



## NEW MEXICO ENVIRONMENT DEPARTMENT



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### **Groundwater Monitoring at Sandia National Laboratories/New Mexico Technical Area-V Conducted by NMED/DOE OB for FFY 2010 Q-2**

The New Mexico Environment Department (NMED) DOE Oversight Bureau (Bureau) has compiled and assessed groundwater data from samples collected in February 2010. The groundwater samples were collected for Bureau analysis from Technical Area-V (TAV) groundwater monitoring wells AVN-1, TAV-MW6, and TAV-MW10. Split samples were collected using standard Sandia National Laboratories/New Mexico (SNL/NM or Sandia) sampling procedures and equipment. The Bureau's samples were submitted to an independent analytical laboratory to be analyzed for volatile organic compounds (VOCs) and nitrate plus nitrite (NPN). Trichloroethylene (TCE) was detected above the EPA MCL at TAV-MW6 and TAV-MW10 monitoring wells. The concentration of NPN was also detected above the EPA MCL at monitoring well TAV-MW10.

#### Data Assessment

Data results are compared to applicable Maximum Allowable Concentrations (MACs) from the New Mexico Water Quality Control Commission (WQCC) (20.6.2.3103A NMAC Human Health Standards) and Maximum Contaminant Levels (MCLs) from the EPA National Primary Drinking Water Regulations (40 CFR 141).

#### Results

Analytical results for VOCs detected above the method detection limits (MDLs) are listed in Table 1. The TCE concentration was measured above the 5 µg/L EPA MCL at TAV-MW6 original (15 µg/L) and duplicate (14 µg/L), and TAV-MW10 (16 µg/L).

Analytical results for NPN are listed in Table 2. The NPN concentration was measured above the 10 mg/L EPA MCL at TAV-MW10 (11 mg/L).

#### Conclusion

Data results from Sandia for this sampling event have not been received at this time. Therefore, the Bureau can make no direct comparison of results.

Trichloroethylene concentrations exceeded the MCL of 5 µg/L at TAV-MW6 and TAV-MW10. Sample results from TAV-MW6 were slightly higher than historical concentrations collected by

Sandia. Trending data results demonstrate that TCE concentrations at TAV-MW6 have exceeded the EPA MCL since October 2006, and they have continued to increase over time (Figure 1). The groundwater monitoring well TAV-MW10 was installed in 2009 as a replacement for TAV-MW1 and in proximity to it. Therefore, the data results from both wells can be used for trending purposes. Based on Sandia historical data and two years of Bureau data, TCE concentrations increased in an erratic manner from June 2001 to December 2006. After that sampling, the concentration showed a single-point, sharp decline followed by a sharp increase until the present, exceeding the EPA MCL since June 2008 (Figure 2). The nitrate plus nitrite concentration at TAV-MW10 exceeded the EPA MCL of 10 mg/L. The data result (11 mg/L) follows the increasing trend established by Sandia analytical data for monitoring well TAV-MW1, which was replaced by TAV-MW10 (Figure 5).

### Response

Questions or comments should be addressed to Chris Armijo by phone at (505)383-2070, by e-mail at [chris.armijo1@state.nm.us](mailto:chris.armijo1@state.nm.us), or to the address in the letterhead.

Enclosure:     (1) Table 1 Volatile Organic Compounds Results  
                  (2) Table 2 Nitrate plus Nitrite Results  
                  (3) Figure 1 TCE Concentration, TAV-MW6  
                  (4) Figure 2 TCE Concentration, TAV-MW10  
                  (5) Figure 3 Nitrate plus Nitrite Concentration, AVN-1  
                  (6) Figure 4 Nitrate plus Nitrite Concentration, TAV-MW6  
                  (7) Figure 5 Nitrate plus Nitrite Concentration, TAV-MW10  
                  (8) Map: TAV Groundwater Monitoring Wells

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File:            SGE42.Groundwater Monitoring. TAV. FFY 2010 Q-2

Acknowledgment:

This material is based upon work supported by the Department of Energy Office of Environmental Management under Award Number *DE-EM0002420*.

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**Table 1- NMED DOE OB FFY 2010 Q-2 Technical Area-V Groundwater Quality Results: Detected Volatile Organic Compounds**

Monitoring Well/ Sample Date	Analyte	Result (µg/L)	EPA MCL (µg/L)	NMED MAC (µg/L)	PQL (µg/L)	MDL (µg/L)	Laboratory Qualifier	Analytical Method
TAV-MW6 12-Feb-10	Dichloroethene[cis-1,2-]	2.7	70	NE	1	0.17		SW8260_25
	Trichloroethylene	<b>15</b>	5	100	1	0.17		SW8260_25
TAV-MW6 12-Feb-10 (Dup)	Dichloroethene[cis-1,2-]	2.5	70	NE	1	0.17		SW8260_25
	Trichloroethylene	<b>14</b>	5	100	1	0.17		SW8260_25
TAV-MW10 15-Feb-10	Dichloroethene[cis-1,2-]	2.9	70	NE	1	0.17		SW8260_25
	Trichloroethylene	<b>16</b>	5	100	1	0.17		SW8260_25

*Refer to the notes at the end of the tables.*

**Table 2- NMED DOE OB FFY 2010 Q-2 Technical Area-V Groundwater Quality Results: Nitrate plus Nitrite**

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	NMED MAC (mg/L)	PQL (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
AVN-1 8-Feb-10	Nitrate-Nitrite as N	9.4	10	10	0.1	0.036		EPA:353.2
TAV-MW6 12-Feb-10	Nitrate-Nitrite as N	9.3	10	10	0.05	0.018		EPA:353.2
TAV-MW6 12-Feb-10 (Dup)	Nitrate-Nitrite as N	9.4	10	10	0.05	0.018		EPA:353.2
TAV-MW10 15-Feb-10	Nitrate-Nitrite as N	<b>11</b>	10	10	0.1	0.036		EPA:353.2

*Refer to the notes at the end of the tables.*

## **Notes for Technical Area-V Groundwater**

### **Result**

Values in bold exceed the established MCL

mg/L = milligrams per liter

µg/L = micrograms per liter

### **EPA MCL**

Maximum Contaminant Level. Established by the U.S. Environmental Protection Agency National Primary Drinking Water Regulations (40 CFR 141)

NE = Not established

### **NMED MAC**

Maximum Allowable Concentrations in groundwater from the New Mexico Water Quality Control Commission (WQCC) (20.6.2.3103A NMAC Human Health Standards)

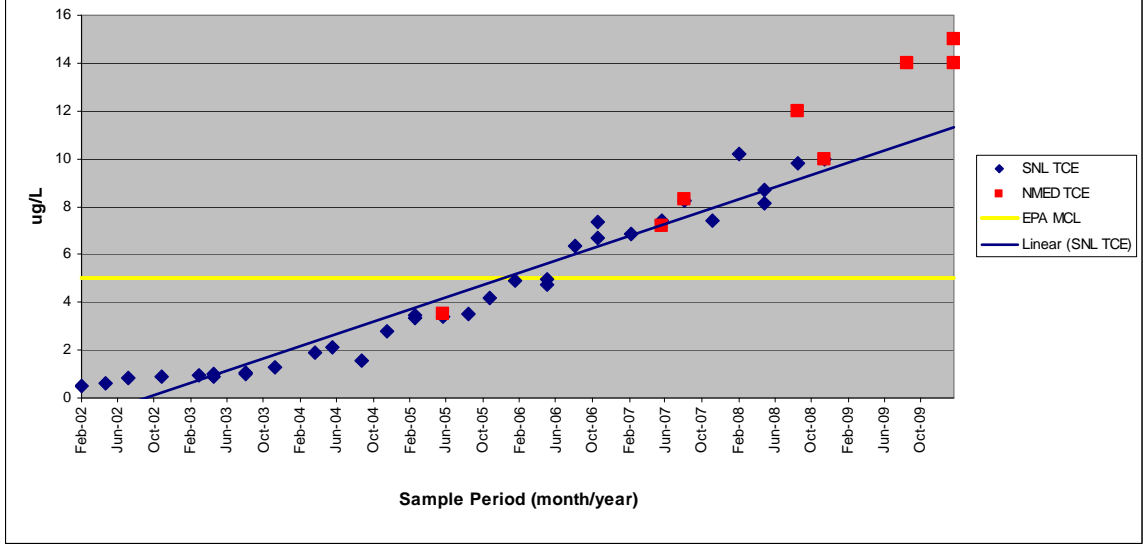
### **PQL**

Practical Quantitation Limit. The lowest concentration that can be reliably measured by a laboratory with defined limits of precision and accuracy.

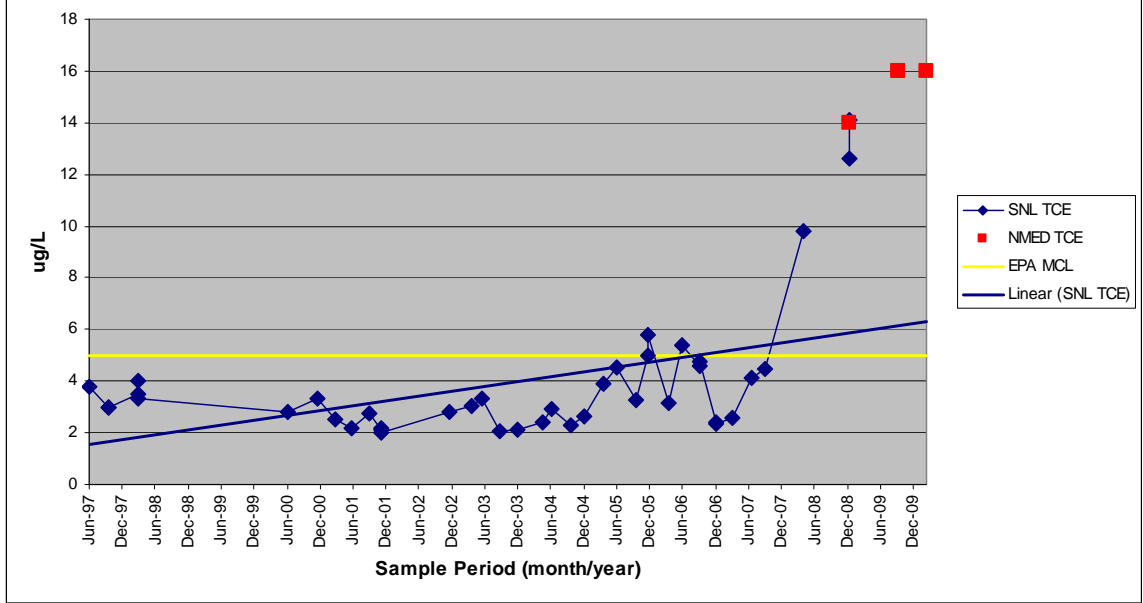
### **MDL**

Method detection limit. The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.

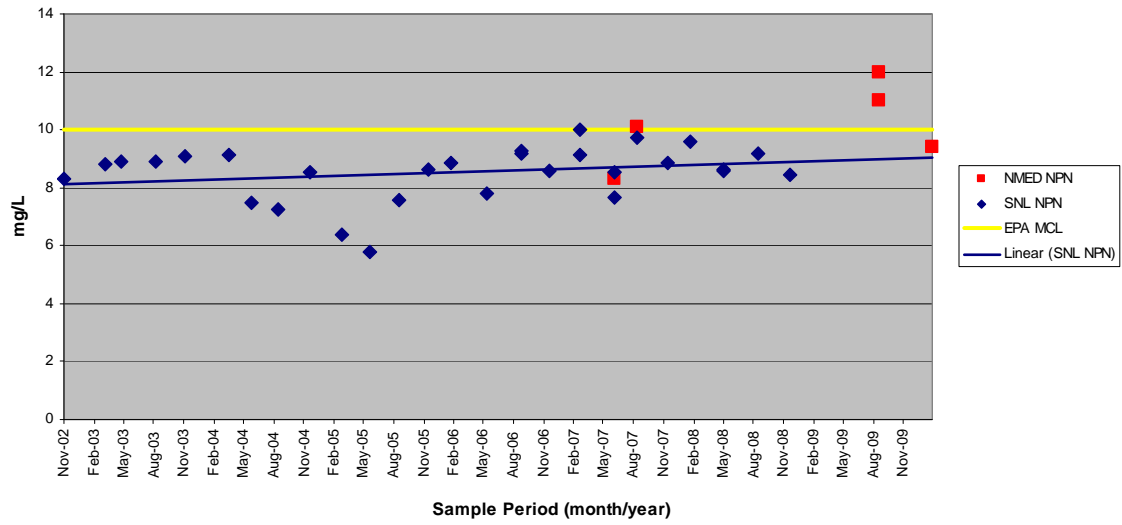
**Figure 1**  
TCE Concentration, TAV-MW6



**Figure 2**  
TCE Concentrations, TAV-MW10



**Figure 3**  
Nitrate plus Nitrite Concentrations, AVN-1



**Figure 4**  
Nitrate plus Nitrite Concentration, TAV-MW6

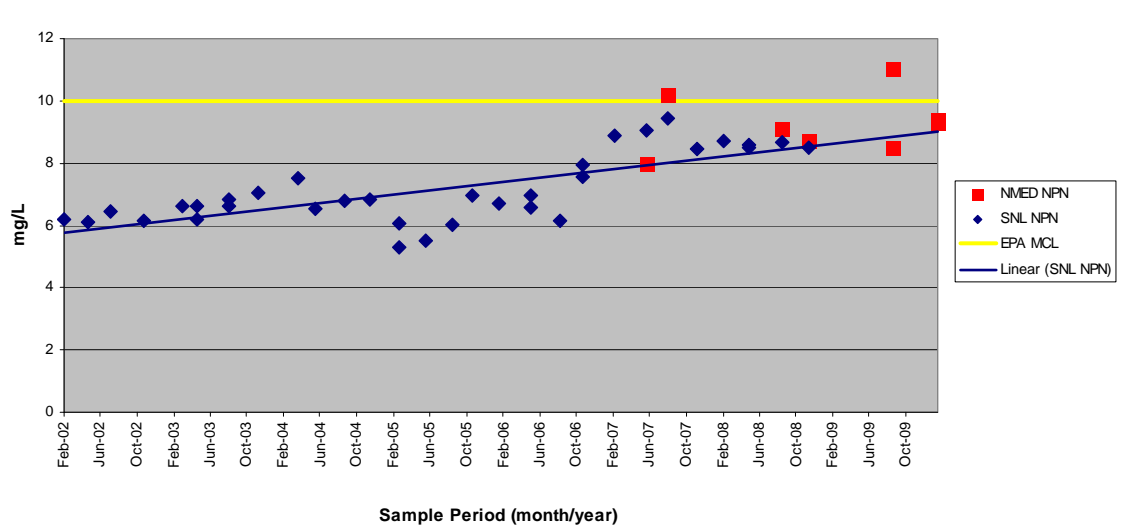
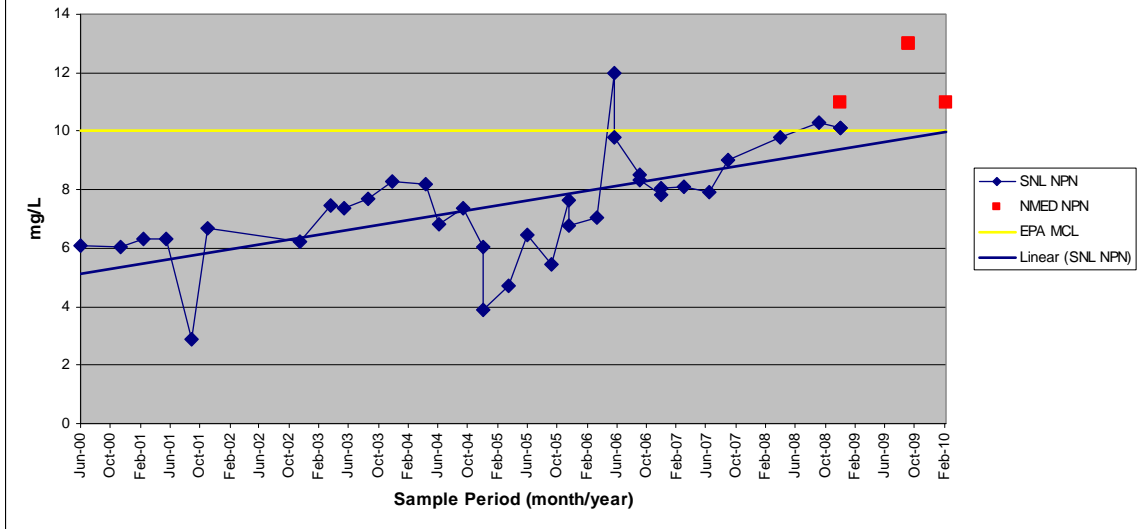
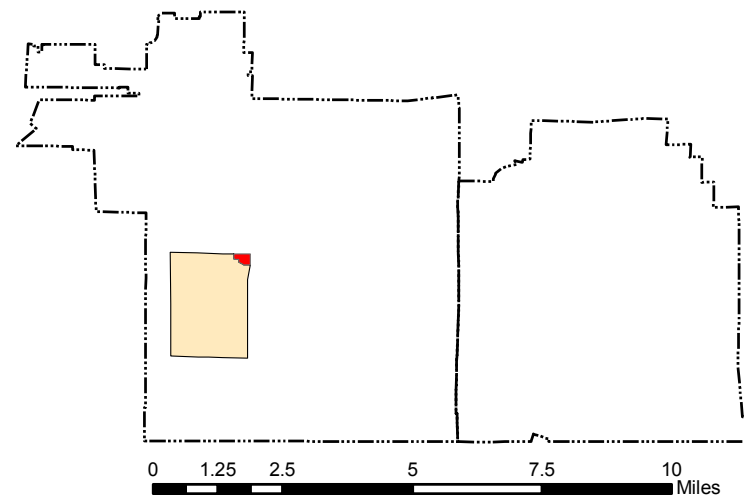
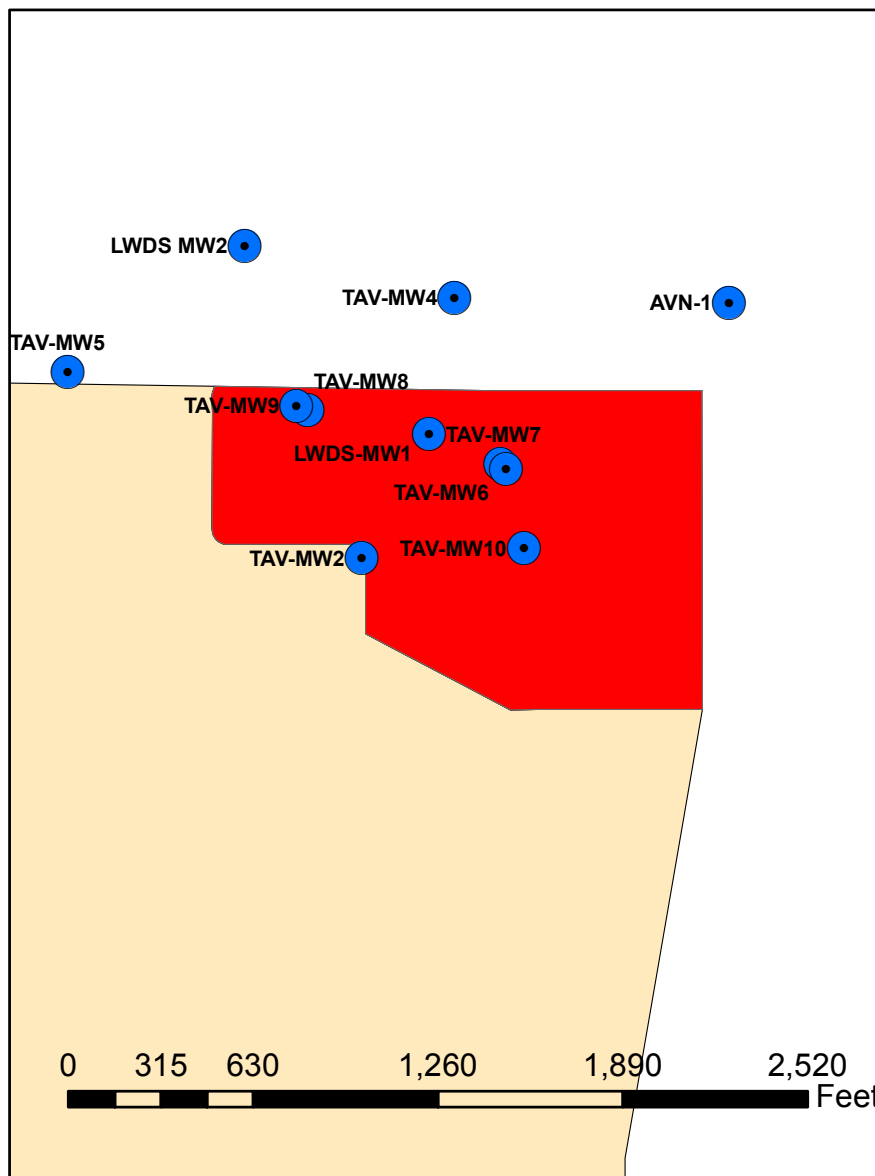
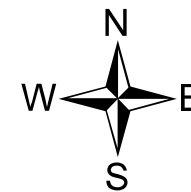




Figure 5  
Nitrate plus Nitrite Concentrations, TAV-MW10



# TAV Groundwater Monitoring Wells



### Legend

- TAV Monitoring Well
- Technical Area V
- KAFB Boundary
- Technical Area III

