

**Moore & Van Allen**

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September 11, 2007

Jaclynne Drummond  
Hydrogeologist  
Environmental Compliance – Solid Waste Section  
NCDENR- Division of Waste Management  
1646 Mail Service Center  
Raleigh, NC 27699-1646

**Re: Monitoring Plan  
Swift Creek Dewatering Program**

Dear Ms. Drummond:

Attached please find the plan to demonstrate the effectiveness of dewatering at Swift Creek requested in your letter dated July 17, 2007 to Full Circle Solutions, Inc. This plan has been prepared for Full Circle Solutions, Inc. by Sherrill Environmental, Inc.

Very truly yours,

Moore & Van Allen PLLC

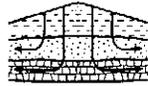


William A. White

cc: Mark Casper  
Robert Waldrop



Research Triangle, NC  
Charleston, SC



**Sherrill Environmental, Inc.**  
Environmental and Geologic Services

September 11, 2007

Jaclynne Drummond  
Hydrogeologist  
Environmental Compliance– Solid Waste Section  
NCDENR- Division of Waste Management  
1646 Mail Service Center  
Raleigh, NC 27699-1646

Subject: Monitoring Plan  
Swift Creek Dewatering Project

Dear Ms. Drummond:

Your letter dated July 17, 2007 to Full Circle Solutions, Inc. stated that the Swift Creek Dewatering Analysis prepared by Appian Consulting Engineers, PA, was conditionally approved based on submitting a plan to demonstrate the effectiveness of the dewatering measure. A water level monitoring network exists at the project and has been monitored since 2002. Figure 1 shows the location of piezometers and monitoring wells that are located at the site. The network consists of 22 piezometers (P-1 through P-22) that are located in/on the project area and 11 monitoring wells that surround the project. Two piezometers (P-10 and P-11) were removed during the construction of the south storm water retention pond. Three piezometers (P-3, P-4 and P-16) have been damaged by routine mowing of the project area and can probably be repaired and brought back into service.

A summary of construction information for the site piezometers and monitoring wells is presented on Table 1. Piezometers P-1 through P-6 monitor water levels in the formation below the ash fill at a depth of approximately 20 to 30 feet below the present surface. Piezometers P-7 and P-8 monitor water levels at a depth of approximately 30 to 40 feet below the present surface. Piezometers P-9 and P-22 are located outside of the ash fill area. Piezometers P-12 through P-21 are screened in the ash fill.

A total of 11 monitoring wells are located around the perimeter of the Swift Creek Project (Figure 1). 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 ash 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 ash 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. Monitoring wells MW-3, MW-4, MW-6 and MW-7 are shallow wells located at the southeast, southwest, northwest and northeast corners of the project. Monitoring well, MW-8 is located northeast of the project approximately 115 feet from the edge of the ash fill. MW-8 is constructed similarly to the other existing shallow monitoring well and is screened in alluvial sediments consisting of medium to coarse quartz sand above the contact with the underlying marine unit.

Once the Appian designed upgradient intercepting cut-off drain along the west side of the property has been installed, Sherrill will supervise the installation of two additional piezometers. The piezometers will be placed at a distance of approximately 20 feet east and west of the cut-off drain. These piezometers will be used to directly monitor the effectiveness of the cut-off drain in reducing the elevation of the local water table.

On August 27, 2007, Sherrill prepared and submitted to Mr. William White of Moore & Van Allen, PLLC, an update of water level data record for the Swift Creek Project. A copy of that report is attached. The latest update includes information obtained on August 21, 2007. In summary, the report showed a significant decrease of water levels in the ash as a response to the lowering of the local groundwater table due to near-drought conditions. Piezometers that measure water level elevations in the ash fill (P-12 through P-21) showed an average decrease of 4.29 feet since the last measurement in September 25, 2006. The average water level presently in the ash fill is 0.8 feet. This data shows that the ash fill has the potential to drain in response to a lower groundwater table. The remedial design proposed by Appian Consulting Engineers, PA, (December 12, 2006) of an upgradient intercepting cut-off drain along the west side of the property that would serve to lower the site groundwater level. As shown by these recent water level measurements, a lower groundwater table should allow for water levels in the ash to decrease.

The remedial measures proposed by Appian also included a proposed low-permeable soil cap to reduce surface infiltration. While this would serve to lower the water level in the ash fill, it may not be necessary. Sherrill recommends installing the intercepting cut-off drain and monitoring the water levels at the site for a period of two years, prior to evaluating the need for the proposed low-permeable soil cap. If an area is observed on the present cap surface that allows surface water to pond, soil should be added to the low area, regraded and planted with grass seed.

Sherrill recommends monitoring water levels at the site in the piezometers and monitoring wells on a quarterly basis. An environmental monitoring program is currently being performed at the site where samples are collected from the eleven monitoring wells and three surface water stations. The environmental monitoring is performed on a semi-annual basis and reported to the Division of Waste Management. The next sampling event is scheduled for October 2007. Sherrill recommends including a section in the semi-annual Assessment Monitoring Report that would include data from the water level measurements and a discussion of the results.

We appreciate the opportunity to provide you with consultation and environmental services. Thank you for your consideration. If you have any questions, or need additional information, please contact us at (919) 493-6555.

Sincerely,

**SHERRILL ENVIRONMENTAL, INC.**



John (Jack) F. Sherrill, L.G.

cc: William White  
Robert J. Waldrop  
Mark A. Casper  
Bobby Joyner



TABLE 1  
PIEZOMETER AND MONITORING WELL 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	104.4	1.8	18-28	30.0		12.5	91.9		Damaged, needs locating
P-4	106.57	104.0	2.6	20-30	32.6		14.0	90.0		Glue Joint, clear obstruction
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		Damaged, needs coupling
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	
B-1	107.66	105.7	2.0	14-19	21.0	19.40	13.5	92.2	88.9	1" casing
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	

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

**ADA AND LEGAL DISCLAIMER**

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**

SCALE: 1" = 200'



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

MW-5D

MW-5S

SITE BENCHMARK  
 IKA MONUMENT  
 ELEV 451.101, 45'

P22

MW-4

P18

P6

P13

P5

P9

P12

P4

P8

P17

P15

P16

P14

P1

P2

P7

MW-1S

MW-1D

MW-2D

MW-2S

MW-7

MW-8

MW-3

MW-6

MW-21

MW-20

MW-25

MW-28

MW-29

MW-30

MW-31

MW-32

MW-33

MW-34

MW-35

MW-36

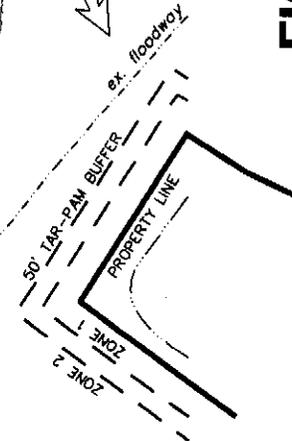
MW-37

**SITE IS OUTSIDE SWIFT CREEK FLOODWAY**

**FIGURE 1**  
**LOCATION MAP OF PIEZOMETER & MONITORING WELL LOCATIONS**

**LEGEND**

- SHALLOW MONITORING WELL (ALLUVIAL TERRACE)
- DEEP MONITORING WELL (MARINE SEDIMENTS)
- PIEZOMETER



DATE:	9-5-07
SHEET #:	1 OF 8

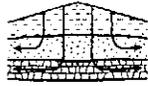
  

ACE JOB #:	01-060
SCALE:	1"=200'

**Sherrill Environmental, Inc.**  
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 sherrill@nc.rr.com

**Appian**  
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**FILE**

August 27, 2007

William White  
Moore & Van Allen, PLLC  
100 N. Tryon St., Floor 47  
Charlotte, NC 28209

Subject: Update of Water Level Data Record  
Swift Creek Project  
US Highway 301, North Carolina

Dear Mr. White:

At your request, Sherrill Environmental, Inc. (Sherrill) is continuing to update the water level data record at the Swift Creek Project in Nash County, North Carolina. The site is located on the east side of Highway 301 at Swift Creek, north of the town of Battleboro, North Carolina. The latest update includes information obtained on August 21, 2007. Piezometer P-3 was damaged and not located. Piezometer P-16 was damaged but can be repaired with a new coupling.

Measured water levels and calculated water elevations for 11 monitoring wells that surround the project are presented on Table 1. Also shown on Table 1 is an average elevation for each measuring event. The average water level has shown a decrease from 92.86 feet (April 4, 2007) to 89.92 feet (August 21, 2007), a decline of 2.94 feet. Piezometers P-9 and P-22 are located on the west side of the property outside of the ash fill area. The average decline in water levels measured at P-9 and P-22 was 3.40 feet. This decline is due to the recent near-drought conditions that have lead to a lowering of the groundwater table.

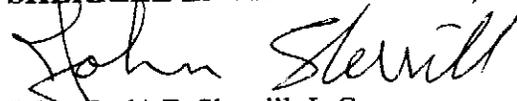
Water level elevation measured from the site piezometers, (all located in the project fill area with the exception of P-9 and P-22) are presented in Table 2. Piezometers that measure water level elevations in the alluvial material beneath the ash (P-5 and P-6) showed an average decrease of 1.8 feet since the last measurement on September 25, 2006. Piezometers that measure water level elevations in the ash fill (P-12 through P-21) showed an average decrease of 4.29 feet since the last measurement in September 25, 2006. Chart 1 shows the average feet of water present in the ash since the piezometers were installed in 2002. Chart 2 shows the elevation of the water levels in the ash as measured in the individual piezometers.

In summary, the decrease of water levels in the ash is a response to the lowering of the local groundwater table due to near-drought conditions. The soil cap with grass cover may also be contributing to reduce the infiltration of precipitation. The most important concept that may be interpreted from the data is that the water level in the ash has the potential to be lowered. This data supports the remedial design proposed by Appian Consulting Engineers, PA, (December 12, 2006) of an upgradient intercepting cut-off drain along the west side of the property that would serve to lower the site groundwater level. As shown by these recent water level measurements, a lower groundwater table should allow for water levels in the ash to decrease.

We appreciate the opportunity to provide you with consultation and environmental services. Thank you for your consideration. If you have any additional questions, or need additional information, please contact us at (919) 493-6555.

Sincerely,

**SHERRILL ENVIRONMENTAL, INC.**



John (Jack) F. Sherrill, L.G.

cc: Robert J. Waldrop  
Mark A. Casper  
Bobby Joyner

**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
TOC ELV.	99.54	99.90	94.87	95.22	102.15	106.06	102.68	102.67	98.41	98.63	95.42	
12/1/2005 GW ELV.	8.21	8.57	4.72	4.70	9.65	11.24	6.01	6.40	7.17	7.63		92.58
	91.33	91.33	90.15	90.52	92.50	94.82	96.67	96.27	91.24	91.00		
1/8/2006 GW ELV.	8.11	8.28	NM	NM	9.48	10.15	5.86	5.68	7.18	7.74		93.45
	91.43	91.62			92.67	95.91	96.82	96.99	91.23	90.89		
6/9/2006 GW ELV.	8.69	9.05	4.83	4.87	10.32	11.41	6.94	6.84	7.74	8.66		92.08
	90.85	90.85	90.04	90.35	91.83	94.65	95.74	95.83	90.67	89.97		
4/4/2007 GW ELV.	7.80	8.18	4.40	4.75	9.31	9.96	6.12	5.96	7.28	7.80	4.84	
	91.74	91.72	90.47	90.47	92.84	96.10	96.56	96.71	91.13	90.83	90.58	92.86
8/21/2007 GW ELV.	10.89	11.30	6.77	6.82	11.40	13.28	9.57	9.42	10.80	10.71	7.67	
	88.65	88.60	88.10	88.40	90.75	92.78	93.11	93.25	87.61	87.92	87.75	89.92

**TABLE 2  
PIEZOMETER WATER ELEVATIONS  
SWIFT CREEK PROJECT**

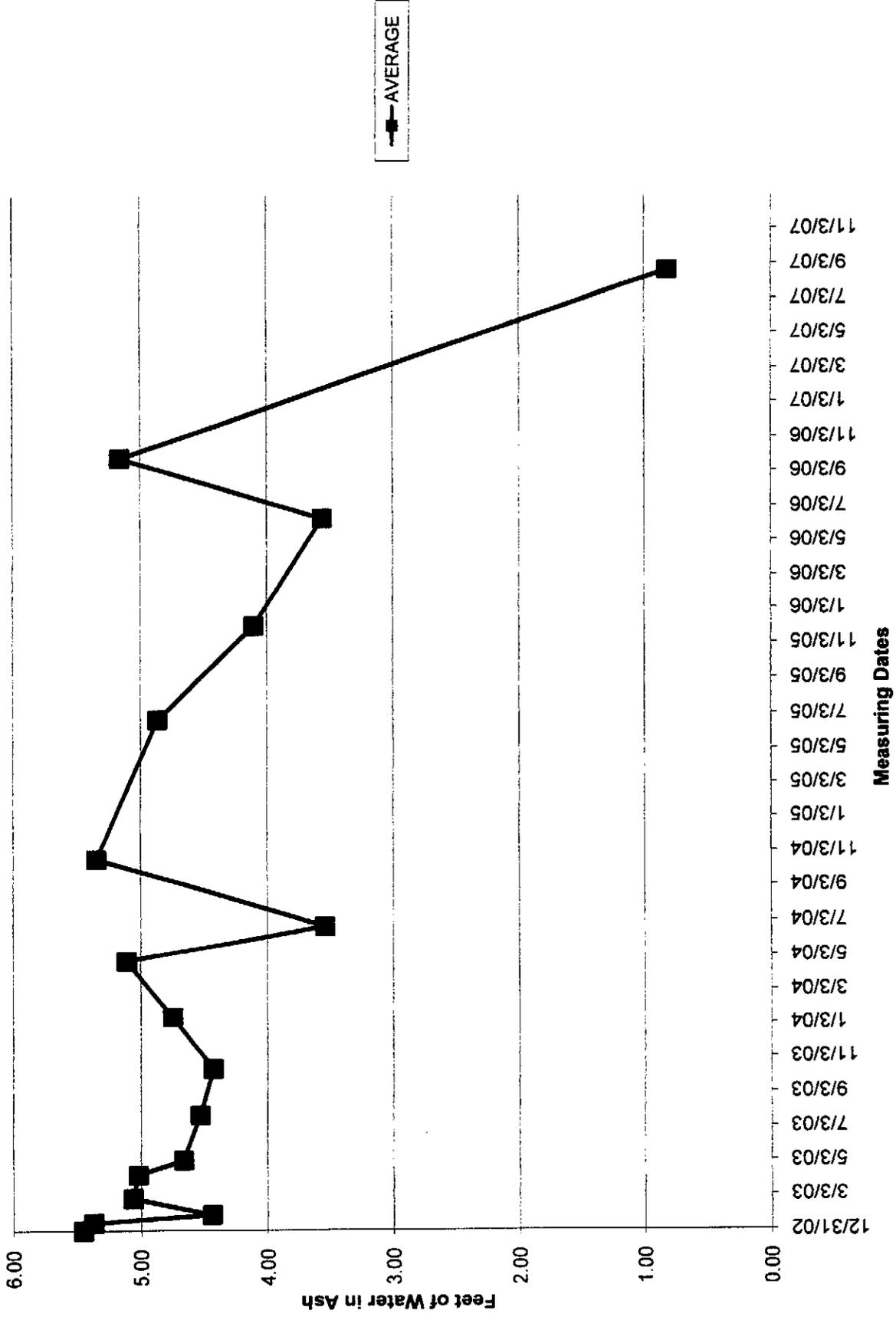
	12/31/02	1/13/03	1/27/03	4/8/03	5/4/03	7/23/03	10/13/03	1/14/04	4/22/04	6/22/04	10/19/04	6/22/05
P-2	92.68	92.53	92.16	92.63	92.36	92.28	92.61	92.48	92.27	91.69	92.95	92.03
P-3	92.45	91.95	91.54	92.19	92.03	91.84	92.4	92.32	92.00	91.19	92.70	91.87
P-5	94.03	94.09	94.59	95.43	95.23	95.25	95.43	95.21	95.41	94.59	95.76	95.46
P-6	97.77	97.66	96.89	97.6	97.17	96.44	96.66	96.64	96.75	95.65	97.04	97.04
Average in Alluvial	94.23	94.06	93.80	94.46	94.20	93.95	94.28	94.16	94.11	93.28	94.61	94.10
P-12	96.60	96.23	95.52	95.81	95.6	95.7	95.87	96.03	96.13	95.39	96.81	96.65
P-13	96.59	96.88	96.90	97.81	97.77	97.63	97.74	97.57	98.11	97.04	98.22	98.53
P-14	94.72	94.29	93.32	93.9	93.42	93.31	93.3	93.84	94.04	91.5	94.15	93.51
P-15	95.81	95.43	92.59	93.73	92.74	93.16	93.16	94.73	95.54	92.37	95.67	94.03
P-16	94.65	94.36	93.92	94.08	93.87	94.02	93.73	93.94	93.99	93.04	94.23	93.54
P-17	94.74	94.67	94.29	94.71	94.59	94.85	94.59	94.92	95.34	93.69	95.52	94.91
P-18	98.00	97.84	97.17	97.74	97.38	96.55	96.69	96.60	96.87	95.53	96.93	96.83
P-19	102.35	101.71	100.08	101.13	100.42	99.57	99.42	99.44	99.63	98	100.12	99.94
P-20	95.10	94.88	94.51	94.52	94.45	94.48	94.55	94.64	94.63	94.36	94.97	94.92
P-21	95.98	97.4	95.58	95.85	95.28	95.49	94.37	95.04	96.32	93.96	96.35	95.19
Average in Ash	96.45	96.37	95.39	95.93	95.55	95.48	95.34	95.68	96.06	94.49	96.30	95.81

**TABLE 2  
PIEZOMETER WATER ELEVATIONS  
SWIFT CREEK PROJECT**

	12/1/05	6/10/06	9/25/06	6/22/04	10/19/04	6/22/05	12/1/05	6/10/06	9/25/06	8/21/07
P-2	92.06	91.60	93.11	91.69	92.95	92.03	92.06	91.60	93.11	
P-3	92.08	91.41	92.77	91.19	92.70	91.87	92.08	91.41	92.77	
P-5	94.76	94.77	96.41	94.59	95.76	95.46	94.76	94.77	96.41	92.49
P-6	95.45	95.69	97.19	95.65	97.04	97.04	95.45	95.69	97.19	93.64
Average in Alluvial	93.59	93.37	94.87	93.28	94.61	94.10	93.59	93.37	94.87	93.07
P-12	96.00	95.93	97.92	95.39	96.81	96.65	96.00	95.93	97.92	93.11
P-13	96.71	97.23	98.89	97.04	98.22	98.53	96.71	97.23	98.89	95.09
P-14	93.08	91.60	93.43	91.5	94.15	93.51	93.08	91.60	93.43	88.16
P-15	93.83	92.19	94.75	92.37	95.67	94.03	93.83	92.19	94.75	90.18
P-16	93.64	92.89	94.16	93.04	94.23	93.54	93.64	92.89	94.16	
P-17	94.23	93.80	95.11	93.69	95.52	94.91	94.23	93.80	95.11	88.59
P-18	95.12	95.51	97.04	95.53	96.93	96.83	95.12	95.51	97.04	93.67
P-19	98.41	97.82	99.56	98	100.12	99.94	98.41	97.82	99.56	94.8
P-20	94.61	94.66	95.24	94.36	94.97	94.92	94.61	94.66	95.24	93.2
P-21	95.60	94.39	95.87	93.96	96.35	95.19	95.60	94.39	95.87	90.41
Average in Ash	95.12	94.60	96.20	94.49	96.30	95.81	95.12	94.60	96.20	91.91

AVERAGE FEET OF WATER IN ASH  
 DATA FROM 11 PIEZOMETERS  
 SWIFT CREEK PROJECT

Sherrill Environmental, Inc.



# ELEVATION OF WATER IN COAL ASH

