



Memorandum

MONTEREY REGIONAL WASTE MANAGEMENT DISTRICT

Reviewed by WMM Date 4-13-07
General Manager

DATE: April 3, 2007
TO: General Manager
FROM: Senior Engineer
SUBJECT: Sliver Fill Final Cover Construction Report

BACKGROUND

The Updated Landfill Master Plan included the utilization of the sliver fill technique for the existing northern exterior slopes of Modules 1, 2, and 3. This overfilling of the side slopes captures the airspace created by the settlement of these previously closed areas of the landfill. The general concept is to steepen the exterior slopes of the landfill by placing additional waste as a sliver fill to take advantage of the space located beneath the previously closed module caps created by the settlement of the existing waste. By removing the existing cover soils and placing additional waste as a sliver fill on these slopes, a significant increase in the overall site capacity is realized. Increasing the exterior landfill side slopes from 4:1 to 3:1 (horizontal:vertical) provides approximately 5.3 million cubic yards (3.5 million tons) of additional total landfill waste capacity. At a fill rate of an estimated 300,000 tons per year, this additional space represents an additional 12 years of landfill site life. Furthermore, the use of the sliver fill airspace delays the construction of the Module 5 liner, a \$2,000,000 capital outlay, by several years.

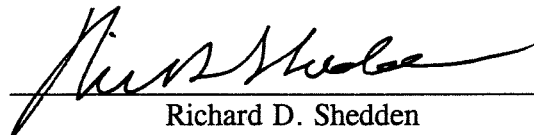
On February 10, 2006 the sliver fill was approved by the Regional Water Quality Control Board (RWQCB) and was also included in the revised Waste Discharge Requirements (WDRs) Order No. R302006-0017 also adopted by the RWQCB. The WDRs allow the use of the sliver fill only during the dry season, from April through September. Staff began the first season sliver fill operation in the spring of 2006, with final cover placement during October 2006. The existing final cover soil had to be removed and several landfill gas wells and the 12-inch landfill gas header had to be relocated. Also, the engineered fill/soil buttress and leachate collection piping had to be placed at the toe of Module 1 in anticipation of the sliver fill operation.

VECTOR'S CQA REPORT

A Construction Quality Assurance (CQA) Monitoring Plan for the final cover placement was prepared and approved by the RWQCB. A key component of the CQA work is to assure that the placement of the one-foot thick clay barrier layer meets the required maximum permeability of 1×10^{-6} cm/sec. Clay that was excavated and stockpiled during the construction of the Module 4 liner is suitable for use in the sliver fill final cover.

In April 2006, the Board of Directors authorized the execution of a contract with Vector Engineering, Inc., of Grass Valley, California, to provide Construction Quality Assurance (CQA) monitoring services related to the placement of final cover on the Module 1 Sliver Fill. The purpose of Vector's monitoring services was to verify that the District had used proper construction techniques and procedures, and to confirm that the closure improvements were constructed in accordance with the project plans and specifications. During construction, Vector conducted the necessary observations and testing to verify that the installation was conducted properly.

The conclusions of their observations and testing have been included in a certification report, titled "Final Construction Documentation Report for the 2006 Sliver Fill Closure Construction at the Monterey Peninsula Landfill." A copy of the Introduction, Signature Page, and Conclusion from the certification report is attached. The first year sliver fill operation and final cover placement went very smoothly, and was clearly a success. Staff intends to commence the second year sliver fill operation in April 2007, with additional final cover to be applied in October 2007.



Richard D. Shedden

Attachment

**FINAL CONSTRUCTION DOCUMENTATION REPORT
for the
2006 SLIVER FILL CLOSURE CONSTRUCTION
at the
MONTEREY PENINSULA LANDFILL**

Prepared for:

**Monterey Regional Waste Management District
14201 Del Monte Boulevard
Marina, California
(831) 384-5313**

Prepared by:

**VECTOR ENGINEERING, INC.
143E Spring Hill Drive
Grass Valley, California 95945
(530) 272-2448**

**November 2006
Project No. 011206.03**

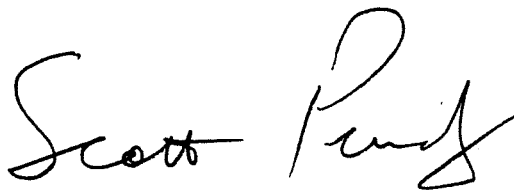
SIGNATURE PAGE

MONTEREY REGIONAL WASTE MANAGEMENT DISTRICT

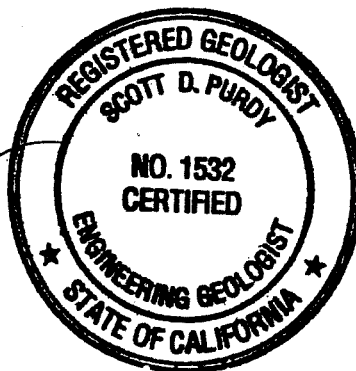
Vector Engineering, Inc. provided full-time construction quality assurance services during the construction of the 2006 Sliver Fill Closure System at the Monterey Peninsula Landfill, which began on October 3, 2006 and was completed by October 23, 2006. The following final construction certification report was prepared by Vector Engineering, Inc. and is hereby submitted to the RWQCB as required.

This report was prepared in accordance with generally accepted geotechnical and soils engineering practices applicable at the time the report was prepared. Vector Engineering, Inc. makes no other warranties, either expressed or implied, as to the professional advice provided under the terms of this agreement, and as described in this report. Our report consists of professional opinions and conclusions based on our testing and inspection program performed during construction.

The purpose of this report is to inform the RWQCB that, in our professional opinion, the cover system has been constructed and completed in general accordance with the plans and specifications, the SWFP, California regulations, and 40 CFR 258, Subtitle D. During the construction, Vector conducted the necessary observations and testing to verify that the installation was conducted properly. The conclusions of our observations and testing together with a written narrative describing the personnel, scope, methods, procedures and results of our CQA services, have been included in this certification report.



Scott Purdy, CEG No. 1532
CQA Project Manager



1.0 INTRODUCTION

This report summarizes the construction quality assurance (CQA) services provided by Vector Engineering, Inc. (Vector) for the Monterey Regional Waste Management District (District) during the construction of the capping system over a portion of the Module 1 sliver fill at the Monterey Peninsula Landfill. The project is located at 14201 Del Monte Boulevard approximately 2 miles north of the City of Marina. The closure area is comprised of a plan area of approximately 1.5 acres, as shown on figure 1. The elements that make up the composite liner system are as follows:

- 2-foot foundation soil cover
- 1-foot compacted low permeability layer ($k < 1 \times 10^{-6}$ cm/sec)
- 1-foot vegetative soil cover

In addition to the foot of vegetative cover, the District also placed an additional foot of biosolids to further promote vegetative growth. Vector conducted full-time CQA services at the site during placement of the low permeability barrier layer in order to verify that the closure improvements satisfied the requirements of the Federal regulations (RCRA Subtitle D), California regulations, and the site permit requirements.

The purpose of this project was to document construction quality assurance monitoring, to verify that proper construction techniques and procedures were used, and to confirm that the closure improvements were constructed in accordance with the project plans and specifications. The controlling documents for this project were as follows:

“Cover System Test Pad and Construction Quality Assurance Plan for the Monterey Peninsula Landfill” dated December 2004, by Vector Engineering, Inc.

The following report contains a discussion of the CQA procedures performed by Vector, a discussion of the construction activities, and a description of the activities observed and tested by Vector. This report also contains appendices describing the

daily construction activities, earthworks testing results, and other information pertaining to the quality assurance monitoring of the closure system.



GRAPHIC SCALE



LEGEND

- EXISTING 10 FT. CONTOURS
- EXISTING 2 FT. CONTOURS
- ==== LANDFILL FOOTPRINT
- PROPERTY BOUNDARY
- EXISTING DRAINAGE
- EXISTING DIRT ROADS
- EXISTING LINER LIMITS
- LIMITS OF WET WEATHER AREA
- VEGETATION
- ◆ POWER POLES

WET WEATHER AREA

MODULE 1

LIMITS OF SLIVER FILL FINAL COVER
2006

NOTES:
1) AERIAL SURVEY BY AERIAL PHOTOMAPPING SERVICES
DATED JULY 6, 2006.

FILE NAME, INFORMATION, ETC.

DATE OF ISSUE: 02/02/2007
 DRAWN BY: SDP
 CHECKED BY: SDP
 APPROVED BY: SDP

VECTOR
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MONTEREY PENINSULA LANDFILL
 2006 SLIVER FILL CLOSURE
 MONTEREY COUNTY, CALIFORNIA
LIMITS OF SLIVER FILL FINAL COVER

FIGURE NO.
1
 PROJECT NO.
 011206.03

This drawing has not been published but rather has been prepared by Vector Engineering, Inc. for use by the client named in the title block, solely in respect of the construction operation, and maintenance of the facility named in the title block. Vector Engineering, Inc. shall not be liable for the use of this drawing on any other facility or for any other purpose.

5.0 CONCLUSION

The construction of the capping system over the Module 1 sliver fill at the Monterey Peninsula Landfill placed in the 2006 construction season was complete on October 23, 2006. Based on our observations and testing during the construction of the closure cap, it is Vector's professional judgment that the Module 1 sliver fill cover system at the Monterey Peninsula Landfill was completed in general accordance with the project plans and specifications, CQA plan, applicable regulations, and design modifications.