Phase II Site Characterization

Milan Farm, Milan, New Mexico

Project Site Code 87021-001

Prepared for

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Executive Summary

Daniel B. Stephens & Associates, Inc. (DBS&A) was retained by the Northwest New Mexico Council of Governments (NWNMCOG) to conduct a Phase II environmental site assessment (ESA) for a future development in Milan, New Mexico under the U.S. Environmental Protection Agency (EPA) Brownfields Program. This report summarizes the results of the Phase II investigation performed by DBS&A at the subject property.

The subject property is located between State Highway 122 and State Highway 605 in Milan, New Mexico. Milan is located in Cibola County, which is in the west-central section of New Mexico. The approximately 880-acre site is bounded on the north side by Nursery Road, on the east side by Ralph Card Road, on the west side by Stanley Card Road, and on the south side by Stanley Avenue.

Past activities that may have had an environmental impact on the subject property include (1) chemical use associated with agricultural production on the site, and (2) the potential presence of contaminants related to documented uses of the subject property and adjacent properties including the Homestake Mining Company (HMC) Superfund site, the Former Dow Chemical Railroad Spur, the Mt. Taylor Millwork, and the former *C*hemical Marketing Service Railroad Spur.

A Phase I ESA was performed by DBS&A and was submitted to NWNMCOG on August 4, 2011. The purpose of the Phase I ESA was to identify any potential past, current, or future recognized environmental conditions (RECs) at the subject property due to facility or off-site activities. During the Phase I ESA, a number of properties adjacent to the subject property were identified as having potential RECs. Although it appeared that contamination associated with these properties was minimal, and that the potential for hydrocarbon contamination at the subject property was low, it was recommended that these results be verified with a Phase II ESA.

Field sampling was performed as described in the Phase II sampling analysis plan. Widespread contamination was not identified in soils or groundwater at the subject property.

With the exception of radium in samples collected from Irrigation Canal I within the drainages emanating from the HMC property, radiological constituents were detected in soil samples at concentrations that are within the range of background and below New Mexico Environment Department (NMED) soil screening levels (SSLs). The radium concentrations are slightly elevated with respect to background, but do not appear to require further characterization at this time.

Analytical results for agricultural applications, including pesticides, herbicides, and nitrate, were found to be below the NMED SSLs throughout all parcels on the subject property.

Although detected at concentrations below NMED SSLs, dioxins and furans were present in Parcel B at the former burn pit area. It is recommended that additional characterization be performed in the burn pit area prior to any redevelopment.

1. Introduction

Daniel B. Stephens & Associates, Inc. (DBS&A) was retained by the Northwest New Mexico Council of Governments (NWNMCOG) to conduct a Phase II environmental site assessment (ESA) for a future development in Milan, New Mexico under the U.S. Environmental Protection Agency (EPA) Brownfields Program. This Phase II environmental site characterization report includes a description of the site background, and describes data collection activities, analytical results, and conclusions based upon the data collected as required by the Phase II sampling analysis plan (SAP) (DBS&A, 2012).

1.1 Purpose of the Investigation

The Village of Milan requested EPA Brownfields Program services for the property. The purpose of the EPA Brownfields Program is to provide municipalities with the environmental data necessary to make decisions about reuse of brownfield sites. A brownfield site is defined as real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. The Milan Farm property qualifies as a brownfield site due to potential contamination associated with prior use of the site and surrounding area, and the Village of Milan's desire to redevelop the subject property. The purpose of this Phase II ESA was to assess whether potential contaminants of concern (COCs) are present in the soil and groundwater at the subject property.

The project objectives, as stated in the Phase II SAP (DBS&A, 2012), were as follows:

- Determine whether pesticides, herbicides, nitrogen species (ammonia, nitrate/nitrite, total Kjeldahl nitrogen [TKN]), uranium, selenium, radium, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), molybdenum, target analyte list (TAL) metals, sulfate, dioxins, and furans are present in soil at the site, and if so, whether they pose a risk to likely receptors (resident, construction worker, or trespasser).

- Collect sufficient amount of data to initially characterize groundwater contamination at the site, and evaluate the risk to human health.

1.2 Scope of Work

DBS&A performed field investigation activities to collect environmental data in support of the NWNMCOG task assignment in accordance with the approved SAP (DBS&A, 2012). DBS&A subcontracted with Enviro-Drill Inc. (EDI) to install soil borings and monitor wells. Activities conducted under this task included (1) collection of surface soil samples, (2) advancement of soil borings and completion of groundwater monitor wells, and (3) analysis of soil and groundwater samples, as described in Sections 3 and 4 of this report.

2. Background

2.1 Site Description and History

The subject property is located between State Highway 122 and State Highway 605 in Milan, New Mexico (Figure 1). Milan is located in Cibola County, which is in the west-central section of New Mexico. The approximately 880-acre site is bounded on the north side by Nursery Road, on the east side by Ralph Card Road, on the west side by Stanley Card Road, and on the south side by Stanley Avenue.

Past activities that may have had an environmental impact on the subject property include (1) chemical use associated with agricultural production on the site, and (2) the potential presence of contaminants related to documented uses of the subject property and adjacent properties including the Homestake Mining Company (HMC) Superfund site, the Former Dow Chemical Railroad Spur, the Mt. Taylor Millwork, and the former Chemical Marketing Service Railroad Spur.

2.2 Physical Setting

The physical address associated with the subject property is 1400 Stanley Card Road, Milan, New Mexico. The property consists of tracts of land situated within Sections 4, 5, and 9 in Township 11 North, Range 10 West, Cibola County, New Mexico (a full legal description is provided in Volume 8, page 5882 in the deed records of Cibola County, New Mexico). Coordinates for the center of the subject property are latitude (north) 35.2042 and longitude (west) 107.9055.

The major geologic units in the area include the Upper Triassic Chinle Formation, the Permian San Andres limestone, and Glorieta sandstone. The Chinle Formation, which primarily consists of shale, includes two sandstone aquifers in the area, interbedded with mudstone units. The Chinle Formation forms the base of the alluvial aquifer. It separates the alluvium and the San Andres aquifer and is approximately 800 feet thick at the nearby HMC site. There is very limited hydraulic communication through the Chinle shale (HMC, 2011).

Quaternary alluvium, with thicknesses ranging between 1 and 80 feet, unconformably overlies the Upper Chinle Formation. The unsaturated alluvium at the site includes clayey, very fine-grained silts and sands (EDR, 2011).

Table 1 provides water level measurements and corresponding groundwater elevations for each of the newly installed monitor wells. The locations of the new monitor wells are provided on Figure 2. These data were used to generate a potentiometric surface map (Figure 3) for the site. The direction of groundwater flow beneath the subject property is to the southwest; the average hydraulic gradient beneath the subject property is relatively flat at 0.0004 foot per foot.

The EDR report (EDR, 2011) indicates that soils in the area of the subject property are Aparejo and Mespun. Aparejo contains materials classified as a clay or clay loam, signifying a high silt and clay content. Mespun contains material classified as a loamy sand, signifying that the sand has high silt and clay contents.

The U.S. Geological Survey (USGS) 7.5-minute quadrangle for Milan, New Mexico, prepared in 1995, indicates that the subject property is located in an area that is generally gently sloping to the east and north with a surface elevation of approximately 6,540 feet above mean sea level (feet msl) (DBS&A, 2011).

2.3 Local Land Use

The subject property is zoned for industrial, commercial, agricultural, and residential use.

2.4 Summary of Previous Assessment

A Phase I ESA was performed by DBS&A in accordance with the American Society of Testing and Materials (ASTM) standard E 1527-05 (ASTM, 2005), and was submitted to NWNMCOG on August 4, 2011 (DBS&A, 2011). The purpose of the Phase I ESA was to identify any potential past, current, or future recognized environmental conditions (RECs) at the site due to on- or off-site activities.

Known or potential RECs that may impact the subject property are related to documented uses of the subject property and adjacent parcels. Potential RECs related to past activities include, but may not be limited to (Figure 4):

- Chemical use associated with agricultural production on the site
- Contamination related to activities at the former greenhouse, burn pit, and open dumping area, including agricultural products, PAHs, dioxins, furans, and asbestos-containing building materials (ACBMs)
- Potential contaminants related to irrigation with groundwater extracted from the HMC Superfund site at the HMC irrigation pivot
- Spills that may have occurred during the unloading of chemicals related to uranium ore processing, including sulfuric acid, at the former Dow Chemical railroad spur
- Possible leaks of aboveground storage tanks (ASTs) at the Mount Taylor Millwork
- Possible spills related to the unloading of liquid fertilizers and other agricultural products at the former Chemical Marketing Service railroad spur

Based on these findings, further investigation was recommended, specifically that a Phase II ESA of the site should be conducted that involved the collection of soil (surface and subsurface) and groundwater samples to assess whether impacts to the subject property had occurred and whether these impacts pose a human health risk.

3. Phase II Investigation

The Phase II site characterization sampling was performed in accordance with the Phase II SAP (DBS&A, 2012) approved by the New Mexico Environment Department (NMED). The Phase II SAP includes a description of the proposed methods and strategies for collecting soil and groundwater samples to identify any contamination present at the subject property. The following sections describe soil and groundwater sample collection that occurred during the field investigation. Field notes from the Phase II sampling are provided in Appendix A. Laboratory analytical results are provided in Appendix B.

3.1 Conceptual Model

The Phase I ESA indicated that the subject property has a potential for RECs as a result of chemical use related to its operation as a farm and from a number of off-site sources in the vicinity of the subject property, including the HMC irrigation pivot, a former Dow Chemical rail spur, Mt. Taylor Millwork, and a former Chemical Marketing Services rail spur.

A former greenhouse, burn pit, and open dumping areas are located on the subject property. Soils in the areas of these features may be contaminated with pesticides, herbicides, and/or nitrates (greenhouse) and with PAHs, dioxins, and furans (burn pit). ACBM waste may be present in the open dumping areas.

3.2 Contaminants of Concern

The potential COCs from the farm operation, burn pit/open dump, and off-site sources include pesticides, herbicides, nitrogen species, uranium, selenium, molybdenum, VOCs, PAHs, TAL metals, dioxins, and furans.

3.3 Field Activities

3.3.1 Collection of Surface Soil Samples

A total of 142 surface soil samples including field duplicates were collected throughout the property, at the approximate locations shown on Figures 5, 6, and 7. These samples were used to assess risks associated with the inhalation, dermal contact, and ingestion pathways.

All surface soil sampling was conducted in accordance with DBS&A SOP 3.5, included in Appendix C, and as described in the Phase II SAP (DBS&A, 2012). Grab soil samples were collected using disposable sampling scoops from a depth interval of 0 to 6 inches below ground surface (bgs). One soil sample was collected from a depth of 5 to 7 feet bgs in the vicinity of the burn pit during the advancement of boring MW-2. This sample was used to assess whether subsurface soils pose a risk to future workers at this location. The required sample volume was collected for analysis of the constituents of each respective sample suite as described in the Phase II SAP (DBS&A, 2012). After collection, samples were stored on ice in coolers pending delivery to the laboratory. Documentation was completed in a bound log notebook and on chain of custody forms. Each sample was assigned a unique number that was noted on the label, in the logbook, and on the chain of custody form. Each analysis requested was recorded for each sample on the chain of custody form. Soil samples were submitted to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico, and analyzed for the four sample suites designated in the Phase II SAP (DBS&A, 2012, Table 5).

3.3.2 Advancement of Soil Borings and Completion of Monitor Wells

Four soil borings were completed as 2-inch-diameter groundwater monitor wells, designated MW-2, MW-4, MW-6, and MW-7 (Appendix D). The rationale for and locations of the wells are provided in the Phase II SAP (DBS&A, 2012, Table 2 and 4). The wells were constructed of 20 feet of 0.020-inch, machine-cut, flush-threaded well screen with blank casing to the surface. The well screen was placed such that approximately 5 feet of screen was above the water table and 15 feet of screen was below the water table. A 2-foot by 2-foot by 6-inch-thick concrete pad was poured around the well vault to ensure that vehicular traffic does not disturb the wells.

Following well development (in accordance with DBS&A SOP 4.2 [DBS&A, 2012, Appendix D]) groundwater samples were collected from the four newly installed monitor wells in accordance with DBS&A SOP 5.3 (DBS&A, 2012, Appendix D). Groundwater samples were submitted to HEAL and analyzed for the groundwater sample suites specified in the Phase II SAP (DBS&A, 2012, Table 6). The samples were accompanied by full chain of custody documentation at all times. The locations of the four monitor wells were surveyed to 0.1-foot accuracy relative to a State Plane Coordinates North American Datum 1983, while the ground elevation and top of casing elevations were measured within 0.01-foot accuracy relative to North American Vertical Datum 1988. The survey was performed by DePauli Engineering & Surveying, a New Mexico registered land surveyor (Appendix E).

3.3.3 Visual Inspection of the Burn Pit/Open Dumping Area

Along with surface soil samples and the installation of monitor well MW-2, a visual investigation of the burn pit and former greenhouse on Parcel B was performed.

The former greenhouse structure is a completely collapsed wood frame with some corrugated steel attached. It appears that most of the steel from the structure has been removed. Old tires, plastic trays, and construction materials were observed below and around the collapsed greenhouse.

The burn pit and dump area is approximately 200 feet by 125 feet in area and is located directly to the west of the greenhouse. Old tires, construction materials, and discarded household materials were observed throughout this location. Some of the material observed was partially buried, indicating that there may be more discarded objects in the subsurface.

Although no confirmatory samples were taken, ACBMs were tentatively identified in the burn pit and former greenhouse locations. A white fibrous material, possibly asbestos insulation, was found within the collapsed greenhouse structure and on the surface of the burn pit, near its northwestern edge (Appendix F, Photographs 5 through 7). In the same area of the burn pit, what appears to be weathered ceiling tiles were also identified (Appendix F, Photograph 8). Due to the presumed age of the materials observed in and around the burn pit, it is likely that these ceiling tiles contain asbestos.

3.3.4 Field Quality Assurance

Field duplicate samples were collected to evaluate how representative samples were of the media to be assessed. The field duplicate samples were collected in the exact same manner as the other samples. Field duplicates were collected at a frequency of at least 10 percent of all samples collected for each of the sampled media. The field duplicates for this Phase II site characterization were collected as follows:

- Soil: A-1FD, A-12FD, A-30FD, B-1FD, B-11FD, C-1FD, C-11FD, C-21FD, D-1FD, D-11FD, D-21FD, E-1FD, E-11FD, E-21FD, and I-1FD
- Groundwater: MW-08 (duplicate of MW-07)

To assess the analytical properties of the sampled media, additional sample volume was collected for matrix spike/matrix spike duplicate (MS/MSD) analysis. Soil samples were collected for MS/MSD analysis from sample locations A-12, A-30, D-11, E-1, E-21, and I-1.

To ensure the integrity of the sampling and transport process, a trip blank was included with the groundwater sample for MW-7.

3.3.5 Decontamination and Management of Investigation-Derived Waste

Augers and drill casings were decontaminated between each drilling location by washing in a Liquinox detergent solution and a two-part rinse. The pump and bailers used for well development were decontaminated between each use by washing in a Liquinox detergent solution and a three-part rinse. Dedicated bailers were used for sampling each of the four monitor wells. Soil drums were left at their respective drilling locations labeled as non-hazardous waste until laboratory analytical data are complete, at which time the soil drums will be disposed of accordingly.

3.4 Deviations from the Sampling Analysis Plan

Out of the seven monitor wells proposed, only four wells were completed: MW-2, MW-4, MW-6, and MW-7. The remaining three wells, MW-1, MW-3, and MW-5, were not completed for the following reasons:

- ***Wells MW-1 and MW-3:*** During the drilling of MW-3, approximately 90 feet of basalt was encountered. Due to the density and thickness of this formation, several equipment breakages occurred. The rig was mobilized to MW-2 before completion of MW-3. At MW-2, the same formation was encountered, resulting in a prolonged drilling cycle. Upon completion of MW-2, it was concluded that in order to complete MW-3 and MW-1 in a timely manner, a larger drill rig would have to be mobilized to the site. Due to the increased drilling cost and the time limitations of the contract and associated funding, these two wells were not completed.

- ***Well MW-5:*** This boring, located on the eastern portion of Parcel A, was drilled to approximately 140 feet bgs. The shallow water zone, which had been present during the completion of wells MW-4, MW-6, and MW-7, was not encountered at this location. Because this water-bearing zone was not present at this location, the boring was plugged and abandoned.

Given the locations of the four completed wells and how they bisect the property, DBS&A believes they are sufficient to assess impacts to the groundwater.

3.5 Analytical Program

3.5.1 Soils

Because of the large number of activities that were performed on the various parcels, four analytical suites were developed and applied to the various parcels as summarized in Table 2. Figure 5 shows those locations where samples analyzed for Suites 1 and 4 were collected. The majority of the samples collected were analyzed for Suite 2. These sample locations are shown

on Figure 6. Figure 7 shows the locations of samples collected in the immediate vicinity of the burn pit. These samples were analyzed for Suites 1, 2, and 3. The four analytical suites include the following constituents:

- *Suite 1:* Radiological constituents and molybdenum in order to assess possible impacts from the HMC pivot. These analyses were performed in Parcels A, B, and C.
  - Molybdenum, uranium, and selenium by EPA method 6010ICP
  - Radium by EPA method 226/228

- *Suite 2:* Pesticides and herbicides in order to assess possible impacts from agricultural use. These analyses were performed on all parcels.
  - Organochlorine pesticides by EPA method 8081
  - Organophosphorous pesticides by EPA method 8141/8270
  - Chlorinated acid herbicides by EPA method 8151
  - Nitrogen species (ammonia by EPA method SM 4500-NH3, nitrate/nitrite by EPA method 300)

- *Suite 3:* VOCs, fuel organics, heavy metals, PAHs, and dioxins and furans to assess possible impacts from the burn pit area.
  - VOCs by EPA method 8260B
  - Total petroleum hydrocarbons (TPH) by EPA method 8015B (gasoline-range organics [GRO], diesel-range organics [DRO], and motor oil-range organics [MRO])
  - PAHs by EPA method 8270 SIMS
  - TAL metals by EPA method 6010/6020
  - Dioxins and furans by EPA method 8290

- *Suite 4:* Inorganic analytes to assess releases from the Dow Chemical rail spur.
  - pH by standard method 4500 H+B
  - Sulfate by EPA method 300.0

3.5.2 Groundwater

Groundwater samples were analyzed for the following:

- Uranium and selenium by EPA method 200.8 ICP/MS
- Radium by EPA method 226/228
- Molybdenum by EPA method 6010
- Organochlorine pesticides by EPA method 8081
- Organophosphorous pesticides by EPA method 8141/8270
- Chlorinated acid herbicides by EPA method 8151
- Nitrogen species (ammonia by EPA method SM 4500-NH3, nitrate/nitrite by EPA method 300)
- Sulfate and chloride by EPA method 300.0
- Total dissolved solids (TDS) by EPA method SM 2540C modified
- VOCs by EPA method 8260B (full list)
- TPH by EPA method 8015B (GRO, DRO, and MRO)
- Ethylene dibromide (EDB) by EPA method 504.1

4. Results

Although there were a few isolated detections of organic and inorganic constituents above laboratory detection limits, for the most part, detected compounds were reported at concentrations below the appropriate NMED soil screening levels (SSLs) for residential land use. Tables 3 through 12 summarize the analytical results for the various suites of analyses performed. Laboratory analytical reports are provided in Appendix B.

4.1 Parcel A

4.1.1 Radiological Constituents and Molybdenum Associated with HMC Pivot

4.1.1.1 Uranium and Selenium

A total of 10 soil samples collected from Parcel A were analyzed for uranium and selenium. None of the samples analyzed were found to contain concentrations of uranium or selenium above the method detection limits (MDLs). See Appendix B for laboratory analytical results.

4.1.1.2 Radium

A total of 10 soil samples collected from Parcel A were analyzed for radium-226 and radium-228. Through discussions with NMED's Hazardous Materials Bureau (Dixon, 2012), it was determined that typical background concentrations of radium in soil in the area of Milan Farm are 1 to 2 picocuries per liter (pCi/L). All of the samples analyzed for radium-226 and radium-228 were found to be within or below this background range of concentrations. Laboratory data for radium-226 and -228 in soil are summarized in Table 3. See Appendix B for complete laboratory analytical results.

4.1.1.3 Molybdenum

A total of 10 soil samples collected from Parcel A were analyzed for molybdenum. None of the samples analyzed were found to contain concentrations of molybdenum above the MDL of 4.0 milligrams per kilogram (mg/kg). See Appendix B for laboratory analytical results.

4.1.2 Agricultural Applications

4.1.2.1 Organochlorine Pesticides

Laboratory results for soils analysis of organochlorine pesticides are summarized in Table 4. A total of 32 soil samples from Parcel A were analyzed for organochlorine pesticides. 4,4'-DDE was detected in 24 of the soil samples; however, all detected concentrations were below the NMED SSL for residential soil. 4,4'-DDT was detected in 13 of the soil samples at concentrations below the NMED SSL for residential soil. Toxaphene was detected in 19 samples at concentrations ranging from 0.20 to 1.0 mg/kg. The NMED SSL for toxaphene in residential soil is 4.42 mg/kg. See Appendix B for complete laboratory analytical results.

4.1.2.2 Organophosphorous Pesticides

Soil from 32 sample locations was analyzed for organophosphorous pesticides. None of the samples collected contained concentrations of organophosphorous pesticides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

4.1.2.3 Chlorinated Acid Herbicides

Soil from 32 sample locations was analyzed for chlorinated acid herbicides. None of the samples collected contained concentrations of chlorinated acid herbicides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

4.1.2.4 Nitrogen Species

Soil from 32 sample locations was analyzed for nitrogen species. None of the samples were found to contain nitrogen species near or above the NMED SSL for residential soil. Laboratory results for nitrogen species analysis of soils are summarized in Table 5. See Appendix B for complete laboratory analytical results.

4.1.3 Samples from Irrigation Canal I

4.1.3.1 Radiological Constituents and Molybdenum Associated with HMC Pivot

4.1.3.1.1 Uranium and Selenium. A total of 3 soil samples collected from Irrigation Canal I were analyzed for uranium and selenium. None of the samples analyzed were found to contain

concentrations of uranium or selenium above the MDLs. See Appendix B for laboratory analytical results.

4.1.3.1.2 Radium. A total of 3 soil samples collected from Irrigation Canal I were analyzed for radium-226 and radium-228. Through discussion with NMED's Hazardous Materials Bureau (Dixon, 2012), it was determined that typical background concentrations of radium in soil in the area of Milan Farm are 1 to 2 pCi/L. Radium-226 concentrations in these samples ranged from 2.57 to 3.20 pCi/L, which is slightly above the expected background concentration for the area. Radium-228 concentrations in these samples ranged from 0.598 to 0.961 pCi/L. Laboratory data for radium-226 and -228 in soil are summarized in Table 3. See Appendix B for complete laboratory analytical results.

4.1.3.1.3 Molybdenum. A total of 3 soil samples collected from Irrigation Canal I were analyzed for molybdenum. None of the samples analyzed were found to contain concentrations of molybdenum above the MDL of 4.0 mg/kg.

4.1.3.2 Agricultural Applications

4.1.3.2.1 Organochlorine Pesticides. Laboratory results for soils analysis of organochlorine pesticides are summarized in Table 4. A total of 3 soil samples from Irrigation Canal I were analyzed for organochlorine pesticides. 4,4'-DDE was detected in 1 of the soil samples; however, the concentration was below the NMED SSL for residential soil. Toxaphene was detected in 1 sample at a concentration below the NMED SSL of 4.2 mg/kg. See Appendix B for complete laboratory analytical results.

4.1.3.2.2 Organophosphorous Pesticides. Soil from 3 sample locations was analyzed for organophosphorous pesticides. None of the samples collected contained concentrations of organophosphorous pesticides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

4.1.3.2.3 Chlorinated Acid Herbicides. Soil from 3 sample locations was analyzed for chlorinated acid herbicides. None of the samples collected contained concentrations of chlorinated acid herbicides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

4.1.3.2.4 Nitrogen Species. Soil from 3 sample locations was analyzed for nitrogen species. None of the samples were found to contain nitrogen species at concentrations near or above the NMED SSL for residential soil. Laboratory results for nitrogen species analysis of soils are summarized in Table 5. See Appendix B for complete laboratory analytical results.

4.2 Parcel B

4.2.1 Radiological Constituents and Molybdenum Associated with HMC Pivot

4.2.1.1 Uranium and Selenium

A total of 5 soil samples collected from Parcel B were analyzed for uranium and selenium. None of the samples analyzed were found to contain concentrations of uranium or selenium above the MDLs. See Appendix B for laboratory analytical results.

The groundwater sample from MW-2 was analyzed for uranium and selenium. Uranium was detected at a concentration of 0.012 milligrams per liter (mg/L), below the New Mexico Water Quality Control Commission (NMWQCC) standard of 0.03 mg/L. Selenium was detected at a concentration of 0.031 mg/L, below the NMWQCC standard of 0.05 mg/L. Laboratory results for uranium and selenium in groundwater are summarized in Table 10. See Appendix B for complete laboratory analytical results.

4.2.1.2 Molybdenum

A total of 5 soil samples collected from Parcel B were analyzed for molybdenum. None of the samples analyzed were found to contain concentrations of molybdenum above the MDL of 4.0 mg/kg. See Appendix B for laboratory analytical results.

Molybdenum was not detected in the groundwater sample collected from well MW-2. See Appendix B for laboratory analytical results.

4.2.2 Agricultural Applications

4.2.2.1 Organochlorine Pesticides

Laboratory results for soils analysis of organochorine pesticides are summarized in Table 4. A total of 6 soil samples from Parcel B were analyzed for organochorine pesticides. 4,4'-DDE was detected in 5 of the soil samples; however, all detected concentrations were below the NMED SSL for residential soil. 4,4'-DDT was detected in 1 of the soil samples at concentrations below the NMED SSL for residential soil. Dieldrin was detected in 1 soil sample at a concentration well below the NMED SSL for residential soil. Toxaphene was detected in 2 samples at concentrations ranging from 0.13 to 0.59 mg/kg. The NMED SSL for toxaphene in residential soil is 4.42 mg/kg. See Appendix B for complete laboratory analytical results.

Groundwater samples from monitor well MW-2 were analyzed for organochorine pesticides. Laboratory results did not identify contamination at concentrations above the MDL of 0.040 micrograms per liter (µg/L). See Appendix B for laboratory analytical results.

4.2.2.2 Organophosphorous Pesticides

Soil from 6 sample locations was analyzed for organophosphorous pesticides. None of the samples collected contained concentrations of organophosphorous pesticides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

Groundwater samples were not analyzed for organophosphorous pesticides.

4.2.2.3 Chlorinated Acid Herbicides

Soil from 6 sample locations was analyzed for chlorinated acid herbicides. None of the samples collected contained concentrations of chlorinated acid herbicides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

Groundwater samples were not analyzed form chlorinated acid herbicides.

4.2.2.4 Nitrogen Species

Soil from 6 sample locations was analyzed for nitrogen species. None of the samples were found to contain nitrogen species near or above the NMED SSL for residential soil. Laboratory

results for nitrogen species analysis of soils are summarized in Table 5. See Appendix B for complete laboratory analytical results.

Groundwater from monitor well MW-2 was analyzed for nitrogen species. Nitrate was detected in groundwater at a concentration of 2.2 mg/L, below the NMWQCC standard of 10 mg/L. Laboratory results for nitrogen species analysis in groundwater are summarized in Table 11. See Appendix B for complete laboratory analytical results.

4.2.3 Burn Pit Residues

4.2.3.1 Volatile Organic Compounds (VOCs)

Soil samples from Parcel B were the only soil samples collected that were analyzed for VOCs. A total of 8 soil samples were analyzed for VOCs; VOCs were not detected in any soil samples at concentrations above the laboratory reporting limits. The laboratory results for VOC analysis of soil samples are summarized in Table 6. See Appendix B for complete laboratory analytical results.

The groundwater samples collected from MW-2 were not analyzed for VOCs.

4.2.3.2 Total Petroleum Hydrocarbons (TPH)

The groundwater samples collected from MW-2 were not analyzed for TPH.

4.2.3.3 Polycyclic Aromatic Hydrocarbons (PAHs)

Soil samples from 8 sample locations in Parcel B were analyzed for PAHs. Of these 8 sample locations, only B-6 and B-13 had PAH detections at concentrations above the laboratory detection limits. Soil from B-6 was found to contain a fluoranthene concentration of 0.020 mg/kg, which is equal to the laboratory detection limit and below the NMED SSL for residential soil. Soil from B-13 was found to contain total naphthalenes, fluoranthene, penanthrene, and pyrene at concentrations of 0.69 mg/kg, 0.19 mg/kg, 0.24 mg/kg, and 0.12 mg/kg, respectively. The concentrations of all constituents were below the NMED SSL for residential soil. Laboratory results for PAH analyses in soil are summarized in Table 7. See Appendix B for complete laboratory analytical results.

Groundwater samples were not analyzed for PAHs.

4.2.3.4 Target Analyte List (TAL) Metals

Soil samples from 8 sample locations in Parcel B were analyzed for TAL metals. No TAL metals were detected at concentrations near or above the NMED SSL for residential soil. Laboratory results for TAL metals analysis are summarized in Table 8. See Appendix B for complete laboratory analytical results.

4.2.3.5 Dioxins and Furans

Soil samples from 8 sample locations in Parcel B were analyzed for dioxins and furans. Dioxin compounds were detected at each sample location, at concentrations below the applicable NMED SSL for residential soil. Furan compounds were detected at sample locations B-5, B-6, B-10, and B-13 at concentrations that were also below the applicable NMED SSLs. The combined toxicity equivalence (TEQ) value for each sample was also below NMED residential SSLs, with the exception of sample location B-13. The TEQ for combined dioxins and furans at sample location B-13 was equivalent to 58.1 nanograms per kilogram (ng/kg) 2,3,7,8-TCDD, which is above the NMED residential SSL of 45 ng/kg, but below the industrial SSL of 204 ng/kg. The sample from location B-13 was taken from a depth of 5 to 7 feet bgs directly under the former burn pit area; other samples were surficial soil. Due to the sampling depth at location B-13, DBS&A applied the NMED industrial SSL to this result. The results and screening levels are summarized in Table 9. See Appendix B for complete laboratory analytical results.

Groundwater samples were not analyzed for dioxins and furans.

4.2.3.6 1,2-Dibromoethane (EDB)

Soil samples from 8 sample locations in Parcel B were analyzed for EDB. EDB was not detected at concentrations above the laboratory detection limit in any soil samples. Laboratory results for EDB analysis in soil are summarized in Table 6. See Appendix B for complete laboratory analytical results.

The groundwater samples collected from MW-2 were not analyzed for EDB.

4.2.4 Sulfate, Chloride, and Total Dissolved Solids (TDS) in Groundwater

Groundwater from monitor well MW-2 was analyzed for sulfate, chloride, and TDS. Sulfate (38 mg/L) and chloride (450 mg/L) concentrations were detected below the NMWQCC standards of 250 mg/L and 600 mg/L, respectively. The TDS concentration (1,020 mg/L) was above the NMWQCC standard of 1,000 mg/L.

4.3 Parcel C

4.3.1 Radiological Constituents and Molybdenum Associated with HMC Pivot

4.3.1.1 Uranium and Selenium

A total of 12 soil samples collected from Parcel C were analyzed for uranium and selenium. None of the samples analyzed were found to contain concentrations of uranium or selenium above the MDLs. See Appendix B for laboratory analytical results.

4.3.1.2 Radium

A total of 12 soil samples collected from Parcel C were analyzed for radium-226 and radium-228. Through discussion with NMED's Hazardous Materials Bureau (Dixon, 2012), it was determined that typical background concentrations of radium in soil in the area of Milan Farm are 1 to 2 pCi/L. All of the samples analyzed for radium-226 and radium-228 were found to be within or below this background range of concentrations. Soil analytical results for radium are summarized in Table 3. See Appendix B for complete laboratory analytical results.

4.3.1.3 Molybdenum

A total of 12 soil samples collected from Parcel C were analyzed for molybdenum. None of the samples analyzed were found to contain concentrations of molybdenum above the MDL of 4.0 mg/kg. See Appendix B for laboratory analytical results.

4.3.2 Agricultural Applications

4.3.2.1 Organochlorine Pesticides

Laboratory results for soils analysis of organochlorine pesticides are summarized in Table 4. A total of 15 soil samples from Parcel C were analyzed for organochlorine pesticides. 4,4'-DDE was detected in 15 of the soil samples; however, all detected concentrations were below the NMED SSL for residential soil. 4,4'-DDT was detected in 10 of the soil samples at concentrations below the NMED SSL for residential soil. Dieldrin was detected in 3 of the soil samples at concentrations below the NMED SSL for residential soil. Toxaphene was detected in 13 samples at concentrations ranging from 0.16 to 0.85 mg/kg. The NMED SSL for toxaphene in residential soil is 4.42 mg/kg. See Appendix B for complete laboratory analytical results.

4.3.2.1 Organophosphorous Pesticides

Soil from 15 sample locations was analyzed for organophosphorous pesticides. None of the samples collected contained concentrations of organophosphorous pesticides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

4.3.2.2 Chlorinated Acid Herbicides

Soil from 15 sample locations was analyzed for organophosphorous pesticides. None of the samples collected contained concentrations of organophosphorous pesticides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

4.3.2.3 Nitrogen Species

Soil from 15 sample locations was analyzed for nitrogen species. None of the samples were found to contain nitrogen species at concentrations near or above the NMED SSL for residential soil. Laboratory results for nitrogen species analysis of soils are summarized in Table 5. See Appendix B for complete laboratory analytical results.

4.4 Parcel D

4.4.1 Agricultural Applications

4.4.1.1 Organochlorine Pesticides

Laboratory results for soils analysis of organochlorine pesticides are summarized in Table 4. A total of 16 soil samples from Parcel D were analyzed for organochlorine pesticides. 4,4'-DDE was detected in 16 of the soil samples; however, all detected concentrations were below the NMED SSL for residential soil. 4,4'-DDT was detected in 12 of the soil samples at concentrations below the NMED SSL for residential soil. Dieldrin was detected in 1 of the soil samples at a concentration below the NMED SSL for residential soil. Heptachlor was detected in 1 of the soil samples at a concentration below the NMED SSL for residential soil. Toxaphene was detected in 11 of the soil samples; of these detections, concentrations in D-13 (5.4 mg/kg), D-17 (4.5 mg/kg), and D-18 (9.6 mg/kg) were above the NMED SSL of 4.42 mg/kg. The remaining 8 toxaphene detections were below the NMED SSL. See Appendix B for complete laboratory analytical results.

Groundwater samples from monitor well MW-4 were analyzed for organochorine pesticides. Laboratory results did not identify contamination at concentrations above the MDL of 0.040 µg/L. See Appendix B for laboratory analytical results.

4.4.1.2 Organophosphorous Pesticides

Soil from 16 sample locations was analyzed for organophosphorous pesticides. None of the samples collected contained concentrations of organophosphorous pesticides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

The groundwater samples collected from MW-4 were not analyzed for organophosphorous pesticides.

4.4.1.3 Chlorinated Acid Herbicides

Soil from 16 sample locations was analyzed for organophosphorous pesticides. None of the samples collected contained concentrations of organophosphorous pesticides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

The groundwater samples collected from MW-4 were not analyzed for chlorinated acid herbicides.

4.4.1.4 Nitrogen Species

Soil from 32 sample locations was analyzed for nitrogen species. None of the samples were found to contain nitrogen species at concentrations near or above the NMED SSL for residential soil. Laboratory results for nitrogen species analysis of soils are summarized in Table 5. See Appendix B for complete laboratory analytical results.

Groundwater from monitor well MW-4 was analyzed for nitrogen species. Nitrate was detected in groundwater at a concentration of 3.8 mg/L, below the NMWQCC standard of 10 mg/L. Laboratory results for nitrogen species analysis in groundwater are summarized in Table 11. See Appendix B for complete laboratory analytical results.

4.4.2 Sulfate and Chloride

Soil from 6 sample locations was analyzed for sulfate and chloride. Of these samples, 3 were found to contain sulfate at concentrations ranging from 15 to 18 mg/kg. There are no NMED SSLs for sulfate. Chloride was not detected in any of the samples at concentrations above the laboratory reporting limit. See Appendix B for laboratory analytical results.

Groundwater from MW-4 was not analyzed for sulfate and chloride.

4.4.3 Total Dissolved Solids (TDS)

Groundwater from MW-4 was not analyzed for TDS.

4.4.4 VOCs in Groundwater

Groundwater samples collected from monitor well MW-4 were analyzed for VOCs. Laboratory results did not detect concentrations at or near NMWQCC standards. The laboratory results for VOC analysis are summarized in Table 12. See Appendix B for complete laboratory results.

4.5 Parcel E

4.5.1 Agricultural Applications

4.5.1.1 Organochlorine Pesticides

Laboratory results for soils analysis of organochlorine pesticides are summarized in Table 4. A total of 21 soil samples from Parcel E were analyzed for organochlorine pesticides. 4,4'-DDE was detected in 21 of the soil samples; however, all detected concentrations were below the NMED SSL for residential soil. 4,4'-DDT was detected in 20 of the soil samples at concentrations below the NMED SSL for residential soil. Dieldrin was detected in 4 of the soil samples at concentrations below the NMED SSL for residential soil. Toxaphene was detected in 21 samples at concentrations ranging from 0.20 to 2.6 mg/kg. The NMED SSL for toxaphene in residential soil is 4.42 mg/kg. See Appendix B for complete laboratory analytical results.

Groundwater samples from monitor wells MW-6 and MW-7 were analyzed for organochorine pesticides. Laboratory results did not identify contamination at concentrations above the MDL of 0.040 µg/L. See Appendix B for laboratory analytical results.

4.5.1.2 Organophosphorous Pesticides

Soil from 21 sample locations was analyzed for organophosphorous pesticides. None of the samples collected contained concentrations of organophosphorous pesticides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

Groundwater samples were not analyzed for organophosphorous pesticides.

4.5.1.3 Chlorinated Acid Herbicides

Soil from 21 sample locations was analyzed for organophosphorous pesticides. None of the samples collected contained concentrations of organophosphorous pesticides above the laboratory reporting limit. See Appendix B for laboratory analytical results.

Groundwater samples were not analyzed for organophosphorous pesticides.

4.5.1.4 Nitrogen Species

Soil from 21 sample locations was analyzed for nitrogen species. None of the samples were found to contain nitrogen species at concentrations near or above the NMED SSL for residential soil. Laboratory results for nitrogen species analysis of soils are summarized in Table 5. See Appendix B for complete laboratory analytical results.

Groundwater from monitor well MW-7 was analyzed for nitrogen species. Nitrate was detected in groundwater at a concentration of 3.8 mg/L, below the NMWQCC standard of 10 mg/L. Laboratory results for nitrogen species analysis in groundwater are summarized in Table 11. See Appendix B for complete laboratory analytical results.

Groundwater samples from monitor wells MW-6 and MW-7 were analyzed for nitrogen species. Laboratory results did not identify contamination at concentrations above the NMWQCC standards. See Appendix B for laboratory analytical results.

4.5.2 VOCs in Groundwater

Groundwater samples collected from monitor wells MW-6 and MW-7 were analyzed for VOCs. Laboratory results did not detect concentrations at or near NMWQCC standards. The laboratory results for VOC analysis are summarized in Table 12. See Appendix B for complete laboratory results.

4.6 Summary of QA/QC Results

Field duplicates are the primary means of assessing reproducibility of the soil sample collection method. With a field duplicate, two samples are collected at the same location. There is generally a natural heterogeneity in soil material, which can cause a difference in analytical results. The field duplicates are identified in Section 3.3.4. The results from the duplicate field sample pairs for soil and groundwater samples show good comparability.

A review of the laboratory data reports revealed that samples were analyzed within holding times. All of the data were deemed appropriate for their intended use.

5. Conclusions

5.1 Nature and Extent of Contamination

Widespread contamination was not identified in soils or groundwater at the subject property.

5.1.1 Parcel A

Soils from Parcel A were analyzed for radiological constituents and molybdenum associated with the HMC pivot, as well as agricultural applications, such as pesticides, herbicides, and nitrogen species. All laboratory results were below NMED SSLs.

Soils from Irrigation Canal I were analyzed for radiological constituents and molybdenum associated with the HMC pivot, as well as agricultural applications, such as pesticides and herbicides. The radium concentrations were found to be slightly elevated with respect to background. These results indicate that past operations at the HMC site may have resulted in the generation of surface water with elevated radium concentrations that has left the site. All other laboratory results were below NMED SSLs.

5.1.2 Parcel B

Soils from Parcel B were analyzed for (1) radiological constituents and molybdenum associated with the HMC pivot, (2) agricultural applications, such as pesticides, herbicides, and nitrogen species, and (3) VOCs, TPH, PAH, TAL metals, dioxins, and furans related to burn pit residues.

Results for radiological constituents and molybdenum were below laboratory MDLs.

Laboratory results for the agricultural applications were below NMED SSLs.

VOCs, TPH, and TAL metals concentrations were all below NMED SSLs. Although detected at concentrations below applicable NMED SSLs, dioxins and furans were present in the former burn pit area. It is recommended that additional characterization be performed in the burn pit area prior to any redevelopment.

Groundwater from monitor well MW-2 was analyzed for (1) radiological constituents and molybdenum associated with the HMC pivot, (2) agricultural applications, such as pesticides and nitrogen species, and (3) sulfate, chloride, and TDS. The TDS concentration (1,020 mg/L) was above the NMWQCC standard of 1,000 mg/L. Despite this exceedance, TDS at this location does not appear to be an indication of a release to groundwater. All other laboratory results were below NMWQCC standards or MDLs.

5.1.3 Parcel C

Soils from Parcel C were analyzed for radiological constituents and molybdenum associated with the HMC pivot, as well as agricultural applications, such as pesticides, herbicides, and nitrogen species. All laboratory results were below NMED SSLs.

5.1.4 Parcel D

Soils from Parcel D were analyzed for agricultural applications, such as pesticides, herbicides, and nitrogen species, as well as chloride and sulfate. All laboratory results were below NMED SSLs.

Groundwater from monitor well MW-4 was analyzed for agricultural applications, such as pesticides and nitrogen species, as well as VOCs. All laboratory results were below NMWQCC standards or MDLs.

5.1.5 Parcel E

Soils from Parcel E were analyzed for agricultural applications, such as pesticides, herbicides and nitrogen species. All laboratory results were below NMED SSLs.

Groundwater samples from monitor wells MW-6 and MW-7 were analyzed for agricultural applications such as pesticides and nitrogen species, along with VOCs. All laboratory results were below NMWQCC standards.

5.2 Limitations

DBS&A followed standard practices of the environmental consulting industry and used current state-of-the-art methods during this investigation. However, given its limited scope, this investigation does not provide definitive information relative to past uses, operations, or incidents in the project area or adjacent properties. Subsurface contamination is possible at other locations in the project area and cannot be adequately assessed without additional research beyond the stated scope of work. Further evaluation could include additional subsurface exploration, sampling, and/or other forms of testing.

In addition, some substances may be present at the subject property or in the vicinity in quantities below those categorized as actionable by current environmental regulations. DBS&A cannot be responsible if regulatory standards are changed in the future in a manner that renders the current site conditions actionable.

6. Qualifications

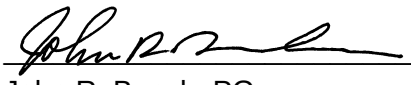
The statement of qualifications of the environmental professionals responsible for the Phase II site characterization report is included in Appendix G of this report.

7. Environmental Professional Statement

We have performed a Phase II environmental site assessment at the property located between State Highway 122 and State Highway 605 in Milan, New Mexico in conformance with the scope and limitations of ASTM Practice E 1903-11 and for the following objectives:

- Determine whether pesticides, herbicides, nitrogen species (ammonia, nitrate/nitrite, TKN), uranium, selenium, radium, VOCs, PAHs, molybdenum, TAL metals, sulfate, dioxins, and furans are present in soil at the site, and if so, whether they pose a risk to likely receptors (resident, construction worker, or trespasser).

- Collect sufficient amount of data to initially characterize groundwater contamination at the site, and evaluate the risk to human health.



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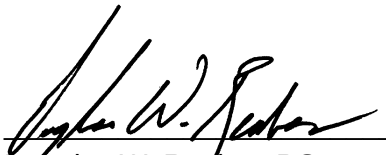

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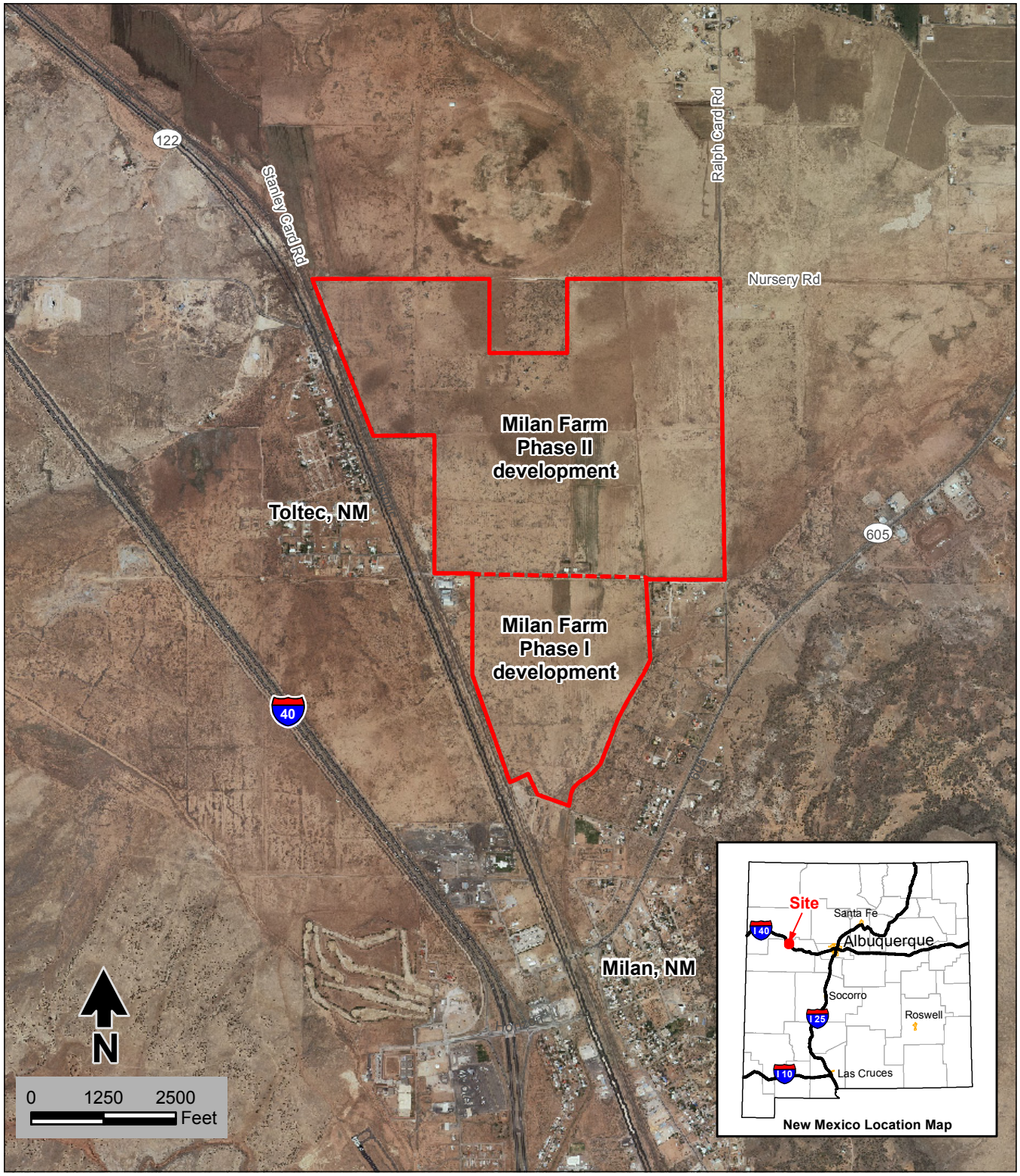
Figures



Source: USDA-FSA-APFO Aerial Photography Field Office aerial photograph dated May, 2009

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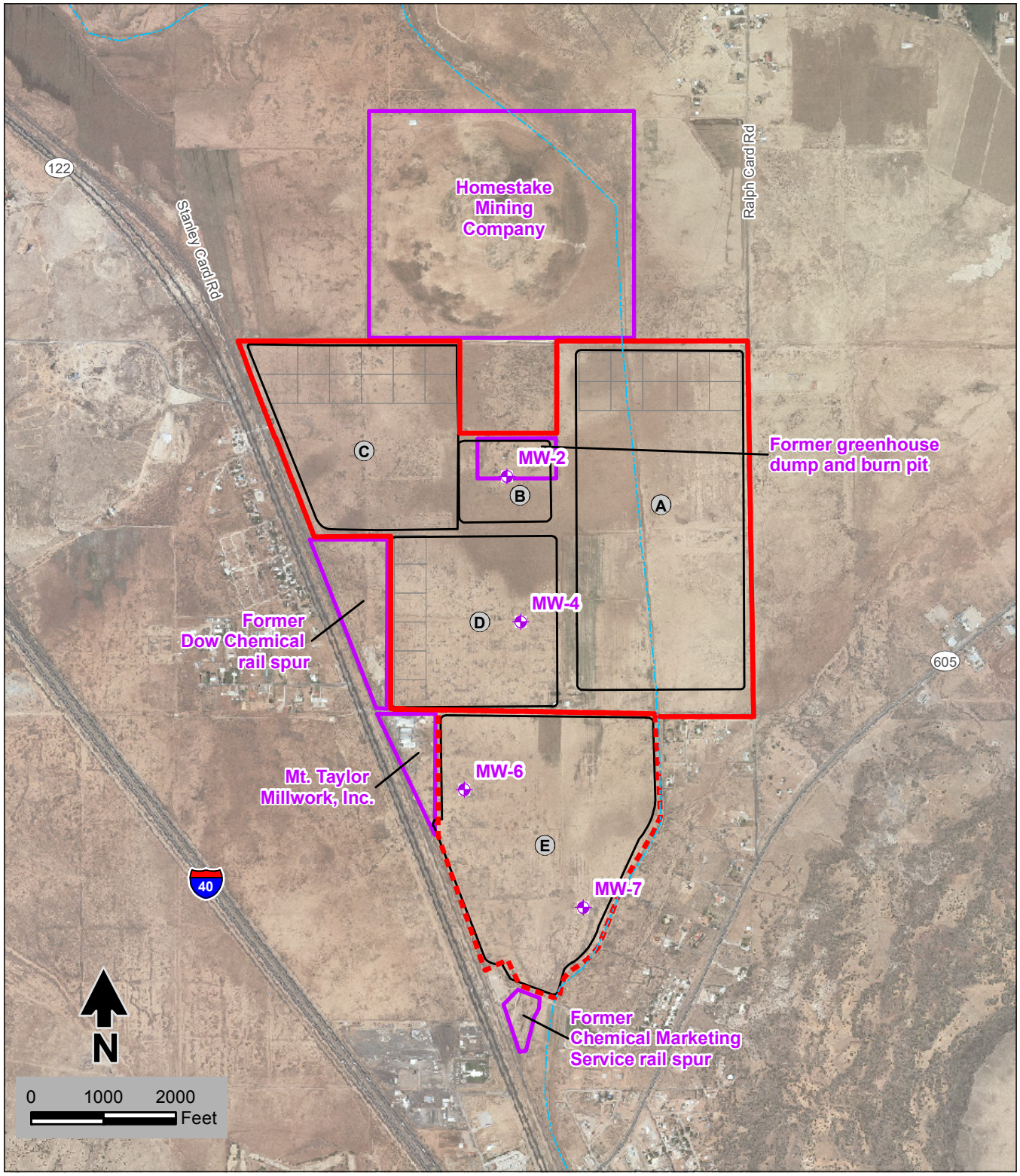
Daniel B. Stephens & Associates, Inc.
9/18/2011
JN ES10.0079.03

MILAN FARM
Area Map
Figure 1



Explanation

- Monitor well
- Milan Farm Phase I development
- Milan Farm Phase II development
- REC site location
- A Parcel
- Irrigation ditch

Source: USDA-FSA-APFO Aerial Photography Field Office aerial photograph dated May 2009

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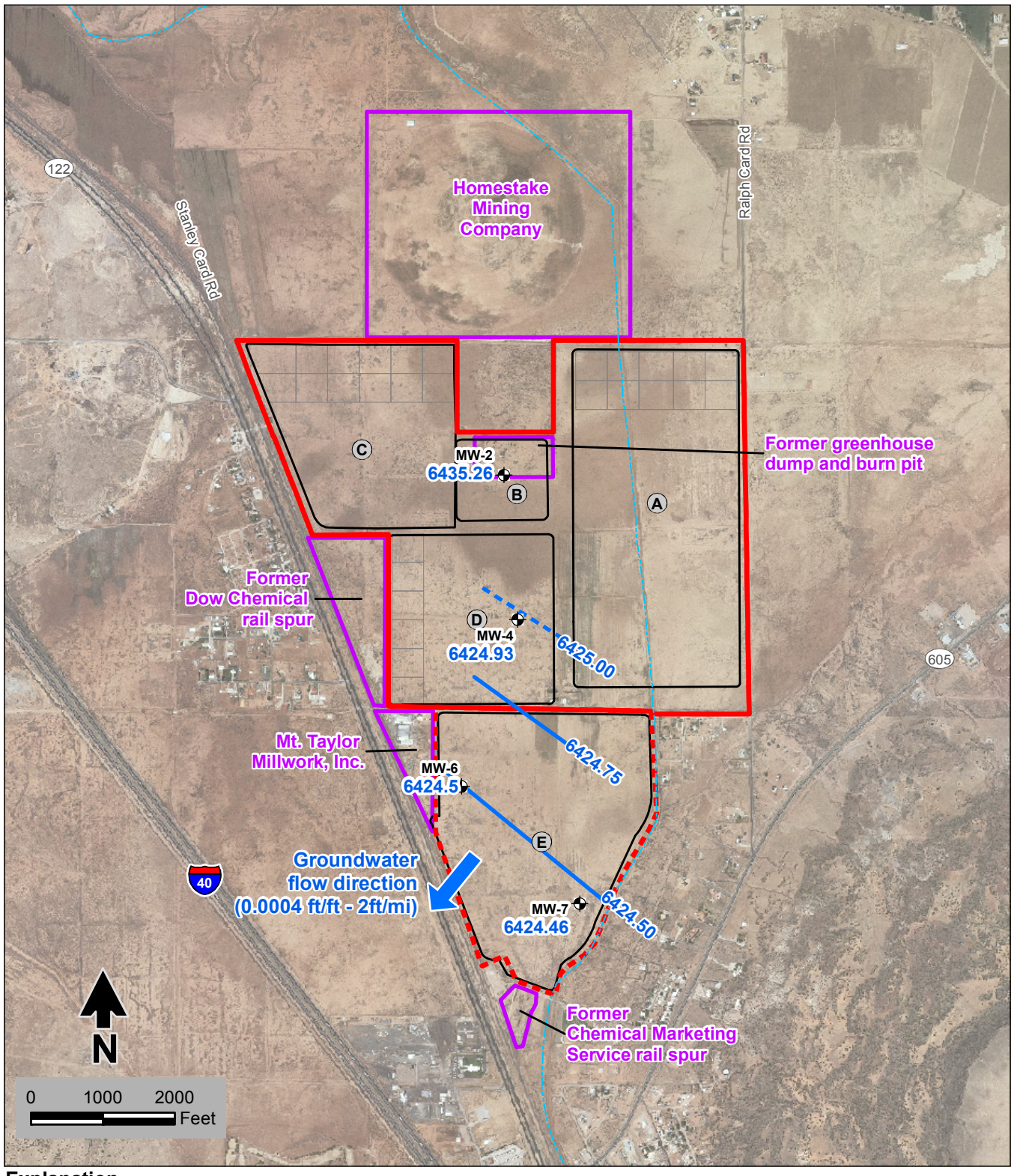
9/27/2012
JN ES10.0079.03

MILAN FARM
Monitor Well Locations
Figure 2



Explanation

- Monitor well
- Potentiometric surface elevation contour (ft msl) (dashed where inferred)
- Irrigation ditch
- REC site location
- Milan Farm Phase I development
- Milan Farm Phase II development
- (A) Parcel
- MW-2 Monitor well designation
- 6435.26 Potentiometric surface elevation (ft msl)

Source: USDA-FSA-APFO Aerial Photography Field Office aerial photograph dated May 2009

MILAN FARM

Potentiometric Surface September 9, 2012

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9/27/2012

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Figure 3

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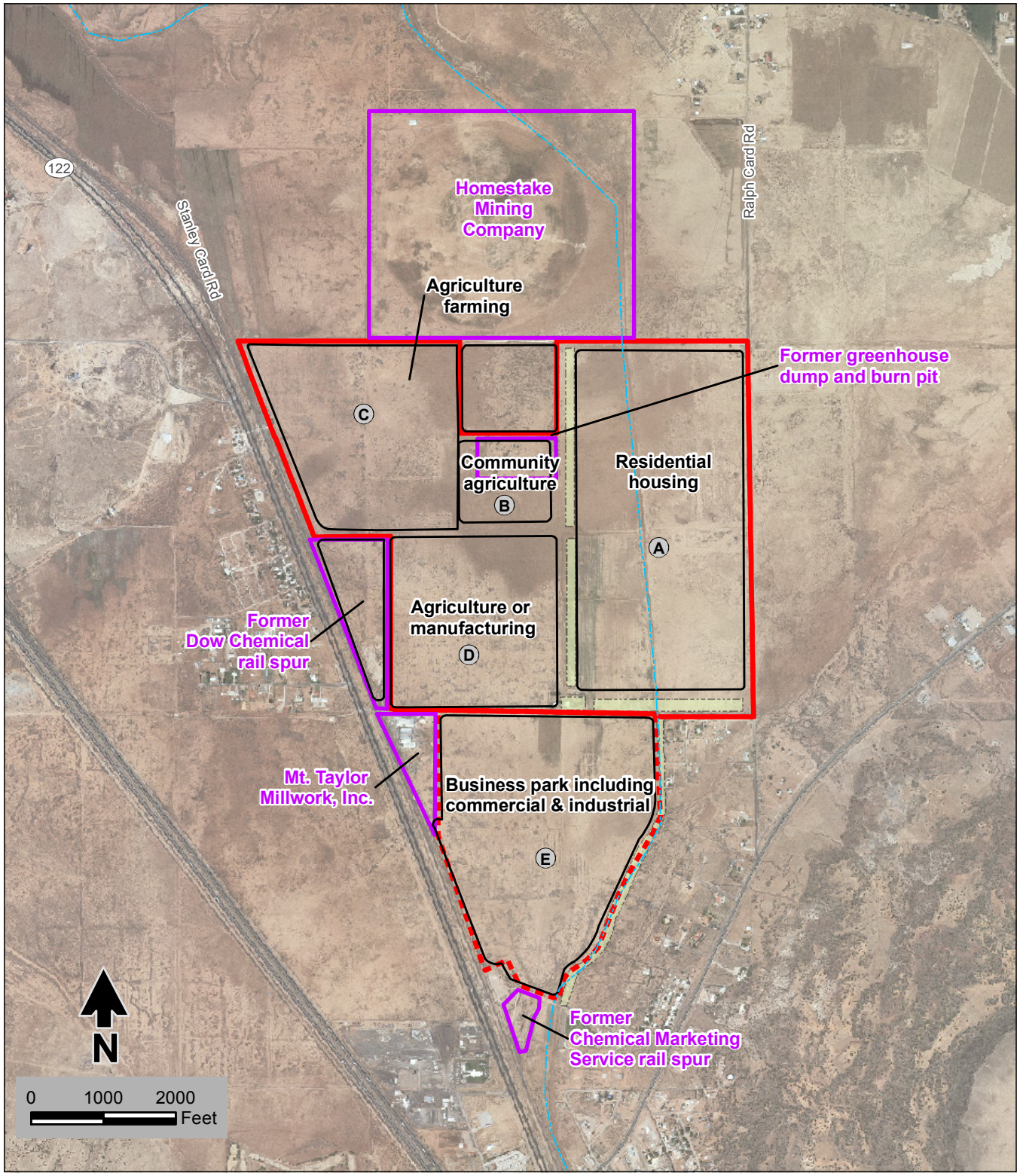

Explanation

- Milan Farm Phase I development
- Milan Farm Phase II development
- REC site location
- Open space pedestrian corridor/buffer
- (A) Parcel
- Irrigation ditch

Source: USDA-FSA-APFO Aerial Photography Field Office aerial photograph dated May 2009

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MILAN FARM

Proposed Future Land Use and REC Locations

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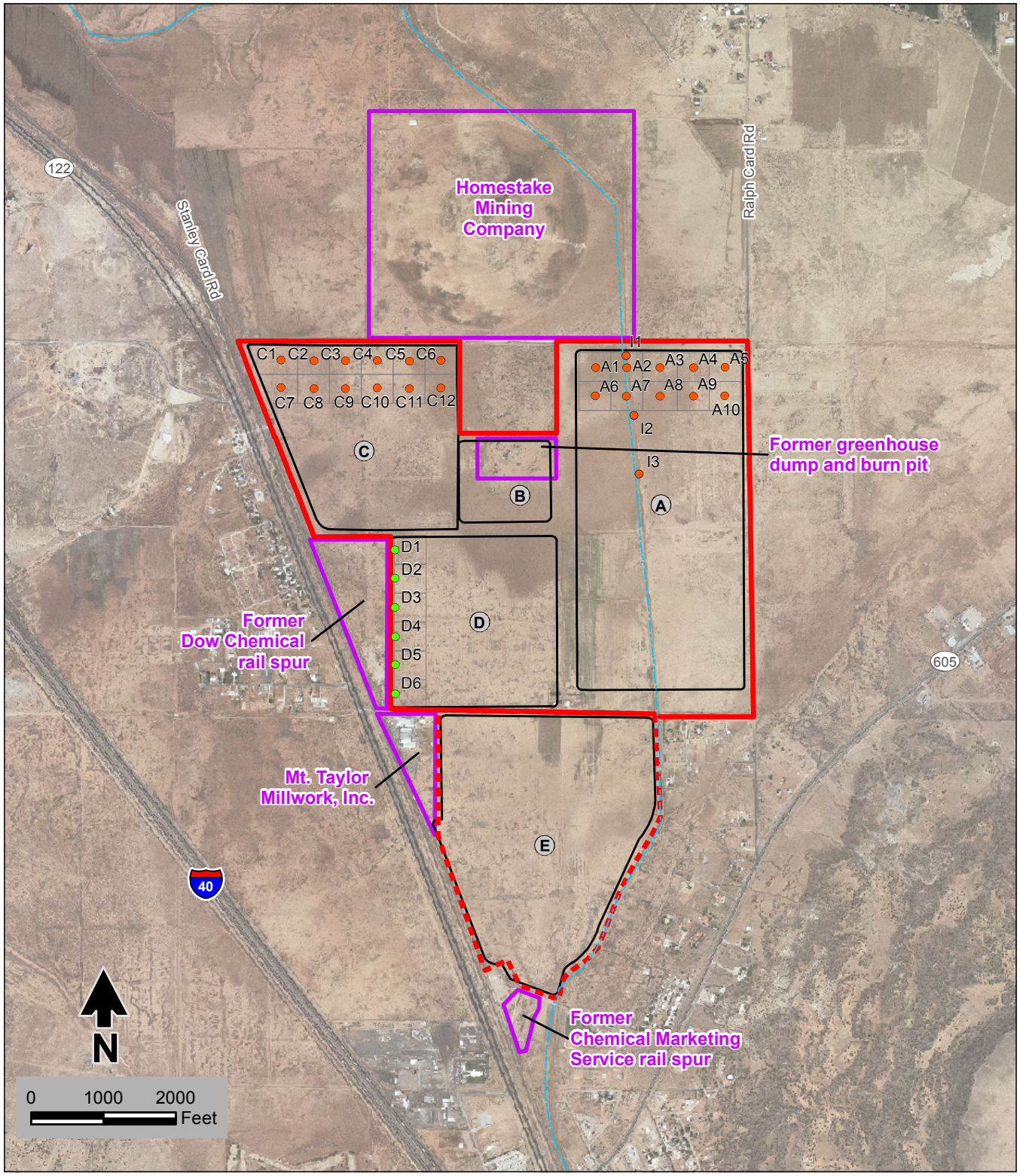
Figure 4



Explanation

- Suite 1 surface soil sample location
- Suite 4 surface soil sample location
- Milan Farm Phase I development
- Milan Farm Phase II development
- REC site location
- (A) Parcel
- Irrigation ditch

Source: USDA-FSA-APFO Aerial Photography Field Office aerial photograph dated May 2009

MILAN FARM

Analytical Suites 1 and 4 - Parcels A, C, and D
Surface Soil Sample Locations

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9/27/2012

JN ES10.0079.03

Figure 5

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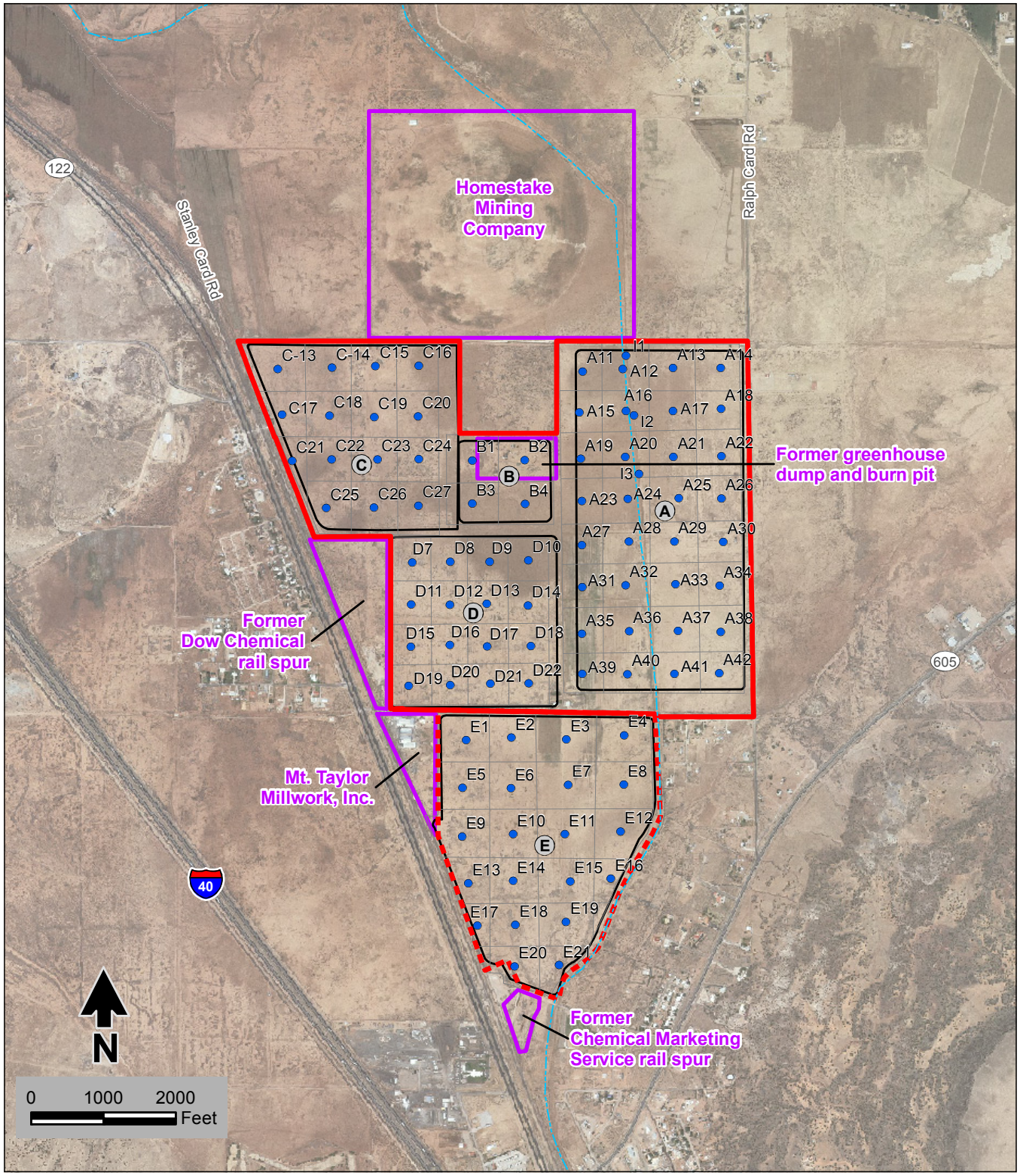

Explanation

- Suite 2 surface soil sample location
- Milan Farm Phase I development
- Milan Farm Phase II development
- REC site location
- Parcel
- Irrigation ditch

Source: USDA-FSA-APFO Aerial Photography Field Office aerial photograph dated May 2009

MILAN FARM

Analytical Suite 2 - Parcels A, B, C, D, and E Surface Soil Sample Locations

Daniel B. Stephens & Associates, Inc.

9/27/2012

JN ES10.0079.03

Figure 6

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Source: Google Earth Pro, dated 2005

Explanation

- Suite 1, 2, and 3 surface soil sample location
- Suite 2 surface soil sample location
- Suite 3 surface soil sample location

MILAN FARM

Parcel B - Former Burn Pit and Greenhouse Surface Soil Sample Locations

Daniel B. Stephens & Associates, Inc.

9/27/2012

JN ES10.0079.03

Figure 7

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Tables

Table 1. Fluid Level Measurements
Milan Farms, Milan, New Mexico

Well	Coordinates		Top of Casing Elevation [a] (feet msl)	Screened Interval (feet bgs)	Depth to Water (feet btoc)	Date Measured	Groundwater Elevation (feet msl)
	Easting [a] (NMWSP)	Northing [a] (NMWSP)					
MW-2	2,703,133.56	1,532,814.55	6,547.68	106–126	112.42	9/13/2012	6,435.26
MW-4	2,703,324.47	1,530,804.84	6,543.88	111–131	118.95	9/13/2012	6,424.93
MW-6	2,702,543.95	1,528,484.63	6,535.92	108–128	111.42	9/13/2012	6,424.50
MW-7	2,704,190.62	1,526,857.39	6,535.49	104–124	111.03	9/13/2012	6,424.46

[a] Surveyed by DePauli Engineering & Surveying, LLC. on August 30, 2012 using North American Datum 1983 (NAD83).

NMWSP = New Mexico West State Plane Grid
msl = Above mean sea level
bgs = Below ground surface
btoc = Below top of casing

Table 2. Soil Sample Collection Strategy
Milan Farm, Milan, New Mexico

Sample Location [a] / Category	Analytical Suite [b]	Number of Samples	Sample ID(s)
Soil Sample for Source Delineation			
Parcel A	1	13	A1 through A10, I1 through I3
	2	35	A11 through A42, I1 through I3
Parcel B	1	5	B1 through B4, B13
	2	6	B1 through B4, B12, B13
	3	8	B5 through B11, B13
Parcel C	1	12	C1 through C12
	2	14	C13 through C27
Parcel D	2	16	D7 through D22
	4	6	D1 through D6
Parcel E	2	21	E1 through E21
Field QC Samples			
Field duplicates (10% rounded up)	1	5	A-1FD, B-1FD, C-1FD, C-11FD, I-1FD
	2	10	A-12FD, A-30FD, B-1FD, C-21FD, D-11FD, D-21FD, E-1FD, E-11FD, E-21FD, I-1FD
	3	1	B-11FD
	4	1	D-1FD
MS/MSD (5% rounded up)	1,2,3,4	NA	A-12MS, A-30MS, D-11MS, E-1MS, E-21MS, I-1MS
Equipment rinsate [c]	1,2,3	1	B-13EB

[a] Sample locations are provided on Figures 3, 4, and 5.

[b] 1 = Uranium and selenium (EPA method 6010B ICP), radium (EPA method 226/228), molybdenum (EPA method 6010)
2 = Organochlorine pesticides (EPA method 8081), organophosphorous pesticides (EPA method 8141/8270), chlorinated acid herbicides (EPA method 8151), nitrogen species (ammonia (EPA method SM 4500-NH3), nitrate/nitrite (EPA method 300)
3 = Volatile organic compounds (VOCs) (EPA method 8260B), total petroleum hydrocarbons (TPH) (EPA method 8015B), polycyclic aromatic hydrocarbons (PAHs) (EPA method 8270 SIMS), target analyte list (TAL) metals (EPA method 6010/6020), dioxins and furans (EPA method 8290)
4 = pH (SM 4500 H+B), sulfate (EPA method 300.0)

[c] Equipment rinsate samples will be analyzed only for the soil sample suite that is being collected.

Table 3. Summary of Soil Analytical Data, Radium
Milan Farm, Milan, New Mexico
Page 1 of 2

Section [a]	Sampling Date	Concentration (pCi/g) [b]	
		Radium-226	Radium-228
A-1	6/14/2012	0.866 ± 0.201	1.07 ± 0.296
A-1 FD	6/14/2012	0.780 ± 0.249	0.322 ± 0.265
A-2	6/14/2012	0.944 ± 0.213	0.515 ± 0.255
A-3	6/14/2012	1.02 ± 0.231	1.27 ± 0.353
A-4	6/14/2012	1.27 ± 0.238	1.18 ± 0.399
A-5	6/14/2012	1.02 ± 0.245	1.52 ± 0.343
A-6	6/15/2012	0.937 ± 0.229	0.758 ± 0.278
A-7	6/15/2012	1.03 ± 0.204	1.28 ± 0.305
A-8	6/15/2012	0.860 ± 0.213	0.657 ± 0.244
A-9	6/15/2012	1.15 ± 0.272	1.03 ± 0.350
A-10	6/15/2012	1.21 ± 0.266	0.858 ± 0.312
B-1	6/21/2012	0.895 ± 0.187	1.09 ± 0.345
B-1 FD	6/21/2012	0.895 ± 0.187	1.09 ± 0.345
B-2	6/21/2012	0.908 ± 0.215	0.863 ± 0.348
B-3	6/21/2012	0.524 ± 0.155	0.473 ± 0.275
B-4	6/21/2012	0.802 ± 0.206	1.28 ± 0.311
B-5 [c]	6/21/2012	0.702 ± 0.174	0.628 ± 0.242
B-13 [d]	6/21/2012	–0.004 ± 0.631	–0.029 ± 0.830
C-1	6/18/2012	1.07 ± 0.241	0.997 ± 0.310
C-1 FD	6/18/2012	0.607 ± 0.230	1.80 ± 0.430
C-2	6/18/2012	1.28 ± 0.280	1.37 ± 0.368
C-3	6/18/2012	1.11 ± 0.245	1.22 ± 0.353
C-4	6/18/2012	0.755 ± 0.156	1.29 ± 0.314
C-5	6/18/2012	0.71 ± 0.159	0.808 ± 0.258
C-6	6/18/2012	0.671 ± 0.168	0.489 ± 0.211
C-7	6/18/2012	1.28 ± 0.277	1.22 ± 0.380
C-8	6/18/2012	1.14 ± 0.297	1.47 ± 0.353
C-9	6/18/2012	1.00 ± 0.241	0.924 ± 0.323
C-10	6/18/2012	1.11 ± 0.243	1.21 ± 0.454
C-11	6/18/2012	0.808 ± 0.199	1.15 ± 0.330
C-11 FD	6/18/2012	0.927 ± 0.221	0.569 ± 0.254

[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 901.1m.
[c] Sample depth is 6 to 12 inches bgs.
[d] Sample depth is 5 to 7 feet bgs.
pCi/g = Average picocuries per gram
— = No standard
FD = Field duplicate
MS= Matrix spike

Table 3. Summary of Soil Analytical Data, Radium
Milan Farm, Milan, New Mexico
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Section [a]	Sampling Date	Concentration (pCi/g) [b]	
		Radium-226	Radium-228
C-12	6/18/2012	0.915 ± 0.218	1.12 ± 0.317
I-1	6/21/2012	3.06 ± 1.09	0.598 ± 0.186
I-1 FD/MS	6/21/2012	2.12 ± 0.877	0.854 ± 0.232
I-2	6/21/2012	2.57 ± 1.34	0.787 ± 0.226
I-3	6/21/2012	3.20 ± 1.37	0.961 ± 0.226

[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 901.1m.
[c] Sample depth is 6 to 12 inches bgs.
[d] Sample depth is 5 to 7 feet bgs.

pCi/g = Average picocuries per gram
— = No standard
FD = Field duplicate
MS= Matrix spike

Table 4. Summary of Soil Analytical Data, Pesticides
Milan Farm, Milan, New Mexico
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Section [a]	Sampling Date	Concentration [b] (mg/kg)							
		4,4´-DDD	4,4´-DDE	4,4´-DDT	Dieldrin	Heptachlor	Heptachlor Epoxide	Methoxychlor	Toxaphene
NMED Residential SSL [c]		*24.4*	*14.3*	*17.2*	*0.304*	*1.08*	*0.053* [d]	*310* [d]	*4.42*
A-11	6/15/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.13
A-12	6/20/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.13
A-12 FD/MS	6/20/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.13
A-13	6/19/2012	<0.0020	0.019	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.23
A-14	6/20/2012	<0.0020	0.048	0.0027	<0.0020	<0.0020	<0.0020	<0.0020	0.47
A-15	6/20/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
A-16	6/20/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
A-17	6/20/2012	<0.0020	0.045	0.0028	<0.0020	<0.0020	<0.0020	<0.0020	0.48
A-18	6/19/2012	<0.0020	0.035	0.0050	<0.0020	<0.0020	<0.0020	<0.0020	0.41
A-19	6/20/2012	<0.0020	0.0027	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
A-20	6/20/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.13
A-21	6/20/2012	<0.0020	0.034	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.30
A-22	6/20/2012	<0.0020	0.017	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.20
A-23	6/20/2012	<0.0020	0.0030	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
A-24	6/20/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
A-25	6/20/2012	<0.0020	0.067	0.0045	<0.0020	<0.0020	<0.0020	<0.0020	0.60
A-26	6/20/2012	<0.0020	0.020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.22
A-27	6/20/2012	<0.0020	0.15	0.0088	<0.0020	<0.0020	<0.0020	<0.0020	1.0

Note: This table provides selected results for detected constituents; complete laboratory results are provided in Appendix B.
Bold indicates that value exceeds applicable screening level.
[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 8081.
[c] Unless otherwise noted.
[d] EPA regional screening level for residential soil
[e] Sample depth is 6 to 12 inches bgs.

mg/kg = Milligrams per kilogram
NMED = New Mexico Environment Department
SSL = Soil screening level
FD = Field duplicate
MS = Matrix spike

Table 4. Summary of Soil Analytical Data, Pesticides
Milan Farm, Milan, New Mexico
Page 2 of 6

Section [a]	Sampling Date	Concentration [b] (mg/kg)							
		4,4´-DDD	4,4´-DDE	4,4´-DDT	Dieldrin	Heptachlor	Heptachlor Epoxide	Methoxychlor	Toxaphene
NMED Residential SSL [c]		*24.4*	*14.3*	*17.2*	*0.304*	*1.08*	*0.053* [d]	*310* [d]	*4.42*
A-28	6/20/2012	<0.0020	0.039	0.0032	<0.0020	<0.0020	<0.0020	<0.0020	0.34
A-29	6/20/2012	<0.0020	0.012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
A-30	6/20/2012	<0.0020	0.036	0.0029	<0.0020	<0.0020	<0.0020	<0.0020	0.38
A-30 FD/MS	6/20/2012	<0.0020	0.034	0.0033	<0.0020	<0.0020	<0.0020	<0.0020	0.34
A-31	6/20/2012	<0.0020	0.077	0.010	<0.0020	<0.0020	<0.0020	<0.0020	0.75
A-32	6/20/2012	<0.0020	0.019	0.0023	<0.0020	<0.0020	<0.0020	<0.0020	0.32
A-33	6/21/2012	<0.0020	0.025	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.20
A-34	6/21/2012	<0.0020	0.087	0.0085	<0.0020	<0.0020	<0.0020	<0.0020	0.52
A-35	6/21/2012	<0.0020	0.0029	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.13
A-36	6/21/2012	<0.0020	0.016	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.15
A-37	6/21/2012	<0.0020	0.0051	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
A-38	6/21/2012	<0.0020	0.034	0.0036	<0.0020	<0.0020	<0.0020	<0.0020	0.24
A-39	6/21/2012	<0.0020	0.050	0.0086	<0.0020	<0.0020	<0.0020	<0.0020	0.59
A-40	6/21/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
A-41	6/21/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
A-42	6/21/2012	<0.0020	0.0041	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.13
B-1	6/21/2012	<0.0020	0.0095	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.13
B-1 FD	6/21/2012	<0.0020	0.011	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12

Note: This table provides selected results for detected constituents; complete laboratory results are provided in Appendix B.
Bold indicates that value exceeds applicable screening level.
[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 8081.
[c] Unless otherwise noted.
[d] EPA regional screening level for residential soil
[e] Sample depth is 6 to 12 inches bgs.

mg/kg = Milligrams per kilogram
NMED = New Mexico Environment Department
SSL = Soil screening level
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Table 4. Summary of Soil Analytical Data, Pesticides
Milan Farm, Milan, New Mexico
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Section [a]	Sampling Date	Concentration [b] (mg/kg)							
		4,4´-DDD	4,4´-DDE	4,4´-DDT	Dieldrin	Heptachlor	Heptachlor Epoxide	Methoxychlor	Toxaphene
NMED Residential SSL [c]		*24.4*	*14.3*	*17.2*	*0.304*	*1.08*	*0.053* [d]	*310* [d]	*4.42*
B-2	6/21/2012	<0.0020	0.0029	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
B-3	6/21/2012	<0.0020	0.017	<0.0020	0.0021	<0.0020	<0.0020	<0.0020	0.13
B-4	6/21/2012	<0.0020	0.049	0.0023	<0.0020	<0.0020	<0.0020	<0.0020	0.59
B-12	6/21/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
B-13 [e]	6/21/2012	<0.0099	0.021	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.62
C-13	6/18/2012	<0.0020	0.17	0.014	0.0037	<0.0020	<0.0020	<0.0020	0.85
C-14	6/18/2012	<0.0020	0.10	0.015	0.0037	<0.0020	<0.0020	<0.0020	0.85
C-15	6/18/2012	<0.0020	0.016	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.16
C-16	6/18/2012	<0.0020	0.017	0.0025	<0.0020	<0.0020	<0.0020	<0.0020	0.20
C-17	6/18/2012	<0.0020	0.093	0.0087	<0.0020	<0.0020	<0.0020	<0.0020	0.60
C-18	6/18/2012	<0.0020	0.047	0.0053	<0.0020	<0.0020	<0.0020	<0.0020	0.49
C-19	6/18/2012	<0.0020	0.028	0.0031	<0.0020	<0.0020	<0.0020	<0.0020	0.28
C-20	6/18/2012	<0.0020	0.0067	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
C-21	6/18/2012	<0.0020	0.070	0.0069	0.0023	<0.0020	<0.0020	<0.0020	0.63
C-21 FD	6/18/2012	<0.0020	0.062	0.0058	0.0020	<0.0020	<0.0020	<0.0020	0.56
C-22	6/18/2012	<0.0020	0.038	0.0041	<0.0020	<0.0020	<0.0020	<0.0020	0.33
C-23	6/18/2012	<0.0020	0.023	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.21
C-24	6/18/2012	<0.0020	0.0059	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.13

Note: This table provides selected results for detected constituents; complete laboratory results are provided in Appendix B.
Bold indicates that value exceeds applicable screening level.

[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 8081.
[c] Unless otherwise noted.
[d] EPA regional screening level for residential soil
[e] Sample depth is 6 to 12 inches bgs.

mg/kg = Milligrams per kilogram
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Table 4. Summary of Soil Analytical Data, Pesticides
Milan Farm, Milan, New Mexico
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Section [a]	Sampling Date	Concentration [b] (mg/kg)							
		4,4´-DDD	4,4´-DDE	4,4´-DDT	Dieldrin	Heptachlor	Heptachlor Epoxide	Methoxychlor	Toxaphene
NMED Residential SSL [c]		*24.4*	*14.3*	*17.2*	*0.304*	*1.08*	*0.053* [d]	*310* [d]	*4.42*
C-25	6/18/2012	<0.0020	0.019	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.28
C-26	6/18/2012	<0.0020	0.075	0.0058	<0.0020	<0.0020	<0.0020	<0.0020	0.49
C-27	6/18/2012	<0.0020	0.081	0.0054	<0.0020	<0.0020	<0.0020	<0.0020	0.52
D-7	6/15/2012	<0.0020	0.015	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
D-8	6/15/2012	<0.0020	0.033	0.0037	<0.0020	<0.0020	<0.0020	<0.0020	<0.13
D-9	6/15/2012	<0.0020	0.13	<0.015	<0.0020	<0.0020	<0.0020	0.010	1.1
D-10	6/15/2012	<0.0020	0.14	<0.014	<0.0020	<0.0020	<0.0020	<0.0020	1.1
D-11	6/15/2012	<0.0020	0.023	0.0023	<0.0020	0.0021	<0.0020	<0.0020	<0.12
D-11 FD/MS	6/15/2012	<0.0020	0.022	0.0022	<0.0020	<0.0020	<0.0020	<0.0020	<0.13
D-12	6/15/2012	<0.0020	0.020	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.12
D-13	6/15/2012	<0.0020	0.50	0.064	0.0030	<0.0020	<0.0020	<0.0020	**5.4**
D-14	6/15/2012	<0.0020	0.21	0.020	<0.0020	<0.0020	<0.0020	<0.0020	2.3
D-15	6/15/2012	<0.0020	0.010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.13
D-16	6/15/2012	<0.0020	0.024	0.0043	<0.0020	<0.0020	<0.0020	<0.0020	0.30
D-17	6/15/2012	<0.0020	0.44	0.055	<0.0020	<0.0020	<0.0020	<0.0020	**4.5**
D-18	6/15/2012	0.026	0.57	0.57	0.0035	<0.0020	<0.0020	<0.0020	**9.6**
D-19	6/15/2012	<0.0020	0.031	0.0035	<0.0020	<0.0020	<0.0020	<0.0020	0.39
D-20	6/15/2012	<0.0020	0.040	0.0052	<0.0020	<0.0020	<0.0020	<0.0020	0.48

Note: This table provides selected results for detected constituents; complete laboratory results are provided in Appendix B.
Bold indicates that value exceeds applicable screening level.

[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 8081.
[c] Unless otherwise noted.
[d] EPA regional screening level for residential soil
[e] Sample depth is 6 to 12 inches bgs.

mg/kg = Milligrams per kilogram
NMED = New Mexico Environment Department
SSL = Soil screening level
FD = Field duplicate
MS = Matrix spike

Table 4. Summary of Soil Analytical Data, Pesticides
Milan Farm, Milan, New Mexico
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Section [a]	Sampling Date	Concentration [b] (mg/kg)							
		4,4´-DDD	4,4´-DDE	4,4´-DDT	Dieldrin	Heptachlor	Heptachlor Epoxide	Methoxychlor	Toxaphene
NMED Residential SSL [c]		*24.4*	*14.3*	*17.2*	*0.304*	*1.08*	*0.053* [d]	*310* [d]	*4.42*
D-21	6/15/2012	<0.0020	0.14	0.019	<0.0020	<0.0020	<0.0020	<0.0020	1.1
D-21 FD	6/15/2012	<0.0020	0.17	0.027	<0.0020	<0.0020	<0.0020	<0.0020	1.2
D-22	6/15/2012	<0.0020	0.20	0.040	<0.0020	<0.0020	<0.0020	<0.0020	1.6
E-1	6/19/2012	<0.0020	0.096	0.011	<0.0020	<0.0020	<0.0020	<0.0020	0.94
E-1 FD/MS	6/19/2012	<0.0020	0.092	0.011	<0.0020	<0.0020	<0.0020	<0.0020	0.88
E-2	6/19/2012	<0.0020	0.15	0.015	<0.0020	<0.0020	<0.0020	<0.0020	1.2
E-3	6/19/2012	<0.0020	0.13	0.022	<0.0020	<0.0020	<0.0020	<0.0020	1.1
E-4	6/19/2012	<0.0020	0.091	0.012	0.0046	<0.0020	<0.0020	<0.0020	1.2
E-5	6/19/2012	<0.0020	0.18	0.022	<0.0020	<0.0020	<0.0020	<0.0020	2.1
E-6	6/19/2012	<0.0020	0.24	0.041	<0.0020	<0.0020	<0.0020	<0.0020	2.6
E-7	6/19/2012	<0.0020	0.045	0.0053	<0.0020	<0.0020	<0.0020	<0.0020	0.49
E-8	6/19/2012	<0.0020	0.031	0.0030	<0.0020	<0.0020	<0.0020	<0.0020	0.45
E-9	6/19/2012	<0.0020	0.078	0.0077	<0.0020	<0.0020	<0.0020	<0.0020	1.1
E-10	6/19/2012	<0.0020	0.14	0.028	<0.0020	<0.0020	<0.0020	<0.0020	1.5
E-11	6/19/2012	<0.0020	0.048	0.0060	<0.0020	<0.0020	<0.0020	<0.0020	0.57
E-11 FD	6/19/2012	<0.0020	0.072	0.0090	<0.0020	<0.0020	<0.0020	<0.0020	0.81
E-12	6/19/2012	<0.0020	0.14	0.025	0.0043	<0.0020	<0.0020	<0.0020	2.0
E-13	6/19/2012	<0.0020	0.13	0.018	<0.0020	<0.0020	<0.0020	<0.0020	0.96

Note: This table provides selected results for detected constituents; complete laboratory results are provided in Appendix B.
Bold indicates that value exceeds applicable screening level.
[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 8081.
[c] Unless otherwise noted.
[d] EPA regional screening level for residential soil
[e] Sample depth is 6 to 12 inches bgs.

mg/kg = Milligrams per kilogram
NMED = New Mexico Environment Department
SSL = Soil screening level
FD = Field duplicate
MS = Matrix spike

Table 4. Summary of Soil Analytical Data, Pesticides
Milan Farm, Milan, New Mexico
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Section [a]	Sampling Date	Concentration [b] (mg/kg)							
		4,4´-DDD	4,4´-DDE	4,4´-DDT	Dieldrin	Heptachlor	Heptachlor Epoxide	Methoxychlor	Toxaphene
NMED Residential SSL [c]		*24.4*	*14.3*	*17.2*	*0.304*	*1.08*	*0.053* [d]	*310* [d]	*4.42*
E-14	6/19/2012	<0.0020	0.097	0.013	<0.0020	<0.0020	<0.0020	<0.0020	1.0
E-15	6/19/2012	<0.0020	0.055	0.0087	0.0086	<0.0020	<0.0020	<0.0020	1.4
E-16	6/19/2012	<0.0020	0.023	0.0044	0.0029	<0.0020	<0.0020	<0.0020	0.60
E-17	6/19/2012	<0.0020	0.072	0.0082	<0.0020	<0.0020	<0.0020	<0.0020	0.83
E-18	6/19/2012	<0.0020	0.076	0.0094	<0.0020	<0.0020	<0.0020	<0.0020	0.79
E-19	6/19/2012	<0.0020	0.035	0.0052	<0.0020	<0.0020	<0.0020	<0.0020	0.50
E-20	6/19/2012	<0.0020	0.028	0.0026	<0.0020	<0.0020	<0.0020	<0.0020	0.25
E-21	6/19/2012	<0.0020	0.012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.21
E-21 FD/MS	6/19/2012	<0.0020	0.012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.20
I-1	6/21/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
I-1 FD/MS	6/21/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
I-2	6/21/2012	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
I-3	6/21/2012	<0.0020	0.0099	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.16

Note: This table provides selected results for detected constituents; complete laboratory results are provided in Appendix B.
Bold indicates that value exceeds applicable screening level.
[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 8081.
[c] Unless otherwise noted.
[d] EPA regional screening level for residential soil
[e] Sample depth is 6 to 12 inches bgs.

mg/kg = Milligrams per kilogram
NMED = New Mexico Environment Department
SSL = Soil screening level
FD = Field duplicate
MS = Matrix spike

Table 5. Summary of Soil Analytical Data, Nitrogen Species and Sulfate
Milan Farm, Milan, New Mexico
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Section [a]	Sampling Date	Concentration (mg/kg)			
		Nitrogen, Ammonia [b]	Nitrogen, Nitrate (as N) [c]	Nitrogen, Nitrite (as N) [c]	Sulfate [c]
NMED Residential SSL		—	*125,000*	*7,820*	—
A-11	6/15/2012	35	77	<1.5	NA
A-12	6/20/2012	42	9.1	<1.5	NA
A-12 FD/MS	6/20/2012	28	5.8	<1.5	NA
A-13	6/19/2012	28	26	<1.5	NA
A-14	6/20/2012	35	11	<1.5	NA
A-15	6/20/2012	42	12	<1.5	NA
A-16	6/20/2012	35	4.2	<1.5	NA
A-17	6/20/2012	35	8.8	<1.5	NA
A-18	6/19/2012	28	3.8	<1.5	NA
A-19	6/20/2012	35	11	<1.5	NA
A-20	6/20/2012	35	5.9	<1.5	NA
A-21	6/20/2012	49	100	<1.5	NA
A-22	6/20/2012	35	12	<1.5	NA
A-23	6/20/2012	<25	9.9	<1.5	NA
A-24	6/20/2012	<25	9.2	<1.5	NA
A-25	6/20/2012	35	25	<1.5	NA
A-26	6/20/2012	35	67	<1.5	NA
A-27	6/20/2012	28	48	<1.5	NA
A-28	6/20/2012	42	150	<0.30	NA
A-29	6/20/2012	35	24	<1.5	NA
A-30	6/20/2012	56	210	<0.30	NA
A-30 FD/MS	6/20/2012	35	28	<1.5	NA
A-31	6/20/2012	49	240	<0.30	NA
A-32	6/20/2012	42	17	<1.5	NA
A-33	6/21/2012	<25	8.7	<1.5	NA
A-34	6/21/2012	<25	3.8	<1.5	NA
A-35	6/21/2012	77	22	<1.5	NA
A-36	6/21/2012	42	130	<0.30	NA

[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method SM 4500-NH_3
[c] Sample analyzed in accordance with EPA 300.0.
[d] Sample depth is 6 to 12 inches bgs.
[e] Sample depth is 5 to 7 feet bgs.

mg/kg = Milligrams per kilogram
NMED = New Mexico Environment Department
SSL = Soil screening level
— = No standard
FD = Field duplicate
MS = Matrix spike
NA = Not analyzed

Table 5. Summary of Soil Analytical Data, Nitrogen Species and Sulfate
Milan Farm, Milan, New Mexico
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Section [a]	Sampling Date	Concentration (mg/kg)			
		Nitrogen, Ammonia [b]	Nitrogen, Nitrate (as N) [c]	Nitrogen, Nitrite (as N) [c]	Sulfate [c]
NMED Residential SSL		—	*125,000*	*7,820*	—
A-37	6/21/2012	35	11	<1.5	NA
A-38	6/21/2012	35	7.4	<1.5	NA
A-39	6/21/2012	56	72	<1.5	NA
A-40	6/21/2012	35	2.5	<1.5	NA
A-41	6/21/2012	49	5.5	<1.5	NA
A-42	6/21/2012	42	5.5	<1.5	NA
B-1	6/21/2012	<1.5	27	<1.5	NA
B-1 FD	6/21/2012	NA	17	<1.5	NA
B-2	6/21/2012	<1.5	39	<1.5	NA
B-3	6/21/2012	<1.5	39	<1.5	NA
B-4	6/21/2012	<1.5	7.1	<1.5	NA
B-5 [d]	6/21/2012	<1.5	NA	NA	NA
B-12	6/21/2012	NA	170	<1.5	NA
B-13 [e]	6/21/2012	56	8.5	<1.5	NA
C-13	6/18/2012	35	9.8	<3.0	NA
C-14	6/18/2012	35	9.2	<3.0	NA
C-15	6/18/2012	28	7.4	<3.0	NA
C-16	6/18/2012	28	12	<3.0	NA
C-17	6/18/2012	35	8.9	<3.0	NA
C-18	6/18/2012	28	9.8	<3.0	NA
C-19	6/18/2012	<25	3.1	<3.0	NA
C-20	6/18/2012	28	5.6	<3.0	NA
C-21	6/18/2012	35	18	<3.0	NA
C-21 FD	6/18/2012	28	14	<3.0	NA
C-22	6/18/2012	35	5.2	<3.0	NA
C-23	6/18/2012	<25	8.5	<3.0	NA
C-24	6/18/2012	28	23	<3.0	NA
C-25	6/18/2012	42	15	<3.0	NA

[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method SM 4500-NH_3
[c] Sample analyzed in accordance with EPA 300.0.
[d] Sample depth is 6 to 12 inches bgs.
[e] Sample depth is 5 to 7 feet bgs.

mg/kg = Milligrams per kilogram
NMED = New Mexico Environment Department
SSL = Soil screening level
— = No standard
FD = Field duplicate
MS = Matrix spike
NA = Not analyzed

Table 5. Summary of Soil Analytical Data, Nitrogen Species and Sulfate
Milan Farm, Milan, New Mexico
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Section [a]	Sampling Date	Concentration (mg/kg)			
		Nitrogen, Ammonia [b]	Nitrogen, Nitrate (as N) [c]	Nitrogen, Nitrite (as N) [c]	Sulfate [c]
NMED Residential SSL		—	*125,000*	*7,820*	—
C-26	6/18/2012	35	4.6	<3.0	NA
C-27	6/18/2012	49	22	<3.0	NA
D-1	6/14/2012	NA	NA	NA	<15
D-1 FD	6/14/2012	NA	NA	NA	15
D-2	6/14/2012	NA	NA	NA	<15
D-3	6/14/2012	NA	NA	NA	<15
D-4	6/14/2012	NA	NA	NA	17
D-5	6/14/2012	NA	NA	NA	<15
D-6	6/14/2012	NA	NA	NA	18
D-7	6/15/2012	<25	6.7	<1.5	NA
D-8	6/15/2012	49	7.7	<1.5	NA
D-9	6/15/2012	42	4.9	<1.5	NA
D-10	6/15/2012	56	34	<1.5	NA
D-11	6/15/2012	28	12	<1.5	NA
D-11 FD/MS	6/15/2012	28	20	2.4	NA
D-12	6/15/2012	56	16	<1.5	NA
D-13	6/15/2012	42	40	<1.5	NA
D-14	6/15/2012	42	30	<1.5	NA
D-15	6/15/2012	28	12	<1.5	NA
D-16	6/15/2012	<25	23	<1.5	NA
D-17	6/15/2012	49	11	<3.0	NA
D-18	6/15/2012	35	27	<1.5	NA
D-19	6/15/2012	42	6.5	<3.0	NA
D-20	6/15/2012	63	110	<1.5	NA
D-21	6/15/2012	49	42	<1.5	NA
D-21 FD	6/15/2012	49	18	<3.0	NA
D-22	6/15/2012	42	49	<1.5	NA
E-1	6/19/2012	35	49	<0.30	NA

[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method SM 4500-NH_3
[c] Sample analyzed in accordance with EPA 300.0.
[d] Sample depth is 6 to 12 inches bgs.
[e] Sample depth is 5 to 7 feet bgs.

mg/kg = Milligrams per kilogram
NMED = New Mexico Environment Department
SSL = Soil screening level
— = No standard
FD = Field duplicate
MS = Matrix spike
NA = Not analyzed

Table 5. Summary of Soil Analytical Data, Nitrogen Species and Sulfate
Milan Farm, Milan, New Mexico
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Section [a]	Sampling Date	Concentration (mg/kg)			
		Nitrogen, Ammonia [b]	Nitrogen, Nitrate (as N) [c]	Nitrogen, Nitrite (as N) [c]	Sulfate [c]
NMED Residential SSL		—	*125,000*	*7,820*	—
E-1 FD/MS	6/19/2012	42	35	<0.30	NA
E-2	6/19/2012	42	110	<0.30	NA
E-3	6/19/2012	42	38	<0.30	NA
E-4	6/19/2012	35	8.1	<0.30	NA
E-5	6/19/2012	35	23	<0.30	NA
E-6	6/19/2012	28	19	<0.30	NA
E-7	6/19/2012	28	25	<0.30	NA
E-8	6/19/2012	42	9.2	<0.30	NA
E-9	6/19/2012	49	28	<0.30	NA
E-10	6/19/2012	42	8.0	<0.30	NA
E-11	6/19/2012	28	23	<1.5	NA
E-11 FD	6/19/2012	<25	30	<1.5	NA
E-12	6/19/2012	35	16	<1.5	NA
E-13	6/19/2012	49	16	<1.5	NA
E-14	6/19/2012	28	24	<1.5	NA
E-15	6/19/2012	28	9.1	<1.5	NA
E-16	6/19/2012	<25	4.3	<1.5	NA
E-17	6/19/2012	49	22	1.7	NA
E-18	6/19/2012	<25	13	1.5	NA
E-19	6/19/2012	35	17	1.8	NA
E-20	6/19/2012	56	12	2.0	NA
E-21	6/19/2012	63	17	<0.30	NA
E-21 FD/MS	6/19/2012	56	17	<1.5	NA
I-1	6/21/2012	35	7.2	<1.5	NA
I-1FD/MS	6/21/2012	<25	11	<1.5	NA
I-2	6/21/2012	28	6.2	<1.5	NA
I-3	6/21/2012	35	7.7	<1.5	NA

[a] All sample depths are 0 to 6 inches below ground surface (bgs), unless otherwise noted.
[b] Sample analyzed in accordance with U.S. Environmental Protection Agency (EPA) method SM 4500-NH_3
[c] Sample analyzed in accordance with EPA 300.0.
[d] Sample depth is 6 to 12 inches bgs.
[e] Sample depth is 5 to 7 feet bgs.

mg/kg = Milligrams per kilogram
NMED = New Mexico Environment Department
SSL = Soil screening level
— = No standard
FD = Field duplicate
MS = Matrix spike
NA = Not analyzed

Table 6. Summary of Soil Analytical Results, Volatile Organic Compounds
Milan Farm, Milan, New Mexico

Section [a]	Sampling Date	Concentration (mg/kg) [b]							
		Benzene	Toluene	Ethyl-benzene	Total Xylenes	BTEX	MTBE	EDB	EDC
NMED Residential SSL		*15.4*	*5,270*	*68.4*	*814*	—	*901*	*0.588*	*7.89*
B-5	6/21/2012	<0.050	<0.050	<0.050	<0.10	<0.25	<0.050	<0.050	<0.050
B-6	6/21/2012	<0.050	<0.050	<0.050	<0.10	<0.25	<0.050	<0.050	<0.050
B-7	6/21/2012	<0.050	<0.050	<0.050	<0.10	<0.25	<0.050	<0.050	<0.050
B-8	6/21/2012	<0.050	<0.050	<0.050	<0.10	<0.25	<0.050	<0.050	<0.050
B-9	6/21/2012	<0.050	<0.050	<0.050	<0.10	<0.25	<0.050	<0.050	<0.050
B-10	6/21/2012	<0.050	<0.050	<0.050	<0.10	<0.25	<0.050	<0.050	<0.050
B-11	6/21/2012	<0.050	<0.050	<0.050	<0.10	<0.25	<0.050	<0.050	<0.050
B-11 FD	6/21/2012	<0.050	<0.050	<0.050	<0.10	<0.25	<0.050	<0.050	<0.050
B-13 [c]	6/21/2012	<0.049	<0.049	<0.049	<0.098	<0.245	<0.049	<0.049	<0.049

Note: This table provides results for selected volatile organic compounds; complete analytical results are provided in Appendix B.

[a] All sample depths are 6 to 12 inches below ground surface (bgs), unless otherwise noted.

[b] Analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 8260B.

[c] Sample depth is 5 to 7 feet bgs.

mg/kg = Milligrams per kilogram
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
MTBE = Methyl tertiary-butyl ether
EDB = 1,2-Dibromoethane
EDC = 1,2-Dichloroethane
NMED = New Mexico Environment Department
SSL = Soil screening level
— = No standard
FD = Field duplicate

Table 7. Summary of Soil Analytical Results, PAHs
Milan Farm, Milan, New Mexico

Section [a]	Sampling Date	Concentration (mg/kg) [b]			
		Total Naphthalenes [c]	Fluoranthene	Phenanthrene	Pyrene
NMED Residential SSL		*43* [d]	*2,290*	*1,830*	*1,720*
B-5	6/21/2012	<0.12	<0.040	<0.040	<0.040
B-6	6/21/2012	<0.12	0.020	<0.020	<0.020
B-7	6/21/2012	<0.12	<0.020	<0.020	<0.020
B-8	6/21/2012	<0.12	<0.020	<0.020	<0.020
B-9	6/21/2012	<0.12	<0.020	<0.020	<0.020
B-10	6/21/2012	<0.12	<0.020	<0.020	<0.020
B-11	6/21/2012	<0.12	<0.020	<0.020	<0.020
B-11 FD	6/21/2012	<0.12	<0.020	<0.020	<0.020
B-13 [e]	6/21/2012	0.69	0.19	0.24	0.12

Note: This table provides selected results for detected constituents; complete analytical results are provided in Appendix B.

[a] All sample depths are 6 to 12 inches below ground surface (bgs), unless otherwise noted.

[b] Analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 8270.

[c] Total naphthalenes = Naphthalene + 1-methylnaphthalene + 2-methylnaphthalene

[d] Standard is for naphthalene alone; U.S. EPA standards for 1-methylnaphthalene and 2-methylnaphthalene are 16 mg/kg and 230 mg/kg, respectively.

[e] Sample depth is 5 to 7 feet bgs

PAH = Polycyclic aromatic hydrocarbon
mg/kg = Milligrams per kilogram
NMED = New Mexico Environment Department
SSL = Soil screening level
FD = Field duplicate

Table 8. Summary of Soil Analytical Results, Target Analyte List Metals
Milan Farm, Milan, New Mexico

Section [a]	Sampling Date	Concentration (mg/kg) [b]															
		Aluminum	Barium	Beryllium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Potassium	Sodium	Vanadium	Zinc
NMED Residential SSL [c]		*78,100*	*15,600*	*156*	*—*	*20.79* [d]	*23* [e]	*3,130*	*54,800*	*400*	*—*	*10,700*	*1,560*	*—*	*—*	*391*	*23,500*
B-5	6/21/2012	11,000	77	0.34	9,000	5.1	2.6	3.8	9,800	2.3	3,100	140	3.9	2,300	<120	12	19
B-6	6/21/2012	12,000	110	0.38	11,000	5.9	2.7	4.1	11,000	3.6	3,600	150	4.2	2,700	<120	14	26
B-7	6/21/2012	13,000	92	0.40	11,000	6.1	2.9	4.0	11,000	4.3	3,600	150	4.4	2,700	<120	15	17
B-8	6/21/2012	9,500	74	0.33	7,400	5.0	2.3	3.0	8,400	3.4	2,900	120	3.5	2,300	<120	12	16
B-9	6/21/2012	12,000	91	0.38	6,600	6.0	3.0	3.9	11,000	3.5	3,300	150	4.1	3,100	<120	14	29
B-10	6/21/2012	12,000	76	0.39	7,600	5.7	2.7	3.7	9,600	3.7	3,100	140	4.1	3,000	<120	14	17
B-11	6/21/2012	13,000	95	0.42	7,700	6.1	2.9	3.9	12,000	3.7	3,300	160	4.5	3,300	<120	14	19
B-11 FD	6/21/2012	13,000	95	0.42	7,700	8.2	3.7	5.1	11,000	3.1	3,300	160	6.0	3,200	<120	18	25
B-13 [f]	6/21/2012	12,000	140	<0.75	15,000	11	4.6	8.0	13,000	27	4,400	210	8.4	4,100	340	20	110

Note: Mercury was analyzed for with the target analyte list (TAL) metals suite, but was not detected in any samples at concentrations above the laboratory detection limit of 0.033 mg/kg.

[a] All sample depths are 6 to 12 inches below ground surface (bgs), unless otherwise noted.

[b] Analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 6010B.

[c] Unless otherwise noted.

[d] The residential SSL for Cr (VI) is 2.97 mg/kg. EPA and NMED assume a Cr (VI):Cr (III) ratio of 1:6, which is considered a health-protective assumption. The derived screening level for total chromium in soil is 20.79 mg/kg.

[e] EPA regional screening level for residential soil.

[f] Sample depth is 5 to 7 feet bgs.

mg/kg = Milligrams per kilogram
NMED = New Mexico Environment Department
SSL = Soil screening level
— = No standard
FD = Field duplicate

Table 9. Summary of Soil Analytical Data, Dioxins and Furans
Milan Farm, Milan, New Mexico
Page 1 of 2

Section [a]	Date	Concentration (ng/kg) [b]								
		2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	1,2,3,7,8-PeCDF
NMED Residential SSL		*45*	*45* [c]	*450* [c]	*450* [c]	*450* [c]	*4,500* [c]	*150,000* [c]	*450*	*1,500* [c]
B-5	6/21/2012	<0.487	<2.44	<2.44	<2.44	3.45	15.5	68.5	<0.487	<2.44
B-6	6/21/2012	<0.491	<2.46	<2.46	<2.46	4.02	31	217	<0.491	<2.46
B-7	6/21/2012	<0.478	<2.39	<2.39	<2.39	2.86	5.59	20.6	<0.478	<2.39
B-8	6/21/2012	<0.616	<3.08	<3.08	<3.08	3.38	8.96	35.1	<0.616	<3.08
B-9	6/21/2012	<0.525	<2.62	<2.62	<2.62	2.82	7.59	25	<0.525	<2.62
B-10	6/21/2012	<0.492	<2.46	3.9	<2.46	10.2	22.2	38.6	<0.492	<2.46
B-11	6/21/2012	<0.474	<2.37	<2.37	<2.37	2.89	5.97	16.4	<0.474	<2.37
B-11 FD	6/21/2012	<0.499	<2.50	<2.50	<2.50	2.93	5.86	16.6	<0.499	<2.50
B-13 [d]	6/21/2012	7.20	23.9	20	65.5	62.9	928	3,740	<0.492	<2.46

[a] All sample depths are 6 to 12 inches below ground surface (bgs), unless otherwise noted.

[b] Analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 1613B, regulatory-monitored compounds only.

[c] Calculated using NMED toxicity equivalency factors (TEFs).

[d] Sample depth is 5 to 7 feet bgs.

ng/kg = Nanograms per kilogram
TCDD = Tetrachlorodibenzodioxin
PeCDD = Pentachlorodibenzo-p-dioxin
HxCDD = Hexachlorodibenzo-p-dioxin
HpCDD = Heptachlorodibenzo-p-dioxin
OCDD = Octachlorodibenzo-p-dioxin
TCDF = Tetrachlorodibenzofuran
PeCDF = Pentachlorodibenzo-p-furan
NMED = New Mexico Environment Department
SSL = Soil screening level
FD = Field duplicate

Table 9. Summary of Soil Analytical Data, Dioxins and Furans
Milan Farm, Milan, New Mexico
Page 2 of 2

Section [a]	Date	Concentration (ng/kg) [b]								
		2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF	TEQ
NMED Residential SSL		*150* [c]	*450* [c]	*450* [c]	*450* [c]	*450* [c]	*4,500* [c]	*4,500* [c]	*150,000* [c]	*45*
B-5	6/21/2012	<2.44	<2.44	<2.44	<2.44	<2.44	<2.44	<4.87	<0.487	0.521
B-6	6/21/2012	<2.46	<2.46	<2.46	<2.46	5.52	<2.46	13.7	<0.491	0.836
B-7	6/21/2012	<2.39	<2.39	<2.39	<2.39	<2.39	<2.39	<4.78	<0.478	0.348
B-8	6/21/2012	<3.08	<3.08	<3.08	<3.08	<3.08	<3.08	<6.16	<0.616	0.438
B-9	6/21/2012	<2.62	<2.62	<2.62	<2.62	<2.62	<2.62	<5.25	<0.525	0.365
B-10	6/21/2012	<2.46	<2.46	<2.46	<2.46	<2.46	<2.46	<4.92	2.71	1.64
B-11	6/21/2012	<2.37	<2.37	<2.37	<2.37	<2.37	<2.37	<4.74	<0.474	0.354
B-11 FD	6/21/2012	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<4.99	1.12	0.375
B-13 [d]	6/21/2012	<2.46	4.6	3.09	<2.46	52.3	2.78	176	85.5	58.1 [e]

[a] All sample depths are 6 to 12 inches below ground surface (bgs), unless otherwise noted.

[b] Analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 1613B, regulatory-monitored compounds only.

[c] Calculated using NMED toxicity equivalency factors (TEFs).

[d] Sample depth is 5 to 7 feet bgs.

[e] Value exceeds the residential SSL for 2,3,7,8-TCDD of 45 ng/kg, but is below the industrial SSL of 204 ng/kg. Due to the sample depth, the industrial standard is applied.

ng/kg = Nanograms per kilogram
PeCDF = Pentachlorodibenzo-p-furan
HxCDF = Hexachlorodibenzo-p-furan
HpCDF = Heptachlorodibenzo-p-furan
OCDF = Octachlorodibenzo-p-furan
TEQ = Toxic equivalent, expressed as the equivalent concentration of 2,3,7,8-TCDD
NMED = New Mexico Environment Department
SSL = Soil screening level
FD = Field duplicate

Table 10. Summary of Groundwater Analytical Data, Metals and Radium
Milan Farm, Milan, New Mexico

Well	Sampling Date	Concentration (mg/L)		Concentration (pCi/L)	
		Selenium [a]	Uranium [a]	Radium-226 [b]	Radium-228 [c]
NMWQCC Standard		*0.05*	*0.03*	*5*	—
MW-2	8/13/2012	0.031	0.012	0.245 ± 0.557	0.619 ± 0.491
MW-4	7/15/2012	NA	NA	NA	NA
MW-6	7/16/2012	NA	NA	NA	NA
MW-7	7/17/2012	NA	NA	NA	NA

[a] Analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 200.8
[b] Analyzed in accordance with EPA method 903.1
[c] Analyzed in accordance with EPA method 904.0
mg/L = Milligrams per liter
pCi/L = Average picocuries per liter
NMWQCC = New Mexico Water Quality Control Commission
— = No standard
NA = Not analyzed

Table 11. Summary of Groundwater Analytical Results, Inorganics
Milan Farm, Milan, New Mexico

Well	Sampling Date	Concentration (mg/L)						
		TDS [a]	Chloride [b]	Ammonia [b]	Nitrate (as N) [b]	Nitrite (as N) [b]	Nitrate + Nitrite (as N) [b]	Sulfate [b]
NMWQCC Standard		*1,000*	*250*	—	*10*	—	—	*600*
MW-2	8/13/2012	**1,020**	38	<0.001	2.2	<0.10	NA	450
MW-4	7/15/2012	NA	NA	<0.001	3.8	<0.50	NA	NA
MW-6	7/16/2012	NA	NA	<0.001	4.2	<0.10	NA	NA
MW-7	7/17/2012	NA	NA	<0.001	NA	NA	3.8	NA

Bold indicates that value exceeds the applicable New Mexico Water Quality Control Commission (NMWQCC) standard.

[a] Analyzed in accordance with standard method 2540C modified.

[b] Analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 300.0.

mg/L = Milligrams per liter
TDS = Total dissolved solids
— = No standard
NA = Not analyzed

Table 12. Summary of Groundwater Analytical Results, Volatile Organic Compounds
Milan Farm, Milan, New Mexico

Monitor Well	Sampling Date	Concentration (µg/L) [a]								
		Benzene	Toluene	Ethyl-benzene	Total Xylenes	Chloroform	MTBE	EDB	EDC	Total Naphthalenes
NMWQCC Standard		*10*	*750*	*750*	*620*	*100*	*—* [b]	*1.0*	*10*	*30*
MW-4	7/15/2012	<1.0	<1.0	<1.0	<1.5	0.55	<1.0	<1.0	<1.0	0.40 J
MW-6	7/16/2012	<1.0	<1.0	<1.0	<1.5	0.41	<1.0	<1.0	<1.0	0.41 J
MW-7	7/17/2012	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<1.0	<2.0

[a] Analyzed in accordance with U.S. Environmental Protection Agency (EPA) method 8260B.

[b] MTBE standard is set by the New Mexico Environmental Improvement Board.

µg/L = Micrograms per liter
MTBE = Methyl tertiary-butyl ether
EDB = 1,2-Dibromoethane
EDC = 1,2-Dichloroethane
NMWQCC = New Mexico Water Quality Control Commission
— = No standard
J = Detected concentration is below the laboratory quantitation limit

Appendix A

Field Notes

6/12/12 Milan Village Meeting MV ①

0900 M. Nauck & J. Fisher leave for Milan

0945 Onsite at Village Hall.

- Meeting w/ M. Sage, E. Williams (NMWQCC) and M. Sandoval, B. Lujan (Milan City)
- Ben Lujan is POC for information & access
- City wondering about schedule:
  - Start soil sampling on 6/14/12
  - Start drilling on 6/18/12
  - Plan to complete by 7/6/12
- City is planning on acquiring property in the center of the north end of of the farm. Planned use is for cemetary

1130 Meeting adjourned

1300 Meet w/ Laguna Pueblo Environmental Manager and Pueblo officials to discuss upcoming Phase I's of Kawnika Center, Laguna Industries & Gas Station

6/12/12 Laguna Pueblo MW

1415 Onsite at Kawaika Center.

Possible COC's:

- ACM's
  - 9x9 floor tiles
  - floor + baseboard mastic
  - Drop ceiling tiles
  - Window Caulking
- LBP
  - Peeling paint on exterior doors
- Other
  - Stained ceiling tiles possible mold.

515 Offsite

530 M. Nauck + J. Fisher onsite at Laguna Industries. Steel structure appears to be offices w/ large roll up doors towards rear of building. Offices are currently occupied. MW

6/12/12 Laguna Pueblo MW

continued. Brick structure also appears to be office space. Although personel were not observed inside this building, J. Fisher noted that lights were on inside.

Access to either building was not gained, but photographs were taken of the exterior

Photographs of possible COC's were taken of the Kawaika Center

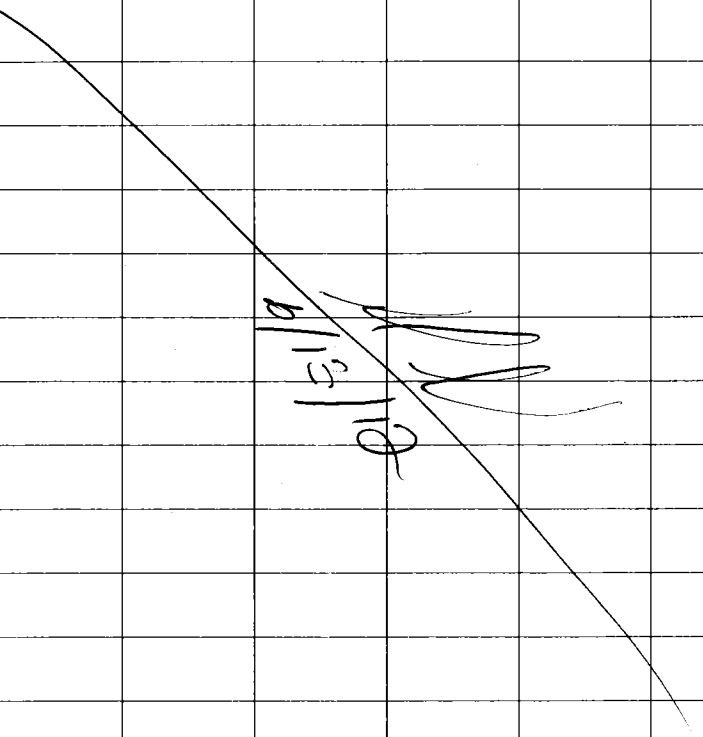
1540 Offsite

6/12/12

6/13/12 — Readiness Meeting — MW

0930 J. Bunch, D. Roeber, J. Fisher, + M. Mauck attend Readiness Meeting.

D. Roeber reviews H+S and SAP. H+S/SAP signature pages signed. Copies of M. Mauck + J. Fisher's training certificates



6/14/12 — Location Spotting + Sampling — MW

0630 A. Bisoglio + M. Mauck meet at office for load up

0855 Onsite at Milan Farm

Field Crew: A. Bisoglio + M. Mauck (DESA)

Weather: Clear, 80's-90's

Plan: Spot Monitoring wells + stake Spot sample locations + sample

0900 Conduct H+S meeting

0915 Staked MW-1 w/ wood lathe + blue pinflag

0932 Staked MW-5 (as w/ MW-1)

1000 Staked MW-7 (as/ MW-1)

1005 Staked MW-6 (as w/ MW-1)

1015 Staked MW-5 (as w/ MW-1)

1024 Staked MW-2 (as w/ MW-1)

1034 Staked MW-3 (as w/ MW-1) photos taken for reference

1040 Begin staking C-1 through 12 using blue pinflags

MW

6

5/14/12 — Sampling D1-4 — Location Spotting — MW AB

1125 Complete staking C1-12

1225 Begin sampling D1-6

1230 Collect D-1 + D-1FD

Soil description:

Sand, Reddish brown 5YR4/4, fine, mod. graded, sub angular, non plastic, dry, loose, ~5% organics USCS: SP

1250 Collect D-2

Soil description

Sand, Reddish brown 5YR5/4, fine, poorly graded, sub ang, non-plastic, loose, dry, ~10% organics USCS SP

1305 Collect D-3

Soil description

Same as D-1

1315 Collect D-4

Soil description

Same as D-1

10-15% organics

MW

5/14/12 — Sampling D6 + A-1-3 — MW+AB

1318 Collect D-4

Soil description

Same as D-1

1330 Collect D-6

Soil Description

Same as D-2

1355 Collect sample A-1

Soil description

Sand, Strong brown 7.5YR4/4, fine, poorly graded, loose, dry, <5% organics USCS: SP

1511 collect sample A-2

Soil Description

gravely sand, Reddish Brown 5YR 5/4 poorly graded, sub-ang, non-plastic, loose dry, 5-10 organics

1528 Collect sample A-3

Soil description

Sand, reddish brown 5YR 4/3, fine grained, poorly graded, sub-angular, non plastic loose, dry <5% organic SP

8

6/14/12 Sampling MW+AB

1548 collect A-4

Soil Description

Sand, reddish Brown 5YR 4/3
poorly graded, sub angular, non plastic
loose, dry, > 5% organics

600 Collect A-5

Soil Description

Sandy, Reddish Brown 5YR 4/4
MB 6/14 ~~Sand~~ Same as A-4

1615 Crew offsite for day

9

6/15/12 Sampling A6-8 MW+AB

0700 Crew onsite

Field Crew: A. Bisoglio & M Nauck

Weather: 60's - 90's, clear

Plan: Sample A-7/11 + D-7/11 + C's. Submit samples to Lab

0710 Conduct H&S meeting

0720 collect sample A-6

Soil description:

Sand, brown 7.5YR5/4, fine, poorly graded sub angular, nonplastic, loose, dry 5-10% organics

0735 Collect sample A-7

Soil description

Same as A-6

0800 Collect sample A-8

Soil description

Sand, strond brown 7.5YR4/6, fine, poorly graded, sub-angular, non plastic loose, dry <5% organics

6/15/12 Sampling A-9-11 MN & AB

0808 Collect sample A-9

Soil Description

Sand (fine grained) Brown 7.5 YR 5/4

Poor graded, non-plastic, loose, dry

Hy quartz, lithics, >5% organics

0818 Collect sample A-10

Soil Description

Medium Sand, Brown 7.5 YR 4/4

Poorly graded, non-plastic, loose, dry

subangular, >5% organics

0850 Collect A-11

Soil Description

Sand, Dark brown 7.5YR 3/4, fine, poorly graded, nonplastic, loose, dry, <5% organics

0900 Completed sampling of A1-11 samples on ice in cooler. COC checked. Custody of samples w/ A. Bisoglio

MN

6/16/12 D7-9 Sampling MN

0905 A. Bisoglio offsite to submit samples to lab.

0920 Calls from utility companies (QWEST, Electric, + Gas) say the only lines are by the ranch house. Boring locations are clear.

0930 Collect D-7

Soil description

Sand, reddish brown 5YR 4/4, fine, poorly graded, non plastic, loose, dry ~10% organics

0942 Collect D-8

Soil Description

same as D-7

0950 Collect D-8 MN 9

Soil Description

Same as D-7

6/15/12

12

6/15/12 Sampling D-10-15 LL

0959 Collect sample D-10

Soil Description

Sand, reddish brown 5YR5/4, fine, poorly graded, loose, nonplastic, dry < 5% organic

1050 Collect sample D-11 w FD+MS

Soil Description

Same as D-7

1100 Collect sample D-12

Soil Description

Same as D-7

1133 Collect sample D-13

Soil Description

1150 Collect D-14

Soil Description

Same as D-10

1207 Collect D-15

Soil Description

Same as D-7

LL

13

6/15/12 Sampling D-16-20 LL

1215 Collect D-16

Soil Description

Same as D-7

1225 Collect D-17

Soil Description

Same as D-7

1236 Collect D-18

Soil Description

same as D-10

1248 Collect D-19

Soil Description

same as D-10

1300 Collect D-20

Soil Description

Same as D-10 LL

1310 Collect D-20 ~~w FD~~

Soil Description

Same as D-10

LL

6/15/12 — Sampling D21-22 — MW

1310 Collect D-21 + FD

Soil Description

Same as D-10 ~15% organics

1320 Collect D-22

Soil Description

same as D-7

1350 Restock ice for samples

1400 Offsite

1545 Submit samples to Hall

Summary: On 6/14, use GPS to stake all monitor well locations + C1-12. Collect samples D1-6 + A1-5.

On 6/15 collect samples A6-10 + D7-22. All collected samples submitted to H.E.A.L.

6/15/12

6/18/12 — Sampling C1-3 — MW

0600 Re-stock equipment at office

0635 Travel to Milan

0800 Onsite at Milan Farm

Field Crew: M. Nauck (DBSA)

Weather: 70's-90's, Clear

Plan: Meet up w/ J. Fisher (DBSA) and EDI drill crew for kick-off meeting. Collect samples C1-11

0900 Collect C-1

Soil Description

Silty sand, reddish brown 5YR 4/3, fine, poorly graded, nonplastic, loose, dry ~15-20% organics

0915 Collect C-2

Soil Description

Same as C-1

0925 Collect C-3

Soil Description

Gravely silty sand, reddish brown 5YR 4/4, coarse-fine, nonplastic, loose, dry

6/18/12 Sampling CH-9 MW

0935 Collect C4

Soil Description

Same as C-1. No organics

0942 Collect C-5

Soil Description

Same as C-1. ~5% organics

0955 Collect C-6

Soil Description

Sand, reddish brown 5YR 4/4, fine, poorly graded, nonplastic, loose, dry, <5% organics

1010 Collect C-7

Soil Description

Same as C-1

1040 Collect C-8

Soil Description

Same as C-1

1050 Collect C-9

Soil Description

Same as C-1

6/19/12 Sampling C10-14 MW

1100 Collect C-10

Soil Description

Same as C-1

1110 Collect C-11 + FD

Soil Description

Same as C-1

1123 Collect C-12

Soil Description

Same as C-6

1200 Meet w/ Drill Crew (EDI) + J. Fisher (DESA). Show work area. J. Fisher conducts kick off meeting.

1245 H&S meeting conducted.

1330 Collect C-13

Soil description

Same as C-1

1344 Collect C-14

Soil Description

Same as C-1

MW

6/18/17

18 Sampling C15-21 MD

1350 Collect C-15

Soil Description

Same as C-3

1402 Collect C-16

Soil Description

Same as C-6

1435 Collect C-17

Soil Description MJ

Same as C-8!

1447 Collect D-18

Soil Description

Same as C-1

1455 Collect D-19

Soil Description C-1

1557 Collect D-20

Soil Description

Same as

1520 Collect D21+FD

Soil Description

same as C-1

19 Sampling C22-27 MD

[illegible] Collect C22

Soil Description

Same as C-1

[illegible] Collect C-23

Soil Description

Same as C-3

[illegible] Collect C-24

Soil Description

Same as C1

[illegible] Collect C-25

Soil Description

Same as C-1

[illegible] Collect C-26

Soil Description

Same as C-1

[illegible] Collect C-27

Soil Description

Same as C-1

[illegible] Restock Eq. Offsite

MD

6/19/12 Sampling E1-2 MW

0600 Load up at warehouse

0745 Onsite at MW-7

Crew: M. Mauck (DBSA)

Weather: Clear, windy, 70's-90's

Plan: Sample section E

0800 Conduct H&S meeting w/ J. Fisher (DBSA) + EDI crew.

0820 Talk w/ J. Bunch about status of project

0840 Collect E-1 w/ FD + MS

Soil Description

Silty sand, reddish brown 5YR 4/3, fine, poorly graded, nonplastic, loose, dry, ~5% caliche, ~5% organ.

0915 Collect E-2

Soil Description

Silty sand, reddish brown 5YR 4/4, fine, poorly graded, nonplastic, loose, dry, ~10% organics

6/19/12 Sampling E-3-8 MW

0930 Collect E-3

Soil Description

Same as E-2

0940 Collect E-4

Soil Description

Same as E-2

1000 Collect E-5

Soil Description

Same as E-2

1020 Collect sample E-6

Soil Description

Same as E-2

1042 Collect E-7

Soil Description

Same as E-2

1053 Collect E-8

Soil Description

Same as E-2

6/19/12 Sampling E8-14 MD

1045 Collect Sample E-9

Sample Description

Same as E-8 1

1100 Collect E-10

Sample Description

Same as E-2

1120 Assist J. Fisher & A. Bisoglio w/ drill logging

1250 Collect E-11 w/FD

Sample Description

Same as E-2

1310 Collect E-12

Sample Description

Same as C-2

1395 Collect E-13

Sample Description

Same as C-2

1335 Collect E-14

Sample Description

Same as E-2

6/12 Sampling E15-20 MD

Collect E-15

Sample Description

Same as E-2

Collect E-16

Sample Description

Same as E-2

Collect E-17

Sample Description

Same as E-2

Collect E-18

Sample Description

Same as E-2

Collect E-19

Sample Description

Same as E-2

Collect E-20

Sample Description

Same as E-2

6/19/13 Sample E-21 MW

1505 Collect E-21 FD + MS

Soil Description

Same as E-2

1540 Check w/ J. Fisher to see if there are any supplies needed. Print off more tailgate forms at office.

1620 Restock ice

1635 Offsite

6/19/13

6/19 Sampling A12-A13 MW

Restock sample bottles at warehouse.

Print off more tailgate forms

Onsite at MW-7.

Crew: M. Nauck (CDBSA)

Weather: 70's-90's, clear, windy

Plan: Continue sampling from A-12 through A-42

Give J. Fisher (CDBSA) extra tailgate forms.

Onsite to east side of irrigation ditch.

Collect A-12 + FD + MS

Soil Description

Sand, Strong brown 7.5 YR 4/4, fine, poorly graded, loose, dry, <5% organics

Collect A-13

Soil Description

Same As A-13

6/20/12 Sampling A14-19 MW

0945 Collect A-14

Soil Description

Same as A-13

1000 Collect A-15

Soil Description

Same as A-13

1020 Collect A-16

Soil Description

Same as A-13

1030 Collect A-17

Soil Desciption

Same as A-13

1045 Collect A-18

Soil Description

Same as A-13

1100 Collect A-19

Soil Description

Same as A-13

12 MW Sampling A20-A26 MW

Collect A-20

Soil Description

Same as A-13

Collect A-21

Soil Description

Same as A-13

Collect A-22

Soil Description

Same as A-13

Collect A-23

Soil Description

Same as A-13

Collect A-24

Soil Description

Collect A-25

Soil Description

Same as A-13

Collect A-26

Soil Description

Same as A-13

28

6/20/12 Sampling A27-32 MW

1350 Collect A-27

Soil Description

Same as A-13

1420 Collect A-28

Soil Description

Same as A-13

1430 Collect A-29

Soil Description

1446 Same as A-30

~~1446~~ Soil Description

Same as A-13

1520 Collect A-31

Soil Description

Same as A-13

1535 Collect A-32

Soil Description

Same as A-13

1600 Restock ice

1625 Offsite

6/21/12 Sampling A-28-36 MW

Send out status update to J. Bunch

Re-stock sample equipment

Submit samples at Hall

Onsite

Crew: M. Nauck (DBSA)

Weather: 70's-80's, windy, clear

Plan: Complete sampling section A. Sample I + B.

Collect A-33

Soil Description

Same as A-13

Collect A-34

Soil Description

Same as A-13

Collect A-35

Soil Description

Same as A-13

Collect A-36

Soil Description

Same as A-13

6/21/12 Sampling A37-42 MW

1005 Collect A-37

Soil Description

Same as A-13

1015 Collect A-38

Soil Description

Same as A-13

1025 Collect A-39

Soil Description

Same as A-13

1040 Collect A-40

Soil Description

Same as A-13

1052 Collect A-41

Soil Description

Same as A-13

1100 Collect A-42

Soil Description

Same as A-13

12 Sampling I1-3+B1-2 MW

Collect I-1 + FD w/MS

Soil Description

Gravely silty sand, reddish brown 5YR4/4, coarse to fine, poorly graded, nonplastic, ~~dry~~ MW loose, dry

Collect I-2

Soil Description

Same as I-1

Collect I-3

Soil Description

Same as I-1

Collect B-1 + FD

Soil Description

Silty sand, reddish brown 5YR4/3, fine, poorly graded, nonplastic, loose, dry

Collect B-2

Soil Description

Same as B-1

MW

6/21/12 Sampling B3-B8 MW

1355 Collect B-3

Soil Description

Same as B-1

1420 Collect B-4

Soil Description

Same as B-1

1445 Collect B-5

Soil Description

Gravelly silty sand, reddish brown 5YR coarse to fine, poorly graded, non-plastic, loose, dry, <10% organ

1500 Collect B-6

Soil Description

Same as B-5

1515 Collect B-6 MW

Soil Description

Same as B-5

1530 Collect E-8

Soil Description

Same as B5

Sampling B-9-12 MW

Collect B-9

Soil Description

Same as B-5

Collect B-10

Soil Description

Same as B-5

Collect B-11 + FD

Soil Description

Same as B-5

Collect B-12

Soil Description

same as B-5

Re-stock Ice offsite

6/21/12

6/18/12 MW-07 DRILLING J. FISHER

1200 ONSITE @ LOVE'S TRUCK STOP TO MEET DRILLERS. HEAD TO SITE.

1220 ONSITE @ MW-07. EDI HAS 3 TRUCKS & 2 TRAILERS (INCLUDING THE DRILL RIG). POSITION EQUIPMENT. EDI PERSONNEL: GEORGE HERRERA, CORDELL SYLVA, LOUIE CHAVEZ

1230 M. NAUCK ONSITE @ MW-07. HOLD TAILGATE SAFETY MEETING. SEE FORM IN HASP FOR DETAILS.

1245 SET UP FOR DRILLING.

1330 LOUIE SAYS THEY DID NOT BRING A DRIVE CAP FOR THE AUGERS. THE SOONEST ONE WILL BE ONSITE IS 1700. WILL START DRILLING IN THE MORNING. OFF TO CHECK O-MICAH.

1430 OFF SITE.

6/18/12

6/19/12 MW-07 J. Fisher

Cool, Calm, Sunny

0700 Onsite @ MW-07. Drillers Are Onsite. They Have Augered Down To ± 31' bgs. ~~+ Back~~ + Hit Basalt. George Says It Feels Pretty Broken up. They Backed The Augers Off To 30' + Have Tripped In (Inside The Augers) w/ A 3" Tricone Bit To Proceed w/ Pilot Hole.

0710 Hold Tailgate Safety Meeting. 3 EDI (George, Gordell, + Louis) + J. Fisher Present.

0720 Proceed w/ Drilling Pilot Hole Using Air.

0728 Had George Stop Because A Lot Of Dust Is Being Generated. Will Use Water To Keep The Dust Down.

6/19/12 MW-07 Drilling (cont.) J

0845 There Has Been Little To No Returns Uphole. The Pilot Hole Is To 55'. George Thinks They Are Losing Air + Cuttings To The Formation. Still Feels Like Basalt. Will Pull Out Tricone + Advance Augers.

0855 Advance Augers From 30'.

0905 Augers @ 35', Some Returns, But ~~Cut~~ Sandy Clay + No Basalt Yet. Add Another Auger.

0907 Arielle Onsite

0949 Augers Add @ 45' bgs.

1000 Resume Drilling w/ Tricone Bit From 55'.

1220 @ 65' w/ Tricone Bit.

1330 @ 75' w/ Tricone Bit. The Basalt Has Gotten Harder w/ Depth. They Are Switching To

6/19/12 MW-07 Drilling (cont'd)

A SLIGHTLY LARGER BIT THAT WILL ALSO HAMMER.

1545 THEY ARE AT ~63' W/ THE HAMMER BIT & ARE HAVING PROBLEMS GETTING IT TO WORK CORRECTLY, POSSIBLY DUE TO THE ACCUMULATION OF CUTTINGS IN THE BOTTOM OF THE HOLE.

1700 THEY HAVE PULLED BACK THE HAMMER BIT & WILL ADVANCE AUGERS FROM 45'

1750 AUGERS ARE @ & 55' bgs. WILL RESUME DRILLING IN THE MORNING.

1900 OFFSITE

6/19/12

4/20/12 J. FISHER

0635 ONSITE @ MW-07 HOLD TAILGATE SAFETY MEETING. SEE FORM IN HASP FOR DETAILS. THE DRILLERS WERE ONSITE @ 0600 & DID MAINTENANCE UNTIL ~0630. START DRILLING W/ AUGERS FROM 55'

0711 @ 60' bgs w/ AUGERS.

0745 @ 65' w/ AUGERS. SWITCH TO HAMMER BIT.

0830 THE HAMMER BIT SEEMS TO BE WORKING MUCH BETTER. WE ARE GETTING MUCH BETTER RETURNS, MOSTLY MARBLE SIZED FRAGMENTS OF BASALT

0919 @ 75' bgs w/ HAMMER BIT. WE SHOULD BE BACK IN VIRGIN ROCK.

0930 BASALT FRAGS ARE SMALLER &

6/20/12 MW-07 DRILLING (CONT)

THE CRYSTALS ARE FINER THAN THE ~~DR~~ MARBLE-SIZED FRAGS AT >70'.

1025 @ 80' WITH HAMMER BIT. STILL IN BASALT

1058 BROKE THROUGH BASALT @~90' bgs. BROWN SAND CAME UP THE AUGERS. THE SAND SEEMS TO BE DRY. WILL TRY TO CATCH THE AUGERS UP TO 90'.

1300 @~73' bgs W/ AUGERS + THEY THINK THEY MAY HAVE SLOUGHED OFF.

1313 BEGIN TRIPPING OUT AUGERS.

1345 75' OF AUGERS OUT OF THE HOLE. THERE ARE ONLY 2 OUT OF 6 TEETH REMAINING IN THE BIT.

6/20/12 MW-07 DRILLING (CONT) J. FISHER

1504 AUGERS ARE BACK TO 73' bgs. RESUME AUGERING W/ A NEW BIT.

1523 THEY HAVE BEEN WORKING ON SOMETHING IN THE DRIVE SYSTEM ON THE RIG. SOMETHING IS CAUSING THE RIG TO SHUT DOWN BEFORE IT BUILDS UP ENOUGH TORQUE TO START TURNING. GEORGE THINKS THE TEETH FROM THE OLD BIT MAY BE PART OF THE PROBLEM.

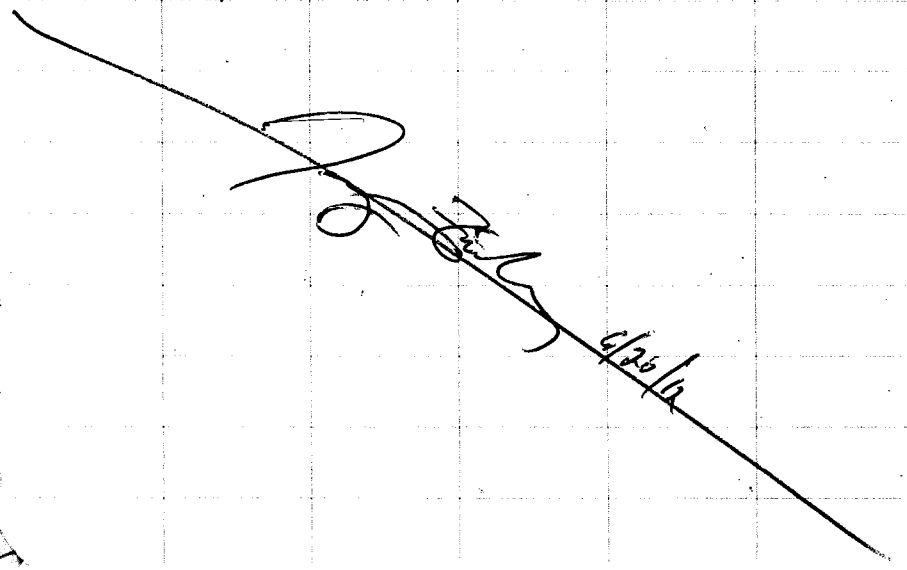
1655 THEY HAVE BEEN TRYING TO USE SAND TO GET THE TEETH TO GO INSIDE THE AUGERS SO THAT THEY MAY BE ABLE TO REMOVE THEM WITH A SPLIT SPOON SAMPLER. THEY ARE CURRENTLY GOING DOWN W/ THE SPLIT SPOON THE 2ND TIME.

6/20/12 MW-07 (cont) J. Fisher

1709 No steel in the sampler. George wants to try 1 more time.

1721 No steel in the sampler. Will try to advance the augers again. Now @ 75'.

1815 Augers @ 75-76' bgs. Will try to get a magnet to see if we can get anything out of the bottom of the hole in the morning. Offsite



6/21/12 MW-07 (cont) J. Fisher

0950 Onsite @ MW-07. They were unable to get a G. magnet. Instead they advanced the tricone bit to 100'. Still no water. At 08:00 they returned to advancing augers. Progress has been very slow. Bit is likely damaged. Now at ~79' bgs. Hold tailgate safety meeting. See form in HASP for details.

1030 Spoke to John Bunch & told him that it doesn't look good for getting through another 11' of basalt. Will have to shut down until we can get a different rig out here. Begin tripping out augers

1115 Augers are out of the hole.

6/21/12 MW-07 (CONT) S

1115 THREE TEETH ARE GONE AS WELL AS THEIR BRACKETS. ONE OTHER TOOTH IS EXTREMELY WORN.

1200 EDI IS GOING TO LEAVE SOME EQUIPMENT ONSITE NEXT TO THE WORKSHOP FOR THE WEEKEND.

1239 SPOKE TO JOHN BURCH ABOUT PLUGGING THE BOTTOM OF THE BOREHOLE INTO THE BASALT.

1300 PUT 2 BAGS OF BENTOVITE CHIPS DOWN THE BOREHOLE & HYDRATED. OFFSITE

6/21/12

6/25/12 MW-07 (cont) J. FISHER

1100 ONSITE @ MW-07 PRECISION SAMPLING (PSI)

1200 MEET DRILLERS AT TRUCK STOP. HEAD TO SITE.

1215 ONSITE @ MW-07. HOLD TAILGATE SAFETY MEETING. SET UP FOR DRILLING.

1353 BEGIN DRILLING. THE NEW LOCATION IS STEPPED OFF APPROX 10' TO THE SOUTH OF THE OLD LOCATION. 21 STICKS (5') +2 LEADS

1430 @ 10'. BEGIN ADVANCING TO 15'.

1442 ROTARY HAMMER OFFSITE.

1516 @ ~~25~~ 24' bgs.

1525 ADVANCE TO 29'.

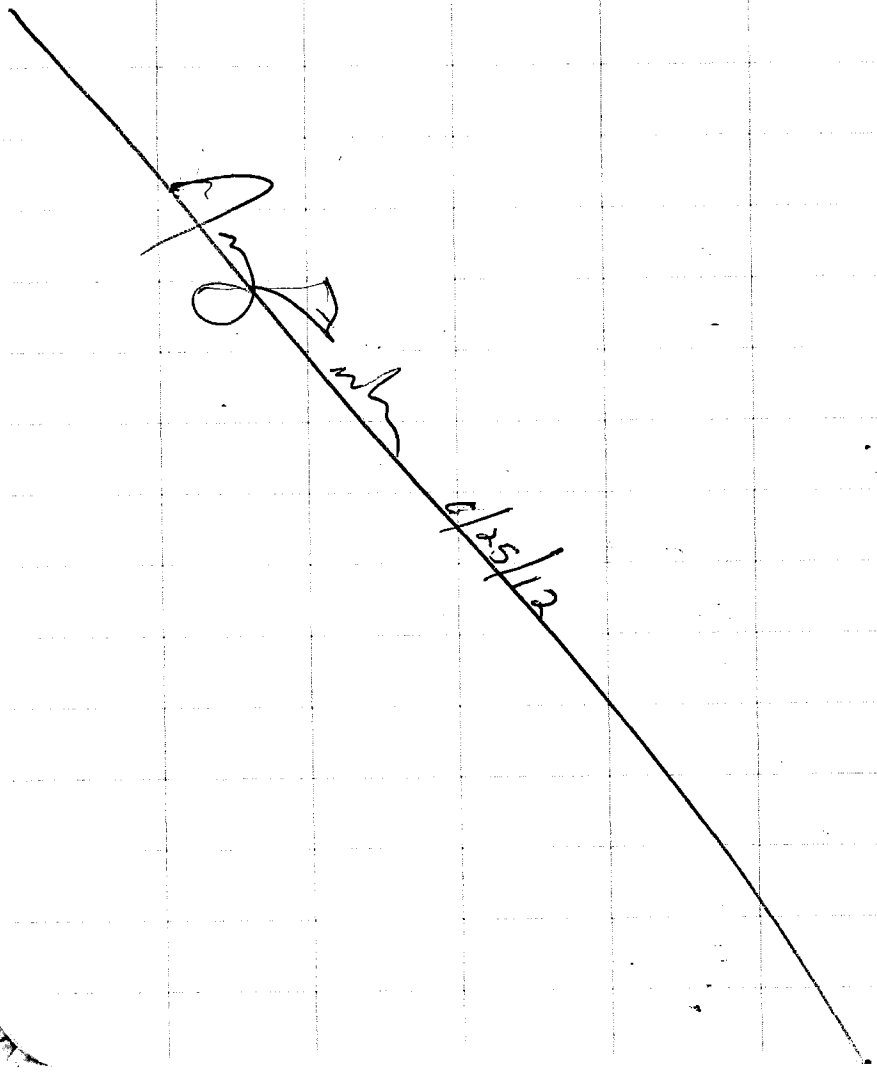
1610 ENCOUNTERED BASALT. @ ~ 33' bgs.

1620 ADVANCE FROM 34' bgs.

1630 THE DUST IS GETTING PRETTY BAD.

4/25/12 MW-07 (CONT) E

1630 @~35'. THE DRILLERS NEED TO MAKE IT BY THE HARDWARE STORE & HOTEL BY 6 PM. WILL RESUME DRILLING IN THE MORNING. OFFSITE



4/26/12 MW-07 (CONT) J. Fisher

0810 ONSITE @ MW-07

DRILLERS ARE ONSITE & DRILLING IN PROGRESS @~36'.

HOLD TAILGATE SAFETY MEETING. SEE MASP FOR DETAILS. JOHN AGUIRRE & ALEX W/ PSI ONSITE, THEY BROUGHT OUT A WATER TANK.

0850 STOP DRILLING TO REPAIR A WATER LEAK @ 40'.

0925 RESUME DRILLING. ARILLE ONSITE.

0945 BASALT COLOR CHANGE TO RED @ ~ 51' bgs.

1015 BEN CHAVEZ ONSITE. JUST CAME BY TO CHECK ON THINGS.

1020 BEN OFFSITE. JOHN & ALEX (PSI) OFFSITE.

1057 @ ~68' BILL THINKS HE HIT SOME WATER.

6/26/12 MW-07 (cont.) J

1057 (cont.) It is likely drilling water from the original borehole.

1155 @ ~~87~~ 91' bgs. Still in Basket. No longer using water.

1235 Bottom of ~~Basket~~ @ 92'. Begin tripping out center rod.

1310 The bit & all rod ~~is~~ are out of the hole. Begin pulling casing.

1347 They are having a hard time pulling the casing. They have tried w/ the cable & also the stinger.

1610 All tools are out of the hole.

1623 Tag borehole @ 91.2'.

1630 Mast is down.

1637 Begin mobbing to MW-06.

6/20/12 MW-07 + MW-04 F

1706 Odex rig is @ MW-06 setting up to drill.

1730 They are set up to go. Just need to refuel the equipment. Bill isn't crazy about hoping. The mast up overnight as there are thunderstorms in the area. Drilling will begin @ MW-06 on 6/27.

Offsite

6/26/12

6/27/12 MW-07 & MW-08 JF

0704 Onsite @ MW-07.
Bill & Juan (PSI) Are Onsite

0715 Alex (PSI) & Louie (EDI) onsite. Hold Tailgate Safety Meeting. See Form in HASP For Details.

0735 Cordell (EDI) - Onsite. PSI Guys off to MW-06.

0730 Set up CME-85 on MW-07 to Auger Down.

0745 Begin Augering.

0902 @ 40' bgs. The Augers Are Having to Do Some Reaming Still in the Basalt.

0935 Spoke to Bill. He's Going To Find out if they Can Run A Bigger Bit.

6/27/12 MW-07 & MW-06 JF

0935 They Are @ 35' @ MW-06. No Basalt Yet

1005 Augers @ 65' bgs.

1116 Augers Are @ 95' bgs. Will Advance to 105' & Wait to Check For Water.

1135 Augers @ 100'.

1145 Augers @ 105'. Wait For Water.

1155 @ MW-06. They Seemed off the Casing 30' Down. They Should Be Able to Lift the Remaining Casing out using the Bit & Drill Stem.

1215 Back @ MW-07. Tag For Water. Dry to 105'.

1230 Cordell Says He Hit Something Very Hard at 106'. Can't Auger into it unless Something is Wrong w/ the Bit.

6/27/12 MW-07 & MW-06 F

1317 @ MW-06. THEY GOT THE CASING OUT & ARE READY TO PROCEED W/ DRILLING. BEGIN TRIPPING BACK IN.

1340 BACK @ MW-07. THEY ARE STILL TRIPPING OUT AUGERS.

1415 AUGERS ARE OUT OF THE HOLE THE BIT IS MISSING ALL 4 TEETH & SOME SHIELDS. CORDELL WILL TALK TO ROD ABOUT HOW THEY WANT TO PROCEED. HEAD TO MW-06.

1425 @ MW-06. DRILLING IN PROGRESS.

1445 LIGHTENING DELAY.

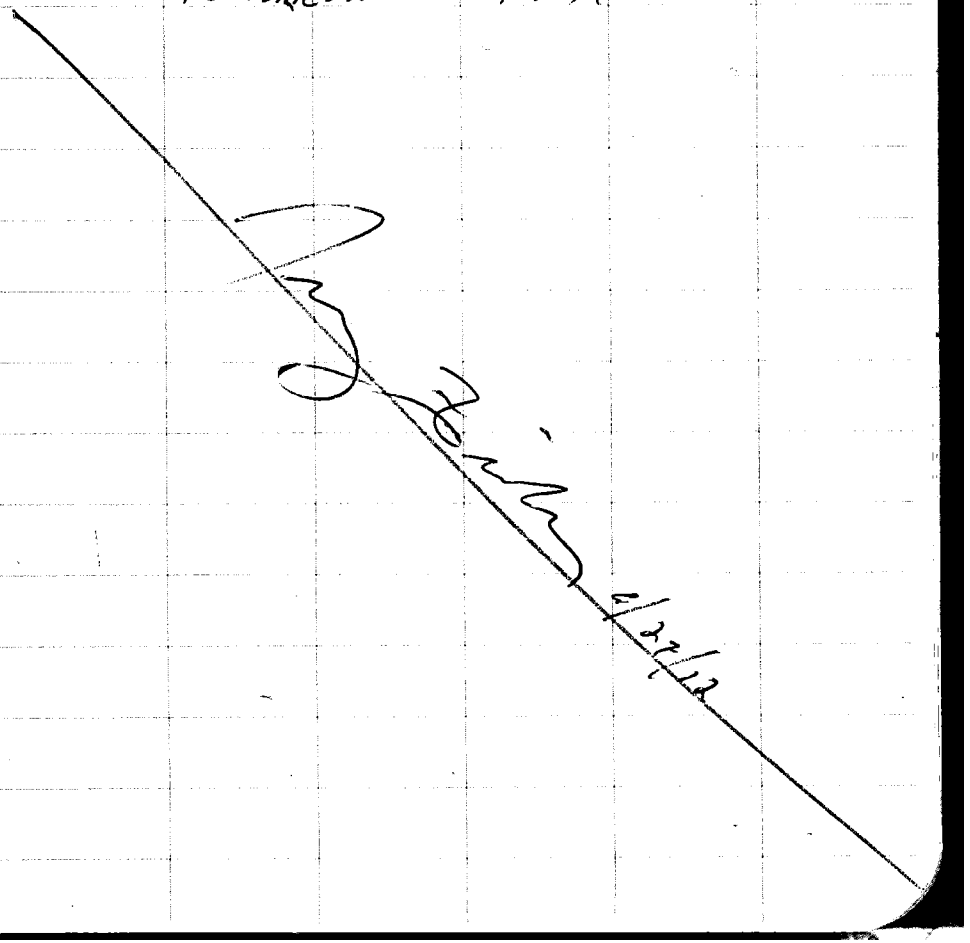
1505 BACK TO WORK. TO RESUME DRILLING FROM 74' bgs.

1540 LIGHTENING BREAK @ 85'

6/27/12 MW-06 & MW-07. F

1600 BACK TO WORK

1630 @ ~~TD~~ 99' bgs. THEY ARE OUT OF DRILL ROD & CASING. MORE SHOULD BE ONSITE BY ~1800. WILL RESUME DRILLING TOMORROW. OFFSITE



06/28/12 MW-06 J. FISHER

0703 ONSITE @ MW-03. THE DRILLERS ARE ONSITE SETTING UP. HOLD TAILGATE SAFETY MEETING. SEE FRA IN HASP FOR DETAILS.

0736 RESUME DRILLING FROM 99'.

0800 THE BIT IS PLUGGED WILL HAVE TO TRIP OUT CENTER RODS.

0915 BIT IS OUT OF THE HOLE. IT IS PLUGGED W/ CLAY THEY ARE GOING TO TAKE IT TO A NEARBY CAR WASH TO GET IT CLEANED UP.

1015 BACK W/ CLEAN BIT.

1055 CLEAN OUT CASING AS TRIPPING BACK IN.

1140 THEY ARE BACK AT THE BOTTOM BUT HAVING TROUBLE

06/28/12 MW-06 F

GETTING THE BIT TO LOCK INTO THE BOTTOM OF THE CASING.

1155 BIT IS LOCKED UNDER THE CASING. RESUME DRILLING FROM 100'.

1245 THE RETURNS HAVE BEEN POOR. BILL THINKS IT IS GUMMING UP THE INSIDE OF THE CASING AGAIN. HE'S GOING TO HAVE TO USE WATER & WILL MIX 1 QUART OF VEGETABLE OIL W/ 330 GALLONS WATER TO SLICKEN THE CASING.

1315 @ 110. RETURNS HAVE IMPROVED. START USING LESS WATER.

1345 @ 120. CUTTINGS ARE WET. STOP USING WATER.

6/28/12 MW-06 F

1410 @ 129'. Will Lift up Casing 5' & Wait 15 -30 Minutes & Check For Water.

1430 Could Not Get the Probe Past ~~110~~ 105' bgs. Will Blow it out & See How much Water Comes out.

1440 Blew out Screen Gallons & Then Lowered Casing While Blowing To 129' Blowing Water the Whole Time. Wait Another 15' Minutes.

1455 The Probe Tape is Sticking to the Inside of the Casing.

1500 Blow out Again. Several

6/28/12 MW-06 F

Gallons once Again. Will Wait 15-20 Minutes & Try to Tag Water Through the Drill Pipe/Center Rod.

1545 Blow out the Hole Again. It Seems to be Making Good Water & Blows out 5-10' Worth Each Time. Will Drill Another 5' (To 135') & Blow out the Hole & Check For Water Level.

1615 Hole is to 134' bgs. It Seems to be Making Good Water. Will Break the Center Rod & Tag After its Allowed to Recover.

1630 DTW = 132.8' btoc

6/28/12 MW-06 F

1635 DTW = 112.29 IN CASING
1635 112.27 IN CASING
1695 112.20 IN CASING,
1655 PULL CENTER RODS & BIT.
1730 TAG OPEN CASING.
DTW = 112.20' btoc
WILL TAG AGAIN IN THE MORNING.
1745 OFFSITE.

6/29/12 MW-06 F

0710 ONSITE @ MW-06
DRILLERS NOT HERE YET.
F WEATHER IS COOL, CALM, SUNNY.
0730 DRILLERS ONSITE. HOLD TAILGATE SAFETY MEETING. SEE FORM IN HASP FOR DETAILS.
0740 TAG BOREHOLE. 1.22' STICKUP
DTW = 112.70' btoc
TD = 136.18' btoc
PREPARE TO BUILD WELL.
0855 WELL CASING IS IN TO 128' bgs.
0926 PREPARING TO PULL 1-5' STICK OF STEEL CASING. BOTTOM WILL BE AT 129' bgs.
1010 BOTTOM OF STEEL CASING IS AT ~ 127' bgs.
TAG BOTTOM. TD = 134'.
BEGIN BACKFILLING w/ 10/20

6/29/12 MW-06 F

SAND COUNT:
10/20 = 22 BAGS
20/40 = 1 BAG
BENTONITE CHIPS = 2 BAGS

1032 ADD 5 SACKS 10/20. SAND @ ~~88~~ 128.5' bgs

1043 PULL 1-5' STICK OF STEEL CASING. BOTTOM @ 123' bgs.

1102 AFTER 9 BAGS, SAND IS AT 123.5'.

1110 CASING IS @ 118' bgs.

1139 CASING @ 108' bgs. 14 BAGS USED SO FAR.

1201 18 BAGS SO FAR. SAND @ 105.5' bgs

1208 ~~SAND~~ 10/20 SAND IS @ 105' bgs.
20/40 SAND @ 103' bgs.
SAND USED: 10/20 - 18.5 BAGS
20/40 - 1 BAG

6/29/12 MW-06 F

1230 2 BAGS BENTONITE USED.
TAG BENTONITE @ 98' bgs.
6 SOIL DRUMS FILLED.

1330 MW-06 IS SECURED & STILL CASED TO 97' bgs.
MOB TO MW-07 TO SECURE INITIAL BOREHOLE FOR THE WEEKEND.

1400 DRUMS LABELED @ MW-06 & MW-07. BOREHOLES SECURE. OFFSITE

6/29/12

7/2/12 — MW-06 / MW-07 — D. Rauch

0950 Arrive on-site @ MW-6. Drillers not present.

1030 Called drillers, will arrive 15 minutes

1046 Drillers arrive. Tailgate. Pulling casing @ MW-6. Will then set up on MW-7 to finish hole.

1205 Trip out complete @ MW-06. Rig breaks down on way to MW-7

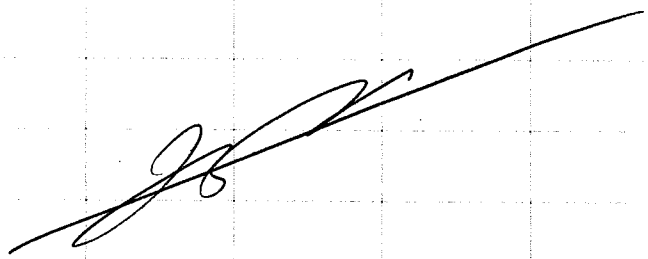
1502 Tripping @ MW-7

1520 Setting casing to 106'

1659 Drilling @ 106'.

1730 @ 110'

1725 Air swivel blown- need to replace. Will resume @ 7:30 AM



7/3/12 — MW-06 / MW-07 — J. Powell

28

0721 On site @ MW-07. Drillers arrive @ 0725. Tailgate.

0800 Resume drilling @ 110'

0816 Having trouble engaging bit. Pulling casing up.

1000 Hammer bit refuses to engage. Will trip out and inspect bit.

1050 Bit is damaged, buttons sheared off reamer. Some metal debris came out of hole as well- remains of CME gauger. Will need to obtain new hammer bit. Done @ MW-07

1130 Grouting @ MW-06 w/ enviodrill. Mixing cement extra thick to prevent losses in basalt. Tagged @ 96.9' bgs.

1131 Consult w/ John Rauch. Want to clarify w/ Precision if they will re-enter same hole or drill new one.

7/5/12 MW-07 J. Fisher

1200 Grouting media Mix approx 75 gal grout using 100 lbs bentonite and 250 lbs cement. ~30% bentonite.

1252 Installing 2nd lift ~70 gal w/ 50 lbs bentonite and 500 lbs cement.

1313 3rd lift ~[illegible] gallons 300 lbs Cement, 50 lbs bentonite Filled to surface, head draws down ~20 feet.

1330 * Precision decides to move MW-7 ~10 feet to new hole *

1335 Grout pump down. Mixing by hand.

1400 Add ~40 gals cement from 70 gal batch. Topped off. Drillers rigging to set pad

1440 J Reuter, A. Bosgard off-site

0810 Onsite @ MW-07. PSI onsite: Juan, Justin, & Fortino. Hold Tailgate Safety Meeting. See HASP for Details. Continue Setting Up To Drill.

0835 Begin Drilling Third Location @ MW-07 From Surface.

0940 Juan said he got a call From Donn Aguire saying He spoke to Rodney Hammer & Rodney wants us To go down The 2nd Hole

1010 Mast is Down.

1030 Mast is up & Rig is set up on 2nd Borehole. Start Tripping in Tooling.

1200 @ 95. Break for Lunch.

1230 Back To Work.

1327 Stopped Using Water @ 110'.

7/5/12 MW-07 J. Fisher

1327 Now At ~114' bgs. Cuttings Are Damp.

1331 Resume Drilling From 114'.

1338 @ 119'. In Lenses & SS. Cuttings Are Moist.

1345 Water Coming Out. @ ~ 123'.

1347 @ 124' bgs.

1355 Tag Water @ 122.00' bToC.

1400 " " 121.95' bToC.

~~Will Drill Another 10' & Check For Water Again~~

1410 Previous Tags were Through Drill Rod. Tag in Casing. DTW = ~109.5' bgs. Will Drill Down To 127' & Lift Casing 1 Ft & Check For Water.

7/5/12 MW-07 J. Fisher

1422 @ 129', I Only Wanted 127', But He Went To 129's. They Could Use The Power Tongs.

1444 DTW in Casing = 104.63' bgs.

1515 DTW MW-06 = 110.60

1536 Tools Are Out Of The Hole. The Bit Looks Good.

1600 Begin Installing Casing.

1625 Casing Is In The Hole. DTW = 108.35 Will Set The Screen @ 104-124' bgs. Begin Filter Pack Instal w/ 10/20 Silica Sand.

1710 Sand @ 116' After Bags

1725 14 Bags of 10/20 Sand. Sand @ 100.8' bgs. Switch To 20/40 Sand.

1730 1 Bag of 20/40 Sand Sand @ 99'.

7/5/12 F

1737 BENTONITE @ 94' AFTER 2 BAGS OF CHIPS.

1740 OFFSITE

7/5/12

7/6/12 MW-07 J. FISHER

0810 ONSITE @ MW-07. THE SITE IS A MESS FROM THE RAIN. PSL GOT THEIR SUPPORT TRUCK STUCK. THEY HAVE STARTED REMOVING THE ODEX CASING. HOLD TAILGATE SAFETY MEETING. SEE FORM IN HASP FOR DETAILS. WILL HAVE TO LOOK AROUND TO SEE WHAT WE'LL BE ABLE TO ACCESS.

1028 MOB RIG TO MW-05. FORTINO & JUSTIN ARE BEGINNING TO MIX GROUT.

1438 MOBBING EQUIPMENT TO MW-05. THEY GOT 3 BATCHES (1/2 DRUM BATCHES) OF GROUT INSTALLED & THEIR DRILL BROKE SO THEY CAN'T MIX ANYMORE. WILL FINISH GROUTING TOMORROW.

7/6/12 MW-07 & MW-05 D. Fisher

1545 Equipment is Mobed To MW-05. Ben Cleared Built vs A Pad For Access. The Boring Location is Moved East Toward Ralph Gind Road. They Still Have A Couple of Hours of Set up. Will Begin Drilling Tomorrow. Offsite

7/6/12

7/7/12 MW-05 J. Fisher

0815 Onsite @ MW-05. They Dug The 1st 5 Feet By Hand & Are Now At 15'. Held Tailgate Safety Meeting. See Form in HASP For Details.

0834 Resume Drilling From 15'.

0920 @ 34' bgs. Still in Sand.

0935 Rodney Hammon Onsite.

0948 Juan Thinks He May Have Hit Basalt @ 44'. Only A Few Cuttings.

0955 @ 49'. No Basalt Yet. Still In Sand.

1030 @ 64'. No Basalt.

1105 @ 8 79'. No Basalt.

1115 Basalt @ 81' bgs. A Few More Chunks.

1130 @ 84' bgs. Drillers Are Breaking For Lunch.

~~7/7/12~~ MW-05 5

1200 Resume Drilling

1230 @ 89'. ~~Still in Sand~~ Getting into Clay, Grey.
Juan thinks the casing may have seperated.

1930 A stick of casing broke off 70' bgs.

1407 Begin Tripping back into hole. Storms Developing.

1645 @ 88'. It has dropped 10° in 5 minutes & lightening w/in 9 miles.

1647 Lightening w/in 5 miles.

Shut down due to weather.

7/8/12 MW-05 J. Fisher

0830 Onsite @ MW-05
Juan, Justin, & Fortino are onsite. Current depth - 114' bgs
Hold Tailgate Safety Meeting.
See Form in HASP for Details.

0858 Resume Drilling From 114' bgs.

0924 Material @ 118' looks like weathered shale.

0931 @ 124'. Lift up casing 1' to see if water comes in

0955 Tag for water. Dry.
Will go to 129' & Circulate Again.

1020 @ ~129'. Still Dry though cuttings are increasing in moisture content.

1034 Resume Drilling From 129'.

1041 Dry to 134'.

1055 Resume Drilling From 134'.

1105 @ 140' bgs. Cuttings are Still

7/7/12

7/8/12 MW-05 J. FISHER

1105 ONLY DRY-DRILL. PREPARE TO TRIP TOOLS OUT OF HOLE.

1145 BREAK FOR LUNCH.

1215 CONTINUE TRIPPING OUT. OFF TO SCOUT LOCATIONS FOR MW-04, MW-03, MW-02, + MW-01.

1330 BACK @ MW-05. STILL TRIPPING OUT.

1415 THE CASING SEPARATED OFF @ 100' bgs. THERE IS STILL 40' OF CASING IN THE HOLE. THEY WILL TRY TO RETRIEVE IT, DECON, & MOVE TO MW-04.

1430 @ MW-07. DTW = 110.38' CEMENT IS TO ~ 30'-35'.

1440 OFF SITE.

7/9/12 MW-04 J. FISHER

~~0~~ 1400 ONSITE @ MW-07. CONDELL IS GROUTING THE GROUT TRUCK SHORTLY. PSI (JUAN, FORTINO, + JUSTIN) ONSITE. HELD TAILGATE SAFETY MEETING. THERE HAS BEEN LIGHTENING IN THE AREA. IT SEEMS TO BE SUBSIDING. PSI HAS MOBBED TO MW-04 AFTER FISHING OUT THE REMAINING 40' OF CASING.

1420 PSI OFF TO MW-04 TO RIG UP.

1435 ONSITE @ MW-04. MAST IS GOING UP.

1445 BEGIN DRILLING MW-04. @ 9' bgs.

1501

1513 GROUT TRUCK PULLING UP AT MW-05.

7/9/12 MW-04 J. Fisher

1530 @ 19' bgs. 14'-18' Was Fine Sand. Built @ 18'.

1545 @ 24' bgs. Still in Bisalt.

1553 Resume Drilling From 24'.

1615 @ 34'. Still in Bisalt.

1625 @ 39'. Still in Bisalt.

1652 @ 49'. Still in Bisalt.

1708 Conrad Comeby to Do Paperwork & is Now Offsite.

MW-05 Plugged 0-140'

MW-07 Well Seal Completed 0'-65'

Open Hole Grouted

Augers Went to 80',

Tricone 3 1/4" Went to 135'.

1738 Resume Drilling From 64'.

Hand Built The Last 15'

7/9/12 MW-04 J. Fisher

1745 @ 69' bgs. He's Had To Use Quite A Bit of Water To Cool The Bit, So He Will Airlift For About 15 Minutes & Call It A Day.

1755 Offsite.

D. Zenk 7/9/12

7/10/12 MW-04 J. Fisher

0830 Onsite @ MW-04. Drivers are onsite & working. Tory Arc @ 94' bgs. Broke through bent @ 93' bgs. Hold Tailgate Safety Meeting. See Form in HASP Folder. Demob. Same 3 PSL Personnel onsite. The site got a little rain last night, but it shouldn't be a problem.

1000 @ ~~99~~ 102' bgs - Juan thinks the casing separated again.

1010 Begin tripping out.

1045 Off to do well development @ MW-06.

1055 MW-07 DTW = 110.43' btoc

1105 Onsite @ MW-06. DTW = 110.68' btoc, TD = 128.38' btoc

7/10/12 J. Fisher

1120 Calibrate YSI Pro Plus SN: 16100832

pH: 7.01/7.00 @ 22.8°C
10.03/10.03 @ 22.9°C

SC: Set to 1000 µS/cm in 1000 µS/cm @ 25°C Std Soln.

Cal'd Reading = 991 µS/cm @ 22.5°C

MW-06 Well Development

Time	Vol (Gal)	pH	SC (µS/cm)	T (°C)	Turbidity (NTU)	Comments
1145	Initial	7.55	1128	17.1	195	Turbid, No Odor, Lots of Fn. Sand
1245	5	7.49	1117	15.9	>1000	V. Turbid, No Odor, Fn. Sand,
1340	10	7.56	1124	14.9	>1000	"
1400	15	7.50	1111	15.7	>1000	" Silty "
7/14/12 * 1415 MW-4	Initial	2.27	574	16.5	>1000	Silty Fine Sand
1500	5	7.60	995	17.9	71000	"
1550	10	7.57	1010	17.6	71000	"
1635	15	7.65	998	17.9	71000	"
7/15/12 1015	5	7.28	988	16.2	71000	"
1024		7.43	1002	15.1	972	"
1030	10	7.44	1000	14.9	900	
1035	15	7.33	1006	14.9	600	

7/10/12 MW-04 J. Fisher

1300 Got a text from Juan. The casing sheared off 65' bgs. They will start back down-hole.

1310 Got a call from Juan. The bit/hammon is sand-locked or something. They will have to trip out the rest of the drill pipe.

MW-06

1415 Bailed 15 gallons. For the 1st 10 gallons, the bailon was surged through the water column for 1-2 minutes/ ½ gallon bailed.

1430 Back @ MW-04. All the tools are out. Clean the bit & the lead casing.

1450 Start back downhole.

1635 Back @ 100' bgs. Resume drilling.

7/10/12 MW-4 J

1711 @ 114' bgs. Still in sand. No water yet.

1725 @ 119' bgs. Still in sand. No water yet.

1736 @ 121' bgs. We're in water now.

1755 @ 130' bgs. Lift casing 1'. Will blow it out really well & let water level equilibrate overnight.

Offsite.

1920 @ Warehouse to load-up sample coolers & equipment.

2000 Off to office.

7/11/12 MW-4 J. FISHER

0740 SPOKE TO JUAN. DTW = 117' bgs. WILL HAVE THEM DRILL ANOTHER 5' & THEN BLOW IT OUT & WAIT FOR WATER.

0815 ONSITE @ MW-04. HOLD TAILGATE SAFETY MEETING. SEE HASP FOR DETAILS.

0845 JOHN AGUIRE & TRACY HOOD (PSL) ONSITE. THE SUPPORT TRUCK IS STUCK. IT RAINED AGAIN LAST NIGHT.

0935 DTW = 115.52' bgs.

0940 SPOKE TO JOHN BURCH. WILL SCREEN THE WELL FROM 111'-131' bgs.

1000 BEGIN TRIPPING OUT DRILL PIPE.

1020 JOHN & TRACY NEED TO TALK TO JUAN.

1056 BACK TO WORK. JOHN & TRACY OFFSITE.

7/11/12 MW-4 5

1110 ALL DRILL PIPE IS OUT OF THE HOLE.

1120 BEGIN INSTALLING WELL PIPE.

12 - 10' STICKS 2" SCH 40 PVC
2 - 10' STICKS 2" SLOT SCREEN (PVC)
1 - 4" POINTED END CAP

1132 WELL PIPE IS IN. WILL LIFT UP ODEX CASING.

1155 WELL PIPE IS AT THE PROPER ELEVATION. ODEX CASING IS @ 126' bgs. BEGIN INSTALLING 10/20 SILICA SAND

SAND @ 129' bgs. PULL 1 STICK CASING
SAND @ 124' bgs. " 1 "
SAND @ 118' bgs " 1 "

1250 BREAK FOR LUNCH SAND @ 113' bgs
5.7' CUT OFF OF 2".

1335 TAG SAND @ 108.2' AFTER 15 BAGS OF SAND. CASING @ 107' bgs.

7/11/12 MW-4 F

1340 Pulled another stick of Oasx Casing. Oasx Now At ~102' bgs. Resume Filter Pack install w/ 20/40 sand

1352 Tag Sand @ 106' bgs After 2 Bags 20/40 Sand. Prepare For Bentonite Chips.

1417 Bentonite @ 100' bgs After 1 1/3 Bags of Bentonite Chips. Continue Tripping out Casing.

1425 Off to Scout Location For MW-2.

1435 Back @ MW-4. There Should'nt Be A Lot of Problems Getting Equipment to MW-02. Juan Can Follow My Tracks & The Location is Marked w/ A Blue Flag & Wooden Stake.

1455 Offsite

7/12/12 ~~MW-02~~ MW-03 J. Fisher

0730 Onsite @ MW-02. Rain Last Night.

0745 After Speaking to Juan About Exactly Where to Drill, He Became Concerned About Hazards Associated w/ Drilling Through Unknown Dumped Materials. He Wants to Talk to John Aguirre About it Before Proceeding. Off to Scout Location for MW-03.

0815 Back @ MW-02, Will Mob to MW-03 While We Wait To Hear on MW-02.

0915 Rig onsite @ MW-03.

0925 Truck Pulling the Compressor is Stuck, 4WD isn't Working.

1015 Juan was able to get the Truck Free & it got Stuck in Another Spot.

7/12/12 MW-3 J. Fisher

1015 OFF TO GET A TOW STRAP OR CHAIN

1055 TOW STRAP DIDN'T WORK. WILL HAVE TO USE THE DRIL RIG.

1230 ALL EQUIPMENT ONSITE @ MW-03. SET UP TO DRILL.

1310 BEGIN DRILLING MW-03.

1339 BTSELT @ 7' bgs.

1400 @ 15'. JUAN SAID THE HOLE ISN'T GOING STRAIGHT. WILL MOVE FORWARD a FEW FEET & START OVER.

1413 START DRILLING AGAIN.

1518 @ 20' bgs. TRI-BIT DISENGAGED FOR SOME REASON. PULL OUT DRILL STEM. 1' OF SAND @ 16'.

1538 TRI-BIT LOCKS FINE. WILL PROCEED.

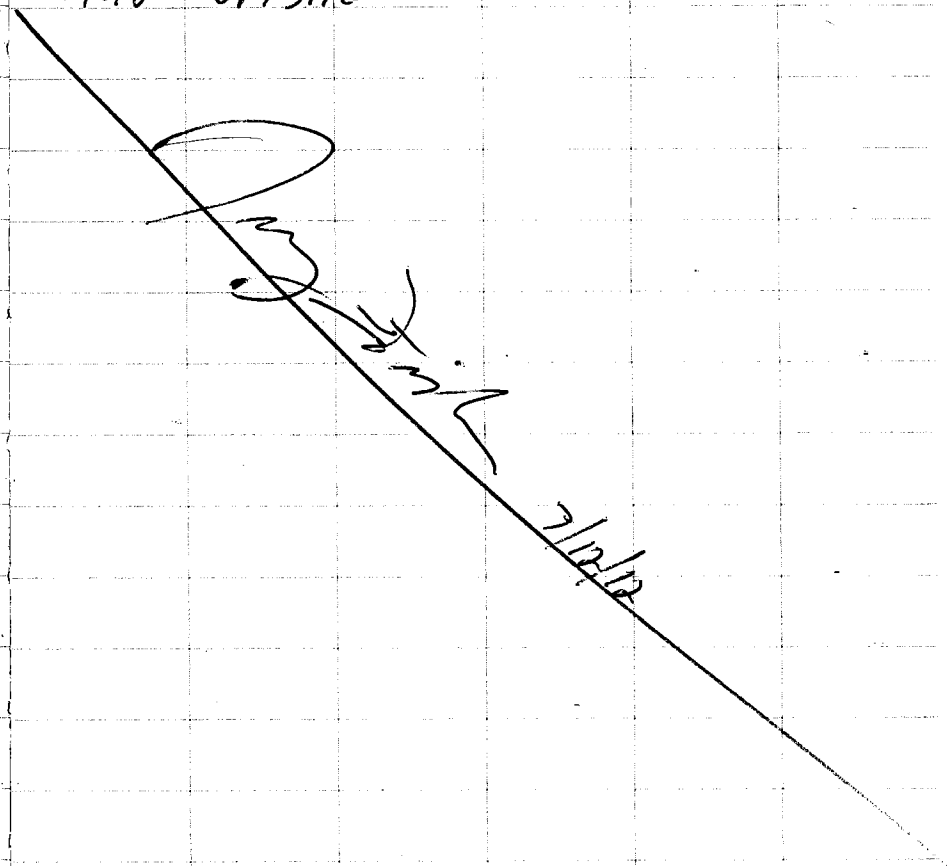
1649 REC BTSELT @ 32' bgs.

1730 @ 46' bgs. 5 OF THE DRIVERS NEED TO GET SOME SUPPLIES

7/12/12 MW-03 J. Fisher

TO REQUIRED THE CUTTINGS DIVERTER. WILL RESUME DRILLING IN THE MORNING

1740 OFFSITE



7/13/12 MW-03 M. Maier J. Fisher

0745 Onsite @ MW-03
Hold Tailgate Safety Meeting.
See Form in HASP for Details.
The Northern Half of the
Site Does Not Appear to Have
Gotten Rain Last Night. They
Just Finished Rebuilding
The Divonizer & Are Ready to
Drill.

0813 Resume Drilling From 45'.

0845 Spoke to Rod Hammon (EDI).
They Will Have More Drums
out Here on Monday. We
Will Stockpile Cuttings on
Plastic & Install A Berm
Around Each Pile. It Will Be
Drummed By EDI on Monday.

0900 Micah Onsite.

1330 Broke through Basalt @ ~102' bgs

7/13/12 MW-03 S/MW

1400 The Bit Disengaged & There is Sand up in the Casing. He's Trying to Blow it out To Re-Engage the Bit.

1600 The Bit is Engaged. They are Drilling Again From 95'.

1045 Casing is Separated. Will Have to Call it a Day. Fishing in the Morning. Casing was @ 103' bgs when it Snapped. Don't Know yet where it Snapped.

7/13/12

55

7/14/12 MW-03 MW

0800 Onsite at MW-3

Weather: 60's-low 80s, 20% T-Storms, slight breeze

Crew: M. Nauck (DBSA) Juan+2 (Precision)

Objectives: Fish out casing from 103' bgs. Complete drilling + construct well.

0815 Conduct H&S meeting

0820 Pull down chain to top head snapped. Drill crew called his PM. Crew working to fix chain

0910 Onsite at MW5

DTW: — MW

Record parameters on pg 44

0920 Water level meter not working. Go purchase new battery.

1000 Battery replaced + connections checked. Cable seperated above probe.

MW

56

7/14/12 MW-3 MW

1030 Drill crew tower down rig for repairs

1045 M. Nauck offsite to replace WL meter

1380 M. Nauck onsite ~~for~~ at MW-4

DTW: 115.6' bgs

1350 Calibrate YSI Pro

Standard	4.0	7.0	10.0	—	1000 µS/cm
pH	3.98	7.02	9.94	SpC µS/cm	963
T°c	26.1	26.0	26.0	—	26.0

1650 Crew still working on rig

1700 M. Nauck offsite

7/14/12

7/15/12 MW-3 MN

0700 At warehouse to load up pump for development

0830 Onsite at MW-3

Weather: 70's to mid 80's, windy

Crew: M. Mauck (OBSA), Juan+1 (Precision)

Objectives: Complete repair of rig, pull snapped casing. Complete development of MW-4

0845 Calibrate YSI Pro

Standard	4.0	7.0	10.0		1000 µS/cm
pH	4.03	7.09	10.03	SpC µS/cm	1006
T°C	25.0	26.6	26.5		25.8

0915 DTW: 115.5 bgs

0930 Set up Mega monsoon pump

1010 Start pumping set @ 28.0 ✓

continued next page

7/15/12

MN

7/15/12 MW-443

Time	Vol gal	pH	SpC µS/cm	T°C	Turb (NTU)	Comments
		Continued from pg 44				
1040	20	7.33	1007	14.7	47	milky
1045	25	7.30	1006	14.7	45	"
1050	30	7.27	1006	14.6	43	"
1100		Collect sample w/ bailer				
1125		Samples collected & on ICE				
1140		Tower up rig. Lower left roller bearing broke.				
		Crew offsite to get replacement				
1235		Complete logging MW-3				
1320		Offsite due to lightning.				

7/15/12

59

7/14/12 MW-6 MW

0820 Submit MW-4 samples to HEAL.

1000 Onsite MW-6

Crew: M. Vacek (DBSA)

Weather: 70's-80's, cloudy, possible T-Storms

Objective: Complete MW-6.

Talked w/ driller about rig repair. Part on order, will come in tomorrow (7/17) sometime.

1010 Call T. Bunch + update on current situation.

1020 Calibrate YSI Pro

Standard	4.0	7.0	10.0		1000 µS/cm
pH	4.05	7.07	10.06	SpC µS/cm	998
T°C	24.9	24.9	24.5		24.9

1045 Take initial sample w/ bailer

1100 Start pumping using Mega Monsoon

7/16/12

60

7/16/12 MW-6 + MW-7 MW

Time	Vol(gal)	pH	SpC µS/cm	T°C	Turb(Gtek)	Comments
1040	Initial	7.32	1134	13.9	46.4	milky
1106	5	7.48	1126	16.3	210	
1111	10	7.65	1117	14.9	117	
1116	15	7.94	1114	14.7	68.6	
1121	20	7.94	1112	14.7	49.1	
1126	25	7.95	1113	14.7	38.3	
1131	30	8.00	1112	14.7	33.6	
1136	35	8.02	1112	14.7	27.0	

1140 pull pump + use bailer for sampling

1210 Complete sampling

1245 Store samples on ice + pack up equipment.

1300 Onsite at MW-7

8x 55gal drums w/ cuttings.

1307 MW-6

6x 55gal drums w/ cuttings

1x 55gal drums w/ development water

61

7/16/12 MW-4 MW

1320 At MW-4
5x 55gal drum of cuttings
1 x 55 gal drum of development water
Cordd (EDI) onsite, clearing area for grout + concrete pad

1325 Grout truck onsite.

1430 Well grouted + monument installed

1435 Offsite

7/16/12

62

7/17/12 MW-7 MW

0800 Onsite at MW-7
Crew: M Nauck
Weather: 70s to low 80s, partly cloudy, 30% chance of T-Storms
Objective: Develop MW-7.
Repair rig.
MW

0830 ~~Start surging + bailing well~~
DTW: 110.48' btoc SU: 1.98' ags

0845 Retrieve empty drum for purge water. Label drum.

0920 Start surging + bailing

0930 Calibrate YSI Pro

Standard	4.0	7.0	10.0		1000 µS/cm
pH	4.05	7.05	10.02	SpC µS/cm	1006
T°C	23.0	23.4	23.4		23.2

1120 Juan (Precision) called. They are en route to site w/ part for rig

1135 Allow well to recover

1300 Set up Mega Monsoon pump
MW

63

7/17/12

MW-4 MW 7

Time	Vol gal	T °C	SpC mS/cm	pH	Turb NTU	Comments
0940	Initial	15.4	967	7.53	71000	Silty & Sandy
100	5	14.7	987	7.52	71000	"
1040	10	14.0	1012	7.42	71000	"
1110	15	14.2	1030	7.48	7100	"
1210	20	14.6	1048	7.43	71000	silty
1345	25	14.8	1064	7.88	71000	silty
1355	30	15.6	1055	8.24	917	"
1405	40	15.0	1039	7.73	216	Milky
1415 ~~1505~~	45	15.1	1035	7.79	123	"
1425	50	14.5	1027	7.84	69.6	"
1435	55	14.7	1029	8.49	39.9	clear
1445	60	14.5	1026	8.64	24.8	clear
1455	65	14.6	1025	7.97	15.4	clear

1530 pull pump & use bailer for sampling

7/17/12

64

7/17/12 MW-7 MW

1340 Start pump @ 0.5gpm

1530 Collect sample w/ bailer

1610 Clean up + secure well

1630 Onsite at MW-4. Rig is repaired.

Pulled 5' of casing before all movement stopped. Using ~~foam~~ MW foam to break believed sand lock.

1640 H. Nauck offsite

7/17/12

65

7/18/12 MW-3 MN

0730 Talk w/ Juan about situation Casing still stuck. Using foam to assist w/ casing removal.

0800 Submit MW-7 + MW-8 samples to HEAL. MW-8 is a blind duplicate for MW-7

1000 Phone call from R. Hammer (EDI) He is onsite at MW-3. Casing is not moving. Precision crew is heading back to Albuquerque for new casing + bit. Plan is to use 6" casing + different bit. Going to move to MW-2 Precision will send a crew out remove casing ~~for~~ from MW-3.

1030 Leave for Milan

1200 Onsite at MW-2

Crew: M. Nauck (DBSA)

Weather: 80's, possible T-Storms

66

7/18/12 MW-2 MN

Objectives: Hand auger to 5' for soil sample at MW-2. Mobilize rig to MW-2

1245 Begin potholing / hand auger at MW-2 to 5' bgs

1310 Hit refusal at 3' bgs. Appears to be basalt

1325 Collect sample + FD.

1400 Collect rinsate

1420 Called Juan (Precision), the are deconing the sonotrex equipment.

1430 M. Nauck offsite

67

7/20/12 MW-2 MV

0730 Onsite at MW-2

Conduct H&S meeting w/drill crew

Weather: high 60s - low 80s, partly cloudy. 20% chance rain in afternoon

Crew: M. Nauck (DBSA), J. Barraza, F. Villa (Precision)

Objective: Drill MW-2. Drilling Method is sonotrex, this is a dual rotary method. Casing has drive shoe, bit locks into casing, both turn casing & bit. Bit hammers as well

0825 Start drilling

1105 Casing appears to have snapped. Bit depth 40' bgs.

1430 Crew extracts casing. Juan called his boss for advice on drilling. They are going to pack up & have meeting for continued work.

1445 Offsite.

68

7/23/12 MW-2 MV

0700 Load up at warehouse

0715 Talked w/ Juan (Precision), they will be leaving Albuquerque at 0830 for site

1080 M. Nauck onsite

Crew: M. Nauck (DBSA), J. Barraza, J. Boca MV ~~F. Villa~~ (Precision)

Objectives: Continue drilling MW-2

Weather: 70's - mid 80s, 20-30% chance of rain

1100 Conduct H&S meeting

1130 Resume drilling. Plan is to use foam to prevent casing breakage

1230 Can not remove last 2 pieces of casing. Going to move boring 10' west. Crew going to refill water.

1345 Move rig 10' west for new boring

1355 Shut down due to lightning

1445 Crew offsite due to weather

7/24/12 MW-2

0815 M. Nauck onsite Crew has rig warmed up & setting bit

Weather: 70s-80s, 50% chance of T-storms in afternoon.

Crew: M. Nauck (DBSA), J. Barraza, J. Bacca (Precision)

0820 Perform H&S meeting

0830 Begin drilling

0845 Use hand auger to collect sample from 5-7 (B-13)

0920 Resume drilling

1110 Casing snapped at 37' bgs

1130 M. Nauck offsite

7/24/12

7/25/12 MW-2 MN

0700 Onsite at DBSA

0845 Onsite at MW-2

Weather: 70s - low 80s, 30% chance T-Storm

Crew: M. Nauck (DBSA), J. Barraza, J. Bacca (Precision)

Objectives: Remove symmetrex casing, drill air rotary w/ tri-cone

0900 Pull symmetrex casing

1130 Symmetrex casing pulled. Crew leaving site fill water tanks

1300 Begin running tricone

1510 Tricone to 34', depth where symmetrex stopped

1715 Drilled to 450 ft. After expanding symmetrex hole, drilling averaged 3' per hour

1730 M. Nauck offsite

7/25/12

7/26/12
71

MW-2 MW

0700 Onsite at DBSA

0930 Onsite at MW-2

Weather: 70s - mid 80s, 30% chance of T-storms

Crew: M. Nauck (DBSA), J. Barraza, J. Baca (Precision)

Objective: Continue drilling at MW-2

0835 Resume drilling w/ tri-cone

1410 Drilled to 70 feet w/ tricone. Precision delivers hammer bit. Unload equipment, trip out tri-cone, + instal hammer.

1530 Shut down due to lightning

1605 Lightning continues. Shut down for day. Offsite

1725 Onsite at warehouse to unload gear

1745 Offsite

7/26/12

72
7/27/12

MW-2 MW

0700 Onsite at DBSA

0750 Submit B-13 + B-13EB to H.E.A.L.

0925 Onsite at MW-2

Crew: M. Nauck (DBSA), J. Barraza, J. Baca (Precision)

Weather: 70's - low 80s, over cast, 40% chance of T-storm

Objective: Complete drilling MW-2, build well

0935 Crew has drilled to 105' bgs w/ hammer. Trip out hammer + trip in tri-cone. Basalt cobs at 97' bgs

1210 Hole continues collapse from 110-115' using EZ mud to attempt to keep borehole open

1340 Crew offsite to refill water

1430 Crew onsite. Making water/EZ-Mud mixture. Plan to pour mixture into borehole + allow to set up (next page)

7/27/12 MW-2 ML

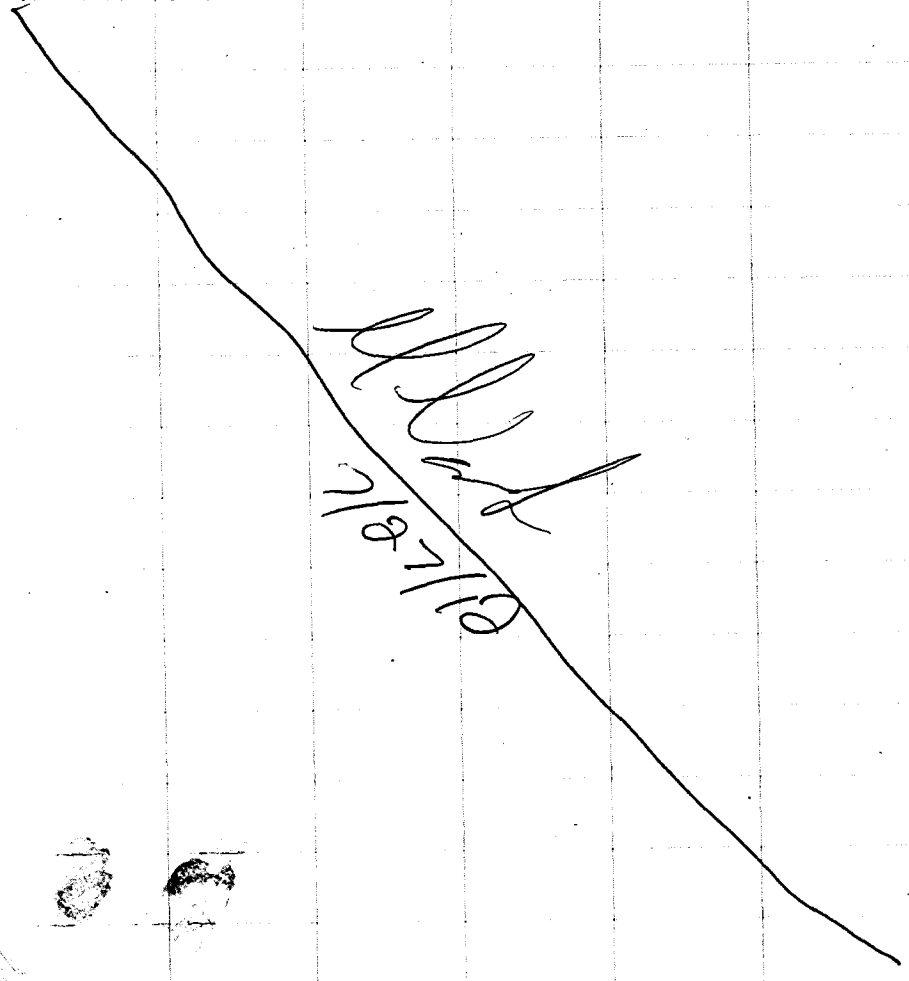
(continued) over the weekend.

1510 Begin pouring SZ-MUD mix

1530 Offsite

1650 Onsite at warehouse to unload equipment.

1700 Offsite



7/30/12 MW-2 ML

0700 Onsite at DBSKA

0825 Onsite at MW-2. Drill crew not onsite

0845 Call Juan (Precision), leaving Albuquerque at 0900

1045 Drill crew onsite

Weather: 70s - high 80s, clear

Crew: M. Nauck (DBSA), J. Baraza, J. Baca (Precision)

Objective: Drill MW-2

1100 Conduct H&S meeting

1110 Resume drilling

1210 Drilled to 130' bgs. Hole is remaining open. Allow well to recover for 40 min

1255 DTW 113.76' btoc SU: 2.5' DTW 111.26'

1310 TD 131'. Plan to set bottom of screen at 127' bgs

7/30/12 MW-2 MD

1315 Crew goes to retrieve well supplies

1325 Crew onsite

1415 Start pulling drill rod

1440 Pulled up to 100 ft. Hole collapsed to 110' bgs. Going to pour more mud/water mixture + allow to set up over night.

1505 Crew offsite for more water

1530 M. Nauck offsite

7/30/12

7/31/12 MW-2 MD

0830 M Nauck onsite at MW-2

Weather: 70s - high 80s, 20% chance of T-Storms

Crew: M. Nauck (DBSA), J. Barraza, J. Bacca (Precision)

Objective: Drill + complete MW-2

0835 Conduct H&S meeting

0837 Crew tripping out drill rod due to plugged bit

0935 Trip in cleaned out drill rod

0950 Resume drilling

1085 Drilled to 130' bgs. Pumping in Diamond-Seal / water mixture due to consistent hole collapse. Once mixture is pumped in, drill rod will be tripped out and PVC well + screen immediately installed

1140 Well keeps collapsing at ~110' bgs

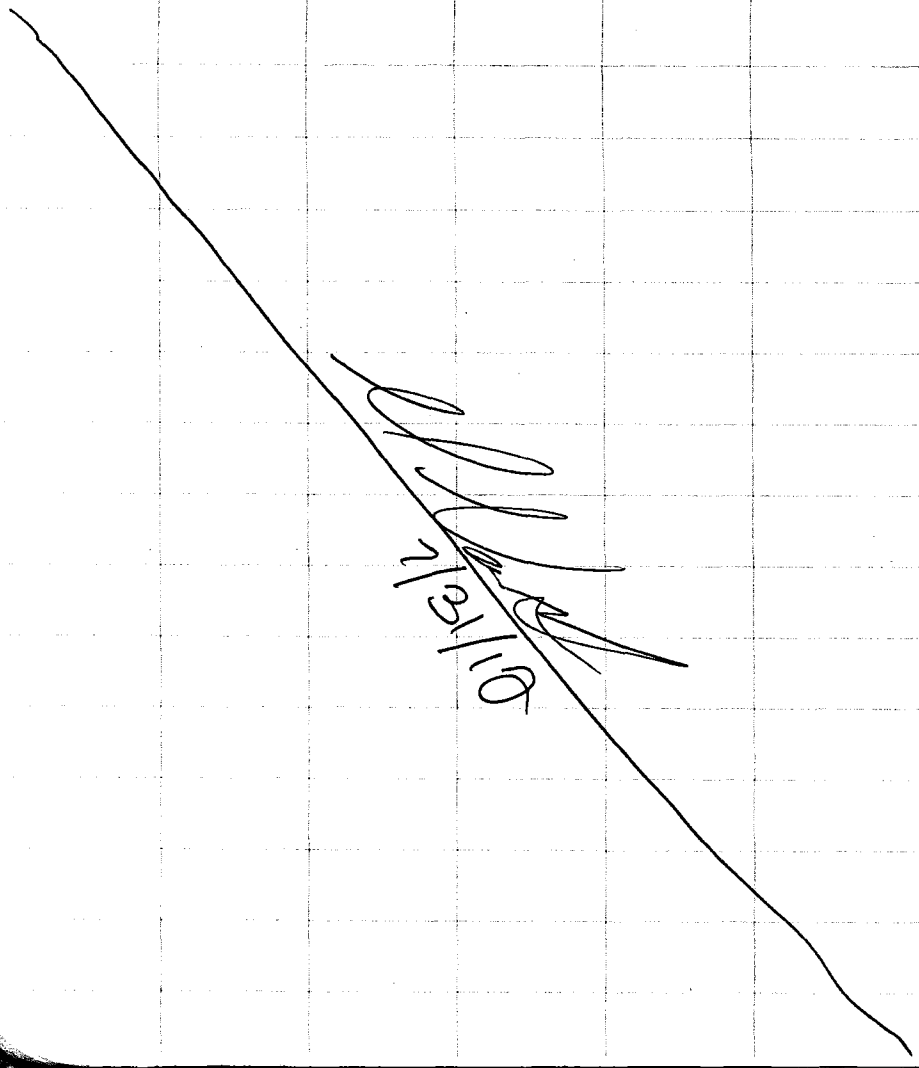
1800 Juan calls boss. Waiting for return call

7/31/12 MW-2 MW

1230 Juan's boss recommends using Quick Gel w/mud pit.

1250 Precision crew returning to Albuquerque for mud equipment.

1300 M. Nauck offsite



8/1/12 MW-2 MW

0815 Onsite at MW-2

Weather: 70s - low 80s, 50% chance of T-Storms

Crew: M. Nauck (DBSA), J. Baraca, J. Bacca (Precision)

Objective: Drill using mud to keep bottom of hole open

0820 Mixing mud 100 lbs of quick-gel per 125 gallons of water

1000 Go to re-fill water. Fractures in basalt may be taking mud.

1040 Resume mixing + pouring mud

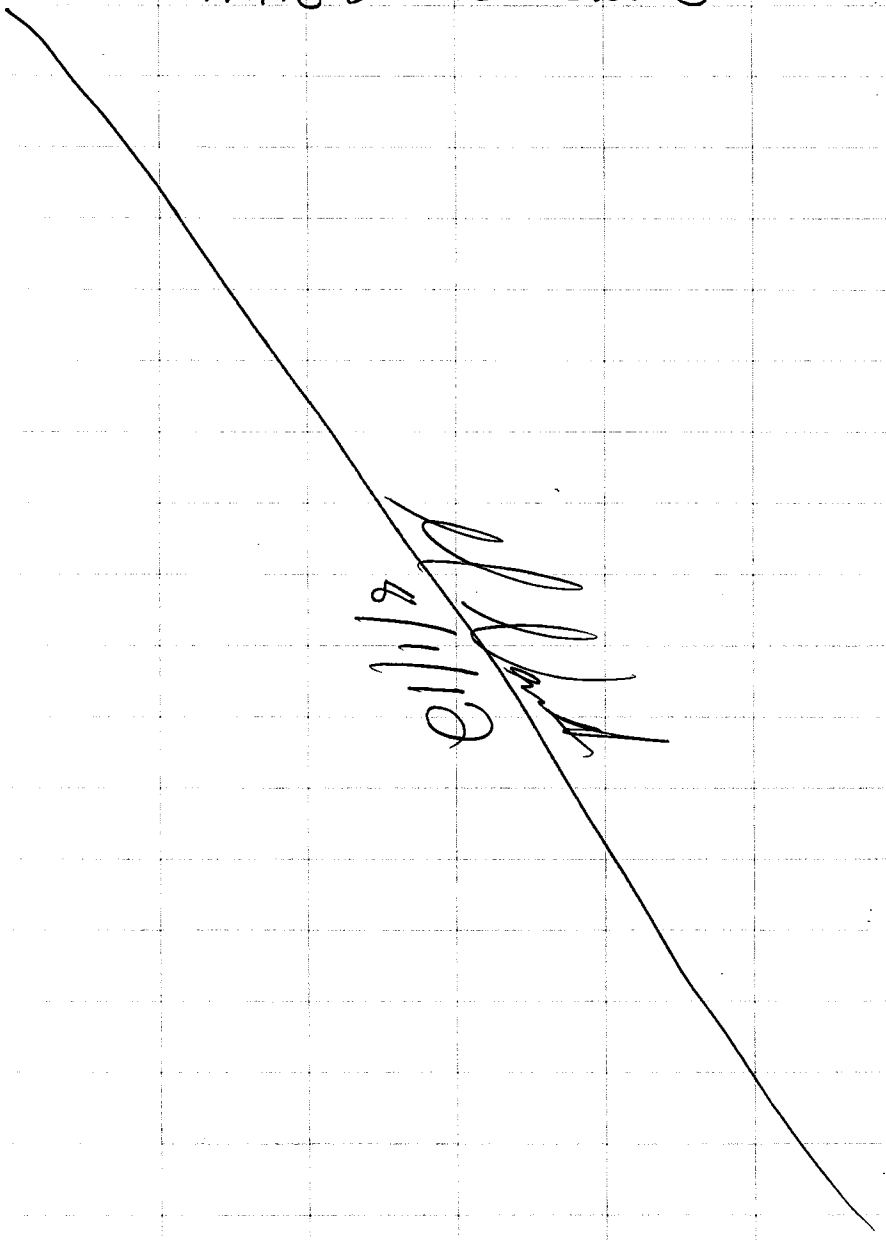
1215 Loosing mud at 56'. Crew going to refill water + get lunch

1300 Crew onsite. Juan called his boss. He recommends pulling bit above mud + mixing diamond seal to attempt to seal basalt fracture

8/1/12 MW-2 MN

1545 Shut down due to lightning

1630 Offsite due to T-Storms



8/3/12 MW-2 MN

1080 M. Nauck onsite

Weather: 70s, 30% T-Storms

Crew: M. Nauck (DBSA), J. Barraza, J. Baca (Precision)

Object: Drill MW-2 w/ Symmetrex & set well

1045 Symmetrex being tripped in

1115 Start drilling

1117 Drilling halted. Something near bit broke. Drill string will not move casing.

1140 Begin trip out

1345 Shut down due to lightning

1420 Resume trip out

1500 Pulled broken piece of casing just above bit. Attempt to fish out broken casing

1530 Shutdown due to lightning.

1600 Offsite

MN

8/5/12 MW-2 MM

0900 Onsite at DBSA

1030 Onsite at MW-2

Weather: 70s-low 80s, 40% chance T-storms

Crew M. Mauck (DBSA), J. Barraza, J. Bacca (Precision)

Objective: Continue boring out MW-2. Set well

1040 Borehole reamed out to 100'

1106 Casing snapped at 106' bgs. Plan is to fish out casing, then re-install casing to 106' & run tricone

1440 Casing & drill rod stripped out. Bottom 1' of casing, which was welded on, broke at welds

1600 M. Mauck off site

M Mauck 8/5/12

8/6/12 MW-2 E Bastien

13:00 onsite. Juan + ~~Trey~~ Justin with precision drilling onsite.

Weather: 80s, partly cloudy. looks like thunderstorms. Drilled to 129ft bgs

13:11 ran casing (photograph screen). 2 joints of screen (10ft each)

13:13 joint #4 (40 ft in hole) next joints are 20ft each.

well is 2" PVC threaded

onsite 130ft of 2" PVC.

Nidah noted DTW = 111.26 ft.

Will set screen 15ft below water table, so 126.26ft is target well depth.

bottom of well = 126.2 ft

13:25 begin filter packing with 10/20 silica sand,

13:31 tag sand at 114ft. 2 bags down hole

Note: screen from 106.2 to 126.2' bgs.

8/6/12 MW-2 E.Bastien

talk to John Bunch about well depth and if grout can be done tomorrow.

13:45 crew Precision drilling pulls out drill casing.

John Bunch ~~will~~ will talk to Ronnie at Enviro drill and get back to me.

MW-2 pipe:

2 joints - 10ft - 2" PVC screen

3 joints - 10 ft each - 2" PVC BLK

4 joints - 20 ft each - 2" PVC BLK.

1 cap - 4 inches - 2" PVC cap.

well depth = 126.2 ft bgs

well cap = 125.9 - 126.2 ft

0.020 slt 2" PVC screen: 105.9 - 125.9'

2" PVC Blank: Toc ± - 105.9 ft bgs

8/6/12 MW-2 E.Bastien

14:00 Juan + Justin off to retrieve ~~m~~ silica sand from staging yard.

14:20 Precision back onsite. resume filter pack.

5 bags of 10/20 sand installed

14:23 7 bags of 10/20 sand downhole tag @ 110 ft. bgs

9 bags of 10/20 sand, tag @ 110 ft.

12 bags of 10/20 sand, tag @ 109 ft.

14:30 Juan + Justin off to get more silica sand.

Note: drill. casing stick up = 3.5 ft ags

14:50 Juan + Justin back @ MW-2. Begin installing filter pack Sand 10/20.

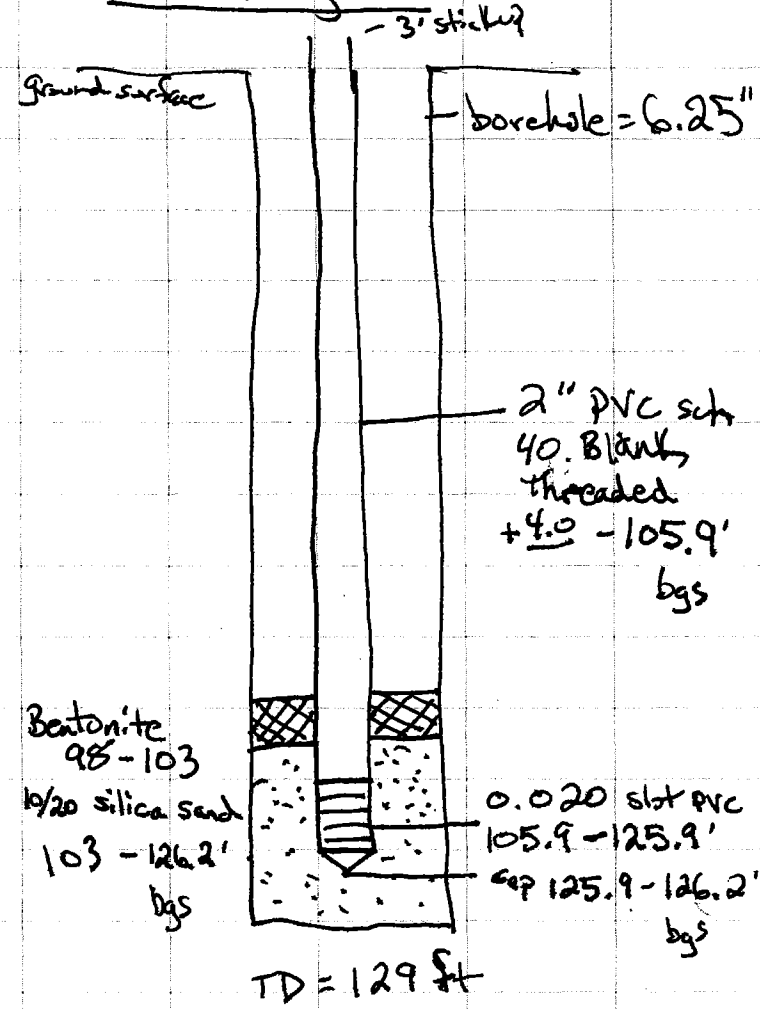
14:55 15 bags silica sand 10/20.

15:02 20 bags 10/20 downhole.

15:16 tag sand @ 103' bgs, 33 (50lb) bags of 10/20 silica sand.

8/6/12 MW-2 E Bastian

Well Diagram:



8/6/12 MW-2. E.Bastien

15:20 pull drill casing

15:25 begin installing bentonite 3/8 Holeplug

15:30 1 bag of bentonite downhole (50lbs/bag)

15:33 2 bags downhole.

15:45 5 bags downhole, tag bentonite @ 98 ft bgs

drill casing @ 96.5ft bgs.

Crew covers borehole opening and secures site.

15:50 talk to J. Bunch. Enviro drill will finish grout + develop well tomorrow. J.Bunch + I will meet in the morning ~~then~~ Prior to E.Bastien driving to site.,

Tally: 33 bags of 10/20 sand
5 bags bentonite.

16:05 offsite

EMB

8/7/12 MW-2 / MW-4 E. Bastien

12:20 onsite @ MW-2. Mostly sunny. Precision drilling present and almost done pulling drill casing out of borehole. Juan says Enviro drill was here but he doesn't know where they went.
Note: Juan + Justin Precision drilling.

12:40 talk to Juan about the other well locations. Also, inform him that all cuttings must be placed in a drum and containerized.

12:45 Drive to wells, Onsite MW-~~3~~ 4.
MW-4: 4 ~~&~~ 55gal drums cuttings and 1 55gal drum with water. 1 empty drum. ~~or~~ 1/4 full w/cuttings

13:00 Cordel + Ivan (Enviro Drill) onsite MW-4. Discuss location for drum storage.

8/7/12 E. Bastien

13:15 at staging yard, near house, north west of mill. This would be easiest access. (photograph.)

13:20 onsite MW-7: 9 55gal drums
7 - drums full w/cuttings
1 - drum ~1/4 full w/cuttings.
1 - drum full of water
Note: 1 drum damaged, 3 inch slit in side, photograph taken.

13:33 onsite MW-6: 7 drums
6 - 55gal drums full w/cuttings
1 - 55gal drum w/water.
flush mount

13:48 talk to Cordel (Enviro Drill) he is waiting for Juan (Precision) to vacate site before he grouts.

14:01 onsite MW-3. 4 bags of trash drill casing downhole and onsite. soil cuttings are laid out on ground.

8/7/12 MW-3 / MW-2. E. Bastien.

MW-3 has 4 drums.
3 full w/ cuttings and 1 ~¼ full w/ cuttings
No well. drill casing is ½ covered w/ plastic bag, ~~Mostly~~ EMB 8/7/12.
~~borehole~~ is open to atmosphere.
(photos taken).

14:15 Precision, Enviro and DBSA (EMB) onsite MW-2. Precision says they started another borehole first ~ 2ft Northeast of MW-2 location.

Drill casing still down hole → ~100ft @ MW-3
→ ~10ft @ MW-2 first attempt.
MW-2 first attempt depth of 40ft.

14:31 MW-2: DTW = 112.70 ft btoc
stick up = 3.4 ft ags. DTW = 109.30 ft bgs
Tag bottom @ 129.65 ft btoc
bottom of well = 125.85 ft bgs.

8/7/12 MW-2 E. Bastien

14:35 Precision offsite, Enviro Drill preps for grout @ MW-2.

15:00 MW-5: 7 55gal drums full w/ cuttings photographed. no well.

15:05 22 empty 55gal drums @ staging yard. (photographed).

15:08 onsite MW-2. Enviro crew mixes cement grout.
1 bag quick grout (Haliburton) 50lbs
3 bags quickete portland cement ~~47~~ 40lb bags. ~50gallons of water

15:15 pour 55gal barrel of grout into borehole

15:19 begin 2nd batch: in a 55gal drum add 25gal water + 1 sack quick grout + 4 sacks type II cement

15:31 drop 2nd batch into borehole.

15:35 Mix 3rd batch

15:45 Pour 3rd batch downhole:
11 sacks cement + 3 sacks quik grout

8/7/12 - MW-2 Grout E.Bastien

18:46 Mix batch #4. 1 sack quick-Grout (Halliburton) and 1111 sacks portland cement.

15:54 pour batch #4 into borehole

15:58 mix batch #5. 1 sack of quick-Grout (Halliburton) and 111 sacks of portland cement

16:07 pour batch #5 down borehole.

16:09 mix batch #6 1 sack (Halliburton) 4 sacks portland.

16:17 pour batch #6

16:18 mix batch #7, 1 sack Quick grout, 4 sacks quickcrete (portland)

16:23 pour batch #7 down borehole. cement is @ surface. 6 1/2 batches downhole.

16:28 ~~Mix batch #~~ pour the remaining batch #7 down nearby ~~at~~ MW-2 first attempt.

8/7/12 MW-2 Development E.Bastien

16:30 cover top 1 ft of 1st attempt w/soil, crew mixes batch 8 as 1/2 batch and adds to MW-2.

16:35 J.Bunch calls. Discuss that staging area is probably best location for storage of drums.

16:44 Enviro Drill set-up for well Development.

16:45 calibrate YSI Pro-Plus SN: 11G100832.

pH std	Pre	Post	temp (°C)
4.0	3.94	4.01	29.4
7.0	6.95	6.99	30.0
10.0	9.94	9.97	28.2

SpC set to 1000 µS/cm, reads as 1001 µS/cm @ 32.5°C

17:00 Crew doesn't have enough 1 inch PVC for the airline.

8/7/12 MW-2 Development EBastian

17:10 cut off the well casing so that we have a 3 ft stickup now.

17:15 1 inch pipe still won't reach crew has 9'11in joints, 13 joints string is ~129ft. So should be ~1 ft off bottom.

17:30 found grip for 1 inch pipe. continue setting up to airlift.

17:45 start air lifting

18:10 only discharging ~100mL/min

18:35 stop airlifting.

18:55 after conversations w/J.Busch (DBSA and Enviro drill). Enviro drill will complete well pad with above ground vault and DBSA will develop it.

19:00 MW-2 2 full drums w/cuttings and ~~two 1/2 full~~ EMB one w/ 1/2 gallon water.

8/7/12 MW-2 Well Development EMB

Time	Vol(gal)	T(C)	SpC(µS/cm)	pH	Comments
17:52	Int	25.4	1316	9.29	turbid/reddish brown
17:56	1/2 gal	25.9	1280	8.13	"

19:05 Precision left drill casing, rig and trailer onsite. Precision driller Juan told about cuttings left out @ MW-2 and MW-3 which need to be containerized in a drum.

19:06 Enviro Drill, Cordel was told that DBSA will develop. They are packing up but will complete vault tomorrow.

* Note: No turbidity meter available in DBSA warehouse or w/previous staff, M. Nauck.

19:25 offsite

EMB 8/7/12

8/9/12 MW-2 Development. E. Bastian

11:15 onsite Milan Farm, MW-2.
weather = Sunny, upper 80's
well pad is complete (photographed)
DBSA lock is attached.
Note: Empty drums @ storage yard ~~are~~ EMB have been removed.
@ MW-2: 1 empty will be used for development water and 3 full w/cuttings.
- Soil cuttings still left out on surface @ MW-2 and MW-3.

11:30 calibrate YSI-Pro Plus SN: 11G100832

pH std	pre	post	temp (°C)
4.0	4.01	4.01	25.5
7.0	7.06	7.00	26.0
10.0	10.05	9.99	25.6

SpC set to 1000 mS/cm: reads 1001 mS/cm @ 26.0°C

8/9/12 MW-2 Development EMB

11:50 DTW = 112.23 ft btoc
TD = 128.98 ft btoc
stick up = 3.2 ft ags

12:15 use 1/2 gallon bailer filled w/sand to surge water column. Pull up + down through water column ~100 times.

12:40 collect initial bailer of development water. (see table on pg 97).

13:15 issues w/ YSI-Pro. double check calibration. Calibration good. pH 7.00=6.97 SpC 1000=999

13:30 Precision drilling onsite to collect drill casing. Remind them to put cuttings in drum.

13:35 Precision offsite MW-2.

15:00 set up mega monsoon. Precision crew Juan + Justin offsite.

16:00 trouble w/pump. tried attaching new motor. pump worked ~5 secs and died again.

8/9/12 MW-2 Development E.Bastian

Time	Vol(gal)	pH	SC(mS/cm)	T(°C)	Turbidity (NTU)	Comments
12:40	Int	7.26	1350	19.5	>1000	turbid silty/sand
13:10	3.0	problem w/YSI.			>1000	"
13:47	5.0	7.20	1342	15.9	>1000	"
14:12	10.0	7.43	1325	16.3	>1000	"
14:35	15.0	7.60	1368	16.1	>1000	silty
14:52	20	7.57	1349	16.1	>1000	"

6/9/12 EMB

8/9/12 MW-2 Development E.Bastian

16:25 dias call J. Calvert equipment manager (DBSA) re suggestions. dissassemble pump + tubing for transport.

16:40 call w/ J. Bunch.

17:05 equipment packed, well locked, site secure. offsite

EMB 8/9/12

8/10/12 MW-2 Development E. Bastian

9:50 onsite MW-2.

9:55 DTW = 112.24

TD = 128.98 ft btoc

10:05 set up monsoon pump

calibrate YSI-Pro Plus SN: 11G100832

pH std	pre	post	Temp (°C)
4.0	3.99	4.01	25.0
7.0	7.04	7.00	27.2
10.0	10.00	9.97	27.9

SpC (1008 µs @ 25°C) set to 1000 µs/cm, reads 1000 µs/cm @ 26.8°C

11:15 No controller for pump. Cannot pump.

11:30 talk to J. Bunch. Will need to figure out a different plan for development.

11:55 pack up Equipment and head back to ABQ. Per J. Bunch.

12:05 offsite

EMB 8/10/12

8/10/12 MW-2 Development cont. E. Bastian

Time	Vol (gal)	pH	SpC (µs/cm)	T (°C)	Turbidity	Comments

EMB 8/10/12

8-13-12 Jim Calvert

11:10 on site at mw-7

DTW = 110.66' B.T.O.C.

put small Lock on 2 plugs of well. Key = P-225

left Lock unlocked for Surveyors.

called John Branch about Locks on Risers. Decided not to put Locks on 2 plugs inside Risers. Key on Risers = 2289.

1120 on site at mw-6 - Flush mount. ~~Lock~~ on 2 Plugs = key 2289

DTW = 111.07 BTOC

8-13-12 Jac

12:05 on site at mw-4

DTW = 118.76' B.T.O.C.

Riser has Lock (key 2289) on it

1220 set up on mw-2

DTW = 112.28'

1225 calibrate YSI 9510

SN: 11G100932

BP = 605 mm Hg

T°C = 28.5°C

PH7 ~~=~~ 6.97 → 7.02

PH10 = 9.91 → 10.00

SPC set at 1 conductivity

reads: 1121 us/cm → 1000 us/cm at 28° C

8-13-12 Jcc

1245 set up on new well-2 to hand bail until well developed.

Parameters: vol, pH, T°c, us/cm SPC, NTU Turbidity

1255	initial	7.68	15.9°c	1216	999<
1400	10g	7.91	15.2°c	1221	999<
1435	Heavy Rain + Lightning -TATE bi@ak				
1500	Rain + Lightning stopped				
1530	20g	7.69	14.9°c	1189	999<
1630	30g	7.65	15.5°c	1209	91.5 ntu
1700	40g	7.61	15.6°c	1204	clear 85.6
	install monsoon pump into well				
1710	pump on				
1720	50g	7.61	15.6	1496	1223

pH	D.O.	T°c	spc	Turbid
7.61		15.6	1496	1223	999<

8-13-12 Jcc

Time	vol	pH	T°c	us/cm spc	mg/L D.O.	mV ORP	Turbid
1730	60	7.62	15.9°	1230	2.68	138mv	999< ntu
1740	70g	7.63	15.6°	1230	2.77	133.7	244 ntu
1750	80g	7.64	15.6°	1229	2.50	127.1	66.1 ntu
1800	90	7.62	15.4°	1230	2.64	124	91.2
1810	100g	7.64	15.3	1231	3.30	116	54.5 ntu
1820	110g	7.61	15.1	1232	3.14	110.4	42.5 ntu
1830	120g	7.63	15.3	1229	3.13	107.4	25.1 ntu
1840	130g	7.63	15.3	1232	3.14	105.2	40.4 ntu

1845 TATE Sample

105

9/13/12 MW

0920 Onsite at dump

Observations:

At Greenhous-

- White material, possibly insolation
- Brown corrugated material

Corrugated shed

- insulation

Near trees

- same white material as at greenhouse
- foam like material, possibly ceiling tile

0945 Guage wells

MW-2	112.42' btoc	2.60' SU
MW-4	118.95' btoc	2.65' SU
MW-6	111.42 btoc	flush
MW-7	111.03 btoc	1.95' SU

Appendix B

Laboratory Analytical Results

This appendix is provided on CD in each report hard copy and on this report CD in the “Appendix B Lab Reports” folder.

Appendix C

Standard Operating Procedures

3.5 Sediment and Sludge Sampling

The following SOP describes the appropriate procedures for the sampling of sediments and sludges under varying conditions as described in this SOP.

The SOPs and SOGs included in this section are applicable to all DBS&A employees for the conduct of all activities listed in this section. **All SOPs and SOGs described in this section are proprietary in nature and shall not be copied or reproduced, or distributed to any person or organization not employed by DBS&A, without the expressed written approval of the President or his/her designee for quality assurance.** All or parts of the SOPs and SOGs described in this section may be reproduced and used in DBS&A reports, proposals, and work plans with the verbal consent of the President, his/her quality assurance designee, or a DBS&A Division Director.

These SOPs and SOGs shall be reviewed periodically, and revisions and additions to these SOPs and SOGs shall be made as needed to assure consistency with industry standards and the collection of high quality data in the field. Requests for revisions shall be made in writing to the President or his/her quality assurance designee.

The procedures described below for collecting sediment and sludge samples are applicable to all types of investigations. These procedures are in accordance with EPA 600/4-84-076, Characterization of Hazardous Waste Sites - A Methods Manual, Volume II, Available Sampling Methods, and ASTM D 887 (11.02), Standard Practice for Field/Laboratory Sampling (for Water-Formed Deposits). Additional references which may be helpful in planning and implementing sediment and sludge sampling programs include: ASTM D 4687-95, Standard Guide for General Planning of Waste Sampling; and the following Field Technical SOPs and SOGs: (1.1) Equipment, (3.2) Soils Logging, Sampling, Handling, and Shipping for Geotechnical and Chemical Analyses, and (5.2) Decontamination of Field Equipment.

3.5.1 Sample Collection

Sediment and sludge samples may be collected by a variety of methods including a spade or shovel, hand auger, hand corer, split-barrel sampler, gravity corer, or ponar grab sampler. The equipment listed above is most commonly used for sediment and sludge sampling; however, other methods which are not listed may also be appropriate depending on the specific investigation. The hand corer, gravity corer, and split-barrel sampler are the only methods which allow for the collection of samples directly into sample rings. The remaining methods require that the soil be transferred from the sampling device to sample containers (typically glass jars). In the case of the hand corer, gravity corer, and split-barrel sampler, the liner rings should be sealed as quickly as possible with Teflon membranes and covered with plastic caps. The rings are labeled, secured with solvent-free tape (for organics analysis), and submitted directly for analysis. Exact sample methods, volumes, containers, preservation, and chain of custody procedures will be outlined in the site-specific Field Sampling Plan (FSP). A list of suggested equipment for sediment and sludge sampling is included as Attachment 3.5-1.

3.5.1.1 Sampling with a Spade and Scoop

The spade and scoop is among the simplest methods of collecting sediment and sludge samples. This method is limited to near surface sediments and sludges and can be disruptive to the water/sediment interface if care is not taken during sample collection. A stainless steel spade and scoop is recommended due to its noncorrosive nature. Sediment and sludge sampling with the spade and scoop is accomplished by the following procedures:

1. Carefully remove the top 1-2 inches of sludge or sediment with the clean spade. This step is not necessary if the material is covered with water, or is not required as part of the project.

2. Insert the scoop into the material and remove a sample. Transfer the sample into the appropriate clean sample container. Note the general characteristics of the material in the field book.

3. If samples are to be collected for chemical analysis, volatile organic and semi-volatile organic samples will be collected first. Be sure that headspace is minimized in the volatile organic analysis samples. If required by the FSP, collect field duplicates and specify that the laboratory perform matrix spike/matrix spike duplicates (MS/MSDs) from the same sample. Place the samples in certified-clean glass jars with Teflon-lined caps.

4. Following collection of all samples for organics analysis, collect samples for any other required analyses. If the FSP specifies mixing (compositing) the sample prior to filling additional sample containers, do so in a stainless-steel bowl or Teflon mixing tray. Samples collected for analysis of volatile constituents should not be composited, because of the potential for loss of volatiles during mixing. Sample volumes and containers will be specified in the FSP.

5. Label the samples in accordance with the FSP. At a minimum, this will include: (1) the sample number; (2) sampling location (if different from the sample number); (3) time and date; (4) required analysis; and (5) sampler initials. If chain of custody seals are required, secure them across the container lid.

6. Place the sample containers in "ziplock" bags and place on ice. Prior to shipment, the sample containers should be wrapped in bubble-pack, or other suitable packing material.

7. Log all information observed during sampling in the field log book and record the sample on the chain of custody form (usually supplied by the laboratory performing the chemical analysis or DBS&A Form No. 095, which is included as Attachment 3.5-2).

3.5.1.2 Sampling with a Hand Auger

The hand auger is very simple to use and is very useful in cases where samples need to be collected at depth. The hand auger is not recommended in cases where water or cobbles are present, and discrete samples are required at depth. Sediment and sludge sampling with the hand auger can be disruptive to the water/sediment interface if care is not taken during sample collection. Sediment and sludge sampling with the hand auger is accomplished using the following procedures:

1. Place the pre-cleaned auger tip at the desired sample location. Rotate the auger clockwise until the auger barrel is full of material. Pull the auger from the borehole and remove the material from within the auger barrel using a clean spatula, if necessary.

2. Repeat this procedure until the desired sample depth is reached.

3. Once the desired sample depth is reached, rotate the auger until the auger barrel is full. Ensure that sloughed material has not fallen into the borehole prior to sample collection.

4. Remove the auger from the borehole and quickly transfer the material to the appropriate sample containers using a stainless steel scoop or spatula. Note the general characteristics of the material in the field book.

5. Follow the steps described in Section 3.5.1.1 of this SOP (3 through 7).

3.5.1.3 Sampling with a Hand Corer

The hand corer is operated in a similar manner as the hand auger. It can be fitted with a check valve which will allow for the collection of soft sediment samples underlying a shallow layer of liquid. The hand corer can also be lined with sample rings which allows for the collection of relatively undisturbed samples. Under certain circumstances it may be difficult or impossible to push the corer to the desired depth. If this is the case, a hand auger may be required to auger to the desired sampling depth. Sediment and sludge sampling with the hand corer is accomplished by the following procedures:

1. Place the pre-cleaned hand corer at the desired sample location. Rotate and push the corer clockwise until the core barrel is full of material. Pull the corer from the borehole and remove the material from within the core barrel using a clean spatula or other metal tool, if necessary.

2. Repeat this procedure until the desired sample depth is reached.

3. Once the desired sample depth is reached, rotate and push the auger until the core barrel is full. Ensure that sloughed material has not fallen into the borehole prior to sample collection.

4. Remove the corer from the borehole and quickly transfer the material to the appropriate sample containers using a stainless steel scoop or spatula. If sample liners are used, carefully remove the core bit and the sample liner rings. Trim excess soil from the ends of the rings with a clean stainless-steel knife or spatula. Cap the rings with Teflon membranes and plastic caps and seal with solvent-free tape (organic analyses only). Note the general characteristics of the material in the field book.

5. Follow the steps described in Section 3.5.1.1 of this SOP (3 through 7).

3.5.1.4 Sampling with a Split-Barrel Sampler

The split-barrel sampler is driven by pounding a slide hammer onto the top of the sampler barrel. Typically the sample barrels are 6-inches in length and between 2 and 3 inches in diameter. If samples are to be collected at depth, a hand auger will be needed to auger to the desired sampling depth. The split-barrel sampler can also be fitted with brass or stainless steel liner rings, which allows for the collection of relatively undisturbed samples. Sediment and sludge sampling with the hand driven split-barrel sampler is accomplished by the following procedures:

1. If samples are to be collected at depth, use a hand auger to reach the proper depth, as described in Section 3.5.1.2 of this SOP.

2. Assemble the split-barrel, including liner rings, if appropriate. Ring requirements will be specified in the FSP.

3. Attach the split-barrel sampler to the drive bar and carefully lower it to the bottom of the borehole. Ensure that soil material has not caved into the borehole prior to sampling.

4. Drive the sampler into the soil by repeatedly pounding the slide hammer onto the top of the sample barrel. Remove the split-barrel sampler from the borehole. Care should be taken not drive the sampler greater than the length of the sample barrel.

5. Carefully disassemble the sampler to minimize soil disturbance. Trim excess soil from the individual rings flush with a clean stainless steel knife or spatula, and place Teflon membranes and plastic caps over the ring ends. Secure the caps with solvent-free tape, and label the rings, including the vertical orientation.

6. Follow the steps described in Section 3.5.1.1 of this SOP (3 through 7).

3.5.1.5 Sampling with a Gravity Corer

Gravity corers are used to collect samples in very loose sediments and sludges, and work best in cases where liquid overlies the sediment. The gravity corer consists of a metal core barrel with a tapered bit on the bottom and a check ball on the top. The check ball allows water to pass upward through the corer during insertion, but prevents loss of the sample during recovery. The gravity corer can also be equipped with liner rings which allow for the collection of relatively undisturbed samples. Sediment and sludge sampling with the gravity corer is accomplished by the following procedures:

1. Attach a pre-cleaned core barrel to the sample line. Make sure that the sample line is properly secured to the corer and to an object at the surface to prevent accidental loss of the corer.

2. Allow the gravity core barrel to free fall through the liquid to the bottom.

3. Carefully pull the corer up and remove the bit.

4. Remove the sediment sample with a stainless steel spoon or spatula and immediately transfer it to an appropriate container. If sample liner rings are used, carefully remove the liner rings and trim excess soil from the ends of the rings with a clean stainless-steel knife or spatula. Cap the rings with Teflon membranes and plastic caps, and seal them with solvent-free tape (organics analyses only). If the material is non-cohesive, samples may need to be directly transferred from the gravity corer to the appropriate sample containers.

5. Follow the steps described in Section 3.5.1.1 of this SOP (3 through 7).

3.5.1.6 Sampling with a Ponar Grab Sampler

Ponar grab samplers are used to collect samples in very loose sediments and sludges, and work best in cases where liquid overlies the sediment. The ponar grab sampler consists of a clamshell type scoop activated by a counter lever system. The sampler is not designed to collect undisturbed samples. Sediment and sludge sampling with the ponar grab sampler is accomplished by the following procedures:

1. Attach a pre-cleaned sampler to the sample line. Make sure that the sample line is properly secured to the sampler and to an object at the surface to prevent accidental loss of the sampler.

2. Open the sample latch and slowly lower the ponar grab sampler to the bottom. This will reduce the amount of agitation of the bottom sediments.

3. As the sampler reaches the bottom, tension is released on the lowering cable which causes the latch to release. The lifting action on the lever system then closes the sampler.

4. Carefully pull the sampler up and place into a stainless steel or Teflon tray.

5. Collect sample with a stainless steel spoon and immediately transfer to an appropriate container.

6. Follow the steps described in Section 3.5.1.1 of this SOP (3 through 7).

Attachments

3.5-1. Sediment and Sludge Sampling Equipment Checklist

3.5-2. Chain-of-Custody Form

References

ASTM D 887-87. *Standard practice for field/laboratory sampling (for water-formed deposits).*

ASTM D 1586-84. *Standard method for penetration test and split-barrel sampling of soils*.

ASTM D 1587-83. *Standard practice for thin-walled tube sampling of soils.*

ASTM D 3350-84. *Standard practice for ring-lined barrel sampling of soils*.

ASTM D 4687-95. *Standard guide for general planning of waste sampling*.

U.S. Environmental Protection Agency (EPA). 1984. *Characterization of hazardous waste sites - a methods manual: Volume II available sampling methods, 2nd Edition*. EPA-600/4-84-076.

Attachment 3.5-1. Sediment and Sludge Sampling Equipment Checklist

Item	Specific Equipment
Soil sampling tool kit	Hand lens, grain size chart, USCS soil classification guide, Munsel soil color chart, spatulas, dilute hydrochloric acid, engineers tape (marked in tenths of feet), geologic hammer
Field book	Waterproof pens Waterproof colored pens
Meters	Photoionization detector, O_2/LEL explosivity meter, Geiger-Mueller radiation meter, water level meter
Tagline	Fiberglass with weighted tape Steel with stainless steel weight (no tape)
Measuring tape or wheel	
Health and safety kit	Hard hat, steel-toed boots, safety glasses, earplugs respirator, Tyvek
Latex gloves	
Decontamination equipment	Minimum of three plastic tubs or buckets, plastic bottle brushes, Liquinox, D.I. water (minimum of 10 gallons), paper towels, garbage bags, plastic sheeting
Sampling equipment	Hand auger system, hand corer, split-barrel sampler, Gravity corer, Ponar grab sampler, stainless-steel spade and scoop, stainless-steel bowl, Teflon tray, Stainless-steel spoon
Soil sample containers	Brass rings (physical properties and petroleum hydrocarbons), stainless steel rings, Teflon liners, (organic chem. analyses), plastic endcaps, sealing tape (electrical or solvent free), aluminum foil, glass headspace jars, glass soil jars, methanol extraction kits, 40ml VOA's (water), quart and gallon ziplock baggies, strapping and packing tape, chain of custody, custody seals
Coolers	One for food only, as needed for samples

Chain of Custody

Daniel B. Stephens & Associates, Inc.

To:

_____ Date _____ Project No. _____

_____ Client _____

_____ Relinquished by _____

Sent by: ☐ Fed Ex ☐ DHL ☐ Other _____

Purpose of shipment _____

Possible contaminants _____

Item No.	Sample No.	Analysis To Be Done	Sample Container	Comments

Date received _____ by _____
Company Representative

Received the above articles in good condition

Except as noted _____

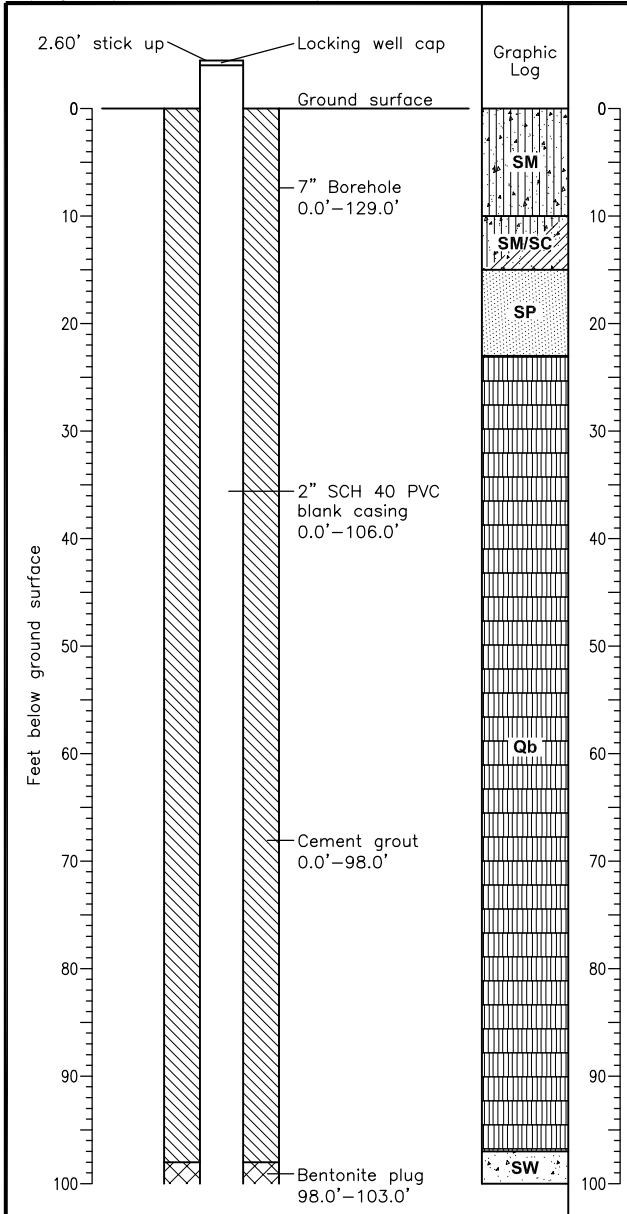
_____

_____

F:\DOM\SECTION.13\Chain-Custody_Form.doc

Appendix D

Soil Boring Logs



PID/FID Reading PPM	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol or Rock Unit	Comments and Lithology
		0–5	SM	Gravelly silty sand, brown (2.5YR 5/3), coarse– to fine–grained, well graded, subround, non–plastic, soft loose, moist, high organic content, burnt wood.
		5–10	SM	Same as above.
		10–15	SM–SC	Clayey silty sand, reddish brown (5YR 4/4), fine–grained, poorly graded, subround, low plastic, soft, moist.
		15–20	SP	Sand, light reddish brown (5YR 6/4), fine to coarse–grained, poorly graded, subround, non–plastic, loose, moist.
		20–23	SP	Same as above.
		23–25	Qb	Basalt, black (5YR 2.5/1), massive, hard, vesicular.
		25–30	Qb	Same as above.
		30–35	Qb	Same as above.
		35–40	Qb	Same as above.
		40–45	Qb	Same as above.
		45–50	Qb	Same as above.
		50–55	Qb	Same as above.
		55–60	Qb	Same as above.
		60–65	Qb	Same as above.
		65–70	Qb	Same as above.
		70–75	Qb	Same as above.
		75–80	Qb	Same as above.
		80–85	Qb	Same as above.
		85–90	Qb	Same as above.
		90–95	Qb	Same as above.
		95–97	Qb	Same as above.
		97–100	SW	Gravelly sand, dark reddish gray (5YR 4/2), coarse–grained, subround, non–plastic, loose, moist.

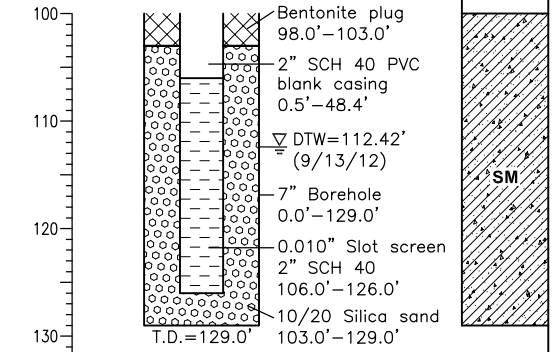
Geologist: M. Nauck/E. Bastien
Driller: Precision
Date completed: 8–6–12

Drilling method: Air rotary/symmetrex
Diameter: 7" O.D.
Sampling device: Hand auger

Northing: 1532814.56 (NMSPG, NAD83)
Easting: 2703133.55 (NMSPG, NAD83)
Elevation: 6547.68 ft. msl.

MILAN FARM
MILAN, NM
Well Log: MW-02

Daniel B. Stephens & Associates, Inc.
9–14–12
JN ES10.0079.03



Graphic Log	PID/FID Reading PPM	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol or Rock Unit	Comments and Lithology
			100–105	SM	Gravelly silty sand, reddish brown (5YR 5/3), coarse– to fine–grained, well graded, subround, non–plastic, wet.
			105–110	SM	Same as above.
			110–115	SM	Same as above.
			115–120	SM	Same as above.
			120–125	SM	Silty sand, reddish yellow (5YR 6/6), angular to subround, fine– to coarse–grained, non–plastic, loose, wet.
			125–129	SM	Same as above.

Geologist: M. Nauck/E. Bastien
Driller: Precision
Date completed: 8–6–12

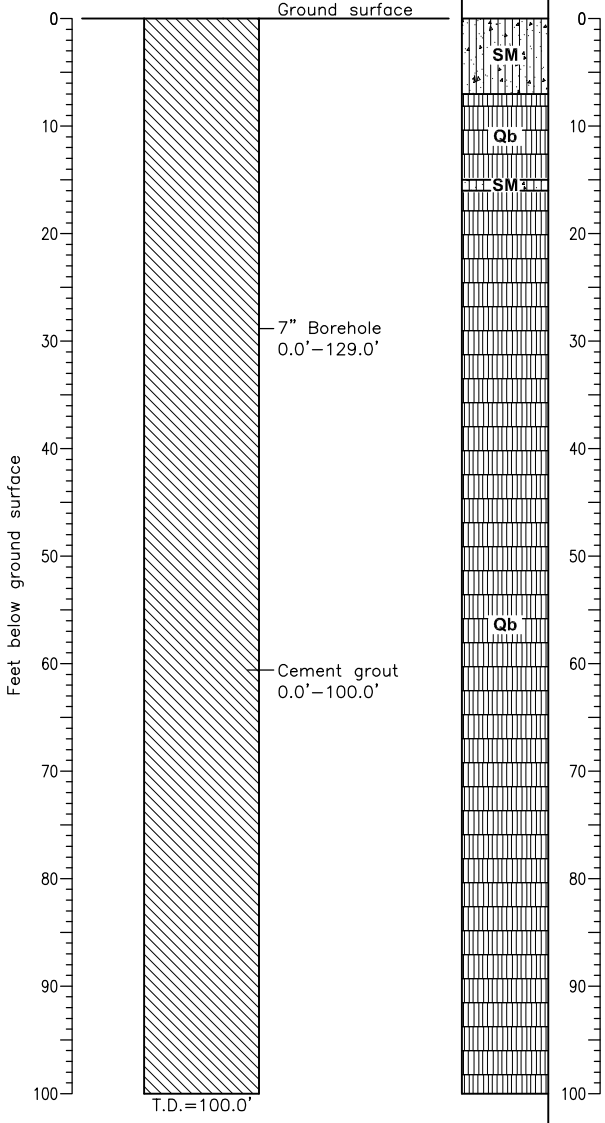
Drilling method: Air rotary/symmetrex
Diameter: 7" O.D.
Sampling device: Hand auger

Northing: 1532814.56 (NMSPG, NAD83)
Easting: 2703133.55 (NMSPG, NAD83)
Elevation: 6547.68 ft. msl.

MILAN FARM
MILAN, NM
Well Log: MW-02

Daniel B. Stephens & Associates, Inc.
9–14–12
JN ES10.0079.03

S:\Projects\ES10.0079_NWNMCOG\ES10.0079.03_Milan_Farm\VR_Drawings\ES10_0079_03_01B_borelogs.dwg



PID/FID Reading PPM	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol or Rock Unit	Comments and Lithology
		0–5	SM	Silty sand, reddish brown (5YR 4/4), fine– to medium– grained, well graded, loose subround, non–plastic when wet, dry to damp, no HC odor.
		5–7	SM	Same as above.
		7–10	Qb	Vesicular basalt, black (7.5YR 2.5/1), olivine crystals up to 1 mm, massive, hard, dry, no HC odor.
		10–15	Qb	Same as above.
		15–16	SM	Silty sand, reddish brown (5YR 4/4), fine– to medium–grained, well graded, loose subround, non–plastic when wet, dry to damp, no HC odor.
		16–20	Qb	Vesicular basalt, black (7.5YR 2.5/1), olivine crystals up to 1 mm, massive, hard, dry, no HC odor.
		20–25	Qb	Same as above.
		25–30	Qb	Same as above.
		30–32	Qb	Same as above.
		32–34	Qb	Vesicular basalt, reddish brown (5YR 4/3), massive, hard, dry, no HC odor.
		34–35	Qb	Vesicular basalt, black (7.5YR 2.5/1), olivine crystals up to 1 mm, massive, hard, dry, no HC odor.
		35–40	Qb	Same as above.
		40–45	Qb	Same as above.
		45–50	Qb	Same as above.
		50–55	Qb	Same as above.
		55–60	Qb	Same as above.
		60–65	Qb	Same as above.
		65–70	Qb	Same as above.
		70–75	Qb	Same as above.
		75–80	Qb	Same as above.
		80–85	Qb	Same as above.
		85–90	Qb	Same as above.
		90–95	Qb	Same as above.
		95–100	Qb	Same as above.
				Note: No well constructed at this location.

Geologist: J. Fisher
Driller: Precision
Date completed: 7–14–12

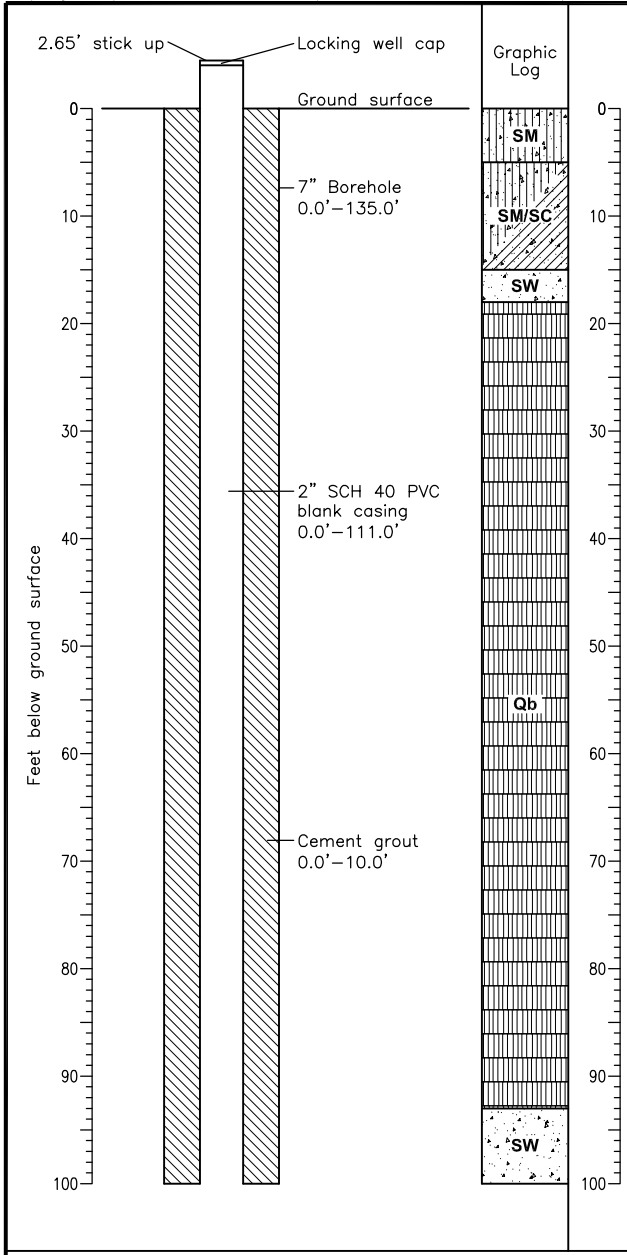
Drilling method: ODEX
Diameter: 7" O.D.

Northing: 1534286.90 (NMSPG, NAD83)
Easting: 2701522.82 (NMSPG, NAD83)
Elevation: 6548 ft. msl.

MILAN FARM
MILAN, NM

Boring Log: MW-03

Daniel B. Stephens & Associates, Inc.
9–14–12
JN ES12.0090



Graphic Log	PID/FID Reading PPM	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol or Rock Unit	Comments and Lithology
SM			0–5	SM	Silty sand with clay, brown (7.5YR 5/4), fine–grained, moderately well graded, round to subround, plastic when wet, dry, no HC odor.
			5–10	SM–SC	Same as above with increased clay content.
SM/SC			10–15	SM–SC	Same as above with increased clay content.
SW			15–18	SW	Sand, brown (7.5YR/5/4), fine– to medium–grained, well graded, loose, subround to subangular, sparse fine gravels, subangular, damp, no HC odor.
			18–20	Qb	Vesicular basalt, black (7.5YR 2.5/1), fine–grained crystals, massive, hard, dry, no HC odor.
			20–25	Qb	Same as above.
			25–30	Qb	Same as above.
			30–35	Qb	Same as above.
			35–40	Qb	Same as above.
			40–45	Qb	Same as above.
			45–50	Qb	Same as above.
			50–55	Qb	Same as above.
Qb			55–60	Qb	Same as above.
			60–65	Qb	Same as above.
			65–70	Qb	Same as above.
			70–75	Qb	Same as above.
			75–80	Qb	Same as above.
			80–85	Qb	Same as above.
			85–90	Qb	Same as above.
			90–93	Qb	Same as above.
			93–95	SW	Gravelly sand, strong brown (7.5YR 5/6), well graded, round to subround, non–plastic, moist, no HC odor, subround to subangular gravels up to 1/2".
SW			95–100	SW	Same as above.

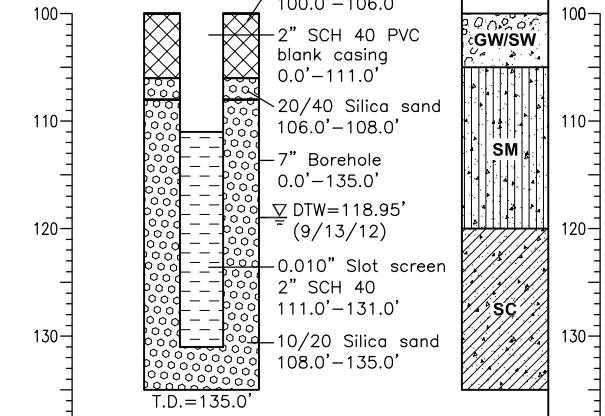
Geologist: J. Fisher
Driller: Precision
Date completed: 7–11–12

Drilling method: ODEX
Diameter: 7" O.D.

Northing: 1530804.84 (NMSPG, NAD83)
Easting: 2703324.47 (NMSPG, NAD83)
Elevation: 6543.88 ft. msl.

MILAN FARM
MILAN, NM
Well Log: MW-04

Daniel B. Stephens & Associates, Inc.
9–14–12
JN ES12.0090



Feet below ground surface

100 110 120 130 140 150 160 170 180 190 200

PID/FID Reading PPM	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol or Rock Unit	Comments and Lithology
		100–105	GW–SW	Same as above with increased gravels (40%), and little fines.
		105–110	SM	Silty sand with clay, pale brown (7.5YR 5/4), fine–grained, moderately well graded, round to subround, plastic when wet, dry, no HC odor.
		110–115	SM	Same as above.
		115–120	SM	Same as above with 15% angular gravels.
		120–125	SC	Clayey sand with gravel, strong brown (7.5YR 5/6), fine– to coarse–grained, well graded, subangular, moist, no HC odor.
		125–130	SC	Same as above but wet.
		130–135	SC	Sand, reddish brown (5YR 4/4), fine– to coarse–grained, well graded, loose, subround to subangular, wet, no HC odor.

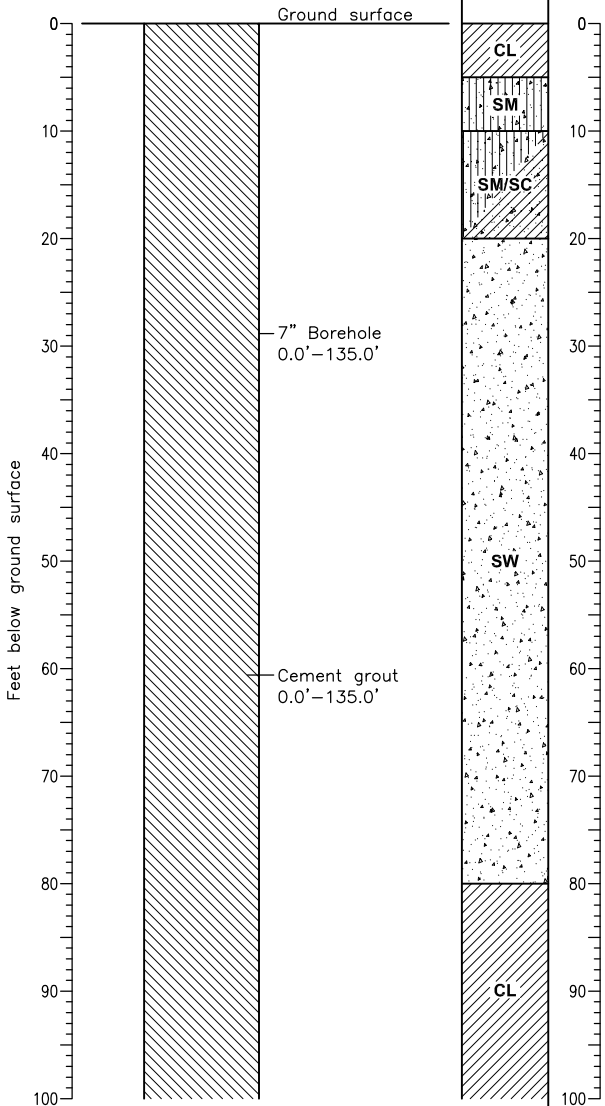
Geologist: J. Fisher
Driller: Precision
Date completed: 7–11–12

Drilling method: ODEX
Diameter: 7" O.D.

Northing: 1530804.84 (NMSPG, NAD83)
Easting: 2703324.47 (NMSPG, NAD83)
Elevation: 6543.88 ft. msl.

MILAN FARM
MILAN, NM
Well Log: MW-04

Daniel B. Stephens & Associates, Inc.
9–14–12
JN ES12.0090



PID/FID Reading PPM	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol or Rock Unit	Comments and Lithology
		0–5	CL	Sandy clay, brown (7.5YR 4/3), fine–grained sand, plastic, soft, moist, no HC odor.
		5–10	SM	Silty sand, brown (7.5YR 4/3), fine–grained, moderately well graded, loose, round to subround, non–plastic, damp, no HC odor.
		10–15	SM/SC	Silty sand with clay, brown (7.5YR 5/3), fine–grained, moderately well graded, loose, round to subround, plastic when wet, damp, no HC odor.
		15–20	SM–SC	Same as above.
		20–25	SW	Sand, brown (10YR 5/3), fine– to medium–grained, well graded, loose, subround to subangular, non–plastic, damp, no HC odor.
		25–30	SW	Same as above.
		30–35	SW	Same as above.
		35–40	SW	Sand, reddish brown (5YR 5/4), fine– to medium–grained, well graded, loose, subround to subangular, non–plastic, interbedded layers of reddish brown sandy clay, damp, no HC odor.
		40–45	SW	Same as above.
		45–50	SW	Same as above.
		50–55	SW	Same as above.
		55–60	SW	Same as above.
		60–65	SW	Same as above.
		65–70	SW	Same as above.
		70–75	SW	Same as above.
		75–80	SW	Same as above.
		80–85	CL	Sandy clay, reddish brown (5YR 5/4), fine– to medium–grained sand, well graded, moderately hard, slightly plastic when wet, damp, no HC odor.
		85–90	CL	Sandy clay, very dark gray (7.5YR 3/1), fine– to medium–grained sand, well graded, soft, slightly plastic when wet, damp, no HC odor.
		90–95	CL	Same as above.
		95–100	CL	Same as above.

Geologist: J. Fisher
Driller: Precision
Date completed: 7–8–12

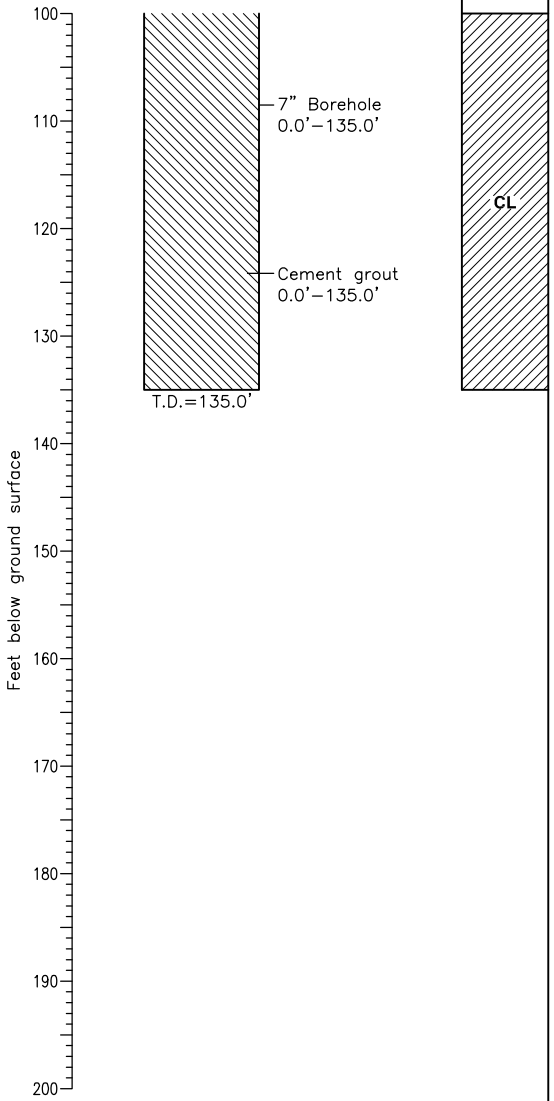
Drilling method: ODEX
Diameter: 7" O.D.

Northing: 1530796.21 (NMSPG, NAD83)
Easting: 2706207.87 (NMSPG, NAD83)
Elevation: 6537 ft. msl.

MILAN FARM
MILAN, NM

Boring Log: MW-5

Daniel B. Stephens & Associates, Inc.
9–14–12
JN ES12.0090



PID/FID Reading PPM	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol or Rock Unit	Comments and Lithology
		100–105	CL	Same as above.
		105–110	CL	Same as above.
		110–115	CL	Sandy clay, grayish brown (10YR 5/2), fine– to medium–grained sand, well graded, soft, slightly plastic when wet, damp, no HC odor.
		115–120	CL	Sandy clay, very dark gray (7.5YR 3/1), fine– to medium–grained sand, well graded, soft, slightly plastic when wet, damp, no HC odor.
		120–125	CL	Sandy clay, very dark gray (7.5YR 3/1), fine– to medium–grained sand, well graded, soft, slightly plastic when wet, damp, no HC odor.
		125–130	CL	Sandy clay, dusky red (10R 3/2), fine– to medium–grained sand, well graded, soft, plastic when wet, damp, no HC odor.
		130–135	CL	Same as above with increased sand content, slightly plastic when wet.
				Note: No well constructed at this location.

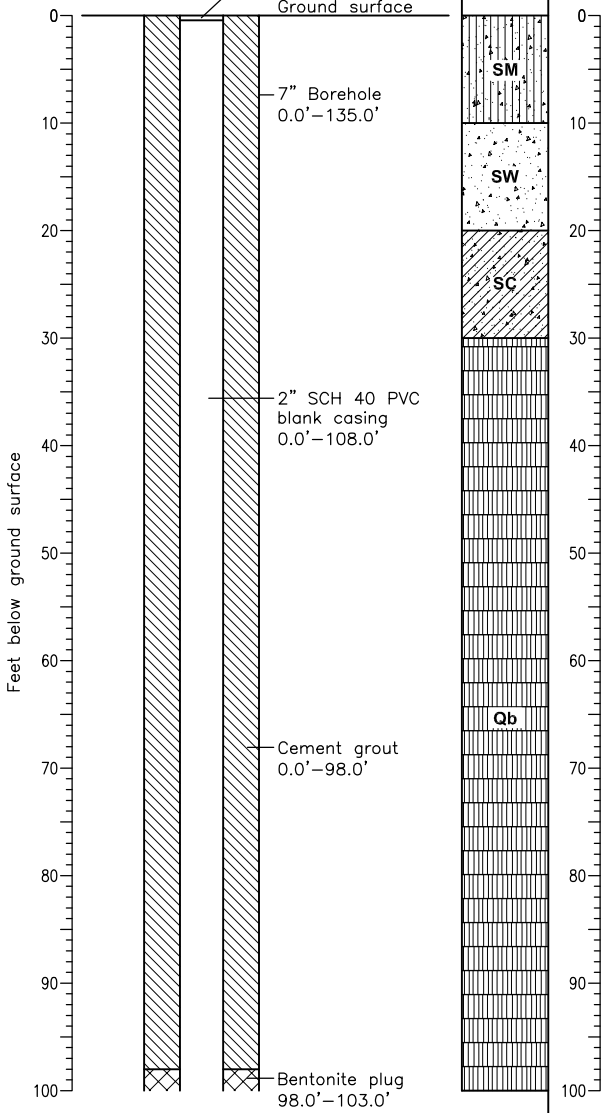
Geologist: J. Fisher
Driller: Precision
Date completed: 7–8–12

Drilling method: ODEX
Diameter: 7" O.D.

Northing: 1530796.21 (NMSPG, NAD83)
Easting: 2706207.87 (NMSPG, NAD83)
Elevation: 6537 ft. msl.

MILAN FARM
MILAN, NM
Boring Log: MW-5

Daniel B. Stephens & Associates, Inc.
9–14–12
JN ES12.0090



PID/FID Reading PPM	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol or Rock Unit	Comments and Lithology
		0–5	SM	Silty sand with clay, brown (7.5YR 5/4), fine–grained, moderately well graded, round to subround, plastic when wet, dry, no HC odor.
		5–10	SM	Silty sand with clay, brown (7.5YR 5/4), fine–grained, moderately well graded, round to subround, plastic when wet, dry, no HC odor.
		10–15	SW	Sand, reddish brown (5YR 5/4), fine–grained, moderately well graded, loose, round to subround, non–plastic, dry, no HC odor.
		15–20	SW	Sand, reddish brown (5YR 5/4), fine–grained, moderately well graded, loose, round to subround, non–plastic, dry, no HC odor.
		20–25	SC	Clayey sand, reddish brown (5YR 5/4), fine to coarse grained, well graded, plastic when wet, damp, no HC odor.
		25–30	SC	Same as above.
		30–35	Qb	Vesicular basalt, black (7.5YR 2.5/1), olivine crystals up to 1 mm, massive, hard, dry, no HC odor.
		35–40	Qb	Same as above.
		40–45	Qb	Same as above.
		45–50	Qb	Same as above.
		50–55	Qb	Same as above.
		55–60	Qb	Same as above.
		60–65	Qb	Same as above.
		65–70	Qb	Same as above.
		70–75	Qb	Same as above.
		75–80	Qb	Same as above.
		80–85	Qb	Same as above.
		85–90	Qb	Same as above.
		90–95	Qb	Same as above.
		95–100	Qb	Same as above.

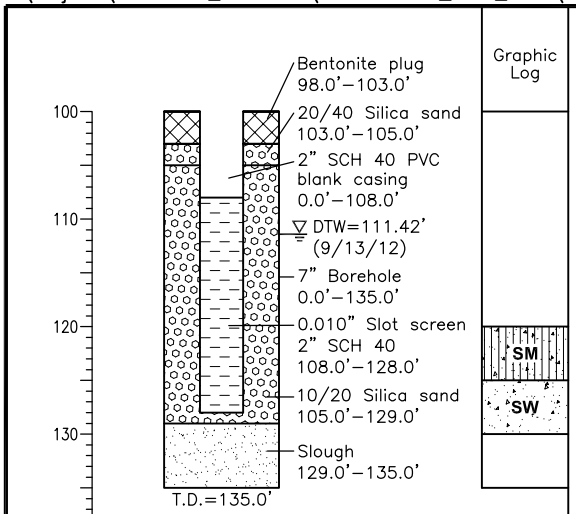
Geologist: J. Fisher
Driller: Precision
Date completed: 6–29–12

Drilling method: ODEX
Diameter: 7" O.D.

Northing: 1528484.63 (NMSPG, NAD83)
Easting: 2702543.95 (NMSPG, NAD83)
Elevation: 6535.92

MILAN FARM
MILAN, NM
Well Log: MW-06

Daniel B. Stephens & Associates, Inc.
9–14–12
JN ES12.0090



PID/FID Reading PPM	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol or Rock Unit	Comments and Lithology
		100–120		No returns.
		120–125	SM	Silty sand, pink (5YR 8/4), fine–grained, moderately well graded, loose, sparse clay nodules, round, non–plastic, wet, no HC odor.
		125–130	SW	Silty sand with gravel, pink (5YR 8/4), fine–grained, moderately well graded, loose, sparse clay nodules, round, non–plastic, wet, no HC odor, gravels are up to 1/4", subangular to subround.
		130–135		No returns.

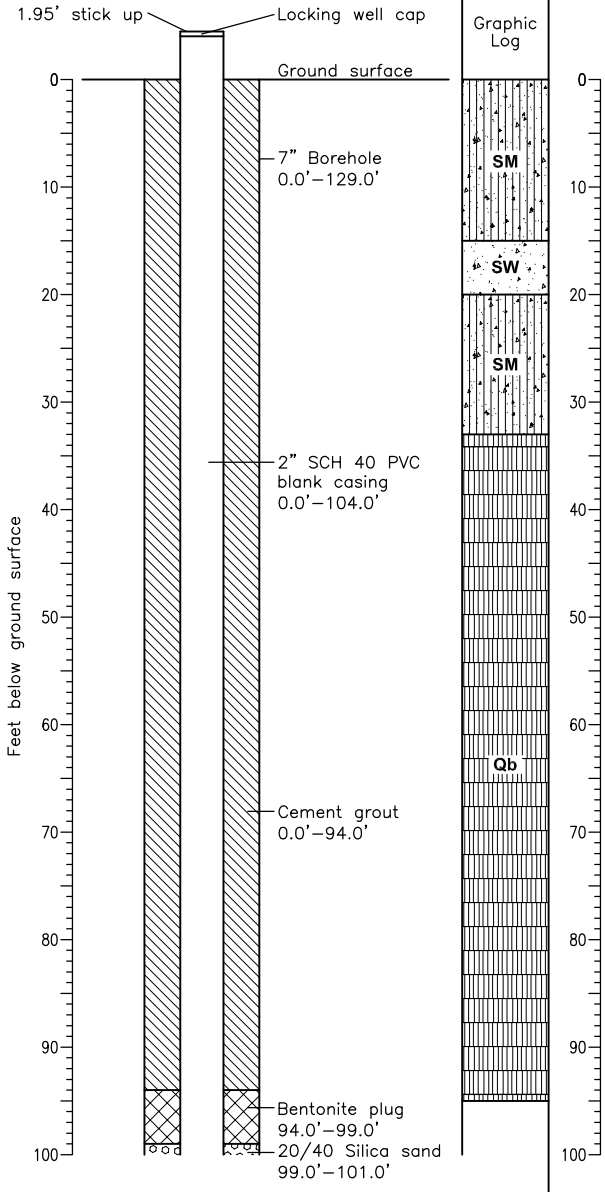
Geologist: J. Fisher
Driller: Precision
Date completed: 6–29–12

Drilling method: ODEX
Diameter: 7" O.D.

Northing: 1528484.63 (NMSPG, NAD83)
Easting: 2702543.95 (NMSPG, NAD83)
Elevation: 6535.92

MILAN FARM
MILAN, NM
Well Log: MW-06

Daniel B. Stephens & Associates, Inc.
9–14–12
JN ES12.0090



PID/FID Reading PPM	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol or Rock Unit	Comments and Lithology
		0–5	SM	Silty sand with clay, brown (7.5YR 5/4), fine–grained, moderately well graded, round to subround, plastic when wet, dry, no HC odor.
		5–10	SM	Silty sand with clay, reddish brown (5YR 4/4), fine– to medium–grained, moderately well graded, round to subround, plastic when wet, slightly moist, no HC odor.
		10–15	SM	Silty sand, reddish brown (5YR 5/4), fine–grained, moderately well graded, round, non–plastic, slightly moist, no HC odor.
		15–20	SW	Gravelly sand with clay, reddish brown (5YR 4/4), fine–grained, well graded, round to subround, non–plastict, slightly moist, no HC odor.
		20–25	SM	Silty sand with clay, dark reddish brown (5YR 3/4), fine–grained, well graded, round to subround, slightly plastic when wet, slightly moist, no HC odor.
		25–30	SM	Silty sand with clay, reddish brown (5YR 4/4), fine–grained, well graded, round, slightly plastic when wet, slightly moist, no HC odor.
		30–33	SM	Same as above.
		33–35	Qb	Vesicular basalt, black (7.5YR 2.5/1), olivine crystals up to 1 mm, massive, hard, dry, no HC odor.
		35–40	Qb	Same as above.
		40–45	Qb	Same as above.
		45–50	Qb	Same as above.
		50–55	Qb	Same as above.
		55–60	Qb	Same as above.
		60–65	Qb	Same as above.
		65–70	Qb	Same as above.
		70–75	Qb	Same as above.
		75–80	Qb	Same as above.
		80–85	Qb	Same as above.
		85–90	Qb	Same as above.
		90–95	Qb	Same as above.
		95–100		No recovery.

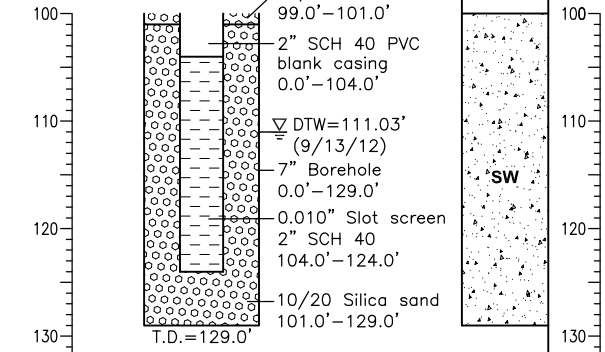
Geologist: J. Fisher
Driller: Precision
Date completed: 7–05–12

Drilling method: ODEX
Diameter: 7" O.D.

Northing: 1526857.39 (NMSPG, NAD83)
Easting: 2704190.62 (NMSPG, NAD83)
Elevation: 6535.49

MILAN FARM
MILAN, NM
Well Log: MW-07

Daniel B. Stephens & Associates, Inc.
9–14–12
JN ES12.0090



Feet below ground surface

Graphic Log	PID/FID Reading PPM	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol or Rock Unit	Comments and Lithology
			100–105		No recovery.
			105–110	SW	Gravelly sand, strong brown (7.5YR 5/6), well graded, round to subround, non–plastic, moist.
			110–115	SW	Sand, pink (5YR 8/4), fine–grained, moderately well graded, loose, round to subround, sparse subround to subangular gravels up to 1/2".
			115–120	SW	Same as above.
			120–125	SW	Same as above with gray clay nodules.
			125–129	SW	Same as above.

Geologist: J. Fisher
Driller: Precision
Date completed: 7–05–12

Drilling method: ODEX
Diameter: 7" O.D.

Northing: 1526857.39 (NMSPG, NAD83)
Easting: 2704190.62 (NMSPG, NAD83)
Elevation: 6535.49

MILAN FARM
MILAN, NM
Well Log: MW-07

Daniel B. Stephens & Associates, Inc.
9–14–12
JN ES12.0090

Appendix E

Survey

DePauli Engineering
& Surveying, LLC.
Civil Engineers and Land Surveyors

Phone: 505-863-5440 • Fax: 505-863-1919 • des@cnetco.com
102 W. Hill Avenue • Gallup, NM 87301
PO Box 876 • Gallup, NM 87305

August 30, 2012

John R. Bunch
Daniel B. Stephens & Associates, Inc.
6020 Academy NE, Suite 100
Albuquerque, New Mexico 87109

RE: Monitoring Wells Location – Milan Farms, Milan, New Mexico

Dear John,

The horizontal and vertical position for monitoring wells MW-2, MW-4, and MW-7 lid is measured to the center of the lid closed for each of the above ground vault. The concrete pad elevation for the above said monitoring wells is referenced at the base of the vault. The horizontal and vertical position for monitoring well MW-6 is measured to the center of the bolted lid. The concrete pad elevation for above said monitoring well is an average elevation of the four corners of the concrete pad. The horizontal and vertical position of the PVC casing is to the existing or established black dot on the north lip (respectively) of the PVC casing. The horizontal position is NAD 83 datum and the vertical position is NAVD 88. The instrumentation used to conduct the survey was a pair of Leica 1200 GPS RTK survey instruments (base & rover).

If you have any questions, please feel free to contact me.

Marc DePauli, NMPS 13606 Date 8/30/2012

MILAN FARM MONITIOR WELL LOCATIONS

MONITORING WELL	NM WEST STATE PLANE GRID, NAD83		NAVD 88 ELEVATION
	NORTHING	EASTING	
MW-2	**1,532,814.46**	**2,703,133.49**	**6,548.16**
MW-2 PVC	**1,532,814.56**	**2,703,133.55**	**6,547.68**
MW-2 CONCRETE PAD			**6,544.65**
MW-4	1,530,804.76	2,703,324.45	6,544.34
MW-4 PVC	1,530,804.84	2,703,324.47	6,543.88
MW-4 CONCRETE PAD			6,540.83
MW-6	**1,528,484.57**	**2,702,543.90**	**6,536.30**
MW-6 PVC	**1,528,484.63**	**2,702,543.95**	**6,535.92**
MW-6 CONCRETE PAD			**6,536.33**
MW-7	1,526,857.34	2,704,190.67	6,535.92
MW-7 PVC	1,526,857.39	2,704,190.62	6,535.49
MW-7 CONCRETE PAD			6,533.20

Survey performed on August 24, 2012

Marc DePauli, NMPS13606

8/30/2012
Date

Appendix F

Photographs

1. Monitor well MW-2

2. Monitor well MW-4

3. Monitor well MW-6

4. Monitor well MW-7

5. Insulation, possible asbestos-containing building material (ACBM)

6. Insulation, possible ACBM

7. Insulation, possible ACBM

8. Ceiling tile, possible ACBM

9. Schramm drill rig with Odex drilling

10. Well completion

Appendix G

Statement of Qualifications

John Bunch, P.G.

Project Scientist

EDUCATION

B.A., Geology, 1993
University of New Mexico

B.A., Psychology, 1988
University of New Mexico

REGISTRATIONS

Professional Geologist No. 3051, Wyoming

New Mexico Construction Industries Division GS-29- Soil Remediation No. 943006

AFFILIATIONS

National Groundwater Association

New Mexico Geological Society

Mr. Bunch specializes in providing geologic, hydrogeologic, and regulatory compliance services to clients in New Mexico, Arizona and Texas. He manages a variety of operations, including monitoring and maintaining project budgets and schedules; oversight of staff scientists, engineers, field technicians, and subcontractors; communication of project objectives with clients and/or regulatory agencies; design and implementation of field programs and corrective action plans; preparation of reports and proposals; and development of new business and clientele. Mr. Bunch is proficient at assembling geologic and hydrogeologic data into concise, comprehensive and interpretive reports which clearly address all objectives of the project. The resulting recommendations aid both the client and the regulatory agency. He prepares a variety of technical reports for the following type of projects: hydrogeologic investigations, Phase 1 and II environmental investigations, preliminary and detailed site investigations, corrective action/remedial design plans and reclamation proposals.

Site Assessments and Remediation of Petroleum Contamination/Hazardous Materials, New Mexico Oil Conservation Division, Multiple Sites, New Mexico: Performed numerous Phase I and Phase II investigations and remedial action at various abandoned oil and gas processing and production sites throughout the state of New Mexico. The assessments and remediation have included the following: investigation and cleanup of large waste pits and oil sludge lagoons, hydrogeologic investigations including soil borings and monitoring well installations, cleanup and disposal of large aboveground storage tanks, asbestos investigation and abatement, contaminated soil delineation and removal, NORM surveys, water quality analysis, mobile mapping and GIS, construction management, and report preparation. These sites include the RUNCO Acidizing and Fracturing Plant in Jal, the JAMAR Oil Processing Plant in Monument, the Ammonite Site, and the Meteor Sites.

Site Assessments and Remediation of Petroleum Contamination/Hazardous Materials, New Mexico Department of Transportation (NMDOT), Multiple Sites, New Mexico: Performed numerous Phase I and Phase II investigations and remedial action at various NMDOT patrol yards throughout the state of New Mexico. The assessments and remediation have included the following: hydrogeologic investigations including soil borings and monitoring well installations, contaminated soil delineation and removal, remedial action system analysis and feasibility studies, conceptual remedial action design and pilot studies, water quality analysis, mobile mapping and GIS, construction management, and report preparation.

Brownfield Redevelopment - Former Phil Carrell Chevrolet Dealership, Carlsbad, New Mexico: This project started with a Phase I and II ESA involving a large commercial property made up of four separately leased tracts of land.

The Phase II revealed extensive soil and groundwater contamination from leaking underground storage tanks. It was revealed during this investigation that hydrocarbons impacting the soil and groundwater were present beneath the former UST location and the building. Approximately 1,000 cubic yards of soil was removed. Mr. Bunch submitted a remedial action plan to the New Mexico Environment Department (NMED)/Ground Water Quality Bureau (GWQB) and NMED Petroleum Storage Tank Bureau (PSTB) in order to address the soil and groundwater contamination at the site. The plan was approved and a dual-phase pump-and-treat/soil vapor extraction (SVE) system was installed and operated at the site. The client entered the VRP program to expedite cleanup and redevelopment at the site.

Site Assessments and Remediation of Petroleum Contamination, Allsups Petroleum Inc., Multiple Sites, New Mexico: Over the course of Mr. Bunch's professional relationship with Allsups Petroleum, he managed more than 40 gasoline-contaminated sites that were being regulated by the NMED PSTB. Work performed included preliminary and hydrogeologic investigations, monitor well installations, free-product removal, soil excavation, monitored natural attenuation, groundwater modeling, GPS mobile mapping, engineered remediation systems, field analysis, PSTB documentation, report preparation, permit preparation, and coordination with the client and PSTB to ensure cost-effective cleanup and site closure.

Phase II investigation, Bernalillo County Public Works, Carlito Springs, Tijeras, New Mexico: Completed Phase II environmental site assessment for a 198-acre site located near Tijeras, Bernalillo County, New Mexico. Mr. Bunch implemented a Sampling and Analysis Plan (Field Sampling Plan/Quality Assurance Project Plan) which was approved by the Environmental Protection Agency (EPA) Region 6. The scope of services included the following: inspection of the subject property, advancement of soil borings to determine the extent of volatile and semivolatile organics, lead, polychlorinated biphenyls (PCBs), asbestos, and petroleum hydrocarbons, completion of a groundwater monitoring well to assess groundwater impact at the subject property.

Phase I ESAs, Sandia Pueblo, Albuquerque, New Mexico: Mr. Bunch completed multiple Phase I ESAs, in conformance with ASTM Standard E1527-00, with asbestos and lead-based paint investigations for properties being redeveloped by the Sandia Pueblo. The environmental assessments were conducted in accordance with the standards set by the ASTM for the conduct of Phase I Environmental Assessments, ASTM E-1527-00. Many of the surveys took place on archeologically and culturally sensitive tracts of land.

Douglas W. Reaber, P.G.

Principal/Senior Geologist

EDUCATION

B.A., Earth Science, 1982, University of California, Berkeley

M.S., Geology, 1986, San Diego State University

REGISTRATIONS

Professional Geologist, California, No. 5033

Professional Geoscientist, Texas, No. 2372

REPRESENTATIVE PUBLICATIONS AND PRESENTATIONS

Cullen, S.J., J. Kelsey, N. Blandford, D. Reaber, 2007. Principal Workshop Developer and Instructor, Vadose Zone Hydrology: Principles and Practices, two day workshop co-sponsored by Wyoming Department of Environmental Quality, Sheridan, Wyoming, October 25-26, 2007.

Cullen, S.J., R. Sahu, D. Reaber, N. Blandford, and M .Jones. 2006. Hydrogeology and Perchlorate Impacts Near the Las Vegas Wash, Henderson, Nevada. Presented at the 2006 East Valley Water District Water Quality/Regulatory Conference in Ontario, California. October 11-13.

Mr. Reaber has more than 25 years of experience in the environmental industry, serving federal, state, and commercial clients. He has served as project manager and technical lead at RCRA landfills, as well as more than 20 Superfund sites throughout EPA Regions 6, and 9. Mr. Reaber has provided managerial and technical support in environmental litigations, including cost allocation, tort litigation and cost recovery matters. Mr. Reaber also serves as DBS&A's corporate Quality Assurance Manager, and has extensive training in quality assurance and expedited site characterization (TRIAD) techniques.

Program Manager, EPA Remedial Action Contract (RAC II) for Region 6: Mr. Reaber serves as DBS&A's Program Manager for all DBS&A work being performed for the EPA under the RAC II contract. In this capacity he coordinates with all project managers, as well as teaming members, in preparing and executing scopes of work for remedial investigations (RIs), feasibility studies (FSs), remedial designs (RDs), and remedial actions (RAs) for federally funded Superfund sites. To date, technical scopes of services have been performed at 16 Superfund sites throughout Regions 6 and 9.

Technical Lead and Quality Assurance Manager, TCEQ Assessment, Investigation and Removal Services (AIRS) Contract for the State of Texas: Currently serving as the technical lead for all task orders being performed on the AIRS contract. Responsibilities include development of scope of services for Superfund and Brownfields projects throughout Texas. Performs senior technical review on all planning documents and final reports. Works closely with TCEQ program managers in developing training materials regarding expedited site characterization.

Senior Geologist/ Technical Lead, Remedial Investigation West County Road 112 Groundwater Plume Superfund Site, Midland, Texas: Serving as technical lead during the development of the Conceptual Site Model (CSM) and performance of the RI at the West County Road 112 Superfund Site. Works with the EPA in evaluating multiple sources that have resulted in the contamination of a multiple aquifer system with hexavalent chromium. Compiled data set includes almost 250 private wells and more than 50 monitoring wells used in assessing multiple coalescing solvent and heavy metal plumes.

Project Manager, Dona Park Removal Action, Corpus Christi, Texas. Served as project manager during the characterization of a more than 200 residential properties that had been impacted with heavy metals from a former foundry. Worked with the TCEQ in developing a TRIAD bases sampling strategy incorporating a field XRF for real time site characterization. Prepared final report including proof of concept that validated tools use in decision making.

REPRESENTATIVE PUBLICATIONS AND PRESENTATIONS (cont.)

Hsu, K.C., D. Jordan, T.N. Blandford, and D.W. Reaber. 1998. Evaluation of local-scale Contaminant Migration within a Heterogeneous Alluvial Basin. Presented at the National Ground Water Association meeting in Las Vegas, Nevada. December 13-16.

Londergan, J., D.W. Reaber, and C. Crowe. 1995. Environmental Drilling and Groundwater Monitoring: A Field Course. Three day short course presented in Albuquerque, NM.

Londergan, J., D.W. Reaber, D.B. Kaminski, and C. Crowe. 1994. Environmental Drilling and Groundwater Monitoring: A Field Course. Three day short course presented in Austin, Texas.

Duval, T.A., C.P. Ardito, and D.W. Reaber. 1993. Characterizing a DNAPL Source in the Unsaturated Zone via Real-time Analysis of Soil Vapor. Fourth National Technology Information Exchange Workshop, Department of Energy, Knoxville, Tennessee.

Reaber, D.W. and T.L. Stein. 1990. Design and Installation of a Detection Monitoring Network at a Class I Landfill in an Arid Environment. Fourth National Outdoor Action Conference on Aquifer Restoration, Ground Water Monitoring and Geophysical Methods, Las Vegas, Nevada.

Project Manager, Remedial Design, Remedial Investigation -Remedial Action State Road 114 Groundwater Plume Superfund Site, Levelland, Texas: Served as PM at a State Lead Superfund Site during the RI. Field services included soil and soil vapor sampling and the installation of 36 wells in three different water bearing units. Work included technical oversight of field staff and negotiation of scope with representatives of the EPA and state of Texas. Later served as the DBS&A PM during the performance of the RD and RA. The project included the installation of 21 groundwater extraction wells and 62 dual-completion SVE wells.

Technical Lead, RI/FS, Iron King Mine/ Humboldt Smelter Superfund Site, Humboldt Arizona. Prepared conceptual site model and RI SAP for the characterization of an abandoned mine and smelter. Project included the delineation of groundwater contamination as well as tailing deposits at the mine and slag deposits at the smelter.

Project Manager, Hydrogeological Support Services for the City of Las Cruces, New Mexico: Served as PM and regulatory specialist for the City of Las Cruces during the performance of the RI/FS at the Griggs-Walnut Street Plume in Las Cruces, New Mexico. Currently serving as DBS&A QA Manager and Regulatory Liaison between the City and the EPA during the RD and RA being performed by DBS&A.

Project Manager, Cyprus Amax Minerals Company, Pecos, New Mexico: Served as project manager during negotiation and implementation of Compliance Monitoring Plans for the El Molino and Pecos Operable Units of the Cyprus Amax Minerals Company Mine near Pecos.

Technical Lead, Garland Creosote Company Superfund Site, Longview, Texas: Served as technical lead during preparation of scoping documents including sampling and analysis plan and quality assurance project plan for the investigation of an abandoned wood treating facility. Managed a field staff of 10 performing work under CLP protocols. Served as primary author of the RI report submitted to the EPA. Currently providing hydrogeologic support during as part of RA.

Technical Lead, East 67th Street Superfund Site, Odessa, Texas. Developed TRIAD-based site characterization strategy for the RI that included qualitative tools for source delineation as well as the installation of 25 monitoring wells and 6 vapor profiling wells to delineate the contaminant plumes in both the saturated and unsaturated zone.

Project Manager for the Tucson International Airport Superfund Site, Tucson, Arizona: Responsible for negotiating scope of work for the RI and FS with regulatory agencies. RI included evaluation of solvents in dissolved and DNAPL phases, PCBs, and heavy metals in the vadose zone and groundwater. Field investigation performed over the course of three years included the installation of approximately 40 groundwater monitor wells, passive and active soil gas sampling, vadose zone characterization and groundwater modeling. Oversaw sampling associated with PCB removal action and provided comments on final removal action report.