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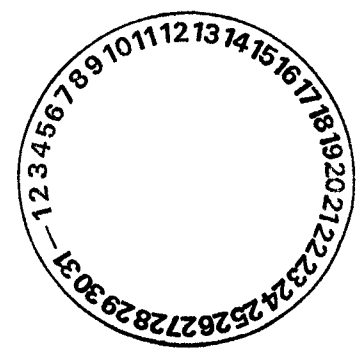
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MAY 11 2004

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Sandra Martin, Acting Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Rd. East
Building 1
Santa Fe, NM 87505



Dear Ms. Martin:

On behalf of the Department of Energy (DOE) and Sandia Corporation, DOE is submitting two documents, the Current Conceptual Model of Groundwater Flow and Contaminant Transport at Sandia National Laboratories/New Mexico (SNL/NM) Technical Area-V (TA-V); and the Corrective Measures Evaluation (CME) Work Plan, Technical Area-V Groundwater Plume. These submittals are required under the final Compliance Order on Consent (Consent Order) for Sandia National Laboratories, New Mexico, EPA ID No. 5890110518.

The Current Conceptual Model report satisfies the requirements of Section IV.C of the Consent Order, which states that site characterization efforts at SNL/NM TA-V must be completed to the satisfaction of the NMED prior to conducting a Corrective Measures Evaluation (CME). The objective of the Current Conceptual Model is to provide a basis for the NMED to determine the adequacy of site characterization performed at TA-V so that SNL/NM can proceed with a CME. Evaluation of remedial alternatives for contaminants of concern in groundwater at TA-V relies on this current conceptual model of groundwater flow and contaminant transport.

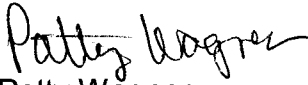
The CME Work Plan has also been developed under the direction of Section IV of the Consent Order, which identifies TA-V as an area of groundwater contamination requiring completion of a CME. The CME Work Plan complies with requirements set forth in the Consent Order and with the guidance of the Resource Conservation and Recovery Act Corrective Action Plan

The Corrective Measures Implementation Schedule found in Section 7 of the CME Work Plan shows the steps for completion of a CME Report by September 30, 2005 (the date established by Table XI-2 of the Consent Order). To ensure that the CME Report due date is met, we request that any comments by the NMED on the enclosed documents be provided by June 16, 2004.



If you have any questions, please contact John Gould [(505) 845-6089] of my staff.

Sincerely,


Patty Wagner
Manager

Enclosures

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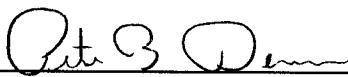
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CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

**Document title: Corrective Measures Evaluation Work Plan Technical Area V
Groundwater; and
Current Conceptual Model of Groundwater Flow and Containment
Transport at Sandia National Laboratories/New Mexico
Technical Area V**

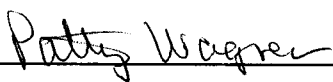
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and

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Sandia Site Office
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4-30-04
Date

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Printed April 2004

Current Conceptual Model of Groundwater Flow and Contaminant Transport at Sandia National Laboratories/New Mexico Technical Area V

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Sandia is a multiprogram laboratory operated by Sandia Corporation,
a Lockheed Martin Company, for the United States Department of Energy's
National Nuclear Security Administration under Contract DE-AC04-94AL85000.

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Collective Measures Evaluation Work Plan Technical Area V Groundwater

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Current Conceptual Model of Groundwater Flow and Contaminant Transport at Sandia National Laboratories/New Mexico Technical Area V

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Abstract

The New Mexico Environment Department (NMED) requires a Corrective Measures Evaluation to evaluate potential remedial alternatives for contaminants of concern (COCs) in groundwater at Sandia National Laboratories/New Mexico (SNL/NM) Technical Area (TA)-V. These COCs consist of trichloroethene, tetrachloroethene, and nitrate. This document presents the current conceptual model of groundwater flow and transport at TA-V that will provide the basis for a technically defensible evaluation.

Characterization is defined by nine requirement areas that were identified in the NMED Compliance Order on Consent. These characterization requirement areas consist of geohydrologic characteristics that control the subsurface distribution and transport of contaminants. This conceptual model document summarizes the regional geohydrologic setting of SNL/NM TA-V. The document also presents a summary of site-specific geohydrologic data and integrates these data into the current conceptual model of flow and contaminant transport. This summary includes characterization of the local geologic framework; characterization of hydrologic conditions at TA-V, including recharge, hydraulics of vadose-zone and aquifer flow, and the aquifer field of flow as it pertains to downgradient receptors. The summary also discusses characterization of contaminant transport in the subsurface, including discussion about source term inventory, release, and contaminant distribution and transport in the vadose zone and aquifer.

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Acronyms

AOC	area of concern
ARG	ancestral Rio Grande
bgs	below ground surface
CME	Corrective Measures Evaluation
COA	City of Albuquerque
COC	contaminant of concern
COOC	Compliance Order on Consent
DO	dissolved oxygen
DOE	U.S. Department of Energy
EPA	Environmental Protection Agency
ER	environmental restoration
ft/min	feet per minute
ft/yr	feet per year
gpm	gallons per minute
KAFB	Kirtland Air Force Base
LWDS	Liquid Waste Disposal System
MCL	maximum contaminant level
MDL	method detection limit
NFA	No Further Action
NMED	New Mexico Environment Department
ORP	oxidation reduction potential
PCE	tetrachloroethene
ppbv	parts per billion by volume
ppmv	parts per million by volume
SERF	Sandia Engineering Reactor Facility
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	Solid Waste Management Unit
TA	technical area
TCE	trichloroethene
TOC	total organic carbon
VOC	volatile organic compound

1.0 INTRODUCTION

Sandia National Laboratories/New Mexico (SNL/NM) is located on Kirtland Air Force Base (KAFB), south of Albuquerque, New Mexico (Figure 1-1). SNL/NM operates five Technical Areas (TAs) (i.e., TA-I, TA-II, TA-III, TA-IV, and TA-V). TA-V is a secured research and testing area that covers approximately 35 acres in the central part of KAFB. This area has been operating since the 1960s.

In Section IV.C of the Draft Final Compliance Order on Consent issued to the Department of Energy and Sandia National Laboratories (NMED 2003), the New Mexico Environment Department (NMED) identified TA-V as an area with groundwater contamination:

TA-V is located in the northeastern corner of TA-III, in the southwestern part of Kirtland Air Force Base. [Trichloroethene] TCE has been detected in water samples from some monitoring wells screened in the regional aquifer in and around TA-V since 1993. Also, nitrate, a contaminant from septic system effluent, has been detected above state drinking water and groundwater standards. TCE levels have ranged as high as 23 $\mu\text{g/L}$, and nitrate has ranged as high as 16.3 mg/L.

In addition, tetrachloroethene (PCE) has been detected in several water samples from one well at concentrations up to 7.5 $\mu\text{g/L}$. The U.S. Environmental Protection Agency (EPA) drinking water maximum contaminant level (MCL) is 5 $\mu\text{g/L}$ for both TCE and PCE in groundwater (40 CFR 141.61). The nitrate MCL is 10 mg/L (as nitrogen) (40 CFR 141.62).

Also in Section IV.C of the Draft Final Compliance Order on Consent, NMED requires a Corrective Measures Evaluation (CME) of TA-V groundwater contamination. Evaluation of remedial alternatives for contaminants of concern (COCs) in groundwater at TA-V requires a current conceptual model of groundwater flow and contaminant transport. This conceptual model will provide the basis for a technically defensible evaluation that will be developed and documented in the CME.

1.1 Background

TA-V facilities are designed to test radiation effects on components. These facilities include large electron beam accelerators, three research reactors in two reactor facilities, an intense gamma irradiation facility, and a hot-cell facility. Historically, wastewater containing contaminants derived from these facilities was disposed to drainfields, seepage pits, and unlined ponds at TA-V.

Numerous subsurface investigations have been conducted in conjunction with surface remediation activities at TA-V. These investigations have resulted in a substantial body of information available in a series of publications and other data sources concerning elements of conceptual models of contaminant release and transport through the vadose zone and Santa Fe Group aquifer. These studies are tabulated in Appendix A of this report.