

**Moore&VanAllen**

By Hand Delivery

March 8, 2010

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**Re: Assessment Monitoring Report—Swift Creek Coal Combustion By-products Structural Fill Site**

Dear Ms. Drummond:

Enclosed please find the completed Assessment Monitoring Report for The Swift Creek Project, Highway 301, Nash County Rocky Mount, North Carolina. This report is dated February, 2010. It was prepared for REUSE TECHNOLOGY, INC., Charlotte, North Carolina, by Sherrill Environmental, Inc., Durham, North Carolina.

We will be happy to respond to any questions you may have concerning the report.

Very truly yours,

Moore & Van Allen PLLC



William A. White

cc: Robert Waldrop  
Reuse Technology, Inc.



**Assessment Monitoring Report  
December 15, 2009  
Swift Creek Project  
Highway 301**

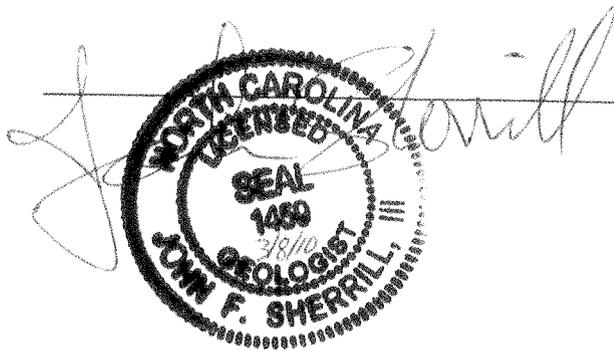
**Nash County  
Rocky Mount, North Carolina**



Prepared for:  
**REUSE TECHNOLOGY, INC.**  
Charlotte, North Carolina



February 2010



Prepared by:  
**Sherrill Environmental, Inc.**  
Durham, North Carolina

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## 1.0 INTRODUCTION

Sherrill Environmental, Inc. (Sherrill) was contracted by ReUse Technology, Inc. (ReUse) to perform Semi-Annual Groundwater and Surface Water Monitoring at the Swift Creek Project. The Swift Creek Project is a "Beneficial Use" fill utilizing coal combustion by-products (CCBs) in the development of a commercial property. The Project is located on the east side on US Highway 301 at Swift Creek near Battleboro, North Carolina (Figure 1). As determined by a review of historical DOT aerial photographs the property was previously developed as a motel with a restaurant (1961). A 1981 aerial photograph shows the project area to consist of the motel and restaurant with the remaining portion of the project area in agricultural use.

On November 11, 1991, ReUse Technology, Inc. submitted a letter to the Solid Waste Management Section seeking approval to use coal ash as structural fill material in the development of 25 acres of commercial property along Highway 301 at Swift Creek. On December 3, 1991, the Solid Waste Section issued a letter to ReUse that stated "Based upon the information received, the project appears to meet the guidelines previously agreed to for such reuse." In September 1992, ReUse began placement of coal ash at the site. In January 2003, the last shipment of coal ash was accepted at the site. On March 23, 2003, the site had been graded, compacted, covered with an 18 inch soil cap and planted with grass seed. On November 4, 2004, the Closure Notice was forwarded to the Solid Waste Section. In March 2006, a Comprehensive Site Assessment (CSA) for the Swift Creek Project was submitted to the Solid Waste Section. In December 2006, an Assessment Monitoring Plan was submitted to the Solid Waste Section. On February 22, 2007, the Assessment Monitoring Plan was approved by the Solid Waste Section.

On January 9, 2009, at the request of Sherrill, Ms. Jaclynne Drummond of the Solid Waste Section, agreed to modify the site sampling parameters. Site groundwater sampling has shown that concentrations of the metals cadmium, chromium, selenium, and silver are typically below detection and are not characteristic of the site contamination. The metals would continue to be analyzed as part of the RCRA (8) metals in the groundwater samples from the downgradient wells MW-1S, MW-3, and MW-7. Cadmium, chromium, selenium, and silver will not be required to be sampled at the site groundwater monitoring wells: MW-1D, MW-2S, MW-2D, MW-4, MW-5S, MW-5D, MW-6, and MW-8. All samples would continue to be analyzed for sulfate.

Eight sampling events have indicated that groundwater associated with the deeper monitoring wells (MW-1D, MW-2D, MW-5D) have not shown any impact from the CCB structural fill. The deeper wells were not sampled for this sampling event as Sherrill believes the existing analytical database is sufficient.

## 2.0 CORRECTIVE MEASURES

A corrective measure designed by Appian Consulting Engineers, P.A. consisting of a longitudinal subsurface drain along the western portion of the site was completed in January 2008. The purpose of the measure is to intercept groundwater flowing from west to east and therefore reduce the groundwater level in the area of the site. To monitor the effectiveness of the corrective measure, two piezometers (P-23 and P-24) were installed at 20 feet east and west of the cut-off drain. These piezometers monitor the effect of the cut-off drain in reducing the groundwater level at the project. The location of the cut-off drain (6" Lateral Subsurface Drain) and the new piezometers are shown on the site map (Figure 2).

## 3.0 SITE GEOLOGY

The site surficial geology consists of an alluvial terrace constructed by the fluvial deposition silts, sands and gravels. The sequence coarsens downward with some coarse sand with gravel present near the base. The terrace deposit overlies the massive and extensive Yorktown Formation. The Yorktown Formation is Pliocene in age and was deposited in the Pliocene Yorktown Sea that covered the entire coastal plain and the eastern most portions of the Piedmont. Depositional environments were back barrier lagoons, shallow inner-bay and estuarine environments and on the open shallow shelf (The Geology of the Carolinas, Horton and Zullo, 1991). The Yorktown in the region of the site is generally described as blueish-gray fine to very fine, silty sands, sandy silt or silty clay, well-sorted and very shelly.

## 4.0 MONITORING WELLS

A total of 11 monitoring wells are located around the perimeter of the Swift Creek Project (Figure 2). Monitoring wells MW-1S (shallow) and MW-1D (deep) are paired monitoring wells located near the center of the project approximately 25 feet east from the edge of the CCB fill. The MW-1S is completed in alluvial sediments and MW-1D is completed in the deeper marine sediments of the Yorktown Formation.

The paired monitoring wells MW-2S (shallow) and MW-2D (deep) are constructed similar to the MW-1 pair. The MW-2 pair is located on a roadway constructed into the swamp and is approximately 160 feet downgradient from the edge of the CCB fill and 135 feet downgradient of MW-1S and MW-1D.

Another paired monitoring well set, MW-5S (shallow) and MW-5D (deep), is located upgradient of the Swift Creek Project on the west side of US Highway 301. Again, the

construction of this monitoring well set is similar with the shallow well screened in alluvial sandy sediments and the deeper well screened in the massive marine sediments.

Monitoring wells MW-3, MW-4, MW-6, MW-7 and MW-8 are shallow wells located at the southeast, southwest, northwest and northeast corners of the project. The borings were advanced through the alluvial material until the underlying marine unit was encountered as determined by split-spoon sampling. The alluvial material varied from a silty fine sand and clayey silty fine sand in the upper portion that generally coarsened downward. Borings at MW-5S, MW-6, MW-7 and MW-8 encountered medium to coarse quartz sand above the contact with the underlying marine unit.

All of the eleven borings were completed using 2-inch schedule 40 PVC with 10-foot slotted screens. The monitoring wells were completed with stick-up casing and 4-inch schedule 40 PVC protective casings with lockable caps.

## 5.0 GROUNDWATER TABLE

The average groundwater elevation as measured in the site monitoring wells from 2005 to 2009 ranged from a high of 93.45 feet to a low of 88.89 feet (Table 1). The average groundwater elevation at the site is 91.59 feet with a standard deviation of 1.25 feet.

The average water elevation as measured in piezometers screened in the coal ash fill (P-12 through P-20) from 2005 to 2009 have ranged from a high of 98.41 feet to a low of 90.65 feet (Table 2). The average water elevation measured in the ash fill is 95.01 feet with a standard deviation of 2.22 feet.

	12/1/05 to 10/22/07		3/22/08 to 12/15/09	
	Average	Stand. Dev.	Average	Stand. Dev.
Elevation of Water in Ash Fill (P-12 to P-20)	93.72	2.29	96.03	1.82
Elevation of Groundwater (MW-1 to MW-8)	91.56	1.82	91.66	0.86

The corrective measure of the longitudinal subsurface drain along the western portion of the site was completed in January 2008. As shown on the above table, the water elevations in the ash fill appear to have risen since the installation of the corrective measure. This rise is not believed to be a result of the corrective measure but due to precipitation, infiltration and holding. The elevation of groundwater appears to be approximately the same with a lower standard deviation suggesting that the 6" Lateral Subsurface Drain along the western edge of the project has served to reduce site groundwater fluctuation. The difference in the water elevation in the CCB fill and the elevation of the shallow groundwater table suggests that they are not connected. The

separation is; however, not complete as evident from the detection of CCB related contaminants in the shallow groundwater table.

## 5.1 Cross Sections

Three cross sections are presented to show water level data for the four measuring events conducted in 2009. The cross sections are anchored to monitoring wells and information from piezometers is projected onto the cross sectional diagram. These cross sectional diagrams may show the typical variation expected for seasonal variation.

A-A' Cross Section (Figure 4) is a west to east diagram in the direction of groundwater flow. The western portion of the diagram (MW-5, P-24 and P-23) shows that the lateral drain is intercepting the migration of groundwater flow onto the site. The diagram shows that the coal ash fill is located above the groundwater table. The corrective measure of the lateral drain affects the site groundwater table. The diagram shows a small seasonal fluctuation in the shallow groundwater table and a large seasonal fluctuation of water levels in the CCB fill.

B-B' Cross Section (Figure 5) is a southwest to northeast diagram also in the direction of groundwater flow. The diagram suggests that the elevation of high groundwater in the northern portion of the site may be seasonally above the fill/ soil contact.

C-C' Cross Section (Figure 6) is a north to south diagram perpendicular to the direction of groundwater flow. The diagram show seasonal fluctuation and saturation within the coal ash fill.

## 5.2 Shallow Groundwater Table

A map of the shallow groundwater table is shown on Figure 7. The map shows that the shallow groundwater flow is in an east northeast direction.

## 6.0 SAMPLE COLLECTION

On December 15, 2009, the site monitoring wells were purged using a new disposable polyethylene bailer for each well. On December 16, 2009, groundwater samples were collected within 24 hours after purging. The resting period allowed for possible particulate in the water to settle prior to sampling. Samples were collected into laboratory prepared glassware, placed in an iced cooler and transferred to Enco Laboratories in Cary, North Carolina. Groundwater samples were analyzed for the Division's requested parameters of sulfate and total RCRA metals.

On December 16, 2009, Sherrill collected a surface water sample at station SW-1 located at the Highway 301 bridge over Swift Creek, SW-2 located near MW-2, and SW-3 located east northeast of MW-8. Sufficient surface water levels were present at each location to collect samples.

## 7.0 GROUNDWATER ANALYSIS

The analytical results for this and the previous groundwater sampling event are summarized on Table 3 and the laboratory report is included in the Appendix. On January 1, 2010, the North Carolina Administrative Code – Title 15A Subchapter 2L Groundwater Standard was revised. These new 2L Standards were used in evaluating data for this event. The new lower 2L Standards for arsenic and selenium allowed for 3 additional exceedances to be reported. Exceedances of the NCAC 2L Groundwater Standard were detected in the groundwater samples from the shallow downgradient monitoring wells MW-3, MW-6, MW-7 and MW-8 (Figure 8). No exceedances of the 2L Groundwater Standard were detected in the groundwater samples from the shallow upgradient monitoring wells MW-4 and MW-5S.

Groundwater monitoring at the site was initiated in 2004. Initially, monitoring well MW-1S appeared to have the highest concentration of contaminants. Exceedances of the 2L Standard were present at MW-1S from 2004 to 2008. Contaminant levels at MW-1S have attenuated with time and only a low concentration of selenium was detected.

Contaminant levels at MW-7 and MW-8 have not shown improvement. While concentrations of sulfate have remained fairly constant in the 400 – 500 mg/L range, the concentrations of arsenic and lead appear to be increasing.

Constituents that were detected in concentrations that exceeded the 2L Groundwater Standard were arsenic, lead, selenium and sulfate.

The new 2L Groundwater Standard for arsenic is 0.010 mg/L. Concentrations of arsenic that exceeded the 2L Standard were limited to four monitoring wells. Low concentrations of arsenic were detected at MW-3 and MW-6 in concentrations of 0.012 mg/L and 0.014 mg/L, respectively. Higher concentrations of arsenic were detected in the northeast portion of the site. Arsenic was detected in concentrations of 0.128 mg/L at MW-7 and 0.569 mg/L at MW-8 (Figure 8).

The 2L Groundwater Standard for lead is 0.015 mg/L. Concentrations of lead that exceeded the 2L Standard were limited to two monitoring wells located in the northeast portion of the site. Lead was detected in concentrations of 0.273 mg/L at MW-7 and 0.376 mg/L at MW-8 (Figure 8).

The 2L Groundwater Standard for sulfate is 250 mg/L. Concentrations of sulfate that exceeded the 2L Standard were 710 mg/L, 490 mg/L and 460 mg/L in the samples from MW-3, MW-7 and MW-8, respectively (Figure 8). These results are consistent with previous results.

The new 2L Groundwater Standard for selenium is 0.020 mg/L. Concentrations of selenium that exceeded the 2L Standard was limited to monitoring well MW-1S. Selenium was detected in concentrations of 0.022 mg/L at MW-1S (Figure 8).

Constituents detected in concentrations less than the 2L Standard and above the NC Solid Waste Section Limit (SWSL) were barium and mercury. Cadmium, chromium and silver were not detected in any concentrations above the Solid Waste Section SWSLs.

## 8.0 SURFACE WATER ANALYSIS

The analytical results for this and the previous surface water sampling events are summarized on Table 4 and the laboratory report is included in the Appendix. Surface water samples were collected at the Highway 301 bridge over Swift Creek (SW-1), at the end of the roadway for MW-2 (SW-2), and northeast of MW-8 in Lane Swamp (SW-3).

None of the tested parameters exceeded the NCAC 2B Surface Water Standard. No metals were detected in concentrations above the SWSLs. Sulfate was detected in concentrations that ranged from 6.2 mg/L to 14 mg/L.

## 9.0 DISCUSSION AND SUMMARY

Exceedances of the 2L Groundwater Standard were detected in the samples from monitoring wells MW-1S, MW-3, MW-6, MW-7 and MW-8. These wells monitor shallow groundwater downgradient of the CCB fill. No exceedance of a 2L Standard was detected in the upgradient monitoring wells (MW-4, MW-5S). The deeper monitoring wells (MW-1D, MW-2D and MW-5D) were not sampled as it has been demonstrated that they are not in connection with the shallow site contamination. No exceedance of a 2B Surface Water Standard was detected.

The corrective measure of the longitudinal subsurface drain along the western portion of the site was completed in January 2008. The water elevations in the ash fill appear to have risen since the installation of the corrective measure. The elevation of groundwater appears to be approximately the same with a lower standard deviation suggesting that the subsurface drain has served to reduce site groundwater fluctuation. This data suggests a separation between the CCB fill and the shallow groundwater table. The separation is, however, not complete as evident from the detection of ash related contaminants in the

shallow groundwater table. This information also suggests that the source of the water present in the CCB fill is from on site precipitation.

In summary, some shallow groundwater contamination is present adjacent and downgradient of the CCB fill. The contamination appears limited vertically as has been shown by no contaminants detected in the deeper monitoring well. The contamination appears limited to the east side of Highway 301 as no contaminants were detected in the upgradient shallow and deep pair of monitoring wells MW-5S and MW-5D on the west side of Highway 301. The direction of groundwater flow is to the east and northeast. The shallow groundwater associated with the site is likely to discharge to the surface water of Lane Creek Swamp and the Swift Creek Swamp. Analysis of surface water samples has not indicated any contamination. No receptors are identifiable for this site and the low level of contamination attenuates as it migrates from the project area into the adjacent swamp.

Contaminant concentrations at the formerly most contaminated monitoring well MW-1S have shown attenuation with time. A trend of increasing concentrations of arsenic and lead has been observed at the northeast monitoring wells MW-7 and MW-8. At this location the concentrations of arsenic and lead are approximately an order of magnitude greater than their respective 2L Standard.

## 10.0 RECOMMENDATIONS

Sherrill recommends continuing with the Assessment Monitoring. The next quarterly event for measuring water levels is scheduled for March 2010. The next semiannual event for measuring water levels and collecting groundwater and surface water samples is scheduled for June 2010. Sherrill recommends removing sampling requirements for the deep monitoring wells MW-1D, MW-2D and MW-5D as no contamination has been detected associated with the deep wells.

In Sherrill's opinion, the Swift Creek Project was not designed for internal drainage of water. Precipitation that falls on the site penetrates the soil cap and then has a long residence time in the CCB fill. Reducing the saturation of the CCB fill would likely reduce the migration of contaminants. It may be of value to consider measures that could reduce the level of saturation within the fill. One such measure could be converting the grass covered soil cap to a plantation of pine trees.

# TABLES

TABLE 1  
GROUNDWATER ELEVATIONS  
SWIFT CREEK PROJECT

	MW-1S	MW-1D	MW-2S	MW-2D	MW-3	MW-4	MW-5S	MW-5D	MW-6	MW-7	MW-8	Average	Lane Swamp Bridge
TOC ELV.	99.54	99.90	94.87	95.22	102.15	106.06	102.68	102.67	98.41	98.63	95.42		92.25
12/1/2005	8.21	8.57	4.72	4.70	9.65	11.24	6.01	6.40	7.17	7.63			
GW ELV.	91.33	91.33	90.15	90.52	92.50	94.82	96.67	96.27	91.24	91.00		92.58	
1/8/2006	8.11	8.28	NM	NM	9.48	10.15	5.86	5.68	7.18	7.74			
GW ELV.	91.43	91.62			92.67	95.91	96.82	96.99	91.23	90.89		93.45	
6/9/2006	8.69	9.05	4.83	4.87	10.32	11.41	6.94	6.84	7.74	8.66			
GW ELV.	90.85	90.85	90.04	90.35	91.83	94.65	95.74	95.83	90.67	89.97		92.08	
4/4/2007	7.80	8.18	4.40	4.75	9.31	9.96	6.12	5.96	7.28	7.80	4.84		
GW ELV.	91.74	91.72	90.47	90.47	92.84	96.10	96.56	96.71	91.13	90.83	90.58	92.65	
8/21/2007	10.89	11.30	6.77	6.82	11.40	13.28	9.57	9.42	10.80	10.71	7.67		
GW ELV.	88.65	88.60	88.10	88.40	90.75	92.78	93.11	93.25	87.61	87.92	87.75	89.72	
10/21/2007	11.40	11.76	7.31	7.43	12.98	14.06	10.62	10.63	11.90	11.41	8.30		
GW ELV.	88.14	88.14	87.56	87.79	89.17	92.00	92.06	92.04	86.51	87.22	87.12	88.89	
1/31/2008	9.13	9.42	4.86	5.02	10.70	14.11	7.65	8.11	8.44	8.71	5.57		
GW ELV.	90.41	90.48	90.01	90.20	91.45	91.95	95.03	94.56	89.97	89.92	89.85	91.26	
3/22/2008	8.10	8.44	4.40	4.54	9.18	13.28	6.98	7.34	7.18	7.79	4.78		2.51
GW ELV.	91.44	91.46	90.47	90.68	92.97	92.78	95.70	95.33	91.23	90.84	90.64	92.14	89.74
6/17/2008	9.12	9.42	5.03	5.23	10.54	14.05	8.93	8.92	8.36	9.06	6.09		3.20
GW ELV.	90.42	90.48	89.84	89.99	91.61	92.01	93.75	93.75	90.05	89.57	89.33	90.98	89.05
9/4/2008	9.26	9.47	4.58	5.02	10.98	14.82	10.87	10.72	8.92	9.06	5.97		3.10
GW ELV.	90.28	90.43	90.29	90.20	91.17	91.24	91.81	91.95	89.49	89.57	89.45	90.53	89.15
1/13/2009	8.22	8.55	4.26	4.46	9.35	13.41	7.16	7.54	7.02	7.60	4.58		2.52
GW ELV.	91.32	91.35	90.61	90.76	92.80	92.65	95.52	95.13	91.39	91.03	90.84	92.13	89.73
3/31/2009	7.60	7.96	4.36	4.38	6.74	12.43	5.98	6.22	6.81	7.20	4.21		2.50
GW ELV.	91.94	91.94	90.51	90.84	95.41	93.63	96.70	96.45	91.60	91.43	91.21	92.88	89.75
6/23/2009	8.62	8.92	4.41	4.77	10.06	13.86	9.83	9.63	7.72	8.52	5.56		2.90
GW ELV.	90.92	90.98	90.46	90.45	92.09	92.20	92.85	93.04	90.69	90.11	89.86	91.24	89.35
9/30/2009	8.86	9.18	4.64	5.00	10.82	14.70	10.40	10.26	8.08	8.51	5.50		3.15
GW ELV.	90.68	90.72	90.23	90.22	91.33	91.36	92.28	92.41	90.33	90.12	89.92	90.87	89.10
12/15/2009	7.54	NM	4.22	NM	8.68	12.85	6.30	NM	6.78	7.13	4.21		2.60
GW ELV.	92.00		90.65		93.47	93.21	96.38		91.63	91.50	91.21	92.51	89.65
									Average Groundwater Elevation		91.59		
									Standard Deviation		1.25		
	Average Groundwater Elevation (12/05 to 10/07)												
	Standard Deviation												
	Average Groundwater Elevation (3/08 to 12/09)												
	Standard Deviation												
	Average Groundwater Elevation												
	Standard Deviation												



**TABLE 3  
SUMMARY OF GROUNDWATER ANALYSES  
SWIFT CREEK PROJECT**

		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Sulfate
<b>NCAC</b>	<b>2L Std.</b>	0.01	0.7	0.002	0.01	0.015	0.02	0.02	0.001	250
<b>NCDWM</b>	<b>SWSL</b>	0.01	0.1	0.001	0.01	0.01	0.01	0.01	0.0002	
<b>MW-1S</b>	6/7/04	0.028	0.190	<0.001	<0.01	<b>0.068</b>	<0.01	<0.01	<0.0002	<b>490</b>
	12/1/05	0.020	0.170	<0.001	<0.01	<b>0.042</b>	<0.01	<0.01	<0.0002	<b>608</b>
	6/10/06	0.012	0.472	<0.001	<0.01	<b>0.052</b>	<0.01	<0.01	0.00064	<b>740</b>
	4/5/07	<0.01	0.458	<0.001	<0.01	<0.010	<0.01	<0.01	0.00047	<b>420</b>
	11/15/07	<0.01	0.529	<0.001	<0.01	<b>0.031</b>	<0.01	<0.01	0.00089	<b>520</b>
	6/18/08	<0.01	0.619	<0.001	<0.01	0.011	<0.01	<0.01	0.00051	<b>470</b>
	1/14/09	<0.01	0.416	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	210
	6/24/09	<0.01	0.412	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	220
	12/16/09	<0.01	0.256	0.001	<0.01	<0.010	<b>0.022</b>	<0.01	<0.0002	160
<b>MW-1D</b>	6/7/04	<0.01	0.540	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	13
	12/1/05	<0.01	0.360	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	7.7
	6/10/06	<0.01	0.341	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	20
	4/5/07	<0.01	0.343	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	12
	10/22/07	<0.01	0.365	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	11
	6/18/08	<0.01	0.334	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	14
	1/14/08	<0.01	0.356	NR	NR	<0.010	NR	NR	<0.0002	14
	6/24/09	<0.01	0.403	NR	NR	<0.010	NR	NR	<0.0002	20
<b>MW-2S</b>	6/22/04	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	32
	12/1/05	<0.01	0.180	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	10.1
	6/10/06	<0.01	0.198	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	4/5/07	<0.01	0.232	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	4.4
	10/22/07	<0.01	0.256	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	3.6
	6/18/08	<0.01	0.103	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	4.4
	1/14/09	<0.01	0.164	NR	NR	<0.010	NR	NR	<0.0002	<5
	6/24/09	<0.01	0.173	NR	NR	<0.010	NR	NR	<0.0002	<5
	12/16/09	<0.01	0.218	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<5
<b>MW-2D</b>	6/22/04	<0.01	0.170	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	5.6
	12/1/05	<0.01	0.300	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	3.1
	6/10/06	<0.01	0.290	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	11
	4/5/07	<0.01	0.254	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	2.9
	10/22/07	<0.01	0.273	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	4.8
	6/18/08	<0.01	0.265	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	22
	1/14/09	<0.01	0.253	NR	NR	<0.010	NR	NR	<0.0002	16
	6/24/09	<0.01	0.289	NR	NR	<0.010	NR	NR	<0.0002	6.3

**TABLE 3  
SUMMARY OF GROUNDWATER ANALYSES  
SWIFT CREEK PROJECT**

		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Sulfate
<b>NCAC</b>	<b>2L Std.</b>	0.01	0.7	0.002	0.01	0.015	0.02	0.02	0.001	250
<b>NCDWM</b>	<b>SWSL</b>	0.01	0.1	0.001	0.01	0.01	0.01	0.01	0.0002	
<b>MW-5S</b>	12/1/05	<0.01	0.450	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	6.1
	6/10/06	<0.01	0.121	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	7
	4/5/07	<0.01	0.218	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	4.7
	10/22/07	<0.01	0.278	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	4.9
	6/18/08	<0.01	0.046	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	8.7
	1/14/09	<0.01	0.051	NR	NR	<0.010	NR	NR	<0.0002	10
	6/24/09	<0.01	0.058	NR	NR	<0.010	NR	NR	<0.0002	13
	12/16/09	<0.01	0.056	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	17
<b>MW-5D</b>	12/1/05	<0.01	0.170	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	8.1
	6/10/06	<0.01	0.236	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	6
	4/5/07	<0.01	0.227	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	5.8
	10/22/07	<0.01	0.258	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	6.6
	6/18/08	<0.01	0.254	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	10
	1/14/09	<0.01	0.255	NR	NR	<0.010	NR	NR	<0.0002	10
	6/24/09	<0.01	0.261	NR	NR	<0.010	NR	NR	<0.0002	17
<b>MW-3</b>	12/1/05	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<b>334</b>
	6/10/06	<0.01	0.192	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<b>580</b>
	4/5/07	<0.01	0.342	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<b>570</b>
	11/15/07	<0.01	0.133	<0.001	<0.01	<b>0.036</b>	<0.01	<0.01	<0.0002	<b>380</b>
	6/18/08	<0.01	0.145	<0.001	<0.01	<b>0.022</b>	<0.01	<0.01	<0.0002	<b>370</b>
	1/14/09	<0.01	0.144	<0.001	<0.01	0.013	<0.01	<0.01	<0.0002	<b>550</b>
	6/24/09	<0.01	0.202	<0.001	<0.01	<b>0.081</b>	<0.01	<0.01	<0.0002	<b>570</b>
	12/16/09	<b>0.012</b>	0.192	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<b>710</b>
<b>MW-4</b>	12/1/05	<0.01	0.460	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	5.7
	6/10/06	<0.01	0.171	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	4/5/07	<0.01	<0.100	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	8.6
	10/22/07	<0.01	0.147	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	5.9
	6/18/08	<0.01	0.198	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	5.4
	1/14/09	<0.01	0.083	NR	NR	<0.010	NR	NR	<0.0002	6.4
	6/24/09	<0.01	0.349	NR	NR	<0.010	NR	NR	<0.0002	7.7
	12/16/09	<0.01	0.121	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	7.5

**TABLE 3  
SUMMARY OF GROUNDWATER ANALYSES  
SWIFT CREEK PROJECT**

		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Sulfate
<b>NCAC</b>	<b>2L Std.</b>	0.01	0.7	0.002	0.01	0.015	0.02	0.02	0.001	250
<b>NCDWM</b>	<b>SWSL</b>	0.01	0.1	0.001	0.01	0.01	0.01	0.01	0.0002	
<b>MW-6</b>	12/1/05	<0.01	1.300	<0.001	<0.01	0.01	<0.01	<0.01	<0.0002	174
	6/10/06	<0.01	0.816	<0.001	<0.01	0.013	<0.01	<0.01	<0.0002	<b>510</b>
	4/5/07	<0.01	0.312	<0.001	<0.01	<b>0.032</b>	<0.01	<0.01	<0.0002	220
	11/15/07	<0.01	0.120	<0.001	<0.01	<b>0.074</b>	<0.01	<0.01	0.00026	<b>290</b>
	6/18/08	<0.01	0.080	<0.001	<0.01	<b>0.054</b>	<0.01	<0.01	0.00091	<b>490</b>
	1/14/09	<0.01	0.066	NR	NR	0.014	NR	NR	<0.0002	<b>560</b>
	6/24/09	0.018	0.155	NR	NR	<b>0.016</b>	NR	NR	0.00026	<b>430</b>
	12/16/09	<b>0.014</b>	0.126	<0.001	<0.01	0.010	<0.01	<0.01	<0.0002	220
<b>MW-7</b>	12/1/05	0.038	<0.10	<0.001	<0.01	<b>0.093</b>	<0.01	<0.01	<0.0002	<b>379</b>
	6/10/06	0.03	0.059	<0.001	<0.01	<b>0.053</b>	<0.01	<0.01	<0.0002	<b>500</b>
	4/5/07	0.017	<0.100	<0.001	<0.01	<b>0.047</b>	<0.01	<0.01	0.0003	<b>460</b>
	11/15/07	0.029	<0.100	<0.001	<0.01	<b>0.124</b>	<0.01	<0.01	0.00072	<b>250</b>
	6/18/08	0.019	0.042	<0.001	<0.01	<b>0.072</b>	<0.01	<0.01	<0.0002	<b>420</b>
	1/14/09	0.022	0.052	<0.001	<0.01	<b>0.088</b>	<0.01	<0.01	<0.0002	<b>500</b>
	6/24/09	<b>0.072</b>	0.080	<0.001	<0.01	<b>0.171</b>	<0.01	<0.01	<0.0002	<b>500</b>
	12/16/09	<b>0.128</b>	0.123	<0.01	<0.01	<b>0.273</b>	<0.100	<0.10	0.0006	<b>490</b>
<b>MW-8</b>	4/5/07	0.025	<0.100	<0.001	<0.01	<b>0.024</b>	<0.01	<0.01	<0.0002	<b>400</b>
	11/15/07	0.030	<0.100	<0.001	<0.01	<b>0.038</b>	<0.01	<0.01	<0.0002	<b>430</b>
	6/18/08	0.031	0.048	<0.001	<0.01	<b>0.027</b>	<0.01	<0.01	<0.0002	<b>300</b>
	1/14/09	0.028	0.039	NR	NR	<b>0.032</b>	NR	NR	<0.0002	<b>350</b>
	6/24/09	<b>0.159</b>	0.114	NR	NR	<b>0.173</b>	NR	NR	0.0003	<b>460</b>
	12/16/09	<b>0.569</b>	0.286j	<0.016	<0.050	<b>0.376j</b>	<0.135	<0.095	0.0002	<b>460</b>
Concentrations in mg/L (ppm), "j" = estimated conce										
Bold values exceed the 2L Groundwater Standard										
MW-1S, MW-2S and MW-5S are screened shallow (approx. 3 to 13 feet).										
MW-1D, MW-2D, and MW-5D are screened deep (approx. 23 to 33 feet).										
MW-3, MW-4, MW-6 and MW-7 are shallow wells located on the SE, SW, NW and NE corners.										

**TABLE 4  
SUMMARY OF SURFACE WATER ANALYSES  
SWIFT CREEK PROJECT**

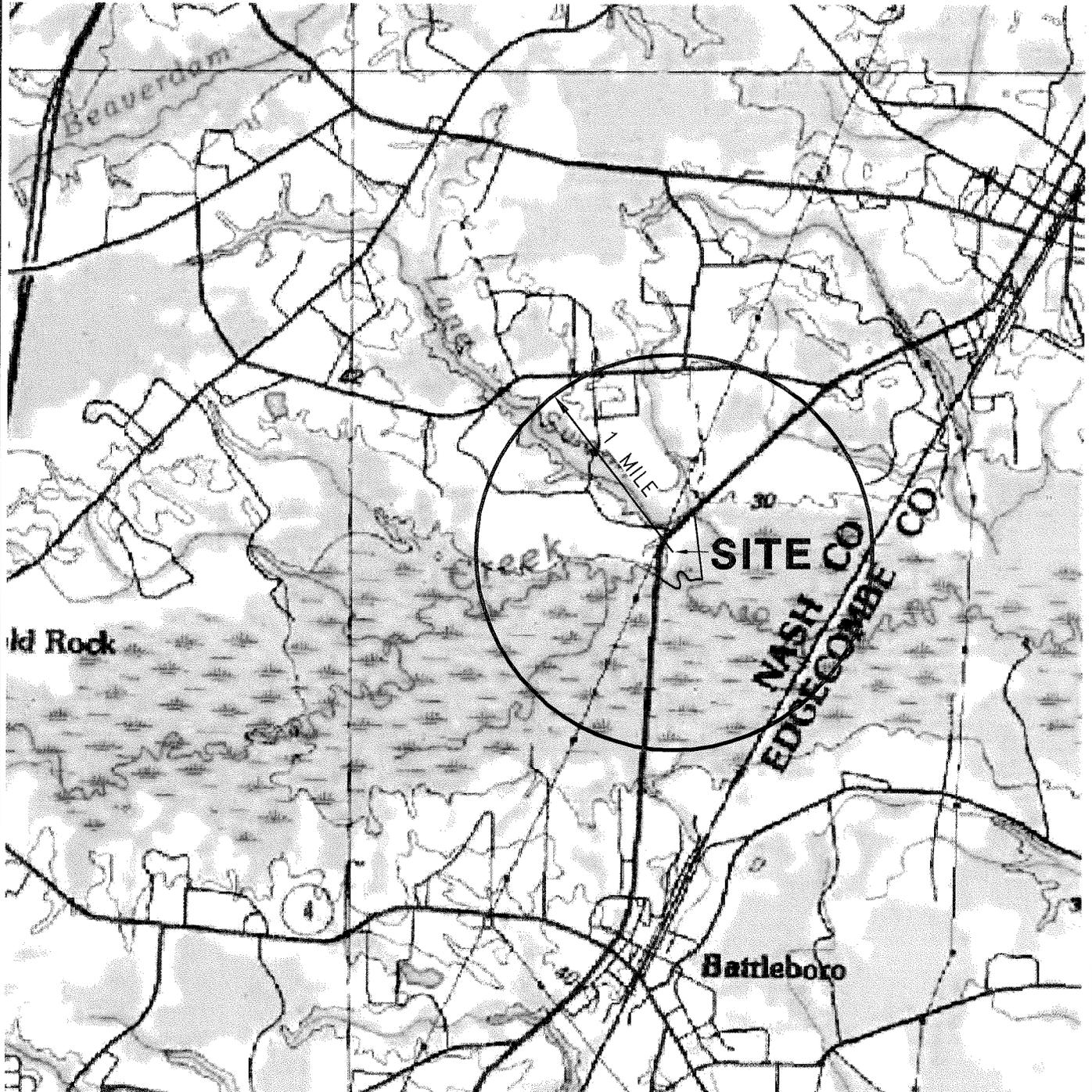
		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Sulfate
<b>NCAC</b>	<b>2B Std.</b>	0.05	1.0	0.002	0.05	0.025	0.005	0.06	0.000012	250
<b>NCDWM</b>	<b>SWSL</b>	0.01	0.1	0.001	0.01	0.01	0.01	0.01	0.0002	
<b>SW-1</b>	3/4/03	<0.01	<0.10	<0.001	<0.01	<0.005	<0.01	<0.01	<0.0002	12
	6/22/04	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<2.0
	12/1/05	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	6.3
	6/10/06	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	4/5/07	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	6.6
	10/22/07	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	3.8
	6/18/08	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	2.5
	1/14/09	<0.01	<0.10	NR	NR	<0.01	NR	NR	<0.0002	5.6
	6/24/09	<0.01	0.03	NR	NR	<0.01	NR	NR	<0.0002	<5
	12/16/09	<0.01	0.048	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	6.2
<b>SW-2</b>	3/4/03	<0.01	<0.10	<0.001	<0.01	<0.005	<0.01	<0.01	<0.0002	13
	6/22/04	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<2.0
	12/1/05	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	10.2
	6/10/06	<0.01	0.090	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	4/5/07	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	3.5
	10/22/07	DRY								
	7/8/08	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	13
	1/14/09	<0.01	<0.10	NR	NR	<0.01	NR	NR	<0.0002	6.1
	6/24/09	<0.01	0.088	NR	NR	<0.01	NR	NR	<0.0002	<5
	12/16/09	<0.01	0.025	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	7.5
<b>SW-3</b>	4/5/07	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	2.4
	10/22/07	DRY								
	6/18/08	<0.01	0.089	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	3.3
	1/14/09	<0.01	<0.10	NR	NR	<0.01	NR	NR	<0.0002	20
	6/24/09	<0.01	0.087	NR	NR	<0.01	NR	NR	<0.0002	<5
	12/16/09	<0.01	0.075	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	14
Concentrations in mg/L (ppm)										
Bold values exceed the 2B Surface Water Standard										
SW-1 Swift Creek at bridge (background).										
SW-2 in swamp near MW-2S and MW-2D										
SW-3 in Lane Swamp north of MW-8										

TABLE 5  
MONITORING WELL AND PIEZOMETER SUMMARY  
SWIFT CREEK PROJECT

Piezometer	Top of Casing Elev.	Ground Surface Elev.	Casing Stick Up	Screen Interval	Total Depth (TOC)	Measured Total Depth 8/2007	Ash/Soil Contact	Ash/Soil Contact Elev.	Alluvial/ Marine contact Elev.	Comments
P-1	108.19	105.6	2.6	20-30	32.6		14.4	91.2		Missing
P-2	109.53	106.7	2.8	20-30	32.8	33.90	16.1	90.6		
P-3	106.18	104.	1.8	18-28	30.0		12.5	91.9		
P-4	106.57	104.0	2.6	20-30	32.6		14.0	90.0		
P-5	108.39	105.9	2.5	20-30	32.5	32.57	13	92.9		
P-6	109.79	107.5	2.3	20-30	32.3	32.35	13.5	94.0		
P-7	107.77	105.9	1.9	30-40	41.9	42.30	14.3	91.6	82.9	
P-8	106.53	103.9	2.6	30-40	42.6	42.15	13.3	90.7	82.9	
P-9	103.32	100.9	2.4	20-30	32.4	32.87	Soil		87.0	
P-10	108.17	106.1	2.1	20-30	32.1		Soil		89.1	Removed
P-11	101.88	99.2	2.7	13-23	25.7		Soil		82.0	Removed
P-12	107.04	104.0	3.0	6-16	19.0	19.44	13.8	90.2		
P-13	108.99	105.9	3.1	6-16	19.1	19.16	13.3	92.7		
P-14	105.38	101.9	3.5	4-14	17.5	17.95	11.5	90.4		
P-15	103.76	101.0	2.8	4-14	16.8	16.85	11.1	89.9		
P-16	105.28	102.1	3.2	4-14	17.2		11.5	90.6		
P-17	105.31	101.8	3.5	4-14	17.5	17.93	11.5	90.3		
P-18	111.21	107.5	3.7	5-15	18.7	18.30	13.5	94.0		
P-19	111.86	108.3	3.6	7-17	20.6	20.00	15.2	93.1		
P-20	107.00	104.2	2.8	7-17	19.8	19.94	15.0	89.2		
P-21	104.99	99.5	5.5	4.5-11.5	16.5	16.60	9.5	90.0		
P-22	103.60	101.8	1.8	17-27	28.8		Soil		87.0	
P-23	109.75	107.1	2.7	9-19	21.8		12.0	95.0	90.0	
P-24	103.17	101.1	2.1	3-13	15.3		Soil		90.0	
B-1	107.66	105.7	2.0	14-19	21.0	19.40	13.5	92.2	88.9	1" casing
<b>Monitoring Wells</b>										
MW-1S	99.54	96.8	2.7	3-13	15.7				84.0	
MW-1D	99.90	97.1	2.8	23-33	35.7				84.0	
MW-2S	94.87	92.1	2.8	6-16	18.7				78.5	
MW-2D	95.22	92.2	3.0	26-36	39.1				78.5	
MW-3	102.15	99.2	3.0	7-17	20.0				82.2	
MW-4	106.06	104.1	2.0	8-18	20.0				89.1	
MW-5S	102.68	99.7	3.0	6-16	17.0				88.2	
MW-5D	102.67	99.8	2.9	25-35	37.9				88.2	
MW-6	98.41	95.0	3.4	6-16	19.4				79.0	
MW-7	98.63	95.1	3.5	6-16	19.5				79.0	
MW-8	95.42	92.4	3.0	6-16	19.0				76.4	

## FIGURES

# REUSE TECHNOLOGY, INC. SWIFT CREEK PROJECT



**FIGURE 1  
SITE LOCATON  
MAP**

**Sherrill**



**Environmental, Inc.**

3326 Rugby Rd.  
Durham N.C. 27707  
Phone (919) 493-6555  
Fax (919) 493-6554  
sherrill@nc.rr.com

ACE JOB #:  
01-060

SCALE:  
1"=4,000'



*Appian*

**APPIAN CONSULTING ENGINEERS, P.A.**  
CIVIL, MUNICIPAL & STRUCTURAL ENGINEERS  
COMPREHENSIVE ENVIRONMENTAL SERVICES  
P.O. Box 7966 / Rocky Mount, N.C. 27804  
Phone: (252) 972-7703 / Fax: (252) 972-7638  
www.appianengineers.com

DATE:  
2-17-10

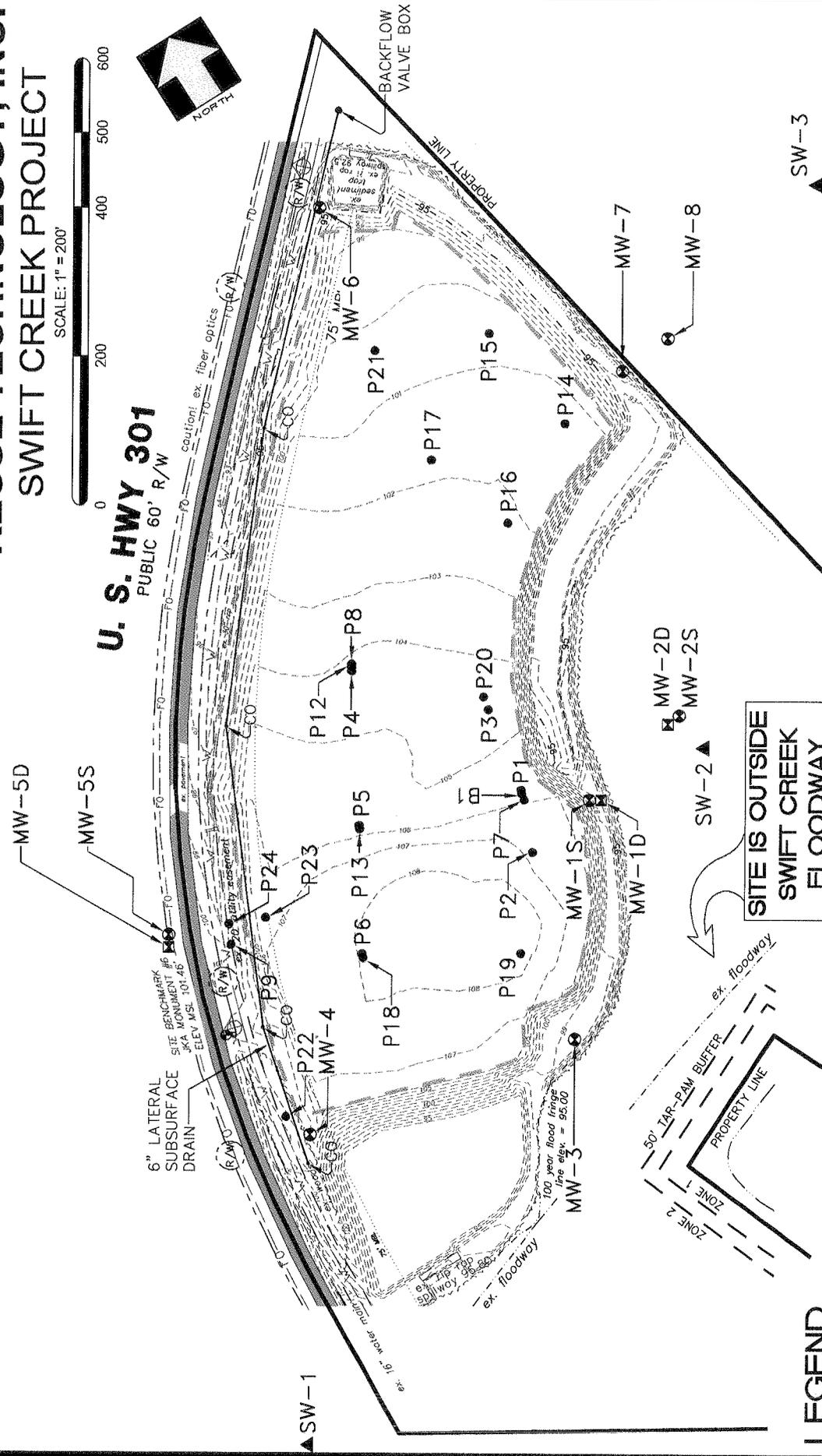
SHEET #:  
1 OF 8

# REUSE TECHNOLOGY, INC. SWIFT CREEK PROJECT

SCALE: 1" = 200'



**U. S. HWY 301**  
PUBLIC 60' R/W



**SITE IS OUTSIDE  
SWIFT CREEK  
FLOODWAY**

## LEGEND

- SHALLOW MONITORING WELL (ALLUVIAL TERRACE)
- ⊠ DEEP MONITORING WELL (MARINE SEDIMENTS)
- PIEZOMETER
- ▲ SURFACE WATER LOCATION
- LIMITS OF ASH FILL PER PAUL ODEN WITH REUSE TECHNOLOGIES
- FEB. 21, 2003

**Sherrill Environmental, Inc.**  
3326 Rugby Rd.  
Durham N.C. 27707  
Phone (919) 493-6555  
Fax (919) 493-6554  
sherrill@nc.rr.com

ACE JOB #: 01-060  
SCALE: 1"=200'

**Appian**

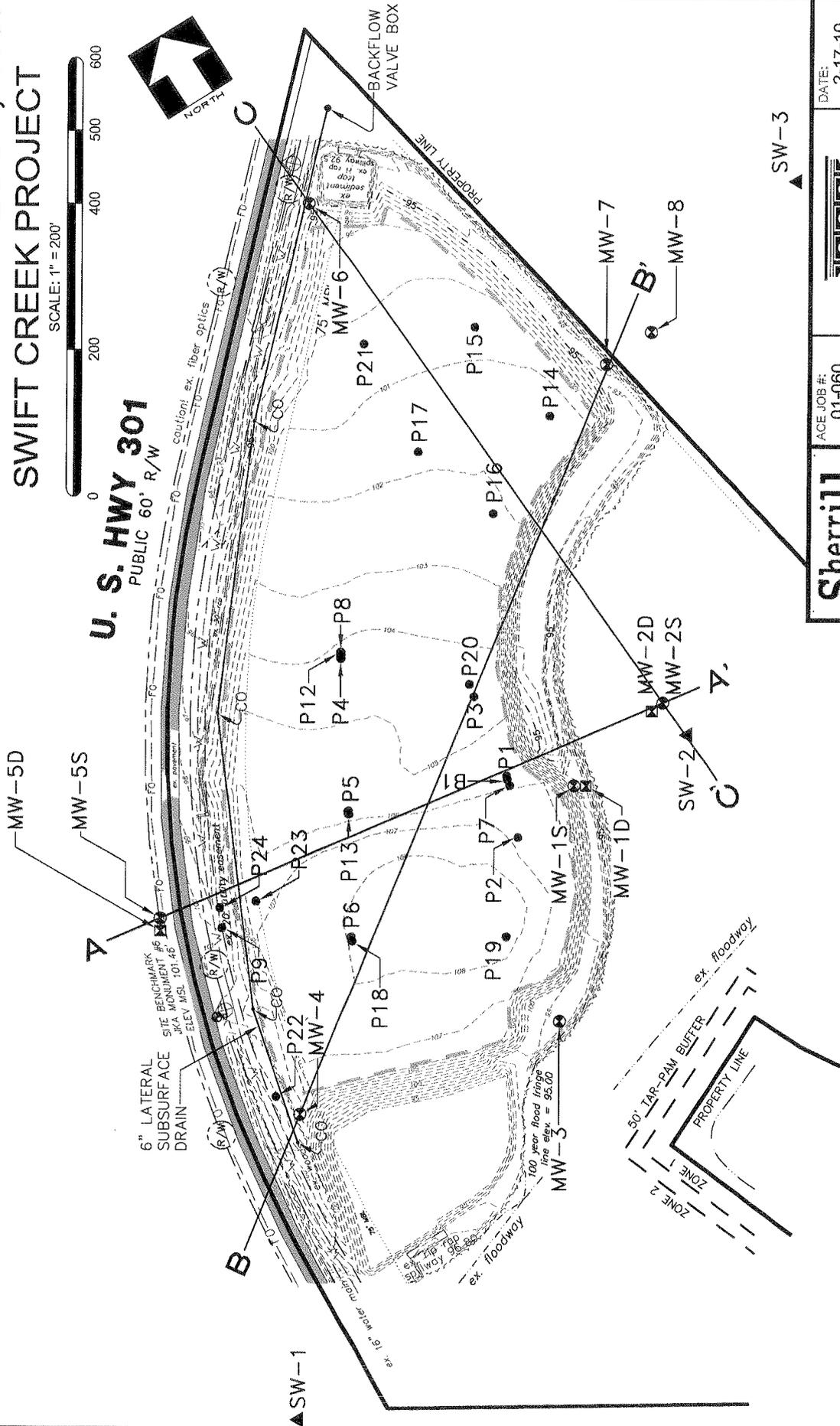
DATE: 2-17-10  
SHEET #: 2 OF 8

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## FIGURE 2 SITE MAP

# REUSE TECHNOLOGY, INC. SWIFT CREEK PROJECT

SCALE: 1" = 200'



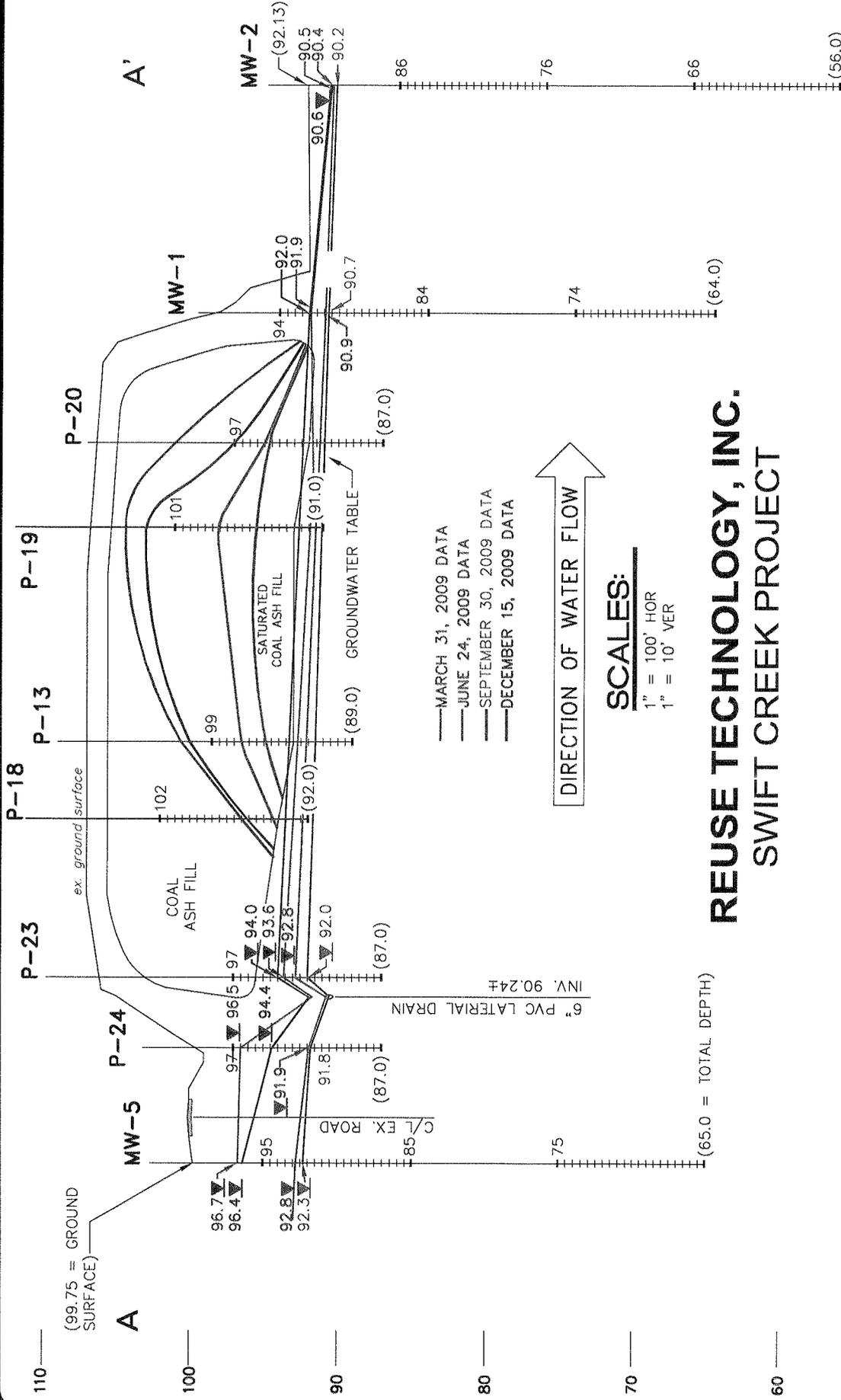
**Sherrill Environmental, Inc.**  
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 Phone (919) 493-6554  
 Fax (919) 493-6554  
 sherrill@nc.rr.com

ACE JOB #: 01-060  
 SCALE: 1" = 200'

DATE: 2-17-10  
 SHEET #: 3 OF 8

**Appian**  
**Appian Consulting Engineers, P.A.**  
 CIVIL, MUNICIPAL & STRUCTURAL ENGINEERS  
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 P.O. Box 7966 / Rocky Mount, N.C. 27804  
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 www.appianengineers.com

**FIGURE 3  
CROSS SECTIONS**



<p><b>Sherrill Environmental, Inc.</b> 3326 Rugby Rd. Durham N.C. 27707 Phone (919) 493-6555 Fax (919) 493-6554 sherrill@nc.rr.com</p>	<p>ACE JOB #: 01-060 SCALE: AS-NOTED</p>	<p><b>Appian</b> APPIAN CONSULTING ENGINEERS, P.A. CIVIL MUNICIPAL &amp; STRUCTURAL ENGINEERS COMPREHENSIVE ENVIRONMENTAL SERVICES P.O. Box 7966 / Rocky Mount, N.C. 27804 Phone: (252) 972-7703 / Fax: (252) 972-7638 www.appianengineers.com</p>
<p>DATE: 2-17-10 SHEET #: 4 OF 8</p>		

**BOUNDARY DESCRIPTION SHOWN IS NOT FOR RECORDATION.**

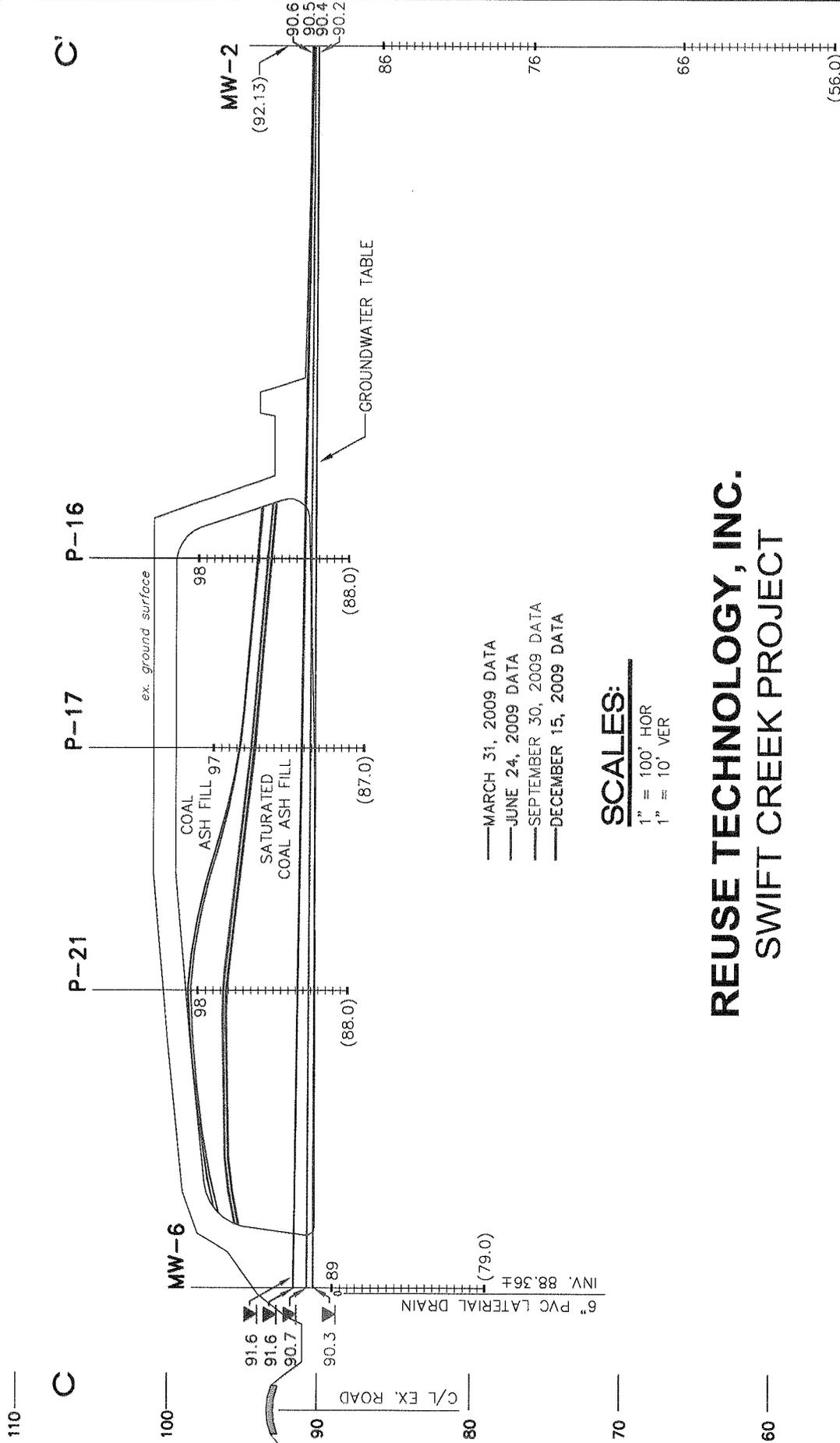
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This document is not represented to comply with all requirements contained in the ADA or other laws. Engineers are not licensed to interpret laws or give advice concerning laws; the owner should have this document reviewed by his attorney to determine legal compliance.

**REUSE TECHNOLOGY, INC.**  
**SWIFT CREEK PROJECT**

**SCALES:**  
1" = 100' HOR  
1" = 10' VER

(65.0 = TOTAL DEPTH)





# REUSE TECHNOLOGY, INC.

## SWIFT CREEK PROJECT

<p><b>Sherrill Environmental, Inc.</b>          3326 Rugby Rd.          Durham N.C. 27707          Phone (919) 493-6555          Fax (919) 493-6554          sherrill@nc.rr.com</p>	DATE: 2-17-10 SHEET #: 6 OF 8
	ACE JOB #: 01-060 SCALE: AS-NOTED

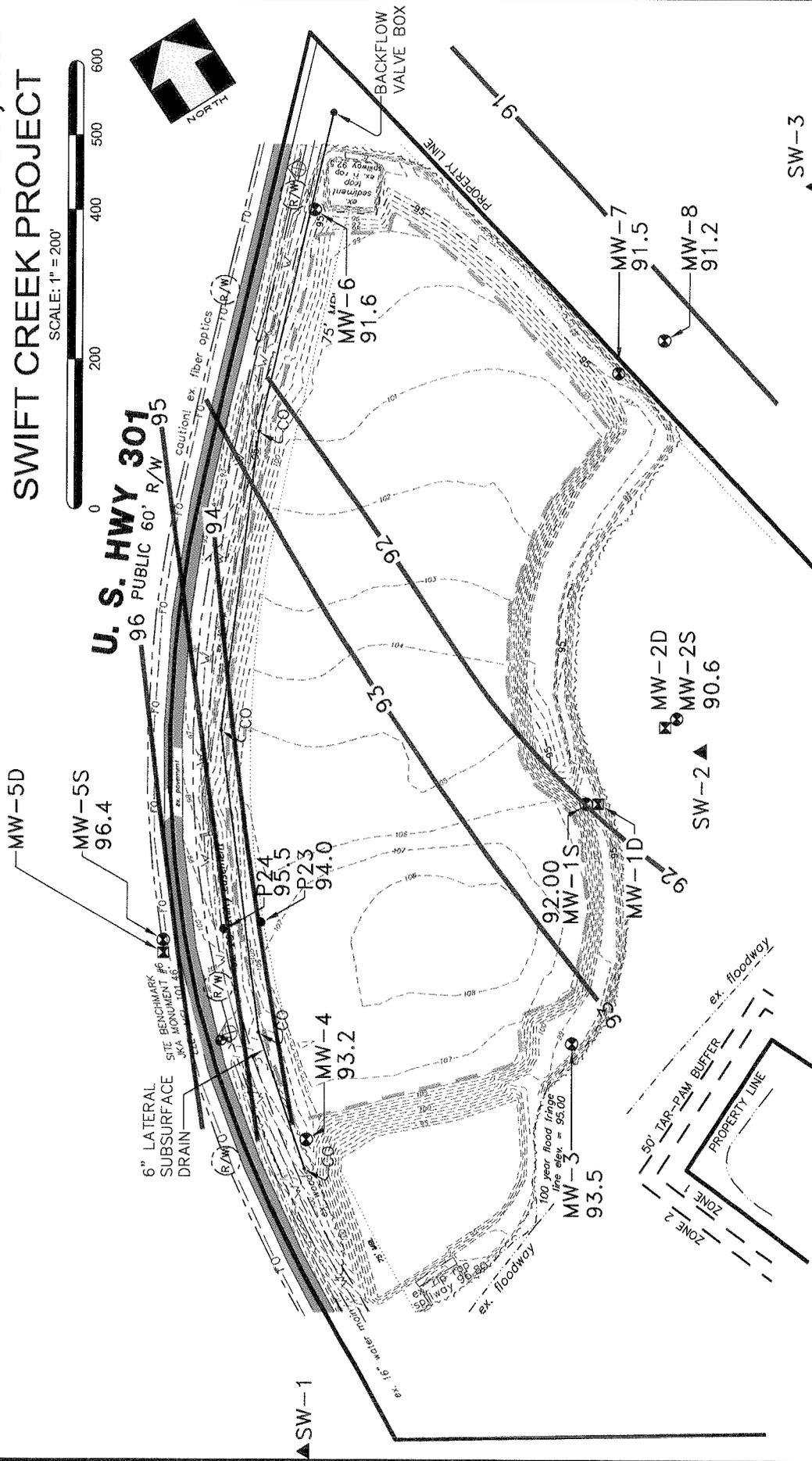
**Appian**  
 APPIAN CONSULTING ENGINEERS, P.A.  
 CIVIL, MUNICIPAL & STRUCTURAL ENGINEERS  
 COMPREHENSIVE ENVIRONMENTAL SERVICES  
 P.O. Box 7966 / Rocky Mount, N.C. 27804  
 Phone: (252) 972-7703 / Fax: (252) 972-7638  
 www.appianengineers.com

**FIGURE 6**  
 C-C'  
 CROSS SECTION

# REUSE TECHNOLOGY, INC.

## SWIFT CREEK PROJECT

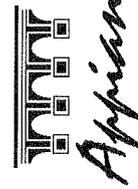
SCALE: 1" = 200'



**Sherrill Environmental, Inc.**  
 3326 Rugby Rd.  
 Durham N.C. 27707  
 Phone (919) 493-6555  
 Fax (919) 493-6554  
 sherrill@nc.rr.com

ACE JOB #: 01-060  
 SCALE: 1"=200'

DATE: 2-17-10  
 SHEET #: 7 OF 8



**APPIAN CONSULTING ENGINEERS, P.A.**  
 CIVIL, MUNICIPAL & STRUCTURAL ENGINEERS  
 COMPREHENSIVE ENVIRONMENTAL SERVICES  
 P.O. Box 7966 / Rocky Mount, N.C. 27804  
 Phone: (252) 972-7703 / Fax: (252) 972-7638  
 www.appianengineers.com

**FIGURE 7**  
**MAP OF**  
**GROUNDWATER TABLE**  
**12/15/09**

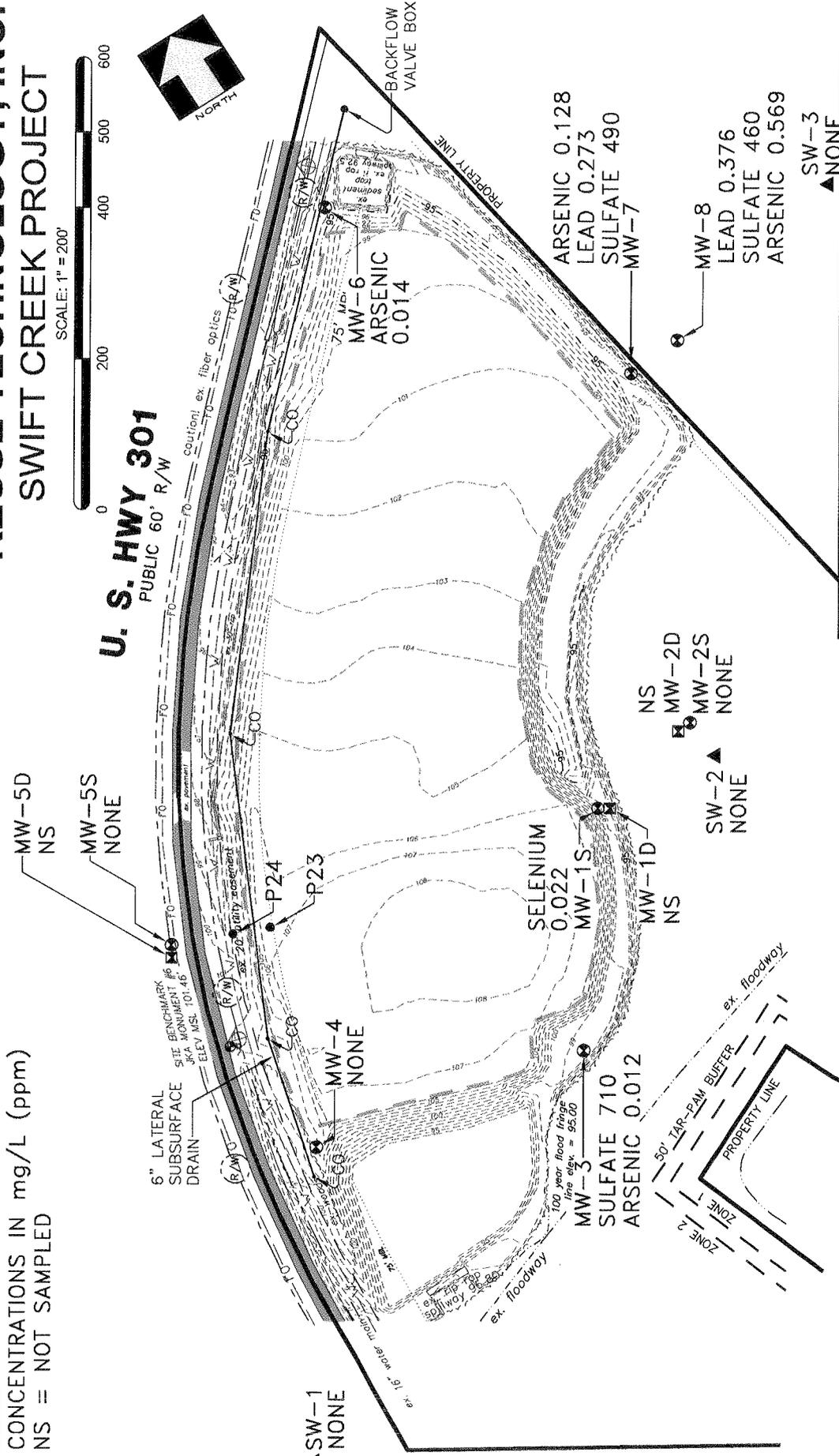
# REUSE TECHNOLOGY, INC. SWIFT CREEK PROJECT

**NOTE:**  
CONCENTRATIONS IN mg/L (ppm)  
NS = NOT SAMPLED

SCALE: 1" = 200'



**U. S. HWY 301**  
PUBLIC 60' R/W



<b>Sherrill Environmental, Inc.</b> 3326 Rugby Rd. Durham N.C. 27707 Phone (919) 493-6555 Fax (919) 493-6554 sherrill@nc.rr.com	<b>AGE JOB #:</b> 01-060	<b>DATE:</b> 2-17-10
<b>Environmental, Inc.</b> 3326 Rugby Rd. Durham N.C. 27707 Phone (919) 493-6555 Fax (919) 493-6554 sherrill@nc.rr.com	<b>SCALE:</b> 1"=200'	<b>SHEET #:</b> 8 OF 8
<b>Applan</b> <b>APPLAN CONSULTING ENGINEERS, P.A.</b> CIVIL, MUNICIPAL & STRUCTURAL ENGINEERS COMPREHENSIVE ENVIRONMENTAL SERVICES P.O. Box 7966 / Rocky Mount, N.C. 27804 Phone: (252) 972-7703 / Fax: (252) 972-7638 www.applanengineers.com		

**FIGURE 8**  
**CONSTITUENTS**  
**EXCEEDING 2L**  
**GROUNDWATER**  
**STANDARDS 12/16/09**

# APPENDIX

**Environmental Conservation Laboratories, Inc.**

102-A Woodwinds Industrial Court

Cary NC, 27511

Phone: 919.467.3090 FAX: 919.467.3515



www.encolabs.com

Wednesday, December 23, 2009

Sherrill Environmental, Inc. (SH004)

Attn: Jack Sherrill

3326 Rugby Road

Durham, NC 27707

**RE: Laboratory Results for  
Project Number: [none], Project Name/Desc: Swift Creek  
ENCO Workorder: C914458**

Dear Jack Sherrill,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Thursday, December 17, 2009.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

The analytical results contained in this report are in compliance with NELAC standards, except as noted in the project narrative. This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Unless otherwise noted, all analyses were performed at ENCO Cary. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Stephanie Franz'.

Stephanie Franz  
Project Manager

Enclosure(s)



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**SAMPLE SUMMARY/LABORATORY CHRONICLE**

<b>Client ID:</b> MW-1S	<b>Lab ID:</b> C914458-01	<b>Sampled:</b> 12/16/09 11:20	<b>Received:</b> 12/17/09 11:12
-------------------------	---------------------------	--------------------------------	---------------------------------

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010C	06/14/10	12/17/09 15:44	12/21/2009 11:09
EPA 7470A	01/13/10	12/21/09 11:49	12/21/2009 18:34

<b>Client ID:</b> MW-1S	<b>Lab ID:</b> C914458-01RE1	<b>Sampled:</b> 12/16/09 11:20	<b>Received:</b> 12/17/09 11:12
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/13/10	12/21/09 07:53	12/22/2009 09:07

<b>Client ID:</b> MW-2S	<b>Lab ID:</b> C914458-02	<b>Sampled:</b> 12/16/09 11:25	<b>Received:</b> 12/17/09 11:12
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/13/10	12/21/09 07:53	12/21/2009 15:42
EPA 6010C	06/14/10	12/17/09 15:44	12/21/2009 11:13
EPA 7470A	01/13/10	12/21/09 11:49	12/21/2009 18:37

<b>Client ID:</b> MW-3	<b>Lab ID:</b> C914458-03	<b>Sampled:</b> 12/16/09 11:15	<b>Received:</b> 12/17/09 11:12
------------------------	---------------------------	--------------------------------	---------------------------------

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/13/10	12/21/09 07:53	12/21/2009 15:59
EPA 6010C	06/14/10	12/17/09 15:44	12/21/2009 11:16
EPA 7470A	01/13/10	12/21/09 11:49	12/21/2009 18:40

<b>Client ID:</b> MW-4	<b>Lab ID:</b> C914458-04	<b>Sampled:</b> 12/16/09 11:10	<b>Received:</b> 12/17/09 11:12
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/13/10	12/21/09 07:53	12/21/2009 16:16
EPA 6010C	06/14/10	12/17/09 15:44	12/21/2009 11:19
EPA 7470A	01/13/10	12/21/09 11:49	12/21/2009 18:44

<b>Client ID:</b> MW-5S	<b>Lab ID:</b> C914458-05	<b>Sampled:</b> 12/16/09 10:50	<b>Received:</b> 12/17/09 11:12
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/13/10	12/21/09 07:53	12/21/2009 16:32
EPA 6010C	06/14/10	12/17/09 15:44	12/21/2009 11:22
EPA 7470A	01/13/10	12/21/09 11:49	12/21/2009 18:48

<b>Client ID:</b> MW-6	<b>Lab ID:</b> C914458-06	<b>Sampled:</b> 12/16/09 12:30	<b>Received:</b> 12/17/09 11:12
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/13/10	12/21/09 07:53	12/21/2009 16:49
EPA 6010C	06/14/10	12/17/09 15:44	12/21/2009 11:40
EPA 7470A	01/13/10	12/21/09 11:49	12/21/2009 18:52







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**Client ID: MW-8** **Lab ID: C914458-08**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Mercury - Total	0.202		0.0540	0.200	ug/L	EPA 7470A	
Sulfate as SO4	460	D	0.78	50	mg/L	EPA 300.0	

**Client ID: MW-8** **Lab ID: C914458-08RE1**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Arsenic - Total	569	D	140	500	ug/L	EPA 6010C	R-05

**Client ID: SW-1** **Lab ID: C914458-09**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Barium - Total	48.1		1.00	10.0	ug/L	EPA 6010C	
Sulfate as SO4	6.2		0.078	5.0	mg/L	EPA 300.0	

**Client ID: SW-2** **Lab ID: C914458-10**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Barium - Total	25.6		1.00	10.0	ug/L	EPA 6010C	
Sulfate as SO4	7.5		0.078	5.0	mg/L	EPA 300.0	

**Client ID: SW-3** **Lab ID: C914458-11**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Barium - Total	75.1		1.00	10.0	ug/L	EPA 6010C	
Sulfate as SO4	14		0.078	5.0	mg/L	EPA 300.0	



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**ANALYTICAL RESULTS**

**Description:** MW-1S

**Matrix:** Ground Water

**Project:** Swift Creek

**Lab Sample ID:** C914458-01

**Sampled:** 12/16/09 11:20

**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12

**Work Order:** C914458

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**Metals by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	9L21017	EPA 7470A	12/21/09 18:34	NLH	



www.encolabs.com

Description: MW-1S  
Matrix: Ground Water  
Project: Swift Creek

Lab Sample ID: C914458-01  
Sampled: 12/16/09 11:20  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:09	JDH	
Barium [7440-39-3] ^	256		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:09	JDH	
Cadmium [7440-43-9] ^	1.09		ug/L	1	1.00	9L17024	EPA 6010C	12/21/09 11:09	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:09	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:09	JDH	
Selenium [7782-49-2] ^	21.7		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:09	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:09	JDH	

**Classical Chemistry Parameters**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	160	D	mg/L	4	20	9L21003	EPA 300.0	12/22/09 09:07	PEV	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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Description: MW-2S  
Matrix: Ground Water  
Project: Swift Creek

Lab Sample ID: C914458-02  
Sampled: 12/16/09 11:25  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

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**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte</u> [ <u>CAS Number</u> ]	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	9L21017	EPA 7470A	12/21/09 18:37	NLH	



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Description: MW-2S  
Matrix: Ground Water  
Project: Swift Creek

Lab Sample ID: C914458-02  
Sampled: 12/16/09 11:25  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:13	JDH	
<b>Barium [7440-39-3] ^</b>	<b>218</b>		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:13	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	9L17024	EPA 6010C	12/21/09 11:13	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:13	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:13	JDH	
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:13	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:13	JDH	



www.encolabs.com

**Description:** MW-2S  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-02  
**Sampled:** 12/16/09 11:25  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

---

**Classical Chemistry Parameters**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	5.0	U	mg/L	1	5.0	9L21003	EPA 300.0	12/21/09 15:42	PEV	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



www.encolabs.com

**Description:** MW-3  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-03  
**Sampled:** 12/16/09 11:15  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

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**Metals by EPA 6000/7000 Series Methods**

---

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	9L21017	EPA 7470A	12/21/09 18:40	NLH	



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Description: MW-3  
Matrix: Ground Water  
Project: Swift Creek

Lab Sample ID: C914458-03  
Sampled: 12/16/09 11:15  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Arsenic [7440-38-2] ^	12.5		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:16	JDH	
Barium [7440-39-3] ^	192		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:16	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	9L17024	EPA 6010C	12/21/09 11:16	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:16	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:16	JDH	
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:16	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:16	JDH	



www.encolabs.com

**Description:** MW-3  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-03  
**Sampled:** 12/16/09 11:15  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

---

### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	710	D	mg/L	10	50	9L21003	EPA 300.0	12/21/09 15:59	PEV	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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**Description:** MW-4  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-04  
**Sampled:** 12/16/09 11:10  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

---

**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte</u> [ <u>CAS Number</u> ]	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	9L21017	EPA 7470A	12/21/09 18:44	NLH	



www.encolabs.com

Description: MW-4  
Matrix: Ground Water  
Project: Swift Creek

Lab Sample ID: C914458-04  
Sampled: 12/16/09 11:10  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:19	JDH	
<b>Barium [7440-39-3] ^</b>	<b>121</b>		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:19	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	9L17024	EPA 6010C	12/21/09 11:19	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:19	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:19	JDH	
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:19	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:19	JDH	



www.encolabs.com

**Description:** MW-4  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-04  
**Sampled:** 12/16/09 11:10  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

**Classical Chemistry Parameters**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	7.5		mg/L	1	5.0	9L21003	EPA 300.0	12/21/09 16:16	PEV	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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**Description:** MW-5S  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-05  
**Sampled:** 12/16/09 10:50  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

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**Metals by EPA 6000/7000 Series Methods**

---

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	9L21017	EPA 7470A	12/21/09 18:48	NLH	



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Description: MW-5S  
Matrix: Ground Water  
Project: Swift Creek

Lab Sample ID: C914458-05  
Sampled: 12/16/09 10:50  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:22	JDH	
Barium [7440-39-3] ^	56.0		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:22	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	9L17024	EPA 6010C	12/21/09 11:22	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:22	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:22	JDH	
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:22	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:22	JDH	



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**Description:** MW-5S  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-05  
**Sampled:** 12/16/09 10:50  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

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**Classical Chemistry Parameters**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	17		mg/L	1	5.0	9L21003	EPA 300.0	12/21/09 16:32	PEV	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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Description: MW-6  
Matrix: Ground Water  
Project: Swift Creek

Lab Sample ID: C914458-06  
Sampled: 12/16/09 12:30  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	9L21017	EPA 7470A	12/21/09 18:52	NLH	



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Description: MW-6  
Matrix: Ground Water  
Project: Swift Creek

Lab Sample ID: C914458-06  
Sampled: 12/16/09 12:30  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Arsenic [7440-38-2] ^	14.6		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:40	JDH	
Barium [7440-39-3] ^	126		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:40	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	9L17024	EPA 6010C	12/21/09 11:40	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:40	JDH	
Lead [7439-92-1] ^	10.2		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:40	JDH	
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:40	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:40	JDH	



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**Description:** MW-6  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-06  
**Sampled:** 12/16/09 12:30  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

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### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	220	D	mg/L	10	50	9L21003	EPA 300.0	12/21/09 16:49	PEV	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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Description: MW-7  
Matrix: Ground Water  
Project: Swift Creek

Lab Sample ID: C914458-07  
Sampled: 12/16/09 11:45  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.669		ug/L	1	0.200	9L21017	EPA 7470A	12/21/09 18:54	NLH	

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	128	D	ug/L	10	100	9L17024	EPA 6010C	12/21/09 11:50	JDH	R-05
Barium [7440-39-3] ^	123	D	ug/L	10	100	9L17024	EPA 6010C	12/21/09 11:50	JDH	R-05
Cadmium [7440-43-9] ^	10.0	UD	ug/L	10	10.0	9L17024	EPA 6010C	12/21/09 11:50	JDH	R-05
Chromium [7440-47-3] ^	100	UD	ug/L	10	100	9L17024	EPA 6010C	12/21/09 11:50	JDH	R-05
Lead [7439-92-1] ^	273	D	ug/L	10	100	9L17024	EPA 6010C	12/21/09 11:50	JDH	R-05
Selenium [7782-49-2] ^	100	UD	ug/L	10	100	9L17024	EPA 6010C	12/21/09 11:50	JDH	R-05
Silver [7440-22-4] ^	100	UD	ug/L	10	100	9L17024	EPA 6010C	12/21/09 11:50	JDH	R-05

**Classical Chemistry Parameters**

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Sulfate as SO4 [14808-79-8] ^	490	D	mg/L	10	50	9L21003	EPA 300.0	12/21/09 17:06	PEV	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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Description: MW-8  
Matrix: Ground Water  
Project: Swift Creek

Lab Sample ID: C914458-08  
Sampled: 12/16/09 12:00  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.202		ug/L	1	0.200	9L21017	EPA 7470A	12/21/09 18:58	NLH	

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	569	D	ug/L	50	500	9L17024	EPA 6010C	12/21/09 15:44	JDH	R-05
Barium [7440-39-3] ^	500	UD	ug/L	50	500	9L17024	EPA 6010C	12/21/09 15:44	JDH	R-05
Cadmium [7440-43-9] ^	50.0	UD	ug/L	50	50.0	9L17024	EPA 6010C	12/21/09 15:44	JDH	R-05
Chromium [7440-47-3] ^	500	UD	ug/L	50	500	9L17024	EPA 6010C	12/21/09 15:44	JDH	R-05
Lead [7439-92-1] ^	500	UD	ug/L	50	500	9L17024	EPA 6010C	12/21/09 15:44	JDH	R-05
Selenium [7782-49-2] ^	500	UD	ug/L	50	500	9L17024	EPA 6010C	12/21/09 15:44	JDH	R-05
Silver [7440-22-4] ^	500	UD	ug/L	50	500	9L17024	EPA 6010C	12/21/09 15:44	JDH	R-05

**Classical Chemistry Parameters**

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Sulfate as SO4 [14808-79-8] ^	460	D	mg/L	10	50	9L21003	EPA 300.0	12/21/09 17:55	PEV	

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**Description:** SW-1  
**Matrix:** Surface Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-09  
**Sampled:** 12/16/09 13:00  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

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**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	9L21017	EPA 7470A	12/21/09 19:03	NLH	



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Description: SW-1  
Matrix: Surface Water  
Project: Swift Creek

Lab Sample ID: C914458-09  
Sampled: 12/16/09 13:00  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:55	JDH	
Barium [7440-39-3] ^	48.1		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:55	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	9L17024	EPA 6010C	12/21/09 11:55	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:55	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:55	JDH	
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:55	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:55	JDH	



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**Description:** SW-1  
**Matrix:** Surface Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-09  
**Sampled:** 12/16/09 13:00  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

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### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	6.2		mg/L	1	5.0	9L21003	EPA 300.0	12/21/09 18:12	PEV	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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**Description:** SW-2  
**Matrix:** Surface Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-10  
**Sampled:** 12/16/09 11:30  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

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**Metals by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	9L21017	EPA 7470A	12/21/09 19:13	NLH	



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Description: SW-2  
Matrix: Surface Water  
Project: Swift Creek

Lab Sample ID: C914458-10  
Sampled: 12/16/09 11:30  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:58	JDH	
Barium [7440-39-3] ^	25.6		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:58	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	9L17024	EPA 6010C	12/21/09 11:58	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:58	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:58	JDH	
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:58	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 11:58	JDH	



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Description: SW-2  
Matrix: Surface Water  
Project: Swift Creek

Lab Sample ID: C914458-10  
Sampled: 12/16/09 11:30  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

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### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	7.5		mg/L	1	5.0	9L21003	EPA 300.0	12/21/09 18:29	PEV	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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**Description:** SW-3  
**Matrix:** Surface Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-11  
**Sampled:** 12/16/09 11:40  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

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**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	9L21017	EPA 7470A	12/21/09 19:16	NLH	



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Description: SW-3  
Matrix: Surface Water  
Project: Swift Creek

Lab Sample ID: C914458-11  
Sampled: 12/16/09 11:40  
Sampled By: John Sherrill

Received: 12/17/09 11:12  
Work Order: C914458

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 12:01	JDH	
Barium [7440-39-3] ^	75.1		ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 12:01	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	9L17024	EPA 6010C	12/21/09 12:01	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 12:01	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 12:01	JDH	
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 12:01	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	9L17024	EPA 6010C	12/21/09 12:01	JDH	



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**Description:** SW-3  
**Matrix:** Surface Water  
**Project:** Swift Creek

**Lab Sample ID:** C914458-11  
**Sampled:** 12/16/09 11:40  
**Sampled By:** John Sherrill

**Received:** 12/17/09 11:12  
**Work Order:** C914458

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### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	14		mg/L	1	5.0	9L21003	EPA 300.0	12/21/09 18:46	PEV	

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**QUALITY CONTROL**

**Metals by EPA 6000/7000 Series Methods - Quality Control**

Batch 9L21017 - EPA 245.1

**Blank (9L21017-BLK1)**

Prepared: 12/21/2009 11:49 Analyzed: 12/21/2009 17:29

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	0.200	U	0.200	ug/L							

**LCS (9L21017-BS1)**

Prepared: 12/21/2009 11:49 Analyzed: 12/21/2009 17:33

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.52		0.200	ug/L	5.00		90	85-115			

**Matrix Spike (9L21017-MS1)**

Prepared: 12/21/2009 11:49 Analyzed: 12/21/2009 17:45

Source: C913277-09

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.22		0.200	ug/L	5.00	0.127	82	85-115			QM-07

**Matrix Spike Dup (9L21017-MSD1)**

Prepared: 12/21/2009 11:49 Analyzed: 12/21/2009 17:55

Source: C913277-09

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.18		0.200	ug/L	5.00	0.127	81	85-115	0.8	15	QM-07

**Post Spike (9L21017-PS1)**

Prepared: 12/21/2009 11:49 Analyzed: 12/21/2009 17:58

Source: C913277-09

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	3.86		0.200	ug/L	5.00	0.127	75	75-125			

**Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control**

Batch 9L17024 - EPA 3005A

**Blank (9L17024-BLK1)**

Prepared: 12/17/2009 15:44 Analyzed: 12/21/2009 10:40

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	10.0	U	10.0	ug/L							
Barium	10.0	U	10.0	ug/L							
Cadmium	1.00	U	1.00	ug/L							
Chromium	10.0	U	10.0	ug/L							
Lead	10.0	U	10.0	ug/L							
Selenium	10.0	U	10.0	ug/L							
Silver	10.0	U	10.0	ug/L							

**LCS (9L17024-BS1)**

Prepared: 12/17/2009 15:44 Analyzed: 12/21/2009 10:43

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	1080		10.0	ug/L	1000		108	80-120			
Barium	1090		10.0	ug/L	1000		109	80-120			
Cadmium	556		1.00	ug/L	500		111	80-120			
Chromium	1090		10.0	ug/L	1000		109	80-120			



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**QUALITY CONTROL**

**Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control**

Batch 9L17024 - EPA 3005A

**LCS (9L17024-BS1) Continued**

Prepared: 12/17/2009 15:44 Analyzed: 12/21/2009 10:43

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lead	1080		10.0	ug/L	1000		108	80-120			
Selenium	1130		10.0	ug/L	1000		113	80-120			
Silver	110		10.0	ug/L	100		110	80-120			

**Matrix Spike (9L17024-MS1)**

Prepared: 12/17/2009 15:44 Analyzed: 12/21/2009 10:58

Source: C915012-09

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	1060		10.0	ug/L	1000	10.0 U	106	75-125			
Barium	1100		10.0	ug/L	1000	50.5	105	75-125			
Cadmium	532		1.00	ug/L	500	1.00 U	106	75-125			
Chromium	1050		10.0	ug/L	1000	10.0 U	105	75-125			
Lead	1040		10.0	ug/L	1000	2.25	104	75-125			
Selenium	1090		10.0	ug/L	1000	10.0 U	109	75-125			
Silver	106		10.0	ug/L	100	10.0 U	106	75-125			

**Matrix Spike Dup (9L17024-MSD1)**

Prepared: 12/17/2009 15:44 Analyzed: 12/21/2009 11:00

Source: C915012-09

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	1070		10.0	ug/L	1000	10.0 U	107	75-125	0.5	20	
Barium	1100		10.0	ug/L	1000	50.5	105	75-125	0.07	20	
Cadmium	531		1.00	ug/L	500	1.00 U	106	75-125	0.3	20	
Chromium	1050		10.0	ug/L	1000	10.0 U	105	75-125	0.2	20	
Lead	1040		10.0	ug/L	1000	2.25	104	75-125	0.2	20	
Selenium	1090		10.0	ug/L	1000	10.0 U	109	75-125	0.3	20	
Silver	106		10.0	ug/L	100	10.0 U	106	75-125	0.4	20	

**Post Spike (9L17024-PS1)**

Prepared: 12/17/2009 15:44 Analyzed: 12/21/2009 11:03

Source: C915012-09

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	1.09		0.0100	mg/L	1.00	0.00182	109	80-120			
Barium	1.13		0.0100	mg/L	1.00	0.0505	108	80-120			
Cadmium	0.544		0.00100	mg/L	0.500	0.000136	109	80-120			
Chromium	1.08		0.0100	mg/L	1.00	0.000473	108	80-120			
Lead	1.06		0.0100	mg/L	1.00	0.00225	106	80-120			
Selenium	1.12		0.0100	mg/L	1.00	-0.00280	112	80-120			
Silver	0.104		0.0100	mg/L	0.100	0.000784	104	80-120			

**Classical Chemistry Parameters - Quality Control**

Batch 9L21003 - NO PREP

**Blank (9L21003-BLK1)**

Prepared: 12/21/2009 07:53 Analyzed: 12/21/2009 09:52

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sulfate as SO4	5.0	U	5.0	mg/L							



**QUALITY CONTROL**

**Classical Chemistry Parameters - Quality Control**

Batch 9L21003 - NO PREP

**LCS (9L21003-BS1)**

Prepared: 12/21/2009 07:53 Analyzed: 12/21/2009 10:26

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sulfate as SO4	47		5.0	mg/L	50.0		94	90-110			

**Matrix Spike (9L21003-MS1)**

Prepared: 12/21/2009 07:53 Analyzed: 12/21/2009 10:42

Source: C913471-05

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sulfate as SO4	72		5.0	mg/L	50.0	20	104	80-120			

**Matrix Spike Dup (9L21003-MSD1)**

Prepared: 12/21/2009 07:53 Analyzed: 12/21/2009 10:59

Source: C913471-05

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sulfate as SO4	70		5.0	mg/L	50.0	20	100	80-120	3	15	

**FLAGS/NOTES AND DEFINITIONS**

- B The analyte was detected in the associated method blank.
- D The sample was analyzed at dilution.
- J The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
- U The analyte was analyzed for but not detected to the level shown, adjusted for actual sample preparation data and moisture content, where applicable.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
- MRL Method Reporting Limit. The MRL is roughly equivalent to the practical quantitation limit (PQL) and is based on the low point of the calibration curve, when applicable, sample preparation factor, dilution factor, and, in the case of soil samples, moisture content.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- R-05 The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.

