
<td><strong>2006 Subgrade Preparation</strong></td>
<td></td>
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</tr>
<tr>
<td>Appendix A, Earthwork, 02200, Section 3.3.3</td>
<td>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.</td>
<td>Field tests were not required but used to verify soil density specifications were met with the equipment used.</td>
</tr>
<tr>
<td>Appendix A, Earthwork, 02200, Section 3.4.2 and Table 3.1</td>
<td>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).</td>
<td>Fill soil properties are consistent.</td>
</tr>
<tr>
<td><strong>2009 ET Cover Construction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design drawings</td>
<td>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%).</td>
<td>2% design slope established with Native and Topsoil Layers.</td>
</tr>
<tr>
<td>Design drawings</td>
<td>The Subgrade side slopes were steeper than 6:1</td>
<td>6:1 side slopes established with Native and Topsoil Layers.</td>
</tr>
<tr>
<td>Design drawings</td>
<td>The Biointrusion Layer side slopes were steeper than 6:1, consistent with the Subgrade side slopes.</td>
<td>6:1 side slopes established with Native and Topsoil Layers.</td>
</tr>
<tr>
<td>Design drawings</td>
<td>The Biointrusion surface slope was less than the 2% design slope in specific areas, consistent with the Subgrade surface (~1.8%).</td>
<td>2% design slope established with Native and Topsoil Layers.</td>
</tr>
<tr>
<td>Appendix A, Earthwork, 02200, Section 3.3.5</td>
<td>The procedure for filling void spaces in the Biointrusion Layer was not addressed in the CMIP.</td>
<td>Soil added to void spaces created a more structurally sound cover less prone to subsidence.</td>
</tr>
<tr>
<td>Appendix A, Earthwork, 02200, Section 3.3.5</td>
<td>Establishing a smooth surface on the Biointrusion Layer upon which the Native Soil Layer could be constructed was not addressed in the CMIP.</td>
<td>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.</td>
</tr>
<tr>
<td>Appendix B, Section 5.0 and Grades, Lines, and Levels, Section 1.4.2</td>
<td>The Native Soil Layer average thickness exceeded the maximum thickness of 2.75 feet by 0.10 feet.</td>
<td>Slight thickness exceedence resulted in a more protective Native Soil Layer.</td>
</tr>
<tr>
<td>Appendix A, Earthwork, 02200, Section 2.1.2</td>
<td>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.</td>
<td>Approved aggregate had the lowest percent passing of available material.</td>
</tr>
<tr>
<td>Appendix A, Reclamation Seeding and Mulching, Section 2.2.1</td>
<td>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.</td>
<td>Higher seeding rate and application process increased the probability of successful revegetation.</td>
</tr>
</tbody>
</table>
### Table 14 (cont’d.)
Mixed Waste Landfill Subgrade and ET Cover Design Change Summary

<table>
<thead>
<tr>
<th>CMIP Specification</th>
<th>Description</th>
<th>No Adverse Quality Impact Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2009 ET Cover Construction (cont’d.)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendix A, Reclamation Seeding and Mulching, Section 2.2.2</td>
<td>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.</td>
<td>Use of fertilizer late in the growing season can be harmful to long-term plant growth.</td>
</tr>
<tr>
<td>Appendix A, Reclamation Seeding and Mulching</td>
<td>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).</td>
<td>Use of supplemental watering increases the probability of successful revegetation.</td>
</tr>
<tr>
<td>Appendix A, Earthwork, 02200</td>
<td>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.</td>
<td>Drainage features will protect the existing monitoring wells from side-slope drainage.</td>
</tr>
<tr>
<td>Section 6.0 of CMIP main text and Design Drawings</td>
<td>Soil and rock volumes used to construct the ET Cover are larger than the estimated volumes in the CMIP.</td>
<td>Larger volumes used resulted in a more protective final cover.</td>
</tr>
<tr>
<td>Design Drawings</td>
<td>Final footprint of the cover is larger than the CMIP design.</td>
<td>Larger footprint is structurally sound and more protective of the disposal areas.</td>
</tr>
<tr>
<td>Appendix A, Monitoring Well MW-4 Extension, 02670, Section 3.1</td>
<td>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.</td>
<td>Incorporating the concrete pad into the Subgrade created a structurally sound “anchor” for the extended casing.</td>
</tr>
<tr>
<td>Appendix A, Monitoring Well MW-4 Extension, 02670, Section 3.1</td>
<td>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.</td>
<td>The height of the well casing (16 inches) does not adversely impact access to the well or well performance.</td>
</tr>
<tr>
<td>Not Included in the CMIP</td>
<td>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.</td>
<td>Required by NMED and installed prior to revegetation of Topsoil Layer to minimize impact to cover.</td>
</tr>
<tr>
<td>Section 7.1 of CMIP main text and Design drawings</td>
<td>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.</td>
<td>Boreholes located on the edge of the cover side slope.</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>MWL ET Cover Layer</th>
<th>Volume Estimates Reflect Placed, Compacted Cubic Yards (cy)</th>
<th>As-Constructed Volume</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CMIP Volume</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subgrade</td>
<td>6,500</td>
<td>7,700</td>
<td>The MWL existing surface required more elevation increase than anticipated in the CMIP design.</td>
</tr>
<tr>
<td>Biointrusion Layer</td>
<td>4,900</td>
<td>6,800</td>
<td>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.</td>
</tr>
<tr>
<td>Biointrusion Layer – Void filling and overlying 3-inch-thick soil layer</td>
<td>Not Estimated</td>
<td>3,100</td>
<td>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.</td>
</tr>
<tr>
<td>Native Soil</td>
<td>13,200</td>
<td>17,300</td>
<td>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.</td>
</tr>
<tr>
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<td>5,400</td>
<td>The average thickness of the Topsoil Layer is approximately 0.33 feet greater than the CMIP design.</td>
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<td><strong>Total</strong></td>
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<td>36,200</td>
<td>7,700 cy difference (27% increase from original estimate). 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.</td>
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1 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.

2 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)
Figure 3
Location of the Mixed Waste Landfill,
Borrow Pit, Bulk Waste
Staging Area, and
Haul Routes

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

Sandia National Laboratories, New Mexico
Environmental Geographic Information System
Figure 4
Schematic Diagram of the Mixed Waste Landfill Alternative Evapotranspirative Cover

- As Designed (minimum thickness)
- Topsoil Layer (Soil/Gravel Admixture)
- Compacted Native Soil Layer
- Thin Soil Layer
- Rock Biointrusion Layer
- Compacted Subgrade
- Original Landfill Surface

Dimensions:
- Total Thickness 4.17 feet
- Total Thickness 5.37 feet
- 0 to 3.3 feet
- 2.85 feet
- 0.25 feet
- 1.25 feet
- 1.0 feet
- 1.02 feet
- 2.5 feet
- 0.67 feet

As needed to create central crown and 2% east-to-west design slope.
Figure 5
Mixed Waste Landfill
2006 Existing Surface Map

Notes:
Proctor: MWL-ES-001
All Locations Approximate

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

Scale: 1000 ft = 3472 m
Scale: 24 yd = 21.84 m

Sandia National Laboratories, New Mexico
Environmental Geographic Information System
Figure 6
Mixed Waste Landfill
Subgrade Lift 1 Map

X = Compaction Test Site
Figure 7
Mixed Waste Landfill
Subgrade Lift 2 Map

X = Compaction Test Site
Figure 8
Mixed Waste Landfill
Subgrade Lift 3 Map
Figure 9
Mixed Waste Landfill
Subgrade Lift 4 Map

X = Compaction Test Site
Figure 10
Mixed Waste Landfill
Subgrade Lift 5 Map

X = Compaction Test Site
Mixed Waste Landfill

Subgrade Lift 6 Map

X = Compaction Test Site

Figure 11
Mixed Waste Landfill
Subgrade Lift 6 Map
Mixed Waste Landfill

Figure 12
Mixed Waste Landfill
Subgrade Lift 7 Map

X = Compaction Test Site

Proctor: MWL-SG-002

MWL-SG7-001
Figure 13
Mixed Waste Landfill
Subgrade Lift 8 Map
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

Proctor MWL-SG-007

Proctor MWL-SG-008

Proctor MWL-SG-009

Proctor MWL-SG-010

Proctor MWL-SG-014

Proctor MWL-SG-013

Proctor MWL-SG-011
Figure 17
Mixed Waste Landfill
Subgrade Lift 12 Map

X = Compaction Test Site
Figure 19
Mixed Waste Landfill Cover Grid Blocks and Locations of Native Soil Layer Wedge Lifts 1 & 2

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

Sandia National Laboratories, New Mexico
Environmental Geographic Information System
Figure 20. Graphical Representation of all MWL Alternative Cover Standard Proctor Results
MIXED WASTE LANDFILL

MOISTURE/DENSITY TEST LOCATIONS

SIDE SLOPE LIFTS

LEGEND:

GRID BLOCK NUMBER

QC TEST LOCATIONS

QA TEST LOCATIONS

GRID BLOCK BOUNDARY

LANDFILL BOUNDARY

LIMIT OF SIDESLOPE (APPROX 6:1)

SLOPE AREAS
MIXED WASTE LANDFILL
MOISTURE/DENSITY TEST LOCATIONS
NATIVE SOIL LAYER WEDGE LIFTS 1 & 2
MIXED WASTE LANDFILL
MOISTURE/DENSITY TEST LOCATIONS
NATIVE SOIL LAYER LIFT 3
MIXED WASTE LANDFILL
MOISTURE/DENSITY TEST LOCATIONS
NATIVE SOIL LAYER LIFT 5
MIXED WASTE LANDFILL
MOISTURE/DENSITY TEST LOCATIONS
NATIVE SOIL LAYER LIFT 6
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

Survey Notes:
1) "Potential Subgrade" locations based on topographic survey by URS Corporation April 2005.
2) Elevations for this survey are based on SRTM-90M DEM elevation of 33.83' Contour interval is 1 foot.
3) Survey Control Coordinates are modified state plane to (Ground), based on New Mexico State Plane Central Zone (NAD 1983). A Combined Scale Factor of 0.9999075 was used to derive project coordinates. State Plane to n "Grnd" values of Control Points listed Um 34 (north +160364.37, east +4327314.35) and Um 16 (north +1401863.69, east +4327313.78)
4) Only surface appearances of underground utilities are shown. Other utilities may exist that are not shown on this survey. SMES RFO were not incorporated into this survey.
5) Distances shown are ground.
6) This is not a boundary survey. No property owners 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 set forth in the Surveying Manual of the American Society of Civil Engineers (ASCE) and satisfies the requirements of any applicable, current design criteria and specifications.

U.S. DEPARTMENT OF ENERGY

SANDIA NATIONAL LABORATORIES

URS CORPORATION

SHIHM MIXED WASTE LANDFILL
FINISHED SUBGRADE

SURVEYER'S CERTIFICATION

I, ROBERT R. SCOTT, hereby certify that the work reported in this document was performed by me or under my immediate supervision. I hereby certify that the data reported in this document is true, complete and accurate. I hereby certify that I have reviewed this document and that I approve its content. I hereby certify that I understand that by signing this document, I assume responsibility for the accuracy and completeness of the data reported herein.

ROBERT R. SCOTT
URS CORPORATION
8-16-2007

URS CORPORATION

9/24/2007

1/1
2009 Alternative Cover
As-Built Drawings
QA Verification Survey Plates
## Mixed Waste Landfill Biointrusion Layer QA Survey

### Tech Area III

Sandaialo Laboratories, Bernallillo County, New Mexico

**June, 2009**

### Survey Notes:
1. Biointrusion Layer coordinates are based on spot elevations surveyed by URS, June 2009.
2. Elevations for this survey are based on SALINATE Miscellaneous "DIR 35" with MOVD 20 and Datum of 1989 SD.
3. Survey Control Points are modified state plane (or "Gisland"), based on New Mexico State Plane, Central Zone, North American Datum of 1983. A Contrasted State Plane of 3985157115 is used to derive project coordinates.
4. No surface apporpiations of uniaural utilities are shown. Other utilities may exist that are shown in this survey. URS, LLC fees were not incorporated into this survey.
5. Distances shown are ground.

### URS Bio Layer QA Shots

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MIXED WASTE LANDFILL
NATIVE SOIL LAYER QA SURVEY

MWL

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

Survey Notes:

1. Native Soil Layer data based on spot elevations surveyed by URS, June 2009.

2. Slopes shown are based on DWAFM Method "Slope 0.50" with an RSC of 0.50 elevation of 0.00'.

3. Survey Control Coordinates are modified State Plane "x Ground", based on New Mexico State Plane, Central Zone, North American Datum of 1983. A Combined Scale Factor of 0.9996575 was used to derive project coordinates.

4. No surface appearance of underlying utilities are shown. Only utilities may exist that are not shown on this survey. SNL ESD has not been incorporated into the survey.

5. Distances shown are ground.

6. This is not a boundary survey. No property corners or lines are shown.

7. The 0.50 column relief is "URS NATIVE SOIL LAYER QA SURVEY" compiled URS survey data (column 263), since the top of the native soil layer is "as found." The "THICK" column shows the thickness of this Native Soil Layer.

8. The native soil layer "URS NATIVE SOIL LAYER TOP SHOTS" and "URS NATIVE SOIL LAYER Toe SHOTS" are shown for verification only. No thickness can be inferred from this data.

9. The survey corner side slopes of the native soil layer are 4:1 in favor of 0.1. The native soil layer side slopes will be adjusted to 1:1 before construction of the Topsoil layer.

10. Survey was not collected by URS on any parcel 86, 87, 88, 89, 90, and 92 for the Native Soil Layer. See Figure 17 for Survey Verification Unit Parcel and Field Testing Grid/Border Description.

SURVEYOR'S CERTIFICATION

[Signed by URS professional surveyor]
Photographic Logs
Log No. 1

Mixed Waste Landfill
2006 Subgrade Construction Photographic Log
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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
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<td>Dave Ransbarger</td>
<td>Screened soil stockpile at the MWL Borrow Pit Area</td>
<td>East</td>
</tr>
<tr>
<td>Date</td>
<td>Time</td>
<td>Photo Taken by</td>
<td>Description</td>
<td>Facing</td>
</tr>
<tr>
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<tr>
<td>06/27/06</td>
<td>1515</td>
<td>Dave Ransbarger</td>
<td>Berm around the MWL Borrow Pit Area</td>
<td>North-northeast</td>
</tr>
<tr>
<td>06/28/06</td>
<td>1622</td>
<td>Dave Ransbarger</td>
<td>MWL Borrow Pit Area after rain</td>
<td>North-northeast</td>
</tr>
<tr>
<td>06/28/06</td>
<td>1622</td>
<td>Dave Ransbarger</td>
<td>MWL Borrow Pit Area after rain</td>
<td>North</td>
</tr>
</tbody>
</table>
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
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Photo Taken by</th>
<th>Description</th>
<th>Facing</th>
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<tbody>
<tr>
<td>10/04/06</td>
<td>1551</td>
<td>Dave Ransbarger</td>
<td>Dust control</td>
<td>Southeast</td>
</tr>
<tr>
<td>10/05/06</td>
<td>1511</td>
<td>Dave Ransbarger</td>
<td>Clearing and grubbing existing surface, unclassified area</td>
<td>East-southeast</td>
</tr>
<tr>
<td>10/05/06</td>
<td>1511</td>
<td>Dave Ransbarger</td>
<td>Clearing and grubbing existing surface</td>
<td>East-southeast</td>
</tr>
<tr>
<td>Date</td>
<td>Time</td>
<td>Photo Taken by</td>
<td>Description</td>
<td>Facing</td>
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<tr>
<td>10/05/06</td>
<td>1512</td>
<td>Dave Ransbarger</td>
<td>Progress at end of day</td>
<td>Southeast</td>
</tr>
<tr>
<td>10/05/06</td>
<td>1512</td>
<td>Dave Ransbarger</td>
<td>Overhead view of existing surface after clearing/grubbing</td>
<td>Northeast</td>
</tr>
<tr>
<td>10/11/06</td>
<td>1553</td>
<td>Dave Ransbarger</td>
<td>Removal of fence around classified area.</td>
<td>South-southwest</td>
</tr>
<tr>
<td>Date: 10/11/06</td>
<td>Time: 1553</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Photo Taken by:</strong> Dave Ransbarger</td>
<td><strong>Description:</strong> Pulling fenceposts around classified area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Facing:</strong> South</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date: 10/11/06</th>
<th>Time: 1553</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Photo Taken by:</strong> Dave Ransbarger</td>
<td><strong>Description:</strong> Hauling fence material to staging area for radiological screening</td>
</tr>
<tr>
<td><strong>Facing:</strong> East</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>Date: 10/11/06</th>
<th>Time: 1553</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Photo Taken by:</strong> Dave Ransbarger</td>
<td><strong>Description:</strong> Soil subsidence above a classified area pit before backfilling and compacting to grade</td>
</tr>
<tr>
<td><strong>Facing:</strong> East</td>
<td></td>
</tr>
<tr>
<td>Date: 10/12/06</td>
<td>Time: 1542</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Photo Taken by: Dave Ransbarger</td>
<td></td>
</tr>
<tr>
<td>Description: Cutting fenceposts from concrete</td>
<td></td>
</tr>
<tr>
<td>Facing: North</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Date: 10/12/06</th>
<th>Time: 1542</th>
</tr>
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<tbody>
<tr>
<td>Photo Taken by: Dave Ransbarger</td>
<td></td>
</tr>
<tr>
<td>Description: Screening grubbed material from classified area</td>
<td></td>
</tr>
<tr>
<td>Facing: South</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Date: 10/12/06</th>
<th>Time: 1542</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo Taken by: Dave Ransbarger</td>
<td></td>
</tr>
<tr>
<td>Description: Overhead view of screening/staging grubbed material</td>
<td></td>
</tr>
<tr>
<td>Facing: Northeast</td>
<td></td>
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</tbody>
</table>
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
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Photo Taken by</th>
<th>Description</th>
<th>Facing</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/25/06</td>
<td>0859</td>
<td>Dave Ransbarger</td>
<td>Performing Existing Landfill Surface and Perimeter Clear and Grub inspection.</td>
<td>East</td>
</tr>
<tr>
<td>10/30/06</td>
<td>1618</td>
<td>Dave Ransbarger</td>
<td>Placement of subgrade material in low-lying areas of unclassified area, Lift 1.</td>
<td>West</td>
</tr>
<tr>
<td>10/30/06</td>
<td>1619</td>
<td>Dave Ransbarger</td>
<td>Placement of stakes by URS for elevation reference in low-lying areas.</td>
<td>North</td>
</tr>
</tbody>
</table>
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
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/08/06</td>
<td>1723</td>
</tr>
<tr>
<td>Photo Taken by:</td>
<td>Dave Ransbarger</td>
</tr>
<tr>
<td>Description:</td>
<td>Compacting subgrade material, Lift 10.</td>
</tr>
<tr>
<td>Facing:</td>
<td>Southwest</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>11/08/06</td>
<td>1723</td>
</tr>
<tr>
<td>Photo Taken by:</td>
<td>Dave Ransbarger</td>
</tr>
<tr>
<td>Description:</td>
<td>Installing and compacting subgrade material, Lift 10.</td>
</tr>
<tr>
<td>Facing:</td>
<td>Northeast</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Time</th>
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</thead>
<tbody>
<tr>
<td>11/08/06</td>
<td>1725</td>
</tr>
<tr>
<td>Photo Taken by:</td>
<td>Dave Ransbarger</td>
</tr>
<tr>
<td>Description:</td>
<td>Progress at end of day.</td>
</tr>
<tr>
<td>Facing:</td>
<td>North-northeast</td>
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</table>
Continued placement of subgrade material, Lift 10.
Facing: East

Continued placement of subgrade material, Lift 10.
Facing: Northeast

Loose lift to elevation marked by surveyors.
Facing: North
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Photo Taken by</th>
<th>Description</th>
<th>Facing</th>
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<tbody>
<tr>
<td>11/13/06</td>
<td>1742</td>
<td>Dave Ransbarger</td>
<td>Continued placement of subgrade material, Lift 10.</td>
<td>South</td>
</tr>
<tr>
<td>11/13/06</td>
<td>1742</td>
<td>Dave Ransbarger</td>
<td>Progress at end of day.</td>
<td>North</td>
</tr>
<tr>
<td>11/15/06</td>
<td>1710</td>
<td>Dave Ransbarger</td>
<td>Installation of subgrade material, Lift 11.</td>
<td>East-northeast</td>
</tr>
<tr>
<td>Date</td>
<td>Time</td>
<td>Photo Taken by</td>
<td>Description</td>
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<tr>
<td>11/15/06</td>
<td>1711</td>
<td>Dave Ransbarger</td>
<td>Installation of subgrade material, Lift 11.</td>
<td>East-Northeast</td>
</tr>
<tr>
<td>11/16/06</td>
<td>1716</td>
<td>Dave Ransbarger</td>
<td>Finished surface, Classified Area Lift 11.</td>
<td>North</td>
</tr>
<tr>
<td>11/20/06</td>
<td>1648</td>
<td>Dave Ransbarger</td>
<td>Screened subgrade material stockpile.</td>
<td>East</td>
</tr>
</tbody>
</table>
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
<table>
<thead>
<tr>
<th>Date: 11/28/06</th>
<th>Time: 1727</th>
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<tbody>
<tr>
<td><strong>Photo Taken by:</strong> Dave Ransbarger</td>
<td><strong>Description:</strong> Completed Lift 11 surface. <strong>Facing:</strong> Northeast</td>
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<table>
<thead>
<tr>
<th>Date: 11/28/06</th>
<th>Time: 1727</th>
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<tbody>
<tr>
<td><strong>Photo Taken by:</strong> Dave Ransbarger</td>
<td><strong>Description:</strong> Beginning installation of Lift 12. <strong>Facing:</strong> East-northeast</td>
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<table>
<thead>
<tr>
<th>Date: 11/29/06</th>
<th>Time: 1703</th>
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<tbody>
<tr>
<td><strong>Photo Taken by:</strong> Dave Ransbarger</td>
<td><strong>Description:</strong> Stockpile of soil existing prior to field operations, soil not used as subgrade. <strong>Facing:</strong> Southeast</td>
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</tbody>
</table>
Date: 11/29/06  Time: 1703
Photo Taken by: Dave Ransbarger
Description: Hauling subgrade for placement in Lift 12.
Facing: Southeast
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Description</th>
<th>Facing</th>
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<tbody>
<tr>
<td>12/04/06</td>
<td>1712</td>
<td>Placement of Subgrade material, Lift 12.</td>
<td>Northeast</td>
</tr>
<tr>
<td>12/04/06</td>
<td>1457</td>
<td>Installation of Subgrade, Lift 12</td>
<td>North</td>
</tr>
<tr>
<td>12/18/06</td>
<td>1650</td>
<td>Overhead view, final surface of Subgrade Lift 12 prior to final grading</td>
<td>North</td>
</tr>
<tr>
<td>Date</td>
<td>Time</td>
<td>Photo Taken by</td>
<td>Description</td>
</tr>
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<tr>
<td>12/20/06</td>
<td>1046</td>
<td>Dave Ransbarger</td>
<td>No personnel on site due to snow, material too wet to perform final grading.</td>
</tr>
<tr>
<td>12/20/06</td>
<td>1046</td>
<td>Dave Ransbarger</td>
<td>No personnel on site due to snow, material too wet to perform final grading.</td>
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</table>
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
<table>
<thead>
<tr>
<th>Date: 04/03/07</th>
<th>Time: 1233</th>
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<tbody>
<tr>
<td>Photo Taken by: Dave Ransbarger</td>
<td>Description: Installation of erosion control blanket.</td>
</tr>
<tr>
<td>Facing: Northwest</td>
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</table>

<table>
<thead>
<tr>
<th>Date: 04/03/07</th>
<th>Time: 1233</th>
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</thead>
<tbody>
<tr>
<td>Photo Taken by: Dave Ransbarger</td>
<td>Description: Anchor trench for erosion control blanket.</td>
</tr>
<tr>
<td>Facing: West</td>
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<table>
<thead>
<tr>
<th>Date: 04/03/07</th>
<th>Time: 1233</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo Taken by: Dave Ransbarger</td>
<td>Description: Installing staple to hold erosion control blanket in place</td>
</tr>
<tr>
<td>Facing: Northeast</td>
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</tbody>
</table>
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
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Photo Taken by</th>
<th>Description</th>
<th>Facing</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/26/09</td>
<td>1150</td>
<td>C. M. Timm</td>
<td>Placement of Biointrusion Layer installation test</td>
<td>Southwest</td>
</tr>
<tr>
<td>05/26/09</td>
<td>1151</td>
<td>C. M. Timm</td>
<td>Surveying the biointrusion rock layer during installation test to verify thickness</td>
<td>Southwest</td>
</tr>
<tr>
<td>05/26/09</td>
<td>1159</td>
<td>C. M. Timm</td>
<td>Compacting thin soil layer over Biointrusion Layer during installation test to determine effectiveness of installation approach to fill rock void</td>
<td>Northeast</td>
</tr>
</tbody>
</table>
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:** 10:26
**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:** 07:41
**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:** 07:58
**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: 09/01/09               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
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

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

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)
### List of Attachments

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Revision 1

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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
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

Sendia 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

Soil Cover Area at SWMU 76, Mixed Waste Landfill

Sandia National Laboratories, New Mexico
Environmental Geographic Information System
PERMIT APPLICATION - PART A. - PROJECT INFORMATION AND GENERAL ACTIVITIES 

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

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

6. UNIVERSAL TRANSVERSE MERCATOR (UTM Coordinates), if available: ASK JEREMY NORTING 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 Demolition

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; R², or, FOR DEMOLITION: TOTAL CUBIC FEET

NOTE: A Fugitive Dust Control Permit Application is required for a building Demolition Project of over 75,000 ft² 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 ¼ 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: 01/06/2004 9/1/14 9/2

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.
Excavation Permit

Requestor: Joe Fritts
Telephone: 845-8763

Org/Company: S146

Project/Task or Service Order #: 7221.02.02.03

Proposed Start Date: 3/7/05
Proposed Completion Date: 7/29/05

Task: Soil Excavation

Utilities have been identified in the area of work. If yes, composite drawings MUST BE ATTACHED

Yes No

Operations are on or near an Environmentally Sensitive Site. If yes, a Jobsite Hazard Evaluation MUST BE ATTACHED

Yes No

Drawing #s:

Utilities Identified / Spotted

Power Distribution

Chiller Distribution

Storm Drain Lines

Other (see description)

Gas Distribution

Water Distribution

Communication Lines

Steam Distribution

Sanitary Sewer Lines

Date Spotting Requested:

Utilities have been identified in the area of work. If yes, composite drawings MUST BE ATTACHED.

Operations are on or near an Environmentally Sensitive Site. If yes, a Jobsite Hazard Evaluation MUST BE ATTACHED.

Drawings

FGIS

Drawing #s:

Utilities Identified / Spotted

Power Distribution

Chiller Distribution

Storm Drain Lines

Other (see description)

Gas Distribution

Water Distribution

Communication Lines

Steam Distribution

Sanitary Sewer Lines

Date Spotting Requested:

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: NO KNOWN MACH. UTILITIES LOCATED

Spotter's Name & Initials: H. F. M. Date:

Electrical Spotter's Comments: NO FALOR DETECTED USE CHURCH

Spotter's Name & Initials: N/A Date:

Notice to Proceed

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

List all attachments:

Utility Coordinator's Signature: Phone#. Date:

SNL Excavation Coordinator:

Date:

Supervisor Authorizing Excavation:

Date:

01/05

Permit not VALID if Reverse Side is not Copied Page 1 of 2
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................................. 845-0336
ITEMS DISCUSSED: Meeting agenda will be standard for each meeting. Items discussed include:

1) The QC staff will record and distribute the minutes of the Progress Meetings.

2) The SWPPP was approved and two items are required at the borrow pits.
   a. A vehicle entrance and exit will be constructed at each borrow pit used.
   b. A berm will be constructed to prevent storm water from exiting the pit. The drawings and notes for the berms were misleading and unclear. Joe has the action to clarify the design requirements with the SWPPP contractor. It was decided to construct the berms with the available caliche material.
   c. The following day Joe found that there were mistakes in the design of the berms; they will only be on the down stream side and the dimensions of the berms was clarified to be much smaller than initially indicated.

3) To date 1200 cyds of soil had been screened.

4) The initial water allowance will not be adequate for the summer and Tim will pursue the change to the allowance. Water usage is being recorded by the water truck operator.

5) Ben or Anthony will print the notifications for work stoppage due to wind, lightning, and heat.

6) Future Progress Meetings will be held on Mondays at 1:00 pm at the CWL building.
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
Joe Fritts
Anthony Martinez

Tim Goering
Ben 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

ATTENDANCE:
Don Schofield
Joe Fritts
Tony Shurtler
Tim Goering
Ben Martinez
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 in removed (aprox Sep 6th). 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.
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 Pell and Corey Woods

ATTENDANCE:
Don Schofield  Dick Fate
Joe Fritts  Ben Martinez

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

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 Shutter: 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.
ATTENDEES: Scho, Joe, Anthony; Ben, Kelly, Correy, Tony, Dick

AGENDA

PROGRESS AT SITE Ben

SAFETY Anthony

PERMIT STATUS Joe

QA Kelly

ADDITIONS TO AGENDA

Dick Fetc - 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

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 Tresspassing” 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 Pell & 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 8th for a progress review.
7) Next meeting will be Monday, August 14 at 1:30 pm at the CWL building.
ATTENDEES: Joe, Anthony, Kelly, Correy, Tony, 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: 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 6th 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
ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

1) Hauling screened soil to the MWL has been put on hold due to continuing rains that have flooded the stockpile area and haul roads. Personnel have been repairing roads around the site and along the haul route.

2) Several SWPPP inspections have been required. Overall, BMPs have held well; however, the berm around the stockpile area has been breached twice. Repairs to the berm have been completed.

3) Setup of the MWL site trailer has been put on hold due to the high cost electrical hookup.
   Work will continue on moving storage units and establishing a parking area.

4) There have been no safety concerns.

5) Next meeting will be Thursday, August 31 at 11:00 am at the CWL building.
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
ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

1) Hauled approx. 7300 cyds of soil as of August 30th 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, Sco, 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
DOCUMENT EXISTING LANDMARKS - Hilltop completed
TRAILER PAD - Gravel will be placed on trailer for walkthrough after delivery
PERSONEL EXIT/ENTRANCE
TRAILER, CONNEX - Trailer to arrive Tuesday, conexes on site
DECON PAD
RELOCATE WATER TOWER - Facilities to complete next week
ROLLOFFS
P/U INSTALL WATER HOSE - P/U of H2 needs to be installed
INSTALL TPOSTS/ROPE - T-posts installed, rope not
RAD/NO TRESPASSING SIGNS - Signs around, not put up
PERIMETER ROAD - Completed, needs some work (grading/compaction) fence removal
NOTIFY SECURITY - Time will notify (planned week of 9/11)
BIO SURVEY - To be completed next week.

Geophysical survey: contract not yet in place, planned for late September
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, percautions 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 2nd.

Attachments:
Agenda
Attendance list
Key elements of the Security Plan
Task Hazard Analysis for fence removal
MWW TAKE DOWN THE FENCE MEETING

September 26, 2006
0900
ITEMS TO COVER

SECURITY PLAN
HASP
RWP
WASTE MANAGEMENT PLAN
CMI PLAN/OVERVIEW

Tim
Anthony
Tony
Joe/Craig
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<th>Organization</th>
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<th>Purpose of Visit</th>
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<td>Brian Fossett</td>
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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 (SIMP) 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).

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<th>Potential Hazard</th>
<th>Hazard Rating</th>
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<td>Chemical</td>
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<tr>
<td>• Fuel</td>
<td>Low</td>
<td>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.</td>
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<tr>
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<td>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</td>
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*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: Kelly Pelt & 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 shredded 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 16th. 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 moritorium 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
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 shredded 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 several
   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.
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
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 refinshed, 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, refinshed, 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 inplace, 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.
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.
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,

Kelly M. Peil
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

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirement &amp; Reference</th>
<th>Audit Question</th>
<th>Compliance</th>
<th>Observation/Finding</th>
<th>Person Contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Availability of CMIP with specifications (Nov 05) on site (CQA 1.1)</td>
<td>Are copies of specifications and the current version of the CMIP in site office</td>
<td>X</td>
<td>A binder at MWL contains the documents required at the site.</td>
<td>Ben Martinez</td>
</tr>
<tr>
<td>2</td>
<td>Availability of CQAP, Security Plan, and HASP on site (CQA 4.0)</td>
<td>Is the CQA with inspection checklists, Security Plan, HASP with THAs and signatures, MSDS, emerg contact info available at the site</td>
<td>X</td>
<td>All items listed in question are in the site office.</td>
<td>Ben Martinez</td>
</tr>
<tr>
<td>3</td>
<td>Provide continuing training to maintain job proficiency (CQA 4.0)</td>
<td>Evidence of daily safety and quality briefings</td>
<td>X</td>
<td>Briefing for today was prepared, reviewed and signatures for all present. The previous briefings are retained in a binder.</td>
<td>Joe Fritts and Anthony Martinez</td>
</tr>
<tr>
<td>4</td>
<td>Provide continuing training to maintain job proficiency (CQA 4.0)</td>
<td>Is instrumentation available for air and noise monitoring to control PPE; calibration records</td>
<td>X</td>
<td>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</td>
<td>Tony Shurter and Anthony Martinez</td>
</tr>
<tr>
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<tr>
<td>5</td>
<td>Continual improvement review and audit (CQA 2.3)</td>
<td>Evidence of past SNL personnel audits of project activities; weekly safety board inspection notes</td>
<td>X</td>
<td>Email concerning audits by Dick Fate in the file. Safety board inspection notes in Don Schofield's file</td>
<td>Joe Fritts and Don Schofield</td>
</tr>
<tr>
<td>6</td>
<td>Project plan, schedule, and resources for the work (CQA 4.0)</td>
<td>Is the plan and schedule up-to-date; are resources available for the work</td>
<td>X</td>
<td>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</td>
<td>Don Schofield</td>
</tr>
<tr>
<td>7</td>
<td>Applicable permits available (CQA 4.0)</td>
<td>Is the excavation permit current (July 24) and on site; RWP signatures daily</td>
<td>X</td>
<td>The excavation permit is effective thru Dec 06; the RWP is signed daily by those accessing the landfill</td>
<td>Joe Fritts</td>
</tr>
<tr>
<td>8</td>
<td>Site storm water control (Spec 01563)</td>
<td>Is the storm water diverted around the construction area; are SWPPP inspection forms complete and filed</td>
<td>X</td>
<td>The SWPPP BMP is a berm around the work site; the inspection records are complete and filed</td>
<td>Joe Fritts</td>
</tr>
<tr>
<td>9</td>
<td>Site storm water control (Spec 01563)</td>
<td>Inspect the BMPs for needed repairs</td>
<td>X</td>
<td>The berm was breached during the summer heavy rain events; it was repaired and is in good shape now</td>
<td>Joe Fritts</td>
</tr>
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<tr>
<td>10</td>
<td>Clearing and grubbing</td>
<td>Inspect equipment storage area and safety of equipment for operators</td>
<td>Yes</td>
<td>I couldn’t get on the landfill; item will be inspected by the QC inspector as part of duties</td>
<td>Joe Fritts</td>
</tr>
<tr>
<td></td>
<td>(Spec 02110)</td>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Clearing and grubbing</td>
<td>Inspect the MWL surface for rocks and debris; inspect MW-4 for protection; inspect the perimeter and organic storage area</td>
<td></td>
<td>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</td>
<td>Joe Fritts</td>
</tr>
<tr>
<td></td>
<td>(Spec 02110)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Earthwork (Spec 02200)</td>
<td>Check compaction equipment to be used for the existing surface; agreement on change to spec for compaction versus field tests</td>
<td>X</td>
<td>A smooth drum, vibrating roller will be used for compaction; this spec will be modified with field density tests to determine compaction</td>
<td>Don Schofield</td>
</tr>
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<td></td>
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</tr>
<tr>
<td>13</td>
<td>Earthwork (Spec 02200)</td>
<td>Tests results for subgrade material is in file; ensure no subgrade placement until compaction results are known</td>
<td>X</td>
<td>The surface permeability tests were projected from near-by field tests; no placement of subgrade will occur until results of surface compaction are available</td>
<td>Tim Goering and Ben Martinez</td>
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</tbody>
</table>
## Audit Checklist

**Audit Reference Number:** 01  
**Date of Audit:** October 16, 2006  
**Subject:** Sandia MWL Subgrade Project  
**Auditor:** Kelly Peil  
**Page Number:** 4

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<tr>
<td>14</td>
<td>Grades, Lines, &amp; Levels (Spec 02210)</td>
<td>Plan for survey of existing surface before subgrade is placed and between lifts</td>
<td>X</td>
<td>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</td>
<td>Ben Martinez</td>
</tr>
<tr>
<td>16</td>
<td>Removal of existing fences (CQA 5.1) and THA</td>
<td>Review plan to separate concrete from posts; inspect waste management (separation, labels, quantities, disposal receipts)</td>
<td>X</td>
<td>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</td>
<td>Joe Fritts</td>
</tr>
<tr>
<td>17</td>
<td>Documentation (CQA 8.0)</td>
<td>Ensure logs and photos are used to document work details, quantities, nonconformances, resolutions, and comments concerning quality and safety</td>
<td>X</td>
<td>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</td>
<td>Joe Fritts</td>
</tr>
</tbody>
</table>
ITEMS DISCUSSED: Standard meeting agenda was used. Items discussed include:

1) The subgrade soil is being applied to the lower north and north east corner in eight inch lifts to level the site.

2) The surveyors have had difficulty locating the site with relation to the control points. The past information was not clear or verifiable. The site grid will be completed when the controls can be verified.

3) The geophysical survey of the classified area was completed.

4) Samples of the subgrade soil have been taken for proctor testing and we are awaiting the results from AMEC. The field density tests on the individual lifts have been above the specification requirements.

5) The RCTs surveyed the area and released it from the RWP PPE requirements. Everyone must fished out of the site.

6) There have been no safety concerns.

7) Acquisition of the crushed rock for the cover soil will continue inorder to have it ready for the amoring layer or stockpiled for the final cover.

8) The next meeting will be Thursday, November 16 at 11:00 am at the CWL building.
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
RECORD OF MEETING

DATE: 11-16-06  JOB NAME: SNL MWL Subgrade Construction  JOB NO: 06-22-0011
RECORDED BY: Kelly Peil & Corey Woods  
ATTENDANCE:
Ben Martinez  Joe Fritts  Anthony Martinez  Jerry Peace  Tim Goering
Don Schofield  Harry Buckner  Stacy Griffith
ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez
Project file
MAIN SUBJECT OF MEETING: Progress Meeting #17

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

1) The subgrade soil is placement is in lift 11 which will cover most of the footprint. It should be complete Nov 21. Lift 12 will be the final lift and should be completed the week of Dec 4.

2) The site grid stakes were marked for all lifts and were extremely helpful for the proper placement.

3) The old soil pile at the MWL was from excavation of some of the trenches. It will only be used for fill in the perimeter areas. A sample will be taken for analysis for chemical constituents.

4) Proctors and field density and moisture tests have been taken on a regular basis and the results have been within specification.

5) There have been no safety concerns.

6) There has been no news from NMED or DOE on the continuation of the project past the subgrade, therefore, the work will shift from the MWL site to the borrow area the week of Dec 11. Soil will be screened and stockpiled at the borrow area. The work will continue to the seasonal break and resume in early January. The acquisition of the crushed rock for the cover soil is on hold.

7) The next meeting will be scheduled later.
November 16, 2006 MWL MANAGERS MEETING AGENDA

ATTENDEES: Joe, Ben, Scho, Tim, Anthony, Kelly, Corey, Don, Harry, Jerry, Peter, Tony, Steve

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

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.
RECORD OF MEETING

DATE: 02-12-07     JOB NAME: SNL MWL Subgrade Construction     JOB NO: 06-22-0011
RECORDED BY: Kelly Peil
ATTENDANCE: Ben Martinez      Joe Fritts      Tim Goering      Don Schofield
           Don Lopez      Paula Schuh
ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez
          Project file
MAIN SUBJECT OF MEETING: Progress Meeting #19 to discuss project work hold

ITEMS DISCUSSED:

1) The MWL project is awaiting decision to proceed with total cover. Without the decision the project will be on hold at the completion of the subgrade soil placement. This meeting was to discuss activities to stabilize the site for six months.

2) One concern was protection of the subgrade layer from wind and water erosion. Both a gravel layer and straw blankets were considered and the straw blanket was selected.

3) The rilling on portions of the subgrade layer will be repaired and the blankets placed and secured.

4) A portion of the drainage swales around the MWL will be constructed to catch and direct surface water away from the site. The main areas of concern will be the NE and SE corners.

5) Weekly inspections of the site will be conducted and documented. This also includes the required SWPPP inspections.

6) A Construction Quality Assurance Report will be prepared to cover the activities through the completion of the subgrade layer.

7) Further meetings will be scheduled as needed.
RECORD OF MEETING

DATE: 02-26-07
JOB NAME: SWL MWL Subgrade Construction
JOB NO: 06-22-0011
RECORDED BY: Kelly Peit and Corey Woods
ATTENDANCE: Ben Martinez  Joe Fritts  Tim Goering  Don Schofield
           Don Lopez  Paula Schuh
ROUTE TO: Don Schofield, Joe Fritts, Ben Martinez, Anthony Martinez
          Project file
MAIN SUBJECT OF MEETING: Progress Meeting #20

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

1) Soil excavation and screening continues at the borrow area. The stock pile now contains an estimated 11,200 cuyds.

2) The Sandia procurement process is in progress to acquire approximately 300 rolls of erosion control blankets and staples for the subgrade surface protection.

3) Sandia is drafting a letter to NMED to update the status of the MWL project and the erosion protection measures to be taken while awaiting the cover decision.

4) Sandia requested two letters from QC concerning the acceptability of the straw blankets and the reasons to leave the blankets in place under the bio-barrier.

5) QC will work with Joe Fritts to prepare an inspection form to use for the biweekly inspections of the MWL site while on hold status.

6) The URS survey team completed the surface topo and the location markers for the drainage swale corners.

7) The vegetation specification may be updated to incorporate seasonal variation in seeds.

8) Further meetings will be scheduled as needed.
ATTENDEES: Joe, Ben, Tim, Don, Kelly, Corey, Paul

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 IPOS, Room 2156
Conducted By: Sandia Personnel

ATTENDEES:

<table>
<thead>
<tr>
<th>NAME</th>
<th>COMPANY</th>
<th>PHONE</th>
<th>EMAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paul Molina</td>
<td>URS Field QA</td>
<td>505-855-7498</td>
<td><a href="mailto:Paul_Molina@urscorp.com">Paul_Molina@urscorp.com</a></td>
</tr>
<tr>
<td>Harry Buckner</td>
<td>URS Survey QA</td>
<td>505-855-7574</td>
<td><a href="mailto:Harry_Buckner@urscorp.com">Harry_Buckner@urscorp.com</a></td>
</tr>
<tr>
<td>Don Lopez</td>
<td>PM, CQA</td>
<td>505-855-7440</td>
<td><a href="mailto:Don_Lopez@urscorp.com">Don_Lopez@urscorp.com</a></td>
</tr>
<tr>
<td>Marshall Nay</td>
<td>URS QA</td>
<td>505-855-7485</td>
<td><a href="mailto:Marshall_Nay@urscorp.com">Marshall_Nay@urscorp.com</a></td>
</tr>
<tr>
<td>Chris Edgman</td>
<td>EDI Con. PM</td>
<td>505-341-3578</td>
<td><a href="mailto:CEdgmon@edi-nm.com">CEdgmon@edi-nm.com</a></td>
</tr>
<tr>
<td>Don Schofield</td>
<td>SNL SDR</td>
<td>505-844-4088</td>
<td></td>
</tr>
<tr>
<td>Mateo Aragon</td>
<td>SNL Contracting Officer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jerry Peace</td>
<td>SNL Senior Tech Leader</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mike Mitchell</td>
<td>SNL Project Tech Lead</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emily Wright</td>
<td>SNL Safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dan Kwiecinski</td>
<td>AMEC – Senior PM Geo Tech.</td>
<td>505-821-1801</td>
<td><a href="mailto:Dan.kwiecinski@amec.com">Dan.kwiecinski@amec.com</a></td>
</tr>
</tbody>
</table>

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.
This will be the readiness review. Release of Notice-To-Proceed is anticipated shortly thereafter pending a successful outcome of the readiness review.

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:

<table>
<thead>
<tr>
<th>NAME</th>
<th>COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paul Molina</td>
<td>URS Field QA</td>
</tr>
<tr>
<td>Harry Buckner</td>
<td>URS Survey QA</td>
</tr>
<tr>
<td>Don Lopez</td>
<td>PM, CQA</td>
</tr>
<tr>
<td>Marshall Nay</td>
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<td>Emily Wright</td>
<td>SNL Safety</td>
</tr>
<tr>
<td>Dan Kwiecinski</td>
<td>AMEC – Senior PM Geo Tech.</td>
</tr>
</tbody>
</table>

MWL ET COVER CONSTRUCTION PROJECT PRE-MOB CHECKLIST

Please see attached

- 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

<table>
<thead>
<tr>
<th>Operation: SNL/NM MWL ET Cover Project</th>
<th>Location: TA III mixed waste landfill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Readiness (faculty/activity)</td>
<td></td>
</tr>
<tr>
<td>Check one:</td>
<td></td>
</tr>
<tr>
<td>New Facility</td>
<td>[ ]</td>
</tr>
<tr>
<td>New Activity</td>
<td>[X]</td>
</tr>
<tr>
<td>Restart of Facility/Activity</td>
<td>[ ]</td>
</tr>
<tr>
<td>Modification to Existing Facility/Activity</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

Was the Standard Industrial Hazard Review (SR) or Low Hazard Review (LR) planned according to Chapter 3 or 4 of the Safety Basis Manual? [ ]  [ ]  [ ]

### A. AUTHORIZATION BASIS/WORK PLANNING *

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is a current Primary Hazard Screening (PHS) (and Hazards Analysis [HA], if necessary) complete and approved for this facility/activity?</td>
<td>[X]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>2. Is a current Hazards Aggregation Rollup Process (HARP) document (if necessary) complete and approved for this facility?</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[X]</td>
</tr>
<tr>
<td>3. Are workers aware of hazards and controls described in the PHS/HA?</td>
<td>[X]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>4. Have interfaces with other organizations been communicated and negotiated (such as nearby operations, ES&amp;H, Facilities Org.)?</td>
<td>[X]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>5. Have activity- or facility-specific controls been implemented (e.g., equipment in place and working)?</td>
<td>[X]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>6. Have lessons learned from projects/activities/facilities with similar hazards been evaluated?</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

### B. TRAINING *

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have workers (authorized users, Members of the Workforce, contractors, subcontractors) completed required training?</td>
<td>[X]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

### C. TECHNICAL WORK DOCUMENTS (TWDS) *

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have TWDS been developed, and have workers read and signed them as authorized users?</td>
<td>[X]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>2. Are TWDS available to workers (preferably at the work site)?</td>
<td>[X]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
3. If more than one TWD is to be used, has the set of TWDs been reviewed for adequacy and consistency?  ☑

4. Are controls implemented (e.g., administrative, engineering, personal protective equipment [PPE])?  ☑

<table>
<thead>
<tr>
<th>D. WORK ENVIRONMENT *</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are adequate signs in place and legible?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are practices to handle waste management issues in place?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Are workers aware of hazards and controls associated with adjacent operations?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E. EQUIPMENT AND MAINTENANCE *</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. For startup of a new operation/facility, is the construction and equipment in accordance with design criteria?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Has maintenance and calibration of line-owned equipment performed?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Are required safety monitoring devices installed and operational?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F. EMERGENCY PREPAREDNESS *</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are emergency plans/procedures in place?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are the local emergency plans/procedures coordinated with the corporate Emergency Plan?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Is emergency equipment in place?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Have emergency response personnel been notified of operations that may present unusual hazards or a special need for response?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Have personnel been trained in emergency planning?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>G. ADDITIONAL CRITERIA FOR RESTARTING OPERATIONS</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have actions been taken to address problems that caused or contributed to the need for a restart?  ☑</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

☐ Check here if additional readiness criteria are attached.

List the subject areas of the additional criteria (such as forklifts, electrical):
Heavy equipment
Persons who participated in this readiness review:

<table>
<thead>
<tr>
<th>Name</th>
<th>Org.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tom Carson</td>
<td>6765</td>
</tr>
<tr>
<td>Don Schfield</td>
<td>4133</td>
</tr>
<tr>
<td>Mike Miller</td>
<td>6765</td>
</tr>
</tbody>
</table>

Verification of Readiness:

- [ ] This operation has successfully passed the review
- [ ] This operation has NOT passed the review at this time

Reviewer

<table>
<thead>
<tr>
<th>Name</th>
<th>Org.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>David D. Wright</td>
<td>6710</td>
<td>5/19/09</td>
</tr>
</tbody>
</table>

ES&H Coordinator (for Low Hazard ONLY)

<table>
<thead>
<tr>
<th>Name</th>
<th>Org.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>David R. Hill</td>
<td>6765</td>
<td>5/19/09</td>
</tr>
</tbody>
</table>

Questions on this tool? Contact Subject Matter Expert: Caren Wenner
# MWL ET COVER CONSTRUCTION PROJECT
MOBILIZATION CHECKLIST FOR OPERATIONAL READINESS
MAY 19, 2009

<table>
<thead>
<tr>
<th>TASK</th>
<th>STATUS</th>
<th>CSSP CROSS-REFERENCE &amp; NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow On Items from May 6 RR Meeting</td>
<td>Complete</td>
<td>See attached list with status information</td>
</tr>
<tr>
<td>Site Access List on site</td>
<td>Complete</td>
<td>Per MWL Security Plan</td>
</tr>
<tr>
<td>Personnel Badging</td>
<td>Ongoing</td>
<td>Per RFQ 27881, all site personnel currently badged. More will phase in over time.</td>
</tr>
</tbody>
</table>

## Site Preparation

<table>
<thead>
<tr>
<th>TASK</th>
<th>STATUS</th>
<th>CSSP CROSS-REFERENCE &amp; NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Trailers and Storage Units</td>
<td>Complete</td>
<td>Per Section 5.2</td>
</tr>
<tr>
<td>Site Utilities Marked – Dig Permit Signed</td>
<td>Complete</td>
<td>Per Section 5.2 and May 6 Mting. Photos taken of utility markings in field.</td>
</tr>
<tr>
<td>Equipment on site and inspected (MWL and Borrow Pit)</td>
<td>Complete</td>
<td>Per Section 5.2. Craig Hauber completed 5/14/</td>
</tr>
<tr>
<td>Permits, CMIP, and CSSP on site</td>
<td>Complete</td>
<td>Per Section 5.2.1 - see list of plans &amp; permits below</td>
</tr>
<tr>
<td>Site Boundary Rope &amp; Signs</td>
<td>Complete</td>
<td>Per Section 5.2 and 5.3, Warning/No Trespassing &amp; Rad signs. Finish 5/19.</td>
</tr>
<tr>
<td>SWPPP BMPs</td>
<td>Complete</td>
<td>Per Section 5.2 and includes perimeter silt fencing and drive off pad</td>
</tr>
<tr>
<td>Fuel and Maintenance Vehicle Placarding, Signage, and Staging Area</td>
<td>Complete</td>
<td>Per Section 11.10 – per inspection by Craig Hauber on 5/11.</td>
</tr>
<tr>
<td>Site Access Control - Visitor Log, Sign In, Safety briefing, and Escort Protocol</td>
<td>Complete</td>
<td>Per Section 6.3, sign posted at site entrance “Visitors Must Sign In at Office Trailer”</td>
</tr>
<tr>
<td>Extension of MW4 Surface Casing</td>
<td>In Progress</td>
<td>Currently scheduled for May 27</td>
</tr>
<tr>
<td>3-Foot Diameter Fence around MW4</td>
<td>In Progress</td>
<td>Per Section 5.6.1 – will be completed after MW4 casing extended</td>
</tr>
<tr>
<td>Initial Traffic Control Plan – Measures &amp; Map</td>
<td>Complete</td>
<td>Per Section 5.5, map will be posted and haul routes/work areas defined</td>
</tr>
<tr>
<td>Site Control Plan &amp; Communications Established</td>
<td>Complete</td>
<td>Two Way Radios operational &amp; on site, cell phone #s distributed to site workers per Chapter 9 and Sections 5.5.1 and 9.3</td>
</tr>
<tr>
<td>Preliminary Photo Documentation and Land Survey</td>
<td>In Progress</td>
<td>Prelim “before start” photos complete, land survey ongoing</td>
</tr>
</tbody>
</table>

## Training, Emergency Equipment & Procedures

<table>
<thead>
<tr>
<th>TASK</th>
<th>STATUS</th>
<th>CSSP CROSS-REFERENCE &amp; NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training completed and verified with documentation on site – AHAs for initial tasks reviewed with site workers</td>
<td>Complete</td>
<td>Per Chapters 6, 7, and 8 - includes Medical Monitoring (Chapter 8) and all site personnel reading and signing the CSSP</td>
</tr>
<tr>
<td>PPE &amp; Associated Training</td>
<td>Complete</td>
<td>Per Chapter 7</td>
</tr>
<tr>
<td>Pre-Emergency Planning with TA 3 and SNL/NM Emergency Operations</td>
<td>Complete</td>
<td>Per May 6 Readiness Review and Sections 5.5.1 and 10.2</td>
</tr>
<tr>
<td>Emergency Procedures, Contact List, Route Map and Directions to Medical Facilities Posted in Office Trailer &amp; Communicated to Site Workers</td>
<td>Complete</td>
<td>Per Chapter 10, Sections 10.6 &amp; 10.11 – post Figure 10.1 and Tables 10.1, 10.3, and 10.4 in Office Trailer</td>
</tr>
</tbody>
</table>
## MWL ET COVER CONSTRUCTION PROJECT
### MOBILIZATION CHECKLIST FOR OPERATIONAL READINESS
**MAY 19, 2009**

<table>
<thead>
<tr>
<th>TASK</th>
<th>STATUS</th>
<th>CSSP CROSS-REFERENCE &amp; NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Extinguisher, Emergency Contact List, Route Map and Directions to Medical Facilities in all site vehicles</td>
<td>Complete</td>
<td>Table 10.1 is the Emergency Contact List. Tables 10.3 &amp; 10.4 provide directions to Lovelace Urgent Care &amp; Hospital, and Figure 10.1 is map to Lovelace Medical facilities.</td>
</tr>
<tr>
<td>Evacuation Route and Assembly Point Map Posted in Office Trailer</td>
<td>Complete</td>
<td>Per Section 10.8</td>
</tr>
<tr>
<td>Emergency Equipment and Supplies</td>
<td>Complete</td>
<td>Per Sections 7.6, 10.9, 10.14, and Table 10.2</td>
</tr>
<tr>
<td>Fire Extinguishers</td>
<td>Complete</td>
<td>Per Section 10.9.2</td>
</tr>
<tr>
<td>Water supply, toilet facilities, and hand wash station</td>
<td>Complete</td>
<td>Per Section 11.16</td>
</tr>
<tr>
<td><strong>Notifications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiation Protection notification for Start of Subgrade Layer work</td>
<td>Complete</td>
<td>Per Section 4.7 Heavy equipment to be used on the Subgrade Layer will be surveyed prior to and after work</td>
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<td>Radiation Protection notification when neutron probe will be brought on and removed from the site</td>
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<td>Per Section 4.7 RCT will survey neutron probes at their discretion</td>
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<td>Field Work Schedule Update to NMED &amp; DOE</td>
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<td>General Project Requirement</td>
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<td><strong>Permits &amp; Plans Maintained On Site</strong></td>
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<td>Contract Specific Safety Plan (CSSP)</td>
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<td>May 8.</td>
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<td>EXCAVATION PERMIT</td>
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<td>SWPPP</td>
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<td>Permit # NMR150000</td>
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<tr>
<td>FUGITIVE DUST CONTROL PERMIT</td>
<td>On Site</td>
<td>#10-683-4160 through -4162</td>
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<td>MWL SURFACE H2O DISCHARGE</td>
<td>On Site</td>
<td>4/27/09 #09-16</td>
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<td>PHS</td>
<td>On Site</td>
<td>3/17/09-SNL09A00039-001</td>
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<tr>
<td>HOT WORK PERMIT</td>
<td>On Site</td>
<td>Needed for MW4 Extension work</td>
</tr>
<tr>
<td>SNL/NM APPROVAL PAPERWORK FOR EDI TEAM TWO-WAY RADIOS</td>
<td>On Site</td>
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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 5925 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 distributed 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:

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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
Title: BIOINTRUSION CONSTRUCTION FIELD TESTS AND THICKNESS VERIFICATION
Quality Resolution #: 002
Date: 26 May, 2009
Layer: Biointronstion Layer
Location: Tech Area III, Sandia Mixed Waste Landfill, Existing Subgrade

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BIOINTRUSION CONSTRUCTION FIELD TESTS

1. Biointronstion 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-feet 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 opposed 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
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:

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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

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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 then 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
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

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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
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

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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

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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
  o  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
  o  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

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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

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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 Caliche 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

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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

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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
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
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

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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
Title: LIFT #5 LOW AREA  
Date: 01 July, 2009  
Quality Resolution #: 014  
Layer: Native Soil Layer  
Location: Tech Area III, Sandia Mixed Waste Landfill

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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

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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

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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 Bioinursion 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

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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

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<td>Jon Schermerhorn</td>
<td>AMEC</td>
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<tr>
<td>Marcus Cordova</td>
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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:

<table>
<thead>
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<tbody>
<tr>
<td>Paul Molina</td>
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<td>Chris Edgman</td>
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<tr>
<td>Don Schofield</td>
<td>SNL/4133</td>
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<td>Mike Mitchell</td>
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<td>John Davidson</td>
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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:

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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:

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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
Project Name: SNL MNL Construction Cover Project  
Date: 6-2-2009  
Contract #: 4010-9031277  
Submittal #: 30-1  
New [X] Resubmittal [ ]  
If resubmittal, prev. submittal #:  

To (name/SNL Dept.) DON LOPEZ - URS CORPORATION  
Submitted by (name/company) CHRIS EDGEMAN - EDI  

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| 01     | 3/8" CRUSHED GRAVEL | THE TOPSOL LAYER SHALL BE AMENDED WITH 3/8" CRUSHED GRAVEL 25% PERCENT BY VOLUME BEFORE PLACING CONCRETE  
SECTION 02700-4 2:1:2 FILL #4 | [X] | [ ] | [ ] | [ ] |

Date: June 2, 2009  
Name/Title: DONALD T. LOPEZ PE  
Signature: [Signature]  
URS NM CQA Engineer
A TOTAL OF THREE (3) SAMPLES WERE COLLECTED FROM THREE DIFFERENT VENDORS. PLEASE FIND ATTACHED THE SPEC ANALYSIS PERFORMED BY ARCE FOR EACH OF THE THREE VENDORS.

#1 - DUKE CITY AGGREGATE
#2 - FISHER INDUSTRIES (SEE NOTE BELOW)
#3 - EDENWOOD AGGREGATE

NOTE - Edi has only received the initial results. Edi will provide the complete package once received from Arce.
---

**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

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**Date:** June 10, 09  
**Name/Title:** Donald L. Capers PE  
**Signature:** [Signature]

---
COMMENTS (include Item #)

The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. Thirteen samples were collected from the 2.6 acre landfill. Please see attached map for grid layout.
### Material Approval Submittal Form

**Project Name:** SNL MWL Construction Cover Project  
**Date:** 6-11-09  
**Contract #:** PO# 903627  
**Submittal #:** 003  
**To:** (name/SNL Dept.) Don Lopez - URS Corporation  
**Submitted by:** (name/company) Chris Edgmon / EDi

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**Date:** 6-12-09  
**Name/Title:** Donald T. Lager PE  
**Signature:**  
**Engineer**
The Mixed Waste Landfill Corrective Measures Implementation 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: 6-18-09
Contract #: PO# 903627
Submittal #: 004

New ☑ Resubmittal ☐
If resubmittal, prev. submittal #:

To (name/SNL Dept.) Don Lopez - URS Corporation
Submitted by (name/company) Chris Edamon / EDI

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Date: 11 June 09
Name/Title: Marshall Nay P.E., URS
Signature: Marshall Nay P.E., URS

for Don Lopez, CQA
Engr
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 3) 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: 6-17-09
Contract #: PO# 903627
Submittal #: 005

New ☑ Resubmittal ☐
If resubmittal, prev. submittal #:

To (name/SNL Dept.): Don Lopez - URS Corporation
Submitted by (name/company): Chris Edamon / EDI

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Date: 6/18/09
Name/Title: MNDY URS for
Signature: Marshall May

Don Lopez - CQA
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the Top Soil. Borrow material at a frequency of 1/500 cubic yards stated in Section 2200-9 3.4.2 and Table 3.1. 6 samples (items 1 to 6) 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**: 6-17-09  
**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 / ED

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**Date**: 18 June 09  
**Name/Title**: Marshall W. May  
**Signature**: Marshall May  

for Don Lopez CQA Engineer
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.
Approximate Method: Surface 3

Goal is to check order of magnitude of production number.

```
Cut Excavation:
- 300 X 100 = 30000 cu. ft
- 300 X 20 = 6000 cu. ft

Lengths: 260 / 200 = 1.30 ft, 255 / 160 = 1.59 ft

Depth = 37 ft

Calculated Volume:
- 27.3 ft x 3.400 CY
```

- The Staking Volume, using Approx Method, is about 34,000 CY. If I reduced my End Flaring Factor to 0.97, the result is: 34,000 CY.
- The computer, using Micro SPT INROADS software, reports 34,000 CY.
- The results are very close.

Special Notes:
1. There is additional material under the surface before you reach the reported Cutline Layer.
2. Calculations were made on 20,000 cu. ft. of material

Surface 3: 3331.74 cu. ft.
- 3377 / 1.0 ft = 3377 ft
- 3377 / 1.0 ft = 3377 ft
### Material Approval 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

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**Date:** 23 June  
**Name/Title:** Marshall Nag, URS for  
**Signature:** Marshall Nag  
**Don Lopez, PE, Project CQA**
The Mixed Waste Landfill Corrective Measures Implementation Plan requires the cover to have a 2% East to West. EDI plans to do a "wedge lift" on the East side of the landfill cover to meet the 2% requirement. The survey data shows the fill depths needed to meet the 2% grade. See attached for site layout.
# MA-01
**MATERIAL APPROVAL FORM**
**MATERIAL APPROVAL SUBMITTAL FORM**

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**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  

Date: 25 Jun 09  
Name/Title: Marshall Nag, URS For  
Signature: [Signature]  
Don Lopez, PE, CQA  
Engineer
The Mixed Waste Landfill Corrective Measures Implementations Plan requires the top soil material contain 3/8" crushed gravel, 25% by volume. In previous submittal, Edgewood Aggregates was approved. Edgewood Aggregates may not be able to produce enough gravel to meet the current schedule. As a potential alternate to the Edgewood Aggregate, EDI would like to use Fisher Industries if needed to maintain the current schedule. The Fisher aggregate is being resubmitted for approval.
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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.
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

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Date: July 6, 09  
Name/Title: Donald T. Cope  
Signature: Donald T. Cope  
CQA Engineer: CRS NM
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the native soil at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. The CMIP does not mention testing the slopes, however it was agreed that the North, East, and West slopes would be tested at a single random spot on every lift. This submittal is for the 6 lifts on the west and east slopes and the 8 on the north slope.
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Date: 7-2-09  Name/Title: Donald T. Cooper  Signature: Donald T. Cooper

CQA Engineer
URS NM
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. Compaction tests were performed in the three grid blocks needed for the wedge lift to make the 2% slope. The wedge lift was not discussed in the CMIP but it is considered a native soil lift and hence, tested.
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

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Date: July 5, 2009
Name/Title: DONALD T. COTTLE
Signature: Donald T. Cottle
CQA Engineer
URS NM
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. Compaction tests were performed in the three grid blocks needed for the second wedge lift to make the 2% slope. The wedge lift was not discussed in the CMIP but it is considered a native soil lift and hence tested.
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Date: 07/06/09
Name/Title: DONALD T. LOPEZ
Signature: [signature]
CQ & A Engineer: [signature]
URS NM
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. Compaction tests were performed in the four grid blocks needed for the lift 3. Lift 3 is only a 3 inch lift. There were some low areas that needed to be lifted up. In these areas the lift was thick enough to be tested. The four grid blocks are the locations with deeper fill amounts.
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The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. Compaction tests were performed in 2 locations in grid block 11 in lift 3. The tests in grid block eleven were performed in two areas that had higher fill amounts. Ten tests were performed on lift 4 in grid blocks 1 to 10. The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2% of the optimal moisture.
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
New ☐ Resubmittal ☑
If resubmittal, prev. submittal #

To (name/SNL Dept.): Don Lopez - URS Corporation
Submitted by (name/company): Chris Edamon / EDi

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Date: July 9, 09
Name/Title: Donald T. Cooper PE
Signature: Donald T. Cooper PE

URS NM
CQA Engineer
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. Density and moisture tests were performed in grid blocks 11, 12, and 13 in lift 4. The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2% of the optimal moisture.
**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

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<th>Item #</th>
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**Date:** 7/14/09  
**Name/Title:** Donald T. Lopez PE  
**Signature:** Donald T. Lopez PE  
**URR NM:**  
**CQA Engineer:**
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. Density and moisture tests were performed in grid blocks 11, 12, 13, and 7 in lift 5. Grid block 7 needed to be tested twice due to a low area that would need more than six inches. The first test in grid block 7 failed on moisture. The area was watered and re-compacted. The re-test in grid block 7 passed. Grid block 7 will be tested a second time when grid blocks 6 and 8 are tested during the full lift. The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2% of the optimal moisture.
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  

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</table>

Date: July 13, 09  
Name/Title: Donald T. Lopez, PE  
Signature: Donald T. Lopez  
URS NM  
CQA Engineer
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.
# 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**

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Date: 7-10-09  
Name/Title: **Donald Tiacos PE**  
Signature: **[Signature]**  

**CQA Engineer**
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. Density and moisture tests were performed in grid blocks 6, 7, 8, 9, 10 in lift 5. All of the tests passed. The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2 % of the optimal moisture.
MA-01
MATERIAL APPROVAL FORM
MATERIAL APPROVAL SUBMITTAL FORM

Project Name  SNL MWL Construction Cover Project  Date  7-16-09
Contract #  PO# 903827
Submittal #  019
New ☐  Resubmittal ☐
If resubmittal, prev. submittal #

To (name/SNL Dept.)  Don Lopez - URS Corporation
Submitted by (name/company)  Chris Edgmon / EDi

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Date  July 17, 09  Name/Title  Donald T. Lopez  Signature  Donald T. Lopez

CQA Engineer  URS NA
COMMENTS (include item #)

The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1.

Density and moisture tests were performed in grid blocks 1, 2, 3, 4, and 5 in lift 5.

The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2% of the optimal moisture.

In the first test, 3 of the 5 grid blocks failed. The entire grid was ripped, watered, and reworked.

The results of the failed tests are included and the results of the re-tests are included for approval.
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Date: 7-20-09  
Submitted by: Chris Edgmon / EDi  
To: Don Lopez - URS Corporation  
Contract #: PO# 903627  
Submittal #: 020  
New: ☑  Resubmittal: ☐  
If resubmittal, prev. submittal #:  

Date: July 20, 2009  
Name/Title: Donald T. Lopez PE  
Signature:  

CQA NA  
CQA Engineer
Approximate Methode - Surface 3

Goal is to check order of magnitude of production number.

Volume:

\[
\frac{2}{3} (60' \times 15') + (80 \times 10') = 360 \text{ cu ft}
\]

\[
\frac{200}{120} = 1.66 \text{ ft}
\]

Lengths:

\[
260' \times 105' = 27.67 \text{ ft}
\]

Volume:

\[
\frac{27.67}{3.33} = 8.34 \text{ cu yd}
\]

Approximate Volume using Approx Methode is about

3400 CY. If I reduced the End Running Edge to 9 ft:

the result is:

3,360 CY.

* The computer using Micro SAFT INROADS software reports 3,360 CY.

* The results are very close.
## 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

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**Date:** July 20, 2009  
**Name/Title:** Donald T. Lopez, PE  
**Signature:** [Signature]

**URS NM**  
**CQA Engineer:** [Name]
Approximate Methods - Surface 3

Goal is to check order of magnitude of production number.

Cut Block Area:
\[ 0.2 \times (W + L) \times (B + H) = 360.3 \text{ SF} \]

Volume:
Lengths: 260' (80) \times 265' (80) Bld for

\[ V = \frac{260 \times 265 \times 80}{3} = 3,400 \text{ CY} \]

- The Shading Volume using Approx Method is about 3,400 CY. If I reduced my End Product field to 0.8, the block on; 3,100 CY.
- The computer using Mine Shift INROACE software reports 3,160 CY.
- The results are very close.

Special Notes:

- There is additional footpath usable fill material below the ground surface before you reach the reported Cut Block Layer.
- Special drill locations would be required to define the quality of indicated material.

Submittal 21
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.

6 samples (items 1 to 6) were collected from the native soil borrow pile.

Please see attached map for sample locations.
**Project Name**: SNL MWL Construction Cover Project  
**Date**: 7-22-09  
**Contract #**: PO# 903627  
**Submittal #**: 022  
**New**: ☑  
**Resubmittal**: ☐  
**To (name/SNL Dept.)**: Don Lopez - URS Corporation  
**Submitted by (name/company)**: Chris Edgmon / EDI

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| 06     |                             |                                                                                       | ☐        | ☐            | ☐           | ☑     |
| 07     |                             |                                                                                       | ☐        | ☐            | ☐           | ☑     |
| 08     |                             |                                                                                       | ☐        | ☐            | ☐           | ☑     |
| 09     |                             |                                                                                       | ☐        | ☐            | ☐           | ☑     |
| 10     |                             |                                                                                       | ☐        | ☐            | ☐           | ☑     |
| 11     |                             |                                                                                       | ☐        | ☐            | ☐           | ☑     |
| 12     |                             |                                                                                       | ☐        | ☐            | ☐           | ☑     |
| 13     |                             |                                                                                       | ☐        | ☐            | ☐           | ☑     |

**Date**: 07/29/09  
**Name/Title**: Donald T. Cooper  
**Signature**: [Signature]

**CQI Engineer**: [Name]  
**URS NM**: [Name]
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.

2 samples (Items 1 and 2) were collected from the excavated and screened material on the west side of the borrow area and from the north side of the borrow area. The samples were taken for material needed for the additional material needed to complete the native soil lifts.

3 samples (Items 3, 4, and 5) are top soil samples excavated and screened from the west edge of the borrow area. This material was added to the existing top soil pile to be blended with the $\frac{3}{8}$" gravel.
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.

6 samples (Items 1 to 6) 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:** 7-22-09  
**Contract #:** PO# 903627  
**Submittal #:** 023

**To (name/SNL Dept.):** Don Lopez - URS Corporation  
**Submitted by (name/company):** Chris Edgmon / EDi

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**Date:** 07/23/09  
**Name/Title:** Donald T. Lopez PE  
**Signature:** [Signature]

**CQA Engineer:** [Name]  
**URS NM:** [Name]
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 3) were collected from the excavated and screened material on the north west side of the borrow area and from the north side of the borrow area. The samples were taken for material needed for the additional material needed to complete the native soil lifts.

1 sample (items 4) is a top soil sample excavated and screened from the west edge of the borrow area. This material was added to the existing top soil pile to be blended with the 3/8" gravel.
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Date: 07/22/09 Name/Title: Donald T. Cooper PE Signature: [Signature]
CQA Engineer: [Signature] URS NM
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. Density and moisture tests were performed in grid blocks 11, 12, and 13 for lift 6. The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2% of the optimal moisture. All tests passed the specifications.
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Date 07/23/09  Name/Title Donald T. Cooper PE Signature Donald T. Cooper
CQA Engineer URS NM
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. This sample has been submitted and approved, however it was missing screen number 40. The sample was re-tested with the # 40 screen.
**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

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**Date:** 7/23/09  **Name/Title:** Ronald T. Lopez PE  **Signature:**

CQA Engineer

URS NM
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2 % of the optimal moisture.

11 tests were performed covering grid blocks 1 to 10 and one around the hand compacted area around MW-4. All grid block tests passed the specifications. The hand compacted area around MW-4 did not pass. The moisture was too high. The area will be re-tested on Monday July 20.
Project Name: SNL MWL Construction Cover Project  
Date: 7-23-99  
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

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Don Approve. On it. Recommend approval now.

Have sorted out the sample taxonomy they are using. "01 is the first of a test sequence, the second 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 repeat of 02-1 from 12 July."

Date 07/29/09  Name/Title Donald T. Lopez PE  Signature Donald T. Lopez  
Cert Engr. 08/07/03  
ENS NM
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2% of the optimal moisture. The density and moisture test was performed in the hand compacted area around MW-4 on Friday. The area was re-compacted and re-tested on Monday July 20. The re-test passed the moisture and density test.
MA-01
MATERIAL APPROVAL FORM
MATERIAL APPROVAL SUBMITTAL FORM

Project Name: SNL MWL Construction Cover Project  
Date: 7-23-09  
Contract #: PC# 903627  
Submittal #: 028  
New ☒ Resubmittal ☐  
If resubmittal, prev. submittal #

To (name/SNL Dept.) Don Lopez - URS Corporation  
Submitted by (name/company) Chris Edgmon / EDi

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Date 7/29/09  Name/Title Donald T. Lopez PE  Signature

CPA Engineer  
URS NM
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2% of the optimal moisture.

8 density and moisture tests were performed on Lift 7 covering grid blocks 6 to 13. All tests passed the specifications.
**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 Edamon / EDi

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Date ___________ Name/Title ____________________________ Signature ___________
Dear [Dear I concur.]

I've looked at these again. They all meet the CIP specification of less than $4.6 \times 10^{-4}$ cubic feet per second.

However, these samples should be tested at 90% max dry density. They were tested at 81 to 82%. I think it makes a difference. If you test at 90% you should be able to achieve 10-5 values.

Recommend "Conditional Approval" until all sample results are in and that they are tested at 90%.

Michael Day
Donald T. Ledesma PE
CRA Engineer

Conditionally APPROVED
August 6, 2009
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 $4.6 \times 10^{-4}$. Item 1 is a sample from wedge lift 2. Items 2 and 3 are samples from lift 4. All samples have hydraulic conductivities passing the required specifications.
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Date: August 6, 09  Name/Title: Donald T. Lopez PE  Signature: [Signature]
CQA Engineer: [Name]  URS NM
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2% of the optimal moisture.

5 density and moisture tests were performed on Lift 7 in covering grid blocks 1 to 5.

All tests passed the specifications.
**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 Edmon / EDi

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Date: August 09

Name/Title: Donald T. Capra PE

Signature: [Signature]

C & A Engineer

URS NA
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2 % of the optimal moisture. 3 density and moisture tests were performed on Lift 8 in covering grid blocks 11 to 13. All tests passed the specifications.
## MATERIAL APPROVAL SUBMITTAL FORM

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</table>
Don't cancer.
Recommend approval of all except #1, #2 & #4. Their moisture contents fell below the minimum.

To their credit, they rectified these three problems and the rest tested all passed.
Good on them.

BE PE
The Mixed Waste Landfill Corrective Measures Implementation Plan requires testing of the subgrade material at a frequency of 5 field density tests per acre stated in Section 2200-9 3.4.2 and Table 3.1. The CMIP requires that the minimum compaction allowed is 90% and the moisture is plus or minus 2% of the optimal moisture.

Eleven density and moisture tests were performed on Lift 8 in covering grid blocks 1 to 10 and the hand compacted area around MW #4. Three of the of the moisture failed the specifications, Items 01, 02, and 04. Items 12, 13 and 14 are the re-tests performed on the areas after they were watered and re-compacted.
MA-01  
MATERIAL APPROVAL FORM  
MATERIAL APPROVAL SUBMITTAL FORM

Project Name: SNL MWL Construction Cover Project  
Date: 8-6-09  
Contract #: PO# 903627  
Submittal #: 033-07  
New ☐  Resubmittal ☐  
If resubmittal, prev. submittal #________

To (name/SNL Dept.)  Don Lopez - URS Corporation  
Submitted by (name/company)  Chris Edmon / EDi

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Date: August 7, 09  
Name/Title: Donald T. Lopez  
PE Signature:  
CDA Engineer:  

[Signature]
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. 8 samples (Items 1 to 8) were collected from the excavated and screened material on the north west side of the borrow area and from the north side of the borrow area. The samples were taken for additional material needed to complete the native soil lifts.
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Date: August 6, 09. Name/Title: Donald T. Capes, PE. Signature: [Signature]
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.

One sample (Items 1) was collected from the excavated and screened material on the south west corner of the borrow area berm. Item 2 was collected from material around the former top soil pile.

Item 3 was collected from the south central part of the borrow area. The samples were taken for additional material needed to complete the native soil lifts.
# Material Approval Form

## Project Name
SNL MWL Construction Cover Project

## Date
8-4-09

## Contract #
PO# 903627

## Submittal #
035

## To (name/SNL Dept.)
Don Lopez - URS Corporation

## Submitted by (name/company)
Chris Edgmon / EDi

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Don: I concur.

I recommend conditional disapproval until a time when all the data can be present.

There may have been a software error.

Date: [Signature]

**Conditionally Approved**

August 61, 2002
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 3/4" 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 Edamon / EDi

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To August

Don on 26

When they originally submitted, they attributed the specimen as "Native Soil." The specimen actually is "Top Soil" and the test results satisfy CDP criteria. Recommend approval.

Marshall May

Date: August 7, 09
Name/Title: Donald T. Lopez EE
Signature: Donald T. Lopez
CDA Engineer
URS NM
The Mixed Waste Landfill Corrective Measures Implementations Plan requires testing of the Top 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 top soil lift. This material was added to the existing top soil pile to be blended with the \( \frac{3}{8} \) gravel.
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Date: August 7, 06
Name/Title: Donald Ti Lopez, PE
CQA Engineer
URS New Mexico
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 5858. The samples shall have a maximum hydraulic conductivity of $4.6 \times 10^{-4}$. Items 1, 2, and 3 are samples collected prior to the native soil lifts intended to cover the entire MWL cover. Items 1, 2, and 3 are hydraulic conductivity samples submitted for lift 3. All samples have hydraulic conductivities passing the required specifications.
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

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Date August 27, 09 Name/Title Donald T. Epstein PE Signature
CDA Engineer
CDA CDA
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 $4.6 \times 10^{-4}$. Items 1-3 are from lift 5, items 4-6 are from lift 6, and items 7-9 are from lift 7. Four of the nine items are faster than $4.6 \times 10^{-4}$ but are still in the $10^{-4}$ range.
MA-01
MATERIAL APPROVAL FORM
MATERIAL APPROVAL SUBMITTAL FORM

Project Name: SNL MWL Construction Cover Project
Date: 08-18-09
Contract #: PO# 503627
Submittal #: 039
New ☑ Resubmittal ☐
If resubmittal, prev. submittal #

To (name/SNL Dept.): Don Lopez - URS Corporation
Submitted by (name/company): Chris Edgmon / EDI

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Date: August 12, 09
Name/Title: Donald T. Lopez PE
Signature: [Signature]
CQA Engineer
URS NM
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 $4.6 \times 10^4$. Both items were compacted to 90 percent using a standard proctor. Item 1 is from the first wedge lift and in grid block 8. Item 2 is from Lift 4 in grid block 9. Both samples passed the required hydraulic conductivity requirements.
### Material Approval Form

**Project Name:** SNL MWL Construction Cover Project  
**Date:** 8-18-09  
**Contract #:** PO# 903827  
**Submittal #:** 040  
**New [✓] Resubmittal [ ]**  
**If resubmittal, prev. submittal #:**

**To:** (name/SNL Dept.) Don Lopez - URS Corporation  
**Submitted by:** (name/company) Chris Edgmon / EDi

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**Date:** August 19, 2009  
**Name/Title:** Donald Ti Coe  
**CFA Engineer:** URS NM  
**Signature:** [Signature]
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>

To "Don_Lopez@URSCorp.com"
    <Don_Lopez@URSCorp.com>
cc "Mitchell, Mike M" <mrmitch@sandia.gov>

This is the modification that John is referring to.

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

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Data on DCE PE

Data looks good - compaction on all 3 > 90%

Recommend your approval

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Date: Aug 24, 09

Name/Title: Donald T Lopez PE

Signature: Daniel T.

CPA Engineer

URS NM
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.
## Material Approval Submittal Form

**Project Name:** SNL MWL Construction Cover Project  
**Date:** 8-26-09  
**Contract #:** PO# 903627  
**Submittal #:** 042  
**New ☐ Resubmittal ☑**  
**To (name/SNL Dept.):** Don Lopez - URS Corporation  
**Submitted by (name/company):** Chris Edgmon / EDi

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**Date:** August 26, 09  
**Name/Title:** Donald T. Lopez PE  
**Signature:** [Signature]  
**CQA Engineer:** URS NM
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 previously compacted to 90 percent using a standard proctor. The samples did not meet the required hydraulic conductivity values and were re-tested using 95% compaction which is more accurate to field conditions on the cover.

All samples passed the required hydraulic conductivity requirements.
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

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- ✔ 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 Biointrasion Layer.

2. 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 overlying 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:** Donald T. Lopez, P.E.  
CQA Engineer  
Date: 5/22/09
**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

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- [ ] 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:**

**URS Corporation**

Approved By: [Signature]  
Donald T. Lopez, P.E.  
CQA Engineer

Date: 05/26/09
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

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.
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:
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 opposed 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

3
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**

**AP #: 003**

**Attention:**
Don Schofield  
Sanda National Laboratories  
P.O. Box 5800 MS 1125  
Albuquerque, NM  
87185

**URS Corporation**
6501 America Parkwy NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

**DATE:** 06/05/09

**Subject:** Biointrusion Rock Thickness (South)  
**URS Project No.** 24343640

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- ☐ Approved, conforms to CMIP  
- ☒ Conditionally Approved  
- ☐ Declined, does not conform to CMIP

**Remarks:**
1. 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.

**Attached:**
1. South portion Biointrusion QA survey locations.

---

**URS Corporation**

**Approved By:**

[Signature]

Donald T. Lopez, P.E.  
CQA Engineer  

06/05/09  

Date:

**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

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- [x] 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**

**AP #: 005**

**Attention:** Don Schofield  
Sandra 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

**DATE:** 06/09/09

---

**Subject:** Biointrusion Rock Thickness  
(Northwest)

**URS Project No:** 24343640

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- [ ] Approved, conforms to CMIP  
- [X] Conditionally Approved  
- [ ] Declined, does not conform to CMIP

---

**Remarks:**

1. 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.

2. 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, P.E.  
CQA Engineer  

[Signature]  
06/09/09  
Date:
MWL BID. TRUSTION LAYER
QA SHOTS 6-8-2009

RECHECK

RECHECK

RECHECK
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RECHECKS OF 6-5-2009 BIOINTRUSION LAYER QA SHOTS WITH INSUFFICIENT FILL, AFTER REWORK BY EDI

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G:\07 Designs\Survey\Bio Intrusion Layer\Bio Intrusion Layer 6-6-2009\Export\MWL South Bio Int Layer Shots 6-6-2009 vs EXIST SFC FROM ABQ SURVEY.xls
5/8/2000
MIXED WASTE LANDFILL APPROVAL FORM

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

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<td>2.</td>
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☑ Approved, conforms to CMIP  ☐ Conditionally Approved  ☐ Declined, does not conform to CMIP

Remarks:
1. The northeast portion of the MWL Biointrusion Layer is approved for the placement of soil into the voids.

2. 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.

3. 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-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:
1. Northeast Biointrusion QA survey locations with two north slope location corrections.
2. QC survey results for the thickness of the Biointrusion Layer.

URS Corporation

Approved By: [Signature]
Donald T. Lopez, P.E.
CQA Engineer

Date: 06/15/09
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| RECHECKS OF 6-12-2009 BIOINTRUSION LAYER QA SHOTS WITH OVER-FILL, AFTER REWORK BY ED |

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Average = 1.25
### MIXED WASTE LANDFILL APPROVAL FORM

**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**

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<td>3.0-inch nominal thickness Thin Soil Layer.</td>
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- **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:  

![Signature]  
Donald T. Lopez, P.E.  
CQA Engineer  
06/17/09
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Average = 0.25
**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

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<th>Item No.</th>
<th>Layer</th>
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<td>1.</td>
<td>Native Soil Layer</td>
<td>Wedge Lifts 1 and 2 approval</td>
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- **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:  

[Signature]

Donald T. Lopez, P.E.  
CQA Engineer  
06/22/09
**MIXED WASTE LANDFILL APPROVAL FORM**

**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 87110-0367  
(505) 855-7500

**Subject:** Wedge Lifts 3 & 4 Approval  
**URS Project No:** 24343640

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<td>Native Soil Layer</td>
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☑ 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  
Date: 06/30/09

Printed: 11-Oct-2009
**Native Soil Layer Approval**

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☐ 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 Bioinvasion Layer.

Attachments:

1. None

---

**URS Corporation**

Approved By: Donald T. Lopez, P.E.

Date: 07/30/09

CQA Engineer
**MIXED WASTE LANDFILL APPROVAL FORM**

**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

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☑ Approved, conforms to CMIP  ☐ Conditionally Approved  ☐ Declined, does not conform to CMIP

**Remarks:**

1. 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.

2. 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:**

1. Map showing 9 locations and thickness pre/post adjustment.
2. QC survey results for the thickness of the Native Soil Layer.

**URS Corporation**

**Approved By:**  
Donald T. Lopez, P.E.  
CQA Engineer  
08/12/09
## Construction QC Survey Results

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Average = 2.85
**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 America Parkway NE, Ste 900  
Albuquerque, NM 87110-6367  
(505) 855-7500

---

**Subject:** Topsoil Layer Approval  
**URS Project No.:** 24343640

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☑ 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:**

[Signature]

Donald T. Lopez, P.E.  
CQA Engineer

**Date:** 08/12/09
# TOPSOIL LAYER

## Construction QC Survey Results

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**Average = 1.02**
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 NH, Ste 900
Albuquerque, NM 87110-6367
(505) 855-7500

Subject: Seeding, Fertilizer and Mulching Modification
URS Project No 24343640

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☑ 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.
CQA Engineer

Date: 8/25/09
Don, Thanks for this mod. We will incorporate this modification into our CQA effort and the report.

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**

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

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☑ 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.  
Date: 9/02/09  
CQA Engineer
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

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WEATHER Clear, cool  TEMPERATURE Low 40s High 60s

WEATHER EFFECTS

PERSONNEL ON-SITE
(If space provided below is inadequate, use additional sheets)

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<td>CQA Inspector</td>
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<td>Kelly Peil</td>
<td>CQA Engineer</td>
<td>MKM</td>
<td>Weekly Meeting</td>
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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

QC INSPECTOR 10/2/06  QC ENGINEER 16Nw36
Crew began removing fence around un-classified area. Removal of small fence complete except for east-west fence in the middle of the un-classified area. Rad personnel performed frisking/swiping of fence material.

Two Proctor samples collected:

MWL-ES-001 Collected from existing surface, approximately 30' Northwest of monitor well MWL-4

MWL-SG-001 Collected from west end of subgrade stockpile
MKM Engineers, Inc.  DAILY QUALITY CONTROL REPORT

CONTRACT NO.  PROJECT TITLE / LOCATION
MWL  Sandia OWE CQA

DATE  REPORT NO.
10/3/2006  002

WEATHER  Clear, cool  TEMPERATURE  Low  40s  High  60s

WEATHER EFFECTS

PERSONNEL ON-SITE
(If space provided below is inadequate, use additional sheets)

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</tbody>
</table>

WAS A JOB SAFETY MEETING HELD THIS DATE?  □ Yes  □ No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
(If yes, attach meeting copy of completed OSHA / accident report)
□ Yes  □ No

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  10/3/06  QC ENGINEER  10/3/06
No QA personnel on site. Crew pulled t-posts from fence around unclassified area. Rad personnel continued frisking/swiping fence material
DAILY QUALITY CONTROL REPORT

CONTRACT NO.  PROJECT TITLE / LOCATION  DATE  REPORT NO.
MWL  Sandia 10/4/2006  003

WEATHER  Clear, cool  TEMPERATURE  Low  40s High 60s

WEATHER EFFECTS

PERSONNEL ON-SITE
(If space provided below is inadequate, use additional sheets)

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
</tr>
</thead>
</table>

WAS A JOB SAFETY MEETING HELD THIS DATE?  ☑ Yes  ☐ No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
(If yes, attach meeting copy of completed OSHA / accident report)  ☐ Yes  ☑ No

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  10/4/06  QC ENGINEER  16Nov/06
No QA personnel on site. Crew attended Rad-II training in the morning, in the afternoon began removal of vegetation in the unclassified area.
**DAILY QUALITY CONTROL REPORT**

**MKM Engineers, Inc.**

<table>
<thead>
<tr>
<th>CONTRACT NO.</th>
<th>PROJECT TITLE / LOCATION</th>
<th>DATE</th>
<th>REPORT NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>MWL</strong></td>
<td>10/5/2006</td>
<td>004</td>
</tr>
<tr>
<td></td>
<td>Sandia <strong>SWL CQA</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WEATHER** Clear, cool  
**TEMPERATURE** Low 40s High 60s

**WEATHER EFFECTS**

**PERSONNEL ON-SITE**

(If space provided below is inadequate, use additional sheets)

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
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<tbody>
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</tbody>
</table>

**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** [Signature] 10/5/06  
**DATE** 1/6/2006  
**QC ENGINEER** [Signature] 1/6/2006
No QA personnel on site. Crew completed removal of vegetation in unclassified area. Appx. 50 cubic yards of vegetation was placed directly into shredder. Appx. 300 cubic yards of dirt and vegetation mixture was screened, vegetation shredded.
# Daily Quality Control Report

**MKM Engineers, Inc.**

**Contract No.:**

<table>
<thead>
<tr>
<th>Weather</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy rains</td>
<td>Low 40s</td>
</tr>
</tbody>
</table>

**Personnel On-Site**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Employer</th>
<th>Activity</th>
</tr>
</thead>
</table>

**Was a Job Safety Meeting Held This Date?**

- Yes

**Were There Any Lost-Time Accidents This Date?**

- Yes

**(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:** 10/9/06

**QC Engineer:** 16 Nov 06
No field activities on this date due to rain and muddy conditions.
Contract No. | Project Title/Location | Date | Report No.
---|---|---|---
| | | 10/10/2006 | 006

Weather: Rain in a.m., clearing in p.m.

Temperature: Low 40s, High 60s

Weather Effects:

Personnel on-site:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Employer</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey Woods</td>
<td>CQA Inspector</td>
<td>MKM</td>
<td>Meeting</td>
</tr>
<tr>
<td>Kelly Peil</td>
<td>CQA Engineer</td>
<td>MKM</td>
<td>Meeting</td>
</tr>
</tbody>
</table>

Was a job safety meeting held this date? ☑ Yes ☐ No

Were there any lost-time accidents this date? ☐ Yes ☑ No

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.

QC Inspector: [Signature] Date: 10/10/06

QC Engineer: [Signature] Date: 11/16/06
Managers' Meeting held. No field activities on this date due to rain and muddy conditions.
## PERSONNEL ON-SITE

(If space provided below is inadequate, use additional sheets)

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
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</table>

- **WAS A JOB SAFETY MEETING HELD THIS DATE?**
  - Yes
  - No

- **WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?**
  - Yes
  - No

### 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**  
10/11/06  
**DATE**

**QC ENGINEER**  
16/Nov/06  
**DATE**
<table>
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</tbody>
</table>
# Daily Quality Control Report

**Contract No.:**

**Project Title / Location:**

**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)

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Employer</th>
<th>Activity</th>
</tr>
</thead>
</table>

**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:** [Signature]

**Date:** 10/12/06

**Qc Engineer:** [Signature]

**Date:** 11/04/06
<table>
<thead>
<tr>
<th>No CQA personnel on site. Crew cut posts from concrete. Continued shredding and began screening grubbed material from classified area.</th>
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<tbody>
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</tbody>
</table>
MKM Engineers, Inc.  DAILY QUALITY CONTROL REPORT

CONTRACT NO.  PROJECT TITLE / LOCATION  DATE  REPORT NO.
MWL  Sandia 10/16/2006  009

WEATHER  Clear, Cool  TEMPERATURE  Low  40s  High  60s

WEATHER EFFECTS

PERSONNEL ON-SITE
(If space provided below is inadequate, use additional sheets)

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelly Peil</td>
<td>CQA Engineer</td>
<td>MKM</td>
<td>Site Audit</td>
</tr>
</tbody>
</table>

WAS A JOB SAFETY MEETING HELD THIS DATE?  ☑ Yes  ☐ No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
(If yes, attach meeting copy of completed OSHA / accident report)

☐ Yes  ☑ No

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  10/16/06  QC ENGINEER  16/Nov/06
Kelly Peil on site to conduct 3rd-party audit of field activities, permits, etc. Crew continued screening and shredding operations.
# DAILY QUALITY CONTROL REPORT

**Contract No.**

**Project Title / Location**

**Date**

**Report No.**

**Weather**

Clear, Warm

**Temperature**

Low 40s High 70s

## Weather Effects

### Personnel On-Site

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Employer</th>
<th>Activity</th>
</tr>
</thead>
</table>

(If space provided below is inadequate, use additional sheets)

- **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**

10/17/06

**Date**

**QC Engineer**

16 Nov 06
No CQA personnel on site. Crew continued screening and shredding operations.
**DAILY QUALITY CONTROL REPORT**

**CONTRACT NO.**

**PROJECT TITLE / LOCATION**

**DATE**

**REPORT NO.**

**WEATHER** Clear, Warm

**TEMPERATURE** Low

**WEATHER EFFECTS**

**PERSONNEL ON-SITE**

(If space provided below is inadequate, use additional sheets)

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
</tr>
</thead>
</table>

**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**

10/18/06

**QC ENGINEER**

16 Nov 06
No CQA personnel on site. Crew completed screening and shredding operations (Total of 300 cubic yards screened). Filled in two voids and broke up concrete pad in southeast corner of classified area.
MKM Engineers, Inc.        DAILY QUALITY CONTROL REPORT

CONTRACT NO. PROJECT TITLE / LOCATION DATE REPORT NO.

MWL Sandia 6W CQA 10/19/2006 012

WEATHER Mostly cloudy, cool TEMPERATURE Low 40s High 50s

WEATHER EFFECTS

PERSONNEL ON-SITE

(If space provided below is inadequate, use additional sheets)

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
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</thead>
<tbody>
<tr>
<td>Corey Woods</td>
<td>CQA Inspector</td>
<td>MKM</td>
<td>Meeting</td>
</tr>
<tr>
<td>Kelly Peil</td>
<td>CQA Engineer</td>
<td>MKM</td>
<td>Meeting</td>
</tr>
</tbody>
</table>

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.

QC INSPECTOR: [Signature] 10/19/06

QC ENGINEER: [Signature] 11/16/06
Managers' Meeting held. Crew broke up concrete on classified area fenceposts, completed shredding operations.
## Daily Quality Control Report

**Contract No.**

**Project Title / Location:**

**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)

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Employer</th>
<th>Activity</th>
</tr>
</thead>
</table>

**Was a job safety meeting held this date?**

☐ Yes  ☐ No

**Were there any lost-time accidents this date?**

(If yes, attach meeting copy of completed OSHA / accident report)

☐ Yes  ☐ No

**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:**

10/23/06

**Date:** 10/23/06

**QC Engineer:**

16 Nov 06

**Date:** 16 Nov 06
No CQA personnel on site. Crew screened grub pile from classified for second time, to 2" minus, completed screening and shredding.
### Daily Quality Control Report

**MKM Engineers, Inc.**

**Contract No.**

**Project Title / Location:** MWL Sandia CQA

**Date:** 10/24/2006

**Report No.:** 014

**Weather:** Clear, warm

**Temperature:** Low 40s High 60s

### Weather Effects

### Personnel on-Site

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Employer</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey Woods</td>
<td>CQA Inspector</td>
<td>MKM</td>
<td>CQA</td>
</tr>
</tbody>
</table>

### 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** 10/24/06

**QC ENGINEER** 16 Nov 06
<table>
<thead>
<tr>
<th>CONTRACT NO.</th>
<th>TITLE AND LOCATION</th>
<th>DATE</th>
<th>REPORT NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sandia MWL CQA</td>
<td>24-Oct-06</td>
<td>014</td>
</tr>
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<td></td>
<td>Albuquerque, NM</td>
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</tbody>
</table>

Site existing surface and perimeter area clearing and grubbing is complete. Rad clearance has not yet been obtained, CQA personnel do not have access to the site until this is complete. Plan to return tomorrow to perform clear and grub inspection and perform compaction testing.
**DAILY QUALITY CONTROL REPORT**

**CONTRACT NO.**

**PROJECT TITLE / LOCATION**

**DATE**

**REPORT NO.**

**WEATHER** Clear, cool

**TEMPERATURE** Low 40s High 60s

**WEATHER EFFECTS**

**PERSONNEL ON-SITE**

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
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</thead>
<tbody>
<tr>
<td>Corey Woods</td>
<td>CQA Inspector</td>
<td>MKM</td>
<td>CQA</td>
</tr>
<tr>
<td>Wes Newman</td>
<td>Technician</td>
<td>AMEC</td>
<td>Compaction Testing</td>
</tr>
</tbody>
</table>

**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**

- QC INSPECTOR: [Signature]
- DATE: 10/25/06
- QC ENGINEER: [Signature]
- DATE: 10/25/06
Arrived on site at 1230, rad clearance has been obtained. Tested several locations along perimeter and existing surface. Density was within specifications but moisture levels were low, around 8-9% compared to optimum of 13.4%. Crew will add water over next two days, will return 10/27 to perform compaction testing.

Performed Existing Landfill Surface and Perimeter Clear and Grub inspection.
**DAILY QUALITY CONTROL REPORT**

**CONTRACT NO.**

**PROJECT TITLE / LOCATION**

**DATE**

10/26/2006

**WEATHER** Clear, warm

**TEMPERATURE** Low 40s High 60s

**WEATHER EFFECTS**

**PERSONNEL ON-SITE**

(If space provided below is inadequate, use additional sheets)

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<th>NAME</th>
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<th>EMPLOYER</th>
<th>ACTIVITY</th>
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**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.

<table>
<thead>
<tr>
<th>QC INSPECTOR</th>
<th>10/26/06</th>
<th>DATE</th>
<th>QC ENGINEER</th>
<th>16 NOV 06</th>
</tr>
</thead>
</table>
No CQA personnel on site. Crew added water to existing landfill surface. URS on site performing survey activities.
**DAILY QUALITY CONTROL REPORT**

**CONTRACT NO.**

**PROJECT TITLE / LOCATION**

**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)

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Corey Woods</td>
<td>CQA Inspector</td>
<td>MKM</td>
<td>CQA Compaction Testing/Sample Collection</td>
</tr>
<tr>
<td>Wes Newman</td>
<td>Technician</td>
<td>AMEC</td>
<td>Compaction Testing/Sample Collection</td>
</tr>
</tbody>
</table>

**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

**QC INSPECTOR**

10/27/06

**QC ENGINEER**

16 Nov 06
Returned to perform compaction testing. Moisture levels are still low after adding water for two days. Joe Fritts and Corey Woods determined that moisture levels could not be met in most areas because water had been added for two days already. Decision was made to proceed with subgrade installation. Density was over 90% at all locations. Spoke with Kelly Peil, CQA Engineer, who concurred with decision to proceed with subgrade installation. Three additional proctors were obtained from the existing surface to determine if original proctor was representative:

- MWL-ES-002, Center of Classified Area
- MWL-ES-003, Center of Northern Portion of Unclassified Area
- MWL-ES-004, Center of Southern Portion of Unclassified Area
<table>
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**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

QQ INSPECTOR: [Signature]
DATE: 10/30/06

QC ENGINEER: [Signature]
DATE: 16 Nov 06
Began placing subgrade material in low-lying areas of unclassified area. URS placed stakes for elevation reference in low-lying areas. Surveyors having problems matching design to base points, will lay out 50' grid when problem is resolved.

120 cy placed on this date (completed Lift 1).
### PERSONNEL ON-SITE

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<td>Robert Carr</td>
<td>Technician</td>
<td>AMEC</td>
<td>Compaction Testing/Sample Collection</td>
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</table>

**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

QC INSPECTOR: [Signature]  
DATE: 10/31/06

QC ENGINEER: [Signature]  
DATE: 16 Nov 06
Continued placing subgrade material in low-lying areas of unclassified area. Lifts placed were relatively small (see Lift Maps). Completed Lifts 2 and 3, began Lift 4. Performed compaction tests on all lifts, all tests passed (See TI-07).

364 cy placed on this date (Lifts 2 through 4).
## PERSONNEL ON-SITE (If space provided below is inadequate, use additional sheets)

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<td>CQA</td>
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<tr>
<td>Kelly Peil</td>
<td>CQA Engineer</td>
<td>MKM</td>
<td>Meeting</td>
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<td>Robert Carr</td>
<td>Technician</td>
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## WAS A JOB SAFETY MEETING HELD THIS DATE?
- [ ] Yes
- [x] No

## WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
- [ ] Yes
- [x] 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

QC INSPECTOR: 

DATE: 11/1/06

QC ENGINEER: 

DATE: 11/1/06
Continued placing subgrade material in low-lying areas of unclassified area. Completed Lifts 4 and 5 (see Lift Maps). Performed compaction tests on all lifts, all tests passed (See TI-07)

Weekly Managers' Meeting held.

498 cy placed on this date (Lifts 4 and 5).
**Daily Quality Control Report**

**MKM Engineers, Inc.**

**Contract No.**

**Project Title/Location**

**Date**

**Report No.**

**Weather**

Clear, warm

**Temperature**

Low 40s High 60s

**Weather Effects**

**Personnel On-Site**

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**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 6, 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, TI-04, and TI-07

**QC Inspector**

11/2/06

**QC Engineer**

16/01/06
Continued placing subgrade material in low-lying areas of unclassified area (completed). Completed Lift 6 (see Lift Map). Performed compaction tests on Lift 6 and additional area of Lift 4, all tests passed (See TI-07).

412 cy placed on this date (Lift 6)

Collected the following proctors from the 2" minus stockpile (see TI-04):

- MWL-SG-005  Northwest corner
- MWL-SG-006  Middle west side
- MWL-SG-007  Southwest corner
MKM Engineers, Inc.  DAILY QUALITY CONTROL REPORT

CONTRACT NO.  PROJECT TITLE / LOCATION  REPORT NO.

WEATHER Clear, warm  TEMPERATURE Low 40s High 60s

WEATHER EFFECTS

PERSONNEL ON-SITE
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WAS A JOB SAFETY MEETING HELD THIS DATE? ☑ Yes  ☐ No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
(If yes, attach meeting copy of completed OSHA / accident report)

☐ Yes  ☑ No

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

QC INSPECTOR  11/6/06  QC ENGINEER  16Nov06
Continued placing subgrade material. Completed Lifts 7 and 8 (see Lift Map). Performed compaction tests on Lift 7, all tests passed (See TI-07)

476 cy placed on this date (Lifts 7 and 8)
WEATHER Clear, warm

TEMPERATURE Low 40s High 60s

PERSONNEL ON-SITE

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

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

QC INSPECTOR 11/7/06 QC ENGINEER 16 Nov 06
Continued placing subgrade material. Began Lift 9 (see Lift Map), not yet compete. Performed compaction tests on Lifts 8 and 9, all tests passed (See TI-07)

344 cy placed on this date (Lift 9)
**MKM Engineers, Inc.**

**DAILY QUALITY CONTROL REPORT**

<table>
<thead>
<tr>
<th>CONTRACT NO.</th>
<th>PROJECT TITLE / LOCATION</th>
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<tr>
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<td>MWL</td>
<td>11/8/2006</td>
<td>024</td>
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<table>
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<tr>
<th>WEATHER</th>
<th>Clear, warm</th>
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</thead>
<tbody>
<tr>
<td>TEMPERATURE</td>
<td>Low 40s High 70s</td>
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**WEATHER EFFECTS**

**PERSONNEL ON-SITE**

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**WAS A JOB SAFETY MEETING HELD THIS DATE?**

☑ Yes  ☐ No

**WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?**

(If yes, attach meeting copy of completed OSHA / accident report)

☐ Yes  ☑ No

**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

Continued placing subgrade material. Completed Lift 9, Began Lift 10 (see Lift Map). Performed compaction test on Lift 9, test passed (See TI-07)

576 cy placed on this date (316 cy on Lift 9, 260 cy on Lift 10)

Collected the following proctors from the 2" minus stockpile:

- MWL-SG-008  Northwest corner
- MWL-SG-009  Middle west side
- MWL-SG-010  Southwest corner
MKM Engineers, Inc. DAILY QUALITY CONTROL REPORT

<table>
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<tr>
<td></td>
<td>MWL CQA</td>
<td>11/9/2006</td>
<td>025</td>
</tr>
</tbody>
</table>

WEATHER
Clear, warm

TEMPERATURE
Low 40s High 70s

WEATHER EFFECTS

PERSONNEL ON-SITE
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<td>AMEC</td>
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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

QC INSPECTOR 11/9/06
QC ENGINEER 16/10/06
Continued placing subgrade material, Lift 10 (see Lift Map). Performed compaction testing on Lifts 9 and 10, all tests passed (See TI-07)
496 cy placed on this date (Lift 10)
<table>
<thead>
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**PERSONNEL ON-SITE**

(If space provided below is inadequate, use additional sheets)

**WEATHER**

Overcast, Cool

**WEATHER EFFECTS**

**TEMPERATURE**

Low 40s High 50s

**DATE**

11/13/2006

**REPORT NO.**

026

**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: 

11/13/06

DATE: 

QC ENGINEER: 

16 Nov 06

DATE: 
Continued placing subgrade material, Lift 10 (see Lift Map).

580 cy placed on this date (Lift 10)
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

<table>
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<td>Kelly Pell</td>
<td>CQA Engineer</td>
<td>MKM</td>
<td>CQA</td>
</tr>
<tr>
<td>Miguel Chavez</td>
<td>Technician</td>
<td>AMEC</td>
<td>Compaction testing/sample collection</td>
</tr>
</tbody>
</table>

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 Lot 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

QC INSPECTOR: [Signature]  11/14/06  QC ENGINEER: [Signature]  11/14/06  DATE: 7/29/06
Continued placing subgrade material, completed Lift 10 (see Lift Map). Performed compaction testing on Lift 10, all tests passed (See TI-07).

280 cy placed on this date, completed Lift 10 (1,616 cy total for Lift 10).

Collected the following samples for proctor analysis:
- MWL-SG-011 East end of Southern stockpile
- MWL-SG-012 West end of Southern stockpile
- MWL-SG-013 South-central area of 2" subgrade stockpile

The Southern stockpile is comprised of material that was on site at the MWL prior to site operations; the material was screened to 2" minus for potential use as subgrade.

Subgrade fill activities were shut down at 1330 due to high winds.
**MKM Engineers, Inc.**

### DAILY QUALITY CONTROL REPORT

**CONTRACT NO.**

**PROJECT TITLE / LOCATION**

MWL

Sandia

**DATE**

11/15/2006

**REPORT NO.**

028

**WEATHER**

Overcast, cool

**TEMPERATURE**

Low

30s

High

50s

### WEATHER EFFECTS

### PERSONNEL ON-SITE

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### 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

**QC INSPECTOR**

11/15/06

**QC ENGINEER**

7 Dec 06
Continued placing subgrade material, began Lift 11 (see Lift Map). Performed compaction testing on Lift 1 all tests passed (See TI-07).

520 cy placed on this date (Lift 11).
WEATHER: Overcast, cool

TEMPERATURE: Low 30s

WEATHER EFFECTS:

PERSONNEL ON-SITE:

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WAS A JOB SAFETY MEETING HELD THIS DATE? ☑ Yes ☐ No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE? ☐ Yes ☑ No

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 Pell, 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:

None.

MATERIAL or EQUIPMENT RECEIVED or RELEASED:

None.

CALIBRATIONS: None.

DAILY INSPECTION CHECKLISTS: CI-02, TI-02, TI-04, and TI-07

QC INSPECTOR: 

DATE: 11/16/06

QC ENGINEER: 

DATE: 11/16/06
Continued placing subgrade material, Lift 11 (see Lift Map). Performed compaction testing on Lift 11, all tests passed (See TI-07).

464 cubic yards placed on this date (Lift 11).

Collected two additional proctor samples:
- MWL-SG-014 - Northwest corner of stockpile
- MWL-SG-015 - Southwest corner of stockpile
**MKM Engineers, Inc.**  
**DAILY QUALITY CONTROL REPORT**

<table>
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<td></td>
<td>MWL</td>
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</table>

**WEATHER**  
Clear, Warm  
**TEMPERATURE**  30s Low 60s

**WEATHER EFFECTS**

**PERSONNEL ON-SITE**  
(If space provided below is inadequate, use additional sheets)

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey Woods</td>
<td>CQA Inspector</td>
<td>MKM</td>
<td>CQA</td>
</tr>
<tr>
<td>Miguel Chavez</td>
<td>Technician</td>
<td>AMEC</td>
<td>Compaction testing</td>
</tr>
</tbody>
</table>

**WAS A JOB SAFETY MEETING HELD THIS DATE?**  Yes [x]  No [ ]

**WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?**  Yes [ ]  No [x]

(Was 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

Signed by:

QC INSPECTOR: [Signature]  
DATE: 11/20/06  
QC ENGINEER: [Signature]  
DATE: Dec 06.
Continued placing subgrade material, Lift 11 (see Lift Map). Performed compaction testing on Lift 11, all tests passed (See TI-07).

624 cy placed on this date (Lift 11).

Collected three additional proctor samples:

- MWL-SG-016 - Southwest corner of stockpile
- MWL-SG-017 - Middle west side of stockpile
- MWL-SG-018 - Northwest corner of stockpile
### Daily Quality Control Report

<table>
<thead>
<tr>
<th>CONTRACT NO.</th>
<th>PROJECT TITLE / LOCATION</th>
<th>DATE</th>
<th>REPORT NO.</th>
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<tbody>
<tr>
<td></td>
<td>Sandia CWL CQA</td>
<td>11/21/2006</td>
<td>031</td>
</tr>
</tbody>
</table>

#### Weather
- Clear, Warm
- Temperature: Low 30s, High 60s

#### Weather Effects

#### Personnel On-Site

<table>
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<td>Miguel Chavez</td>
<td>Technician</td>
<td>AMEC</td>
<td>Compaction testing</td>
</tr>
</tbody>
</table>

#### Was a Job Safety Meeting Held This Date?
- Yes
- No

#### Were There Any Lost-Time Accidents This Date?
- No

#### 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
- None.

#### Material or Equipment Received or Released
- None.

#### Calibrations
- None.

#### Daily Inspection Checklists
- CI-02, TI-02, and TI-07

**Signatures**
- QC Inspector: [Signature] 11/21/06
- QC Engineer: [Signature] 12/06
Continued placing subgrade material, Lift 11 (see Lift Map). Performed compaction testing on Lift 11, all tests passed (See TI-07).

856 cy placed on this date (Lift 11).
WEATHER EFFECTS

PERSONNEL ON-SITE

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<td>Compaction testing</td>
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</table>

WAS A JOB SAFETY MEETING HELD THIS DATE?  ☐ Yes  ☐ No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?  ☐ Yes  ☑ No

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
Continued placing subgrade material, completed Lift 11 (see Lift Map). Performed final compaction test on Lift 11, test passed (See TI-07).

56 cy placed on this date (Lift 11).
MKM Engineers, Inc.  DAILY QUALITY CONTROL REPORT

CONTRACT NO.  PROJECT TITLE / LOCATION  DATE  REPORT NO.

MWL  Sandia-GWL CQA  11/27/2006  033

WEATHER  Overcast, breezy  TEMPERATURE  Low  20s  High  50s

WEATHER EFFECTS

PERSONNEL ON-SITE

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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

QC INSPECTOR  11/27/06  QC ENGINEER  7 Dec 06

DATE  DATE
No site activities. Collected three samples for proctor analysis from 2" minus stockpile at CAMU Borrow Area:

| MWL-SG-019 - North end of stockpile |
| MWL-SG-020 - West side of stockpile |
| MWL-SG-021 - East side of stockpile |
WEATHER Overcast, breezy

TEMPERATURE Low 20s High 50s

PERSONNEL ON-SITE

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<td>CQA</td>
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WAS A JOB SAFETY MEETING HELD THIS DATE? Yes

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE? No

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 11/28/06
QC ENGINEER 11/28/06
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<td>Sandia MWL CQA</td>
<td>28-Nov-06</td>
<td>034</td>
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<td>Albuquerque, NM</td>
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</table>

Began placing subgrade on final lift (Lift 12).

284 cy placed on this date.
MKM Engineers, Inc.  DAILY QUALITY CONTROL REPORT

CONTRACT NO.  PROJECT TITLE / LOCATION  DATE  REPORT NO.

MWL  Sandia GWL-CQA  11/29/2006  035

WEATHER  Overcast, intermittent snow  TEMPERATURE  Low 10s High 30s

WEATHER EFFECTS

PERSONNEL ON-SITE
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WAS A JOB SAFETY MEETING HELD THIS DATE?  Yes  No
WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
(If yes, attach meeting copy of completed OSHA / accident report)

Yes  No

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  11/29/06  QC ENGINEER  7/06
DATE  SIGNATURE  DATE
Continued placing subgrade (Lift 12).
648 cy placed on this date.
Existing 2" minus subgrade pile exhausted. Crew will work the next few days hauling soil from the existing stockpile at the CAMU Borrow Area and excavating/screening additional soil needed to complete the final subgrade lift.
## Daily Quality Control Report

**Contract No.**

**Project Title / Location**

**Date**

**Report No.**

**Weather** Overcast, cold

**Temperature**

<table>
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<th>Weather Effects</th>
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**Personnel on Site**

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<td>AMEC</td>
<td>Compaction Testing</td>
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**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

**QC Inspector**

11/30/06

**QC Engineer**

7/06/06
Crew working on hauling soil from borrow area and excavating/screening additional soils for subgrade.

Performed compaction testing on Lift 12, all tests passed. See Form TI-07.
2006 Daily Quality Control Reports

December 2006
MKM Engineers, Inc.

DAILY QUALITY CONTROL REPORT

CONTRACT NO.           PROJECT TITLE / LOCATION    DATE    REPORT NO.
                        Sandia CQA            12/4/2006    037

WEATHER                Clear, Cool
TEMPERATURE            Low 20s High 50s

WEATHER EFFECTS

PERSONNEL ON-SITE

(If space provided below is inadequate, use additional sheets)

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<td>Corey Woods</td>
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<td>CQA</td>
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</table>

WAS A JOB SAFETY MEETING HELD THIS DATE? □ Yes □ No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
(If yes, attach meeting copy of completed OSHA / accident report)
□ Yes □ No

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    12/4/06    QC ENGINEER    27-Dec-06
Crew continued excavating/screening additional soils for subgrade and hauling from borrow area to MWL.

Re-started installing subgrade. Installed 160 cy on lift 12.
DAILY QUALITY CONTROL REPORT

CONTRACT NO.  | PROJECT TITLE / LOCATION | DATE  | REPORT NO.
--- | --- | --- | ---
     | Sandia GWL CQA           | 12/5/2006 | 038

WEATHER Clear, Cool

TEMPERATURE Low 20s High 50s

WEATHER EFFECTS

PERSONNEL ON-SITE
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<td>Technician</td>
<td>AMEC</td>
<td>Compaction Testing</td>
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</table>

WAS A JOB SAFETY MEETING HELD THIS DATE? ☑ Yes ☐ No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
(If yes, attach meeting copy of completed OSHA / accident report)

☐ Yes ☑ No

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 Signature 12/5/06    QC ENGINEER Signature 12/7/06
Crew continued excavating/screening additional soils for subgrade and hauling from borrow area to MWL.

Continued installing subgrade, 340 cy installed on lift 12.

Collected additional proctor from newly screened material:

- MWL-SG-022 - Collected from northeast corner of stockpile at MWL
DAILY QUALITY CONTROL REPORT

CONTRACT NO.   PROJECT TITLE / LOCATION   DATE   REPORT NO.
MKM         Sandia GWL CQA           12/6/2006    039

WEATHER       Clear, Cool       TEMPERATURE       Low   20s   High   50s

WEATHER EFFECTS

PERSONNEL ON-SITE
(If space provided below is inadequate, use additional sheets)

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<tr>
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<tbody>
<tr>
<td>Corey Woods</td>
<td>CQA Inspector</td>
<td>MKM</td>
<td>CQA</td>
</tr>
</tbody>
</table>

WAS A JOB SAFETY MEETING HELD THIS DATE?  Yes  No
WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
(If yes, attach meeting copy of completed OSHA / accident report)

Yes  No

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  12/6/06  QC ENGINEER  27 Dec 2006
Crew completed excavating/screening additional soils for subgrade and hauling from borrow area to MWL.

A total of approximately 2,000 cy of additional subgrade material was excavated/screened and hauled.

Continued installing Lift 12, 460 cy.
WEATHER | Clear, Cool | TEMPERATURE | Low 20s High 50s

WEATHER EFFECTS

PERSONNEL ON-SITE

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<thead>
<tr>
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<tbody>
<tr>
<td>Corey Woods</td>
<td>CQA Inspector</td>
<td>MKM</td>
<td>CQA</td>
</tr>
<tr>
<td>Robert Carr</td>
<td>Technician</td>
<td>AMEC</td>
<td>Compaction Testing</td>
</tr>
</tbody>
</table>

WAS A JOB SAFETY MEETING HELD THIS DATE? ☐ Yes ☑ No
WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
(If yes, attach meeting copy of completed OSHA / accident report) ☐ Yes ☑ No

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

QC INSPECTOR | 12/7/06 | QC ENGINEER | 27 Dec 06

DATE | DATE
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<td>Sandia MWL CQA</td>
<td>7-Dec-06</td>
<td>040</td>
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<td>Albuquerque, NM</td>
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</table>

Continued installing Lift 12, 492 cy.

Performed compaction tests on Lift 12, all tests passed, see Form TI-07.
MKM Engineers, Inc. DAILY QUALITY CONTROL REPORT

CONTRACT NO. PROJECT TITLE / LOCATION DATE REPORT NO.

Sandia GWE CQA 12/11/2006 041

WEATHER Clear, Cool TEMPERATURE Low 20s High 50s
WEATHER EFFECTS

PERSONNEL ON-SITE
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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 QC ENGINEER 02/06/06
<table>
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<td>Sandia MWL CQA Albuquerque, NM</td>
<td>11-Dec-06</td>
<td>041</td>
</tr>
</tbody>
</table>

Continued installing Lift 12, 220 cy.
PERSONNEL ON-SITE

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?
(If yes, attach meeting copy of completed OSHA / accident report)

Yes  No

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

QC INSPECTOR: [Signature]  12/12/06  QC ENGINEER: [Signature]  27 Dec 06
DATE: 12/12/06  DATE: 27 Dec 06
Crew began excavating/screening additional subgrade material.

Two samples collected from newly screened material for proctor analysis:

MWL-SG-023 - North side of stockpile at borrow site
MWL-SG-024 - South side of stockpile at borrow site
PERSONNEL ON-SITE

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<td>Technician</td>
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<td>Testing</td>
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WAS A JOB SAFETY MEETING HELD THIS DATE?  ☑ Yes  ☐ No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?  ☐ Yes  ☑ No

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
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Crew continued excavating/screening additional subgrade material.

AMEC on site to conduct compaction testing, Lift 12, all test passed. See Form TI-07.
WEATHER EFFECTS

PERSONNEL ON-SITE

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<td>Miguel Chavez</td>
<td>Technician</td>
<td>AMEC</td>
<td>Sample Collection</td>
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WAS A JOB SAFETY MEETING HELD THIS DATE?  ☑ Yes  ☐ No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
(If yes, attach meeting copy of completed OSHA / accident report)

☑ Yes  ☐ No

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  QC ENGINEER: 27/02/06
| MWL-SG-025 | Collected from south side of MWL stockpile |
| MWL-SG-026 | North side of site stockpile |


AMEC on site to collect two additional samples for proctor analysis:
**DAILY QUALITY CONTROL REPORT**

**CONTRACT NO.**

**PROJECT TITLE / LOCATION**

**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)

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey Woods</td>
<td>CQA Inspector</td>
<td>MKM</td>
<td>CQA</td>
</tr>
<tr>
<td>Miguel Chavez</td>
<td>Technician</td>
<td>AMEC</td>
<td>Compaction Testing</td>
</tr>
</tbody>
</table>

**WAS A JOB SAFETY MEETING HELD THIS DATE?**

☑ Yes  ☐ No

**WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?**

(If yes, attach meeting copy of completed OSHA / accident report)

☐ Yes  ☐ No

**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

**QC INSPECTOR**

12/15/06

**DATE**

**QC ENGINEER**

27 Dec 06

**DATE**
Installed 512 cy Lift 12 (340 cy Proctor 023 and 172 cy Proctor 024).

AMEC on site to conduct compaction testing, all tests passed, see Form TI-07.
**DAILY QUALITY CONTROL REPORT**

**CONTRACT NO.**

<table>
<thead>
<tr>
<th>PROJECT TITLE / LOCATION</th>
<th>DATE</th>
<th>REPORT NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MWL</td>
<td>12/18/2006</td>
<td>046</td>
</tr>
<tr>
<td>Sandia CWA CQA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WEATHER**

- Overcast, cold, windy

**TEMPERATURE**

- Low 10s
- High 40s

**WEATHER EFFECTS**

**PERSONNEL ON-SITE**

(If space provided below is inadequate, use additional sheets)

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey Woods</td>
<td>CQA Inspector</td>
<td>MKM</td>
<td>CQA</td>
</tr>
<tr>
<td>Robert Carr</td>
<td>Technician</td>
<td>AMEC</td>
<td>Compaction Testing</td>
</tr>
</tbody>
</table>

**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**

QC INSPECTOR: [Signature]  12/18/06  QC ENGINEER: [Signature]  2/7/06

DATE: 12/18/06  DATE: 2/7/06
Installed 788 cy, completed Lift 12 (328 cy Proctor 024, 460 cy Proctor 025).

AMEC on site to conduct compaction testing, all tests passed, see Form TI-07.
WEATHER: Cold, windy, intermittent snow

TEMPERATURE: Low 10s High 30s

WEATHER EFFECTS:

PERSONNEL ON-SITE

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey Woods</td>
<td>CQA Inspector</td>
<td>MKM</td>
<td>CQA</td>
</tr>
</tbody>
</table>

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  12/19/06  QC ENGINEER  2/7/06
Completed final grade work on subgrade.
DAILY QUALITY CONTROL REPORT

CONTRACT NO. | PROJECT TITLE / LOCATION | DATE | REPORT NO.
--- | --- | --- | ---
| MWL Sandia CQA | 12/20/2006 | 048 |

WEATHER | TEMPERATURE | Low 10s High 30s
--- | --- | ---
Snow | |

WEATHER EFFECTS | No personnel on site due to snow.
--- | ---

PERSONNEL ON-SITE
(If space provided below is inadequate, use additional sheets)

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
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<tbody>
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</table>

WAS A JOB SAFETY MEETING HELD THIS DATE? ☑ Yes ☐ No

WERE THERE ANY LOST-TIME ACCIDENTS THIS DATE?
(If yes, attach meeting copy of completed OSHA / accident report)
☐ Yes ☑ No

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 | DATE | QC ENGINEER | DATE
--- | --- | --- | ---
<p>| | 12/20/06 | Kelly M Paul | 27/01/06 |</p>
<table>
<thead>
<tr>
<th>CONTRACT NO.</th>
<th>TITLE AND LOCATION</th>
<th>DATE</th>
<th>REPORT NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sandia MWL CQA</td>
<td>20-Dec-06</td>
<td>048</td>
</tr>
<tr>
<td></td>
<td>Albuquerque, NM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No personnel on site on this date due to snow.
**DAILY QUALITY CONTROL REPORT**

<table>
<thead>
<tr>
<th>CONTRACT NO.</th>
<th>PROJECT TITLE / LOCATION</th>
<th>DATE</th>
<th>REPORT NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sandia GWE CQA</td>
<td>12/21/2006</td>
<td>049</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION</th>
<th>EMPLOYER</th>
<th>ACTIVITY</th>
</tr>
</thead>
</table>

**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** ______________________  **DATE** 12/21/06  **QC ENGINEER** ______________________  **DATE** 27 Dec 06
Crew attempted final grading operations on subgrade, but material too wet. Site operations shut down at 1100. No CQA personnel on site on this date.

The Sandia holiday shut-down begins tomorrow, crew will not return to the site until Jan. 3, 2007.
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.

<table>
<thead>
<tr>
<th>Description</th>
<th>CQA Report Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009 Daily QC Summary Reports (text describing construction procedures and daily tasks)</td>
<td>Attachment 3</td>
</tr>
<tr>
<td>Summary of 2009 ET Cover construction activities and schedule</td>
<td>Table 1</td>
</tr>
<tr>
<td>Daily sign-in sheet and visitors log</td>
<td>Not Included¹</td>
</tr>
<tr>
<td>Survey verification grid points and field testing grid blocks</td>
<td>Figure 18</td>
</tr>
<tr>
<td>Daily Tailgate Meeting Forms</td>
<td>Not Included¹</td>
</tr>
<tr>
<td>Quality Resolution Meetings and Cover Layer Approval Forms</td>
<td>Table 3</td>
</tr>
<tr>
<td>2009 Saturated Hydraulic Conductivity test results</td>
<td>Table 8 and Attachment 7</td>
</tr>
<tr>
<td>2009 Standard Proctor, Gradation, and Classification test results</td>
<td>Tables 5-7 and Attachment 7</td>
</tr>
<tr>
<td>List of heavy equipment used the MWL ET Cover construction</td>
<td>Table 13</td>
</tr>
<tr>
<td>Approximate surface area of material placed</td>
<td>2009 Photographic Log in tabbed section at end of report, Volume 1</td>
</tr>
<tr>
<td>Locations of QC and CQA density and moisture tests</td>
<td>Figures 21-29</td>
</tr>
<tr>
<td>Location of grubbed material after it was removed from the MWL Subgrade surface.</td>
<td>Not Included¹</td>
</tr>
<tr>
<td>Receiving, construction, and testing inspection forms</td>
<td>Attachments 4-6</td>
</tr>
<tr>
<td>QC survey data provided by EDI</td>
<td>Table 12 and 2009 Alternative Cover As-Built Drawings Figure No. 1 - 4 in tabbed section at end of report, Volume 1</td>
</tr>
<tr>
<td>QA verification surveys performed by URS</td>
<td>Quality Assurance Verification Survey Plates 1 – 3 in tabbed section at end of report, Volume 1</td>
</tr>
<tr>
<td>Daily photos of construction activities</td>
<td>2009 Photo Log in tabbed section at end of report, Volume 1</td>
</tr>
<tr>
<td>Summary report for the extension of monitoring well MWL-MW4</td>
<td>Attachment 8</td>
</tr>
</tbody>
</table>

¹. Information maintained in the SNL/NM ES&H and Security Records Center.
2009 Daily Quality Control Reports

May 2009
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

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 ½-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 Appendix A 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.
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 than 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

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 (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 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 decide 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
  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 – 7:30 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. 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-feet 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 opposed 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 López 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 dwg_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
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
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 Bioinvasion 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 Bioinvasion Rock Classification*
   Marshall Nay (URS CQA) arrived on site and collected 25 random samples of the Bioinvasion 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

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. Bioinvasion 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 Bioinvasion Layer.
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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 ¾ -inch gravel. These will be taken into consideration and will be the criteria used for determination of the ¾-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:
   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:
   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_060509_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: **CQA 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
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. 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. 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. 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 Bioinvasion Voids
The Northwest portion of the MWL has been approved for the placement of loose soil
into the Bioinvasion 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 Bioinvasion
      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 Bioinvasion 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 Bioinvasion 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. Bioinvasion Inspection Form

PROPOSED NEXT DAY ACTIVITIES (date: 06/10/09)
1. Continue with Bioinvasion Layer with delivered rock.
2. Continue placing the loose sand and working into voids of Bioinvasion Layer in approved sections.
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:
   o 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
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: CQA 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 then 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 Caliche 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. Bioinvasion 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. 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.
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. 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.
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 1st Native Soil lift, Wedge Lift #1
- Construct 2nd Native Soil lift, Wedge Lift #1
- Density/Moisture tests on 1st and 2nd 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 1st 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 2nd 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
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 then 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, 3rd Lift
   The 3rd 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
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, 3rd Lift
Moisture/Density test on the Native Soil 3rd 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 3rd 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 4th lift on areas not tested during the 3rd 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.
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, 3rd Lift
   Continue construction and testing of the Native Soil Layer 3rd 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, 4th Lift*
   Begin construction of the Native Soil Layer 4th lift. Construction from west to east.

   ISSUES/COMMENTS:
   1. The areas that did not receive enough soil to test during the 3rd lift. These areas will be tested during the 4th lift. Caution will be taken not to exceed the 6-inch thickness specification constraint during the 4th lift on areas not tested during the 3rd lift. The locations of the tested areas will be surveyed. The 4th 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.
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 4th 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, 4th 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
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 2:00 pm 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 4th 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.
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. 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.
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. ED tested grid blocks 11, 12, and 13.

   2. A location on the corner of Grid Bock 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-feet layer placed yesterday was tested for moisture/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.

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-feet low area was corrected and tested in two 0.45-feet 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
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
cast 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_Consrtuction_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
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

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
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):
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
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:
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. TASK DESCRIPTION: Native Soil, Lift #6 Density and Moisture Testing Only
   Density/Moisture Testing of Native Soil Lift #6.

II. 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
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  

1
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
dwig_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. 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. 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
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)
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:
1. Description: Morning Tailgate Meeting
   Time: 7:00 – 7:21 AM
   Attendees: See attached sign in sheet.
Procedure:
- (See general description above)

DAILY TASK

1. 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-compact ed, 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. 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.
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/COMMENTTTS
   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.
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:
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: 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 Bioinursion Layer. The Bioinursion 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 survey 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.
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/COMMENTS

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.
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/COMMENTS
   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 Ill, 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.
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 then 4-inches in dimension.

C. STATUS:
1. Lee Landscapes began scarifying/tilling 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.
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
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/COMMENTS
   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/COMMENTTTTS
   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/COMMENTS
   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
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. TASK DESCRIPTION: Mixed Waste Landfill Seeding
   Seed and straw continued being placed and crimped into place.

II. 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.
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

November 21, 2005
TO: Sandia National Laboratories
ATT: Armani Vadelle
MS 0214
P.O. Box 5800
Albuquerque, NM 87185-0214

**PROJECT:** Document NO.: 494326

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**TOTAL** $210,985.84
NM STATE TAX $13,186.61

OCT 24, 2005
YOU MAY DEDUCT THE STATE TAX IF YOU FURNISH US WITH A NEW MEXICO NON TAXABLE CERTIFICATE.
OUR CRS NO.: 01-736398-005
Non Tax Certificate  # A-1504384-003

11/26/05  ROA CK# 122 6013  210,985.84
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**TOTAL** $95,488.12

**NM STATE TAX** $5,968.00

**TOTAL AMOUNT DUE** $106,058.92

OCT 24, 2005

YOU MAY DEDUCT THE STATE TAX IF YOU FURNISH US WITH A NEW MEXICO NON TAXABLE CERTIFICATE.

OUR CRS NO.:01-736398-005
# PAUL PARKER CONSTRUCTION

P O BOX 459

LOS ALAMOS, NEW MEXICO 87544

PHONE: 505-662-7456  FAX 505-661-6168

November 17, 2005

TO: Sandia National Laboratories
ATT: Armani Vadiiee
MS 0214
P. O. Box 5800
Albuquerque, NM 87185-0214

**PROJECT:** Document NO.: 494326

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MATERIALS: $19,248.30

FREIGHT CHARGE: 1069.5 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

**TO:** ENVIRONMENTAL DIMENSIONS INC.
P O BOX 6250
ALBUQUERQUE, NEW MEXICO 87197-6250

**INVOICE #:** 09-0615

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**FREIGHT CHARGE:** 629.75 TONS @ $12.00 PER TON

**MATERIALS TOTAL:** $11,355.50

**FREIGHT CHARGE TOTAL:** $7,557.00

**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

**NC STATE TAX EXEMPT**
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<td>--------------------------</td>
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<td>3/8&quot; Minus Crushed Gravel</td>
<td>67301</td>
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<td>23.78</td>
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<td>3/8&quot; Minus Crushed Gravel</td>
<td>67428</td>
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<td>23.81</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>2435.67</strong></td>
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</tbody>
</table>
2009 Seed and Mulch
**RECEIVING INSPECTION FORM**
**SEED/FERTILIZER/MULCH**

Project Name: Sandia Mixed Waste Landfill  
Weather: 62 low – 93 high  
Material Name: Seed and Mulch  
Transporter/Supplier: Lee Landscaping  
Number of Bags/Bales: 26 Bags of seed (80 lb/Acre)

<table>
<thead>
<tr>
<th>SPECIFICATION</th>
<th>MATERIAL RECEIVED</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier: Lee Landscape</td>
<td></td>
<td></td>
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<tr>
<td>Supplier Designation: NA</td>
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<td></td>
</tr>
<tr>
<td>Material: Seed and Mulch</td>
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<td></td>
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</tbody>
</table>

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

**Checks before unloading:**

- Have delivery tickets and QC certificates been provided for seed/fertilizer/mulch received?  
  
  **YES**

- Does the material description match the construction specifications?  
  
  **YES**

- Is the material free of damage?  
  
  **YES**

- Is the material acceptable for use?  
  
  **YES**

**Checks before unloading:**

- Is the material free of damage?  
  
  **YES**

- Is the material properly stored?  
  
  **YES**

- Is the storage area free of water and/or moisture?  
  
  **YES**

**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.
<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Prey</th>
<th>Germ &amp; Test Date</th>
<th>Total PLB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Grapes</td>
<td>Texas</td>
<td>SB</td>
<td>11/09/19</td>
<td>151.7</td>
</tr>
<tr>
<td>Front</td>
<td>New Mexico</td>
<td>SB</td>
<td>01/09/19</td>
<td>71.0</td>
</tr>
<tr>
<td>Black Grapes</td>
<td>Wyoming</td>
<td>SB</td>
<td>11/09/19</td>
<td>151.7</td>
</tr>
<tr>
<td>Front</td>
<td>New Mexico</td>
<td>SB</td>
<td>01/09/19</td>
<td>71.0</td>
</tr>
<tr>
<td>Other Crop</td>
<td>00.15%</td>
<td>00.15%</td>
<td>00.15%</td>
<td>00.15%</td>
</tr>
</tbody>
</table>

| Total Bulk Pounds: 920.225 |

<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Prey</th>
<th>Germ &amp; Test Date</th>
<th>Total PLB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Grapes</td>
<td>Texas</td>
<td>SB</td>
<td>11/09/19</td>
<td>151.7</td>
</tr>
<tr>
<td>Front</td>
<td>New Mexico</td>
<td>SB</td>
<td>01/09/19</td>
<td>71.0</td>
</tr>
<tr>
<td>Black Grapes</td>
<td>Wyoming</td>
<td>SB</td>
<td>11/09/19</td>
<td>151.7</td>
</tr>
<tr>
<td>Front</td>
<td>New Mexico</td>
<td>SB</td>
<td>01/09/19</td>
<td>71.0</td>
</tr>
<tr>
<td>Other Crop</td>
<td>00.15%</td>
<td>00.15%</td>
<td>00.15%</td>
<td>00.15%</td>
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</tbody>
</table>

| Total Bulk Pounds: 920.225 |
### MWL Seed Bag Label 2

#### Lee Landscaping
6.3253 Acres Custom Mix
4 Times the mix (60 P/LB/Acre)
25 - 25 Acre Bags @ 56.25 Bulk Pounds Each
1 - 0.753 Acres @ 10.68 Bulk Pounds
JCB: Tonda National Lab

**Lot # 3-918**

<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Variety</th>
<th>Germ</th>
<th>Test</th>
<th>Total PLB</th>
</tr>
</thead>
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<tr>
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<td>Texas</td>
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<td>95.0%</td>
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<td>92.5%</td>
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<tr>
<td>Vizia</td>
<td>Texas</td>
<td>95.0%</td>
<td></td>
<td></td>
<td>92.5%</td>
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<tr>
<td>Black Oasma</td>
<td></td>
<td>95.0%</td>
<td></td>
<td></td>
<td>92.5%</td>
</tr>
<tr>
<td>Fagel, Certified</td>
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<td></td>
<td></td>
<td></td>
<td>92.5%</td>
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<tr>
<td>Seed Dropped</td>
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<td></td>
<td></td>
<td></td>
<td>92.5%</td>
</tr>
<tr>
<td>Silver Streak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>92.5%</td>
</tr>
<tr>
<td>Spale Ruby</td>
<td></td>
<td>85.0%</td>
<td></td>
<td></td>
<td>92.5%</td>
</tr>
<tr>
<td>El Vado</td>
<td></td>
<td>85.0%</td>
<td></td>
<td></td>
<td>92.5%</td>
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</table>

Other Crop: 00.1% There Are 26 Bags For This Mix

Total Bulk Pounds: 920.225

#### Lee Landscaping
6.3253 Acres Custom Mix
4 Times the mix (60 P/LB/Acre)
25 - 25 Acre Bags @ 56.25 Bulk Pounds Each
1 - 0.753 Acres @ 10.68 Bulk Pounds
JCB: Tonda National Lab

**Lot # 3-918**

<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Variety</th>
<th>Germ</th>
<th>Test</th>
<th>Total PLB</th>
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<tr>
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<td>85.9%</td>
<td>95.0%</td>
<td></td>
<td>92.5%</td>
</tr>
<tr>
<td>Vizia</td>
<td>Texas</td>
<td>95.0%</td>
<td></td>
<td></td>
<td>92.5%</td>
</tr>
<tr>
<td>Black Oasma</td>
<td></td>
<td>95.0%</td>
<td></td>
<td></td>
<td>92.5%</td>
</tr>
<tr>
<td>Fagel, Certified</td>
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<td>92.5%</td>
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<tr>
<td>Silver Streak</td>
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<td>92.5%</td>
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<tr>
<td>Spale Ruby</td>
<td></td>
<td>85.0%</td>
<td></td>
<td></td>
<td>92.5%</td>
</tr>
<tr>
<td>El Vado</td>
<td></td>
<td>85.0%</td>
<td></td>
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<td>92.5%</td>
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Other Crop: 00.1% There Are 26 Bags For This Mix

Total Bulk Pounds: 920.225
## MWL Seed Bag Label 3

<table>
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<th>Pounds</th>
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<td>Black Grama</td>
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<td>91.0%</td>
<td>0.00%</td>
<td>91.00% (71)</td>
<td>12/03</td>
<td>151.7</td>
</tr>
<tr>
<td>Seed Grade</td>
<td>Texas</td>
<td>31.6%</td>
<td>91.0%</td>
<td>0.00%</td>
<td>91.00% (71)</td>
<td>12/03</td>
<td>151.7</td>
</tr>
<tr>
<td>New Mexico</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.00%</td>
<td>76.00%</td>
<td>93.00%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
<tr>
<td>Seed Grade</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.00%</td>
<td>76.00%</td>
<td>93.00%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
<tr>
<td>South Dakota</td>
<td>Wyoming</td>
<td>11.69%</td>
<td>65.50%</td>
<td>14.00%</td>
<td>78.50%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
</tbody>
</table>

**Other Crop:** 00.15% There Are 25 Bags For This Mix

**Weed Seed:** 00.05% This Bag Weight 5.89 Bulk Pounds

**Inert Matter:** 54.15% Use This Bag For 25 Acres

---

## MWL Seed Bag Label 4

<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Purity</th>
<th>Germ.</th>
<th>Test</th>
<th>Total PLS</th>
<th>Date</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Grama</td>
<td>Texas</td>
<td>31.6%</td>
<td>91.0%</td>
<td>0.00%</td>
<td>91.00% (71)</td>
<td>12/03</td>
<td>151.7</td>
</tr>
<tr>
<td>Seed Grade</td>
<td>Texas</td>
<td>31.6%</td>
<td>91.0%</td>
<td>0.00%</td>
<td>91.00% (71)</td>
<td>12/03</td>
<td>151.7</td>
</tr>
<tr>
<td>New Mexico</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.00%</td>
<td>76.00%</td>
<td>93.00%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
<tr>
<td>Seed Grade</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.00%</td>
<td>76.00%</td>
<td>93.00%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
<tr>
<td>South Dakota</td>
<td>Wyoming</td>
<td>11.69%</td>
<td>65.50%</td>
<td>14.00%</td>
<td>78.50%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
</tbody>
</table>

**Other Crop:** 00.15% There Are 25 Bags For This Mix

**Weed Seed:** 00.05% This Bag Weight 5.89 Bulk Pounds

**Inert Matter:** 54.15% Use This Bag For 25 Acres

---

## MWL Seed Bag Label 5

<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Purity</th>
<th>Germ.</th>
<th>Test</th>
<th>Total PLS</th>
<th>Date</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Grama</td>
<td>Texas</td>
<td>31.6%</td>
<td>91.0%</td>
<td>0.00%</td>
<td>91.00% (71)</td>
<td>12/03</td>
<td>151.7</td>
</tr>
<tr>
<td>Seed Grade</td>
<td>Texas</td>
<td>31.6%</td>
<td>91.0%</td>
<td>0.00%</td>
<td>91.00% (71)</td>
<td>12/03</td>
<td>151.7</td>
</tr>
<tr>
<td>New Mexico</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.00%</td>
<td>76.00%</td>
<td>93.00%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
<tr>
<td>Seed Grade</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.00%</td>
<td>76.00%</td>
<td>93.00%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
<tr>
<td>South Dakota</td>
<td>Wyoming</td>
<td>11.69%</td>
<td>65.50%</td>
<td>14.00%</td>
<td>78.50%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
</tbody>
</table>

**Other Crop:** 00.15% There Are 25 Bags For This Mix

**Weed Seed:** 00.05% This Bag Weight 5.89 Bulk Pounds

**Inert Matter:** 54.15% Use This Bag For 25 Acres

---

## MWL Seed Bag Label 6

<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Purity</th>
<th>Germ.</th>
<th>Test</th>
<th>Total PLS</th>
<th>Date</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Grama</td>
<td>Texas</td>
<td>31.6%</td>
<td>91.0%</td>
<td>0.00%</td>
<td>91.00% (71)</td>
<td>12/03</td>
<td>151.7</td>
</tr>
<tr>
<td>Seed Grade</td>
<td>Texas</td>
<td>31.6%</td>
<td>91.0%</td>
<td>0.00%</td>
<td>91.00% (71)</td>
<td>12/03</td>
<td>151.7</td>
</tr>
<tr>
<td>New Mexico</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.00%</td>
<td>76.00%</td>
<td>93.00%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
<tr>
<td>Seed Grade</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.00%</td>
<td>76.00%</td>
<td>93.00%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
<tr>
<td>South Dakota</td>
<td>Wyoming</td>
<td>11.69%</td>
<td>65.50%</td>
<td>14.00%</td>
<td>78.50%</td>
<td>03/09</td>
<td>175.9</td>
</tr>
</tbody>
</table>

**Other Crop:** 00.15% There Are 25 Bags For This Mix

**Weed Seed:** 00.05% This Bag Weight 5.89 Bulk Pounds

**Inert Matter:** 54.15% Use This Bag For 25 Acres
### LWL Seed Bag Label 4

**Lee Landscaping**

**6.3333 Acre Custom Mix**

<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Variety</th>
<th>Germination</th>
<th>Dormant</th>
<th>Penman</th>
<th>Total PLS</th>
<th>Date</th>
<th>Total Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains</td>
<td>Texas</td>
<td>High Grade</td>
<td>98.90%</td>
<td>0.00%</td>
<td>2.50%</td>
<td>100.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>Vans</td>
<td>Texas</td>
<td>High Grade</td>
<td>98.90%</td>
<td>0.00%</td>
<td>2.50%</td>
<td>100.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>Black Grains</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>High Certified</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>Seed Drilled</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>Net Sanded</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>Spika Mixy</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>El Vado</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
</tbody>
</table>

**Other Crop: 00.02% There Are 26 Bags For This Mix**

**Wired Seed: 00.05% This Bag Weight 35.49 Bulk Pounds**

**Inert Matter: 54.15% Use This Bag For 2 Acres**

---

**Lee Landscaping**

**6.3333 Acre Custom Mix**

<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Variety</th>
<th>Germination</th>
<th>Dormant</th>
<th>Penman</th>
<th>Total PLS</th>
<th>Date</th>
<th>Total Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains</td>
<td>Texas</td>
<td>High Grade</td>
<td>98.90%</td>
<td>0.00%</td>
<td>2.50%</td>
<td>100.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>Vans</td>
<td>Texas</td>
<td>High Grade</td>
<td>98.90%</td>
<td>0.00%</td>
<td>2.50%</td>
<td>100.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>Black Grains</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>High Certified</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>Seed Drilled</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>Net Sanded</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>Spika Mixy</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
<tr>
<td>El Vado</td>
<td>Texas</td>
<td>Snow White</td>
<td>88.80%</td>
<td>0.00%</td>
<td>11.20%</td>
<td>95.00%</td>
<td>07/09</td>
<td>75.00 lbs</td>
</tr>
</tbody>
</table>

**Other Crop: 00.02% There Are 26 Bags For This Mix**

**Wired Seed: 00.05% This Bag Weight 35.49 Bulk Pounds**

**Inert Matter: 54.15% Use This Bag For 2 Acres**
### MWL Seed Bag Label 5

<table>
<thead>
<tr>
<th>Date Range: 36-911A</th>
<th>Origin</th>
<th>Variety</th>
<th>Germination</th>
<th>Dormant</th>
<th>Total PLS</th>
<th>Date</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas</td>
<td>13.86%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>13.86%</td>
<td>11/03</td>
<td>507.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date Range: 36-911B</th>
<th>Origin</th>
<th>Variety</th>
<th>Germination</th>
<th>Dormant</th>
<th>Total PLS</th>
<th>Date</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas</td>
<td>23.18%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>23.18%</td>
<td>07/08</td>
<td>121.7</td>
</tr>
</tbody>
</table>

| Other Crop: 0.01%  | There Are 25 Bags For This Mix | Total Bulk Pounds: 920.225 |
| Weed Seed: 0.00%  | This Bag Weighs 36.59 Bulk Pounds |
| Insect Matter: 0.15% | Use This Bag For 25 Acres |

---

<table>
<thead>
<tr>
<th>Date Range: 36-911C</th>
<th>Origin</th>
<th>Variety</th>
<th>Germination</th>
<th>Dormant</th>
<th>Total PLS</th>
<th>Date</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas</td>
<td>11.93%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>11.93%</td>
<td>11/03</td>
<td>151.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date Range: 36-911D</th>
<th>Origin</th>
<th>Variety</th>
<th>Germination</th>
<th>Dormant</th>
<th>Total PLS</th>
<th>Date</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas</td>
<td>11.93%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>11.93%</td>
<td>11/03</td>
<td>151.7</td>
</tr>
</tbody>
</table>

| Other Crop: 0.01%  | There Are 25 Bags For This Mix | Total Bulk Pounds: 920.225 |
| Weed Seed: 0.00%  | This Bag Weighs 36.59 Bulk Pounds |
| Insect Matter: 0.15% | Use This Bag For 25 Acres |

---

<table>
<thead>
<tr>
<th>Date Range: 36-911E</th>
<th>Origin</th>
<th>Variety</th>
<th>Germination</th>
<th>Dormant</th>
<th>Total PLS</th>
<th>Date</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Mexico</td>
<td>38.87%</td>
<td>17.00%</td>
<td>76.00%</td>
<td>93.00%</td>
<td>53.00%</td>
<td>05/09</td>
<td>073.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date Range: 36-911F</th>
<th>Origin</th>
<th>Variety</th>
<th>Germination</th>
<th>Dormant</th>
<th>Total PLS</th>
<th>Date</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.00%</td>
<td>76.00%</td>
<td>93.00%</td>
<td>03/09</td>
<td>073.9</td>
<td></td>
</tr>
</tbody>
</table>

| Other Crop: 0.01%  | There Are 25 Bags For This Mix | Total Bulk Pounds: 920.225 |
| Weed Seed: 0.00%  | This Bag Weighs 36.59 Bulk Pounds |
| Insect Matter: 0.15% | Use This Bag For 25 Acres |
### MWL Seed Bag Label 6

**Les Landscaping**

**5.325 Acre Custom Mix**

- **4 Times the mix (50 PLS/Acre)**
- **25 - 25 Acre Bags @ 36.59 Bulk Pounds Each**
- **1 - 5725 Acre @ 10.68 Bulk Pounds**
- **JOB: Santa Fe National Lab**

#### Lot 36-9118

<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Test</th>
<th>Germ</th>
<th>Test</th>
<th>Total PLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quinoa</td>
<td>Texas</td>
<td>21.90%</td>
<td>93.50%</td>
<td>0.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>Virea</td>
<td>Texas</td>
<td>21.90%</td>
<td>93.50%</td>
<td>0.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>Black Grama</td>
<td>Texas</td>
<td>21.90%</td>
<td>93.50%</td>
<td>0.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>Ragged, Cattled</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.60%</td>
<td>76.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>Salt Draped</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.60%</td>
<td>76.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>Not Branded</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.60%</td>
<td>76.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>Spike Malty</td>
<td>Montana</td>
<td>11.69%</td>
<td>56.50%</td>
<td>14.00%</td>
<td>71.50%</td>
</tr>
<tr>
<td>El Vado</td>
<td>Wyoming</td>
<td>11.69%</td>
<td>56.50%</td>
<td>14.00%</td>
<td>71.50%</td>
</tr>
</tbody>
</table>

**Couch Crop:** 00.15%

**Weed Seed:** 00.25%

**Insect Matter:** 34.15%

*There Are 25 Bags For This Mix*

**Total Bulk Pounds:** 920.225

---

**Les Landscaping**

**5.325 Acre Custom Mix**

- **4 Times the mix (50 PLS/Acre)**
- **25 - 25 Acre Bags @ 36.59 Bulk Pounds Each**
- **1 - 5725 Acre @ 10.68 Bulk Pounds**
- **JOB: Santa Fe National Lab**

#### Lot 36-9118

<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Test</th>
<th>Germ</th>
<th>Test</th>
<th>Total PLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quinoa</td>
<td>Texas</td>
<td>21.90%</td>
<td>93.50%</td>
<td>0.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>Virea</td>
<td>Texas</td>
<td>21.90%</td>
<td>93.50%</td>
<td>0.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>Black Grama</td>
<td>Texas</td>
<td>21.90%</td>
<td>93.50%</td>
<td>0.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>Ragged, Cattled</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.60%</td>
<td>76.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>Salt Draped</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.60%</td>
<td>76.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>Not Branded</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.60%</td>
<td>76.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>Spike Malty</td>
<td>Montana</td>
<td>11.69%</td>
<td>56.50%</td>
<td>14.00%</td>
<td>71.50%</td>
</tr>
<tr>
<td>El Vado</td>
<td>Wyoming</td>
<td>11.69%</td>
<td>56.50%</td>
<td>14.00%</td>
<td>71.50%</td>
</tr>
</tbody>
</table>

**Couch Crop:** 00.15%

**Weed Seed:** 00.25%

**Insect Matter:** 34.15%

*Use This Bag For 25 Acres*

**Total Bulk Pounds:** 920.225

---

**Les Landscaping**

**5.325 Acre Custom Mix**

- **4 Times the mix (50 PLS/Acre)**
- **25 - 25 Acre Bags @ 36.59 Bulk Pounds Each**
- **1 - 5725 Acre @ 10.68 Bulk Pounds**
- **JOB: Santa Fe National Lab**

#### Lot 36-9118

<table>
<thead>
<tr>
<th>Item</th>
<th>Origin</th>
<th>Test</th>
<th>Germ</th>
<th>Test</th>
<th>Total PLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quinoa</td>
<td>Texas</td>
<td>21.90%</td>
<td>93.50%</td>
<td>0.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>Virea</td>
<td>Texas</td>
<td>21.90%</td>
<td>93.50%</td>
<td>0.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>Black Grama</td>
<td>Texas</td>
<td>21.90%</td>
<td>93.50%</td>
<td>0.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>Ragged, Cattled</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.60%</td>
<td>76.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>Salt Draped</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.60%</td>
<td>76.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>Not Branded</td>
<td>New Mexico</td>
<td>08.87%</td>
<td>17.60%</td>
<td>76.00%</td>
<td>5.00%</td>
</tr>
<tr>
<td>Spike Malty</td>
<td>Montana</td>
<td>11.69%</td>
<td>56.50%</td>
<td>14.00%</td>
<td>71.50%</td>
</tr>
<tr>
<td>El Vado</td>
<td>Wyoming</td>
<td>11.69%</td>
<td>56.50%</td>
<td>14.00%</td>
<td>71.50%</td>
</tr>
</tbody>
</table>

**Couch Crop:** 00.15%

**Weed Seed:** 00.25%

**Insect 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

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Made Carry ECA</th>
<th>Date 10-25-06 Time 1330</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather</td>
<td>Mostly Cloudy</td>
<td>Inspected by Furcy Woods</td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>Smooth Drum Roller</td>
<td></td>
</tr>
<tr>
<td>Surface area and location covered during shift</td>
<td>Existing Landfill Surface and Perimeter</td>
<td></td>
</tr>
</tbody>
</table>

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have all shrubs, grass, roots, and other vegetation been completely cleared and grubbed from the landfill surface and perimeter?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the landfill surface and perimeter been inspected to ensure that all loose or soft zones have been properly compacted?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the landfill surface and perimeter been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
</tr>
</tbody>
</table>

NOTES:

Compaction testing at 5 tests/acre will be conducted to ensure adequate coverage of compaction equipment.

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: M.U. Cave CQA
Inspected by: [Signature]
Borrow Area: West of Cany
Weather: Clear, Cool

Date: 10/30/06 Time: 14:30
Max Dry Density (pcf): 113.2
Optimum Moisture (%): 10.9

Compaction Equipment: Smooth Drum Roller
Fill Description: 2" minus screened subgrade stockpile

Volume and location of soil placed during shift:
120 cu. yd. low-lying areas at northern mile
of unclassified area, lift 1

Surface area and location covered during shift:
Low-lying areas, northern half of unclassified
scatter, 9 ft. lift, Map B

(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?  YES

Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?  NO

Have TA-3 borrow soils been determined to be suitable for subgrade fill?  YES

Has approved fill been used during subgrade construction?  YES

Has the subgrade 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 the compaction equipment been documented?  NO

NOTES:
1. Survey crew having problems matching data points to study 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: [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: MWR Cover CQA
Inspected by: Currie Woods
Borrow Area: West of CMA
Weather: Clear, 60°F

Date: 10/31/86
Time: 14:00
Max Dry Density (pcf): 112.2
Optimum Moisture (%): 10.9

Compaction Equipment: Smooth Drum Roller
Fill Description: 2" minus screened subgrade stockpile

Volume and location of soil placed during shift: 2400 cu. yd. southwest of northern half of unclassified area, lift 2, 3, 4

Surface area and location covered during shift: See lift maps, elevating areas, northern half of unclassified area.

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use? YES/NO: YES

Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings? YES/NO: NO

Have TA-3 borrow soils been determined to be suitable for subgrade fill? YES/NO: YES

Has approved fill been used during subgrade construction? YES/NO: YES

Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension? YES/NO: YES

Has the number of passes and the coverage of the compaction equipment been documented? YES/NO: NO

NOTES:
1. Survey crew having problems matching data points to existing data. Elevations were surveyed, but good will be completed at a later date.
2. Inspection tests will be conducted to ensure adequate coverage.

CQA Inspector Signature: [Signature]
CQA Engineer Signature: [Signature]
<table>
<thead>
<tr>
<th>Project Name</th>
<th>MPR Cover CQA</th>
<th>Date</th>
<th>11/1/06</th>
<th>Time</th>
<th>11:30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td>Corey Woods</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borrow Area</td>
<td>I-49 north of CAMU</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather</td>
<td>Clear, Bura</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>Smooth Drum Roller</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fill Description</td>
<td>2&quot; minus screened subgrade stockpile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume and location of soil placed during shift</td>
<td>364 CY, low-lying areas of northern half of unclassified area, lines 4 and 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface area and location covered during shift</td>
<td>low-lying areas, northern half of unclassified area, see lift maps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Proide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
<td>YES</td>
</tr>
<tr>
<td>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</td>
<td>YES</td>
</tr>
<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
</tr>
</tbody>
</table>

**NOTES:**
Covers 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  MWC Power CQA  Date 11/2/04  Time 1400
Inspected by
Borrow Area West of CSM
Weather Clear, Dry

Compaction Equipment Smooth Drum Roller
Max Dry Density (pcf) 113.2
Optimum Moisture (%) 10.9

Fill Description 8" minus screened subgrade stockpile

Volume and location of soil placed during shift 4/12 cy. coworking areas of unclassified
area, lift 6

Surface area and location covered during shift coworking areas of unclassified area, sec
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? YES
Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings? YES
Have TA-3 borrow soils been determined to be suitable for subgrade fill? YES
Has approved fill been used during subgrade construction? YES
Has the subgrade 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 the compaction equipment been documented? NO

NOTES:
Coverage verified with compaction testing.

CQA Inspector Signature

CQA Engineer Signature
CONSTRUCTION INSPECTION FORM
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name: M12 Corer CQA
Inspected by: Carey Dirdk
Borrow Area: West of CA-50
Weather: Cloudy, Warm

Date: 11/6/06  Time: 1100
Max Dry Density (pcf): 113.3
Optimum Moisture (%): 13.2

Compaction Equipment: Smooth Drum Roller
Fill Description: 2" minus subgrade stockpile

Volume and location of soil placed during shift:
476.7 total, 100.7 ft3, 7376 cy
6 ft above, 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.)

Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use? YES/NO

Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings? YES

Have TA-3 borrow soils been determined to be suitable for subgrade fill? YES

Has approved fill been used during subgrade construction? YES

Has the subgrade 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 the compaction equipment been documented? NO

NOTES:
coverage verified by compaction testing

CQA Inspector Signature: [Signature]
CQA Engineer Signature: [Signature]
CONSTRUCTION INSPECTION FORM
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Date 11/7/06</th>
<th>Time 0730</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borrow Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>Smooth Drum Roller</td>
<td></td>
</tr>
<tr>
<td>Fill Description</td>
<td>2&quot; minus subgrade stockpile</td>
<td></td>
</tr>
<tr>
<td>Volume and location of soil placed during shift</td>
<td>344 cy, L: #9, see L: #1 Map</td>
<td></td>
</tr>
<tr>
<td>Surface area and location covered during shift</td>
<td>L: #9, see L: #1 Map</td>
<td></td>
</tr>
</tbody>
</table>

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
<td>YES</td>
</tr>
<tr>
<td>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</td>
<td>YES</td>
</tr>
<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
</tr>
</tbody>
</table>

NOTES:
"Average verified by compaction testing"

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
## CONSTRUCTION INSPECTION FORM
### SUBGRADE FILL FIELD FORM

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Date</th>
<th>Time</th>
<th>Inspected by</th>
<th>Borrow Area</th>
<th>Weather</th>
<th>Max Dry Density (pcf)</th>
<th>Optimum Moisture (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marc Cover C3A</td>
<td>11/8/06</td>
<td>10:30</td>
<td>Corey Woods</td>
<td>west of C3A</td>
<td>Clear, Warm</td>
<td>117.4</td>
<td>12.9</td>
</tr>
</tbody>
</table>

**Compaction Equipment**
- Smooth Drum Roller

**Fill Description**
- 0" minus subgrade stockpile

**Volume and location of soil placed during shift**
- 576 cy, Lifts 7 and 10, see lift maps
- 216 cy placed on lift 9 (completed), 260 cy on lift 10

**Surface area and location covered during shift**
- Lifts 7 & 10, see lift maps

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>Yes/No</th>
<th>Note No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
<td>YES</td>
</tr>
<tr>
<td>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</td>
<td>YES</td>
</tr>
<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
</tr>
</tbody>
</table>

**NOTES:**
- Coverage verified with compaction testing

CQA Inspector Signature: 

CQA Engineer Signature: 

CQA Engineer Signature: Kelly W. Reid
CI-02
CONSTRUCTION INSPECTION FORM
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

<table>
<thead>
<tr>
<th>Project Name</th>
<th>MWL Cover CQA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td>Corey Woods</td>
</tr>
<tr>
<td>Borrow Area</td>
<td>Armstrong</td>
</tr>
<tr>
<td>Weather</td>
<td>Clear, warm</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Dry Density (pcf)</td>
<td>18.3/18.7</td>
</tr>
<tr>
<td>Optimum Moisture (%)</td>
<td>12.7/12.4</td>
</tr>
</tbody>
</table>

Compaction Equipment Smooth Drum Roller

Fill Description Continuously subgrade stockpile

Volume and location of soil placed during shift 496 cy, lift 10, sec lift map

Surface area and location covered during shift Lift 10, sec lift map

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
<td>YES</td>
</tr>
<tr>
<td>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</td>
<td>YES</td>
</tr>
<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>AWC Cover CQA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td>Lorry Woods</td>
</tr>
<tr>
<td>Borrow Area</td>
<td>West of CAVU</td>
</tr>
<tr>
<td>Weather</td>
<td>Overcast, Clea</td>
</tr>
</tbody>
</table>

**Compaction Equipment**
- Smooth Drum Roller

**Fill Description**
- 2" minus subgrade stockpile

**Volume and location of soil placed during shift**
- 580 cu., 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
<td>YES</td>
</tr>
<tr>
<td>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</td>
<td>YES</td>
</tr>
<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
</tr>
</tbody>
</table>

---

**NOTES:**
- [ ] Incorporate aggregate with compaction testing.

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
CONSTRUCTION INSPECTION FORM
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name: Queen Creek CA
Inspected by: [Signature]
Borrow Area: Queen Creek CA
Weather: 5% C.E.
Date: 11/14/06
Time: 6:30
Max Dry Density (pcf): 115.41
Optimum Moisture (%): 12.7

Compaction Equipment: Smooth Drum Roller

Fill Description: 2" minus subgrade stockpile

Volume and location of soil placed during shift: 780 cu yd, completed lift 11, 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use? **YES**

Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings? **YES**

Have TA-3 borrow soils been determined to be suitable for subgrade fill? **YES**

Has approved fill been used during subgrade construction? **YES**

Has the subgrade 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 the compaction equipment been documented? **No**

NOTES:

([Incorporate explanation related to inspection 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

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Date 1/19/06</th>
<th>Time 1430</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borrow Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Max Dry Density (pcf)  115.4 / 116.5
Optimum Moisture (%)   12.5 / 13.0

Compaction Equipment  Smooth Drum Roller

Fill Description  Soils from subgrade stockpile

Volume and location of soil placed during shift  S-20 W, L-14 N, S-16 E

Surface area and location covered during shift  L-14 N, S-16 E

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
<td>YES</td>
</tr>
<tr>
<td>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</td>
<td>YES</td>
</tr>
<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
</tr>
</tbody>
</table>

NOTES:
- Values verified with compaction tests

CQA Inspector Signature  
CQA Engineer Signature  

Kelley Witt
**CI-02**
CONSTRUCTION INSPECTION FORM
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVE Cover CQA</td>
<td>11/14/06</td>
<td>1000</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Inspected by</th>
<th>Max Dry Density (pcf)</th>
<th>Optimum Moisture (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peter Morse</td>
<td>116.5/113.5</td>
<td>13.0/13.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Borrow Area</th>
<th>Compaction Equipment</th>
<th>Weather</th>
</tr>
</thead>
<tbody>
<tr>
<td>West of CAMU</td>
<td>Smooth Drum Roller</td>
<td>Overcast, Sun</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fill Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot; minus subgrade stockpile</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume and location of soil placed during shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>464 cubic yards</td>
</tr>
<tr>
<td>264 cubic yards</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surface area and location covered during shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lift 11, See Lift Map</td>
</tr>
</tbody>
</table>

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
<td>YES</td>
</tr>
<tr>
<td>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</td>
<td>YES</td>
</tr>
<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
</tr>
</tbody>
</table>

**NOTES:**
CD coverage worked with compaction testing

CQA Inspector Signature [Signature]  
CQA Engineer Signature [Signature]
**CONSTRUCTION INSPECTION FORM**

**SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Date</th>
<th>Time</th>
<th>Max Dry Density (pcf)</th>
<th>Optimum Moisture (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLW Cover CA</td>
<td>11/20/06</td>
<td>1400</td>
<td>113.5 / 113.6</td>
<td>12.0 / 12.6</td>
</tr>
</tbody>
</table>

**Inspected by**

Mary Woods

**Borrow Area**

West Rte (CA)

**Weather**

Cloudy, Warm

**Compaction Equipment**

Smooth Drum Roller

**Fill Description**

2" minus subgrade stockpile

**Volume and location of soil placed during shift**

624 cu total (236 cubic MLW-6A-007, 388 cubic MLW-6A-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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>✔️</td>
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<td>✔️</td>
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<td>✔️</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

CQA Inspector Signature

CQA Engineer Signature
CONSTRUCTION INSPECTION FORM
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name: Core CQA
Inspected by: (Sign)
Borrow Area: Wash at CAMU
Weather: Clear, Warm

Date: 1/28/06 Time: 1400
Max Dry Density (pcf): 117.6 / 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 cu yd total (112 cu yd proctor 010, 500 cu yd proctor 013, 244 cu yd 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
</tbody>
</table>

NOTES:

CQA Inspector Signature: (Sign)
CQA Engineer Signature: (Sign)
CONSTRUCTION INSPECTION FORM
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name: MNL Cover CQA
Inspected by: [Name]
Borrow Area: West of CMLW
Weather: [Clear, Warm]
Compaction Equipment: Smooth Drum Roller
Fill Description: 2" minus subgrade stockpile

Date: 11/22/06  Time: 10-00
Max Dry Density (pcf): 1.7 9
Optimum Moisture (%): 13.0

Volume and location of soil placed during shift: 56 cu (Peevew min 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
<td>YES</td>
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<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
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</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
</tr>
</tbody>
</table>

NOTES:

CQA Inspector Signature: [Signature]  CQA Engineer Signature: [Signature]
**CONSTRUCTION INSPECTION FORM**

**SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Mulch CQA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td>Perry Woods</td>
</tr>
<tr>
<td>Borrow Area</td>
<td>West of CMAU</td>
</tr>
<tr>
<td>Weather</td>
<td>Westerly</td>
</tr>
</tbody>
</table>

**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.)

<table>
<thead>
<tr>
<th>Question</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
<td>YES?</td>
<td></td>
</tr>
<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
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<td></td>
</tr>
<tr>
<td>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</td>
<td>YES?</td>
<td></td>
</tr>
<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td>YES?</td>
<td></td>
</tr>
<tr>
<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td>YES?</td>
<td></td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>

**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
Inspected by
Borrow Area
Weather

Date
Time
Max Dry Density (pcf)
Optimum Moisture (%)

Compaction Equipment
Fill Description

Volume and location of soil placed during shift
Surface area and location covered during shift

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
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<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
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</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
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NOTES:

CQA Inspector Signature

CQA Engineer Signature
### CONSTRUCTION INSPECTION FORM
#### SUBGRADE FILL FIELD FORM

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>MWC Cover CQA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td>[Signature]</td>
</tr>
<tr>
<td>Borrow Area</td>
<td>West of CAMU</td>
</tr>
<tr>
<td>Weather</td>
<td>Clear, Cool</td>
</tr>
<tr>
<td>Date</td>
<td>12/4/2004</td>
</tr>
<tr>
<td>Time</td>
<td>10:30</td>
</tr>
<tr>
<td>Max Dry Density (pcf)</td>
<td>118.4</td>
</tr>
<tr>
<td>Optimum Moisture (%)</td>
<td>12.7</td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>Smooth Drum Roller</td>
</tr>
<tr>
<td>Fill Description</td>
<td>2&quot; minus screened subgrade</td>
</tr>
</tbody>
</table>

Volume and location of soil placed during shift:

160 cy, Lift 12, see Lift Map, Proctor 0.20

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.)

<table>
<thead>
<tr>
<th>Question</th>
<th>YES/NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
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<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
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<td>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</td>
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<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td>YES</td>
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<tr>
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<td>YES</td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
</tr>
</tbody>
</table>

**NOTES:**

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
### CONSTRUCTION INSPECTION FORM

**SUBGRADE FILL FIELD FORM**

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Mul Cove - CQA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td>Corey Pearsall</td>
</tr>
<tr>
<td>Borrow Area</td>
<td>West of CQA</td>
</tr>
<tr>
<td>Weather</td>
<td>Clear, Cool</td>
</tr>
<tr>
<td>Date</td>
<td>7/5/06</td>
</tr>
<tr>
<td>Time</td>
<td>14:30</td>
</tr>
<tr>
<td>Max Dry Density (pcf)</td>
<td>118.4</td>
</tr>
<tr>
<td>Optimum Moisture (%)</td>
<td>12.7</td>
</tr>
</tbody>
</table>

**Compaction Equipment**

- Smooth Drum Vibratory Roller

**Fill Description**

- 2" minus screened subgrade

**Volume and location of soil placed during shift**

- 240 cu. yd, lift 12, sec lift Map, Proctor 0.20

**Surface area and location covered during shift**

- Lift 12, sec lift Map

--

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
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</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
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<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
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<tr>
<td>Has approved fill been used during subgrade construction?</td>
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<tr>
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<tr>
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</tr>
</tbody>
</table>

**NOTES:**

---

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
CONSTRUCTION INSPECTION FORM
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park Cover CQA</td>
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<table>
<thead>
<tr>
<th>Inspected by</th>
<th>Max Dry Density (pcf)</th>
<th>Optimum Moisture (%)</th>
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</thead>
<tbody>
<tr>
<td>CQW</td>
<td>112.4</td>
<td>13.0</td>
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</table>

<table>
<thead>
<tr>
<th>Borrow Area</th>
<th>Compaction Equipment</th>
<th>Fill Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>West of CMA</td>
<td>Smooth Drum Vibratory Roller</td>
<td>2&quot; Things Screwed Subgrade</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weather</th>
<th>Volume and location of soil placed during shift</th>
<th>Surface area and location covered during shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear, Cool</td>
<td>4600 cft, lift 12, see c/fb Map, Proctor 0.9</td>
<td>Lift 12, see c/fb Map</td>
</tr>
</tbody>
</table>

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
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<tr>
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<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
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<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>NO</td>
</tr>
</tbody>
</table>

NOTES:

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
### CONSTRUCTION INSPECTION FORM
#### SUBGRADE FILL FIELD FORM

**ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Date</th>
<th>Time</th>
<th>Inspected by</th>
<th>Borrow Area</th>
<th>Max Dry Density (pcf)</th>
<th>Optimum Moisture (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12/7/2023</td>
<td>1400</td>
<td></td>
<td>West of CML</td>
<td>119.0</td>
<td>12.0</td>
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</table>

<table>
<thead>
<tr>
<th>Compaction Equipment</th>
<th>Fill Description</th>
<th>Volume and location of soil placed during shift</th>
<th>Surface area and location covered during shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smooth Drum Vibratory Roller</td>
<td>2&quot; minus screened subgrade</td>
<td>492 cu., lift 12, see lift map, Proctor 02</td>
<td>lift 12, see lift map</td>
</tr>
</tbody>
</table>

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Yes</td>
<td></td>
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<tr>
<td>Yes</td>
<td></td>
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<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

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: Mill Creek CBA
Inspected by: Casey Woods
Borrow Area: Duston CANY
Weather: Clear, Cool

Date: 12/11/06  Time: 1500
Max Dry Density (pcf): 115.9
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 cu, 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.)

Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?  YES

Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?  YES

Have TA-3 borrow soils been determined to be suitable for subgrade fill?  YES

Has approved fill been used during subgrade construction?  YES

Has the subgrade 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 the compaction equipment been documented?  NO

CQA Inspector Signature: [Signature]
CQA Engineer Signature: [Signature]
### Construction Inspection Form

**Subgrade Fill Field Form**

**One Form Per Shift When This Work Is Being Done**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Mule Creek CFA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td>Terry Woods</td>
</tr>
<tr>
<td>Borrow Area</td>
<td>West of CAMU</td>
</tr>
<tr>
<td>Weather</td>
<td>Clear, warm</td>
</tr>
</tbody>
</table>

**Date** 12/14/06  **Time** 1:00

Max Dry Density (pcf)  115.9 / 117.9
Optimum Moisture (%)  12.2 / 12.1

Compaction Equipment: Smooth Drum Vibratory Roller

Fill Description: 2" Means Level Subgrade

Volume and location of soil placed during shift:

440 CY, lift 12, sec lift Map (280 CY Proctor 021, 160 CY Proctor 023)

Surface area and location covered during shift: Lift 12, sec lift Map

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>Question</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</td>
<td><strong>YES</strong></td>
<td></td>
</tr>
<tr>
<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
<td><strong>YES</strong></td>
<td></td>
</tr>
<tr>
<td>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</td>
<td><strong>YES</strong></td>
<td></td>
</tr>
<tr>
<td>Has approved fill been used during subgrade construction?</td>
<td><strong>YES</strong></td>
<td></td>
</tr>
<tr>
<td>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td><strong>YES</strong></td>
<td></td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td><strong>NO</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
CONSTRUCTION INSPECTION FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Mule Deer CQA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td>Lake Woods</td>
</tr>
<tr>
<td>Borrow Area</td>
<td>West of CQA</td>
</tr>
<tr>
<td>Weather</td>
<td>Clear, Warm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>12/15/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>10:00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Max Dry Density (pcf)</th>
<th>117.9 / 116.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimum Moisture (%)</td>
<td>12.8 / 12.0</td>
</tr>
</tbody>
</table>

Compaction Equipment: Smooth Drum Vibratory Roller

Fill Description: 2" minus screened subgrade

Volume and location of soil placed during shift: 512 c.f., lift 12, see lift map (Practor 023, 172 c.f. Practor 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.)

<table>
<thead>
<tr>
<th>Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>_____</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>_____</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Have TA-3 borrow soils been determined to be suitable for subgrade fill?</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>_____</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Has approved fill been used during subgrade construction?</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>_____</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>_____</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Has the number of passes and the coverage of the compaction equipment been documented?</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>_____</td>
</tr>
</tbody>
</table>

NOTES:

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
CONSTRUCTION INSPECTION FORM
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name: Muni Corr CQA
Inspected by: Corey Wood
Borrow Area: West of CAMU
Weather: Overcast, cold, windy

Date 12/18/06  Time 1000
Max Dry Density (pcf) 116.5
Optimum Moisture (%) 12.0

Compaction Equipment: Smooth Drum Vibratory Roller
Fill Description: 2" Mann screened subgrade

Volume and location of soil placed during shift: 788 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.)

Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use? YES/NO
NOTE NO.

Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings? YES/NO
NOTE NO.

Have TA-3 borrow soils been determined to be suitable for subgrade fill? YES/NO
NOTE NO.

Has approved fill been used during subgrade construction? YES/NO
NOTE NO.

Has the subgrade been inspected to ensure that it is free of all rocks greater than 2 inches in dimension? YES/NO
NOTE NO.

Has the number of passes and the coverage of the compaction equipment been documented? YES/NO
NOTE NO.

NOTES:

CQA Inspector Signature [Signature]  CQA Engineer Signature [Signature]
CONSTRUCTION INSPECTION FORM
SUBGRADE FILL FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

Project Name: MVU cover CQA
Inspected by: Comp Woods
Borrow Area: West of CAMU
Weather: Cold, windy, intermittent snow

Date: 12/15/06  Time: 1020
Max Dry Density (pcf): 
Optimum Moisture (%): 

Compaction Equipment: Smooth Drum Vibratory Roller
Fill Description: 7" minus subgrade stockpile

Volume and location of soil placed during shift:
Completed final grade on lift 12, see lift Map ②

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.)

Has all organic matter, rubble, trash, and deleterious material been removed from subgrade fill prior to use?  YES

Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?  YES

Have TA-3 borrow soils been determined to be suitable for subgrade fill?  YES

Has approved fill been used during subgrade construction?  YES

Has the subgrade 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 the compaction equipment been documented?  NO

NOTES: Completed subgrade installation.

CQA Inspector Signature: [Signature]
CQA Engineer Signature: [Signature]
<table>
<thead>
<tr>
<th>Project Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td>KMP</td>
</tr>
<tr>
<td>Borrow Area</td>
<td></td>
</tr>
<tr>
<td>Weather</td>
<td>Clear / Sunny - breezy</td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>NA</td>
</tr>
<tr>
<td>Fill Description</td>
<td>NA</td>
</tr>
<tr>
<td>Date</td>
<td>11 Apr 07</td>
</tr>
<tr>
<td>Time</td>
<td>10 AM</td>
</tr>
</tbody>
</table>

Max Dry Density (pcf) 
Optimum Moisture (%) 

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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>NA</td>
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<td>Has the prepared subgrade been surveyed for final grades to verify that it conforms to the construction drawings?</td>
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</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

- 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: [Signature]
CQA Engineer Signature: [Signature]
(2) Drainage swale: The partial drainage swale was excavated on the eastern side of the MHM in the footprint of the design drawing location for the final swale. The swale is next to the sub-grade layer toe slope. The final swale could not be excavated because of the interference with the side-slopes of the final cover layers. The swale's NE and SW corners direct any water around the MHM end to the west. No rock armament is installed at this time.

(As Engineer)  
Signature  
Kelly M. Phil
2009 Construction Inspection Forms
CONSTRUCTION INSPECTION FORM
EXISTING LANDFILL SURFACE AND PERIMETER CLEAR AND GRUB FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Sandia Mixed Waste LF</th>
<th>Date</th>
<th>5/11/09</th>
<th>Time</th>
<th>9:00am</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather</td>
<td>Overcast</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>Loaded (See Attached)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Surface area and location covered during shift: The surface of existing subgrade was cleared and graded as indicated in daily report.

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have all shrubs, grass, roots, and other vegetation been completely cleared and grubbed from the landfill surface and perimeter?</td>
<td>Yes</td>
</tr>
<tr>
<td>Has the landfill surface and perimeter been inspected to ensure that all loose or soft zones have been properly compacted?</td>
<td>Yes</td>
</tr>
<tr>
<td>Has the landfill surface and perimeter been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
<td>Yes</td>
</tr>
<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

NOTES:

Meets Specification Requirements. Signature: [Signature]

Construction Engineer
CONSTRUCTION INSPECTION FORM
EXISTING LANDFILL SURFACE AND PERIMETER CLEAR AND GRUB FIELD FORM

ONE FORM PER SHIFT WHEN THIS WORK IS BEING DONE

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Sandin Mixed Waste LF</th>
<th>Date</th>
<th>5/20/09</th>
<th>Time</th>
<th>9:00am</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather</td>
<td>Cloudy</td>
<td>Inspected by</td>
<td>Paul Molina</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>Loader (See attached)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface area and location covered during shift</td>
<td>Perimeter slope was</td>
<td>Clear and graded. (See daily report)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

<table>
<thead>
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<tr>
<td>Has the landfill surface and perimeter been inspected to ensure that it is free of all rocks greater than 2 inches in dimension?</td>
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<tr>
<td>Has the number of passes and the coverage of the compaction equipment been documented?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

Meets Specification Requirements

[Signature]

CDA Engineer,
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)

Date: 05/27/2009

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.

[Signature]
5/27/09
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)

Date: 05/28/2009

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 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.
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)

Date: 05/29/2009

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 Ti 5/29/2009
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)

Date: 06/01/2009

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.

---

[Signature]
6/01/2009
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
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.

[Signature] 6/2/2009
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)

Date: 06/03/2009

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.)

<table>
<thead>
<tr>
<th>YES/NO (If no, see notes below)</th>
</tr>
</thead>
</table>

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.

[Signature]
6/03/2009
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
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.

[Signature] 6/04/2009
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)

Date: 06/05/2009

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.

[Signature]

P.E.  6/05/2003
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)

Date: 06/08/2009

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.

[Signature]
6/08/2009
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)
Date: 06/09/2009

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.

Barlow Pe.  6/09/2009
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)
Date: 06/10/2009

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.)

<table>
<thead>
<tr>
<th>Question</th>
<th>YES/NO (If no, see notes below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was the Existing Subgrade Layer scarified using a minimum of four passes with the tracks of the dozer?</td>
<td>NO</td>
</tr>
<tr>
<td>After the rock was spread, was a minimum of four passes with the dozer performed to compact/interlock the Biointrusion Barrier Rock?</td>
<td>NO</td>
</tr>
<tr>
<td>Was the Biointrusion rock thickness verified with survey equipment to ensure a minimum thickness of 1.0 – feet?</td>
<td>NO</td>
</tr>
<tr>
<td>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.</td>
<td>NO</td>
</tr>
<tr>
<td>Was water applied to bring the soil in the filled voids of the rock to approximately the optimum moisture content (-2 to +2 percent)?</td>
<td>NO</td>
</tr>
</tbody>
</table>

NOTES:

1. No construction today.

*Signature*

Burdell Ti 6/10/2003
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)

Date: 06/11/2009

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 (68 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.

---

[Signature] PE. 6/11/2009
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)
Date: 06/12/2009

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.

[Signature]
6/12/2009
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)

Date: 06/15/2009

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.

[Signature] 6/15/2009
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)

Date: 06/16/2009

Approximate surface area of Biointrusion Rock installed: Approx. 0 CY
Approximate surface area of Loose Soil in voids installed: Approx. 108 CY (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.

[Signature] PE  6/16/2009
CONSTRUCTION INSPECTION FORM
BIOINTRUSION BARRIER CONSTRUCTION

Project Name: Sandia Mixed Waste Landfill
Inspected By: Paul Molina (URS)

Date: 05/26/2009

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.

[Signature]

May 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
Lift Number: 6:1 Slopes Lift 1 & 2
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (86 deg); Clear Sky

Date: 06/16/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 120.1
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 in 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:

[Signature] 06/16/2009
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
Borrow Area: Native Soil Borrow Area
Weather: 3:20 PM (85 deg); Clear Sky

Inspected By: Paul Molina
Max Dry Density (pcf) 120.1
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 in 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:

C. sindel Ti PE, 6/17/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: 6:1 Slopes Lifts # 5, 6, 7, & 8
Borrow Area: Native Soil Borrow Area
Weather: 10:00 am PM (76 deg): Clear Sky

Date: 06/18/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 120.1
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:

[Signature] 6/18/2009
Project Name: Sandia Mixed Waste Landfill
Lift Number: Wedge Lifts #1 & #2
Borrow Area: Native Soil Borrow Area
Weather: 2:10 PM (85 deg): Clear Sky

Date: 06/19/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 115.8
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 in 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:

[Signature] 6/19/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: NA
Borrow Area: Native Soil Borrow Area
Weather: 7:38 AM (72 deg); Partly Cloudy

Date: 06/22/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 115.8
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 in 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:

[Signature] PE, 06/22/2009
CI-03
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #3
Borrow Area: Native Soil Borrow Area
Weather: 1:21 PM (72 deg): Cloudy

Date: 06/23/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 115.8
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 in 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:

Bob Thomas, 6/27/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #3 & 4
Borrow Area: Native Soil Borrow Area
Weather: 3:30 PM (87 deg); Partly Cloudy

Date: 06/24/2009
Inspected By: Paul Moline
Max Dry Density (pcf) 117.0
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:

[Signature] PE, 6/24/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #4
Borrow Area: Native Soil Borrow Area
Weather: 12:45 PM (82 deg); Partly Cloudy

Date: 06/25/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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:

[Signature] 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
Lift Number: Native Soil Lift #4
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (78 deg); Partly Cloudy

Date: 06/26/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 17.0
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 in 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:

[Signature] PE 6/26/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #4
Borrow Area: Native Soil Borrow Area
Weather: 7:34 (61 deg); Partly Cloudy

Date: 06/29/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

Has the previous lift been surveyed for final grades to verify that it conforms to the construction specifications?

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

Burland T. PE. 6/29/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (86 deg); Partly Cloudy

Date: 06/30/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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 in 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:

[Handwritten notes on the page]
CI-03
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 2:33 PM (88 deg); Partly Cloudy

Date: 07/01/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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. 782 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 in 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:

[Signature] 7/01/2009
Project Name: Sandia Mixed Waste Landfill

Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 9:38 AM (74 deg); Partly Cloudy

Date: 07/02/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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 in 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:

[Signature] PE, 7/02/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: NA

Date: 07/03/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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 in 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:

[Signature]
7/03/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill  
Lift Number: Native Soil Lift #5  
Borrow Area: Native Soil Borrow Area  
Weather: 2:34 PM (86 deg); Partly Cloudy

Date: 07/06/2009  
Inspected By: Paul Molina  
Max Dry Density (pcf) 117.0  
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 in 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:

[Signature] 7/6/2009
CI-03
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 4:30 PM (91 deg); Partly Cloudy

Date: 07/07/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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:

[Signature] 7/07/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 4:00 PM (92 deg); Partly Cloudy

Date: 07/08/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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. 7/08/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (91 deg); Partly Cloudy

Date: 07/09/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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 in 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:

[Signature] PE 7/09/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (90 deg); Partly Cloudy

Date: 07/10/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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 Ti PE 7/10/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 3:58 PM (96 deg); Clear Sky

Date: 07/13/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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) MNL 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 in 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 7/13/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #6
Borrow Area: Native Soil Borrow Area
Weather: 7:13 AM (74 deg); Clear Sky

Date: 07/14/2009
Inspectied By: Paul Molina
Max Dry Density (pcf) 117.0
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 in 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:

[Signature] 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
Lift Number: Native Soil Lift #6
Borrow Area: Native Soil Borrow Area
Weather: 1:45 PM (93 deg); Partly Cloudy

Date: 07/15/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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:

[Signature] 7/15/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #6
Borrow Area: Native Soil Borrow Area
Weather: 2:29 PM (93 deg); Cloudy

Date: 07/16/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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 in 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:

Sandia T. L. 7/16/2009
Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #7
Borrow Area: Native Soil Borrow Area
Weather: 2:29 PM (93 deg): Partly Cloudy

Date: 07/17/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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:

[Signature] 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
Lift Number: Native Soil Lift #7
Borrow Area: Native Soil Borrow Area
Weather: 3:05 PM (78 deg); Partly Cloudy

Date: 07/20/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.  PE, 7/20/2009
Contraction Inspection Form
Native Soil Layer Field Form

One Per Shift When Work Is Being Done

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #7
Borrow Area: Native Soil Borrow Area
Weather: 4:28 PM (87 deg); Partly Cloudy

Date: 07/21/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

Has the previous lift been surveyed for final grades to verify that in 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:

[Signature] 7/21/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #8
Borrow Area: Native Soil Borrow Area
Weather: 4:02 PM (87 deg); Partly Cloudy

Date: 07/22/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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:

[Signature]

P.E. 7/22/2009
Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #8
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (78 deg): Partly Cloudy

Date: 07/23/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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) MNL 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:

[Signature] PE 7/23/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #8
Borrow Area: Native Soil Borrow Area
Weather: 8:39 AM (69 deg); Clear Sky

Date: 07/24/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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:

[Signature] 7/24/2009
CONSTRUCTION INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM
ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sancola Mixed Waste Landfill
Lift Number: Native Soil Lift #8
Borrow Area: Native Soil Borrow Area
Weather: 1:00 PM (87 deg); Partly Cloudy

Date: 07/27/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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 in 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:

[Signature] PE, 7/27/2009
CONSTRUCTION INSPECTION FORM
TOPSOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill

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:

Donald T. PE 08/03/2009
CONSTRUCTION INSPECTION FORM
TOPSOIL LAYER FIELD FORM

ONE PER SHIFT WHEN WORK IS BEING DONE

Project Name: Sandia Mixed Waste Landfill
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:

[Signature]

08/04/2009
Project Name: Sandia Mixed Waste Landfill

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 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:

[Signature] 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
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 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:

[Signature]
Bandel T. 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
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 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:

[Signature]

08/07/2009
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
Weather: 7:01 am (57 deg); cloudy

Date: 08/25/2009   Time: 8:00 am
Inspected By: Paul Molina (URS)

Surface area and location covered during shift **Approx. ½ acre (60lb. of seed)**

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td></td>
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<tr>
<td>NO</td>
<td>1</td>
</tr>
<tr>
<td>YES</td>
<td>2</td>
</tr>
</tbody>
</table>

** (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.

[Signature] 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
Weather: 7:01 am (57 deg); cloudy

Date: 08/26/2009   Time: 8:00 am
Inspected By: Paul Molina (URS)

Surface area and location covered during shift Approx. ½ acre (60lb. of seed)

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the cover surface been surveyed for final grade prior to placement of seed?</td>
<td>YES</td>
</tr>
<tr>
<td>Has approved seed been used for seeding?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the cover surface been mulched and crimped after seeding?</td>
<td>NO</td>
</tr>
<tr>
<td>Did application rate of seed mix meet the construction specifications?</td>
<td>YES</td>
</tr>
</tbody>
</table>

** (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.

[Signature]
08/26/2009
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
Weather: 7:10 am (58 deg); cloudy
Date: 08/27/2009  Time: 8:00 am
Inspectors 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td>1</td>
</tr>
<tr>
<td>YES</td>
<td>2</td>
</tr>
<tr>
<td>** (If no, see notes below)</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

1. No mulch was placed on seed today.
2. Application rate of seed mix is 80 lb/acre per revised CMIP.

[Signature] 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  
**Inspected By:** Paul Molina (URS)

**Weather:** 7:10 am (58 deg): cloudy

**Surface area and location covered during shift:** Approxi. 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
</table>

| **Has the cover surface been surveyed for final grade prior to placement of seed?** | YES |  |
| **Has approved seed been used for seeding?** | YES |  |
| **Has the cover surface been mulched and crimped after seeding?** | YES |  |
| **Did application rate of seed mix meet the construction specifications?** | NO | 1 |

***(If no, see notes below)***

---

**NOTES:**

1. No seed was placed on seed today. Mulch only
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
Weather: 7:10 am (56 deg); cloudy

Date: 08/31/2009  Time: 8:00 am
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?  YES

Has approved seed been used for seeding?  YES

Has the cover surface been mulched and crimped after seeding? YES

Did application rate of seed mix meet the construction specifications? NO 1

** (If no, see notes below)

NOTES:

1. No seed was placed on seed today. Mulch only

[Signature] 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  
Weather: 7:00 am (57 deg); cloudy  
Date: 09/01/2009  
Time: 8:00 am  
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YES</strong></td>
<td></td>
</tr>
</tbody>
</table>

Has the cover surface been surveyed for final grade prior to placement of seed?

Has approved seed been used for seeding?

Has the cover surface been mulched and crimped after seeding?

Did application rate of seed mix meet the construction specifications?

** (If no, see notes below)

### NOTES:

1. Application rate of seed mix is 80 lb/acre per revised CMIP.

   [Signature]

   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
Weather: 7:00 am (57 deg); cloudy
Date: 09/02/2009 Time: 8:00 am
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td></td>
</tr>
</tbody>
</table>

Has the cover surface been surveyed for final grade prior to placement of seed?

YES

Has approved seed been used for seeding?

YES

Has the cover surface been mulched and crimped after seeding?

YES

Did application rate of seed mix meet the construction specifications?

YES **(If no, see notes below)**

NOTES:

1. Application rate of seed mix is 80 lb/acre per revised CMIP.

Signed: [Signature]
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: Mul Cove Landfill  Date: 10/27/04  Time: 10:15
Inspected by: Carey Edwards  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.)

Has soil been moistened to approximate optimum moisture content?  YES/NO  NOTE NO.

Has surface been compacted/proof-rolled utilizing 10 passes of a roller?  NO  1

Have depressions been filled with moistened, clean fill, and recompacted with ten passes of a roller?  NO  2

Did roller have a minimum ballasted weight of 25 tons?  NO  2

Did roller have a minimum pneumatic tire pressure of 90 psi?  NO  2

Was any proof rolling conducted within a 2-ft radius of any groundwater monitoring well?  NO

NOTES:
Out of 15 tests performed, only 3 met ±2% of optimum. Optimum moisture at 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.

CQA Inspector Signature: [Signature]  CQA Engineer Signature: [Signature]
Testing Inspection Form
Subgrade Fill Field Test Form

Project Name: MWC Cover CQA  
Lift Number: 1 through 4  
Borrow Area: West of CAMV  
Compaction Equipment: Smooth drum roller  
Soil Description: 2" minus screened subgrade  
Date: 10/21/06  
Time: 0800-1500  
Inspected by: Corey Woods  
Weather: Clear, Cool  
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 area, Trenches B and C  

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

Has in situ soil nuclear density and moisture content tests been performed at the frequency required?  
YES  NO  
Note No.  

Have field density test locations and elevations been plotted and checked?  
NO  
Note No. 1  

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?"  
YES  
Note No.  

Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?  
Y/N  
Note No. 2  

Notes:
1. Survey grid not yet in place; locations approximated, see lift maps
2. Backscatter method used to avoid coming in contact with potentially contaminated material

CQA Inspector Signature: [Signature]  
CQA Engineer Signature: [Signature]
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name: MUC 1500 CQA
Lift Number: 4 and 5
Borrow Area: West of Cahu
Compaction Equipment: Smooth Drum Roller
Soil Description: 2" minus screened subgrade stockpile

Volume and location of soil placed during shift: 364 cf, 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

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

Have in situ soil nuclear density and moisture content tests been performed at the frequency required? YES/NO: YES

Have field density test locations and elevations been plotted and checked? YES/NO: YES

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”? YES/NO: YES

Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped? YES/NO: N/A

NOTES:

CQA Inspector Signature: [Signature]
CQA Engineer Signature: [Signature]
TI-02
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name  MSE Cover CQA    Date 1/2/06  Time 1:00
Lift Number  6    Inspected by  Terry 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.)

Have in situ soil nuclear density and moisture content tests been performed at the frequency required?  YES
Have field density test locations and elevations been plotted and checked?  YES
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”?  YES
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?  N/A

NOTES:

CQA Inspector Signature  CQA Engineer Signature  Kelly M. Paul
TI-02
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name: MCE Cover CQA

Lift Number: 7 and 8

Borrow Area: West of CAMU

Compaction Equipment: Smooth Drum Roller

Soil Description: 2" minus subgrade stockpile

Volume and location of soil placed during shift: 476 cy total, 100:7 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.)

Have in situ soil nuclear density and moisture content tests been performed at the frequency required?

YES/NO

NOTES:

CQA Inspector Signature

CQA Engineer Signature
Project Name: LDU Cover CQA
Lift Number: 9
Borrow Area: West of CAMU
Compaction Equipment: Smooth Drum Roller
Soil Description: 2" minus subgrade stockpile

Volume and location of soil placed during shift: 3cy, Lft 9, see lift map
Surface area and location covered during shift: Lft 9, see lift map

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

<table>
<thead>
<tr>
<th>Question</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>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 &quot;Moisture/Density Field Test Results Form?&quot;</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

CQA Inspector Signature

CQA Engineer Signature
TI-02
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name  MUC Cover CQA  Date 11/8/06  Time 10:30
Lift Number  9  Inspected by Curry 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 cy Lift 9, 260 cy Lift 10
See lift map for location

Surface area and location covered during shift Completed Lift 9, Started Lift 10, see lift map

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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”?</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>N/A</td>
</tr>
</tbody>
</table>

NOTES:

CQA Inspector Signature [Signature]  CQA Engineer Signature [Signature]
## TI-02
### TESTING INSPECTION FORM
#### SUBGRADE FILL FIELD TEST FORM

<table>
<thead>
<tr>
<th>Project Name</th>
<th>MWL Cover CQA</th>
<th>Date</th>
<th>11/9/66</th>
<th>Time</th>
<th>1500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lift Number</td>
<td>9 and 10</td>
<td>Inspected</td>
<td>Cory Woods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borrow Area</td>
<td>west of CAMU</td>
<td>Weather</td>
<td>Clear, Warm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>Smooth Drum Roller</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil Description</td>
<td>2&quot; minus subgrade stockpile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Volume and location of soil placed during shift 496 cu, 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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?”</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### NOTES:

CQA Inspector Signature 

CQA Engineer Signature Keliy M. Reid
TI-02  
TESTING INSPECTION FORM  
SUBGRADE FILL FIELD TEST FORM

Project Name: MEC Corr CQA  
Date: 11/14/26  
Time: 0830  
Lift Number: 10  
Inspected by: Corey Wilsons  
Borrow Area: W OF CUM  
Weather: overcast, high winds  
Compaction Equipment: Smooth Drum Roller  
Soil Description: 2% minus subgrade stockpile  
Volume and location of soil placed during shift: 260, 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.)

- Have in situ soil nuclear density and moisture content tests been performed at the frequency required? 
  YES/NO: YES  
  NOTE NO.:   

- Have field density test locations and elevations been plotted and checked? 
  YES/NO: YES  
  NOTE NO.:   

- 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?” 
  YES/NO: YES  
  NOTE NO.:   

- Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped? 
  YES/NO: N/A  
  NOTE NO.:   

NOTES:

CQA Inspector Signature: [Signature]  
CQA Engineer Signature: [Signature]
TI-02
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name: Mill Cure CQA  Date: 11/15/06  Time: 14:30
Lift Number: 11  Inspected by: C. J. Woods
Borrow Area: 125 ft x 180 ft  Weather: Clear, cool
Compaction Equipment: Smooth Drum Roller
Soil Description: 2" minus subgrade stockpile

Volume and location of soil placed during shift: 520 cu. yd, 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.)

Have in situ soil nuclear density and moisture content tests been performed at the frequency required?  YES/NO  NOTE NO.
Have field density test locations and elevations been plotted and checked?  YES
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”?  YES
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?  YES

NOTES:

CQA Inspector Signature:  CQA Engineer Signature: Kelly Pink
TI-02
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name: 
Date: 11/16/04
Time: 1500

Lift Number: 11
Inspected by: 

Borrow Area: West of CANU
Weather:

Compaction Equipment: Smooth Drum Roller

Soil Description: 2" minus subgrade

Volume and location of soil placed during shift:
- 464cy total - 200cy proctor MWC=56.008
- 214cy proctor MWC=54.007, 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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”?</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>N/A</td>
</tr>
</tbody>
</table>

NOTES:

CQA Inspector Signature: 
CQA Engineer Signature: 


TI-02
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name MUL CWA CQA Date 11/24/06 Time 1400
Lift Number 11 Inspected by Terry Woods
Borrow Area West of AMU Weather Clear, Warm
Compaction Equipment Smooth Drum Roller
Soil Description 2" Mans Subgrade stockpile

Volume and location of soil placed during shift 624 yd total 1836 yd P-Factor MUL-56-001, 383 P-Factor MUL-56-001, C11, 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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?”</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>N/A</td>
</tr>
</tbody>
</table>

NOTES:

CQA Inspector Signature

CQA Engineer Signature
TI-02
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name: MWR Cover CQA  Date: 11/21/06  Time: 14:00
Lift Number: 11  Inspected by: Casey Woods
Borrow Area: West of C-Arra  Weather: Clear, Warm
Compaction Equipment: Smooth Drum Roller
Soil Description: 2" minus subgrade stockpile

Volume and location of soil placed during shift: 856.7 yd total (112 yd Plot Location 010, 500 yd Plot Location 013, and 244 yd Plot Location 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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”?</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>N/A</td>
</tr>
</tbody>
</table>

NOTES:

CQA Inspector Signature: [Signature]  CQA Engineer Signature: [Signature]
### TESTING INSPECTION FORM
#### SUBGRADE FILL FIELD TEST FORM

<table>
<thead>
<tr>
<th>Project Name</th>
<th>MW, Cove, CA</th>
<th>Date</th>
<th>11/22/06</th>
<th>Time</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lift Number</td>
<td>11</td>
<td>Inspected by</td>
<td>C. M. Woods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borrow Area</td>
<td>West of CAU</td>
<td>Weather</td>
<td>Clear, Warm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>Smooth Drum Roller</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil Description</td>
<td>2&quot; Muds, Subgrade Stockpile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Volume and location of soil placed during shift: S6 cp (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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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 T1-07 “Moisture/Density Field Test Results Form”?</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### NOTES:

CQA Inspector Signature: [Signature]
CQA Engineer Signature: [Signature]
## Testing Inspection Form

**Project Name:** Mud Cover CAA  
**Date:** 11/30/06  
**Lift Number:** 12  
**Inspected by:** Corey Woods  
**Borrow Area:** NE 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

11/28 and 11/29. None on this date, tests taken on soils placed.

---

(Please provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

### YES/NO  
### NOTE NO.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>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 &quot;Moisture/Density Field Test Results Form&quot;?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

---

### NOTES:

---

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name: MWE Cover CQA
Lift Number: 12
Borrow Area: West of Cauco
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.)

Have in situ soil nuclear density and moisture content tests been performed at the frequency required? YES/NO
Yes

Have field density test locations and elevations been plotted and checked? YES/NO
Yes

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"? YES/NO
Yes

Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped? YES/NO
N/A

NOTES:

CQA Inspector Signature: [Signature]
CQA Engineer Signature: [Signature]
Project Name: Mul Cove CQA  
Lift Number: 12  
Borrow Area: West of CMAU  
Compaction Equipment: Smooth Drum Vibratory Roller  
Soil Description: 2" minus screened subgrade  

Volume and location of soil placed during shift: 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.)

<table>
<thead>
<tr>
<th>Question</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>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?”</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

CQA Inspector Signature:  
CQA Engineer Signature:  

Signed:  
Date: 12/7/06  
Time: 1400  
Inspected by: Percy Woods  
Weather: Clear, Cool
TI-02
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name MUL Cover C & A Date 12/12/06 Time 1000
Lift Number 12 Inspected by Corey 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 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.)

Have in situ soil nuclear density and moisture content tests been performed at the frequency required? YES/NO NOTE NO.

Have field density test locations and elevations been plotted and checked? YES

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?" YES

Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped? N/A

NOTES:

CQA Inspector Signature

CQA Engineer Signature
TI-02
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name: Mul Cove CQA
Lift Number: 12
Borrow Area: West of Camu
Compaction Equipment: Smooth Drum Vibratory Roller
Soil Description: 2" minus covered 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

(Date: 12/15/06 Time: 10:00
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.)

Have in situ soil nuclear density and moisture content tests been performed at the frequency required? YES
Have field density test locations and elevations been plotted and checked? YES
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?” YES
Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped? N/A

NOTES:

CQA Inspector Signature: [Signature]
CQA Engineer Signature: [Signature]
## TI-02
**TESTING INSPECTION FORM**
**SUBGRADE FILL FIELD TEST FORM**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Mul Cover CQA</th>
<th>Date</th>
<th>12/18/06</th>
<th>Time</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lift Number</td>
<td>12</td>
<td>Inspected</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>by</td>
<td>Cody Woods</td>
<td></td>
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</tr>
<tr>
<td>Borrow Area</td>
<td>West of CAMU</td>
<td>Weather</td>
<td>Overcast, Cold, Windy</td>
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</tr>
<tr>
<td>Compaction Equipment</td>
<td>Smooth Drum Vibratory Roller</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil Description</td>
<td>2&quot; Means screened subgrade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.)

<table>
<thead>
<tr>
<th>Question</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
<td></td>
</tr>
</tbody>
</table>

|                               | YES    |          |
| Have field density test locations and elevations been plotted and checked? | YES    |          |

|                               | YES    |          |
| 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?” | YES    |          |

|                               | N/A    |          |
| Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped? | N/A    |          |

**NOTES:**

CQA Inspector Signature:

CQA Engineer Signature: Kelly M. Reid
Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698? **YES**

Has gradation been performed in accordance with ASTM C 136? **YES**

Has classification been performed in accordance with ASTM D 2487 and D 4318? **YES**

Do laboratory tests meet the construction specification? **YES**

---

**NOTES:**

- Collected the following proctors on this date:
  - MUL-ES 001 - Existing surface, approx. 30' NW of monitor with mulch
  - MUL-811.001 - Subgrade stockpile, west end

- Results received Oct. 19

- No specification for existing surface

---

CQA Inspector Signature  
CQA Engineer Signature
TI-04
TESTING INSPECTION FORM
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

Project Name: [Name]  Date: 10/27/06  Time: 11:00
Inspected by: [Name]  Weather: Clear, Cool

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?  YES
Has gradation been performed in accordance with ASTM C 136?  YES
Has classification been performed in accordance with ASTM D 2487 and D 4318?  YES
Do laboratory tests meet the construction specification?  N/A

NOTES:
- Samples collected 10/27, 11/6-8-10, 11/13, and 11/18
- No specification for existing surface
- Results received 11/2/06

CQA Inspector Signature: [Signature]  CQA Engineer Signature: [Signature]
TI-04
TESTING INSPECTION FORM
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

Project Name  MUL  Cover CQA  Date 10/31/06  Time 14:30
Inspected by  (Name)  Weather  Clear, Cool

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?  YES

Has gradation been performed in accordance with ASTM C 136?  YES

Has classification been performed in accordance with ASTM D 2487 and D 4318?  YES

Do laboratory tests meet the construction specification?  YES

NOTES:

Samples collected 10/31/06:
MUL-56-002 - Southwest corner of stockpile
MUL-56-008 - Middle west end of stockpile
MUL-56-001 - Northwest corner of stockpile

Results received 11/6/06

CQA Inspector Signature  (Signature)  CQA Engineer Signature  (Signature)
TI-04
TESTING INSPECTION FORM
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

Project Name  Mulch over CQA  Date  1/2/06  Time  14:36
Inspected by  ---------------------------------------
Weather  Clear, warm

(Provide explanatory notes if the answer to any of the following questions is "no." Include any remedial steps required.)

Has the relationship between moisture content and density been analyzed
by the Standard Proctor test in accordance with ASTM D 698?  YES  __________

Has gradation been performed in accordance with ASTM C 136?  YES  __________

Has classification been performed in accordance with ASTM D 2487 and D 4318?  YES  __________

Do laboratory tests meet the construction specification?  YES  __________

NOTES:
- Collected proctors mwa-540-35, -006, ad -007 on 11/2
- Results received 11/6 for mwa-54-005 and -006
- Results received 11/13 for mwa-54-007

CQA Inspector Signature  ____________________________  CQA Engineer Signature  ____________________________
TI-04
TESTING INSPECTION FORM
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

Project Name: MWE Cover CQA
Date: 11/8/06
Time: 10:30
Inspected by: Corey Woods
Weather: Clear, Warm

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698? YES/NO

Has gradation been performed in accordance with ASTM C 136? YES/NO

Has classification been performed in accordance with ASTM D 2487 and D 4318? YES/NO

Do laboratory tests meet the construction specification? YES/NO

NOTES:
Collected the following proctor samples on 11/8/06:
MWE-5A-008 - Northwest corner of subgrade stockpile
MWE-5A-001 - Middle west of stockpile
MWE-5A-010 - Southwest corner of stockpile

Results for MWE-5A-008 received 11/14/06
Results for MWE-5A-001 and -010 received 11/15/06

CQA Inspector Signature: [Signature]
CQA Engineer Signature: [Signature]
Project Name: CQA

Inspected by: 

Weather: Ex: St. High Wind

Yes/No

Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?

Yes

Has gradation been performed in accordance with ASTM C 136?

Yes

Has classification been performed in accordance with ASTM D 2487 and D 4318?

Yes

Do laboratory tests meet the construction specification?

No

NOTES:
The following samples were collected for proctor analysis on 11/14:

MUL-5A-011 - East end of Southern Stockpile
MUL-5A-012 - West end of Southern Stockpile
MUL-5A-013 - South central area of Subgrade Stockpile

Results received 11/20/06. Sample MUL-5A-011 #200 sieve at 15% of 20-40% in spec. This sample was from the soi pile that was excavated at the muck prior to field operations, this soil will be used for perimeter grading only, not for subgrade placement.

CQA Inspector Signature: 

CQA Engineer Signature: Kelly M. Reid
TI-04
TESTING INSPECTION FORM
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

<table>
<thead>
<tr>
<th>Project Name</th>
<th>MWL Cwer CQA</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspected by</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather</td>
<td>overcast, cool</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
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<tr>
<td>Yes</td>
<td></td>
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<tr>
<td>Yes</td>
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</tr>
<tr>
<td>Yes</td>
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</table>

<table>
<thead>
<tr>
<th>NOTES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collected the following samples for proctor analysis on 11/16:</td>
</tr>
<tr>
<td>MWL 56-014 Northwest corner of subgrade stockpile</td>
</tr>
<tr>
<td>MWL 56-015 Southwest corner of subgrade stockpile</td>
</tr>
</tbody>
</table>

Received results 11/28

CQA Inspector Signature

CQA Engineer Signature
### TEST REPORT

**Project Name:** MUL EMU CQA  
**Date:** 11/20/06  
**Time:** 14:30  
**Inspected by:**  
**Weather:** Clear, warm  

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>Question</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?</td>
<td>NO</td>
<td>1</td>
</tr>
<tr>
<td>Has gradation been performed in accordance with ASTM C 136?</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Has classification been performed in accordance with ASTM D 2487 and D 4318?</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
<td></td>
</tr>
</tbody>
</table>

### NOTES:

- Collected the following samples for proctor analysis on 11/20:
  - MUL-SC-016: Southwest corner of subgrade stockpile
  - MUL-SC-017: Middle west side
  - MUL-SC-018: Northwest corner

- Results for MUL-SC-016 and 017 received 11/28
- Results for MUL-SC-018 received 12/4

- Proctor MUL-SC-018 analyzed by ASTM 1557 (modified proctor). This proctor was not used for compression testing.

CQA Inspector Signature  
CQA Engineer Signature
TI-04
TESTING INSPECTION FORM
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

Project Name: MWE Cove CQA
Date: 11/27/06
Time: 11:00

Inspected by: Corey Woods
Weather: Overcast, Breezy, Cold

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>Question</th>
<th>YES/NO</th>
<th>NOTE NO.</th>
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<tbody>
<tr>
<td>Has the relationship between moisture content and density been analyzed</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>by the Standard Proctor test in accordance with ASTM D 698?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has gradation been performed in accordance with ASTM C 136?</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Has classification been performed in accordance with ASTM D 2487 and D 4318?</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

Collected the following samples for proctor analyses on 11/27:

- MWE-56-019 North End of stockpile
- MWE-56-020 West side of stockpile
- MWE-56-021 East side of stockpile

Samples collected from stockpile at CAMU Borrow Area

Received results for MWE-56-020 on 12/5
Received results for MWE-56-019 and 021 on 12/7

CQA Inspector Signature

CQA Engineer Signature
TI-04
TESTING INSPECTION FORM
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

Project Name: M16 Core CQA
Date: 12/5/96
Time: 1500

Inspected by: Perry Woods
Weather: Clear, Cool

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698? YES/NO

Has gradation been performed in accordance with ASTM C 136? YES

Has classification been performed in accordance with ASTM D 2487 and D 4318? YES

Do laboratory tests meet the construction specification? YES

NOTES:
Collected sample M16-56-022 for proctor analysis, newly screened material.
Results received 12/13

CQA Inspector Signature

CQA Engineer Signature

Kellum Reid
TI-04
TESTING INSPECTION FORM
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

Project Name: MUI - Can CQA
Date: 12/12/06
Time: 11:00

Inspected by: Corey Woods
Weather: Clear, Warm

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?

YES/NO
NOTE NO.

YES

Has gradation been performed in accordance with ASTM C 136?

YES

Has classification been performed in accordance with ASTM D 2487 and D 4318?

YES

Do laboratory tests meet the construction specification?

YES

NOTES:
Collected two samples for proctor analysis from stockpile at borrow area:
MUI - SA-023 - North side of stockpile
MUI - SA-024 - South side of stockpile

Received results for MUI - SA-023 on 12/15
Received results for MUI - SA-024 on 12/18

CQA Inspector Signature: ____________________________
CQA Engineer Signature: ____________________________
TI-04
TESTING INSPECTION FORM
SUBGRADE FILL LABORATORY TEST VERIFICATION FORM

Project Name: MWL Cover CQA

Date: 12/14/06
Time: 10:00

Inspected by: Penny Woods
Weather: Clear, Warm

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
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<tbody>
<tr>
<td>YES</td>
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<tr>
<td>YES</td>
<td>________</td>
</tr>
<tr>
<td>YES</td>
<td>________</td>
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</tbody>
</table>

Has the relationship between moisture content and density been analyzed by the Standard Proctor test in accordance with ASTM D 698?

Has gradation been performed in accordance with ASTM C 136?

Has classification been performed in accordance with ASTM D 2487 and D 4318?

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-SA-025 - South side of stockpile
MWL-SA-026 - North side of stockpile

Results for MWL-SA-025 received 12/20

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
<table>
<thead>
<tr>
<th>Test Number</th>
<th>Approximate Location</th>
<th>North</th>
<th>East</th>
<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUL-ES1-001</td>
<td>See Attached</td>
<td>104.1</td>
<td>90.1</td>
<td>13.8</td>
<td>70.4</td>
<td>Ex situ surface</td>
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<td>CFA</td>
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<td>MUL-ES1-002</td>
<td></td>
<td>111.8</td>
<td>96.8</td>
<td>7.5</td>
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<td>MUL-ES1-003</td>
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<td>110.2</td>
<td>95.4</td>
<td>7.8</td>
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<td>MUL-ES1-004</td>
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<td>106.0</td>
<td>91.8</td>
<td>10.2</td>
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<td>MUL-ES1-005</td>
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<td>106.7</td>
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<td>MUL-ES1-006</td>
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<td>MUL-ES1-008</td>
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<td>93.7</td>
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<tr>
<td>MUL-ES1-011</td>
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</table>

**NOTES:**

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
<table>
<thead>
<tr>
<th>Test Number</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUL-561-001</td>
<td>Middle of Trench A, appx 100' North of Trench B</td>
<td>113.2</td>
<td>100</td>
<td>9.1</td>
<td>-1.8</td>
<td>2&quot; Muns Subgrade</td>
</tr>
<tr>
<td>MUL-561-002</td>
<td>Middle of Trench B, appx 110' South of Trench A</td>
<td>122.8</td>
<td>96.6</td>
<td>9.8</td>
<td>-1.1</td>
<td></td>
</tr>
<tr>
<td>MUL-561-003</td>
<td>Middle of Trench C, appx 75' South of Trench B</td>
<td>110.6</td>
<td>97.7</td>
<td>11.1</td>
<td>+0.2</td>
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</tr>
<tr>
<td>MUL-562-001</td>
<td>Middle of Trench B, appx 50' South of Trench A</td>
<td>113.0</td>
<td>99.8</td>
<td>10.6</td>
<td>-0.3</td>
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</tr>
<tr>
<td>MUL-563-001</td>
<td>Middle of Trench A, appx 100' South of Trench B</td>
<td>106.7</td>
<td>94.3</td>
<td>10.0</td>
<td>-0.7</td>
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<tr>
<td>MUL-564-002</td>
<td>Middle of Trench B, appx 75' South of Trench A</td>
<td>113.0</td>
<td>99.8</td>
<td>10.0</td>
<td>-0.3</td>
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<tr>
<td>MUL-564-003</td>
<td>Middle of Trench C, appx 100' South of Trench B</td>
<td>113.2</td>
<td>100</td>
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</tr>
<tr>
<td>MUL-564-004</td>
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<td>10.7</td>
<td>-0.2</td>
<td></td>
</tr>
</tbody>
</table>

**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: 11/1/96  Time: 11:30  Weather: Clear, Warm

Stockpile Area: **Subgrade**  Borrow Area: **Subgrade**

Type of Construction: **Subgrade** (landfill surface and perimeter, subgrade, native soil layer, topsoil layer)

Maximum Dry Density (pcf): 113.2

Optimum Moisture: 10.9

![See Lift Maps]

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
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<tbody>
<tr>
<td>Mwl-S65-001</td>
<td>Trench B 70' from North</td>
<td>10.28</td>
<td>96.1</td>
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<td>2&quot; Minus Subgrade</td>
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<td>Mwl-S64-003</td>
<td>Trench C 100' from North</td>
<td>10.30</td>
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<td>40.2</td>
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<td>Mwl-S64-004</td>
<td>Trench C 200' from North</td>
<td>111.5</td>
<td>98.2</td>
<td>9.6</td>
<td>-1.3</td>
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**NOTES:**

CQA Inspector Signature: 
CQA Engineer Signature:

[Handwritten Signatures]
TI-07
TESTING INSPECTION FORM
MOISTURE/DENSITY FIELD TEST RESULTS FORM

Project Name: 
Date: 3/7/06  Time: 14:00  Weather: Clear, Warm
Stockpile Area: 2" minus subgrade stockpile
Borrow Area: West of Camp
Type of Construction: Subgrade
(landfill surface and perimeter, subgrade, native soil layer, topsoil layer)
Maximum Dry Density (pcf): 113.2
Optimum Moisture: 10.7%

<table>
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<tr>
<th>Test Number</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
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<tbody>
<tr>
<td>mul-564-005</td>
<td>5' SE of stake 4025</td>
<td>102.3</td>
<td>90.7</td>
<td>8.7</td>
<td>-2.0</td>
<td>2&quot; minus subgrade</td>
</tr>
<tr>
<td>mul-565-001</td>
<td>5' SE of stake 4015</td>
<td>113.2</td>
<td>100</td>
<td>9.2</td>
<td>-1.7</td>
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<tr>
<td>mul-566-002</td>
<td>10' South of stake 4024</td>
<td>110.5</td>
<td>97.6</td>
<td>11.0</td>
<td>+0.1</td>
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<td>mul-566-003</td>
<td>5' NE of stake 4043</td>
<td>107.5</td>
<td>95.0</td>
<td>12.1</td>
<td>+1.2</td>
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NOTES:

CQA Inspector Signature ____________________________  CQA Engineer Signature ____________________________
### TI-07

**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**Project Name:**  
**Date:** 11/1/06  
**Time:** 11:00  
**Weather:** Clear, Warm  
**Stockpile Area:** 2" minus subgrade  
**Borrow Area:** West of dam  
**Type of Construction:** Subgrade  
*(landfill surface and perimeter, subgrade, native soil layer, topsoil layer)*  
**Maximum Dry Density (pcf):** 113.3  
**Optimum Moisture:** 13.2  

**LOCATION SKETCH**

**Proctor MWD-564-002**

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<th>Test Number</th>
<th>North</th>
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<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
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<tbody>
<tr>
<td>MWD-564-001</td>
<td>15' NE of 4008</td>
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**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:** 11/30/06  
**Time:** 0930  
**Weather:** Clear/Warm

**Stockpile Area:** 2' M.O.A. subgrade

**Borrow Area:** East of C.A.M.U.

**Type of Construction:** Subgrade

(landfill surface and perimeter, subgrade, native soil layer, topsoil layer)

**Maximum Dry Density (pcf):** 118.3 (Proctor M/C-SG-0.02, 117.4 (Proctor M/C-SG-0.08)

**Optimum Moisture:** 12.2 (Proctor M/C-SG-0.02), 12.4 (Proctor M/C-SG-0.08)

---

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<th>Test Number</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
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<td>M/C-SG-001</td>
<td>10' S.W. of 4008</td>
<td>111.5</td>
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<td>5' S.W. of 4019</td>
<td>107.4</td>
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<td>12' S.W. of 4022</td>
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<td>25' S.W. of 4008</td>
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**NOTES:**

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
## TESTING INSPECTION FORM
### MOISTURE/DENSITY FIELD TEST RESULTS FORM

**LOCATION SKETCH**

- See sheet of maps

### Test Results

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<th>Test Number</th>
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<th>In Situ Dry Density (pcf)</th>
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<td>MUE-56-003</td>
<td>25' N 60' 400' E</td>
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### Notes:

CQA Inspector Signature

CQA Engineer Signature
TC-07
TESTING INSPECTION FORM
MOISTURE/DENSITY FIELD TEST RESULTS FORM

LOCATION SKETCH

Project Name:
Date: 11/19/06 Time: 1500 Weather: Clear, Warm
Stockpile Area: 2" minus subgrade stockpile
Borrow Area: West of C4MU
Type of Construction: Subgrade
(laundry surface and perimeter, subgrade, native soil layer, topsoil layer)
Maximum Dry Density (pcf): 118.2 (Proctor MML = 56.0 cts), 118.7 (Proctor MML = 63.0 cts)
Optimum Moisture: 12.7 (Proctor MML = 58.0 cts), 12.4 (Proctor MML = 65.0 cts)

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<th>Test Number</th>
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NOTES:

CQA Inspector Signature [Signature] CQA Engineer Signature [Signature]
### Approximate Location

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</table>

### Notes:

CQA Inspector Signature: 

CQA Engineer Signature: 

Location Sketch: See Lift Map
**TI-07**  
**TESTING INSPECTION FORM**  
**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

Project Name:  
Date: 11/5/16  Time: 14:30  Weather: Cldry, Cw

Stockpile Area: 2' minus subgrade stockpile  
Borrow Area: west of Ctnw  
Type of Construction: subgrade  
(landfill surface and perimeter, subgrade, native soil layer, topsoil layer)

Maximum Dry Density (pcf): 115.4  
Optimum Moisture: 9.4

<table>
<thead>
<tr>
<th>Test Number</th>
<th>North</th>
<th>East</th>
<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
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<tr>
<td>MNL-56/11-001</td>
<td>35' NNW</td>
<td>4637</td>
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<td>94.3</td>
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<td>MNL-56/11-002</td>
<td>25' W</td>
<td>4649</td>
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<td>112.9</td>
<td>97.8</td>
<td>14.2</td>
<td>+1.3</td>
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**NOTES:**

CQA Inspector Signature:  
CQA Engineer Signature:  

See site plan
### Project Name:

Date: 11/14/96  Time: 1500  Weather: Overcast, Rain

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 (Agr. MUI-56-004) 113.5 (Agr. MUI-56-003)

Optimum Moisture: 13.0 (Rut Proctor)

### Testing Inspection Form

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
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<th>Soil Description</th>
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<td>20' W of 4050</td>
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<td>-1.5</td>
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### Notes:

CQA Inspector Signature: [Signature]  
CQA Engineer Signature: [Signature]
Project Name:  
Date: 1/22/04  Time: 1400  Weather: Clear, Warm  
Stockpile Area: 2" minus subgrade  
Borrow Area: West of CA HWY  
Type of Construction: Subgrade  
(landfill surface and perimeter, subgrade, native soil layer, topsoil layer)  
Maximum Dry Density (pcf): 113.5  
Optimum Moisture: 13.0  

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<tr>
<th>Test Number</th>
<th>Approximate Location</th>
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<td>15' NW of 4016</td>
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<td>96.3</td>
<td>12.0</td>
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NOTES:  

CQA Inspector Signature  
CQA Engineer Signature

LOCATION SKETCH
### TESTING INSPECTION FORM

**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

**Project Name:**
**Date:** 11/21/06  
**Time:** 14:00  
**Weather:** Clear, Warm

**Stockpile Area:**  
**Borrow Area:**

**Type of Construction:** Subgrade  
(landfill surface and perimeter, subgrade, native soil layer, topsoil layer)

**Maximum Dry Density (pcf):** 113.0 (Proctor Mul-SC-010)  
**Optimum Moisture:** 12.6 (Proctor -0.10)  

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<tr>
<th>Test Number</th>
<th>North</th>
<th>East</th>
<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
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<td>10'E of 4025</td>
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<td>+1.6</td>
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**NOTES:**

CQA Inspector Signature: 

CQA Engineer Signature: K. Paul
**TI-07**
*TESTING INSPECTION FORM*
*MOISTURE/DENSITY FIELD TEST RESULTS FORM*

**LOCATION SKETCH**

Project Name:
Date: 11/22/06  Time: 10:00  Weather: **Clear, Warm**
Stockpile Area: **7' minus subgrade**
Borrow Area: **West of 6th Ave**
Type of Construction: **Subgrade**
(landfill surface and perimeter, subgrade, native soil layer, topsoil layer)
Maximum Dry Density (pcf): **116.0**
Optimum Moisture: **12.3**  **Proctor Mwp - SG - 013**

<table>
<thead>
<tr>
<th>Test Number</th>
<th>North</th>
<th>East</th>
<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mwp - sc #1</td>
<td>6'</td>
<td>0.0</td>
<td>4021</td>
<td>116.3</td>
<td>100</td>
<td>13.2</td>
<td>+0.1</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

CQA Inspector Signature  
CQA Engineer Signature
**TI-07 TESTING INSPECTION FORM**

**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

Project Name: 
Date: 11/30/06  Time: 0930  Weather: Windy, Cold

Stockpile Area: 2' - 3' subgrade

Borrow Area: West of CAMU

Type of Construction: Subgrade

(landfill surface and perimeter, subgrade, native soil layer, topsoil layer)

Maximum Dry Density (pcf): 117.7 (Proctor MCL-SC-014)  118.1 (Proctor MCL-SC-015)

Optimum Moisture: 13.0 (Proctor -014)  13.3 (Proctor -015)

<table>
<thead>
<tr>
<th>Test Number</th>
<th>North</th>
<th>East</th>
<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCL-SC-012-01</td>
<td>12' NW of Y058</td>
<td>4058</td>
<td>109.7</td>
<td>93.2</td>
<td>12.2</td>
<td>-0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCL-SC-011-01</td>
<td>20' NW of Y049</td>
<td>4049</td>
<td>114.2</td>
<td>96.9</td>
<td>11.7</td>
<td>-1.3</td>
<td></td>
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</tr>
<tr>
<td>MCL-SC-001-05</td>
<td>20' NW of Y045</td>
<td>4045</td>
<td>117.7</td>
<td>94.7</td>
<td>11.8</td>
<td>-1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCL-SC-001-04</td>
<td>25' SW of Y050</td>
<td>4050</td>
<td>117.0</td>
<td>94.1</td>
<td>12.2</td>
<td>-1.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

CQA Inspector Signature  
CQA Engineer Signature
### TESTING INSPECTION FORM

**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

**LOCATION SKETCH**

**Project Name:**

**Date:** 12/5/06  **Time:** 1430  **Weather:** Clear, 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):** 118.7

**Optimum Moisture:** 12.7

**Proctor:** 0.20

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUL-5617-005</td>
<td>15' W of 4037</td>
<td>118.7</td>
<td>&gt;100</td>
<td>12.3</td>
<td>0.4</td>
<td>2&quot; Minus Subgrade</td>
</tr>
<tr>
<td>MUL-5617-006</td>
<td>15' E of 4052</td>
<td>112.0</td>
<td>94.6</td>
<td>12.4</td>
<td>-0.3</td>
<td></td>
</tr>
</tbody>
</table>

### NOTES:

CQA Inspector Signature: 

CQA Engineer Signature: 
**TI-07**

**TESTING INSPECTION FORM**

**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

Project Name: 
Date: 12/7/06  
Time: 1400  
Weather: Clear, Cool

Stockpile Area: 2" minus subdrak 
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)

---

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mwl-S612-007</td>
<td>251 SE of 405 3</td>
<td>112.4</td>
<td>100</td>
<td>13.1</td>
<td>-0.5</td>
<td>2&quot; minus subdrak</td>
</tr>
<tr>
<td>mwl-S612-008</td>
<td>251 NE of 404 2</td>
<td>112.4</td>
<td>100</td>
<td>14.1</td>
<td>+0.5</td>
<td></td>
</tr>
<tr>
<td>mwl-S612-009</td>
<td>251 SSE of 402 7</td>
<td>112.4</td>
<td>94.4</td>
<td>13.6</td>
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</tr>
<tr>
<td>mwl-S612-010</td>
<td>201 E of 401 4</td>
<td>110.4</td>
<td>92.8</td>
<td>11.9</td>
<td>-0.1</td>
<td></td>
</tr>
</tbody>
</table>

---

**NOTES:**

CQA Inspector Signature: [Signature]  
CQA Engineer Signature: [Signature]
**TESTING INSPECTION FORM**

**MOISTURE/DENSITY FIELD TEST RESULTS FORM**

---

**Project Name:**

**Date:** 12/3/06  **Time:** 10:00  **Weather:** Clear, Warm

**Stockpile Area:** 2" minus subgrade

**Borrow Area:** 2" minus subgrade

**Type of Construction:** Subgrade

(landfill surface and perimeter, subgrade, native soil layer, topsoil layer)

**Maximum Dry Density (pcf):** 115.9

**Optimum Moisture:** 12.2

---

**Approximate Location**

<table>
<thead>
<tr>
<th>Test Number</th>
<th>North</th>
<th>East</th>
<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mwl-56a-011</td>
<td>20 W of 8</td>
<td>416</td>
<td>114.8</td>
<td>99.1</td>
<td>10.8</td>
<td>-1.4</td>
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</tr>
<tr>
<td>mwl-56a-012</td>
<td>25 W of 8</td>
<td>4025</td>
<td>113.1</td>
<td>97.6</td>
<td>12.1</td>
<td>-0.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**NOTES:**

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
TI-07
TESTING INSPECTION FORM
MOISTURE/DENSITY FIELD TEST RESULTS FORM

LOCATION SKETCH

Project Name: [Name]
Date: 12/15/06 Time: 10:00 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): 115.9 (Proctor 022), 117.9 (Proctor 023)
Optimum Moisture: 12% (Proctor 022), 12.1 (Proctor 023)

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mul-022-013</td>
<td>20' SW of 4010</td>
<td>112.3</td>
<td>96.9</td>
<td>12.3</td>
<td>+0.1</td>
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</tr>
<tr>
<td>mul-023-014</td>
<td>15' SW of 41024</td>
<td>113.2</td>
<td>96.0</td>
<td>13.7</td>
<td>+1.6</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

CQA Inspector Signature /Signature/ CQA Engineer Signature /Signature/
# TESTING INSPECTION FORM

## MOISTURE/DENSITY FIELD TEST RESULTS FORM

**Project Name:** MUL Case CAA

**Date:** 12/18/06  **Time:** 10:00  **Weather:** overcast, cold, windy

**Stockpile Area:** MUL-56-02

**Borrow Area:** West of CAA

**Type of Construction:** Subgrade

(Landfill surface and perimeter, subgrade, native soil layer, topsoil layer)

**Maximum Dry Density (pcf):** 117.9

**Optimum Moisture:** 12.1

### Test Number

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUL-56-02-015</td>
<td>15° 35.960' 61° 09.44'</td>
<td>108.7</td>
<td>92.2</td>
<td>14.0</td>
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<tr>
<td>MUL-56-02-016</td>
<td>20° 35.960' 61° 10.00'</td>
<td>111.1</td>
<td>94.2</td>
<td>13.1</td>
<td>+1.0</td>
<td></td>
</tr>
</tbody>
</table>

### NOTES:

CQA Inspector Signature: [Signature]

CQA Engineer Signature: [Signature]
2009 Testing Inspection Forms
TI-02
TESTING INSPECTION FORM
SUBGRADE FILL FIELD TEST FORM

Project Name: Sanford Medical Waste LF
Date: 5/22/09
Time: 8:30 AM

Lift Number: 80
Inspected by: Paul Mathers

Borrow Area: 80
Weather: Cloudy

Compaction Equipment: Vibrating Roller

Soil Description: Existing Subgrade of 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.)

Have in situ soil nuclear density and moisture content tests been performed at the frequency required? YES/NO

Have field density test locations and elevations been plotted and checked? YES

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"? NO

Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped? YES

YES/NO

NOTE NO.

NOTES:
- Additional test data, record survey data will be included when received.
- All Tests, Density and Moisture content meet specification required.

Approves: Donald T. Coger PE, CQA Engineer
May 22, 2009

AL10-05WP/SNL05c5729-b.dod037
date: 840857 04:25 10/27/06 1:09 PM
Project Name: Sandia Mixed Waste Landfill  
Lift Number: 6:1 Slopes Lift 1 & 2  
Borrow Area: Native Soil Borrow Area  
Weather: 3:00 PM (86 deg): Clear Sky  
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:

Date: 06/16/2009  
Inspected By: Paul Molina  
Max Dry Density (pcf) 120.1  
Optimum Moisture (%) 11.6

(Provide explanatory notes if the answer to any of the following questions is "no," include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
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</tr>
<tr>
<td>YES</td>
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<tr>
<td>YES</td>
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<td></td>
</tr>
</tbody>
</table>

NOTES:

[Signature] 06/16/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: 6:1 Slopes Lift 1, 2, 3, & 4
Borrow Area: Native Soil Borrow Area
Weather: 3:20 PM (86 deg); Clear Sky

Date: 06/17/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 120.1
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
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</tr>
<tr>
<td>YES</td>
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<tr>
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<tr>
<td>YES</td>
<td></td>
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<td>YES</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

[Signed Ti L] P.R. 06/17/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: 6:1 Slopes Lifts # 5, 6, 7, & 8
Borrow Area: Native Soil Borrow Area
Weather: 10:09 am PM (78 deg). Clear Sky

Date: 06/18/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 120.1
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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 &quot;Moisture/Density Field Test Results Form&quot;?</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped?</td>
<td>YES</td>
</tr>
<tr>
<td>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature] 06/18/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Wedge Lifts #1 & #2
Borrow Area: Native Soil Borrow Area
Weather: 2:10 PM (85 deg); Clear Sky

Date: 06/19/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 115.8
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Have in situ soil nuclear density and moisture content tests been performed at the frequency required? YES

Have field density test locations and elevations been plotted and checked? YES

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"? YES

Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped? YES

Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted? YES

NOTES:

[Handwritten signature]

Paul T. [Signature] PE. 06/19/2009
Project Name: Sandia Mixed Waste Landfill
Lift Number: NA
Borrow Area: Native Soil Borrow Area
Weather: 7:38 AM (72 deg); Partly Cloudy

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

Date: 06/22/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 115.8
Optimum Moisture (%) 12.3

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>

Have in situ soil nuclear density and moisture content tests been performed at the frequency required?  
YES  

Have field density test locations and elevations been plotted and checked?  
YES  

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”?  
YES  

Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?  
YES  

Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?  
YES  

NOTES:

[Signature] 06/22/2009
**TI-03**
**TESTING INSPECTION FORM**
**NATIVE SOIL LAYER FIELD FORM**

**Project Name:** Sandia Mixed Waste Landfill

**Lift Number:** Native Soil Lift #3

**Borrow Area:** Native Soil Borrow Area

**Weather:** 1:21 PM (72 deg); Cloudy

**Date:** 06/23/2009

**Inspected By:** Paul Molina

**Max Dry Density (pcf):** 115.8

**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. **1208 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
</table>

| Have in situ soil nuclear density and moisture content tests been performed at the frequency required? | YES |

| Have field density test locations and elevations been plotted and checked? | YES |

| Have the results of 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”? | YES |

| Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped? | YES |

| Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted? | YES |

---

**NOTES:**

\[Signature\] 06/23/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #3 & 4
Borrow Area: Native Soil Borrow Area
Weather: 3:30 PM (87 deg); Partly Cloudy

Date: 06/24/2009
Inspected By: Paul Moline
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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 &quot;Moisture/Density Field Test Results Form&quot;</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>YES</td>
</tr>
<tr>
<td>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature] PE 06/24/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #4
Borrow Area: Native Soil Borrow Area
Weather: 12:45 PM (82 deg): Partly Cloudy

Date: 06/25/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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”</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>YES</td>
</tr>
<tr>
<td>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

Daniel Ti 06/25/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #4
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (78 deg); Partly Cloudy

Date: 06/26/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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 &quot;Moisture/Density Field Test Results Form&quot;?</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped?</td>
<td>YES</td>
</tr>
<tr>
<td>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature] PE 06/26/2001
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #4
Borrow Area: Native Soil Borrow Area
Weather: 7:34 (61 deg); Partly Cloudy

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

Date: 06/29/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
Optimum Moisture (%) 12.0

(Provide explanatory notes if the answer to any of the following questions is “no.” Include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Have in situ soil nuclear density and moisture content tests been performed at the frequency required?    YES

Have field density test locations and elevations been plotted and checked?    YES

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”?    YES

Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?    YES

Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?    YES

NOTES:

No soil has been placed today

[Signature]
06/29/2009
Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (86 deg); Partly Cloudy

Date: 06/30/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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. 758 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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”?</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>YES</td>
</tr>
<tr>
<td>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:
Bobbi L. 06/30/2009
<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</strong></td>
<td><strong>YES</strong></td>
</tr>
<tr>
<td><strong>Have field density test locations and elevations been plotted and checked?</strong></td>
<td><strong>YES</strong></td>
</tr>
<tr>
<td><strong>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 &quot;Moisture/Density Field Test Results Form&quot;?</strong></td>
<td><strong>YES</strong></td>
</tr>
<tr>
<td><strong>Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped?</strong></td>
<td><strong>YES</strong></td>
</tr>
<tr>
<td><strong>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</strong></td>
<td><strong>YES</strong></td>
</tr>
</tbody>
</table>

**NOTES:**

[Signature] 07/01/2009
**TI-03**
**TESTING INSPECTION FORM**
**NATIVE SOIL LAYER FIELD FORM**

Project Name: Sandia Mixed Waste Landfill

Lift Number: Native Soil Lift #5

Borrow Area: Native Soil Borrow Area

Weather: 9:38 AM (74 deg): Partly Cloudy

Date: 07/02/2009

Inspected By: Paul Molina

Max Dry Density (pcf) 117.0

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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>

Have in situ soil nuclear density and moisture content tests been performed at the frequency required?  

YES

Have field density test locations and elevations been plotted and checked?  

YES

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”?  

YES

Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?  

YES

Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?  

YES

---

**NOTES:**

[Signature]

Candela Tielli PE 07/02/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: NA

Date: 07/03/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAVE IN SITU SOIL NUCLEAR DENSITY AND MOISTURE CONTENT TESTS BEEN PERFORMED AT THE FREQUENCY REQUIRED?</td>
<td>YES</td>
</tr>
<tr>
<td>HAVE FIELD DENSITY TEST LOCATIONS AND ELEVATIONS BEEN PLOTTED AND CHECKED?</td>
<td>YES</td>
</tr>
<tr>
<td>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 &quot;MOISTURE/DENSITY FIELD TEST RESULTS FORM?&quot;</td>
<td>YES</td>
</tr>
<tr>
<td>HAVE ALL HOLES FROM THE SOIL NUCLEAR DENSITY TESTS BEEN BACKFILLED WITH LIKE MATERIAL AND HAND-TAMPED?</td>
<td>YES</td>
</tr>
<tr>
<td>HAVE THE LABORATORY HYDRAULIC CONDUCTIVITY TESTS BEEN PERFORMED AT THE SPECIFIED FREQUENCY AND THE LOCATIONS PLOTTED?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature]
PE 07/03/2009
Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 2:34 PM (86 deg); Partly Cloudy

Date: 07/06/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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?”</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>YES</td>
</tr>
<tr>
<td>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

Baukert Tri PE 07/06/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Lancfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 4:30 PM (91 deg); Partly Cloudy

Date: 07/07/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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. 758 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4.) Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>(4.) Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>(4.) 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 &quot;Moisture/Density Field Test Results Form&quot;?</td>
<td>YES</td>
</tr>
<tr>
<td>(4.) Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>YES</td>
</tr>
<tr>
<td>(4.) Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Handwritten Notes]

Candela Ti PE 01/07/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sanchia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 4:00 PM (92 deg); Partly Cloudy

Date: 07/08/2009
Inspecteda: Paul Molina
Max Dry Density (pcf) 117.0
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?  YES

Have field density test locations and elevations been plotted and checked?  YES

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”?  YES

Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped?  YES

Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?  YES

NOTES:

[Signature] 07/08/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (91 deg); Partly Cloudy

Date: 07/09/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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 &quot;Moisture/Density Field Test Results Form&quot;?</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>YES</td>
</tr>
<tr>
<td>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature] PE, 07/09/2009
Project Name: Sandia Mixed Waste Landfill  
Lift Number: Native Soil Lift #5  
Borrow Area: Native Soil Borrow Area  
Weather: 3:00 PM (90 deg); Partly Cloudy  

Date: 07/10/2009  
Inspected By: Paul Molina  
Max Dry Density (pcf) 117.0  
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Have in situ soil nuclear density and moisture content tests been performed at the frequency required?  
YES

Have field density test locations and elevations been plotted and checked?  
YES

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”?  
YES

Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped?  
YES

Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?  
YES

NOTES:

[Signature] 07/10/2009
## TI-03
### TESTING INSPECTION FORM
#### NATIVE SOIL LAYER FIELD FORM

**Project Name:** Sandia Mixed Waste Landfill  
**Lift Number:** Native Soil Lift #5  
**Borrow Area:** Native Soil Borrow Area  
**Weather:** 3:58 PM (96 deg); Clear Sky  
**Date:** 07/13/2009  
**Inspected By:** Paul Molina  
**Max Dry Density (pcf):** 117.0  
**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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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”?</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>YES</td>
</tr>
<tr>
<td>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</td>
<td>YES</td>
</tr>
</tbody>
</table>

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**NOTES:**

[Signature]  
07/13/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #6
Borrow Area: Native Soil Borrow Area
Weather: 7:13 AM (74 deg); Clear Sky

Date: 07/14/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>________</td>
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<tr>
<td>YES</td>
<td>________</td>
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<tr>
<td>YES</td>
<td>________</td>
</tr>
<tr>
<td>YES</td>
<td>________</td>
</tr>
</tbody>
</table>

Have in situ soil nuclear density and moisture content tests been performed at the frequency required?

Have field density test locations and elevations been plotted and checked?

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."

Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?

Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?

NOTES:

[Signature]
07/14/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #6
Borrow Area: Native Soil Borrow Area
Weather: 1:45 PM (93 deg); Partly Cloudy

Date: 07/15/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YES</strong></td>
<td></td>
</tr>
</tbody>
</table>

Have in situ soil nuclear density and moisture content tests been performed at the frequency required?

Have field density test locations and elevations been plotted and checked?

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?"

Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped?

Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?

**NOTES:**

[Bioletti] PE, 07/15/2009
**TI-03**  
**TESTING INSPECTION FORM**  
**NATIVE SOIL LAYER FIELD FORM**

Project Name: *Sandia Mixed Waste Landfill*  
Lift Number: *Native Soil Lift #6*  
Borrow Area: *Native Soil Borrow Area*  
Weather: *2:29 PM (93 deg); Cloudy*  

Date: **07/16/2009**  
Inspected By: **Paul Molina**  
Max Dry Density (pcf) **117.0**  
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td><strong>YES</strong></td>
</tr>
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<td>Have field density test locations and elevations been plotted and checked?</td>
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</tr>
<tr>
<td>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 &quot;Moisture/Density Field Test Results Form&quot;?</td>
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</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped?</td>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</td>
<td><strong>YES</strong></td>
</tr>
</tbody>
</table>

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**NOTES:**  

[Signature]  
*Sandel Ti, PE. 07/16/2009*
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #7
Borrow Area: Native Soil Borrow Area
Weather: 2:29 PM (93 deg): Partly Cloudy

Date: 07/17/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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. 826 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
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<tbody>
<tr>
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<td></td>
</tr>
</tbody>
</table>

NOTES:

Bob 
07/17/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #7
Borrow Area: Native Soil Borrow Area
Weather: 3:05 PM (78 deg); Partly Cloudy

Date: 07/20/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
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<td>YES</td>
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</tr>
</tbody>
</table>

NOTES:

Conahy P.E. 07/20/2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #7
Borrow Area: Native Soil Borrow Area
Weather: 4:28 PM (67 deg); Partly Cloudy

Date: 07/21/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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?  YES

Have field density test locations and elevations been plotted and checked?  YES

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"?  YES

Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped?  YES

Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?  YES

NOTES:

[Signature]  July 21, 2009
TI-03
TESTING INSPECTION FORM
NATIVE SOIL LAYER FIELD FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #8
Borrow Area: Native Soil Borrow Area
Weather: 4:02 PM (87 deg); Partly Cloudy

Date: 07/22/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
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<tbody>
<tr>
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</tbody>
</table>

Have in situ soil nuclear density and moisture content tests been performed at the frequency required? YES

Have field density test locations and elevations been plotted and checked? YES

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"? YES

Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped? YES

Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted? YES

NOTES:

[Signature]
2009
**Project Name:** Sandia Mixed Waste Landfill  
**Lift Number:** Native Soil Lift #8  
**Borrow Area:** Native Soil Borrow Area  
**Weather:** 3:00 PM (78 deg); Partly Cloudy  
**Date:** 07/23/2009  
**Inspected By:** Paul Molina  
**Max Dry Density (pcf):** 117.0  
**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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</strong></td>
<td>YES</td>
</tr>
<tr>
<td><strong>Have field density test locations and elevations been plotted and checked?</strong></td>
<td>YES</td>
</tr>
<tr>
<td><strong>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?”</strong></td>
<td>YES</td>
</tr>
<tr>
<td><strong>Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped?</strong></td>
<td>YES</td>
</tr>
<tr>
<td><strong>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</strong></td>
<td>YES</td>
</tr>
</tbody>
</table>

**NOTES:**

Oliver Ti, PE, 07/23/2009
Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #8
Borrow Area: Native Soil Borrow Area
Weather: 8:39 AM (69 deg): Clear Sky

Date: 07/24/2009
Inspected By: Paul Moline
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
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<tbody>
<tr>
<td>YES</td>
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<tr>
<td>YES</td>
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<tr>
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<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>YES</td>
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</tr>
</tbody>
</table>

Have in situ soil nuclear density and moisture content tests been performed at the frequency required?

Have field density test locations and elevations been plotted and checked?

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?”

Have all holes from the soil nuclear density tests been backfield with like material and hand-tamped?

Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?

NOTES:

[Signature]
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

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(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have in situ soil nuclear density and moisture content tests been performed at the frequency required?</td>
<td>YES</td>
</tr>
<tr>
<td>Have field density test locations and elevations been plotted and checked?</td>
<td>YES</td>
</tr>
<tr>
<td>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 &quot;Moisture/Density Field Test Results Form&quot;?</td>
<td>YES</td>
</tr>
<tr>
<td>Have all holes from the soil nuclear density tests been backfilled with like material and hand-tamped?</td>
<td>YES</td>
</tr>
<tr>
<td>Have the laboratory hydraulic conductivity tests been performed at the specified frequency and the locations plotted?</td>
<td>YES</td>
</tr>
</tbody>
</table>

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**NOTES:**

[Signature] 07/27/2007
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill  
Lift Number: 6:1 Slopes Lift 1 & 2  
Borrow Area: Native Soil Borrow Area  
Time/Weather: 3:00 PM (86 deg); Clear Sky  
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:

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?</td>
<td>YES</td>
</tr>
<tr>
<td>Has gradation been performed in accordance with ASTM C136?</td>
<td>YES</td>
</tr>
<tr>
<td>Has classification been performed in accordance with ASTM D2487 and D4318?</td>
<td>YES</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

Candie Ti REI 06/16/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: 6:1 Slopes Lift 1, 2, 3, & 4
Borrow Area: Native Soil Borrow Area
Weather: 3:20 PM (86 deg); Clear Sky

Date: 06/17/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 120.1
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
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<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature] 06/17/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: 6:1 Slopes Lifts # 5, 6, 7, & 8
Borrow Area: Native Soil Borrow Area
Weather: 10:09 am. PM (76 deg); Clear Sky
Date: 06/18/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 120.1
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?</td>
<td>YES</td>
</tr>
<tr>
<td>Has gradation been performed in accordance with ASTM C136?</td>
<td>YES</td>
</tr>
<tr>
<td>Has classification been performed in accordance with ASTM D2487 and D4318?</td>
<td>YES</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature]
06/18/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Wedge Lifts #1 & #2
Borrow Area: Native Soil Borrow Area
Weather: 2:10 PM (85 deg); Clear Sky

Date: 06/19/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 115.8
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?</td>
<td>YES</td>
</tr>
<tr>
<td>Has gradation been performed in accordance with ASTM C136?</td>
<td>YES</td>
</tr>
<tr>
<td>Has classification been performed in accordance with ASTM D2487 and D4318?</td>
<td>YES</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature]
06/19/2009
Project Name: Sandia Mixed Waste Landfill

Lift Number: NA

Borrow Area: Native Soil Borrow Area

Weather: 7:38 AM (72 deg); Partly Cloudy

Date: 06/22/2009

Inspected By: Paul Molina

Max Dry Density (pcf) 115.8

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? YES

Has gradation been performed in accordance with ASTM C136? YES

Has classification been performed in accordance with ASTM D2487 and D4318? YES

Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure? YES

Do laboratory tests meet the construction specification? YES

NOTES:

[Handwritten note in the margin: Brandon Ti 06/22/2009]
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #3
Borrow Area: Native Soil Borrow Area
Weather: 1:21 PM (72 deg); Cloudy

Date: 06/23/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 115.8
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.)

<table>
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<tr>
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<tr>
<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?</td>
<td>YES</td>
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<tr>
<td>Has gradation been performed in accordance with ASTM C136?</td>
<td>YES</td>
</tr>
<tr>
<td>Has classification been performed in accordance with ASTM D2487 and D4318?</td>
<td>YES</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature] Pe 06/23/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #3 & 4
Borrow Area: Native Soil Borrow Area
Weather: 3:30 PM (87 deg); Partly Cloudy

Date: 06/24/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
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<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?</td>
<td>YES</td>
</tr>
<tr>
<td>Has gradation been performed in accordance with ASTM C136?</td>
<td>YES</td>
</tr>
<tr>
<td>Has classification been performed in accordance with ASTM D2487 and D4318?</td>
<td>YES</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature]
6/24/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #4
Borrow Area: Native Soil Borrow Area
Weather: 12:45 PM (32 deg); Partly Cloudy

Date: 06/25/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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?
YES

Has gradation been performed in accordance with ASTM C136?
YES

Has classification been performed in accordance with ASTM D2487 and D4318?
YES

Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?
YES

Do laboratory tests meet the construction specification?
YES

NOTES:

[Signature] 06/25/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #4
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (78 deg); Partly Cloudy
Date: 06/26/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
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<tr>
<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?</td>
<td>YES</td>
</tr>
<tr>
<td>Has gradation been performed in accordance with ASTM C139?</td>
<td>YES</td>
</tr>
<tr>
<td>Has classification been performed in accordance with ASTM D2487 and D4318?</td>
<td>YES</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
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NOTES:

[Signature] 06/26/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #4
Borrow Area: Native Soil Borrow Area
Weather: 7:34 (81 deg); Partly Cloudy

Date: 06/29/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

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<tr>
<td>Has gradation been performed in accordance with ASTM C136?</td>
<td>YES</td>
</tr>
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<td>YES</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

No soil has been placed today

[Signature] 06/29/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (86 deg): Partly Cloudy

Date: 06/30/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
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</tr>
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<tr>
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</table>

Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?  YES

Has gradation been performed in accordance with ASTM C136?  YES

Has classification been performed in accordance with ASTM D2487 and D4318?  YES

Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?  YES

Do laboratory tests meet the construction specification?  YES

NOTES:

[Signature]
PE 06/30/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 2:33 PM (88 deg); Partly Cloudy

Date: 07/01/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
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<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
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NOTES:

[Signature] 07/01/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 9:38 AM (74 deg); Partly Cloudy

Date: 07/02/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?</td>
<td>YES</td>
</tr>
<tr>
<td>Has gradation been performed in accordance with ASTM C136?</td>
<td>YES</td>
</tr>
<tr>
<td>Has classification been performed in accordance with ASTM D2487 and D4318?</td>
<td>YES</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature]
07/02/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: NA

Date: 07/03/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
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<td>Has gradation been performed in accordance with ASTM C136?</td>
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<tr>
<td>Has classification been performed in accordance with ASTM D2487 and D4318?</td>
<td>YES.</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES.</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES.</td>
</tr>
</tbody>
</table>

NOTES:

[Signature]
07/09/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 2:34 PM (66 deg); Partly Cloudy

Date: 07/06/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
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<tr>
<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?</td>
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<tr>
<td>Has gradation been performed in accordance with ASTM C136?</td>
<td>YES</td>
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<td>Has classification been performed in accordance with ASTM D2487 and D4318?</td>
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</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

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[Signature]
07/06/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 4:30 PM (91 deg); Partly Cloudy

Date: 07/07/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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) MVL Cover Native Soil Lift #5

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
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<tbody>
<tr>
<td></td>
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</tr>
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</table>

Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?

YES

Has gradation been performed in accordance with ASTM C136?

YES

Has classification been performed in accordance with ASTM D2487 and D4318?

YES

Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?

YES

Do laboratory tests meet the construction specification?

YES

NOTES:

[Signature]
07/07/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill  
Lift Number: Native Soil Lift #5  
Borrow Area: Native Soil Borrow Area  
Weather: 4:00 PM (92 deg); Partly Cloudy  

Date: 07/08/2009  
Inspected By: Paul Molina  
Max Dry Density (pcf) 117.0  
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.)

<table>
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<th>YES/NO</th>
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<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?</td>
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<td>Has gradation been performed in accordance with ASTM C136?</td>
<td>YES</td>
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<td>YES</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

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TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (91 deg); Partly Cloudy

Date: 07/09/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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?  YES

Has gradation been performed in accordance with ASTM C136?  YES

Has classification been performed in accordance with ASTM D2487 and D4318?  YES

Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?  YES

Do laboratory tests meet the construction specification?  YES

NOTES:

[Signature]  07/09/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 3:00 PM (90 deg); Partly Cloudy

Date: 07/10/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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?  
YES

Has gradation been performed in accordance with ASTM C136?  
YES

Has classification been performed in accordance with ASTM D2487 and D4318?  
YES

Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?  
YES

Do laboratory tests meet the construction specification?  
YES

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[Signature]
07/10/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #5
Borrow Area: Native Soil Borrow Area
Weather: 3:58 PM (96 deg); Clear Sky

Date: 07/13/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

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<td>Has gradation been performed in accordance with ASTM C136?</td>
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<td>YES</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

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[Signature] 07/13/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #6
Borrow Area: Native Soil Borrow Area
Weather: 7:13 AM (74 deg); Clear Sky

Date: 07/14/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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?  YES

Has gradation been performed in accordance with ASTM C136?  YES

Has classification been performed in accordance with ASTM D2487 and D4318?  YES

Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?  YES

Do laboratory tests meet the construction specification?  YES

NOTES:

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TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #6
Borrow Area: Native Soil Borrow Area
Weather: 1:45 PM (93 deg); Partly Cloudy

Date: 07/15/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
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<tr>
<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?</td>
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<td>YES</td>
</tr>
<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
</tbody>
</table>

Do laboratory tests meet the construction specification?

YES

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[Handwritten] 07/15/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #6
Borrow Area: Native Soil Borrow Area
Weather: 2:29 PM (93 deg); Cloudy

Date: 07/16/2009
Inspected By: Paul Moline
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
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<tbody>
<tr>
<td>Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?</td>
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<td>Has gradation been performed in accordance with ASTM C136?</td>
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<tr>
<td>Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature] RE, 07/16/2009
TI-05  
TESTING INSPECTION FORM  
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #7
Borrow Area: Native Soil Borrow Area
Weather: 2:29 PM (93 deg): Partly Cloudy

Date: 07/17/2009
Inspected By: Paul Molina
Max Dry Density (pcf): 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
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<tr>
<td>YES</td>
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NOTES:

[Signature]
07/17/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #7
Borrow Area: Native Soil Borrow Area
Weather: 3:05 PM (78 deg); Partly Cloudy

Date: 07/20/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
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<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
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</tbody>
</table>

NOTES:

[Signature]
07/20/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #7
Borrow Area: Native Soil Borrow Area
Weather: 4:28 PM (87 deg); Partly Cloudy

Date: 07/21/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
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</table>

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[Signature]
31/21/2009
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #8
Borrow Area: Native Soil Borrow Area
Weather: 4:02 PM (87 deg); Partly Cloudy

Date: 07/22/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
Optimum Moisture (%) 12.0

Compaction Equipment: Vibrating, Smooth Drum Roller.
Fill Description: Native Soil Located in TA-3 Borrow Area
Surfave 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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
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Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?  
YES

Has gradation been performed in accordance with ASTM C136?  
YES

Has classification been performed in accordance with ASTM D2487 and D4318?  
YES

Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?  
YES

Do laboratory tests meet the construction specification?  
YES

NOTES:

[Signature] 07/22/2007
**TI-05**

**TESTING INSPECTION FORM**

**NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM**

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**Project Name:** Sandia Mixed Waste Landfill  
**Lift Number:** Native Soil Lift #8  
**Borrow Area:** Native Soil Borrow Area  
**Weather:** 3:00 PM (78 deg); Partly Cloudy

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**Date:** 07/23/2009  
**Inspected By:** Paul Molina  
**Max Dry Density (pcf):** 117.0  
**Optimum Moisture (%):** 12.0

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**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

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(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

<table>
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<td>YES</td>
</tr>
<tr>
<td><strong>Do laboratory tests meet the construction specification?</strong></td>
<td>YES</td>
</tr>
</tbody>
</table>

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**NOTES:**

[Signature]

**07/23/2009**
TI-05
TESTING INSPECTION FORM
NATIVE SOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #8
Borrow Area: Native Soil Borrow Area
Weather: 8:39 AM (69 deg); Clear Sky

Date: 07/24/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
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<tr>
<td>Do laboratory tests meet the construction specification?</td>
<td>YES</td>
</tr>
</tbody>
</table>

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[Signature] PE 07/24/2009
Project Name: Sandia Mixed Waste Landfill
Lift Number: Native Soil Lift #8
Borrow Area: Native Soil Borrow Area
Weather: 1:00 PM (87 deg); Partly Cloudy

Date: 07/27/2009
Inspected By: Paul Molina
Max Dry Density (pcf) 117.0
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>______</td>
</tr>
</tbody>
</table>

Has the relationship between moisture content and density been analyzed by the Standard Proctor Test in accordance with ASTM D698?

Has gradation been performed in accordance with ASTM C136?

Has classification been performed in accordance with ASTM D2487 and D4318?

Has hydraulic conductivity testing been performed in accordance with ASTM rigid wall testing procedure?

Do laboratory tests meet the construction specification?

NOTES:

[Signature] 07/27/2009
**TI-06**
**TESTING INSPECTION FORM**
**TOPSOIL LAYER LABORATORY TEST VERIFICATION FORM**

Project Name: Sandia Mixed Waste Landfill  
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has gradation been performed in accordance with ASTM C136?</td>
<td>YES</td>
</tr>
<tr>
<td>Has classification been performed in accordance with ASTM D2487 and D4318?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specifications?</td>
<td>YES</td>
</tr>
</tbody>
</table>

**NOTES:**

[Signature]
08/03/2009
TI-06
TESTING INSPECTION FORM
TOPSOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Has gradation been performed in accordance with ASTM C136?

Has classification been performed in accordance with ASTM D2487 and D4318?

Do laboratory tests meet the construction specifications?

YES

NOTES:

[Signature]
8/4/2009
TI-06
TESTING INSPECTION FORM
TOPSOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
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.)

Has gradation been performed in accordance with ASTM C136? YES

Has classification been performed in accordance with ASTM D2487 and D4318? YES

Do laboratory tests meet the construction specifications? YES

NOTES:

[Signature]
P.E. 08/05/2009
TI-06
TESTING INSPECTION FORM
TOPSOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
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

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Provide explanatory notes if the answer to any of the following questions is "no." include any remedial steps required.)

Has gradation been performed in accordance with ASTM C136?
Has classification been performed in accordance with ASTM D2487 and D4318?
Do laboratory tests meet the construction specifications?

NOTES:

[Signature] 08/06/2009
TI-06
TESTING INSPECTION FORM
TOPSOIL LAYER LABORATORY TEST VERIFICATION FORM

Project Name: Sandia Mixed Waste Landfill
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.)

<table>
<thead>
<tr>
<th>YES/NO</th>
<th>NOTE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has gradation been performed in accordance with ASTM C136?</td>
<td>YES</td>
</tr>
<tr>
<td>Has classification been performed in accordance with ASTM D2487 and D4318?</td>
<td>YES</td>
</tr>
<tr>
<td>Do laboratory tests meet the construction specifications?</td>
<td>YES</td>
</tr>
</tbody>
</table>

NOTES:

[Signature]
C. T. 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)

<table>
<thead>
<tr>
<th>Test Number (Description/Location)</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URS Subgrade Surface</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Light Red Sandy</td>
</tr>
<tr>
<td>(Subgrade Surface/Grid Block 5)</td>
<td>1453083.9</td>
<td>411683.3</td>
<td>5381.0</td>
<td>98</td>
<td>10.6</td>
<td>+/- 2</td>
</tr>
<tr>
<td>URS Subgrade Surface</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Light Red Sandy</td>
</tr>
<tr>
<td>(Subgrade Surface/Grid Block 12)</td>
<td>1453088.0</td>
<td>411659.2</td>
<td>5385.8</td>
<td>97</td>
<td>11.0</td>
<td>+/- 2</td>
</tr>
<tr>
<td>URS Subgrade Surface</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Light Red Sandy</td>
</tr>
<tr>
<td>(Subgrade Surface/Grid Block 8)</td>
<td>1452939.2</td>
<td>411755.4</td>
<td>5364.1</td>
<td>99</td>
<td>10.0</td>
<td>+/- 2</td>
</tr>
<tr>
<td>URS Subgrade Surface</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Light Red Sandy</td>
</tr>
<tr>
<td>(Subgrade Surface/Grid Block 1)</td>
<td>1452723.0</td>
<td>411680.2</td>
<td>5361.7</td>
<td>98</td>
<td>10.0</td>
<td>+/- 2</td>
</tr>
</tbody>
</table>

**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 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)

<table>
<thead>
<tr>
<th>Test Number (Description/Location)</th>
<th>North</th>
<th>East</th>
<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URS Wedge Lift 1 (Native Soil Lift 1/Grid Block 8)</td>
<td>1452939.09</td>
<td>411789.54</td>
<td>5386.80</td>
<td>105.7</td>
<td>91</td>
<td>10.7</td>
<td>+/- 2</td>
<td>Clayey Silty Sand</td>
</tr>
<tr>
<td>URS Wedge Lift 1 (Native Soil Lift 1/Grid Block 11)</td>
<td>1452934.55</td>
<td>411879.23</td>
<td>5388.33</td>
<td>107.1</td>
<td>92</td>
<td>11.0</td>
<td>+/- 2</td>
<td>Clayey Silty Sand</td>
</tr>
<tr>
<td>URS East Slope Lift 6 (East Slope Lift 6/East Slope)</td>
<td>1453115.79</td>
<td>411912.68</td>
<td>5384.57</td>
<td>117.4</td>
<td>98</td>
<td>10.1</td>
<td>+/- 2</td>
<td>Light Red Sandy</td>
</tr>
<tr>
<td>URS East Slope Lift 5 (East Slope Lift 5/East Slope)</td>
<td>1453115.79</td>
<td>411912.68</td>
<td>5384.07</td>
<td>112.3</td>
<td>94</td>
<td>10.3</td>
<td>+/- 2</td>
<td>Light Red Sandy</td>
</tr>
<tr>
<td>URS West Slope Lift 5 (West Slope Lift 5/West Slope)</td>
<td>1452721.94</td>
<td>411574.36</td>
<td>5379.92</td>
<td>117.9</td>
<td>98</td>
<td>11.1</td>
<td>+/- 2</td>
<td>Light Red Sandy</td>
</tr>
<tr>
<td>URS West Slope Lift 5 (West Slope Lift 5/West Slope)</td>
<td>1452721.94</td>
<td>411574.36</td>
<td>5379.42</td>
<td>115.4</td>
<td>96</td>
<td>10.6</td>
<td>+/- 2</td>
<td>Light Red Sandy</td>
</tr>
<tr>
<td>URS Wedge Lift 2 (Native Soil Lift 2/Grid Block 11)</td>
<td>1452928.63</td>
<td>411961.93</td>
<td>5388.23</td>
<td>106.5</td>
<td>94</td>
<td>11.0</td>
<td>+/- 2</td>
<td>Clayey Silty Sand</td>
</tr>
<tr>
<td>URS North Slope Lift 8 (North Slope Lift 8/North Slope)</td>
<td>1453120.33</td>
<td>411778.76</td>
<td>5382.30</td>
<td>102.5</td>
<td>80</td>
<td>15.2</td>
<td>+/- 2</td>
<td>Clayey Silty Sand</td>
</tr>
<tr>
<td>URS North Slope Lift 7 (North Slope Lift 7/North Slope)</td>
<td>1453120.33</td>
<td>411778.76</td>
<td>5381.80</td>
<td>106.7</td>
<td>92</td>
<td>14.0</td>
<td>+/- 2</td>
<td>Clayey Silty Sand</td>
</tr>
</tbody>
</table>

**NOTES:**
###Project Name: SANDIA MIXED WASTE LANDFILL

Stockpile Area: BORROW AREA TA-3
Borrow Area: TA-3
Type of Construction: Moisture/Density Test Locations Side Slope Re-Test
Maximum Dry Density (pcf): 115.8
Optimum Moisture: 12.3
Date: 6/22/2009
Approximate Time: 10:00 am
Weather: 72 (F)

<table>
<thead>
<tr>
<th>Test Number (Description/Location)</th>
<th>Approximate Location</th>
<th>North</th>
<th>East</th>
<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (W/C %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URS North Slope Lift 8 Re-Test (North Slope Lift 6/Grid Block 13)</td>
<td>1453139.784 411825.3244</td>
<td>5382.30</td>
<td>105.6</td>
<td>91</td>
<td>10.9</td>
<td>+/ 2</td>
<td>Clayey Silty Sand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>URS North Slope Lift 8 Re-Test (North Slope Lift 6/Grid Block 10)</td>
<td>1453141.195 411775.7289</td>
<td>5381.31</td>
<td>105.9</td>
<td>92</td>
<td>10.5</td>
<td>+/ 2</td>
<td>Clayey Silty Sand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>URS North Slope Lift 8 Re-Test (North Slope Lift 8/Grid Block 5)</td>
<td>1453141.019 411626.7926</td>
<td>5378.87</td>
<td>106.0</td>
<td>92</td>
<td>11.0</td>
<td>+/ 2</td>
<td>Clayey Silty Sand</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

###NOTES:
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
Maximum Dry Density (pcf): 115.6
Optimum Moisture: 12.3
Date: 6/23/2009
Approximate Time: 10:00 AM
Weather: 72 (F)

<table>
<thead>
<tr>
<th>Test Number (Description/Location)</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URS NS Lift 3 (Native Soil Lift 3/Grid Block 2)</td>
<td>1452875.899 411618.4673 5383.34</td>
<td>115.6</td>
<td>97</td>
<td>10.8</td>
<td>+/- 2</td>
<td>Clayey Silty Sand</td>
</tr>
</tbody>
</table>

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
Maximum Dry Density (pcf): 117.0
Optimum Moisture: 12.0
Date: 8/24/2009
Approximate Time: 3:30 PM
Weather: 87°F

<table>
<thead>
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<th>Test Number (Description/Location)</th>
<th>North</th>
<th>East</th>
<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URS NS Lift 3 (Native Soil Lift 3/Grid Block 8)</td>
<td>1452990.737</td>
<td>411734.8062</td>
<td>5385.53</td>
<td>110.1</td>
<td>94</td>
<td>10.0</td>
<td>+/- 2</td>
<td>Silty Sand</td>
</tr>
</tbody>
</table>

**NOTES:**

**LOCATION SKETCH**

Figure 24
<table>
<thead>
<tr>
<th>Test Number</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>Percent Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URS NS Lift 3</td>
<td>(Native Soil Lift 3/Block 11)</td>
<td>1452961.18</td>
<td>411689.1</td>
<td>5388.37</td>
<td>114.4</td>
<td>98</td>
</tr>
<tr>
<td>URS NS Lift 4</td>
<td>(Native Soil Lift 4/Block 1)</td>
<td>1452711.66</td>
<td>411629.3</td>
<td>5383.83</td>
<td>117.7</td>
<td>100</td>
</tr>
<tr>
<td>URS NS Lift 4</td>
<td>(Native Soil Lift 4/Block 3)</td>
<td>1452947.35</td>
<td>411639.1</td>
<td>5383.88</td>
<td>110.9</td>
<td>95</td>
</tr>
<tr>
<td>URS NS Lift 4</td>
<td>(Native Soil Lift 4/Block 5)</td>
<td>1453124.35</td>
<td>411629.6</td>
<td>5380.70</td>
<td>111.6</td>
<td>95</td>
</tr>
<tr>
<td>URS NS Lift 4</td>
<td>(Native Soil Lift 4/Block 9)</td>
<td>1453056.44</td>
<td>411736.3</td>
<td>5384.69</td>
<td>115.0</td>
<td>98</td>
</tr>
<tr>
<td>URS NS Lift 4</td>
<td>(Native Soil Lift 4/Block 7)</td>
<td>1452841.98</td>
<td>411745.1</td>
<td>5385.81</td>
<td>111.9</td>
<td>96</td>
</tr>
</tbody>
</table>

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 4
Maximum Dry Density (pcf): 117.0
Optimum Moisture: 12.0
Date: 6/29/2009
Approximate time: 8:00 am
Weather: 61°F

<table>
<thead>
<tr>
<th>Test Number (Description/Location)</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URS NS Lift 4 (Native Soil Lift 4/Block 13)</td>
<td>1453083.953 411883.6456 5386.65</td>
<td>114.8</td>
<td>98</td>
<td>11.6</td>
<td>±2</td>
<td>Silty Sand</td>
</tr>
<tr>
<td>URS NS Lift 4 (Native Soil Lift 4/Block 11)</td>
<td>1452933.739 411835.6811 5387.97</td>
<td>113.0</td>
<td>97</td>
<td>10.1</td>
<td>±2</td>
<td>Silty Sand</td>
</tr>
</tbody>
</table>

**NOTES:**
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 5  
Maximum Dry Density (pcf): 117.0  
Optimum Moisture: 12.0  
Date: 7/1/2009  
Approximate Time: 8:30 am  
Weather: 67 (F)

<table>
<thead>
<tr>
<th>Test Number (Description/Location)</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URS NS Lift 5 (Native Soil Lift 5/ Grid Block 12)</td>
<td>1453028.304 411884.8002 5386.33</td>
<td>105.0</td>
<td>92</td>
<td>10.0</td>
<td>+/- 2</td>
<td>Silty Sand</td>
</tr>
</tbody>
</table>

**NOTES:**
## Project Information

**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 Lift 5  
**Maximum Dry Density (pcf):** 117.0  
**Optimum Moisture:** 12.0  
**Date:** 7/2/2009  
**Approximate Time:** 9:38 am  
**Weather:** 74 (F)

## Test Results Form

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Approximate Location</th>
<th>North</th>
<th>East</th>
<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
</table>
| URS NS Lift 5  
(Native Soil Lift 5/Grid Block 10) | 1453095.1  
411772.2522  
5385.29 | 109.9 | 94 | 12.3 | +/- 2 Silty Sand |
| URS NS Lift 5  
(Native Soil Lift 5/Grid Block 8) | 1452931.527  
411771.8425  
5387.37 | 109.0 | 93 | 12.8 | +/- 2 Silty Sand |
| URS NS Lift 5  
(Native Soil Lift 5/Grid Block 6) | 1452705.202  
411778.9914  
5386.45 | 113.2 | 97 | 13.6 | +/- 2 Silty Sand |

### Notes:

- [Link](file:///C:/Users/username/Documents/Project_Deliverables/MWIL_FINAL_REPORT/URS/092009_FINAL_REPORT_ATTACHMENT/Attachment_092009_Testing_Inspection_Forms/09/07_MOISTURE.xlt)
- [Timestamp](13/20/2009 8:56 AM)
**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 5  
**Maximum Dry Density (pcf):** 117.0  
**Optimum Moisture:** 12.0  
**Date:** 7/9/2009  
**Approximate Time:** 3:00 pm  
**Weather:** 91 (F)

<table>
<thead>
<tr>
<th>Test Number (Description/Location)</th>
<th>Approximate Location</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URS NS Lift 5 (Native Soil Lift 5/Grid Block 4)</td>
<td>145302.353 411690.4044 5385.02</td>
<td>117.0</td>
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<td>10.0</td>
<td>+/- 2</td>
<td>Silty Sand</td>
</tr>
<tr>
<td>URS NS Lift 5 (Native Soil Lift 5/Grid Block 2)</td>
<td>145280.212 411640.3927 5384.16</td>
<td>113.1</td>
<td>97</td>
<td>10.2</td>
<td>+/- 2</td>
<td>Silty Sand</td>
</tr>
</tbody>
</table>

**NOTES:**

---

**LOCATION SKETCH**  
**Figure 26**
Test Number: SANDIA MIXED WASTE LANDFILL
Stockpile Area: BORROW AREA TA-3
Borrow Area: TA-3
Type of Construction: Moisture/Density Test Locations Native Soil Lift 6
Maximum Dry Density (pcf): 117.0
Optimum Moisture: 12.0
Date: 7/14/2009
Approximate Time: 3:17 pm
Weather: 88 (F)

<table>
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<tr>
<th>Test Number</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URS NS Lift 6</td>
<td>1453106.092</td>
<td>116.3</td>
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<td>10.4</td>
<td>+/- 2</td>
</tr>
<tr>
<td>(Native Soil Lift 6/Grid Block 11)</td>
<td>411856.5263</td>
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<td>+/- 2</td>
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<td>411808.051</td>
<td>5388.39</td>
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<td>100</td>
<td>12.2</td>
</tr>
</tbody>
</table>

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 6
Maximum Dry Density (pcf): 117.0
Optimum Moisture: 12.0
Date: 7/17/2009
Approximate Time: 10:00 am
Weather: 79 (F)

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<th>Approximate Location</th>
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<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
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<tbody>
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<td>Silty Sand</td>
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<tr>
<td>(Native Soil Lift 6/Grid Block 8)</td>
<td>411717.2438</td>
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<td>URS NS Lift 6</td>
<td>1452762.578</td>
<td>5386.67</td>
<td>108.3</td>
<td>93</td>
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<td>Silty Sand</td>
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<td>(Native Soil Lift 6/Grid Block 6)</td>
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<td>(Native Soil Lift 6/Grid Block 2)</td>
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**NOTES:**
## 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 Lift 7  
**Maximum Dry Density (pcf):** 117.0  
**Optimum Moisture:** 12.0  
**Date:** 7/21/2009  
**Approximate Time:** 10:10 am  
**Weather:** 79 deg

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<th>Elevation</th>
<th>In Situ Dry Density (pcf)</th>
<th>Percent Compaction</th>
<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
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<tbody>
<tr>
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</tr>
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<td>12.8</td>
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<tr>
<td>URS NS Lift 7 (Native Soil Lift 7/Grid Block 9)</td>
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<td>URS NS Lift 7 (Native Soil Lift 7/Grid Block 7)</td>
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<td>12.4</td>
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</table>

**NOTES:**

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P:\98 Project Deliverables\09_FINAL REPORT\9/20/2009_FINAL REPORT ATTACHMENTS\Attachment 6/2009 Testing Inspection Form\TI-07 Moisture Density Testing Inspection Form\TI-07_MOISTURE.xls  
12/20/2009 2:52 AM
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 7
Maximum Dry Density (pcf): 117.0
Optimum Moisture: 12.0
Date: 7/22/2009
Approximate Time: 8:00 am
Weather: 71 (F)

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<th>Percent Compaction</th>
<th>In Situ Water Content (%WC)</th>
<th>Percent Water Content Variation</th>
<th>Soil Description</th>
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</thead>
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<tr>
<td>URS NS Lift 7 (Native Soil Lift 7/Grid Block 1)</td>
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NOTES:
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: 7/28/2008
Approximate Time: 1:00 pm
Weather: 93 (F)

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<th>In Situ Water Content (WC %)</th>
<th>Percent Water Content Variation</th>
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</tr>
</thead>
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<tr>
<td>URS NS Lift 8 (Native Soil lift 8/Grid Block 2)</td>
<td>411637.4463</td>
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<td>99</td>
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<td>+/- 2</td>
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<tr>
<td>URS NS Lift 8 (Native Soil lift 8/Grid Block 4)</td>
<td>411603.3962</td>
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NOTES:
ATTACHMENT 7

Laboratory and Field Test Results and Supporting Data
2006 Standard Proctor, Gradation, and Classification Tests
Sieve Analysis (ASTM C117/C136) Specifications

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<thead>
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<th>Sieve Size</th>
<th>Passing</th>
<th>Min</th>
<th>Max</th>
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<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2 in.</td>
<td>99%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/8 in.</td>
<td>99%</td>
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</tr>
<tr>
<td>#4</td>
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</tr>
<tr>
<td>#8</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td></td>
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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: 

HG

Distribution: Client: File: Supplier: Other: Addresssee (2) Cory Woods / MKM Engineering (1)
Sieve Analysis (ASTM C117/C138)

<table>
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Moisture Density Relationship: \( \text{ASTM D698} \)  Method: A

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<tr>
<td>Optimum Moisture</td>
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<td>13.2</td>
<td></td>
</tr>
</tbody>
</table>

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: ah

Distribution: Client: ✔  File: ✔  Supplier: ✔  Other:  Addresssee (2)  Coy Woods / MGM Engineering (1)

AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 5058211901
Fax 5058217371  www.amec.com
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
Sieve Analysis (ASTM C117/C136)

<table>
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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: [Signature]

Distribution: Client: File: Supplier: Other: Address (2)
Email: Cory Woods / MKM Engineering (1)
Moisture Density Relationship: (ASTM D598) 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 (ASTD D2487) SC

Reviewed By: [Signature]

Distribution: Client: ✔ File: ✔ Supplier: ✔ Other: Addresses (2)

Cory Woods/MKM Engineering (1)
**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
Sieve Analysis (ASTM C117/C136)

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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: Addresssee (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-

Attn: Don Lopez

Project Name: Mixed Waste Landfill Cover
KAFB
Albuquerque, NM

Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

<table>
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<tr>
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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
Preperation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By: HG

Distribution: Client: ✓ File: ✓ Supplier: ✓ Other: Addressee (2)
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

**Attn:** Don Lopez

**Project Name:** Mixed Waste Landfill Cover  
KAFB  
Albuquerque, NM

**Project Manager:** Robert Romero

---

**SOILS / AGGREGATES**

**Sieve Analysis**  
(ASTM C117/C136)

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**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)

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**Preparation Method:** Dry  
Liquid Limit Method: A

**Soil Classification**  
(ASTM D2487)  
SC-SM

---

Reviewed By: [Signature]

**Distribution:**  
Client:  
File:  
Supplier:  
Other:  
Addresssee (2)  
Cory Woods / MKM Engineering (1)

---

AMEC Earth Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 5058211801  
Fax 5058217371  
www.amec.com
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

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
Client: URS
6501 Americas Pkwy. NE, Suite 900
Albuquerque, NM 87110-

Attn: Don Lopez

Project Name: Mixed Waste Landfill Cover
KAFB
Albuquerque, NM

Project Manager: Robert Romero

SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

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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: [Signature]

Distribution: Client: ✅ File: ✅ Supplier: ✅ Other: [Addressed (2)]
Cory Woods / MKM Engineering (1)
### Sieve Analysis

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**ASTM C117/C136**

**Method:** A

**Preparation Method:** Dry

**Rammer Type:** Mechanical

**Specific Gravity:** Assumed 2.651

**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**

**Classification:** SM
SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

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Plasticity Index (ASTM D4318)

- Liquid Limit: NV
- Plastic Limit: NV
- Plasticity Index: NP

Preparation Method: Dry

Soil Classification (ASTM D2487) SM

Distribution: Client: File: Supplier: Other: Addressee (2)

AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 5058211801
Fax 50582117371

www.amec.com
SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

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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: 

Distribution: 
Client: ✔ File: ✔ Supplier: ✔ Other: 
Addressee (2) 
Cory Woods / MKM Engineering (1)
SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

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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
Moisture Density Relationship:  (ASTM D698)  Method: A
Preparation Method: Dry  Rammer Type: Mechanical
Specific Gravity:  2.625  Assumed
Maximum Density:  116.4
Optimum Moisture:  13.2
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

Distribution:  Client:  File:  Supplier:  Other:  Addressee (2)  Cory Woods / MKM Engineering (1)
Report Date: November 28, 2006

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)

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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
Prepation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SC-SM

Reviewed By

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
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]

Distribution: Client: ✔ File: ✔ Supplier: ✔ Other: Addresssee (2)
Cory Woods / MKM Engineering (1)
**Client:** URS  
**Address:** 5501 Americas Pkwy, NE, Suite 900  
**City:** Albuquerque  
**State:** NM  
**Zip:** 87110-

**Attn:** Don Lopez  
**Project Name:** Mixed Waste Landfill Cover  
**Location:** KAFB  
**City:** Albuquerque  
**State:** NM

**Project Manager:** Robert Romero

---

**SOILS / AGGREGATES**

**Sieve Analysis** (ASTM C117/C136)  
**Specifications**

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**Moisture Density Relationship:** (ASTM D698)  
**Method:** B  
**Preparation Method:** Dry  
**Rammer Type:** Mechanical  
**Specific Gravity:** 2.501  
**Assumed**

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**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**

---

**Distribution:**  
**Client:** ✔  
**File:** ✔  
**Supplier:** ✔  
**Other:**  
- **Addressee:** (2)  
- **Cory Woods / MKM Engineering:** (1)

---

AMEC Earth Environmental, Inc.  
**Address:** 8519 Jefferson NE  
**City:** Albuquerque  
**State:** NM  
**Zip:** 87113  
**Tel:** 5058211801  
**Fax:** 5058217371  
www.amec.com
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

Sieve Analysis (ASTM C117/C136) Specifications

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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
Sieve Analysis (ASTM C117/C136)

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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]

Distribution: Client: File: Supplier: Other: Address: (2)
Email: Cory Woods / MKM Engineering (1)
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

Distribution:
Client: ✓ File: ✓ Supplier: ✓ Other: Addressee (2)
Email: [Box checked]

Reviewed By: [Signature]

AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 505-821-1801
Fax 505-821-3731
www.amec.com
### Sieve Analysis (ASTM C117/C136)

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### 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)

- **Classification:** SM

---

**Distribution:**
- **Client:** ✓
- **File:** ✓
- **Supplier:** ✓
- **Other:** Addresssee (2)
  - Cory Woods / MKM Engineering (1)
SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

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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

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

Reviewed By: HG

Distribution: Client: ✓  File: ✓  Supplier: ✓  Other: Address (2)
Cory Woods / MKM Engineering (1)
SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

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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: AH

Distribution: Client: File: Supplier: Other: Addressee (2) Cory Woods / MKM Engineering (1)

AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 5058211801
Fax 5058217371
www.amec.com
SOILS / AGGREGATES

Sieve Analysis (ASTM C117/C136)

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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: AH

Distribution: Client: File: Supplier: Other: 2
Addressee (2) Cury Woods / MKM Engineering (1)

AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 5058211801
Fax 5058217371  www.amec.com
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)
Cory Woods / MKM Engineering (1)

AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 5058211801
Fax 5058217371

www.amec.com
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-002

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

Sieve Analysis (ASTM C117/C136)

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<td>1/2 in.</td>
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<tr>
<td>3/8 in.</td>
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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
Sieve Analysis (ASTM C117/C136)

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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 D4316)
- Liquid Limit: NV
- Plastic Limit: NV
- Plasticity Index: NP
Preperaation Method: Dry Liquid Limit Method: A

Soil Classification (ASTM D2487) SM
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
2006 Density and Moisture Tests
### Field Density Test Using Nuclear Density Gauge (ASTM D6938-08)

**Moisture Density Curves Used**

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<th>Maximum Density</th>
<th>Optimum Moisture</th>
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**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 30282

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<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (L)</th>
<th>% Moisture Required (T)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
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<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
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<td>B</td>
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<tr>
<td>11-1</td>
<td>200' N &amp; 5' E From SW Corner W Perimeter of Unclassified Area (MWL-ES1-011)</td>
<td></td>
<td>FSG</td>
<td>B</td>
<td>8.4</td>
<td>2</td>
<td>2</td>
<td>116.8</td>
<td>107.7</td>
<td>115.5</td>
<td>93</td>
<td>90</td>
</tr>
</tbody>
</table>

BTB=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.
<table>
<thead>
<tr>
<th>Test #</th>
<th>Location Description</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (-) (+)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Comp. Required Min Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-1</td>
<td>130' N &amp; 25' E From SW Corner of Unclassified Area (MWL-ES1-012)</td>
<td></td>
<td>FSG</td>
<td>B</td>
<td>8.1 2 2</td>
<td>126.8</td>
<td>117.3</td>
<td>115.5</td>
<td>100+ 90</td>
</tr>
<tr>
<td>13-1</td>
<td>130' N &amp; 50' W From SE Corner of Unclassified Area (MWL-ES1-013)</td>
<td></td>
<td>FSG</td>
<td>B</td>
<td>8.8 2 2</td>
<td>124.3</td>
<td>114.2</td>
<td>115.5</td>
<td>99 90</td>
</tr>
<tr>
<td>14-1</td>
<td>75' N &amp; 40' W From SE Corner of Unclassified Area (MWL-ES1-014)</td>
<td></td>
<td>FSG</td>
<td>B</td>
<td>8.8 2 2</td>
<td>119.8</td>
<td>110.2</td>
<td>115.5</td>
<td>95 90</td>
</tr>
<tr>
<td>15-1</td>
<td>75' N &amp; 40' E From SW Corner of Unclassified Area (MWL-ES1-015)</td>
<td></td>
<td>FSG</td>
<td>B</td>
<td>11.9 2 2</td>
<td>122.8</td>
<td>109.8</td>
<td>115.5</td>
<td>95 90</td>
</tr>
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</table>

Reviewed By: [Signature]

SC

Distribution:  
- Client: ✔  
- File: ✔  
- Supplier: ✔  
- Other: Addressee (2)  
- 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.
### Field Density Test Using Nuclear Density Gauge (ASTM D6938-08)

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1444-01</td>
<td>113.2</td>
<td>10.9</td>
<td>ASTM D698-07 / A</td>
<td></td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>Trench C, 100' S of N Edge (MWL-SG1-001)</td>
<td>1ST LIFT</td>
<td>B</td>
<td>0</td>
<td>9.1</td>
<td>2</td>
<td>2</td>
<td>123.5</td>
<td>113.2</td>
<td>113.2</td>
</tr>
<tr>
<td>02-1</td>
<td>Trench B, 110' S of N Edge (MWL-SG1-002)</td>
<td>1ST LIFT</td>
<td>B</td>
<td>0</td>
<td>9.8</td>
<td>2</td>
<td>2</td>
<td>123.9</td>
<td>112.8</td>
<td>113.2</td>
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<tr>
<td>03-1</td>
<td>Trench C, N End (MWL-SG2-001)</td>
<td>2ND LIFT</td>
<td>B</td>
<td>0</td>
<td>11.1</td>
<td>2</td>
<td>2</td>
<td>122.9</td>
<td>110.6</td>
<td>113.2</td>
</tr>
<tr>
<td>04-1</td>
<td>Trench C, S End (MWL-SG2-002)</td>
<td>2ND LIFT</td>
<td>B</td>
<td>0</td>
<td>10.6</td>
<td>2</td>
<td>2</td>
<td>125.0</td>
<td>113.0</td>
<td>113.2</td>
</tr>
<tr>
<td>05-1</td>
<td>Trench B, N End (MWL-SG4-001)</td>
<td>2ND LIFT</td>
<td>B</td>
<td>0</td>
<td>10.7</td>
<td>2</td>
<td>2</td>
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<td>106.2</td>
<td>113.2</td>
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<tr>
<td>06-1</td>
<td>Trench B, S End (MWL-SG4-002)</td>
<td>2ND LIFT</td>
<td>B</td>
<td>0</td>
<td>10.5</td>
<td>2</td>
<td>2</td>
<td>118.0</td>
<td>106.8</td>
<td>113.2</td>
</tr>
<tr>
<td>07-1</td>
<td>Trench B, S End (MWL-SG3-001)</td>
<td>3RD LIFT</td>
<td>B</td>
<td>0</td>
<td>10.0</td>
<td>2</td>
<td>2</td>
<td>117.0</td>
<td>106.4</td>
<td>113.2</td>
</tr>
<tr>
<td>08-1</td>
<td>Trench B, N End (MWL-SG3-002)</td>
<td>3RD LIFT</td>
<td>B</td>
<td>0</td>
<td>10.6</td>
<td>2</td>
<td>2</td>
<td>116.5</td>
<td>105.3</td>
<td>113.2</td>
</tr>
<tr>
<td>09-1</td>
<td>Trench A, N End (MWL-SG3-003)</td>
<td>1ST LIFT</td>
<td>B</td>
<td>0</td>
<td>10.0</td>
<td>2</td>
<td>2</td>
<td>124.3</td>
<td>113.0</td>
<td>113.2</td>
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<tr>
<td>10-1</td>
<td>Trench C, N End (MWL-SG3-004)</td>
<td>3RD LIFT</td>
<td>B</td>
<td>0</td>
<td>10.7</td>
<td>2</td>
<td>2</td>
<td>121.3</td>
<td>109.6</td>
<td>113.2</td>
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<tr>
<td>11-1</td>
<td>Trench C, S End (MWL-SG3-005)</td>
<td>3RD LIFT</td>
<td>B</td>
<td>0</td>
<td>9.0</td>
<td>2</td>
<td>2</td>
<td>123.4</td>
<td>113.2</td>
<td>113.2</td>
</tr>
</tbody>
</table>

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
<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (±)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min Max</th>
</tr>
</thead>
</table>

Reviewed By: [Signature]

SC

Distribution:  
Client: ✔  File: ✔  Supplier: ✔  Other: Addresssee (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
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1444-01</td>
<td>113.2</td>
<td>10.9</td>
<td>ASTM D698-07 / A</td>
<td></td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required</th>
<th>% Compaction Min</th>
<th>% Compaction Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>Trench B, N End (MWL-SG5-001)</td>
<td>10.2</td>
<td>B</td>
<td>0</td>
<td>119.9</td>
<td>108.8</td>
<td>113.2</td>
<td>96</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02-1</td>
<td>Trench C, S End (MWL-SG4-003)</td>
<td>11.1</td>
<td>B</td>
<td>0</td>
<td>114.4</td>
<td>103.0</td>
<td>113.2</td>
<td>91</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03-1</td>
<td>Trench C, N End (MWL-SG4-004)</td>
<td>9.6</td>
<td>B</td>
<td>0</td>
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<td>111.5</td>
<td>113.2</td>
<td>98</td>
<td>90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reviewed By: SC

**Distribution:**
- Client: ✔️ File: ✔️ Supplier: ✔️ Other: Addresssee (2) Cory Woods / MKM Engineering (1)

---

**Notes:**
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- 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

1 of 1
**Client:** URS  
6501 Americas Pkwy, NE, Suite 900  
Albuquerque, NM 87110-

**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)**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density (pcf)</th>
<th>Optimum Moisture (%)</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>6-1444-01</td>
<td>113.2</td>
<td>10.9</td>
<td>ASTM D6988-07 / A</td>
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</tr>
</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler  
- **Model #:** 3430  
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>% Moisture Required</th>
<th>Test Depth (in)</th>
<th>% Compaction Required</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>00-1</td>
<td>Trench C, N End (MWL-SG4-005)</td>
<td>0</td>
<td>B</td>
<td>0</td>
<td>8.9</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>00-2</td>
<td>Trench C, S End (MWL-SG6-001)</td>
<td>0</td>
<td>B</td>
<td>0</td>
<td>9.2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>00-3</td>
<td>Trench N, N End (MWL-SG6-002)</td>
<td>0</td>
<td>B</td>
<td>0</td>
<td>11.0</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>00-4</td>
<td>Trench B, S End (MWL-SG6-003)</td>
<td>0</td>
<td>B</td>
<td>0</td>
<td>12.1</td>
<td>2</td>
<td>2</td>
<td>2</td>
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</tbody>
</table>

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**Reviewed By:**  

**Distribution:**  
- Client: ☑  
- File: ☑  
- Supplier: ☑  
- Other: Addresssee (2)  
- 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

---

AMEC Earth, Environmental, Inc. 
6519 Jefferson NE  
Albuquerque, NM 87110  
Tel 505-821-1801  
Fax 505-821-3711  
www.amec.com
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1624</td>
<td>113.3</td>
<td>13.2</td>
<td>ASTM D698-07 / a</td>
<td>Light Brown</td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location Description</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>4008 15' Northeast (MWL-SG7-001)</td>
<td>7TH LIFT</td>
<td>B</td>
<td>0</td>
<td>11.2</td>
<td>2</td>
<td>2</td>
<td>122.1</td>
<td>109.8</td>
<td>113.3</td>
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</table>

**Reviewed By:** [Signature]

**Distribution:**

- **Client:** [✓]
- **File:** [✓]
- **Supplier:** [✓]
- **Other:** [ ]
  - Addressee (2)
    - Cory Woods / MKM Engineering (1)

---

**Legend:**

- **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.**

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Albuquerque, NM 87113
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Fax 5059217371

www.ame.com
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>6-1624</td>
<td>113.3</td>
<td>13.2</td>
<td>ASTM D698-07 / a</td>
<td>Light Brown</td>
</tr>
<tr>
<td>6-1625</td>
<td>117.4</td>
<td>12.9</td>
<td>ASTM D698-07 / a</td>
<td>Light Brown</td>
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</table>

**Nuclear Density Gauge**
- **Make:** Troxler
- **Model #:** 3430
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<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required</th>
<th>% Compensation</th>
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<tbody>
<tr>
<td>01-1</td>
<td>4009 6' West (MWL-S9-001)</td>
<td>8TH LIFT</td>
<td>B</td>
<td>0</td>
<td>11.5</td>
<td>2</td>
<td>2</td>
<td>124.3</td>
<td>111.5</td>
<td>113.3</td>
</tr>
<tr>
<td>02-1</td>
<td>4019 4' West (MWL-S9-002)</td>
<td>8TH LIFT</td>
<td>B</td>
<td>0</td>
<td>11.5</td>
<td>2</td>
<td>2</td>
<td>119.8</td>
<td>107.4</td>
<td>113.3</td>
</tr>
<tr>
<td>03-1</td>
<td>4008 12' East (MWL-S9-003)</td>
<td>8TH LIFT</td>
<td>B</td>
<td>0</td>
<td>12.5</td>
<td>2</td>
<td>2</td>
<td>117.7</td>
<td>104.3</td>
<td>113.3</td>
</tr>
<tr>
<td>04-1</td>
<td>4022 12' SW (MWL-S9-001)</td>
<td>9TH LIFT</td>
<td>B</td>
<td>0</td>
<td>14.2</td>
<td>2</td>
<td>2</td>
<td>123.1</td>
<td>107.9</td>
<td>117.4</td>
</tr>
<tr>
<td>05-1</td>
<td>4020 15' SW (MWL-S9-002)</td>
<td>9TH LIFT</td>
<td>B</td>
<td>0</td>
<td>11.0</td>
<td>2</td>
<td>2</td>
<td>126.7</td>
<td>114.1</td>
<td>117.4</td>
</tr>
<tr>
<td>06-1</td>
<td>4008 25' SW (MWL-S9-003)</td>
<td>9TH LIFT</td>
<td>B</td>
<td>0</td>
<td>11.0</td>
<td>2</td>
<td>2</td>
<td>122.5</td>
<td>110.4</td>
<td>117.4</td>
</tr>
</tbody>
</table>

Reviewed By: [Signature]

**Distribution:**
- Client: ✔
- File: ✔
- Supplier: ✔
- Other: ✔

Cory Woods / MKM Engineering (1)

**Explanation:**
- BTSB = Below Top of Subbase
- BTOF = Below Top of Fill
- FBC = Final Base Course
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- FBC = Finished Base Course
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- Test Mode = D for Direct Transmission and B for Backscatter Modes

AMEC Earth Environmental, Inc.
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Tel 505 8211801
Fax 505 8217371

www.amec.com
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

Moisture Density Curves Used

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1625</td>
<td>117.4</td>
<td>12.9</td>
<td>ASTM D698-07 / a</td>
<td>Light Brown</td>
</tr>
</tbody>
</table>

Nuclear Density Gauge

Make: Troxler
Model #: 3430
Serial #: 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required</th>
<th>% Compaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>4005 25' SW (MWL-SG9-004)</td>
<td>9TH LIFT</td>
<td>B</td>
<td>0</td>
<td>12.7</td>
<td>2</td>
<td>2</td>
<td>1217.0</td>
<td>108.7</td>
<td>117.4</td>
</tr>
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Reviewed By: [Signature]

Distribution: Client: [ ] File: [ ] Supplier: [ ] Other: [ ]

Addresssee (2)

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
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

### AMEC Lab #

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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<tbody>
<tr>
<td>6-1626</td>
<td>118.3</td>
<td>12.7</td>
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<td>6-1645</td>
<td>118.7</td>
<td>12.4</td>
<td>ASTM D698-07 / a</td>
<td>Light Brown</td>
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### Nuclear Density Gauge

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

### Test Data

<table>
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<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required</th>
<th>% Compaction Min</th>
<th>% Compaction Max</th>
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</thead>
<tbody>
<tr>
<td>01-1</td>
<td>4004 20' SW (MWL-SG9-005)</td>
<td>9TH LIFT</td>
<td>B</td>
<td>0</td>
<td>11.7</td>
<td>126.4</td>
<td>113.2</td>
<td>118.3</td>
<td>96</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>02-1</td>
<td>4022 4' S (MWL-SG10-001)</td>
<td>10TH LIFT</td>
<td>B</td>
<td>0</td>
<td>13.8</td>
<td>126.5</td>
<td>111.2</td>
<td>118.3</td>
<td>94</td>
<td>90</td>
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<tr>
<td>03-1</td>
<td>4019 6' NE (MWL-SG10-002)</td>
<td>10TH LIFT</td>
<td>B</td>
<td>0</td>
<td>11.3</td>
<td>123.3</td>
<td>110.8</td>
<td>118.7</td>
<td>93</td>
<td>90</td>
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</tr>
<tr>
<td>04-1</td>
<td>4008 10' N (MWL-SG10-003)</td>
<td>10TH LIFT</td>
<td>B</td>
<td>0</td>
<td>11.7</td>
<td>120.9</td>
<td>108.3</td>
<td>118.7</td>
<td>91</td>
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**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
# FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

## Moisture Density Curves Used

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1646</td>
<td>119.6</td>
<td>11.0</td>
<td>ASTM D698-07 / a</td>
<td>Light Brown</td>
</tr>
<tr>
<td>6-1647</td>
<td>115.4</td>
<td>12.9</td>
<td>ASTM D698-07 / a</td>
<td>Light Brown</td>
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</tbody>
</table>

## Nuclear Density Gauge

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>15' W of 4018 10th Lift (MWL-SG10-004)</td>
<td>FSG -1.0'</td>
<td>B</td>
<td>0</td>
<td>9.6</td>
<td>2</td>
<td>2</td>
<td>123.7</td>
<td>112.9</td>
<td>94</td>
<td>90</td>
</tr>
<tr>
<td>02-1</td>
<td>5' NE of 4012 10th Lift (MWL-SG10-005)</td>
<td>FSG -1.0'</td>
<td>B</td>
<td>0</td>
<td>9.6</td>
<td>2</td>
<td>2</td>
<td>127.6</td>
<td>117.5</td>
<td>96</td>
<td>90</td>
</tr>
<tr>
<td>03-1</td>
<td>15' E of 4011 10th Lift (MWL-SG10-006)</td>
<td>FSG -1.0'</td>
<td>B</td>
<td>0</td>
<td>12.5</td>
<td>2</td>
<td>2</td>
<td>127.0</td>
<td>119.6</td>
<td>96</td>
<td>90</td>
</tr>
<tr>
<td>04-1</td>
<td>5' E of 4031 10th Lift (MWL-SG10-007)</td>
<td>FSG -1.0'</td>
<td>B</td>
<td>0</td>
<td>9.4</td>
<td>2</td>
<td>2</td>
<td>128.2</td>
<td>114.6</td>
<td>96</td>
<td>90</td>
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<tr>
<td>05-1</td>
<td>15' E of 4038 10th Lift, (MWL-SG10-008)</td>
<td>FSG -1.0'</td>
<td>B</td>
<td>0</td>
<td>10.9</td>
<td>2</td>
<td>2</td>
<td>130.9</td>
<td>118.1</td>
<td>96</td>
<td>90</td>
</tr>
<tr>
<td>06-1</td>
<td>8' NW of 4055 (MWL-SG10-009)</td>
<td>FSG -1.0'</td>
<td>B</td>
<td>0</td>
<td>13.9</td>
<td>2</td>
<td>2</td>
<td>121.3</td>
<td>106.5</td>
<td>92</td>
<td>90</td>
</tr>
<tr>
<td>07-1</td>
<td>20' NW of 4038 (MWL-SG10-10)</td>
<td>FSG -1.0'</td>
<td>B</td>
<td>0</td>
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<td>2</td>
<td>2</td>
<td>128.7</td>
<td>114.4</td>
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**Reviewed By:**

**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**
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density (pcf)</th>
<th>Optimum Moisture (%)</th>
<th>Test Type / Method</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>6-1647</td>
<td>115.4</td>
<td>12.9</td>
<td>ASTM D698-07 / a</td>
<td>Light Brown</td>
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**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (±)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required</th>
<th>% Compaction Min</th>
<th>% Compaction Max</th>
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<tbody>
<tr>
<td>01-1</td>
<td>34' NW of 4036 (MWL-SG11-01)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>0</td>
<td>11.8</td>
<td>2</td>
<td>2</td>
<td>128.2</td>
<td>114.6</td>
<td>115.4</td>
<td>99</td>
</tr>
<tr>
<td>02-1</td>
<td>25' W of 4049 (MWL-SG11-02)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>0</td>
<td>14.2</td>
<td>2</td>
<td>2</td>
<td>129.0</td>
<td>112.9</td>
<td>115.4</td>
<td>98</td>
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</table>

**Distribution:**
- Client: ✅
- File: ✅
- Supplier: ✅
- Other: Addressess (2)

**Reviewed By:**

SC

**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
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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<tbody>
<tr>
<td>6-1690</td>
<td>116.5</td>
<td>13.0</td>
<td>ASTM D698-07 / a</td>
<td>Light Brown</td>
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<td>6-1691</td>
<td>113.5</td>
<td>13.0</td>
<td>ASTM D698-07 / A</td>
<td>Light Brown</td>
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</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (l)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required Min Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>15' W of 4038 (MWL-SG11-003)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>0</td>
<td>14.1</td>
<td>124.2</td>
<td>108.9</td>
<td>116.5</td>
<td>93</td>
<td>90</td>
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<tr>
<td>02-1</td>
<td>20' W of 4050 (MWL-SG11-004)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>0</td>
<td>11.5</td>
<td>127.8</td>
<td>114.6</td>
<td>116.5</td>
<td>98</td>
<td>90</td>
</tr>
<tr>
<td>03-1</td>
<td>10' W of 4051 (MWL-SG-005)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>0</td>
<td>12.7</td>
<td>128.9</td>
<td>114.4</td>
<td>116.5</td>
<td>98</td>
<td>90</td>
</tr>
<tr>
<td>04-1</td>
<td>15' S of 4039 (MWL-SG11-006)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>0</td>
<td>11.8</td>
<td>119.2</td>
<td>106.6</td>
<td>113.5</td>
<td>94</td>
<td>90</td>
</tr>
<tr>
<td>05-1</td>
<td>15' W of 4055 (MWL-SG11-007)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>0</td>
<td>14.1</td>
<td>128.9</td>
<td>113.0</td>
<td>113.5</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>06-1</td>
<td>5'E of 4042 (MWL-SG11-008)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>0</td>
<td>12.6</td>
<td>127.7</td>
<td>113.5</td>
<td>113.5</td>
<td>100</td>
<td>90</td>
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Reviewed By: [Signature]

**Distribution:**
- Client: [ ] File: [x] Supplier: [x] Other: [ ]
  - Addressee (2): Cory Woods / MKM Engineering (1)

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8519 Jefferson NE
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Tel 505-821-1801
Fax 505-821-7371
www.amec.com
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density (pcf)</th>
<th>Optimum Moisture (%)</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1692</td>
<td>113.6</td>
<td>12.6</td>
<td>ASTM D698-07 / a</td>
<td>light Brown</td>
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</tbody>
</table>

Nuclear Density Gauge

Make: Troxler  
Model #: 3430  
Serial #: 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>15' Northwest of 4026</td>
<td></td>
<td>B</td>
<td>14.1</td>
<td>2</td>
<td>130.1</td>
<td>113.5</td>
<td>113.6</td>
<td>100</td>
<td>90</td>
</tr>
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<td></td>
<td>(MWWL-SG11-09)</td>
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<td></td>
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</tr>
<tr>
<td>02-1</td>
<td>15' Northwest of 4013</td>
<td></td>
<td>B</td>
<td>12.0</td>
<td>2</td>
<td>122.5</td>
<td>109.3</td>
<td>113.6</td>
<td>96</td>
<td>90</td>
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<tr>
<td></td>
<td>(MWWL-SG11-10)</td>
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Reviewed By: [Signature]

Distribution:  
Client: [ ]  
File: [ ]  
Supplier: [ ]  
Other: [ ]  
Addresssee (2)  
Cory Woods / MKM Engineering (1)
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<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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<tbody>
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<td>ASTM D698-07 / a</td>
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<tr>
<td>6-1740</td>
<td>116.0</td>
<td>12.3</td>
<td>ASTM D698-07 / A</td>
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</table>

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3430  
**Serial #:** 35427

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<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Test Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required</th>
<th>Min</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td>01-1</td>
<td>10' East of 4025 (MWL-SG11-011)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>14.3 2 2</td>
<td>125.7 110.0 113.6</td>
<td>97</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02-1</td>
<td>15' Southwest of 4010 (MWL-SG11-012)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>11.8 2 2</td>
<td>127.7 114.2 113.6</td>
<td>100+</td>
<td>90</td>
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</tr>
<tr>
<td>03-1</td>
<td>17' West of 4011 (MWL-SG11-013)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>13.7 2 2</td>
<td>120.0 105.5 113.6</td>
<td>93</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04-1</td>
<td>12' West of 4023 (MWL-SG11-014)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>12.3 2 2</td>
<td>119.4 106.4 113.6</td>
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<td>5' Southeast of 4010 (MWL-SG11-015)</td>
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<td>10.7 2 2</td>
<td>125.5 113.4 116.0</td>
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<tr>
<td>06-1</td>
<td>13' Southeast of 4009 (MWL-SG11-016)</td>
<td>FSG -0.5'</td>
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<td>11.6 2 2</td>
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<td>90</td>
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<td></td>
<td></td>
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</tr>
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<td>07-1</td>
<td>7' Northeast of 4032 (MWL-SG11-017)</td>
<td>FSG -0.5'</td>
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<td>13.9 2 2</td>
<td>128.3 112.7 116.0</td>
<td>97</td>
<td>90</td>
<td></td>
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**Distribution:**  
Client: ✅  File: ✅  Supplier: ✅  Other:  
Addressee (2)  Cory Woods / MKM Engineering (1)

**Test Modes:**  
BTSG=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

1 of 1
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1740</td>
<td>116.0</td>
<td>12.3</td>
<td>ASTM D698-07 / A</td>
<td>Light Brown</td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>6' West of 4021 (MVL-SG11-018)</td>
<td>FSG -0.5'</td>
<td>B</td>
<td>13.2</td>
<td>2</td>
<td>131.6</td>
<td>116.3</td>
<td>116.0</td>
<td>100</td>
<td>90</td>
</tr>
</tbody>
</table>

**Distribution:**
- Client: ✓ File: ✓ Supplier: ✓ Other: Addresssee (2)
- 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**
Historical Data

### FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

**Moisture Density Curves Used**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1779</td>
<td>117.9</td>
<td>13.0</td>
<td>ASTM D698-07 / A</td>
<td>Light Red &amp; Rocky</td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 28750

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (±)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>12' W of 4058 (MWL-SG12-001)</td>
<td></td>
<td>FSG</td>
<td>6</td>
<td>12.2</td>
<td>123.3</td>
<td>109.9</td>
<td>117.9</td>
<td>93</td>
<td>90</td>
</tr>
<tr>
<td>02-1</td>
<td>20' NW of 4049 (MWL-SG12-002)</td>
<td></td>
<td>FSG</td>
<td>6</td>
<td>11.7</td>
<td>127.6</td>
<td>114.2</td>
<td>117.9</td>
<td>97</td>
<td>90</td>
</tr>
<tr>
<td>03-1</td>
<td>20' NW of 4045 (MWL-SG12-003)</td>
<td></td>
<td>FSG</td>
<td>6</td>
<td>11.8</td>
<td>131.6</td>
<td>117.7</td>
<td>117.9</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>04-1</td>
<td>25' SW of 4050 (MWL-SG12-004)</td>
<td></td>
<td>FSG</td>
<td>6</td>
<td>12.2</td>
<td>131.3</td>
<td>117.0</td>
<td>117.9</td>
<td>99</td>
<td>90</td>
</tr>
</tbody>
</table>

*Reviewed By: [Signature]*

*Distribution:*
- Client: ✓
- File: ✓
- Supplier: ✓
- Other: Addresssee (2)
- Cory Woods / MKM Engineering (1)

---

**Legend:**
- 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
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

### Moisture Density Curves Used

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1834</td>
<td>118.4</td>
<td>12.7</td>
<td>ASTM D698-07 / A</td>
<td>Light Red</td>
</tr>
</tbody>
</table>

### Nuclear Density Gauge

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 28750

### Test Results

- **Test #** | **Location** | **Elevation** | **Test Mode** | **Probe Depth (in)** | **% Moisture Required** | **Wet Density (pcf)** | **Dry Density (pcf)** | **Maximum Density (pcf)** | **% Compaction Required Min** | **% Compaction Required 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]

**Distribution:**
- **Client:**
- **File:**
- **Supplier:**
- **Other:**
  - Address (2)
  - Address (2)
  - Address (2)
- **Email:**

**Notes:**
- 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
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

Moisture Density Curves Used

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1833</td>
<td>112.4</td>
<td>13.6</td>
<td>ASTM D698-07 / B</td>
<td>Light Red &amp; Rocky</td>
</tr>
<tr>
<td>6-1835</td>
<td>119.0</td>
<td>12.0</td>
<td>ASTM D698-07 / A</td>
<td>Light Red</td>
</tr>
</tbody>
</table>

Nuclear Density Gauge

Make: Troxler
Model #: 3430
Serial #: 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (%)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>4053, 25' SE (MWL-SG12-007)</td>
<td>FSG</td>
<td>B</td>
<td>0</td>
<td>13.1</td>
<td>127.1</td>
<td>112.4</td>
<td>112.4</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>02-1</td>
<td>4042, 25' NE (MWL-SG12-008)</td>
<td>FSG</td>
<td>B</td>
<td>0</td>
<td>14.1</td>
<td>128.2</td>
<td>112.4</td>
<td>112.4</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>03-1</td>
<td>4027, 25' SE (MWL-SG12-009)</td>
<td>FSG</td>
<td>B</td>
<td>0</td>
<td>13.6</td>
<td>127.7</td>
<td>112.4</td>
<td>119.0</td>
<td>94</td>
<td>90</td>
</tr>
<tr>
<td>04-1</td>
<td>4014, 20' E (MWL-SG12-010)</td>
<td>FSG</td>
<td>B</td>
<td>0</td>
<td>11.9</td>
<td>123.0</td>
<td>110.4</td>
<td>119.0</td>
<td>93</td>
<td>90</td>
</tr>
</tbody>
</table>

Reviewed By: SC

Distribution:
- Client: ✔
- File: ✔
- Supplier: ✔
- Other: Addressee (2)
  Cory Woods / MKM Engineering (1)

BTSTB = Below Top of Subbase, BTOTF = Below Top of Fill, FBC = Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOB = Bottom of Base, ROF = Bottom of Footing, OGP = Original Ground Prep
Test Mode = D for Direct Transmission and B for Backscatter Modes
# FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

**Moisture Density Curves Used**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1895</td>
<td>115.9</td>
<td>12.2</td>
<td>ASTM D698-07 / A</td>
<td>Light Brown</td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 28750

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>Landfill 10’ W of 4016</td>
<td>FSG</td>
<td>D</td>
<td>0</td>
<td>10.8</td>
<td>127.2</td>
<td>114.8</td>
<td>115.9</td>
<td>99</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>(MWL-SG12-011)</td>
<td></td>
<td></td>
<td></td>
<td>(2)</td>
<td>(2)</td>
<td>(2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02-1</td>
<td>Landfill 25’ SW of 4025</td>
<td>FSG</td>
<td>D</td>
<td>12.1</td>
<td>2</td>
<td>126.8</td>
<td>113.1</td>
<td>115.9</td>
<td>98</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>(MWL-SG12-012)</td>
<td></td>
<td></td>
<td></td>
<td>(2)</td>
<td>(2)</td>
<td>(2)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reviewed By: [Signature]

**Distribution:**
- **Client:**
- **File:**
- **Supplier:**
- **Other:** Addresssee (2)
- **Email:**

**Addresssee:** Cory Woods / MKM Engineering (1)

---

**Notes:**
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- Test Mode = D for Direct Transmission and B for Backscatter Modes
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density (pcf)</th>
<th>Optimum Moisture (%)</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1895</td>
<td>115.9</td>
<td>12.2</td>
<td>ASTM D698-07 / A</td>
<td>Light Brown</td>
</tr>
<tr>
<td>6-1951</td>
<td>117.9</td>
<td>12.1</td>
<td>ASTM D698-07 / A</td>
<td>Light Brown</td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 28750

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (%)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>20' SW of 4010 (MWL-SG12-013)</td>
<td>FSG</td>
<td>B</td>
<td>0</td>
<td>12.3</td>
<td>2</td>
<td>2</td>
<td>126.2</td>
<td>112.3</td>
<td>115.9</td>
</tr>
<tr>
<td>02-1</td>
<td>15' SW of 4024 (MWL-SG12-14)</td>
<td>FSG</td>
<td>B</td>
<td>0</td>
<td>13.7</td>
<td>2</td>
<td>2</td>
<td>115.0</td>
<td>113.2</td>
<td>117.9</td>
</tr>
</tbody>
</table>

**Distribution:**
- **Client:**
- **File:**
- **Supplier:**
- **Other:**

- **Addresssee (2):**
- **Cory Woods / MKM Engineering (1)**

**Report Date:** December 18, 2006
**Amended Date:** December 22, 2009
**Project #:** 6-519-004081
**Report #:** 13522
**Tested By:** Miguel Chavez
**Date Tested:** 12/15/2006
**Visual Description of Landfill Cover Material:**

---

- **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
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

Moisture Density Curves Used

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1951</td>
<td>117.9</td>
<td>12.1</td>
<td>ASTM D698-07 / A</td>
<td>Light Brown</td>
</tr>
</tbody>
</table>

Nuclear Density Gauge

Make: Troxler
Model #: 3430
Serial #: 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>4024, 15' Southeast (MWL-SG12-015)</td>
<td>FSG</td>
<td>D</td>
<td>6</td>
<td>14.0 (+2, -2)</td>
<td>123.9</td>
<td>108.7</td>
<td>117.9</td>
<td>92 (90)</td>
<td></td>
</tr>
<tr>
<td>02-1</td>
<td>4010, 20' Southeast (MWL-SG12-016)</td>
<td>FSG</td>
<td>D</td>
<td>6</td>
<td>13.1 (+2, -2)</td>
<td>125.6</td>
<td>111.1</td>
<td>117.9</td>
<td>94 (90)</td>
<td></td>
</tr>
</tbody>
</table>

Reviewed By: [Signature]

Distribution:
- Client: ☑
- File: ☑
- Supplier: ☑
- Other: Addressee (2)
- 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
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
Sieve Analysis (ASTM C117-04/C136-06)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8in.</td>
<td>100%</td>
</tr>
<tr>
<td>#4</td>
<td>98%</td>
</tr>
<tr>
<td>#8</td>
<td>96%</td>
</tr>
<tr>
<td>#10</td>
<td>95%</td>
</tr>
<tr>
<td>#16</td>
<td>92%</td>
</tr>
<tr>
<td>#30</td>
<td>89%</td>
</tr>
<tr>
<td>#40</td>
<td>87%</td>
</tr>
<tr>
<td>#50</td>
<td>85%</td>
</tr>
<tr>
<td>#100</td>
<td>74%</td>
</tr>
<tr>
<td>#200</td>
<td>34%</td>
</tr>
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</table>

Plasticity Index (ASTM D4318-05)

<table>
<thead>
<tr>
<th>Preparation Method</th>
<th>Liquid Limit</th>
<th>Plastic Limit</th>
<th>Plasticity Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry</td>
<td>27</td>
<td>20</td>
<td>7</td>
</tr>
</tbody>
</table>

Moisture Content (%): 5.7%

PI Sample Was Air Dried.
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

Distribution:  Client  File  Supplier  Other: Address (2)

EC Earth Environmental, Inc.
9 Jefferson NE
Albuquerque, NM 87113
Tel 50598211001
Fax 50598217371
Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4in.</td>
<td>100%</td>
</tr>
<tr>
<td>1/2in.</td>
<td>98%</td>
</tr>
<tr>
<td>3/8in.</td>
<td>97%</td>
</tr>
<tr>
<td>#4</td>
<td>94%</td>
</tr>
<tr>
<td>#8</td>
<td>90%</td>
</tr>
<tr>
<td>#10</td>
<td>90%</td>
</tr>
<tr>
<td>#16</td>
<td>86%</td>
</tr>
<tr>
<td>#30</td>
<td>83%</td>
</tr>
<tr>
<td>#40</td>
<td>81%</td>
</tr>
<tr>
<td>#50</td>
<td>79%</td>
</tr>
<tr>
<td>#100</td>
<td>67%</td>
</tr>
<tr>
<td>#200</td>
<td>26%</td>
</tr>
</tbody>
</table>

Plasticity Index (ASTM D4318-05)

Preparation Method: Dry  Liquid Limit: 24
Liquid Limit Method: A  Plastic Limit: 20
Soil Classification (ASTM D2487-06) SC-SM  Plasticity Index: 4

Moisture Content (%): 4.2%

Sample Source: SNL MWL 05-2009-2

Amec Earth & Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 5058217845
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: May 27, 2009

Project #: 0-517-00022a
Work Order #: 3
Lab #: 9-0589-03
Sampled By: Client
Date Sampled: 05/20/2009
Visual Description of Material: Silty Sand w/Rock
Sample Source: SNL MWL 05-2009-3

SOILS / AGGREGATES

Sieve Analysis: (ASTM C117-04/C135-06)
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]

Distribution: Client File Supplier Other Address (2)
Email: [ ]

EC Earth Environmental, Inc.
8 Jefferson NE
Albuquerque, NM 87113
Tel 5058211901
Fax 5058217371
www.amec.com
### Sieve Analysis (ASTM C117-04/C135-06)

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### Plasticity Index (ASTM D4318-05)

- **Preparation Method:** Dry
- **Liquid Limit:** 24
- **Plastic Limit:** 20
- **Plasticity Index:** 4

**PI Sample Was Air Dried.**

Moisture Content (%): 4.7%

---

Distribution:
- Client: ✔
- File: ✔
- Supplier: ✔
- Other: Addresssee (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 Maranville

Report Date: June 01, 2009

Project #: 9-517-00322D
Work Order #: 1
Lab #: 9-0529-01
Sampled By: Client
Date Sampled: 05/23/2009
Visual Description of Silty Sand
Material:
Sample Source: SNLMWL: 052909-4

Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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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
Preperation Method: Dry
Liquid Limit Method: A
Pi Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By: [Signature]

Distribution: Client [ ] File: [ ] Supplier: [ ] Other: Addresssee (2)

EC Earth Environmental, Inc.
3519 Jefferson NE
Albuquerque, NM 87113
Tel 5058214801
Fax 5058217371

www.ame.com
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

Sieve Analysis (ASTM C117-04/C136-06) 200 Wash Procedure: A

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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
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

Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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Plasticity Index (ASTM D4318-05)
- Liquid Limit: 25
- Plastic Limit: 17
- Plasticity Index: 8

Preparation Method: Dry  Liquid Limit Method: A
Pl Air Dried.

Soil Classification (ASTM D2487-06) SC
Sieve Analysis  (ASTM C117-04/C136-06)

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Moisture Density Relationship:  (ASTM D698-00)  Method: A
Preparation Method:  Dry  Rammer Type:  Mechanical
Specific Gravity:  2.551 Assumed
Maximum Density:  115.8
Optimum Moisture:  12.3

Plasticity Index  (ASTM D4318-05)
Liquid Limit:  25
Plastic Limit:  20
Plasticity Index:  6
Preperation Method:  Dry  Liquid Limit Method: A
PI Air Dried.

Soil Classification  (ASTM D2487-05) SC-SM
Report Date: June 02, 2009

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

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C138-06)
200 Wash Procedure: A

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Moisture Density Relationship: (ASTM D1657-02) Method: A
Preparation Method: Dry Rammer Type: Mechanical
Specific Gravity: 2.651 Assumed
Maximum Density: 117.0
Optimum Moisture: 12.0

Plasticity Index (ASTM D4318-06)
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]

Distribution: Client: [✓] File: [✓] Supplier: [✓] Other: Addresssee (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 Maranville

---

**Report Date:** June 12, 2009

**Project #:** 9-517-00022D

**Work Order #:** 6

**Lab #:** 9-0671-01

**Sampled By:** Jon Schmerhorn/Client

**Date Sampled:** 06/09/2009

**Visual Description of Material:** Brown Silty Sand - From Native Soil Material:
Sample Source: SNL MWL: 060909-009

---

**SOILS / AGGREGATES**

**Sieve Analysis**  
(ASTM C117-04/C135-06)  
200 Wash Procedure: A

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**Moisture Density Relationship:**  
(ASTM D698-07)  
Method: B

**Preparation Method:** Dry  
**Rammer Type:** Mechanical  
**Specific Gravity:** 2.551  
**Assumed**

**Maximum Density:** 115.2  
**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:** 

**Distribution:**  
Client: ☑  File: ☑  Supplier: ☑  Other:  
Addresses (2)  
Email: ☐

AMEC Earth & Environmental, Inc.  
8519 Jefferson NE  
Albuquerque, NM 87113  
Tel 505/821/1891  
Fax 505/821/7371  
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

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C135-06)

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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 D2487-08) SC

Reviewed By: [Signature]

Distribution: Client: File: Supplier: Other: Addresssee (2)

Email: [Email Address]
Report Date: June 12, 2009

Project #: 9-517-000220
Work Order #: 8
Lab #: 9-0371-03
Sampled By: Jon Schermerhorn/Client
Date Sampled: 6/9/2009
Visual Description of Brown Silty Sand - From Native Soil Material:
Sample Source: SNL MWL: 060090-011

**Sieve Analysis** (ASTM C117-04/C135-06)

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200 Wash Procedure: A

**Moisture Density Relationship:** (ASTM D598-97) 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: [Signature]

**Distribution:**
- Client: ✔  File: ✔  Supplier: ✔  Other: Addresssee (2)
- Email: ☐
SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C135-06)

200 Wash Procedure: A

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Moisture Density Relationship: (ASTM D698-07)  Method: B
Preparation Method: Dry  Rammer Type: Mechanical
Specific Gravity: 2.55 Assumed
Maximum Density: 113.9
Optimum Moisture: 13.6

Plasticity Index (ASTM D4318-05)

Liquid Limit: 25
Plastic Limit: 21
Plasticity Index: 4

Preperation Method: Dry  Liquid Limit Method: A
PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By: [Signature]

Distribution: Client: ✔  File: ✔  Supplier: ✔  Other: Addressee (2)

Email: [Signature]
Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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Moisture Density Relationship: (ASTM D598-07)
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
Pl Air Dried.

Soil Classification (ASTM D2487-06) SC-SM
Report Date: June 29, 2009

Project #: 9-517-00222D
Work Order #: 10
Lab #: 9-0720-01
Sampled By: David A. Luna
Date Sampled: 06/24/2009
Visual Description of Material: Brown Silty Sand
Sample Source: SNL MWL-062409-014

**SOILS / AGGREGATES**

**Sieve Analysis** (ASTM C117-04/C136-06)
200 Wash Procedure: A

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**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 D4318-06)
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]

**Distribution:**
- Client: ✓
- File: ✓
- Supplier: ✓
- Other: ✓
- Addressée (2)
- Email: □
Report Date: June 30, 2009

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

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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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
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

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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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
Sieve Analysis (ASTM C117-04/C136-06)

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Moisture Density Relationship: (ASTM D698-07)

- 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 D2487-08) SM

Reviewed By: [Signature]

Distribution: Client: ✔ File: ✔ Supplier: ✔ Other: Addressed (2) Email: ☐
Project Name: EDI SNL Mixed Waste Landfill Cover

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

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Moisture Density Relationship: (ASTM D595-97) Method: B
Preparation Method: Dry Rammer Type: Mechanical
Specific Gravity: 2.551 Assumed
Maximum Density: 117.6
Optimum Moisture: 11.5

Plasticity Index (ASTM D4318-05)
Liquid Limit: NV
Plastic Limit: NV
Plasticity Index: NP
Preparation Method: Dry Liquid Limit Method: A
Air Dried.

Soil Classification (ASTM D2487-08) SM
Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

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Moisture Density Relationship: (ASTM D698-97)  Method: B
Preparation Method: Dry  Rammer Type: Mechanical
Specific Gravity: 2.651 Assumed
Maximum Density: 117.7
Optimum Moisture: 12.0

Plasticity Index (ASTM D4318-06)
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: Jan

Distribution: Client: File: Supplier: Other: Address (2)

Email: www.amec.com
Report Date: July 09, 2009

Project #: 9-517-00022D
Work Order #: 11
Lab #: 9-0733-02
Sampled By: Jon Schermhammer
Date Sampled: 06/29/2009
Visual Description of Sampled Material:
Sample Source: SNL MWL 062909-20

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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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]

Distribution: Client: File: Supplier: Other: Addressee (2)

AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 5058211801
Fax 5058217371

www.amec.com
Report Date: July 09, 2009

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 Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C138-06)
200 Wash Procedure: A

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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: ☐

AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 5058211801
Fax 5058217371
www.amec.com
Report Date: July 09, 2009

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 062509-22

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C135-08)

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Moisture Density Relationship (ASTM D698-07)

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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

Distribution: Client: ✔ File: ✔ Supplier: ✔ Other: Addressee (2)
Email: ☐
**Soils / Aggregates**

### Sieve Analysis (ASTM C117-04/C136-05)

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**Plasticity Index (ASTM D4318-06)**

- **Liquid Limit:** NV
- **Plastic Limit:** NV
- **Plasticity Index:** NP

**Preparation Method:** Dry  **Liquid Limit Method:** A  **Pl Air Dried.**

**Soil Classification (ASTM D2487-06)** SM

---

**Distribution:**
- Client: ✓
- File: ✓
- Supplier: ✓
- Other: Addresser (2)
- Email: 

**Reviewed By:**

**Client:** Environmental Dimensions Inc
1901 Candalaria Rd NW
ABQ, NM 87107-

**Attn:** Chris Edgmon

**Project Name:** EDI SNL Mixed Waste Landfill Cover
ABQ, NM

**Project Manager:** Vicke Marianville

---

**Report Date:** July 09, 2009
**Project #:** 9-517-00022D
**Work Order #:** 11
**Lab #:** 9-0733-05
**Sampled By:** Jon Schriemerhorn
**Date Sampled:** 06/29/2009
**Visual Description of Brown Silty Sand Material:**
**Sample Source:** SNL MWL 062909-23

---

**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
Report Date: July 10, 2009
Project #: 9-517-00022D
Work Order #: 11
Lab #: 9-0733-06
Sampled By: Jon Schmerelhorn
Date Sampled: 06/29/2009
Visual Description of Brown Silty Sand
Material:
Sample Source: SNL MWL 062909-24

Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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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-3M

Distribution: Client: ✔ File: ✔ Supplier: ✔ Other: Addressee (2)

Reviewed By: Jan
**Sieve Analysis** (ASTM C117-04/C136-06)

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**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
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

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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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
Pl Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

 Reviewed By: [Signature]

Distribution: Client [X] File: [X] Supplier: [X] Other: Addressee (2)

© Earth Environmental, Inc.
16 Jefferson NE
Albuquerque, NM 87113
Tel 505-821-1001
Fax 505-821-371
www.amec.com
**Moisture Density Relationship:** (ASTM D689-07)  
**Method:** B  
**Preparation Method:** Dry  
**Rammer Type:** Mechanical  
**Specific Gravity:** 2.551 Assumed  
**Maximum Density:** 118.3  
**Optimum Moisture:** 11.2

**Sieve Analysis** (ASTM C117-04/C136-06)  
**200 Wash Procedure:** A  

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**Plasticity Index** (ASTM D4318-06)  
**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
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

SOILS / AGGREGATES

**Sieve Analysis** (ASTM C117-04/C136-06)

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**Moisture Density Relationship** (ASTM D699-07)

- 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

Preperation Method: Dry
Liquid Limit Method: A
Pl Air Dried.

**Soil Classification** (ASTM D2487-06) SM

Distribution:
- Client: ✔
- File: ✔
- Supplier: ✔
- Other: Addressee (2)

IC Earth Environmental, Inc.
918 Jefferson NE
Albuquerque, NM 87113
Tel 505-821-1801
Fax 505-821-7371

www.amec.com
Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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Moisture Density Relationship: (ASTM D698-97)
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
Report Date: July 09, 2009

Project #: 9-517-00022D
Work Order #: 13
Lab #: 9-0737-06
Sampled By: Jon Schermerhom
Date Sampled: 06/30/2009
Visual Description of Material: Brown Silty Sand
Sample Source: SNL MWL 063009-30

**SOILS / AGGREGATES**

**Sieve Analysis (ASTM C117-04/C136-06)**
200 Wash Procedure: A

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**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: [Signature]

Distribution: Client File: Supplier Other: Addressee (2)

EC Earth Environmental, Inc.
19 Jefferson NE
Albuquerque, NM 87113
Tel 5058211601
Fax 5058217371
www.amec.com
Sieve Analysis (ASTM C117-04/C135-06)

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Moisture Density Relationship: (ASTM D588-07)
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 D2487-96) SM
**Project #:** 9-517-00222D  
**Work Order #:** 15  
**Lab #:** 9-0743-02  
**Sampled By:** Jon Schenker  
**Date Sampled:** 06/30/2009  
**Visual Description of:** Brown Silty Sand  
**Material:**  
**Sample Source:** SNL MWL Burn-2  

### Sieve Analysis  
**Method:** ASTM C117-04/C135-06  
**Wash Procedure:** A  

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### Moisture Density Relationship  
**Method:** A  
**Preparation Method:** Dry  
**Rammer Type:** Mechanical  
**Specific Gravity:** 2.451 Assumed  
**Maximum Density:** 117.0  
**Optimum Moisture:** 10.4

### Plasticity Index  
**Liquid Limit:** NV  
**Plastic Limit:** NV  
**Plasticity Index:** NP  
**Preparation Method:** Dry  
**Liquid Limit Method:** A PI Air Dried.

### Soil Classification  
**Method:** ASTM D2487-06 SM

---

**Reviewed By:**

---

**Distribution:**  
Client: ✔  
File: ✔  
Supplier: ✔  
Other: Addressee (2)

---

EC Earth Environmental, Inc  
19 Jefferson NE  
Albuquerque, NM 87113  
Tel 5056211801  
Fax 5056217371  
www.amec.com
### Sieve Analysis

**ASTM C117-04/C119-06**

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### Moisture Density Relationship

**ASTM D698-07**

Method: A

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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

Plasticity: NP

### Soil Classification

**ASTM D2487-06 SM**
SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

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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
Preperation Method: Dry
Liquid Limit Method: A
PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Distribution: Client ✓ File: ✓ Supplier: ✓ Other: Addressee (2)
**Sieve Analysis** (ASTM C117-04/C136-06)

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**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
SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

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Moisture Density Relationship: (ASTM D698-07)

Method: B
Preparation Method: Dry
Rammer Type: Mechanical
Specific Gravity: 2.851 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
Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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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
Pl Air Dried.

Soil Classification (ASTM D2487-06) SC-SM
Client: Environmental Dimensions Inc
1901 Candelaria Rd NW
ABQ, NM 87107-

Attr: Chris Edgmon
Project Name: EDI SNL Mixed Waste Landfill Cover
ABQ, NM

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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Moisture Density Relationship: (ASTM D698-07) Method: B
Preparation Method: Dry Rammer Type: Mechanical
Specific Gravity: 2.551 Assumed
Maximum Density: 118.5
Optimum Moisture: 11.3

Plasticity Index (ASTM D4318-06)
Liquid Limit: 21
Plastic Limit: 17
Plasticity Index: 4
Preperation Method: Dry Liquid Limit Method: A
PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By: [Signature]

Distribution: Client: ☒ File: ☒ Supplier: ☒ Other: Addressee (2)
Email: ☐

Earth Environmental, Inc.
8510 Jefferson NE
Albuquerque, NM 87113
Tel 505 216-0001
Fax 505 217-3771
www.amec.com

Report Date: July 20, 2009
Project #: 9-517-00022D
Work Order #: 16
Lab #: 9-0781-04
Sampled By: Jon Schermerhorn
Date Sampled: 7/14/2009
Visual Description of Brown Silty Sand
Material: Sample Source: SNL MWL Berm-8
Soils / Aggregates

**Moisture Density Relationship**: (ASTM D698-97)  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

**Sieve Analysis** (ASTM C117-04/C136-06)
- **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  70%
  - #200  38%

**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
Sieve Analysis  (ASTM C117-04/C136-06)
200 Wash Procedure: A

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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
Pl Air Dried.

Soil Classification (ASTM D2487-06) SM
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

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

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Moisture Density Relationship: (ASTM D598-97)  
Preparation Method: Dry  
Rammer Type: Mechanical

Specific Gravity: 2.651 Assumed

Maximum Density: 115.3

Optimum Moisture: 13.2

Plastic Index (ASTM D4318-05)

Liquid Limit: 23

Plastic Limit: 19

Plasticity Index: 4

Preparation Method: Dry  
Liquid Limit Method: A  
Pl Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By: [Signature]  
Jan

Distribution: Client: ✓  
File: ✓  
Supplier: ✓  
Other: Addresssee (2)

Email: [Signature]
Moisture Density Relationship: (ASTM D698-07)

Specific Gravity: 2.651 Assumed
Maximum Density: 117.7
Optimum Moisture: 12.1

Sieve Analysis (ASTM C117-04/C136-06)

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Plasticity Index (ASTM D4318-05)

Liquid Limit: 24
Plastic Limit: 18
Plasticity Index: 6

Preparation Method: Dry
Liquid Limit Method: A
Air Dried.

Soil Classification (ASTM D2487-06) SC-SM
Report Date: July 23, 2009

Client: Environmental Dimensions Inc
1901 Candelaria Rd NW
ABQ, NM  87107

Project #: 9-517-00022D
Work Order #: 19
Lab #: 9-0798-05
Sampled By: Jon Schermerhorn
Date Sampled: 07/16/2009
Visual Description of Brown Silty Sand
Material:
Sample Source: SNL MWL Berm-13

Project Manager: Vickie Maranville  SOILS / AGGREGATES

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**Sieve Analysis** (ASTM C117-04/C136-06)
200 Wash Procedure: A

**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
Pl Air Dried.

**Soil Classification** (ASTM D2487-06) SC
Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

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Moisture Density Relationship: (ASTM D599-07) 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
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  
Pl Air Dried.  

Soil Classification (ASTM D2487-05) SC-SM
Moisture Density Relationship: (ASTM D598-97)  Method: A
Preparation Method: Dry  Rammer Type: Mechanical
Specific Gravity: 2.651 Assumed
Maximum Density: 116.0
Optimum Moisture: 14.4

Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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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 D2487-96) SC-SC
Report Date: July 27, 2009

Project #: 9-517-00022D
Work Order #: 22
Lab #: 9-0825-02
Sampled By: Jon Schernerhor
Date Sampled: 07/23/2009
Visual Description of Sample: Brown Silty Sand
Material:
Sample Source: SNL MWL Berm-17

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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Moisture Density Relationship: (ASTM D688-07)
Method: A
Preparation Method: Dry
Rammer Type: Mechanical
Specific Gravity: 2.651 Assumed
Maximum Density: 114.9
Optimum Moisture: 15.0

Plasticity Index (ASTM D4318-06)
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
Sieve Analysis (ASTM C117-04/C136-06)

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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 D2487-08) SM
Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

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Moisture Density Relationship: (ASTM D698-97) 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
Preperation Method: Dry Liquid Limit Method: A
PI Air Dried.

Soil Classification (ASTM D2487-06) SM
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

Sieve Analysis: (ASTM C117-04/C136-06)
200 Wash Procedure: A

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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 CMP specifications. A separate laboratory firm is provided and the corresponding Lab Number is 9-0636-04.

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
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

Sieve Analysis (ASTM C117-04/C128-06)  
Wash Procedure: A  
Sieve Size Passing  
1/2in. 100%  
3/8in. 100%  
#4 89%  
#8 96%  
#10 94%  
#16 90%  
#30 88%  
#50 68%  
#100 82%  
#200 29%  

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 CRMP specifications. A separate laboratory form is provided and the corresponding Lab Number is 9-0634-06.

Plasticity Index [ASTM D4318-08]  
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]  
Distribution: Client: [Check]  
File: [Check]  
Supplier: [Check]  
Other: Addressee (2)  
Email: [ ]
**Amec**

**Client:** Environmental Dimensions Inc  
1901 Candelaria Rd NW  
ABQ, NM 87107

**Report Date:** July 15, 2009

**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

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**SOILS / AGGREGATES**

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**Sieve Analysis** *(ASTM C117-04/C138-06)*  
**Wash Procedure:** A

<table>
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<tr>
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<td>95%</td>
</tr>
<tr>
<td>#16</td>
<td>93%</td>
</tr>
<tr>
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<td>91%</td>
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<tr>
<td>#40</td>
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<tr>
<td>#100</td>
<td>70%</td>
</tr>
<tr>
<td>#200</td>
<td>21%</td>
</tr>
</tbody>
</table>

---

**Moisture Density Relationship:** *(ASTM D698-07)*  
**Method:** B

- **Preparation Method:** Dry  
- **Rammer Type:** Mechanical
- **Specific Gravity:** 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  
**Pl Air Dried.**

**Soil Classification** *(ASTM D2487-06)* SM

---

**Distribution:**  
**Client:** ✔  
**File:** ✔  
**Supplier:** ✔  
**Other:** Addressee (2)  
**Email:**

---

www.amec.com
**Report Date:** July 17, 2009

**Project #:** 9-517-00022D

**Work Order #:** 18

**Lab #:** 9-0781-01

**Sampled By:** Jon Schermethorn

**Sampled:** 07/14/2009

**Visual Description:** Brown Silty Sand

**Material:**

**Sample Source:** SNL MWL 071409-10

---

### Sieve Analysis (ASTM C117-04/C135-06)

200 Wash Procedure: A

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4in.</td>
<td>100%</td>
</tr>
<tr>
<td>1/2in.</td>
<td>99%</td>
</tr>
<tr>
<td>3/8in.</td>
<td>99%</td>
</tr>
<tr>
<td>#4</td>
<td>97%</td>
</tr>
<tr>
<td>#8</td>
<td>96%</td>
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<tr>
<td>#10</td>
<td>95%</td>
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<tr>
<td>#16</td>
<td>93%</td>
</tr>
<tr>
<td>#30</td>
<td>91%</td>
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</tr>
<tr>
<td>#100</td>
<td>74%</td>
</tr>
<tr>
<td>#200</td>
<td>31%</td>
</tr>
</tbody>
</table>

---

**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 D4318-06)

**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]

**Distribution:**

- Client: [✓]
- File: [✓]
- Supplier: [✓]
- Other: Addresssee (2)
- Email: [ ]

---

AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 505-821-8201
Fax 505-821-7371

www.amec.com
Report Date: June 01, 2009

Project #: 9-517-00022D
Work Order #: 2
Lab #: 5-0632
Sampled By: Client

Date Sampled:
Visual Description of 3/8" Aggregate
Material:
Sample Source: Bar J

Project Manager: Vickie Maranville

SOILS / AGGREGATES

Type of Specification: Topsoil Layer Fill Specifications for SNL Mixed Waste Landfill Cover

Sieve Analysis, (ASTM C117-04/C138-08)

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<th>Max</th>
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</thead>
<tbody>
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<tr>
<td>1/2in.</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/8in.</td>
<td>93%</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>25%</td>
<td>5</td>
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<td></td>
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</tr>
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</table>

These results represent the 3/8 inch crushed gravel used in the Topsoil Layer (mixed with topsoil at 25% by volume ratio). Sample date was not specified, but within several days of the report date (i.e., June 1, 2009).

mm/dd
12/21/09

* Material did not fall within specified tolerances.

Reviewed By: [Signature]

Distribution: Client ✓ File: ✓ Supplier: ✓ Other: Addressed [2]

Email:

AEC Earth Environmental, Inc.
5519 Jefferson NE
Albuquerque, NM 87113
Tel: 505.821.1801
Fax: 505.821.3711

www.amec.com
<table>
<thead>
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<th>Soil Class</th>
<th>L.L.</th>
<th>P.I.</th>
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<th>#40</th>
<th>#30</th>
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<th>#10</th>
<th>#8</th>
<th>1/4&quot;</th>
<th>3/8&quot;</th>
<th>1/2&quot;</th>
<th>3/4&quot;</th>
<th>1&quot;</th>
<th>1 1/4&quot;</th>
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</tbody>
</table>

Reviewed By: 

Distribution: Client: File: Supplier: Other: Address (2)

AMEC Earth & Environmental, Inc.
8619 Jefferson NE
Albuquerque, NM 87113
Tel 505-821-1801
Fax 505-821-7971
www.amec.com
### SOILS / AGGREGATES

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<thead>
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<th>Lab Number</th>
<th>Sample Location</th>
<th>Soil Class.</th>
<th>L.L.</th>
<th>P.I.</th>
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<th>D30</th>
<th>D60</th>
<th>CC</th>
<th>CU</th>
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</table>
Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

<table>
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<tr>
<th>Sieve Size</th>
<th>Passing</th>
</tr>
</thead>
<tbody>
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<td>98%</td>
</tr>
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<td>97%</td>
</tr>
<tr>
<td>#16</td>
<td>97%</td>
</tr>
<tr>
<td>#30</td>
<td>94%</td>
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<tr>
<td>#100</td>
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</tr>
<tr>
<td>#200</td>
<td>27%</td>
</tr>
</tbody>
</table>

Plasticity Index (ASTM D4318-06)

Preparation Method: Dry

Liquid Limit Method: A

Soil Classification (ASTM D2487-06): SM

Liquid Limit: NV
Plastic Limit: NV
Plasticity Index: NP

Sample Was Air Dried.
SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)
200 Wash Procedure: A

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4in.</td>
<td>100%</td>
</tr>
<tr>
<td>1/2in.</td>
<td>99%</td>
</tr>
<tr>
<td>3/8in.</td>
<td>99%</td>
</tr>
<tr>
<td>#4</td>
<td>98%</td>
</tr>
<tr>
<td>#8</td>
<td>96%</td>
</tr>
<tr>
<td>#10</td>
<td>95%</td>
</tr>
<tr>
<td>#16</td>
<td>93%</td>
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<tr>
<td>#30</td>
<td>91%</td>
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</tr>
<tr>
<td>#100</td>
<td>70%</td>
</tr>
<tr>
<td>#200</td>
<td>21%</td>
</tr>
</tbody>
</table>

Moisture Density Relationship: (ASTM D698-97)

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
Pl Air Dried.

Soil Classification (ASTM D2487-08) SM

Reviewed By: Jan

Distribution: Client: ☑ File: ☑ Supplier: ☑ Other: Addressee (2)
Email: ☐
SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Passing</th>
</tr>
</thead>
<tbody>
<tr>
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<td>100%</td>
</tr>
<tr>
<td>1/2in.</td>
<td>100%</td>
</tr>
<tr>
<td>3/8in.</td>
<td>99%</td>
</tr>
<tr>
<td>#4</td>
<td>98%</td>
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<tr>
<td>#8</td>
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<td>#16</td>
<td>94%</td>
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<tr>
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<td>26%</td>
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</tbody>
</table>

Plasticity Index (ASTM D4318-05)

Preparation Method: Dry
Liquid Limit Method: A
Soil Classification (ASTM D2487-06): SM

Liquid Limit: NV
Plastic Limit: NV
Plasticity Index: NP

PI Sample was air dried.

Reviewed By: [Signature]

Distribution: Client: ☑ File: ☑ Supplier: ☑ Other: Addressees (2)

AMEC Earth Environmental, Inc.
6519 Jefferson NE
Albuquerque, NM 87113
Tel 505.211.801
Fax 505.217.371
www.amec.com
Moisture Density Relationship: (ASTM D588-07)  Method: B
Preparation Method: Dry  Rammer Type: Mechanical
Specific Gravity: 2.551 Assumed
Maximum Density: 118.0
Optimum Moisture: 11.2

Sieve Analysis (ASTM C117-04/C138-06)
200 Wash Procedure: A

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4in.</td>
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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
Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

<table>
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<th>Sieve Size</th>
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Plasticity Index (ASTM D4318-05)

Preparation Method: Dry
Liquid Limit Method: A

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<td>Plasticity Index</td>
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Soil Classification (ASTM D2487-06) SC-SM

PI Sample Was Air Dried.

Reviewed By: [Signature]

Jan

Distribution:
- Client: ✓
- File: ✓
- Supplier: ✓
- Other: Addressee (2)
- Email: ☐
Sieve Analysis (ASTM C117-04/C136-06)

<table>
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<th>Sieve Size</th>
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Plasticity Index (ASTM D4318-06)

Preparation Method: Dry
Liquid Limit Method: A
Soil Classification (ASTM D2487-06) SM

Liquid Limit: 22  Plastic Limit: 20  Plasticity Index: 2

PI Sample Was Air Dried.

Reviewed By:  

Distribution: Client: ✔  File: ✔  Supplier: ✔  Other: Addressee (2)  Email: 

2009 Density and Moisture Tests
2009 CQC Density and Moisture Tests
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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<tbody>
<tr>
<td>6-1811</td>
<td>120.1</td>
<td>11.6</td>
<td>ASTM D698-07 / a</td>
<td>Light Red Sandy</td>
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**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3440
- **Serial #:** 37046

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>Actual</th>
<th>Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
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<tbody>
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<td>120.1</td>
<td>98</td>
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<td></td>
<td></td>
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</table>

**Remarks:** Revised.

Reviewed By: ____________________________

**Distribution:**
- **Client:** ✔
- **File:** ✔
- **Supplier:** ✔
- **Other:**
- **Addresssee (2)**

**Email: □**

**BSB** = 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
### FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>6-1811</td>
<td>120.1</td>
<td>11.6</td>
<td>ASTM D698-07 / a</td>
<td>Light Red Sandy</td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**

Make: Troxler  
Model #: 3440  
Serial #: 37046

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required</th>
<th>Min</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td>01-1</td>
<td>1453140.678/411700.30, Edi North Slope Lift 6</td>
<td>5380.11</td>
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<td>120.1</td>
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</tr>
<tr>
<td>02-1</td>
<td>1453140.678/411700.30, Edi North Slope Lift 5</td>
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<td>11.8</td>
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<td>116.0</td>
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<td>128.2</td>
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<td>120.1</td>
<td>96</td>
</tr>
</tbody>
</table>

**Remarks:** Revised.
Client: Environmental Dimensions Inc  
1901 Candelaria Rd NW  
ABQ, NM  87107-

Att: Chris Edgmon  

Project Name: EDI SNL Mixed Waste Landfill Cover 

ABQ, NM  

Project Manager: Vickie Maranville  

FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)  

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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<tbody>
<tr>
<td>6-1811</td>
<td>120.1</td>
<td>11.6</td>
<td>ASTM D698-07 / a</td>
<td>Light Red Sandy</td>
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<tr>
<td>9-0629-04</td>
<td>115.8</td>
<td>12.3</td>
<td>ASTM D698-07 / A</td>
<td>Clayey Silty Sand</td>
</tr>
</tbody>
</table>

Nuclear Density Gauge 

Make: Troxler  
Model #: 3440  
Serial #: 37046  

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (%)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required</th>
<th>Min</th>
<th>Max</th>
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<tbody>
<tr>
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Reviewed By:  

Distribution: Client:  
File:  
Supplier:  
Other: Addressee (2) 
Email:  

BTST = 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  
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<table>
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<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
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<tr>
<td>6-1811</td>
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**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3440
- **Serial #:** 37046

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>Actual (+)</th>
<th>(+)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required Min Max</th>
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<tbody>
<tr>
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**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, ROF = Bottom of Footing, OGP = Original Ground Prep**

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<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
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<th>Test Type / Method</th>
<th>Description</th>
</tr>
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<td>115.8</td>
<td>12.3</td>
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<td>Clayey Silty Sand</td>
</tr>
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</table>

**Nuclear Density Gauge**

Make: Troxler  
Model #: 3440  
Serial #: 37046

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<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
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<tbody>
<tr>
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<td>90</td>
</tr>
</tbody>
</table>

Reviewed By: [Signature]

Distribution: Client: ✔  File: ✔  Supplier: ✔  Other: Addressee (2)

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

1 of 1
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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Nuclear Density Gauge

Make: Troxler
Model #: 3440
Serial #: 37046

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min Max</th>
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<td>1453138.995/411843.859, Edi North Slope Lift 1</td>
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<td>1452968.883/411578.344, Edi West Slope Lift 2</td>
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Remarks: Revised.

Reviewed By: jdr

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FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

Moisture Density Curves Used

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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Nuclear Density Gauge

Make: Troxler
Model #: 3440
Serial #: 37046

<table>
<thead>
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<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
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<tbody>
<tr>
<td>01-1</td>
<td>1452988.634/411737.606, Edi Lift #3, GB 6</td>
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<td>122.7</td>
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<td>1452693.015/411774.812, Edi Lift #3, GB 6</td>
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<td>126.5</td>
<td>113.4</td>
<td>117.0</td>
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</table>

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Reviewed By: jdr

Distribution: Client: ✓ File: ✓ Supplier: ✓ Other: Addresssee (2)

Email: ❌

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<thead>
<tr>
<th>AMEC Lab #</th>
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### Nuclear Density Gauge

- **Make:** Troxler
- **Model #:** 3440
- **Serial #:** 37046

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>Actual</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
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<th>Min</th>
<th>Max</th>
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<td>1452875.793/411617.388, Edi NS Lift #3, GB 2</td>
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<td>115.8</td>
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<td>90</td>
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<td>131.9</td>
<td>119.2</td>
<td>115.8</td>
<td>100+</td>
<td>90</td>
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<tr>
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<th>Description</th>
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<td>9-0629-01</td>
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<td>12.0</td>
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## Nuclear Density Gauge

- **Make:** Troxler
- **Model #:** 3440
- **Serial #:** 37046

## Test Results

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<tr>
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<th>Test Mode</th>
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<th>% Moisture Required (l)</th>
<th>% Moisture Required (+)</th>
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<th>Dry Density (pcf)</th>
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<th>% Compaction</th>
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<tr>
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**Notes:**
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<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Actual (-)</th>
<th>(+)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required</th>
<th>Min</th>
<th>Max</th>
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Reviewed By: [Signature]

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Email: [ ]

BT3B = 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

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<tr>
<th>AMEC Lab #</th>
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<th>Test Type / Method</th>
<th>Description</th>
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<tr>
<td>9-0629-01</td>
<td>117.0</td>
<td>12.0</td>
<td>ASTM D698-07 / B</td>
<td>Silty Sand</td>
</tr>
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</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3440
- **Serial #:** 37046

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<thead>
<tr>
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<th>Test Mode</th>
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<th>% Moisture Required</th>
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<th>Min</th>
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FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)

Moisture Density Curves Used

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<td>12.0</td>
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Nuclear Density Gauge
Make: Troxler
Model #: 3440
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<th>% Moisture Required (%)</th>
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<th>% Compaction</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
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<td>111.9</td>
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<td>117.0</td>
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<td>90</td>
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<td>05-1</td>
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<td>10.3</td>
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<td>112.1</td>
<td>117.0</td>
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Reviewed By: [Signature]

Distribution:
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* Material did not fall within specified tolerances.
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

Table: Moisture Density Curves Used

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<thead>
<tr>
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<th>Optimum Moisture</th>
<th>Test Type / Method</th>
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<tbody>
<tr>
<td>9-0629-01</td>
<td>117.0</td>
<td>12.0</td>
<td>ASTM D698-07 / B</td>
<td>Silty Sand</td>
</tr>
</tbody>
</table>

Nuclear Density Gauge

Make: Troxler
Model #: 3440
Serial #: 37046

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
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Reviewed By: JDR

Distribution: Client: ✔ File: ✔ Supplier: ✔ Other: Addressee (2)

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 505/211801
Fax 505/927371
www.amer.com
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

---

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>9-0629-01</td>
<td>117.0</td>
<td>12.0</td>
<td>ASTM D698-07 / B</td>
<td>Silty Sand</td>
</tr>
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</table>

**Nuclear Density Gauge**

**Make:** Troxler  
**Model #:** 3440  
**Serial #:** 37046

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<th>Test #</th>
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<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required</th>
<th>Min</th>
<th>Max</th>
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<tr>
<td>01-1</td>
<td>1453106.816/411646.065, Edi NS, Lift 5, GB 5</td>
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Client: ✅  
File: ✅  
Supplier: ✅  
Other: Addressee (2)  
Email: 

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<td>ASTM D698-07 / B</td>
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### Nuclear Density Gauge

- **Make:** Troxler
- **Model #:** 3440
- **Serial #:** 37046

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<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (r)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required Min</th>
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<tr>
<td>01-1</td>
<td>1453106.816/411648.065, Edi NS, Lift 5, GB 5 (Retest of #01-1, Dated 7/7/09)</td>
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</table>

**Report Date: July 10, 2009**

**Project #:** 9-517-00022D  
**Report #:** 22812  
**Tested By:** Miguel Chavez  
**Date Tested:** 07/09/2009

**Visual Description of Landfill Material:**
**FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)**

**Moisture Density Curves Used**

<table>
<thead>
<tr>
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**Nuclear Density Gauge**

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<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
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**Distribution:**
- **Client:**
- **File:**
- **Supplier:**
- **Other:** Addressee (2)
- **Email:**

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<tr>
<td>9-0629-01</td>
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<td>Silty Sand</td>
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**Nuclear Density Gauge**

**Make:** Troxler  
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<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
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<th>% Compaction Expected Max</th>
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Serial #: 37046

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Make: Troxler  
Model #: 3440  
Serial #: 37046

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (l) (r)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required</th>
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<th>Max</th>
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Reviewed By: [Signature]

**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**
### FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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#### Nuclear Density Gauge
- **Make:** Troxler
- **Model #:** 3440
- **Serial #:** 37046

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation (ft)</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (%)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaaction Required Max</th>
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**Distribution:**
- **Client:** ✓
- **File:** ✓
- **Supplier:** ✓
- **Other:** Addressee (2)
- **Email:** 

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**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, DOB = Bottom of Base, DOF = Bottom of Footing, OGP = Original Ground Prep**

**Test Mode = D for Direct Transmission and B for Backscatter Modes**
FIELD DENSITY TEST USING NUCLEAR DENSITY GUAGE (ASTM D6938-08)

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<tr>
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<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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Nuclear Density Gauge
Make: Troxler
Model #: 3440
Serial #: 37046

<table>
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<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
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<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
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Reviewed By: jdr

Distribution: Client: ✔ File: ✔ Supplier: ✔ Other: Addressee (2)

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
### Field Density Test Using Nuclear Density Gauge (ASTM D6938-08)

#### Moisture Density Curves Used

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<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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#### Nuclear Density Gauge

- **Make:** Troxler
- **Model #:** 3440
- **Serial #:** 37046

#### Test Results

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<th>Location</th>
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<th>Dry Density (pcf)</th>
<th>% Compression Required</th>
<th>Min</th>
<th>Max</th>
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<tr>
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<td>120.2</td>
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**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.*
<table>
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<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
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Reviewed by: [Signature]

Distribution: Client: ✓ File: ✓ Supplier: ✓ Other: Addressee (2)

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.
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

Moisture Density Curves Used

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
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Nuclear Density Gauge

- Make: Troxler
- Model #: 3440
- Serial #: 37046

<table>
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<th>Test #</th>
<th>Location</th>
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</tbody>
</table>

Reviewed By: mbr

Distribution: Client: ✔ File: ✔ Supplier: ✔ Other: Addresssee (2) Email: 

BTSB = Below Top of Subbase, BTOF = Below Top of Fill, FBC = Final Base Course, FSG = Finised 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:** DUR  
6501 Americas Pkwy, NE, Suite 300  
Albuquerque, NM 87110  
**Attn:** Don Lopez  
**Project Manager:** Robert Romero

**Report Date:** May 25, 2009  
**Project #:** 9-519-005363  
**Phone:**  
**Project Name:** Mixed Waste Landfill 2009  
**Address:** KAPB

**Report Number:** 13719  
**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

<table>
<thead>
<tr>
<th>Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1811</td>
<td>120.1</td>
<td>11.6</td>
<td>ASTM2922 / A</td>
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</tr>
</tbody>
</table>

### Nuclear Density Gauge

**Make:** TENSOR  
**Model #:** 3430  
**Serial #:** 55412

### Test Data

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required</th>
<th>% Compaction Min</th>
<th>% Compaction Max</th>
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</thead>
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<tr>
<td>1</td>
<td>Subgrade</td>
<td>5384.06</td>
<td>D 6 10.6 2 2</td>
<td>129.7</td>
<td>117.3</td>
<td>120.1</td>
<td>98</td>
<td>95</td>
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<tr>
<td>2</td>
<td>Subgrade</td>
<td>5381.71</td>
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<td>95</td>
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<td>3</td>
<td>Subgrade</td>
<td>5385.04</td>
<td>D 6 10.0 2 2</td>
<td>130.6</td>
<td>118.9</td>
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<tr>
<td>4</td>
<td>Subgrade</td>
<td>5381.04</td>
<td>D 6 10.0 2 2</td>
<td>129.6</td>
<td>117.9</td>
<td>120.1</td>
<td>98</td>
<td>95</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Below Top of Subgrade, BTG Below Top of Fill, FTG Final Top of Gravel, FG1 Finished Gravel, FTG1 Finished Top of Gravel, BOP Bottom of Pipe, BOP/B Bottom of Base, BGP/B Bottom of Pipe, GPG/PG Gravel Pipe. Test Methods for Direct Transmission and R for Blockbolter Modes.

**Reviewed By:**

**Distribution:** Client:  
Supplier:  
Other: Don Lopez (email) (1)  
AMEC Earth & Environmental Inc.  
8129 Jefferson NE  
Albuquerque, NM 87112  
(505) 821-1801  
FAX: (505) 821-7371
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1811</td>
<td>120.1</td>
<td>11.6</td>
<td>ASTM D698-07 / a</td>
<td>Light Red Sandy</td>
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<tr>
<td>9-0629-04</td>
<td>115.8</td>
<td>12.3</td>
<td>ASTM D698-07 / A</td>
<td>Clayey Silty Sand</td>
</tr>
</tbody>
</table>

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 |
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 | 120.3 | 117.4 | 120.1 | 98 | 90 |
04-1     East Slope Lift 5  | 5384.07   D  12 | 13.0 | 2 | 2 | 123.9 | 123.3 | 120.1 | 94 | 90 |
05-1     West Slope Lift 6  | 5370.92   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 | 99 | 90 |
09-1     North Slope Lift 7  | 5381.80   D  6 | 14.0 | 2 | 2 | 121.7 | 105.7 | 115.8 | 92 | 90 |

Distribution: Client: ✔  File: ✔  Supplier: ✔  Other:  Addressee (0)
Email: ____________________________________________
Don Lopez (email) (1)
Pual Molina (email) (1)

BTSE=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.

AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 505-921-8921
t Fax 505-921-7371 www.amec.com

Report Date: June 23, 2009
Project #: 9-519-005363
Report #: 22570
Tested By: Robert Carr
Date Tested: 6/19/2009
Visual Description of Landfill Cap
Material:
### FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

**Moisture Density Curves Used**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-0629-04</td>
<td>115.8</td>
<td>12.3</td>
<td>ASTM D698-07 / A</td>
<td>Clayey Silty Sand</td>
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</table>

**Nuclear Density Gauge**

- **Make:** Tracer
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>North Slope Lift 8, Grid Block 13 (Retest)</td>
<td>5382.54</td>
<td>D</td>
<td>6</td>
<td>10.9</td>
<td>2</td>
<td>2</td>
<td>117.1</td>
<td>105.6</td>
<td>91</td>
<td>90</td>
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<td>02-1</td>
<td>North Slope Lift 8, Grid Block 10 (Retest)</td>
<td>5381.31</td>
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<td>6</td>
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<td>2</td>
<td>117.0</td>
<td>105.9</td>
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<td>90</td>
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<tr>
<td>03-1</td>
<td>North Slope Lift 8, Grid Block 5 (Retest)</td>
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**Distribution:**

- **Client:** ✓
- **File:** ✓
- **Supplier:** ✓
- **Other:** Addressee (0)
  - Don Lopez (email) (1)
  - Paul Molina (email) (1)

---

**Amec Earth & Environmental, Inc.**
8510 Jefferson NE
Albuquerque, NM 87113
Tel 505-821-1801
Fax 505-821-7371

www.amec.com
### Field Density Test Using Nuclear Density Gauge (ASTM D6938-08)

#### Moisture Density Curves Used

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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<tbody>
<tr>
<td>9-0629-04</td>
<td>115.8</td>
<td>12.3</td>
<td>ASTM D698-07 / A</td>
<td>Clayey Silty Sand</td>
</tr>
</tbody>
</table>

#### Nuclear Density Gauge

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Prove Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min Max</th>
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<tbody>
<tr>
<td>01-1</td>
<td>Native Soil Lift 3, Grid Block 2</td>
<td>5383.34</td>
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<td>10.8</td>
<td>124.3</td>
<td>112.1</td>
<td>115.8</td>
<td>97 90</td>
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</table>

Reviewed By: [Signature]

**Distribution:**
- Client: ✔
- File: ✔
- Supplier: ✔
- Other:  
  - Address(0)
  - Don Lopez (email) (1)
  - Paul Molina (email) (1)

**BTSG = Below Top of Subbase, BTOF = Below Top of Fill, FBC = Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BB = 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 505-824-8001
Fax 505-821-7371

www.amec.com
### FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

**Moisture Density Curves Used**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>9-0629-01</td>
<td>117.0</td>
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<td>Silty Sand</td>
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</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>% Moisture Required (+)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
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</thead>
<tbody>
<tr>
<td>01-1</td>
<td>Native Soil Lift 3, Grid Block 8</td>
<td>5385.53</td>
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<td>121.1</td>
<td>110.1</td>
<td>117.0</td>
<td>94</td>
<td>90</td>
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**Distribution:**

- **Client:** ✓  
- **File:** ✓  
- **Supplier:** ✓  
- **Other:** ✓  

**Addressee:**

- Don Lopez (email) (1)
- Paul Molina (email) (1)

---

**BTSC = 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
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

<table>
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<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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<td>9-0629-01</td>
<td>117.0</td>
<td>12.0</td>
<td>ASTM D698-07 / B</td>
<td>Silty Sand</td>
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Nuclear Density Gauge

Make: Troxler
Model #: 3430
Serial #: 35427

<table>
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<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
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<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required</th>
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</thead>
<tbody>
<tr>
<td>01-1</td>
<td>Native Soil Lift 3, Grid Block 11</td>
<td>5388.37</td>
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<td>11.5</td>
<td>2</td>
<td>2</td>
<td>126.0</td>
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</tbody>
</table>

Reviewed By:

Distribution: Client: ✔ File: ✔ Supplier: ✔ Other: Addresssee (0)
Email: 

Don Lopez (email) (1)
Paul Molina (email) (1)

BTSG = Below Top of Subbase, BTOF = Below Top of Fill, FBC = Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOS = Bottom of Base, BCF = Bottom of Footing, OGP = Original Ground Prep

Test Mode = D for Direct Transmission and B for Backscatter Modes
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D5938-08)

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
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<td>9-0529-01</td>
<td>117.0</td>
<td>12.0</td>
<td>ASTM D698-07 / B</td>
<td>Silty Sand</td>
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</tbody>
</table>

Nuclear Density Gauge
Make: Troxler
Model #: 3430
Serial #: 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>Actual</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required</th>
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<tbody>
<tr>
<td>01-1</td>
<td>Native Soil Lift 4, Grid Block 13</td>
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<td>114.8</td>
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<td>98</td>
<td>90</td>
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<tr>
<td>02-1</td>
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<td>117.0</td>
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Reviewed By: jdr

Distribution: 
Client: ✔️ File: ✔️ Supplier: ✔️ Other: Addressed (0)
Email: 📧 Don Lopez (email) (1)
        📧 Paul Molina (email) (1)
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>9-0629-01</td>
<td>117.0</td>
<td>12.0</td>
<td>ASTM D698-07 / B</td>
<td>Silty Sand</td>
</tr>
</tbody>
</table>

Nuclear Density Gauge

Make: Troxler
Model #: 3430
Serial #: 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>Actual (%)</th>
<th>(+) (%)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required</th>
<th>Min</th>
<th>Max</th>
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<tbody>
<tr>
<td>01-1</td>
<td>Native Soil Lift 5, Grid Block 12</td>
<td>5388.33</td>
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<td>108.0</td>
<td>117.0</td>
<td>92</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

Reviewed By: [Signature]

Distribution: Client: ☑ File: ☑ Supplier: ☑ Other: Addressee (0):
Don Lopez (email) (1)
Paul Molina (email) (1)

BTB = Below Top of Subbase, BTOF = Below Top of Fill, FBC = Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipe, BOS = Bottom of Base, BC = 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 5058218801
Fax 5058217371
www.amec.com

Report Date: July 02, 2009
Project #: 9-519-005363
Report #: 22718
Tested By: Robert Carr
Date Tested: 7/1/2009
Visual Description of Landfill Cap Material:
### Field Density Test Using Nuclear Density Gauge (ASTM D6938-08)

#### Moisture Density Curves Used

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density (pcf)</th>
<th>Optimum Moisture (%)</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
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<tr>
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<td>117.0</td>
<td>12.0</td>
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<td>Silty Sand</td>
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#### Nuclear Density Gauge

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

#### Test Results

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (%)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
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<tr>
<td>01-1</td>
<td>Native Soil Lift 5, Grid Block 10</td>
<td>5385.29</td>
<td>D</td>
<td>4</td>
<td>12.3</td>
<td>123.4</td>
<td>109.9</td>
<td>117.0</td>
<td>94</td>
<td>90</td>
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<tr>
<td>02-1</td>
<td>Native Soil Lift 5, Grid Block 8</td>
<td>5387.37</td>
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<td>4</td>
<td>12.8</td>
<td>123.0</td>
<td>109.0</td>
<td>117.0</td>
<td>93</td>
<td>90</td>
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<tr>
<td>03-1</td>
<td>Native Soil Lift 5, Grid Block 6</td>
<td>5386.45</td>
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<td>4</td>
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<td>128.5</td>
<td>113.2</td>
<td>117.0</td>
<td>97</td>
<td>90</td>
</tr>
</tbody>
</table>

---

#### Distribution

- **Client:** ✓
- **File:** ✓
- **Supplier:** ✓
- **Other:**

  - Addressee (0)
  - Don Lopez (email) (1)
  - Paul Molina (email) (1)

---

**BTDB =** 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, **CGF =** 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 5055211801
Fax 5059217371
www.amec.com
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-0629-01</td>
<td>117.0</td>
<td>12.0</td>
<td>ASTM D698-07 / B</td>
<td>Silty Sand</td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**
- Make: Troxler
- Model #: 3430
- Serial #: 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>Native Soil Lift 5, Grid Block 4</td>
<td>5385.02</td>
<td>D</td>
<td>10.0 / 2 / 2</td>
<td>128.7</td>
<td>117.0</td>
<td>117.0</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>02-1</td>
<td>Native Soil Lift 5, Grid Block 2</td>
<td>5384.18</td>
<td>D</td>
<td>10.2 / 2 / 2</td>
<td>124.6</td>
<td>113.1</td>
<td>117.0</td>
<td>97</td>
<td>90</td>
</tr>
</tbody>
</table>

Reviewed By: [Signature]

**Distribution:**
- Client: [✓]
- File: [✓]
- Supplier: [✓]
- Other: [ ]

**Address(es):**
- Don Lopez (email) (1)
- Paul Molina (email) (1)

**Notes:**
- BTSB = Below Top of Subbase
- BTOF = Below Top of Fill
- FBC = Final Base Course
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- FBC = Finished Base Course
- BOP = Bottom of Pipe
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**Test Mode:**
- D for Direct Transmission and B for Backscatter Modes
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<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density (pcf)</th>
<th>Optimum Moisture (%)</th>
<th>Test Type / Method</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>9-0529-01</td>
<td>117.0</td>
<td>12.0</td>
<td>ASTM D698-07 / B</td>
<td>Silty Sand</td>
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**Nuclear Density Gauge**
- Make: Troxler
- Model #: 3430
- Serial #: 35427

**Test Results**

<table>
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<th>Test #</th>
<th>Location</th>
<th>Elevation (ft)</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>Native Soil Lift 6, Grid Block 11</td>
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<td>2</td>
<td>2</td>
<td>128.4</td>
<td>116.3</td>
<td>117.0</td>
</tr>
<tr>
<td>02-1</td>
<td>Native Soil Lift 6, Grid Block 13</td>
<td>5388.39</td>
<td>D</td>
<td>4</td>
<td>12.2</td>
<td>2</td>
<td>2</td>
<td>131.2</td>
<td>116.9</td>
<td>117.0</td>
</tr>
</tbody>
</table>

**Distribution:**
- **Client:** X
- **File:** X
- **Supplier:** X
- **Other:**
  - Address: (0)
  - Don Lopez (email) (1)
  - Paul Molina (email) (1)

**Notes:**
- 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
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**Moisture Density Curves Used**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-0629-01</td>
<td>117.0</td>
<td>12.0</td>
<td>ASTM D698-07 / B</td>
<td>Silty Sand</td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required</th>
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</thead>
<tbody>
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<td>Native Soil Lift 6, Grid Block 8</td>
<td>5386.48</td>
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<td>02-1</td>
<td>Native Soil Lift 6, Grid Block 6</td>
<td>5386.07</td>
<td>D</td>
<td>4</td>
<td>10.3</td>
<td>2</td>
<td>2</td>
<td>119.4</td>
<td>108.3</td>
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<tr>
<td>03-1</td>
<td>Native Soil Lift 6, Grid Block 2</td>
<td>5383.91</td>
<td>D</td>
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<td>14.0</td>
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<td>2</td>
<td>126.7</td>
<td>111.1</td>
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<tr>
<td>04-1</td>
<td>Native Soil Lift 6, Grid Block 4</td>
<td>5384.61</td>
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<td>10.9</td>
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<tr>
<td>05-1</td>
<td>Native Soil Lift 5, Grid Block 9</td>
<td>5386.18</td>
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<td>11.4</td>
<td>2</td>
<td>2</td>
<td>132.1</td>
<td>118.6</td>
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**Reviewed By:**

jdr

**Distribution:**

- Client: ✓
- File: ✓
- Supplier: ✓
- Other: Addressee (0)

Don Lopez (email) (1)
Paul Molina (email) (1)

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Test Mode = D for Direct Transmission and B for Backscatter Modes

1 of 1
FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-0529-01</td>
<td>117.0</td>
<td>12.0</td>
<td>ASTM D6938-07 / B</td>
<td>Silty Sand</td>
</tr>
</tbody>
</table>

Nuclear Density Gauge
- Make: Troxler
- Model #: 3430
- Serial #: 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction Required Min Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>Native Soil Lift 7, Grid Block 11</td>
<td>5389.85</td>
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<td>126.4</td>
<td>112.8</td>
<td>117.0</td>
<td>96 90</td>
</tr>
<tr>
<td>02-1</td>
<td>Native Soil Lift 7, Grid Block 13</td>
<td>5387.14</td>
<td>D</td>
<td>4</td>
<td>12.8</td>
<td>129.1</td>
<td>114.4</td>
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<tr>
<td>03-1</td>
<td>Native Soil Lift 7, Grid Block 9</td>
<td>5387.79</td>
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<td>115.4</td>
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<td>04-1</td>
<td>Native Soil Lift 7, Grid Block 17</td>
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<td>12.4</td>
<td>131.9</td>
<td>117.3</td>
<td>117.0</td>
<td>100 90</td>
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</table>

Reviewed By: [Signature]

Distribution: Client: ☑ File: ☑ Supplier: ☑ Other: Addressess (0)
- Don Lopez (email) (1)
- Paul Moline (email) (1)

BTSB = Below Top of Subbase, BTOF = Below Top of Fill, BFC = Final Base Course, FSG = Finished Subgrade, FBC = Finished Base Course, BOP = Bottom of Pipes, BOB = Bottom of Base, BOF = Bottom of Footing, OGP = Original Ground Prep

Test Mode = D for Direct Transmission and B for Backscatter Modes
# FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-0829-01</td>
<td>117.0</td>
<td>12.0</td>
<td>ASTM D698-07 / B</td>
<td>Silty Sand</td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler
- **Model #:** 3430
- **Serial #:** 35427

<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required (t) (+)</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>% Compaction Required Min</th>
<th>% Compaction Required Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-1</td>
<td>Native Soil Lift 7, Grid Block 1</td>
<td>5384.90</td>
<td>D</td>
<td>4</td>
<td>14.0 2 2</td>
<td>124.1</td>
<td>106.9</td>
<td>117.0</td>
<td>93</td>
<td>90</td>
<td>95</td>
</tr>
<tr>
<td>02-1</td>
<td>Native Soil Lift 7, Grid Block 3</td>
<td>5386.74</td>
<td>D</td>
<td>4</td>
<td>10.5 2 2</td>
<td>119.5</td>
<td>108.2</td>
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<td>90</td>
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<td>Native Soil Lift 7, Grid Block 5</td>
<td>5382.35</td>
<td>D</td>
<td>4</td>
<td>12.2 2 2</td>
<td>124.5</td>
<td>111.0</td>
<td>117.0</td>
<td>95</td>
<td>90</td>
<td>95</td>
</tr>
</tbody>
</table>

**Distribution:**

- **Client:** ✓
- **File:** ✓
- **Supplier:** ✓
- **Other:**
  - Addressee (0)
  - Don Lopez (email) (1)
  - Paul Molina (email) (1)

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AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel: 505-211-801
Fax 505-217-7371
www.amec.com

Report Date: July 24, 2009
Project #: 9-519-005303
Report #: 22946
Tested By: Robert Carr
Date Tested: 7/22/2009
Visual Description of Landfill Cap Material:
**FIELD DENSITY TEST USING NUCLEAR DENSITY GAUGE (ASTM D6938-08)**

**Moisture Density Curves Used**

<table>
<thead>
<tr>
<th>AMEC Lab #</th>
<th>Maximum Density</th>
<th>Optimum Moisture</th>
<th>Test Type / Method</th>
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<tbody>
<tr>
<td>9-0829-01</td>
<td>117.0</td>
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<td>ASTM D698-07 / B</td>
<td>Silty Sand</td>
</tr>
</tbody>
</table>

**Nuclear Density Gauge**

- **Make:** Troxler
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<table>
<thead>
<tr>
<th>Test #</th>
<th>Location</th>
<th>Elevation</th>
<th>Test Mode</th>
<th>Probe Depth (in)</th>
<th>% Moisture Required</th>
<th>Wet Density (pcf)</th>
<th>Dry Density (pcf)</th>
<th>Maximum Density (pcf)</th>
<th>% Compaction</th>
<th>Min</th>
<th>Max</th>
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<tbody>
<tr>
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<td>Native Soil Lift 8, Grid Block 12.</td>
<td>5380.71</td>
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<td>115.5</td>
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<td>99</td>
</tr>
<tr>
<td>03-1</td>
<td>Native Soil Lift 8, Grid Block 2</td>
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<td>6</td>
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<td>116.1</td>
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<td>04-1</td>
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<td>97</td>
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<td>05-1</td>
<td>Native Soil Lift 8, Grid Block 8</td>
<td>5388.66</td>
<td>D</td>
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<td>10.3</td>
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<td>117.0</td>
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<td>2</td>
<td>129.2</td>
<td>116.4</td>
<td>117.0</td>
<td>99</td>
</tr>
</tbody>
</table>

**Distribution:** Client: [✓] File: [✓] Supplier: [✓] Other: [ ]

- Addresssee (0)
  - Don Lopez (email) (1)
  - Paul Morena (email) (1)

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AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 505-921-1100
Fax 505-921-7371
www.amec.com
2009 Saturated Hydraulic Conductivity Tests
### Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Diameter</td>
<td>6.22</td>
</tr>
<tr>
<td>Initial Length</td>
<td>7.12</td>
</tr>
<tr>
<td>Final Diameter</td>
<td>6.22</td>
</tr>
<tr>
<td>Final Length</td>
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</tr>
<tr>
<td>Initial Gravimetric Water Content</td>
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</tr>
<tr>
<td>Initial Dry Bulk Density</td>
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<tr>
<td>Final Gravimetric Water Content</td>
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</tr>
<tr>
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<td>Permeant Liquid</td>
<td>TAP WATER</td>
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<tr>
<td>Percent Swell</td>
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<tr>
<td>Specific Gravity Assumed? (Y/N)</td>
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<tr>
<td>Permeameter Top Allows Swelling? (Y/N)</td>
<td>N</td>
</tr>
<tr>
<td>Controlled Vertical Stress Applied? (Y/N)</td>
<td>N</td>
</tr>
<tr>
<td>Total Pore Volumes Run Through Sample</td>
<td>0.9</td>
</tr>
<tr>
<td>Averaged K_sat Value of Last Four Readings (cm/s)*</td>
<td>4.03E-04</td>
</tr>
<tr>
<td>Averaged K_sat Value of Chosen Readings (cm/s)*</td>
<td>4.02E-04</td>
</tr>
</tbody>
</table>

* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by
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

AMEC Earth Environmental, Inc.
8519 Jefferson NW
Albuquerque, NM 87113
Phone: (505) 821-1901
Fax: (505) 821-7371
www.amec.com
Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

<table>
<thead>
<tr>
<th>INITIAL DIAMETER</th>
<th>INITIAL GRAVIMETRIC WATER CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.13</td>
<td>12.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INITIAL LENGTH</th>
<th>INITIAL DRY BULK DENSITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.63</td>
<td>105.5</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>FINAL DIAMETER</th>
<th>FINAL GRAVIMETRIC WATER CONTENT</th>
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<tr>
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<tbody>
<tr>
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<table>
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<tr>
<th>TEST METHOD USED</th>
<th>% OF D698 PROCTOR</th>
<th>SPECIFIC GRAVITY</th>
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</thead>
<tbody>
<tr>
<td>B: Falling Head/Constant Tail</td>
<td>90.2%</td>
<td>2.65</td>
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<table>
<thead>
<tr>
<th>PERMEANT LIQUID</th>
<th>SPECIFIC GRAVITY</th>
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<tbody>
<tr>
<td>TAP WATER</td>
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<table>
<thead>
<tr>
<th>PERCENT SWELL</th>
<th>DEGREE OF SATURATION</th>
</tr>
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<tbody>
<tr>
<td>NA</td>
<td>99.5%</td>
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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

Hydraulic Conductivity Vs Time*

* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by [Signature]
Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

INITIAL DIAMETER 6.13
INITIAL LENGTH 7.63
FINAL DIAMETER 6.13
INITIAL GRAVIMETRIC WATER CONTENT 12.4%
INITIAL DRY BULK DENSITY 105.0
FINAL GRAVIMETRIC WATER CONTENT 20.1%
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

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6519 Jefferson NW
Albuquerque, NM 87113
Phone: (505) 821-1901
Fax: (505) 821-7371  www.amec.com
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
Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
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<tbody>
<tr>
<td>Initial Diameter</td>
<td>6.11</td>
</tr>
<tr>
<td>Initial Length</td>
<td>7.60</td>
</tr>
<tr>
<td>Final Diameter</td>
<td>6.11</td>
</tr>
<tr>
<td>Final Length</td>
<td>NO DATA</td>
</tr>
<tr>
<td>Test Method Used</td>
<td>C: Falling Head/Rising Tail</td>
</tr>
<tr>
<td>Permeant Liquid</td>
<td>TAP WATER</td>
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<tr>
<td>Percent Swell</td>
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<tr>
<td>Initial Gravimetric Water Content</td>
<td>12.0%</td>
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<tr>
<td>Initial Dry Bulk Density</td>
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<tr>
<td>Final Gravimetric Water Content</td>
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<tr>
<td>Final Dry Bulk Density</td>
<td>NO DATA</td>
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<tr>
<td>% of D698 Compaction</td>
<td>84.6%</td>
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<td>Specific Gravity</td>
<td>2.65</td>
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<tr>
<td>Degree of Saturation</td>
<td>83.0%</td>
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</table>

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

Hydraulic Conductivity Vs Time*

* All hydraulic conductivity values normalized to a water viscosity at 20° C
Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-96)

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<tr>
<th>Parameter</th>
<th>Value</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>INITIAL DIAMETER</td>
<td>6.10</td>
<td>INITIAL GRAVIMETRIC WATER CONTENT</td>
<td>10.9%</td>
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<tr>
<td>INITIAL LENGTH</td>
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<td>INITIAL DRY BULK DENSITY</td>
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<tr>
<td>FINAL DIAMETER</td>
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<td>FINAL GRAVIMETRIC WATER CONTENT</td>
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<td>FINAL DRY BULK DENSITY</td>
<td>NO DATA</td>
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<tr>
<td>TEST METHOD USED</td>
<td>B:Falling Head/Constant Tail</td>
<td>% OF D698 PROCTOR</td>
<td>81.2%</td>
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<tr>
<td>PERMEANT LIQUID</td>
<td>TAP WATER</td>
<td>SPECIFIC GRAVITY</td>
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</tr>
<tr>
<td>PERCENT SWELL</td>
<td>NA</td>
<td>DEGREE OF SATURATION</td>
<td>83.7%</td>
</tr>
</tbody>
</table>

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  0.8
AVERAGED Ksat VALUE OF LAST FOUR READINGS (cm/s)*  1.82E-04
AVERAGED Ksat VALUE OF CHOSEN READINGS (cm/s)*  1.87E-04

Hydraulic Conductivity Vs Time*

* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by
Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-96)

<table>
<thead>
<tr>
<th>INITIAL DIAMETER</th>
<th>6.24</th>
<th>INITIAL GRAVIMETRIC WATER CONTENT</th>
<th>12.2%</th>
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</thead>
<tbody>
<tr>
<td>INITIAL LENGTH</td>
<td>6.63</td>
<td>INITIAL DRY BULK DENSITY</td>
<td>105.1</td>
</tr>
<tr>
<td>FINAL DIAMETER</td>
<td>6.24</td>
<td>FINAL GRAVIMETRIC WATER CONTENT</td>
<td>22.5%</td>
</tr>
<tr>
<td>FINAL LENGTH</td>
<td>NO DATA</td>
<td>FINAL DRY BULK DENSITY</td>
<td>NO DATA</td>
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<tr>
<td>TEST METHOD USED</td>
<td>A:Constant Head</td>
<td>% OF D698 PROCTOR</td>
<td>89.8%</td>
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<tr>
<td>PERMEANT LIQUID</td>
<td>TAP WATER</td>
<td>SPECIFIC GRAVITY</td>
<td>2.65</td>
</tr>
<tr>
<td>PERCENT SWELL</td>
<td>NA</td>
<td>DEGREE OF SATURATION</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

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 of 20° C

Reviewed by

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5519 Jefferson NW
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Fax: (505) 821-7371
www.amec.com
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

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Phone: (505) 821-1901
Fax: (505) 821-7371
www.amec.com
Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5858-95)

INITIAL DIAMETER 6.14
INITIAL LENGTH 7.59
FINAL DIAMETER 6.14
FINAL LENGTH NO DATA
TEST METHOD USED A. Constant Head
PERMEANT LIQUID TAP WATER
PERCENT SWELL NA

INITIAL GRAVIMETRIC WATER CONTENT 11.6%
INITIAL DRY BULK DENSITY 111.5
FINAL GRAVIMETRIC WATER CONTENT 18.5%
FINAL DRY BULK DENSITY NO DATA
% OF D698 PROCTOR 95.3%
SPECIFIC GRAVITY 2.65
DEGREE OF SATURATION 100.0%

SPECIFIC GRAVITY ASSUMED? (Y/N) Y
PERMEAMETER TOP ALWAYS SWELLING? (Y/N) N
CONTROLLED VERTICAL STRESS APPLIED? (Y/N) N
TOTAL PORE VOLUMES RUN THROUGH SAMPLE 0.3
AVERAGED \( K_{\text{sat}} \) VALUE OF LAST FOUR READINGS (cm/s)* 1.46E-04
AVERAGED \( K_{\text{sat}} \) VALUE OF CHOSEN READINGS (cm/s)* 1.43E-04

Hydraulic Conductivity Vs Time*

* All hydraulic conductivity values normalized to a water viscosity at 20° C

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Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>INITIAL DIAMETER</td>
<td>6.14</td>
</tr>
<tr>
<td>INITIAL LENGTH</td>
<td>7.58</td>
</tr>
<tr>
<td>FINAL DIAMETER</td>
<td>6.14</td>
</tr>
<tr>
<td>FINAL LENGTH</td>
<td>NO DATA</td>
</tr>
<tr>
<td>INITIAL GRAVIMETRIC WATER CONTENT</td>
<td>12.2%</td>
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<tr>
<td>INITIAL DRY BULK DENSITY</td>
<td>110.6</td>
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<tr>
<td>FINAL GRAVIMETRIC WATER CONTENT</td>
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<tr>
<td>FINAL DRY BULK DENSITY</td>
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<td>TEST METHOD USED</td>
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</tr>
<tr>
<td>PERMEANT LIQUID</td>
<td>TAP WATER</td>
</tr>
<tr>
<td>PERCENT SWELL</td>
<td>NA</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY</td>
<td>2.65</td>
</tr>
<tr>
<td>DEGREE OF SATURATION</td>
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</tr>
<tr>
<td>D698 PROCTOR</td>
<td>94.6%</td>
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</tbody>
</table>

**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: [Signature]

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<tr>
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</tr>
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<td>6.13</td>
<td></td>
</tr>
<tr>
<td>FINAL LENGTH</td>
<td>NO DATA</td>
<td></td>
</tr>
<tr>
<td>TEST METHOD USED</td>
<td>A:Constant Head</td>
<td></td>
</tr>
<tr>
<td>PERMEANT LIQUID</td>
<td>TAP WATER</td>
<td></td>
</tr>
<tr>
<td>PERCENT SWELL</td>
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</tr>
<tr>
<td>INITIAL GRAVIMETRIC WATER CONTENT</td>
<td>11.7%</td>
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</tr>
<tr>
<td>INITIAL DRY BULK DENSITY</td>
<td>105.6</td>
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</tr>
<tr>
<td>FINAL GRAVIMETRIC WATER CONTENT</td>
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<td>FINAL DRY BULK DENSITY</td>
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<td></td>
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<tr>
<td>% OF D698 PROCTOR</td>
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</tr>
<tr>
<td>SPECIFIC GRAVITY</td>
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<td></td>
</tr>
<tr>
<td>DEGREE OF SATURATION</td>
<td>100.0%</td>
<td></td>
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</table>

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)* 3.13E-04
AVERAGED K_sat VALUE OF CHOSEN READINGS (cm/s)* 3.05E-04

Hydraulic Conductivity Vs Time*

* All hydraulic conductivity values normalized to a water viscosity at 20°C
Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

<table>
<thead>
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<th>INITIAL DIAMETER</th>
<th>INITIAL GRAVIMETRIC WATER CONTENT</th>
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<tbody>
<tr>
<td>6.12</td>
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<table>
<thead>
<tr>
<th>INITIAL LENGTH</th>
<th>INITIAL DRY BULK DENSITY</th>
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<tbody>
<tr>
<td>7.58</td>
<td>105.6</td>
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<table>
<thead>
<tr>
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<th>FINAL GRAVIMETRIC WATER CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.12</td>
<td>22.5%</td>
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</table>

<table>
<thead>
<tr>
<th>FINAL LENGTH</th>
<th>FINAL DRY BULK DENSITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO DATA</td>
<td>NO DATA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEST METHOD USED</th>
<th>% OF D698 PROCTOR</th>
<th>SPECIFIC GRAVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A:Constant Head</td>
<td>90.3%</td>
<td>2.65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PERMEANT LIQUID</th>
<th>DEGREE OF SATURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAP WATER</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

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 0.8

AVERRAGED $K_{sat}$ VALUE OF LAST FOUR READINGS (cm/s)* 3.52E-04
AVERRAGED $K_{sat}$ VALUE OF CHOSEN READINGS (cm/s)* 3.51E-04

* All hydraulic conductivity values normalized to a water viscosity at 20°C
Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

| INITIAL DIAMETER | 6.13 |
| INITIAL LENGTH   | 7.58 |
| FINAL DIAMETER   | 6.13 |
| FINAL LENGTH     | NO DATA |
| TEST METHOD USED | A:Constant Head |
| PERMEANT LIQUID  | TAP WATER |
| PERCENT SWELL    | NA |
| INITIAL GRAVIMETRIC WATER CONTENT | 12.7% |
| INITIAL DRY BULK DENSITY   | 104.7 |
| FINAL GRAVIMETRIC WATER CONTENT | 21.7% |
| FINAL DRY BULK DENSITY | NO DATA |
| % OF D698 PROCTOR | 89.5% |
| SPECIFIC GRAVITY | 2.65 |
| 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

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<th>Parameter</th>
<th>Value</th>
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**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\textsubscript{sat} VALUE OF LAST FOUR READINGS (cm/s)**  2.22E-04

**AVERAGED K\textsubscript{sat} VALUE OF CHOSEN READINGS (cm/s)**  2.18E-04

---

**Hydraulic Conductivity Vs Time**

*All hydraulic conductivity values normalized to a water viscosity at 20° C*

Reviewed by

[Signature]
Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

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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

Hydraulic Conductivity Vs Time*

* All hydraulic conductivity values normalized to a water viscosity at 20° C
Measurement of Hydraulic Conductivity of Porous Material Using a Rigid Wall, Compaction-Mold Permeameter (ASTM D5856-95)

<table>
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<thead>
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<tbody>
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| 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

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www.amec.com
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

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<td>% OF D698 PROCTOR</td>
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<td>PERMEANT LIQUID</td>
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<td>1.23E-06</td>
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</tbody>
</table>

*All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by

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<td>PERCENT SWELL</td>
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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

Hydraulic Conductivity Vs Time*

* All hydraulic conductivity values normalized to a water viscosity at 20° C

Reviewed by [Signature]
ATTACHMENT 8

Summary Report for the Extension of Monitoring Well MWL-MW4 at the Mixed Waste Landfill
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<table>
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<th>ACRONYMS AND ABBREVIATIONS</th>
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</tr>
<tr>
<td>ET</td>
</tr>
<tr>
<td>ER</td>
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<td>ft</td>
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<tr>
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<td>WDC</td>
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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
Figure 1-2
Location of Monitoring Well MWL-MW4, Mixed Waste Landfill

Legend
- Monitoring Well
- Mobile Office / Shed
- MWL Burial Pit / Trench
- Edge of unpaved Road
- Fence
- MWL Disposal Area

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

<table>
<thead>
<tr>
<th>Well</th>
<th>Ground Surface Elevation (famsl)</th>
<th>Top of PVC Casing Elevation (famsl)</th>
<th>Depth to Tops and Bottoms of Screens (ft bgs)</th>
<th>Total Depth of Well (bottom of sump) (ft bgs)</th>
<th>Depth of groundwater sampling pump inlet (set at bottom of upper screen)</th>
</tr>
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<tbody>
<tr>
<td>MWL-MW4</td>
<td>5381.61</td>
<td>5383.46</td>
<td>482.5–502.5, 522.5–542.5</td>
<td>548</td>
<td>502.5 ft bgs, 504.35 ft btoc</td>
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<td>(original well)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MWL-MW4</td>
<td>5387.5 (5.89 ft above original MWL surface)</td>
<td>5389.03 (5.57 ft above top of original PVC well casing)</td>
<td>488.39–508.39, 528.39–548.39</td>
<td>553.89</td>
<td>508.39 ft bgs, 509.92 ft btoc</td>
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<tr>
<td>(extended well)</td>
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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
**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


INTRODUCTION


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.
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).

- 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.
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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
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


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

<table>
<thead>
<tr>
<th>Documentation Requirement</th>
<th>Location in the MWL Alternative Cover CQA Report (Appendix A)</th>
<th>Comments</th>
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<tr>
<td>Daily reports of construction activities</td>
<td>Described in Section 4.1 Reports in Attachment 3 NA CQC Data</td>
<td>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.</td>
</tr>
<tr>
<td>Documentation of equipment used</td>
<td>Described in Chapter 5.0, Table 13, and Daily Reports See comments for additional information NA</td>
<td>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.</td>
</tr>
<tr>
<td>Inspection checklists/forms ¹</td>
<td>Described in Section 4.2 Forms in Attachments 4-6 NA</td>
<td>Receiving, Construction, and Testing Inspection Forms and related documentation were completed by the CQA Team.</td>
</tr>
<tr>
<td>Supporting documentation for laboratory and field testing ¹</td>
<td>Described in Section 4.3 Supporting documentation in Attachment 7 Described in Section 4.3 Supporting documentation in Attachment 7</td>
<td>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.</td>
</tr>
<tr>
<td>As-Built Drawings</td>
<td>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 Drawings and 2009 As-Built Drawings in tabbed section at end of report</td>
<td>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.</td>
</tr>
<tr>
<td>Photographic records</td>
<td>Described in Section 4.5 NA</td>
<td>Photographic Logs for both 2006 and 2009 phases included in a tabbed section at end of the CQA Report.</td>
</tr>
<tr>
<td>CQA Engineer Approval of all Cover Layers, Design Changes, and Final Construction</td>
<td>Described in Sections 3.4, Chapters 7 and 9, and Tables 3 and 14 NA</td>
<td>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.</td>
</tr>
</tbody>
</table>

¹ 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
Mixed Waste Landfill
Alternative Cover Construction
Quality Assurance Report

Submitted to

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P.O. Box 5800
Albuquerque, NM 87185

January 2010

Revision 1

Submitted by

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One Park Square
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<td>6.0</td>
<td>Monitoring Well (MWL-MW4) Extension</td>
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<td>Cover Layer Approvals, <strong>Nonconformances</strong>, and Design Changes</td>
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Executive Summary


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 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 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
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 (Bioinursion, 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 Subgrade installation, 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 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.

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  
Title: CQA Certifying Engineer  
URS Group. Inc.  
State: New Mexico  
Date: January 14, 2010  
Registration No. 5122
### Table 8

**Mixed Waste Landfill 2009 ET Cover Construction**

Saturated Hydraulic Conductivity CQC Laboratory Results

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

**Average**                  90.2%  1.62E-04

**Geometric Mean**           90.2%  4.72E-05

**Median**                   90.0%  1.87E-04

---

\(^1\) **Minimum** **Maximum** Value is 4.6E-04.

\(^2\) Tests were performed using ASTM D5856 Rigid Wall Method.

CQC = Construction Quality Control
ET = Evapotranspirative
APPENDIX A

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

Volume 2
Attachments

(provided electronically on compact disc)
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

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