Mr. Ashley Allen  
Kansas Department of Health and Environment  
Curtis State Office Building  
1000 SW Jackson Street, Suite 410  
Topeka, Kansas 66612-1367


Dear Mr. Allen:

On behalf of the Sunflower Redevelopment, LLC (SRL), Tetra Tech has prepared this letter report to provide the results of groundwater sampling conducted through December 2009 at Solid Waste Management Unit (SWMU) 56, at the former Sunflower Army Ammunition Plant (SFAAP), located near De Soto, Kansas. SWMU 56 is known as the “Well South of Facility 211” and is located in the northeastern portion of the former Sunflower Army Ammunition Plant (SFAAP) south of the former administration area (See Figure 1).

Site History

Land application of treated wastewater from the nitroguanidine (NQ) process area [Area of Concern 17(AOC 17) and SWMU 47] was performed across SFAAP for several years. A 1994 letter and 1993 Land Application map from the Hercules Aerospace Company, Ordnance Group (Hercules) documents that wastewater was applied to Land Application Sites #37 and #38 in 1993 that included the area south of Facility 211 where SWMU 56 is located (see Attachment A).

A groundwater monitoring well, 96-20 (003MW003), was installed in shallow bedrock just south of Facility 211 in September 1996 as part of a SFAAP-wide investigation. Weathered limestone bedrock was encountered at 4.5 ft below ground surface (bgs) and the well was completed in predominantly weathered limestone at a total depth of 20.5 ft bgs. A groundwater sample was collected from the borehole 96-6D/well 96-20 in September 1996 soon after well was installed. The well installation and sampling were documented in the Burns & McDonald February 2000 final report titled Geology, Hydrology, and Groundwater Quality, Sunflower Army Ammunition Plant, DeSoto, Kansas. The groundwater sample results showed a concentration of nitrate/nitrite (as N) of 56,000 micrograms per liter (µg/L) that was substantially higher than the Federal Safe Drinking Water Act Maximum Concentration Level (MCL) of 10,000 µg/L for nitrate that is used by KDHE for the protection of groundwater.

Following the 1997 declaration that the SFAAP was excess property, the Army conducted an Environmental Baseline Survey (EBS) to determine the environmental condition of the property. The EBS Report dated August 1998 was prepared by Aguirre Engineers, Inc, Englewood, Colorado. During the EBS assessment, environmental parcel 1-25(7)HR(P) was identified as an area near well 96-20 where “treated industrial wastewaters with high nitrates” were applied to
the land (Aguirre, 1998). The EBS identified Parcel 25 in Segment 1 of the SFAAP as a 300-foot radius downgradient of well 96-20 that was considered to be the potential zone of groundwater impact from the land application of wastewater. A portion of Figure 5-1 from the EBS report showing the location of Parcel 1-25(7)HR(P) along with a description of the site is provided in Attachment A.

A letter from KDHE (Dan Nicoski, KDHE to Ralph Burns, SFAAP) in November 2000 included a map showing the location of the SWMUs and AOCs that had been identified at that time. This map, also provided in Attachment A, indicates that Parcel 1-25 as identified in the EBS had been adopted as SWMU 56. It is noted that the SWMU boundary on this figure is consistent with the semi-circular area shown on EBS Figure 5-1 that was selected as the estimated area of groundwater impacts based on the 1996 results from well 96-20.

A modification was made to the SFAAP RCRA Permit (RCRA ID# KS321382087) in 2000, in part, to accommodate “identification of additional SWMUs and identification of Areas of Concern”. In the permit modification, SWMU 56 was identified as EBS Parcel 1-25(7)HR(P), “Well South of Facility 211”.

Consent Order Number 05-E-0111 for SFAAP includes a consistent description of SWMU 56 as the “well located south of Facility 211”. Exhibit 2 to the Consent Order provides a map showing the boundary areas of the SWMUs and AOCs. The resolution of the boundary area on Exhibit 2 for SWMU 56 is of poor quality, but the SWMU 56 boundary appears to be an “L” shaped rectilinear area that partially overlaps the fenced area around Facility 211 (see Attachment A). The boundary area indicated in Exhibit 2 of the Consent Order appears to include the area of well 96-20.

Documentation addressing why the shape of the SWMU 56 boundary changed from the semi-circular area in the earliest cited references discussed above (i.e., EBS, KDHE letter) to what is shown on the Consent Order Exhibit 2 has not been located. Also, as shown on Figure 2 of this report, based on the computer aided drawing (CAD) layer file that SRL received from the Army for plotting the SWMU/AOC boundaries at SFAAP, the SWMU 56 boundary does not strictly coincide with the boundary shown on Consent Order Exhibit 2 figure; to coincide (and to ensure that well 96-20 lies within the SWMU boundary) it is necessary to reposition the boundary area to the south. Based on the information presented, the SWMU 56 boundary has been revised as indicated on Figure 2 to lie within several non-clean tracks immediately south of Facility 211.

Site Environmental Setting

SWMU 56 lies in the northeast portion of SFAAP in a gently sloping upland area with a site elevation of 880 ft. The topography rises to the west to an elevation of 900 ft. Immediately east of SWMU 56 the slope of the topography steepens and forms an upland surface drainage feature that leads approximately 2,500 ft to Kill Creek that lies at an elevation of about 800 ft. A small wet-weather pond lies about 150 ft upslope from well 003MW003, but the upland drainage swale running through the site is typically not flowing. Soils of the area lie within the Morrill loam map unit shown in the Soil Survey for Johnson County. The Morrill soils are typically fine-
loamy soils that formed in glaciofluvial deposits; they are well drained with a moderately low saturated hydraulic conductivity.

SFAAP is located in the Kansas River Valley in the Osage Cuestas section of the Central Lowlands Physiographic Province. The Osage Cuestas section generally represents the southern limit of glaciation and is underlain by alternating beds of Pennsylvanian age limestone and shale. Although much of the Osage section was not affected by glaciation, soil data from SFAAP indicate that a lobe of the Kansan stage glacial advance extended south of the Kansas River and included the SFAAP area. Upon its retreat, thick deposits of till and glacial outwash material consisting predominantly of clay-, silt-, sand-, and gravel-sized particles were unconformably deposited upon the Pennsylvanian bedrock surface across much of SFAAP. Alluvial and terrace deposits consisting of clay, silt, sand, and gravel are present along major stream valleys in the area of SFAAP. Portions of SFAAP also contain a near surface residuum of weathered-in-place shale and limestone bedrock.

The geology of SWMU 56 was investigated during the drilling of a single bore hole 96-6D for well 96-20 in 1996; the well was subsequently named 003MW003. The boring log shows the presence of dark grayish to reddish, low plasticity clay residuum (i.e., overburden) overlying bedrock that was encountered at a depth of 4.5 ft bgs. The overburden appears to consist of glaciofluvial silt and clay consistent with local soils and SFAAP geology. Core drilling was utilized to a total depth of 20.5 ft bgs. The core showed a sequence of approximately 11 ft of the Spring Hill limestone, 1.5 ft of Hickory Creek shale, 2.5 ft of Merriam limestone, and 1.5 ft of Bonner Springs shale that were penetrated. The limestones showed the presence of weathered intervals, shale partings, fractures, and contained fossils. The shales also showed some weathering, laminations to massive bedding, and some fossils. The boring log notes that groundwater was not encountered during the drilling.

Based on the geology of the site, the well was screened in the Plattsburg Limestone Formation (i.e., the Spring Hill, Hickory Creek, and Merriam members) and bottomed in the top of the Bonner Springs Shale Formation. These units are not known to represent significant aquifer zones in Johnson County. The well construction details are provided in Table 1 along with the depth to water and groundwater elevation calculations for the sampling events performed at well 003MW003 from 2007 through 2009. These data show that the well typically contained a water column of 9 to 14 ft. The depth to water measurements taken prior to sample collection was used to calculate the groundwater elevations that are presented in a hydrograph for well 003MW003 in Figure 3. These data show the seasonally higher water levels during the spring and summer (May and July) compared to the fall and winter (November and December) that is typical for the shallow groundwater zones at SFAAP. For this location, the groundwater elevation lies below the top of bedrock suggesting that the bedrock contains an unconfined aquifer zone.

**Previous Investigations**

The first groundwater sample collected from well 003MW003 in late September 1996 showed a concentration of nitrate/nitrite in groundwater of 56,500 ng/L, greater than the TMCL of 10,000 µg/L for nitrate that is based on the Federal maximum contaminant level (MCL). The
result for sulfate was reported to be 99,200 µg/L, which is below the Consent Order performance standard of 250,000 µg/L; nitroglycerin (NG) and nitroguanidine (NQ) were reported as not detected; and lead was detected at 15.5 µg/L, slightly above the current TMCL of 15 µg/L. These data appear in the SFAAP analytical database and in a summary table (Table 3-3) of the above-referenced report (BMcD, 2000), but nitrate/nitrite was shown as ‘not analyzed’ in the laboratory data table in Appendix 10 of that report.

Well 003MW003 was subsequently sampled as part of the Relative Risk Site Evaluation (RRSE) conducted by the Army in March 2003 to evaluate newly identified SWMUs and AOCs. The RRSE Work Plan (March 2003) and RRSE Report (November 2003) were prepared for the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) by Battelle, Aberdeen, Maryland. The 2003 sample results showed nitrate/nitrite as not detected in groundwater. Soil samples collected from the site during the RRSE showed a maximum concentration for nitrate of 6.18 mg/kg - slightly higher than the site background value of 4.5 mg/kg, but below the current TMCL of 200 mg/kg in surface soil and 40 mg/kg in subsurface soil in vegetated areas that are based on protecting groundwater from nitrogen contamination. While the soil results did not identify the location of a potential source area for nitrogen in the groundwater, they did demonstrate little potential for future leaching from soil to groundwater at SWMU 56.

LTM Groundwater Sampling

As a result of the 1996 and 2003 groundwater sampling events, KDHE responded to the RRSE Report that additional monitoring of the concentration of nitrogen in groundwater would be required to evaluate the trend in nitrogen concentration and determine the need for additional actions at SWMU 56 (KDHE March 2004, letter from R. Weber to K. Herstowski, EPA). Subsequently, the modified RCRA permit and the Army’s Installation Action Plan (IAP) prepared for Fiscal Year 2006 identified the need to conduct long-term monitoring of groundwater for nitrates/nitrite at SWMU 56.

SRL initiated sampling of well 003MW003 at SWMU 56 in November 2007; sampling was also performed in May and November of 2008 and in July and December of 2009. A total of five LTM sampling events have been conducted by SRL. The results of the November 2007 sampling event were provided to KDHE in a letter report dated May 2008 (and are included in this report). Documentation of the 2008 and 2009 sampling events are provided in this report. Analysis and presentation of all sample data from SWMU 56 are also presented in this report.

LTM Monitoring Summary

The location of well 003MW003 at SWMU 56 is shown on Figure 2. Prior to purging for each sampling event, the static water level in the well was measured and was determined to lie sufficiently above the bottom of the well to allow purging and sampling (9 to 14 ft of water in the well). The dedicated bladder pump and a low-flow purge/sample methodology were employed for both purging and sample collection in November 2007. The well was purged until the stabilization criteria were achieved. Based on KDHE comments, the purging procedure was revised in 2008 to include the goal of three to five well volumes during well purging. All 2008
and 2009 sampling events attempted to achieve the required purge volume, but the well went dry before three casing volumes could be recovered, even under low-flow pumping conditions (see Attachment B). Water temperature, pH, specific conductivity, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) of the groundwater were monitored and recorded during the purging/sampling process. These data are provided on the field sampling forms provided in Attachment B. The well was sampled after purging was completed. Beginning with the November 2008 sample, the depth to water in the well was measured following purging but before sample collection.

The groundwater samples were collected and analyzed for nitrate/nitrite, total Kjeldahl nitrogen (TKN), and ammonia using EPA Methods for each sampling event with the exception that the specific ions of nitrate and nitrite were analyzed in lieu of nitrate/nitrite during the November 2008 event. Nitrate and nitrate/nitrite were analyzed during the December 2008 event. The May 2008 samples were submitted to Analytical Management Laboratory (AML), located in Olathe, Kansas. The November 2008 and both 2009 samples were submitted to Environmental Science Corporation, located in Mt. Juliet, Tennessee.

**LTM Monitoring Results**

The analytical results for the four groundwater samples collected in 2008 and 2009 from well 003MW003 showed the nitrate/nitrite concentration to be below the TMCL of 10,000 µg/L for nitrate and below the TMCL of 1,000 µg/L for nitrite for all samples. These results were consistent with the low concentrations observed in the 2007 LTM sample. The data are summarized in Table 2 and the laboratory reports for all 2008 and 2009 samples are provided in Attachment C.

Ion-specific analyses for nitrate were conducted for the November 2008 and December 2009 samples; nitrate (730 µg/L and 310 µg/L, respectively) was an order of magnitude below its TMCL of 10,000 µg/L. Ion-specific analysis for nitrite was conducted for the November 2008 sample and nitrite was not detected at 100 µg/L.

Ammonia was analyzed for all four 2008 and 2009 samples with positive detected concentrations of 130 µg/L and 49J µg/L in November 2008 and July 2009, respectively; the other two sample results were not detected (consistent with the November 2007 result and the low detected concentrations).

TKN was analyzed for all four 2008 and 2009 samples with positive detected concentrations ranging between 77J µg/L and 380 µg/L and one not detected at 29U µg/L.

The historical sampling results for nitrate/nitrite and nitrate are shown on Figure 4 along with the most recent results. A plot showing the trend in nitrate/nitrite concentration in groundwater from the initial sample collection in 1996 through December 2009 is provided as Figure 5.
Conclusions and Recommendations

SRL has conducted semi-annual groundwater sampling at the SWMU 56 well for a period of two and a half years (2007 through 2009). A total of six sample events have been performed since the initial well sample was collected in 1996. All six samples collected between 2003 and 2009 have consistently been below the TMCLs for nitrogen in groundwater. Based on these data, SRL concludes that groundwater at SWMU 56 is no longer impacted. Furthermore, the past soil data and groundwater monitoring demonstrate that there is no current or future potential risk from soil or groundwater at SWMU 56. Therefore, no additional LTM sampling is recommended. As a consequence of these findings, SRL intends to request under separate cover a determination of “No Further Remedial Action Planned” from KDHE for SWMU 56.

If you should have any questions regarding this report, please contact me at (865) 220-4724, or Mike Albert, Project Manager at (931) 583-3000, ex. 6816.

Sincerely,

Allan T. Jenkins, P.G.

Cc with attachments

Bob Jurgens, KDHE
Mostafa Kamal, KDHE
Tom Winn, KDHE
Ken Herstowski, EPA Region 7, Kansas City, KS
Tony Spaar, U.S. Army Former SFAAP
Cindy Kemper, Johnson County
Kaleo Lui, IRG
Scott Young, Polsinelli, Shalton, Flanigan, & Suelthaus
Table 1
Well Summary Data
SWMU 56

<table>
<thead>
<tr>
<th>Location</th>
<th>Alias</th>
<th>Date Completed</th>
<th>Aquifer Unit</th>
<th>Northing (NAD83, ft)</th>
<th>Easting (NAD83, ft)</th>
<th>TOC (ft msl)</th>
<th>Ground Elevation (ft msl)</th>
<th>Bedrock Elevation (ft bgs)</th>
<th>Depth to Bedrock (ft bgs)</th>
<th>Well Depth (ft bgs)</th>
<th>Top of Screen (ft bgs)</th>
<th>Bottom of Screen (ft bgs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>003MW003</td>
<td>96-20</td>
<td>09/10/96</td>
<td>2</td>
<td>Bdr</td>
<td>231841</td>
<td>2167495</td>
<td>877.63</td>
<td>875.4</td>
<td>4.5</td>
<td>20.5</td>
<td>10.5</td>
<td>20.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Alias</th>
<th>Date Completed</th>
<th>Aquifer Unit</th>
<th>Northing (NAD83, ft)</th>
<th>Easting (NAD83, ft)</th>
<th>Depth to Water ft btoc</th>
<th>Groundwater Elevation ft msl</th>
</tr>
</thead>
<tbody>
<tr>
<td>003MW003</td>
<td>96-20</td>
<td>09/10/96</td>
<td>2</td>
<td>Bdr</td>
<td>13.62</td>
<td>8.69</td>
<td>864.01</td>
</tr>
</tbody>
</table>

ft - feet; TOC - top of well casing; bgs - below ground surface; btoc - below TOC
### Table 2:
Concentrations of Chemicals In Groundwater - SWMU 56

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TMCL for Groundwater (ug/L)</th>
<th>TMCL Source</th>
<th>Background for Groundwater (ug/L)</th>
<th>SWMU 056</th>
<th>SWMU 056</th>
<th>SWMU 056</th>
<th>SWMU 056</th>
<th>SWMU 056</th>
<th>SWMU 056</th>
<th>SWMU 056</th>
<th>SWMU 056</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Caecaistrr</td>
<td>N/a</td>
<td>N/a</td>
<td></td>
<td>n/a</td>
<td>n/a</td>
<td>30U</td>
<td>1000U</td>
<td>130U</td>
<td>49U</td>
<td>100U</td>
<td></td>
</tr>
<tr>
<td>Nitrogen, total organic</td>
<td>TBD</td>
<td>n/a</td>
<td></td>
<td>n/a</td>
<td>n/a</td>
<td>500U</td>
<td>1090U</td>
<td>911U</td>
<td>686U</td>
<td>100U</td>
<td></td>
</tr>
<tr>
<td>Ammonia (as N)</td>
<td>TBD</td>
<td>n/a</td>
<td></td>
<td>n/a</td>
<td>n/a</td>
<td>500U</td>
<td>1090U</td>
<td>911U</td>
<td>686U</td>
<td>100U</td>
<td></td>
</tr>
<tr>
<td>Nitrate / nitrite</td>
<td>10000 Field Work Variance 007</td>
<td>11000</td>
<td></td>
<td>56500</td>
<td>n/a</td>
<td>500U</td>
<td>1090U</td>
<td>911U</td>
<td>686U</td>
<td>100U</td>
<td></td>
</tr>
<tr>
<td>Nitrite</td>
<td>1000 Field Work Variance 007</td>
<td>11000</td>
<td></td>
<td>56500</td>
<td>n/a</td>
<td>500U</td>
<td>1090U</td>
<td>911U</td>
<td>686U</td>
<td>100U</td>
<td></td>
</tr>
<tr>
<td>Nitrogen, total kjeldahl (TKN)</td>
<td>TBD</td>
<td>n/a</td>
<td></td>
<td>n/a</td>
<td>n/a</td>
<td>159U</td>
<td>259U</td>
<td>280U</td>
<td>250U</td>
<td>75U</td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>15</td>
<td>KDHE RSK Tier II</td>
<td></td>
<td>15.5</td>
<td>5</td>
<td>15.5</td>
<td>5</td>
<td>15.5</td>
<td>5</td>
<td>15.5</td>
<td>5</td>
</tr>
</tbody>
</table>

**Notes:**
- All units are micrograms per liter (ug/L)
- Bold and shade indicates result greater than TMCL and greater than background.
- Bold indicates result greater than background.
- TMCL - Target Media Cleanup Level
- REG - regular sample, FD - field duplicate sample
- Blank indicates not analyzed
- KDHE - Values from the KDHE RSK manual updated June 2007
- TBD - to be determined, n/a - not applicable
- "*" - validation qualifier indicating positive detection at numerical value shown.
- U - not detected at detection limit
- J - analyte detected but quantitation estimated.
Figure 1
SWMU 56 Site Map
for the Sunflower Army Ammunition Plant

LONG TERM MONITORING REPORT
FOR SWMU 56
FORMER SFAAP
DE SOTO, KANSAS

TETRA TECH
OAK RIDGE, TENNESSEE

Note:
- All information presented on the figure was included in the GIS provided by the Army and adjusted as necessary based on historic aerial photographs, as-built drawings and historical documents.
Notes:
- All information presented on the figure was included in the GIS provided by the Army and adjusted as necessary based on historic aerial photographs, as-built drawings and historical documents.
- Bedrock Potentiometric Surface Contours based on April 2004, DIUZ water level survey. (Shaw, 2004)
- 2005 aerial photograph.
- 2 ft topographic contours interpolated from 3 m contours.
Figure 3
Hydrograph for Well 003MW003
SWMU 56

Top of Bedrock
Notes:
- All information presented on the figure was included in the GIS provided by the Army and adjusted as necessary based on historic aerial photographs, as-built drawings and historical documents.
- Bedrock Potentiometric Surface Contours based on April 2004, OUS water level survey. (Shaw, 2004)
- 2005 aerial photograph.
- 2 ft topographic contours interpolated from 3 m contours.
- Nitrate, TMCL = 10,000 ug/L
- Nitrate/nitrite, BACKGROUND = 11,000 ug/L

03MW003
9/30/1996 Nitrate / nitrite: 56500 D ug/L
3/26/2003 Nitrate / nitrite: 500 U ug/L; Nitrate: 500 U ug/L
11/7/2007 Nitrate / nitrite: 1090 ug/L
5/28/2008 Nitrate / nitrite: 911 ug/L
11/20/2008 Nitrate: 730 ug/L
7/28/2009 Nitrate / nitrite: 680 ug/L
12/29/2009 Nitrate / nitrite: 100 U ug/L; Nitrate: 310 ug/L
Figure 5
LTM Monitoring Trends, Nitrogen in Groundwater
SWMU 56

Note: * Numeric detection limit concentration used for plotting non-detect
ATTACHMENT A

SUPPORTING INFORMATION
May 26, 1994

Commander
Sunflower Army Ammunition Plant
ATTN: SMCSU-CO
P.O. Box 640
DeSoto, Kansas 66018-0640

Subject: NPDES Permit No. F-KS12-PO01; 1993 Land Application Report

Dear Sir:

Enclosed is the 1993 Land Application Report as required by paragraph D.7.e. of SFAAP's NPDES Permit No. F-KS12-PO01 (KS-002831). This report is a new annual requirement due May 28 to KDHE for land application activities from the previous year.

Please send a copy of your transmittal to the Hercules Environmental Programs Department and advise if further information is required.

Very truly yours,

John W. Schrader
General Manager

JWS/JCB/GAJackson:gh

Encl. a/s

cc: SMCSU-EV
### TABLE 5-1a
SEGMENT 1 ENVIRONMENTAL PARCEL DESCRIPTIONS
SUNFLOWER ARMY AMMUNITION PLANT

<table>
<thead>
<tr>
<th>Environmental Parcel No. and Label</th>
<th>Location (X,Y Coordinates)</th>
<th>Approximate Size (Acres)</th>
<th>CERFA Category</th>
<th>Basis</th>
<th>EBS Source Of Evidence</th>
<th>Remediation/Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25(7)HR(P)</td>
<td>11,14</td>
<td>30.54</td>
<td>7</td>
<td>This parcel is associated with a well south of Facility 211. This well was sampled in 1997 and found to have nitrate/nitrite concentrations in excess of the MCLs. It is located in an area where land application of treated industrial wastewater with high nitrates took place. The parcel delineation is based on the assumption of easterly groundwater flow toward Kill Creek. A 300-yard radius of affected groundwater is assumed, except where groundwater flow is intercepted by tributaries to Kill Creek or is overlain by other parcels.</td>
<td>SU2100.15</td>
<td>None To Date.</td>
</tr>
<tr>
<td>1-26(7)HR(P)</td>
<td>7,12</td>
<td>28.97</td>
<td>7</td>
<td>This parcel is associated with a well due west of the Old Administration Area. This well was sampled in 1997 and found to have nitrate/nitrite concentrations in excess of the MCLs. It is not located in an area where land application of treated industrial wastewater with high nitrates took place. The parcel delineation is based on the assumption of easterly groundwater flow toward Kill Creek. A 300-yard radius of affected groundwater is assumed but has not been verified by sampling.</td>
<td>SU2100.15</td>
<td>None To Date.</td>
</tr>
<tr>
<td>1-27(7)HR(P)</td>
<td>9,8</td>
<td>0.16</td>
<td>7</td>
<td>This parcel is associated with Facility 507-2, the Chemical Preparation House. Interviews revealed that chemicals were commonly dumped outside the building. The parcel includes the facility and the immediately surrounding area.</td>
<td>Interviews</td>
<td>None To Date.</td>
</tr>
</tbody>
</table>
Mr. Ralph C. Burns  
Sunflower Army Ammunition Plant  
P.O. Box 640  
DeSoto, KS 66018

RE: GPS Data

Dear Mr. Burns;

On October 27 and November 7, 2000, a Garmin GPS unit was utilized to collect north and west coordinates at various locations from several of the SWMUs at SFAAP. The approximate location of each data point is indicated on the attached figures for the respective SWMUs. A data point location description and the respective north/west coordinates are listed in the order in which they were recorded. In addition, per your request, is a copy of a combined SWMU and AOC map for SFAAP.

If you should you have any questions, please call me at (785) 291-3249.

Respectfully,

Dan Nicoski  
Environmental Geologist  
Bureau of Environmental Remediation

enclosure

DRN/ms

cc:  Randy Carlson → Leo Henning → SFAAP File 3.1  
    Ken Herstowski, EPA  
    Judy Meier, USACE  
    Keith Walker, IT Corporation
Outline of SWMU 56

Portion of Consent Order Exhibit #2
ATTACHMENT B

GROUNDWATER SAMPLING FIELD FORMS
## WATER SAMPLE COLLECTION FIELD SHEET

**CONTRACTOR NAME:** TETRA TECH  
**PROJECT NAME:** SFAP  
**CONTRACT/PROJECT NUMBER:** SFAP - SWMU 5c - GW - GM - GUC - S60  
**SAMPLE NUMBER:** SFAP - SWMU 5c - GW - GM - GUC - S60  
**PERSONNEL:** KEVIN MAXWELL, KEITH BROWN

**LOCATION DESCRIPTION:** SURFACE WATER  
**SAMPLE MEDIA (circle one):** GROUNDWATER  
**SAMPLE SPLIT (circle one):** YES  
**WATER LEVEL:** 22.5G = TOTAL DEPTH  
**WATER LEVEL MEASUREMENT FROM TOP OF RISER:** 8.67 ft  
**COLLECTION: YR:** 2008  
**TIME:** 11:50 AM  
**METHOD:** MICRO PURGE

**SAMPLE CONTAINER:**  
| CONTAINER | 1 L AMBER GLASS | 500 ml POLY |  
**PRESERVATIVE:**  
|  | H2SO4 | NONE |  
**ANALYSIS REQUESTED:**  
|  |  |  | TKN, AMMONIA, NITRATES |

**FIELD ANALYSIS:**  
|  | H2SO4 U22 H20 QUALITY METER, MIN, MAX, PII |  
**DATE:** 5/28/08  
**TIME:** 11:50 AM  
**APPEARANCE:** CLEAR  
**ODOR:** NONE  
**COMMENTS:**

| TEMPERATURE, °C | 13.2 |  
| SAMPLE pH | 7.23 |  
| SALINITY, parts per thousand | N/A |  
| CONDUCTIVITY, µmhos/cm | 75.2 |  
| pH BUFFER BEFORE | 4.0 |  
| pH BUFFER AFTER | 4.0 |

Figure 2-7
# Well Purge / Sampling Form

## Well Data

<table>
<thead>
<tr>
<th>Project: SFAAP</th>
<th>Well Number: SWMU 56</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 5/28/08</td>
<td>L = Total Casing and Screen Length (ft): 22.55</td>
</tr>
<tr>
<td>Sampler(s):</td>
<td>W = Depth to Water (ft BTOC): 8.67</td>
</tr>
<tr>
<td>PID Reading (ppm):</td>
<td>D = Casing Diameter (in): 2''</td>
</tr>
<tr>
<td>Purge / Sample Method:</td>
<td>V = Volume of Water in Casing:</td>
</tr>
<tr>
<td>Field Fe II Results(Fe²⁺):</td>
<td></td>
</tr>
<tr>
<td>Field Fe Results (total):</td>
<td>Total Volume Purged: 1 Gal</td>
</tr>
</tbody>
</table>

## Purge Data

<table>
<thead>
<tr>
<th>Time</th>
<th>Pump Flow Rate (ml/min)</th>
<th>Temperature (°C)</th>
<th>pH</th>
<th>Specific Conductivity (µS/cm)</th>
<th>Dissolved Oxygen (mg/L)</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>Depth to GW (ft BTOC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:45</td>
<td>320</td>
<td>±0.5°C</td>
<td>±0.1</td>
<td>±3%</td>
<td>±0.2</td>
<td>±10</td>
<td>≤50 NTU</td>
<td>&lt;0.01 Ft Increase</td>
</tr>
<tr>
<td>10:47</td>
<td>125</td>
<td>11.8</td>
<td>7.04</td>
<td>76.7</td>
<td>6.5</td>
<td>179</td>
<td>75</td>
<td>9.89</td>
</tr>
<tr>
<td>10:54</td>
<td>125</td>
<td>12.0</td>
<td>7.07</td>
<td>76.7</td>
<td>6.6</td>
<td>179</td>
<td>83</td>
<td>10.35</td>
</tr>
<tr>
<td>10:59</td>
<td>125</td>
<td>12.5</td>
<td>7.07</td>
<td>74.6</td>
<td>7.0</td>
<td>179</td>
<td>61</td>
<td>10.35</td>
</tr>
<tr>
<td>11:05</td>
<td>125</td>
<td>12.6</td>
<td>7.1</td>
<td>75.7</td>
<td>6.8</td>
<td>176</td>
<td>69</td>
<td>10.51</td>
</tr>
<tr>
<td>11:07</td>
<td>125</td>
<td>12.9</td>
<td>7.13</td>
<td>77.2</td>
<td>6.8</td>
<td>174</td>
<td>59</td>
<td>10.57</td>
</tr>
<tr>
<td>11:09</td>
<td>125</td>
<td>13.0</td>
<td>7.18</td>
<td>74.6</td>
<td>6.8</td>
<td>171</td>
<td>55</td>
<td>10.58</td>
</tr>
<tr>
<td>11:17</td>
<td>125</td>
<td>12.8</td>
<td>7.21</td>
<td>75.2</td>
<td>6.8</td>
<td>167</td>
<td>53</td>
<td>10.58</td>
</tr>
</tbody>
</table>

## Water Quality Parameters

<table>
<thead>
<tr>
<th>Time</th>
<th>Temperature (°C)</th>
<th>pH</th>
<th>Specific Conductivity (µS/cm)</th>
<th>Dissolved Oxygen (mg/L)</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>Depth to GW (ft BTOC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:45</td>
<td>±0.5°C</td>
<td>±0.1</td>
<td>±3%</td>
<td>±0.2</td>
<td>±10</td>
<td>≤50 NTU</td>
<td>&lt;0.01 Ft Increase</td>
</tr>
<tr>
<td>11:09</td>
<td>±0.1</td>
<td>±0.1</td>
<td>±3%</td>
<td>±0.2</td>
<td>±10</td>
<td>≤50 NTU</td>
<td>&lt;0.01 Ft Increase</td>
</tr>
</tbody>
</table>

## Observations:

Sample ID: SFAAP-SWBU 56-GW1-GW-GW10056
Sample Date: 5/28/08
Sample Time: 11:20
Date: 5/28/08  Monitoring Wells

2758 Calibration PID Multi PH 2000

<table>
<thead>
<tr>
<th>PID</th>
<th>cal</th>
<th>ppm</th>
</tr>
</thead>
</table>
| 1.00 ppm std  | 100 ppm cal  | 100 ppm ppm | Calibrated this hour at 1:32
| PH   | 5.99 |
| Cond | 0.449 mS |
| Turb | 0.0 NTU |
| DO   | 9.2 3/ |
| Temp | 21.5C |
| ORP  | 508 mV |

09:58 - Worm at section 7B

monitoring well at center
Sample from 60 ft. at bottom water level = 8.69 feet below TLC
PID at well head = 100 ppm
Local depth = 22-25 ft. TBC

10:25 - Open pass for well

11:09 - Finish pumping well - add parameters to log for well pump.
Sampling ID in

11:20 - Collected samples
**WELL DEVELOPMENT AND WATER STABILIZATION**

**DATA SHEET**

**CONTRACTOR NAME:** Tetra Tech

**SITE NAME:** Sunflower

**WELL NUMBER:** 003 MW 003

**CONTRACT PROJECT NUMBER:** Sunlum 3

**DATE:** 13 November 2003

**TOTAL DEPTH OF WELL:** 32.55"

**DEPTH TO WATER:** (MEASURED FROM TOP OF CASING) 12.69"

**1 WELL VOLUME:** 2 INCH WELL: 0.17 X 9.86 = 1.676 (GALLONS)

**4 INCH WELL:** 0.86 X **= ____ (GALLONS)

**NUMBER OF CASING VOLUMES TO BE REMOVED:** 3

\[
\frac{3 \times 1.676}{1 \text{ CASING VOLUME}} = \frac{5.028}{\text{(TOTAL NUMBER OF GALLONS TO BE REMOVED)}}
\]

**METHOD OF WELL DEVELOPMENT:**

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>VOLUME REMOVED</th>
<th>CONDUCTIVITY (µS/CM)</th>
<th>TEMP. (°C)</th>
<th>TURBIDITY (NTU)</th>
<th>D.O. (Mg/L)</th>
<th>ORP (MV)</th>
<th>pH</th>
<th>Depth to GW (Ft BTOC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/26/13 13:56</td>
<td>1.7gal</td>
<td>±3%</td>
<td>±0.5°</td>
<td>≤50</td>
<td>±0.2</td>
<td>±10</td>
<td>±0.1</td>
<td></td>
<td>16.85&quot;</td>
</tr>
<tr>
<td>11/26/13 13:56</td>
<td>3.4gal</td>
<td>78.5</td>
<td>13.7</td>
<td>48</td>
<td>5.4</td>
<td>84.0</td>
<td>7.22</td>
<td>19.3&quot;</td>
<td></td>
</tr>
<tr>
<td>11/20/13 14:02</td>
<td>Pumped dry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ADDITIONAL COMMENTS:** Started pumping well at 13.22 hrs.

**Figure 2-6**
**WATER SAMPLE COLLECTION FIELD SHEET**

| CONTRACTOR NAME: | Tetra Tech |
| PROJECT NAME: | Surfflower |
| CONTRACT/PROJECT NUMBER: | 003 M W 003 - GW 0084 |

**SAMPLE NUMBER:** 003 M W 003 - GW 0084

**PERSONNEL:**
- Bryan Erickson
- Glenda Thompson
- Tetra Tech
- Donna DeCario

**LOCATION DESCRIPTION:** 003 M W 003

**SAMPLE MEDIA (circle one):**
- GROUNDWATER
- SURFACE WATER
- OTHER

**SAMPLE SPLIT (circle one):**
- YES
- NO

**WATER LEVEL:** 18.56 (Topwell 22.55) 18.56 - 3.99 = 18.57

**WATER LEVEL MEASUREMENT FROM TOP OF RISER:** 20.41

**SAMPLE CONTAINER:**
- 1L Amber
- 1L Plastic
- 125mL Plastic

**PRESEVATIVE:**
- H2SO4
- H2SO4
- 4°C

**ANALYSIS REQUESTED:**
- ammonia
- TKN
- nitrate

**FIELD ANALYSIS:**
- Carry out water quality PID Min Kae 2000

<table>
<thead>
<tr>
<th>TEMPERATURE, °C</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SAMPLE pH:</th>
<th>TIME:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SALINITY, parts per thousand:</th>
<th>APPEARANCE:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONDUCTIVITY, microsiemens:</th>
<th>ODOR:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>pH BUFFER BEFORE:</th>
<th>pH BUFFER AFTER:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**COMMENTS:**
- Well pumped down to 18.09 - Well achieved on 11/14/03, still getting below 15.
- Acid to sample 11/20/03 - KDHE Donna Decario.
- Selecting nitrate sample - 125mL bottle.

Figure 2-7
11/18/08

1257 Tetra Tech arrives at WMD to sample 003W003 P&D water.

1310 KDHE Dominique and Mike from Kometer arrive on-site.

1330 Tetra Tech begins pumping well. Well volume calculated at 1.67 gpd.

1400 Well pumped dry at total volume of 4 gal. Well returned within 24 hours to collect samples.

1403 KDHE off-site.

1415 Tetra Tech off-site.

1430 arrive on site - trying to locate a couple of groundwater wells but unable to do so.

1455 Amite fresh @ Offset unload truck - Markwell Energy - leave for the day. After unloading truck made copies of yield sheet and tied off.

11/19/08

Clean, light wind out of the South.

01:03kg Bryan, Ericson and Amanda Chung arrive @ 003W003 to measure well but was pumped today. Yesterday - 01:33 batching the top of pump - well doesn't have no charge. Will check later today. Moving on for now to next location.

[Signature]
**WELL DEVELOPMENT / WATER STABILIZATION**

**DATA SHEET**

(Circle One)

**SITE NAME:** SFAAP  
**WELL NUMBER:** 003 MW003  
**CONTRACTOR NAME:** Tekla Tech  
**PERSONNEL:** Bryan Erickson & Curtis Sipes  
**CONTRACT / PROJECT NUMBER:** SWMU 56  
**DATE:** 7/27/09

**TOTAL DEPTH OF WELL (ft below top of casing):** 22.55'  
**DEPTH TO WATER (ft below top of casing):** 10.20'

**ONE WELL VOLUME**

<table>
<thead>
<tr>
<th>WELL DIAMETER</th>
<th>VOLUME REMOVED</th>
<th>WATER COLUMN, FT</th>
<th>WATER COLUMN, FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 INCH WELL</td>
<td>0.041 x ____</td>
<td>= _____ (GALLONS)</td>
<td>(Water Column, Ft.)</td>
</tr>
<tr>
<td>2 INCH WELL</td>
<td>0.170 x 12.35</td>
<td>= 2.10 (GALLONS)</td>
<td>= 7.950 ml</td>
</tr>
<tr>
<td>4 INCH WELL</td>
<td>0.660 x ____</td>
<td>= _____ (GALLONS)</td>
<td>(Water Column, Ft.)</td>
</tr>
</tbody>
</table>

**NUMBER OF CASING VOLUMES TO BE REMOVED:** 3 or till dry

\[
\frac{3 \times 2.10}{1 \text{ Casing Vol.}} = 6.3 \text{ (TOTAL NUMBER OF GALLONS TO BE REMOVED)}
\]

**METHOD OF WELL DEVELOPMENT or PURGING:** Dedicated bladder pump

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>VOLUME REMOVED (gals or ml)</th>
<th>SPECIFIC CONDUCTIVITY µS/cm</th>
<th>TEMP. °C</th>
<th>TURBIDITY NTUs</th>
<th>DO mg/L</th>
<th>ORP mV</th>
<th>pH</th>
<th>COMMENTS (e.g., DTW, flow rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/27/09</td>
<td>1446</td>
<td>2000 ml</td>
<td>78.5</td>
<td>21.3</td>
<td>12</td>
<td>10.0</td>
<td>71</td>
<td>6.62</td>
<td>DTW 10.50'</td>
</tr>
<tr>
<td>7/27/09</td>
<td>1517</td>
<td>4000 ml</td>
<td>76.1</td>
<td>20.0</td>
<td>9</td>
<td>6.7</td>
<td>137</td>
<td>7.09</td>
<td>DTW 12.50'</td>
</tr>
<tr>
<td>7/27/09</td>
<td>1536</td>
<td>9,000 ml</td>
<td>99.9</td>
<td>18.0</td>
<td>6</td>
<td>9.5</td>
<td>139</td>
<td>7.08</td>
<td>DTW 14.70'</td>
</tr>
<tr>
<td>7/27/09</td>
<td>1557</td>
<td>12,000 ml</td>
<td>75.8</td>
<td>16.7</td>
<td>12</td>
<td>7.9</td>
<td>151</td>
<td>7.13</td>
<td>DTW 16.90'</td>
</tr>
<tr>
<td>7/27/09</td>
<td>1614</td>
<td>16,000 ml</td>
<td>75.9</td>
<td>17.1</td>
<td>23</td>
<td>5.6</td>
<td>164</td>
<td>7.17</td>
<td>DTW 19.00'</td>
</tr>
<tr>
<td>7/27/09</td>
<td>1639</td>
<td>20,000 ml</td>
<td>78.0</td>
<td>16.6</td>
<td>57</td>
<td>3.6</td>
<td>160</td>
<td>7.20</td>
<td>DTW 21.60'</td>
</tr>
</tbody>
</table>

| 7/27/09 | 1650 | Well Pumped Dry              |                             |         |                |         |         |     |                                 |

**ADDITIONAL COMMENTS:** Final well at a rate of approx. 200 ml/min

**SIGNATURE:** [Signature]  
**DATE:** 7/27/09  
**Figure 2-6**

Revision: June 2009
WATER SAMPLE COLLECTION FIELD SHEET

SITE NAME: SFAAP
WELL NUMBER: 083HWW003
CONTRACTOR NAME: Tetra Tech
PERSONNEL: Bryan Erickson + Curtis Sykes
CONTRACT / PROJECT NUMBER: SWMU 5G / GW / LTM
DATE: 7/28/07
SAMPLE NUMBER: 003HWW003 - GW - GM008.5

LOCATION DESCRIPTION: SWMU 5G / 003HWW003
SAMPLE MEDIA (circle one) GROUNDWATER SURFACE WATER OTHER
SAMPLE SPLIT (circle one) YES NO
SPLIT SAMPLE NUMBER: 
DEPTH TO WATER* (prior to sample collection): 18.70'
DATE: 7/28/07 TIME: 1555
DEPTH OF PUMP INTAKE/TUBING INTAKE*: 22'
(* - ft below top of casing)
DEDICATED PUMP PRESENT (circle one) YES NO
TYPE OF TUBING: 
TYPE OF PUMP PRESENT: Dedicated PE + 1/4" PE tubing
SAMPLE COLLECTION METHOD: Low Flow method, dedicated Bladder pump
COLLECTION DATE: 7/28/07 COLLECTION TIME: 1555

SAMPLE CONTAINER
250 mL PE
250 mL PE
1,000 mL PE
2500 mL PE

PRESEVATIVE
N/a
H2SO4
H2SO4

ANALYSIS REQUESTED
Nitrate
NH4/Nitrite
Ammonia
TKN

FIELD ANALYSIS:

TEMPERATURE: 18.0 °C ORP: 160 mV
SAMPLE pH: 7.19 DO: 3.6 mg/L
CONDUCTIVITY: 78.0 μmhos/cm APPEARANCE: Clear
SALINITY: 14 (parts per thousand) ODOR: None
pH BUFFER BEFORE: 4.01 pH BUFFER AFTER: 4.02

COMMENTS: Collected water level measurements with Heron Digger T
Serial # 17875. Dedicated Bladder pump was used

SIGNATURE: DATE: 7/28/09

Figure 2-7
Revision: June 2009
1345 Bryan Eskin, Curtis Sykes, Okteta, Tech writer at Monitoring
Well #003HWOOD is SWNW 5G.
BE + CS began setting up well
sampling equipment. Mike Law +
KDEE also onsite, there is
a dedicated bladder pump at
this well. BE contacted Glenn
Thompson & asked whether we should
pull the dedicated pump or use
it. She contacted Allen Jenkins
who said to use the dedicated
bladder pump for flushing & sampling.
CS returned to field office to
get air compressor. BE told
Mike Law that we will be
using the dedicated bladder pump
for flushing & sampling.

1415 After setting up sampling equipment
we began pumping well. Pumping at a
rate of approx. 200 ml/min

1536 We have pumped one full
well volume from 003HWOOD.
Location: SFAAP - SWMU 5C  Date: 7/27/09
Project / Client: IRG/SRL
92°F, cloudy, 0-5 mph West wind

1617  ORP = 164 mV
pH = 7.17

1640  We continued to purge well 3050002 after recording water quality parameters.

1650  Before we were able to collect our third well volume, the well went dry. We will return to 3050002 tomorrow to collect sample.
Team departs site.

BE 7/27/09

Project / Client: IRG/SRL
68°F, cloudy, 0-5 mph West wind

1530  Bryan Erickson & Curtis Spikes arrive at monitoring well 003Mw003 in SWMU 5C. We are waiting for lift rain to pass.
Rain has stopped. BE & CS began setting up equipment to sample well # 003Mw003.
Beg. sampling well # 003Mw003.

<table>
<thead>
<tr>
<th>No. of containers</th>
<th>Preserv</th>
<th>Auburn</th>
<th>Nitrates</th>
<th>Nitrite/Nitrate</th>
<th>Ammonia</th>
<th>TKN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,250 mL PE</td>
<td>HoNO3</td>
<td></td>
<td>HNO3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,250 mL PE</td>
<td>H2SO4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,000 mL PE</td>
<td>H2SO4</td>
<td>Nitrite</td>
<td>Nitrite</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,250 mL PE</td>
<td></td>
<td>Nitrate</td>
<td>Nitrate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,250 mL PE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1630  Mike Law (KDHE) arrives.
003Mw003 was purged dry on 7/27/09 at 1650. We sampled using the dedicated bladder pump at a rate of approx 200 mL/minute. The pump departs water from approx 6' off the bottom (22') b/fw.

1645  Team departs site after collecting sample.
**WELL DEVELOPMENT / WATER STABILIZATION**

**DATA SHEET**

(Circle One)

**SITE NAME:**

**WELL NUMBER:**

**CONTRACTOR NAME:**

**PERSONNEL:**

**CONTRACT / PROJECT NUMBER:**

**DATE:**

**TOTAL DEPTH OF WELL (ft below top of casing):**

**DEPTH TO WATER: (ft below top of casing):**

**ONE WELL VOLUME**

1 INCH WELL: 

\[
0.041 \times \text{ (Water Column, Ft.)} = \text{ GALLONS}
\]

2 INCH WELL: 

\[
0.170 \times \text{ (Water Column, Ft.)} = 1.9 \text{ GALLONS}
\]

4 INCH WELL: 

\[
0.660 \times \text{ (Water Column, Ft.)} = \text{ GALLONS}
\]

**NUMBER OF CASING VOLUMES TO BE REMOVED:**

\[
\frac{3}{\text{ (Volumes)}} \times 1.9 = 5.8 \text{ (TOTAL NUMBER OF GALLONS TO BE REMOVED)}
\]

**METHOD OF WELL DEVELOPMENT or PURGING:**

DEPLETED BLASDELL PUMP

PUMP INTAKE AT 22.201 BELOW TOC

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>VOLUME REMOVED (gals or ft³)</th>
<th>SPECIFIC CONDUCTIVITY (\mu S/cm)</th>
<th>TEMP. °C</th>
<th>TURBIDITY NTUs</th>
<th>DO mg/L</th>
<th>ORP mV</th>
<th>pH</th>
<th>COMMENTS (e.g., DTW, flow rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/14</td>
<td>1027</td>
<td>3008</td>
<td>79.7 (\mu S/cm)</td>
<td>11.84</td>
<td>5</td>
<td>7.5</td>
<td>163</td>
<td>6.90</td>
<td>WL 13.91</td>
</tr>
<tr>
<td></td>
<td>1038</td>
<td>2200</td>
<td>81.0</td>
<td>11.76</td>
<td>12</td>
<td>7.5</td>
<td>163</td>
<td>7.01</td>
<td>WL 15.62</td>
</tr>
<tr>
<td></td>
<td>1057</td>
<td>10800</td>
<td>80.7</td>
<td>11.09</td>
<td>24</td>
<td>7.4</td>
<td>163</td>
<td>7.04</td>
<td>WL 17.60</td>
</tr>
<tr>
<td></td>
<td>1127</td>
<td>14,400</td>
<td>79.9</td>
<td>8.33</td>
<td>23</td>
<td>5.7</td>
<td>158</td>
<td>7.14</td>
<td>WL 19.40</td>
</tr>
<tr>
<td></td>
<td>1152</td>
<td>18,000</td>
<td>82.3</td>
<td>9.51</td>
<td>23</td>
<td>3.4</td>
<td>144</td>
<td>7.16</td>
<td>WL 21.80</td>
</tr>
<tr>
<td></td>
<td>1300</td>
<td>24000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DRY-WL BELOW PUMPS.</td>
</tr>
<tr>
<td></td>
<td>1355</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WL 21.05</td>
</tr>
</tbody>
</table>

**ADDITIONAL COMMENTS:**

START PURGING 10 W.C. WEATHER 12°F, 5 MPH WIND, 12 RPM FAN RATE 3. MY MIN. RECESS TO DATE AT 13:55 TO COLLECT SAMPLES.

**SIGNATURE:**

**DATE:**

**Figure 2-6**

Revision: June 2009
WATER SAMPLE COLLECTION FIELD SHEET

SITE NAME: SFAMP
WELL NUMBER: 003 MW003
CONTRACTOR NAME: TETRA TECH
PERSONNEL: K. DOEBEN/T. DRUMMOND

CONTRACT / PROJECT NUMBER: DATE: 12/29/09
SAMPLE NUMBER: 003MW 003-6W-6M 112
LOCATION DESCRIPTION: SWN 3

SAMPLE MEDIA (circle one) GROUNDWATER SURFACE WATER OTHER
SAMPLE SPLIT (circle one) YES NO SPLIT SAMPLE NUMBER: 

STATIC DEPTH TO WATER/WATER DEPTH: DATE: 12/29/09 TIME: 1355
DEPTH OF PUMP INTAKE/TUBING INTAKE*: Z 20 (*) - ft below top of casing
DEDICATED PUMP PRESENT (circle one) YES NO

SAMPLE COLLECTION METHOD: DEDICATED BALLOON PUMP
TYPE OF PUMP/BAILER: WELL WIZARD
TYPE OF TUBING: 

pH: 7.16 DO: 3.4 mg/L
TEMPERATURE: 9.31 °C ORP: 144 mV
CONDUCTIVITY: 82.3 μS/cm TURBIDITY: 73 NTUs
APPEARANCE: CLEAR ODOR: NONE

<table>
<thead>
<tr>
<th>ANALYSIS REQUESTED</th>
<th>SAMPLE CONTAINER</th>
<th>PRESERVATION</th>
<th>DATE/TIME FILLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>NITRATE</td>
<td>250 mL POLY</td>
<td>COOL</td>
<td>12/29/09 1355</td>
</tr>
<tr>
<td>NITRAT/NITRATE</td>
<td>250 mL POLY</td>
<td>H2SO4</td>
<td></td>
</tr>
<tr>
<td>TOTAL REDUV ALK. NIT.</td>
<td>LL POLY</td>
<td>H2SO4</td>
<td>1500</td>
</tr>
<tr>
<td>AMMONIA</td>
<td>LL POLY</td>
<td>H2SO4</td>
<td>1500</td>
</tr>
</tbody>
</table>

FIELD ANALYSIS:

COMMENTS: WELL PRODUCES VERY SLOWLY: DUG DRY AND THEN ALLOWED TO DECANT 1 ½ HOURS. WATER LEVEL AFTER SAMPLE COLLECTION BELOW TOP OF DEDICATED PUMP. TOTAL DEPTH OF WELL FROM TCL - 22.55

SIGNATURE: [Signature] DATE: 12/29/09

Revision: November 2009
TETRA TECH ENVIRONMENTAL TEAM OF
NATIONAL LABS ARRIVE @ SWMU 5G.
TO CHECK & MEASURE THE GROUNDWATER
LEVEL INDICATOR (HERON DIFFERENTIAL SERIAL
#1989). THE TEAM OBTAIN THE H2O
LEVEL INDICATOR FOLLOWING EACH USE.
THIS PROCEDURE WILL BE USED FOR ALL
UTM WELLS TODAY. MEASUREMENT
RESULTS WERE AS FOLLOWS:

<table>
<thead>
<tr>
<th>TIME</th>
<th>WELL #</th>
<th>PID (PPM)</th>
<th>DTW (FT.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1327</td>
<td>003MW003</td>
<td>0.0</td>
<td>3.28</td>
</tr>
<tr>
<td>1335</td>
<td>TEAM DEPARTS SWMU 5G.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1342</td>
<td>TEAM ARRIVES @ SWMU 1 &amp; WELL 001MWO03.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RESULTS WERE AS FOLLOWS:

<table>
<thead>
<tr>
<th>TIME</th>
<th>WELL #</th>
<th>PID (PPM)</th>
<th>DTW (FT.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1515</td>
<td>011MW004</td>
<td>0.0</td>
<td>8.04</td>
</tr>
<tr>
<td>1527</td>
<td>012MW004</td>
<td>0.0</td>
<td>11.54</td>
</tr>
<tr>
<td>1533</td>
<td>013MW004</td>
<td>0.0</td>
<td>3.85</td>
</tr>
<tr>
<td>1541</td>
<td>014MW002</td>
<td>0.0</td>
<td>14.71</td>
</tr>
<tr>
<td>1559</td>
<td>015MW001</td>
<td>0.0</td>
<td>4.02</td>
</tr>
<tr>
<td>1610</td>
<td>016MW005</td>
<td>0.0</td>
<td>7.09</td>
</tr>
<tr>
<td>1621</td>
<td>017MW001A</td>
<td>0.0</td>
<td>DRY</td>
</tr>
</tbody>
</table>

1625 TEAM DEPARTS SWMU 10/11.

CONTINUED
0920 T+ Team Doeden and Drumenda arrive at 3W003 in SWM03 to collect water for analysis of the following analytes:
- Nitrate: 250 poly
- Nitrate/Nitrite: 250 poly
- Ammonia: 1-1L poly
- TKN: 1-1L poly

Equipment:
- Tubing
- Horiba Water Quality Meter
- Dedicated Bladder Pump
- Water Level Meter
- Mini-Rae 2000 (PID)
- Graduated plastic containers

0930 PID = 0.0 ppm
0935 DTW = 11.24

Begin pumping
0945 Drumenda returns to OEC to collect more sampling buckets
0950 Drumenda returns to 3W003 in SWM03
1010 Team begins pumping well.
<table>
<thead>
<tr>
<th>Location</th>
<th>SFAAP, DeSoto, KS</th>
<th>Date</th>
<th>12-29-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project / Client</td>
<td>IRG/SRL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather:</td>
<td>Overcast ~ 15°F</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume</th>
<th>1027 mL</th>
<th>1121 mL</th>
<th>1152 mL</th>
<th>1208 mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temp</td>
<td>11.84°C</td>
<td>8.53°C</td>
<td>9.5°C</td>
<td></td>
</tr>
<tr>
<td>Cond.</td>
<td>79.7 mS/m</td>
<td>79.9 mS/m</td>
<td>82.3 mS/m</td>
<td></td>
</tr>
<tr>
<td>Turb.</td>
<td>5 NTUs</td>
<td>2.3 NTUs</td>
<td>7.3 NTUs</td>
<td></td>
</tr>
<tr>
<td>DO</td>
<td>7.5 mg/L</td>
<td>5.7 mg/L</td>
<td>3.4 mg/L</td>
<td></td>
</tr>
<tr>
<td>ORP</td>
<td>163 mV</td>
<td>144 mV</td>
<td>144 mV</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>6.98</td>
<td>7.10</td>
<td>7.10</td>
<td></td>
</tr>
<tr>
<td>DTW</td>
<td>13.91′</td>
<td>19.40′</td>
<td>21.80′</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume</th>
<th>1038 mL</th>
<th>1380 mL</th>
<th>1350 mL</th>
<th>1355 mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temp</td>
<td>11.76°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cond.</td>
<td>81.0 mS/m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb.</td>
<td>12 NTUs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO</td>
<td>7.5 mg/L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORP</td>
<td>163 mV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>7.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTW</td>
<td>15.62′</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume</th>
<th>1051 mL</th>
<th>1212 mL</th>
<th>1380 mL</th>
<th>1350 mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temp</td>
<td>11.08°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cond.</td>
<td>80.7 mS/m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb.</td>
<td>24 NTUs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO</td>
<td>14 mg/L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORP</td>
<td>144 mV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>7.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTW</td>
<td>17.60′</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- 1208: 21000 mL removed: Well Dry.
- 1212: Team returns to OFC.
- 1380: Team fills up Truck 47 with Gas.
- 1350: Team returns to 003MW003 to collect H2O sample.
- 1355: Team begins collection.
- 1550: Sampling, return to OFC.

*Signature:* [Signature]
WATER SAMPLE COLLECTION FIELD SHEET

CONTRACTOR NAME: Tetra Tech
PROJECT NAME: SFAP
CONTRACT/PROJECT NUMBER: SWMU 560
SAMPLE NUMBER: SFAP-SWML-6W-8W-5M0560
PERSONNEL: Kevin Maxwell, Keith Brown

LOCATION DESCRIPTION: SWMU 560 MW

SAMPLE MEDIA (circle one) GROUNDWATER
SURFACE WATER
OTHER

SAMPLE SPLIT (circle one) YES
NO

WATER LEVEL: 22.55 ft = TOTAL DEPTH

WATER LEVEL MEASUREMENT FROM TOP OF RISER: 3.67 ft 10.58 ft

COLLECTION: YR: 2008
MO: MAY
DAY: 18
TIME: 11:28 AM
METHOD: MICRO PURGE

SAMPLE CONTAINER
1L AMBER GLASS
500 ML POLY

PRESEVATIVE
H2SO4
NONE

ANALYSIS REQUESTED
TEN, AMMONIA
NITRATES

FIELD ANALYSIS
HORIBA U22 1420 QUALITY METER
MIN, MAX, PID

| TEMPERATURE, °C | 72.3 | DATE: 5/28/08 |
| SAMPLE pH:     | 7.23 | TIME: 11:28  |
| SALINITY, parts per thousand: | N/A | APPEARANCE: CLEAR |
| CONDUCTIVITY, µmhos/cm: | 75.2 | ODOR: NONE |
| pH BUFFER BEFORE: | 4.0 | pH BUFFER AFTER: 4.0 |

COMMENTS: ____________________________

Figure 2-7
# Well Purge / Sampling Form

**Well Data**

| Project: SFAAP | Well Number: | SwMU 50 | L = Total Casing and Screen Length (ft): | 22.55 |
| Date: 5/28/08 | W = Depth to Water (ft BTOC): | 8.67 |
| Sampler(s): mixed / Brown | D = Casing Diameter (in): | 2" |
| PID Reading (ppm): | V = Volume of Water in Casing: | |
| Purge / Sample Method: | Field Fe Results (total): | |
| Field Fe II Results(Fe²⁺): | Total Volume Purged: | ~ 1 gal |

**Purge Data**

<table>
<thead>
<tr>
<th>Time</th>
<th>Pump Flow Rate (ml/min)</th>
<th>Temperature (°C)</th>
<th>pH</th>
<th>Specific Conductivity (μS/cm)</th>
<th>Dissolved Oxygen (mg/L)</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>Depth to GW (ft BTOC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero Drawdown</td>
<td>±0.5°C</td>
<td>± 0.1</td>
<td>± 3%</td>
<td>± 0.2</td>
<td>± 10</td>
<td>≤ 50 NTU</td>
<td>&lt; 0.01 Ft Increase</td>
<td></td>
</tr>
<tr>
<td>10:47</td>
<td>125</td>
<td>9.1</td>
<td>7.04</td>
<td>76.7</td>
<td>6.5</td>
<td>179</td>
<td>95</td>
<td>9.9</td>
</tr>
<tr>
<td>10:54</td>
<td>125</td>
<td>12.0</td>
<td>7.07</td>
<td>76.7</td>
<td>6.6</td>
<td>179</td>
<td>83</td>
<td>10.55</td>
</tr>
<tr>
<td>10:59</td>
<td>125</td>
<td>12.5</td>
<td>7.07</td>
<td>74.6</td>
<td>7.0</td>
<td>179</td>
<td>61</td>
<td>10.35</td>
</tr>
<tr>
<td>11:03</td>
<td>125</td>
<td>12.9</td>
<td>7.13</td>
<td>77.2</td>
<td>6.8</td>
<td>174</td>
<td>59</td>
<td>10.51</td>
</tr>
<tr>
<td>11:05</td>
<td>125</td>
<td>13.0</td>
<td>7.13</td>
<td>74.6</td>
<td>6.8</td>
<td>171</td>
<td>55</td>
<td>10.55</td>
</tr>
<tr>
<td>11:07</td>
<td>125</td>
<td>12.8</td>
<td>7.21</td>
<td>75.2</td>
<td>6.8</td>
<td>167</td>
<td>59</td>
<td>10.58</td>
</tr>
<tr>
<td>11:09</td>
<td>125</td>
<td>13.2</td>
<td>7.23</td>
<td>75.2</td>
<td>6.7</td>
<td>168</td>
<td>59</td>
<td>10.58</td>
</tr>
</tbody>
</table>

**Water Quality Parameters**

<table>
<thead>
<tr>
<th>Time</th>
<th>Temperature (°C)</th>
<th>pH</th>
<th>Specific Conductivity (μS/cm)</th>
<th>Dissolved Oxygen (mg/L)</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>Depth to GW (ft BTOC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:47</td>
<td>9.1</td>
<td>7.04</td>
<td>76.7</td>
<td>6.5</td>
<td>179</td>
<td>95</td>
<td>9.9</td>
</tr>
<tr>
<td>10:54</td>
<td>12.0</td>
<td>7.07</td>
<td>76.7</td>
<td>6.6</td>
<td>179</td>
<td>83</td>
<td>10.55</td>
</tr>
<tr>
<td>10:59</td>
<td>12.5</td>
<td>7.07</td>
<td>74.6</td>
<td>7.0</td>
<td>179</td>
<td>61</td>
<td>10.35</td>
</tr>
<tr>
<td>11:03</td>
<td>12.9</td>
<td>7.13</td>
<td>77.2</td>
<td>6.8</td>
<td>174</td>
<td>59</td>
<td>10.51</td>
</tr>
<tr>
<td>11:05</td>
<td>13.0</td>
<td>7.13</td>
<td>74.6</td>
<td>6.8</td>
<td>171</td>
<td>55</td>
<td>10.55</td>
</tr>
<tr>
<td>11:07</td>
<td>12.8</td>
<td>7.21</td>
<td>75.2</td>
<td>6.8</td>
<td>167</td>
<td>59</td>
<td>10.58</td>
</tr>
<tr>
<td>11:09</td>
<td>13.2</td>
<td>7.23</td>
<td>75.2</td>
<td>6.7</td>
<td>168</td>
<td>59</td>
<td>10.58</td>
</tr>
</tbody>
</table>

**Observations:**

Sample ID: SFAAP-SwMU 56-GW1-GW-GM 005L
Sample Date: 5/28/08
Sample Time: 11:20
5/28/03 Monitoring Wells

07:58 Calibrated PID, Multi RAE 2000
PID zero - cal - 500 ppm
100 ppm std - 100 ppm; Waterline
Calibrated the Horiba
pH = 4.99
Cond = 0.449 mS
Turb = 0 NTU
DO = 9.23 mg/L
Temp = 21.5°C
ORP = 508 mV

09:58 - Arrive at County 56
Monitoring well to collect sample for the amount present.
Water level = 8.5 ft below TOC
PID at well head = 0.00 ppm
Total depth = 22.5 ft BTOP

10:35 - Began pumping well
11:09 - Finish pumping well - all parameters remain same; well pressure
11:20 - Collected sample
CONTRACT/PROJECT NUMBER: Sunmu 3
DATE: 003 MW 003

TOTAL DEPTH OF WELL: 22.55"
DEPTH TO WATER: (MEASURED FROM TOP OF CASING) 12.69"

1 WELL VOLUME: 2 INCH WELL: 0.17 X 9.86 = 1.676 (GALLONS)
4 INCH WELL: 0.86 X (WATER COLUMN, FT)

NUMBER OF CASING VOLUMES TO BE REMOVED: 3

METHOD OF WELL DEVELOPMENT:

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>VOLUME REMOVED</th>
<th>CONDUCTIVITY (µS/CM)</th>
<th>TEMP. (°C)</th>
<th>TURBIDITY (NTU)</th>
<th>D.O. (Mg/L)</th>
<th>ORP (MV)</th>
<th>pH</th>
<th>Depth to GW (FT BTOC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/15/08 13:30</td>
<td>1.7gal</td>
<td>±3%</td>
<td>±.05°</td>
<td>≤50</td>
<td>±0.2</td>
<td>±10</td>
<td>±0.1</td>
<td>16.85</td>
<td></td>
</tr>
<tr>
<td>11/15/08 13:54</td>
<td>3.4gal</td>
<td>78.5</td>
<td>13.7</td>
<td>48</td>
<td>5.4</td>
<td>84.0</td>
<td>7.22</td>
<td>19.3+</td>
<td></td>
</tr>
<tr>
<td>11/16/08 14:02</td>
<td>Pumped dry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADDITIONAL COMMENTS: Started pumping well @ 1322 hrs.

Figure 2-6
# WATER SAMPLE COLLECTION FIELD SHEET

**CONTRACTOR NAME:** Tetra Tech  
**PROJECT NAME:** Sunflower  
**CONTRACT/PROJECT NUMBER:** 5mmw 3  
**SAMPLE NUMBER:** 003 MW 003 - GWL 0084  
**PERSONNEL:** Bryan Erickson, Glenda Thompson, TetraTech, Donna Decarlo

**LOCATION DESCRIPTION:** 003 MtQcO"-2; AMDI MCntA mMM> TI
e/1/MCD>

**SAMPLE MEDIA (circle one):** Groundwater  
**SAMPLE SPLIT (circle one):** Yes  
**WATER LEVEL: 18.56 (Topwell 22.35) 18.56 - 3.99 = 0.0783**  
**WATER LEVEL MEASUREMENT FROM TOP OF RISER:** 20.41

**SAMPLE CONTAINER:**  
- 1 L amber  
- 1 L plastic  
- 1250 mL plastic  
- 1250 mL plastic  

**PRESERVATIVE:**  
- H2SO4  
- H2SO4  
- 4°C

**ANALYSIS REQUESTED:**  
- TKN  
- Nitrate

**FIELD ANALYSIS:**  
- Temperature: 42°C  
- Conductivity:  
- pH Buffer:  
- Appearance:  
- Odor:

**COMMENTS:** Well pumped down 1/18/09. Well rechecked on 1/15/08. Still getting blue/green. Acid to sample 4 L (2 L each). KDHE Donna DeCarlo supplementing Nitrate Sample 125 mL bottle.

**Figure 2-7**
12:57 Tetra Tech arrives in SUV to take samples (003-1003 P1) and return on-site.
13:00 KDHE Demure and Mike Arrive on-site.
13:20 Tetra Tech begins pumping well. Well volume calculated at 1.9 mgd.
14:00 Well pumped dry at total volume of 4 gal. Well return within 24 hours to collect samples.
14:07 KDHE off-site.
14:15 Tetra Tech off-site.
14:20 Arrive on-site. Trying to locate samples of groundwater wells but unable to do so.
14:35 Arrive back at Inter Tech unload truck. Returned heavy equipment for the day. After unloading charged multiple rapid yield tests. Did CEC.
WELL DEVELOPMENT / WATER STABILIZATION
DATA SHEET
(Circle One)

SITE NAME: SFAP
WELL NUMBER: 003
CONTRACTOR NAME: Tetra Tech
PERSONNEL: Bryan Erickson & Curtis Spack

CONTRACT / PROJECT NUMBER: SWU 54
DATE: 7/27/09

TOTAL DEPTH OF WELL (ft below top of casing): 22.55'
DEPTH TO WATER: (ft below top of casing) 10.20'

ONE WELL VOLUME
INCH WELL: 0.041 x (Water Column, Ft.) = (GALLONS)
2 INCH WELL: 0.170 x (Water Column, Ft.) = (7.39 ml)
4 INCH WELL: 0.660 x (Water Column, Ft.) = (GALLONS)

NUMBER OF CASING VOLUMES TO BE REMOVED: 3 or till dry
(# Volumes) (1 Casing Vol.) = 6.3 (TOTAL NUMBER OF GALLONS TO BE REMOVED)

METHOD OF WELL DEVELOPMENT or PURGING: Dedicated bladder pump

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>VOLUME REMOVED (gals or ml)</th>
<th>SPECIFIC CONDUCTIVITY μS/cm</th>
<th>TEMP. ºC</th>
<th>TURBIDITY NTUs</th>
<th>DO mg/L</th>
<th>ORP mV</th>
<th>pH</th>
<th>COMMENTS (e.g., DTW, flow rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/27/09</td>
<td>14:46</td>
<td>300.0</td>
<td>78.5</td>
<td>71.3</td>
<td>6</td>
<td>10.0</td>
<td>71.6</td>
<td>10.50' DTW</td>
<td></td>
</tr>
<tr>
<td>7/27/09</td>
<td>15:17</td>
<td>400.0</td>
<td>76.1</td>
<td>20.0</td>
<td>9</td>
<td>6.7</td>
<td>11.4</td>
<td>7.09' DTW</td>
<td></td>
</tr>
<tr>
<td>7/27/09</td>
<td>15:36</td>
<td>9.000</td>
<td>79.9</td>
<td>18.0</td>
<td>6</td>
<td>9.5</td>
<td>13.9</td>
<td>7.08' DTW</td>
<td></td>
</tr>
<tr>
<td>7/27/09</td>
<td>15:57</td>
<td>13.000</td>
<td>75.8</td>
<td>16.7</td>
<td>12</td>
<td>7.9</td>
<td>151.7</td>
<td>21.70' DTW</td>
<td></td>
</tr>
<tr>
<td>7/27/09</td>
<td>16:17</td>
<td>16.000</td>
<td>78.0</td>
<td>17.1</td>
<td>27</td>
<td>5.6</td>
<td>16.4</td>
<td>7.17' DTW</td>
<td></td>
</tr>
<tr>
<td>7/27/09</td>
<td>16:39</td>
<td>20.000</td>
<td>78.0</td>
<td>16.6</td>
<td>59</td>
<td>3.6</td>
<td>160.0</td>
<td>7.20' DTW</td>
<td></td>
</tr>
<tr>
<td>7/27/09</td>
<td>16:50</td>
<td>Well Pumped Day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADDITIONAL COMMENTS: Pumped well at a rate of approx. 200 ml/min

SIGNATURE: [Signature]
DATE: 7/27/09
Figure 2-6
Revision: June 2009
WATER SAMPLE COLLECTION FIELD SHEET

SITE NAME: SEAP
WELL NUMBER: 083MN003
CONTRACTOR NAME: Tetra Tech
PERSONNEL: Bryan Erickson + Curt Fykes
CONTRACT/PROJECT NUMBER: 5WM1 56/6W/LTM
DATE: 7/28/07
SAMPLE NUMBER: 083MN003 - GW - GM0085

LOCATION DESCRIPTION: 5WM1 56/083MN003

SAMPLE MEDIA (circle one) GROUNDWATER
SURFACE WATER
OTHER

SAMPLE SPLIT (circle one) YES NO

DEPTH TO WATER* (prior to sample collection): 18.70
DATE: 7/28/07
TIME: 15:55

DEPTH OF PUMP INTAKE/TUBING INTAKE*: 22
(*) - ft below top of casing

DEDICATED PUMP PRESENT (circle one) YES NO

TYPE OF TUBING: Dedicated PE + 1/2" PE tubing PE

SAMPLE COLLECTION METHOD: Low Flow method, dedicated bladder pump

COLLECTION DATE: 7/28/07
COLLECTION TIME: 15:55

SAMPLE CONTAINER
250 ml PE
500 ml PE
1000 ml PE
2500 ml PE

PRESERVATIVE
NONE
H2SO4
H2SO4

ANALYSIS REQUESTED
Nitrate
Nitrate/Nitrite
Amona
TKN

FIELD ANALYSIS:

TEMPERATURE: 18.0 °C
SAMPLE pH: 7.19
CONDUCTIVITY: 78.0 µmhos/cm
SALINITY: NA (parts per thousand)

DO: 3.6 mg/L
APPEARANCE: Clear

ORP: 160 mV
ODOR: none
pH BUFFER BEFORE: 4.01
pH BUFFER AFTER: 4.02

COMMENTS: Collected water level measurements with Heron Digger T
Serial # 17875. Dedicated bladder pump was used

SIGNATURE: [Signature]
DATE: 7/28/09

Figure 2-7
Revision: June 2009
1345
Bryan Erickson, Curtis Sykes & Jll
Tech. Tech. observed at monitoring
well #0034MWOOD in SWMV 56.
BE + CS began setting up well
Sampling equipment, Mike Law Jr.
KDE also onsite. There is
a dedicated bladder pump at
this well. BE contacted Linda
Thompson & asked whether we should
pull the dedicated pump or use
it. She contacted Allen Jenkins
who said to use the dedicated
bladder pump for pumping & sampling.

1400
CS returned to field office to
get air compressor. BE told
Mike Law that we will be
using the dedicated bladder pump
for pumping & sampling.

1445
After setting up sampling equipment
we began sampling well. Pumping at a
cate of appx 200 ml/min

1536
We have pumped one full
well volume from #0034MWOOD.
1617 ORP = 164 mV
PH = 7.17

1619 We continued to log well parameters after recording water quality parameters.

1650 Before we were able to collect our third well sample, the well went dry. We will return to 003HWW003 tomorrow to collect sample.

1700 Team departs site.

1520 Bryan Erickson & Curtis Sykes arrive at monitoring well 003HW003 in SWMU 56. We are waiting for light rain to pass up.

1530 Rain has stopped. BE & CS began setting up equipment to sample well 003HW003. CS sampling well 003HWW003.

<table>
<thead>
<tr>
<th>Material</th>
<th>Container</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1250 ml PE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1250 ml PE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1400 ml PE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1250 ml PE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nitrate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nitrate/Nitrite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ammonia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TKN</td>
</tr>
</tbody>
</table>

1625 Mike Law (KDHE) arrived
- 003HW003 was purged dry on 7/27/09 at 1650. We sampled using the dedicated bladder pump at a rate of approx. 200 ml/minute. The pump draws water from approx. 6" off the bottom (2") below.

1615 Team departs site after collecting sample.
WELL DEVELOPMENT / WATER STABILIZATION
DATA SHEET
(Circle One)

SITE NAME: Stack  
WELL NUMBER: 003MW003
CONTRACTOR NAME: Petra Tech  PERSONNEL: K. Doohan / T. Drivenberg

TOTAL DEPTH OF WELL (ft below top of casing): 22.55
DEPTH TO WATER: (ft below top of casing) 11.24

ONE WELL VOLUME
1 INCH WELL: 0.041 x ____________ = ____________ (GALLONS)
(Water Column, Ft.)

2 INCH WELL: 0.170 x ____________ = ____________ (GALLONS)
(Water Column, Ft.)

4 INCH WELL: 0.660 x ____________ = ____________ (GALLONS)
(Water Column, Ft.)

NUMBER OF CASING VOLUMES TO BE REMOVED: 3

TOTAL NUMBER OF GALLONS TO BE REMOVED = 5.8
(# Volumes) (1 Casing Vol.)

METHOD OF WELL DEVELOPMENT or PURGING: DEDICATED BLADDER PUMP
PUMP INTAKE AT 22.20' BELOW TOC

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>VOLUME REMOVED (gals or m3)</th>
<th>SPECIFIC CONDUCTIVITY µS/cm</th>
<th>TEMP. °C</th>
<th>TURBIDITY NTUs</th>
<th>DO mg/L</th>
<th>ORP mV</th>
<th>pH</th>
<th>COMMENTS (e.g., DTW, flow rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/24</td>
<td>1027</td>
<td>7600</td>
<td>79.7 µS/cm</td>
<td>11.84</td>
<td>5</td>
<td>7.5</td>
<td>163</td>
<td>698</td>
<td>WL 13.91</td>
</tr>
<tr>
<td>1030</td>
<td>7200</td>
<td>584</td>
<td>81.0</td>
<td>11.56</td>
<td>9</td>
<td>2.5</td>
<td>163</td>
<td>701</td>
<td>WL 15.62</td>
</tr>
<tr>
<td>1051</td>
<td>1000</td>
<td>80.7</td>
<td>80.7</td>
<td>11.08</td>
<td>24</td>
<td>7.4</td>
<td>163</td>
<td>704</td>
<td>WL 17.60</td>
</tr>
<tr>
<td>1227</td>
<td>14400</td>
<td>79.9</td>
<td>8.03</td>
<td>23</td>
<td>5.7</td>
<td>158</td>
<td>21.80</td>
<td>19.40</td>
<td>WL 19.30</td>
</tr>
<tr>
<td>1522</td>
<td>18000</td>
<td>82.3</td>
<td>9.81</td>
<td>7.3</td>
<td>3.4</td>
<td>144</td>
<td>7.14</td>
<td>21.80</td>
<td>WL 21.05</td>
</tr>
<tr>
<td>1355</td>
<td>21000</td>
<td>82.3</td>
<td>9.81</td>
<td>7.3</td>
<td>3.4</td>
<td>144</td>
<td>7.14</td>
<td>21.80</td>
<td>WL 21.05</td>
</tr>
</tbody>
</table>

ADDITIONAL COMMENTS: START PURGING 10:27. WEATHER 15°F, C=5 MPH WIND. INITIAL FLOW RATE 3 gpm. MY MIN. RETURN TO DATE AT 13:55 TO COLLECT SAMPLES.

SIGNATURE: [Signature]  DATE: 12/29/09

Figure 2-6  Revision: June 2009
WATER SAMPLE COLLECTION FIELD SHEET

SITE NAME: SWIM 3
WELL NUMBER: 003 MW 003
CONTRACTOR NAME: TETRA TECH
PERSONNEL: R. DROVENEN
CONTRACT / PROJECT NUMBER: DATE: 12/29/09
SAMPLE NUMBER: 003 MW 003-6W-6W
LOCATION DESCRIPTION: SWIM 3
SAMPLE MEDIA (circle one) GROUNDWATER SURFACE WATER OTHER
SAMPLE SPLIT (circle one) YES NO
STATIC DEPTH TO WATER*/WATER DEPTH: 21.05 DATE: 12/29/09 TIME: 1355
DEPTH OF PUMP INTAKE/TUBING INTAKE*: 22.20 (* - ft below top of casing)
DEDICATED PUMP PRESENT (circle one) YES NO
SAMPLE COLLECTION METHOD: DEDICATED BUCKET PUMP
TYPE OF PUMP/BAILER: WELL WIZARD
TYPE OF TUBING:

<table>
<thead>
<tr>
<th>pH</th>
<th>7.16</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMPERATURE</td>
<td>9.91 °C</td>
</tr>
<tr>
<td>CONDUCTIVITY</td>
<td>82.3 µS/cm</td>
</tr>
<tr>
<td>APPEARANCE</td>
<td>CLEAR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ANALYSIS REQUESTED</th>
<th>SAMPLE CONTAINER</th>
<th>PRESERVATION</th>
<th>DATE/TIME FILLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>NITRATE</td>
<td>250 ML POLY</td>
<td>COOL</td>
<td>12/29/09 1355</td>
</tr>
<tr>
<td>NITRATE</td>
<td>250 ML POLY</td>
<td>H2SO4</td>
<td>1355</td>
</tr>
<tr>
<td>TOTAL NITRATE</td>
<td>LL POLY</td>
<td>H2SO4</td>
<td>1500</td>
</tr>
<tr>
<td>AMMONIA</td>
<td>LL POLY</td>
<td>H2SO4</td>
<td>1500</td>
</tr>
</tbody>
</table>

FIELD ANALYSIS:

COMMENTS: WELL PUMPED AT 60 GPM, DUGGED DRY AND THEN ALLOWED TO RECHARGE 1½ HOURS. WATER LEVEL AFTERSAMPLE COLLECTION BELOW TOP OF DEDICATED PUMP. TOTAL DEPTH OF WELL FROM TDC - 22.55.

SIGNATURE: N. J. DATE: 12/29/09

Revision: November 2009
**Location:** SFAAP-LTM WELLS  
**Date:** 11/23/2009

**Project / Client:** 186-LM

**LI'F FAIR WIND 5 @ 11 MPH HUMIDITY 41%**

---

**1322**  
**TOTAL TECH ENVIRONMENTAL TEAM OF**  
**WATERS & MEANS ARRIVE @ SWMU 50**  
**TO CHECK & MEASURE THE GROUNDWATER**  
**IN THE MONITORING WELL LOCATED THERE.**  
**THE TEAM FIRST CHECKS THE WELL W/**  
**THE PID (MINI RATE 2000) & THEN MEASURES**  
**THE GROUNDWATER LEVEL USING THE HD20**  
**LEVEL INDICATOR (HERON DIFFER T SERIAL**  
**#13629). THE TEAM BECOMES THE HD20**  
**LEVEL INDICATOR FOLLOWING EACH USE.**  
**THIS PROCEDURE WILL BE USED FOR ALL**  
**LTM WELLS TODAY. MEASUREMENT**  
**RESULTS WERE AS FOLLOWS:**

<table>
<thead>
<tr>
<th>TIME</th>
<th>WELL #</th>
<th>PID (PPM)</th>
<th>DTW (FT.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1542</td>
<td>001MWW05</td>
<td>0.0</td>
<td>15.29</td>
</tr>
</tbody>
</table>

---

**1430 TEAM ARRIVES @ SWMU 1 TO REPLACE**  
**THE LOCK ON WELL 001MWW05.**  
**1434 TEAM DEPARTS SWMU 1.**  
**1450 TEAM ARRIVES @ SWMU 2 TO CHECK &**  
**MEASURE GROUNDWATER IN THE LTM**  
**WELLS. RESULTS WERE AS FOLLOWS:**

<table>
<thead>
<tr>
<th>TIME</th>
<th>WELL #</th>
<th>PID (PPM)</th>
<th>DTW (FT.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1542</td>
<td>001MWW05</td>
<td>0.0</td>
<td>15.29</td>
</tr>
</tbody>
</table>

---

**CONTINUED**
0920 T+ Team Doeden and Druvenga arrive @ 003 MWO-3 in SWMU-3 to collect water for analysis of the following analytes:
- Nitrates: 250 poly
- Nitrates/Nitrate: 250 poly
- Ammonia: 1-1L poly
- TKN: 1-1L poly

Equipment:
- Tubing
- Horiba Water Quality Meter
- Dedicated bladder pump
- Water Level Meter
- MiniRad 2000 (PID)
- Graduated plastic container

0930 PID = 0.00ppm
0935 DTW = 11.24

Begin sampling

0945 Druvenega returns to OFC to collect more sampling buckets
0950 Druvenega returns @ 003 MWO-3 in SWMU-3.

1010 Team begins process.
<table>
<thead>
<tr>
<th>Location</th>
<th>SFAAP, DeSoto, KS</th>
<th>Date</th>
<th>12-29-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project / Client</td>
<td>IRG/SRL</td>
<td>Weather</td>
<td>Overcast ~ 15°F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1027</th>
<th>Vol Removed: 3,600 mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spec. Conductivity: 79.7 mS/m</td>
<td></td>
</tr>
<tr>
<td>Temp: 11.84 °C</td>
<td></td>
</tr>
<tr>
<td>Turbidity: 5 NTUS</td>
<td></td>
</tr>
<tr>
<td>DO: 7.3 mg/L</td>
<td></td>
</tr>
<tr>
<td>ORP: 1163 mV</td>
<td></td>
</tr>
<tr>
<td>pH: 6.98</td>
<td></td>
</tr>
<tr>
<td>DTW: 13.91</td>
<td></td>
</tr>
<tr>
<td>Flow Rate: 300 mL/min</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1038</th>
<th>Vol Removed: 7,200 mL</th>
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</thead>
<tbody>
<tr>
<td>Spec. Conductivity: 81.0 mS/m</td>
<td></td>
</tr>
<tr>
<td>Temp: 11.71 °C</td>
<td></td>
</tr>
<tr>
<td>Turbidity: 12 NTUS</td>
<td></td>
</tr>
<tr>
<td>DO: 7.5 mg/L</td>
<td></td>
</tr>
<tr>
<td>ORP: 1163 mV</td>
<td></td>
</tr>
<tr>
<td>pH: 7.01</td>
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</tr>
<tr>
<td>DTW: 15.62'</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1051</th>
<th>Vol Removed: 10,800 mL</th>
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</thead>
<tbody>
<tr>
<td>Spec. Conductivity: 80.7 mS/m</td>
<td></td>
</tr>
<tr>
<td>Temp: 11.08 °C</td>
<td></td>
</tr>
<tr>
<td>Turbidity: 24 NTUS</td>
<td></td>
</tr>
<tr>
<td>DO: 7.4 mg/L</td>
<td></td>
</tr>
<tr>
<td>ORP: 1447 mV</td>
<td></td>
</tr>
<tr>
<td>pH: 7.16</td>
<td></td>
</tr>
<tr>
<td>DTW: 17.60’</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1121</th>
<th>Vol Removed: 4,400 mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cond: 79.9 mS/m</td>
<td></td>
</tr>
<tr>
<td>Temp: 8.53 °C</td>
<td></td>
</tr>
<tr>
<td>Turb: 2.3 NTUS</td>
<td></td>
</tr>
<tr>
<td>DO: 5.7 mg/L</td>
<td></td>
</tr>
<tr>
<td>ORP: 1441 mV</td>
<td></td>
</tr>
<tr>
<td>pH: 7.10</td>
<td></td>
</tr>
<tr>
<td>DTW: 19.90’</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1152</th>
<th>Vol Removed: 18,000'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cond: 82.3 mS/m</td>
<td></td>
</tr>
<tr>
<td>Temp: 9.51 °C</td>
<td></td>
</tr>
<tr>
<td>Turb: 7.3 NTUS</td>
<td></td>
</tr>
<tr>
<td>DO: 3.4 mg/L</td>
<td></td>
</tr>
<tr>
<td>ORP: 1441 mV</td>
<td></td>
</tr>
<tr>
<td>pH: 7.16</td>
<td></td>
</tr>
<tr>
<td>DTW: 21.80’</td>
<td></td>
</tr>
</tbody>
</table>

1298 21,000 mL removed: Well dry.
1212 Team returns to OFC.
1330 Team fills up Truck #7 with gas.
1350 Team returns to CO3M1003 to collect H2O sample.
1355 Team begins collection.
1552 completes sampling. Returns to OFC.

12-29-09
ATTACHMENT C

LABORATORY REPORTS
June 23, 2008

Ms. Maureen McMyler
Tetra Tech, Inc.
800 Oak Ridge Turnpike
Oak Ridge, TN 37830
(865) 220-4762

Dear Ms. McMyler

RE: SFAAP AOC 18 RFI/SWMU 56 MW/SWMU 1MW
AML Work Order Number: 0805155

Attached, please find the hardcopy analytical report (289 total pages) for environmental samples collected by Tetra Tech, Inc. for the project described above. The analytical results included in this report relate only to the samples received by Analytical Management Laboratories (AML) and meet NELAC compliance, except as noted in the case narrative. Problems encountered in the analysis of these samples are documented in the laboratory case narrative observations and non-conformances and/or data qualifiers. The case narrative is an integral part of this report. This report has been paginated and may not be reproduced for distribution, except in full, without the written approval of AML. Results are reported to three significant figures; the third significant figure may be estimated. Please feel free to contact me by phone (913-829-0101 ext. 23), fax (913-829-1181) or email (rstrauss@amlabinc.com) if you have any questions.

Respectfully Submitted,

Analytical Management Laboratories, Inc.  
Rebecca Strauss
Project Manager

15130 South Keeler, Olathe, Kansas 66062
Phone: (913) 829-0101 Fax: (913) 829-1181
Project Information
Four (4) samples were received by AML on May 28, 2008 and logged in according to the Sample Status and Receipt Report included in this report. Reference the chain of custody and Sample Condition upon receipt Report for any non-conformances on receipt condition and temperature upon receipt.

Observations and Non-Conformances

Ammonia by method SM 4500 NH3 A/B/D
There were no observations and/or non-conformances to report for this analysis.

Nitrate/Nitrite by SM-4500-NO3 E
Only the preserved analysis by SM-4500-NO3 E was performed and reported as Nitrate/Nitrite, as the samples were unable to be run within the 48 hour analytical hold time for method 300.0.

Batch P805427 – MS/MSD recoveries were outside QC limits for Nitrate/Nitrite due to potential matrix interference. LCS/LCSD recoveries were within QC limits.

Nitrocellulose by AML SOP
There were no observations and/or non-conformances to report for this analysis.

Explosives & Nitroglycerine method 8330A/8332
There were no observations and/or non-conformances to report for this analysis.

Mercury by method 7470A
There were no observations and/or non-conformances to report for this analysis.

Metals by method 6020A
There were no observations and/or non-conformances to report for this analysis.

SVOCs by method 8270
Batch P806078 – The LCS recovery was outside QC limits for Dimethyl phthalate as flagged on the LCS summary report. The LCSD recoveries were outside of QC limits for Dimethyl phthalate, and Diethyl phthalate as flagged on the LCSD summary report. LCS data is acceptable as it is within the number of marginal exceedances. There was not a sufficient amount of sample remaining to perform a corrective action for the LCSD recoveries.
Samples and/or QC had multiple surrogate recoveries outside QC limits as indicated on the Form 2- Equivalent summary. Upon reanalysis the surrogate recoveries were confirmed to be outside QC limits. The sample was not additionally re-injected due to the nature of the sample matrix.

**Affected Sample(s):**
0805155-03RE1

Sample(s) had internal standard areas outside QC limits, sample(s) were re-analyzed and the internal standard areas outside of QC limits were confirmed. Internal Standard area failures may be due to sample matrix.

**Affected Samples:**
0805155-03RE1

**Subcontracted Analyses**
Technical support for the following analyses was provided by GEL Laboratories, LLC, 2040 Savage Road, Charleston, SC 29407. The analytical report prepared by the subcontract laboratory is included. EDDs for these parameters provided by GEL.

TKN by 351.2
Field Sample Information
(Chain of Custody Record, Sample Receipt Report, Condition Upon Receipt Report)

0805155
(Sample Delivery Group, SDG)
<table>
<thead>
<tr>
<th>Sample ID Number</th>
<th>Item Number</th>
<th>Date</th>
<th>Time</th>
<th>Matrix</th>
<th>Acct#</th>
<th>Project Name</th>
<th>Project Location</th>
<th>Project Manager/Supervisor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWA-011</td>
<td>AOC-RTWI-SW-001</td>
<td>05/28/08</td>
<td>1415 G SO</td>
<td>AOC-18</td>
<td></td>
<td></td>
<td></td>
<td>Mike Albert/Keith Brown</td>
<td></td>
</tr>
<tr>
<td>SWA-012</td>
<td>AOC-RTWI-SW-002</td>
<td>05/28/08</td>
<td>1120 G SO</td>
<td>AOC-18</td>
<td></td>
<td></td>
<td></td>
<td>Da Soto, KS</td>
<td></td>
</tr>
<tr>
<td>SWA-013</td>
<td>AOC-RTWI-SW-003</td>
<td>05/28/08</td>
<td>1445 G SO</td>
<td>AOC-18</td>
<td></td>
<td></td>
<td></td>
<td>Da Soto, KS</td>
<td></td>
</tr>
<tr>
<td>SWA-014</td>
<td>AOC-RTWI-SW-004</td>
<td>05/28/08</td>
<td>1630 G SW</td>
<td>AOC-18</td>
<td></td>
<td></td>
<td></td>
<td>Da Soto, KS</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
- Standard TAT
- Special Instructions
- Received in Good Condition
- N - Cold
### Analytical Management Laboratories - Sample Status and Receipt Report

<table>
<thead>
<tr>
<th>AML Sample</th>
<th>Matrix</th>
<th>Client Sample ID</th>
<th>Date Collected</th>
<th>Projected Analytical Due Date</th>
<th>Analysis</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0805155-01</td>
<td>Soil</td>
<td>A18-TTSSB042-SS-DR09091</td>
<td>05/28/08 14:15</td>
<td>06/10/08</td>
<td>Metals by 6020A ✓</td>
<td></td>
</tr>
<tr>
<td>0805155-01</td>
<td>Soil</td>
<td>A18-TTSSB042-SS-DR09091</td>
<td>05/28/08 14:15</td>
<td>06/10/08</td>
<td>Metals by 6010B ✓</td>
<td></td>
</tr>
<tr>
<td>0805155-01</td>
<td>Soil</td>
<td>A18-TTSSB042-SS-DR09091</td>
<td>05/28/08 14:15</td>
<td>06/10/08</td>
<td>Solids, Dry Weight by % Solids ✓</td>
<td></td>
</tr>
<tr>
<td>0805155-C2</td>
<td>Water</td>
<td>:FAAP-SWMU56-GW1-GW-GM005</td>
<td>05/28/08 11:20</td>
<td>06/10/08</td>
<td>TKN by 351.2 ✓</td>
<td></td>
</tr>
<tr>
<td>0805155-C2</td>
<td>Water</td>
<td>:FAAP-SWMU56-GW1-GW-GM005</td>
<td>05/28/08 11:20</td>
<td>06/10/08</td>
<td>NO2 and NO3 by 300.0 ✓</td>
<td>Nitrate</td>
</tr>
<tr>
<td>0805155-C2</td>
<td>Water</td>
<td>:FAAP-SWMU56-GW1-GW-GM005</td>
<td>05/28/08 11:20</td>
<td>06/10/08</td>
<td>Ammonia by SM 4500 NH3 A/B/D ✓</td>
<td></td>
</tr>
<tr>
<td>0805155-C3</td>
<td>Water026</td>
<td>-TTWC0001-SW-DR11316</td>
<td>05/28/08 14:40</td>
<td>06/05/08</td>
<td>Mercury by 7470A ✓</td>
<td>RCRA</td>
</tr>
<tr>
<td>0805155-C3</td>
<td>Water026</td>
<td>-TTWC0001-SW-DR11316</td>
<td>05/28/08 14:40</td>
<td>06/05/08</td>
<td>Metals by 6020A ✓</td>
<td>RCRA</td>
</tr>
<tr>
<td>0805155-C3</td>
<td>Water026</td>
<td>-TTWC0001-SW-DR11316</td>
<td>05/28/08 14:40</td>
<td>06/05/08</td>
<td>Metals by 6010B ✓</td>
<td>PAH &amp; Phthalates</td>
</tr>
<tr>
<td>0805155-C3</td>
<td>Water026</td>
<td>-TTWC0001-SW-DR11316</td>
<td>05/28/08 14:40</td>
<td>06/05/08</td>
<td>Semivolatiles by 8270C ✓</td>
<td></td>
</tr>
<tr>
<td>0805155-C3</td>
<td>Water026</td>
<td>-TTWC0001-SW-DR11316</td>
<td>05/28/08 14:40</td>
<td>06/05/08</td>
<td>Explosives by 8330A/8332 ✓</td>
<td></td>
</tr>
<tr>
<td>0805155-C3</td>
<td>Water026</td>
<td>-TTWC0001-SW-DR11316</td>
<td>05/28/08 14:40</td>
<td>06/05/08</td>
<td>Nitrocellulose by AML SOP I-Nit ✓</td>
<td></td>
</tr>
<tr>
<td>0805155-C4</td>
<td>Water</td>
<td>001MW005-GW-GM0055</td>
<td>05/28/08 16:30</td>
<td>06/10/08</td>
<td>SVOCs Phthalates by 8270C ✓</td>
<td></td>
</tr>
</tbody>
</table>
## SUBCONTRACT ORDER

Analytical Management Laboratories, Inc.

AML Project #: 0805155

### SENDING LABORATORY:
Analytical Management Laboratories, Inc.
15130 South Keeler
Olathe, KS 66062
Phone: 913-829-0101
Fax: 913-829-1181
Project Manager: Rebecca E. Strauss

### RECEIVING LABORATORY:
GEL Laboratories
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 556-8171

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Due</th>
<th>Expires</th>
<th>TAT (days)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample ID: SFAAP-SWMU56-GW1-GW-GM005c Water</td>
<td>06/10/08 00:00</td>
<td>06/25/08 11:20</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>TKN by 351.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Containers Supplied:

Released By 5/29/08 0930AM

Received By

Date

Released By

Date

Received By

Date
AML - Sample Condition Upon Receipt Report
(See Comments for exceptions)

Client ID:   Tetra Tech, Inc
Project ID: SFAAP AQC 18 RFI/ SWMU 56 MV

AML Work Order Number: 0805155
Cooler ID: Default Cooler

Name of Person Receiving Samples: Robb Said
Airbill Number: 

Cooler Opened By: Nissa Said
Date Opened: 5/28/2008

Were Custody Seals Present? No
Were Custody Seals Intact? No

Type of Coolant Used: Ice
Temperature of Cooler: 2.00°C
Did all the bottles arrive unbroken? Yes

Were all bottles sealed in separate plastic bags? No

Type of Packing Used: None

Packaging / Coolant / Temperature

Were all sample labels complete? Yes

Did all the bottles arrive unbroken? Yes

Were samples received in proper containers? Yes

Was a sufficient amount of sample sent for analysis? Yes

Was sample pH within QC limits? Yes

Were air bubbles absent in VOA samples? NA

(if no see comments)

Was project manager contacted about any "out of control" issues? Yes

Comments/ Exceptions

Samples Received by: Robb Said

Project Manager Review: 
Date: 05/24/08

12 of 289
Field Sample Analysis Data Sheets
(Form I equivalents)

0805155
(Sample Delivery Group, SDG)

SM 4500 NH3 A/B/D
(Parameter)

P806204
(Analytical Batch)
<table>
<thead>
<tr>
<th>CAS NO.</th>
<th>COMPOUND</th>
<th>RESULT</th>
<th>Units</th>
<th>Flag</th>
<th>LOD</th>
<th>LOQ</th>
<th>DIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>7664-41-7</td>
<td>Ammonia - Probe</td>
<td></td>
<td>mg/L</td>
<td>U</td>
<td>0.500</td>
<td>1.00</td>
<td>1</td>
</tr>
</tbody>
</table>

Note:
1A Equivalent

ANALYSIS DATA SHEET

Lab Name: Analytical Management Laboratories, Inc.
Client ID: Tetra Tech, Inc
Matrix: Water
Initial/Final: 50.0 mL / 50 mL
% Solids: NA
Analytical Method: SM 4500 NH3 A/B/D
Preparation: SM 4500 NH3 A/B/D
Batch: P806204
Leach Method:

Sample ID: SFAAP-SWMU56-GW1-GW-GM0056
Project: SFAAP AQC 18 RFI SWMU 56 MW/SWMU 11
Project Num: 0805155
Lab Sample ID: 0805155-02
Date Collected: 05/28/08 11:20
Date Analyzed: 06/12/08 13:09
Date Received: 05/28/08 17:16
Date Leached: NA
Date Prepared: 06/11/08 23:04

SFAAP-SWMU56-GW1-GW-GM0056
SFAAP AQC 18 RFI SWMU 56 MW/SWMU 11
0805155
0805155-02
05/28/08 11:20
06/12/08 13:09
05/28/08 17:16
NA
06/11/08 23:04

AML Work Order/Report Number: 0805155
Printed: 6/20/2008
Field Sample Analysis Data Sheets
(Form I equivalents)

0805155
(Sample Delivery Group, SDG)

SM-4500-NO3 E
(Parameter)

P805427
(Analytical Batch)
1A - Equivalent

**ANALYSIS DATA SHEET**

<table>
<thead>
<tr>
<th>Lab Name:</th>
<th>Analytical Management Laboratories, Inc.</th>
<th>Sample ID:</th>
<th>SFAAP-SWMU56-GW1-GW-GM0056</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client ID:</td>
<td>Tetra Tech, Inc</td>
<td>Project:</td>
<td>SFAAP ACC 18 RFI/ SWMU 58 MW/SWMU 13</td>
</tr>
<tr>
<td>Matrix:</td>
<td>Water</td>
<td>Project Num:</td>
<td>0805155</td>
</tr>
<tr>
<td>Initial/Final:</td>
<td>25.0 mL / 25 mL</td>
<td>Lab Sample ID:</td>
<td>0805155-02</td>
</tr>
<tr>
<td>% Solids:</td>
<td>NA</td>
<td>Date Collected:</td>
<td>05/28/08 11:20</td>
</tr>
<tr>
<td>Analytical Method:</td>
<td>SM-4500-NO3 E</td>
<td>Date Analyzed:</td>
<td>06/11/08 23:34</td>
</tr>
<tr>
<td>Preparation:</td>
<td>SM-4500-NO3 E</td>
<td>Date Received:</td>
<td>05/28/08 17:16</td>
</tr>
<tr>
<td>Batch:</td>
<td>P805427</td>
<td>Date Leached:</td>
<td>NA</td>
</tr>
<tr>
<td>Leach Method:</td>
<td></td>
<td>Date Prepared:</td>
<td>05/28/08 16:06</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS NO.</th>
<th>COMPOUND</th>
<th>RESULT</th>
<th>Units</th>
<th>Flag</th>
<th>LOD</th>
<th>LOQ</th>
<th>DIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>N3N2N</td>
<td>Nitrate/Nitrite as N</td>
<td>0.911</td>
<td>mg/L</td>
<td></td>
<td>0.0200</td>
<td>0.0400</td>
<td>1</td>
</tr>
</tbody>
</table>

Note:

AML Work Order/Report Number: 0805155
Printed: 6/20/2008
Subcontracted Report

0805155
(AML Sample Delivery Group, SDG)

GEL Laboratories, LLC.-Report

209376
(Laboratory)
<table>
<thead>
<tr>
<th>Analysis</th>
<th>Due</th>
<th>Expires</th>
<th>TAT (days)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>TKN by 351.2</td>
<td>06/10/08 00:00</td>
<td>06/25/08 11:20</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

**Sample ID:** SFAAP-SWMU56-GW1-GW-GM005f Water

Sampled: 05/28/08 11:20

**Containers Supplied:**

Released By: 05/29/08 09:30am

Received By: Patricia, May 30, 08 09:30
**SAMPLE RECEIPT & REVIEW FORM**

<table>
<thead>
<tr>
<th>Client: AML</th>
<th>SDG/ARCOC/Work Order: 209376</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received By: Patricia Nett</td>
<td>Date Received: May 30, 2008</td>
</tr>
</tbody>
</table>

### Suspected Hazard Information
- **Marked as radioactive?**
- **Classified Radioactive II by RSO?**
- **Marked containing PCBs?**
- **Shipped as a DOT Hazardous?**
- **Identified as Foreign Soil?**

### Sample Receipt Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Yes</th>
<th>NA</th>
<th>No</th>
<th>Comments/Qualifiers (Required for Non-Conforming Items)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shipping containers received intact and sealed?</td>
<td>X</td>
<td></td>
<td></td>
<td>seals broken, damaged container, leaking container, other (describe)</td>
</tr>
<tr>
<td>2. Samples requiring cold preservation within (4 +/- 2 C)?</td>
<td>X</td>
<td></td>
<td></td>
<td>Preservation Method: ice bags, blue ice, dry ice, none, other (describe)</td>
</tr>
<tr>
<td>3. Chain of custody documents included with shipment?</td>
<td>X</td>
<td></td>
<td></td>
<td>Circle Applicable: seals broken, damaged container, leaking container, other (describe)</td>
</tr>
<tr>
<td>4. Sample containers intact and sealed?</td>
<td>X</td>
<td></td>
<td></td>
<td>Sample ID's, containers affected and observed pH:</td>
</tr>
<tr>
<td>5. Samples requiring chemical preservation at proper pH?</td>
<td>X</td>
<td></td>
<td></td>
<td>If Preservation added, Lot#:</td>
</tr>
<tr>
<td>6. VOA vials free of headspace (defined as &lt; 6mm bubble)?</td>
<td>X</td>
<td></td>
<td></td>
<td>Sample ID's and containers affected:</td>
</tr>
<tr>
<td>7. Are Encore containers present?</td>
<td>X</td>
<td></td>
<td></td>
<td>(If yes, immediately deliver to Volatiles laboratory)</td>
</tr>
<tr>
<td>8. Samples received within holding time?</td>
<td>X</td>
<td></td>
<td></td>
<td>Id's and tests affected:</td>
</tr>
<tr>
<td>9. Sample ID's on COC match ID's on bottles?</td>
<td>X</td>
<td></td>
<td></td>
<td>Sample ID's and containers affected:</td>
</tr>
<tr>
<td>10. Date &amp; time on COC match date &amp; time on bottles?</td>
<td>X</td>
<td></td>
<td></td>
<td>Sample ID's affected:</td>
</tr>
<tr>
<td>11. Number of containers received match number indicated on COC?</td>
<td>X</td>
<td></td>
<td></td>
<td>Sample ID's affected:</td>
</tr>
<tr>
<td>12. COC form is properly signed in relinquished/received sections?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

<table>
<thead>
<tr>
<th>Maximum Counts Observed*:</th>
<th>Hazard Class Shipped:</th>
<th>UN#:</th>
</tr>
</thead>
</table>

**PM (or PMA) review: Initials**

Date: 5/30/08
Method/Analysis Information

Product: Total Kjeldahl Nitrogen
Analytical Batch: 760548  Method: EPA 351.2
Prep Batch : 760544  Method: EPA 351.2 Prep

Sample Analysis
The following samples were analyzed using the analytical protocol as established in EPA 351.2:

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Client ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>209376001</td>
<td>SFAAP-SWMU56-GW1-GW-GM0056</td>
</tr>
<tr>
<td>1201590814</td>
<td>Method Blank (MB)</td>
</tr>
<tr>
<td>1201590824</td>
<td>Laboratory Control Sample (LCS)</td>
</tr>
<tr>
<td>1201590879</td>
<td>209376001(SFAAP-SWMU56-GW1-GW-GM0056) SampleDuplicate (DUP)</td>
</tr>
<tr>
<td>1201590882</td>
<td>209376001(SFAAP-SWMU56-GW1-GW-GM0056) Matrix Spike (MS)</td>
</tr>
<tr>
<td>1201590885</td>
<td>209376001(SFAAP-SWMU56-GW1-GW-GM0056) Matrix Spike Duplicate (MSD)</td>
</tr>
</tbody>
</table>

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-104 REV# 6.

Preparation/Analytical Method Verification
The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information
The Nutrient analysis was performed on a Lachat Quickchem FIA+ 8000 Series.

Continuing Calibration Blanks
All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)
All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.
Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
The following sample was selected for QC analysis: 209376001 (SFAAP-SWMU56-GW1-GW-GM0056).

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The spike recovery falls outside of the established acceptance limits. Since both the spike duplicate recovery and the RPD between the spike and spike duplicate fall within acceptance limits, the data is reported. 1201590882 (SFAAP-SWMU56-GW1-GW-GM0056).

Matrix Spike Duplicate (MSD) Recovery Statement
The MSD recoveries for this sample set were within the required acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement
The RPD between the MS and MSD met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information
GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

Sample Preservation/Integrity
All the samples from this sample group met the preservation and integrity requirements of the method.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
The samples in this SDG did not require dilutions.

Sample Re-analysis
The following sample was re-analyzed due to their proximity to an overrange sample: 209376001 (SFAAP-SWMU56-GW1-GW-GM0056).
Miscellaneous Information

Nonconformance (NCR) Documentation
The following NCR was generated for this SDG: 560550 1201590882 (SFAAP-SWMU56-GW1-GW-GM0056).

Additional Comments
Additional comments were not required for this SDG.
Certificate of Analysis

Company: Analytical Management Labs.
Address: 15130 South Keeler
         Olathe, Kansas 66062
Contact: Ms. Rebecca Strauss
Project: GELP07-0848 Kansas Project

Report Date: June 9, 2008

Client Sample ID: SFAAP-SWMU56-GW1-GW-GM0056
Sample ID: 209376001
Matrix: Water
Collect Date: 28-MAY-08 11:20
Receive Date: 30-MAY-08
Collector: Client

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Qualifier</th>
<th>Result</th>
<th>DL</th>
<th>RL</th>
<th>Units</th>
<th>DF</th>
<th>Analyst</th>
<th>Date</th>
<th>Time</th>
<th>Batch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrient Analysis Federal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrogen, Total Kjeldahl (TKN) &quot;As Received&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>mg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrogen, Total Kjeldahl</td>
<td>U</td>
<td>ND</td>
<td>0.029</td>
<td>0.100</td>
<td>mg/L</td>
<td>1</td>
<td>AXH3</td>
<td>06/05/08</td>
<td>1709</td>
<td>760548</td>
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</table>

The following Prep Methods were performed

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Analyst</th>
<th>Date</th>
<th>Time</th>
<th>Prep Batch</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA 351.2 Prep</td>
<td>EPA 351.2 Total Kjeldahl Nitrogen Prep</td>
<td>SXK1</td>
<td>06/03/08</td>
<td>1342</td>
<td>760544</td>
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</table>

The following Analytical Methods were performed

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Analyst Comments</th>
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<tbody>
<tr>
<td>1</td>
<td>EPA 351.2</td>
<td></td>
</tr>
</tbody>
</table>
Report Summary

Thursday December 04, 2008

Report Number: L376045
Samples Received: 11/21/08
Client Project: 100-TEN-T16961-2 TAS

Description: LongTerm Monitoring Wells

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Darren Riedel, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375,DW21704, ND - R-140
NJ - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

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1 Samples Reported: 12/02/08 17:41 Revised: 12/04/08 10:48
Page 1 of 5
Date Received: November 21, 2008
Description: LongTerm Monitoring Wells
Sample ID: 003MW003-GW-GM0084
Collection Date: 11/20/08 08:30

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>MDL</th>
<th>RDL</th>
<th>Units</th>
<th>Q</th>
<th>Method</th>
<th>Date</th>
<th>Dil.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrate</td>
<td>730</td>
<td>31.</td>
<td>100</td>
<td>ug/l</td>
<td></td>
<td>9056</td>
<td>11/22/08</td>
<td>1</td>
</tr>
<tr>
<td>Nitrite</td>
<td>0</td>
<td>25.</td>
<td>100</td>
<td>ug/l</td>
<td></td>
<td>9056</td>
<td>11/22/08</td>
<td>1</td>
</tr>
<tr>
<td>Ammonia Nitrogen</td>
<td>130</td>
<td>34.</td>
<td>100</td>
<td>ug/l</td>
<td></td>
<td>350.1</td>
<td>12/02/08</td>
<td>1</td>
</tr>
<tr>
<td>Kjeldahl Nitrogen, TKN</td>
<td>380</td>
<td>31.</td>
<td>100</td>
<td>ug/l</td>
<td></td>
<td>351.2</td>
<td>11/28/08</td>
<td>1</td>
</tr>
</tbody>
</table>

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)

Note:
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This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 12/02/08 17:41 Revised: 12/04/08 10:48
TSR Signing Reports: 364
R5 - Desired TAT

Sample: L376045-01 Account: IRGTETSFAA Received: 11/21/08 07:45 Due Date: 12/08/08 00:00 RPT Date: 12/02/08 17:41
EDD=Equis EZ.
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Sample ID Number</th>
<th>Date</th>
<th>Time</th>
<th>Comp/Gas</th>
<th>Matrix</th>
<th>Acc no</th>
<th>Acc Loc</th>
<th>Lab Code</th>
<th>Analysis Desired</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>003MW003-GW-GM0084</td>
<td>11/20/08</td>
<td>0830</td>
<td>G</td>
<td>GW</td>
<td>003</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

**Field Notes:**
- long term monitoring well

**Special Instructions:**
- Item #1 Bis-2(ethylhexyl) phthalate only

**Report:**
- Lab Name: Environmental Science Corp. (ESC)
- Site Contact: Keith Brown
- Site Telephone Number: 913-583-3000, ext 6748

**Analysis Desired:**
- Analyte by SW6150.G200
- Explosives by SW6330
- NC by UV-Spec
- Nitrate as N by E300
- Peroxides by SW6064
- SCOC-PAHs by SW200
- 2,4-D by SW6064
- MSMSD
Report Summary

Friday August 07, 2009

Report Number: L414899
Samples Received: 07/31/09
Client Project: LTM
Description: GW

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: T. Alan Harvill, ESC Representative

Laboratory Certification Numbers
A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375, DW21704, ND - R-140
NJ - TN002, NJ NELAP - TNO02, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.
## REPORT OF ANALYSIS

**Environmental Science Corp.**

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859
Tax I.D. 62-0814289
Est. 1970

Mr. Mike Albert
Tetra Tech, Inc.
800 Oak Ridge Turnpike, A-500
Oak Ridge, TN 37830

**Date Received:** July 31, 2009  
**Description:** GW  
**Sample ID:** 003MW003-GW-GM0085  
**Collected By:**  
**Collection Date:** 07/28/09 15:55

**ESC Sample #:** L414899-01  
**Site ID:** SWMU 56  
**Project #:** LTM

### Parameter Table

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>MDL</th>
<th>RDL</th>
<th>Units</th>
<th>Q</th>
<th>Method</th>
<th>Date</th>
<th>Dil.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia Nitrogen</td>
<td>0.049</td>
<td>0.034</td>
<td>0.10</td>
<td>mg/l</td>
<td>J</td>
<td>350.1</td>
<td>08/07/09</td>
<td>1</td>
</tr>
<tr>
<td>Nitrate-Nitrite</td>
<td>0.68</td>
<td>0.017</td>
<td>0.10</td>
<td>mg/l</td>
<td></td>
<td>353.2</td>
<td>08/06/09</td>
<td>1</td>
</tr>
<tr>
<td>Kjeldahl Nitrogen, TKN</td>
<td>0.25</td>
<td>0.032</td>
<td>0.10</td>
<td>mg/l</td>
<td></td>
<td>351.2</td>
<td>08/04/09</td>
<td>1</td>
</tr>
</tbody>
</table>

- **U = ND** (Not Detected)
- **MDL = Minimum Detection Limit = LOD**
- **RDL = Reported Detection Limit = LOQ = PQL = EQL**

Note:
The reported analytical results relate only to the sample submitted. This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 08/07/09 13:12 Printed: 08/07/09 15:56
<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Work Group</th>
<th>Sample Type</th>
<th>Analyte</th>
<th>Run ID</th>
<th>Qualifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>L414899-01</td>
<td>WG434188</td>
<td>SAMP</td>
<td>Ammonia Nitrogen</td>
<td>R849317</td>
<td>J</td>
</tr>
</tbody>
</table>
Qualifier | Meaning
----------|-----------------
J | (EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and usable unless qualified as 'R' (Rejected).

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.
TSR Signing Reports: 364
RX - Priority Rush

Sample: L414899-01 Account: IRGETSFBA Received: 07/31/09 07:45 Due Date: 08/07/09 00:00 RPT Date: 08/07/09 13:12
EDO=Equis EZ.
**SFAAP**

**CHAIN OF CUSTODY**

**IRGTETSFAA**

<table>
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<tr>
<th>Task Location:</th>
<th>SWMU 56</th>
</tr>
</thead>
</table>

**Task Description:**

**Analysis Desired:**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Sample ID Number</th>
<th>Date/Time</th>
<th>Comp/Gas</th>
<th>Matrix</th>
<th>Acct #</th>
<th>Acct Loc</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>003MW003-GW-GM0085</td>
<td>07/28/09  1555</td>
<td>G</td>
<td>W</td>
<td>SWMU 56</td>
<td>003MW003</td>
</tr>
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</table>

**Transfers:**

- **Reclaimed By:**
  - Signature: [Signature]
  - Date/Time: 7/30/07  13:42

- **Accepted By:**
  - Signature: [Signature]
  - Date/Time: 7/30/07  13:42

**Special Instructions:**

- TAT: 3 DAY
- STANDARD: [ ]
- RUSH: [ ]
- REPORT: IN [ ]

**Field Notes:**

- Monitoring Well 003MW003 in SWMU 56

**Contact:** Alan Harvill

**Site Telephone Number:** 816-769-5640

**Site Address:** 12065 Lebanon Rd. Mt. Juliet, TN 37122

**Task Location:** SWMU 56

**Analysis Desired:**

- Ammonia by SW60/60020
- Arsenic by SW60/60020
- Explosives by SW60/60020
- Lead by SW60/60020
- Metals by SW60/60020
- Explosives by SW60/60020
- Metals by SW60/60020
- Explosives by SW60/60020
- Metals by SW60/60020
- Explosives by SW60/60020
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- Metals by SW60/60020
- Explosives by SW60/60020
- Metals by SW60/60020
- Explosives by SW60/60020
- Metals by SW60/60020
Report Summary

Friday January 08, 2010

Report Number: L438581
Samples Received: 12/30/09
Client Project: LTM

Description: LTM

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Darren Reeder, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375, DW21704, ND - R-140
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

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Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.
Mr. Mike Albert  
Tetra Tech, Inc.  
800 Oak Ridge Turnpike, A-500  
Oak Ridge, TN 37830  

Date Received: December 30, 2009  
Description: LTM  
Sample ID: 003MW003-GW-GM112  
Collected By:  
Collection Date: 12/29/09 13:55  

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
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<th>RDL</th>
<th>Units Qualifier</th>
<th>Method</th>
<th>Date</th>
<th>Dil.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrate</td>
<td>0.31</td>
<td>0.031</td>
<td>0.10</td>
<td>mg/l</td>
<td>9056</td>
<td>12/30/09</td>
<td>1</td>
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<td>Ammonia Nitrogen</td>
<td>U</td>
<td>0.034</td>
<td>0.10</td>
<td>mg/l</td>
<td>350.1</td>
<td>01/06/10</td>
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<tr>
<td>Nitrate-Nitrite</td>
<td>U</td>
<td>0.013</td>
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<td>mg/l</td>
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<td>01/05/10</td>
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<tr>
<td>Organic Nitrogen</td>
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<td>0.033</td>
<td>0.10</td>
<td>mg/l</td>
<td>CALC.</td>
<td>01/06/10</td>
<td>1</td>
</tr>
<tr>
<td>Kjeldahl Nitrogen, TKN</td>
<td>0.077</td>
<td>0.032</td>
<td>0.10</td>
<td>mg/l J</td>
<td>351.2</td>
<td>01/08/10</td>
<td>1</td>
</tr>
</tbody>
</table>

U = ND (Not Detected)  
MDL = Minimum Detection Limit = LOD  
RDL = Reported Detection Limit = LOQ = PQL = EQL  

Note:  
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Reported: 01/08/10 17:24 Printed: 01/08/10 17:25
## Attachment A

### List of Analytes with QC Qualifiers

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Work Group</th>
<th>Sample Type</th>
<th>Analyte</th>
<th>Run ID</th>
<th>Qualifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>L438581-01</td>
<td>WG458106</td>
<td>SAMP</td>
<td>Kjeldahl Nitrogen, TKN</td>
<td>R1068508</td>
<td>J</td>
</tr>
</tbody>
</table>
## Attachment B
### Explanation of QC Qualifier Codes

<table>
<thead>
<tr>
<th>Qualifier</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.</td>
</tr>
</tbody>
</table>

**Qualifier Report Information**

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**TIC** - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.
Rerun any V8260TCL samples with failing surrogates. All samples to be logged for EDD=Equis EZ
Log standard TAT Dioxin samples using the IRGTETSFAA-DIOXIN project key.

Sample: L438581-01 Account: IRGTETSFAA Received: 12/30/09 11:25 Due Date: 01/11/10 00:00 RPT Date: 01/08/10 17:24
EDD=Equis EZ
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Sample Id Number</th>
<th>Time</th>
<th>Date</th>
<th>Matrix</th>
<th>Type</th>
<th>Start Depth</th>
<th>End Depth</th>
<th>CoC ID#</th>
<th>Prepared By</th>
<th>Lab Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>003MW003-GW-GM112</td>
<td>13:55</td>
<td>12/29/2009</td>
<td>GW</td>
<td>REG</td>
<td>0</td>
<td>0</td>
<td>197</td>
<td>203</td>
<td>Total Kjeldahl &amp; Organic Nitrogen by EPA 353.1 &amp; SM4500org</td>
</tr>
</tbody>
</table>

**COC ID#:** 197  
**Prepared By:** 203

**Sample Id Number:** 003MW003-GW-GM112  
**Time:** 13:55  
**Date:** 12/29/2009  
**Matrix:** GW  
**Type:** REG  
**Start Depth:** 0  
**End Depth:** 0  
**Account:** 003MW  
**Bore Id:** 003

**Lab Instructions:** Total Kjeldahl & Organic Nitrogen by EPA 353.1 & SM4500org

**Date/Time:** 12/29/09 17:00  
**Transfers Accepted By:** Paige L. Rich

**TAT:** 1125  
**STANDARD**

**Transfers Relinquished By:** G. S. J.  
**Date/Time:** 12/29/09 10:49