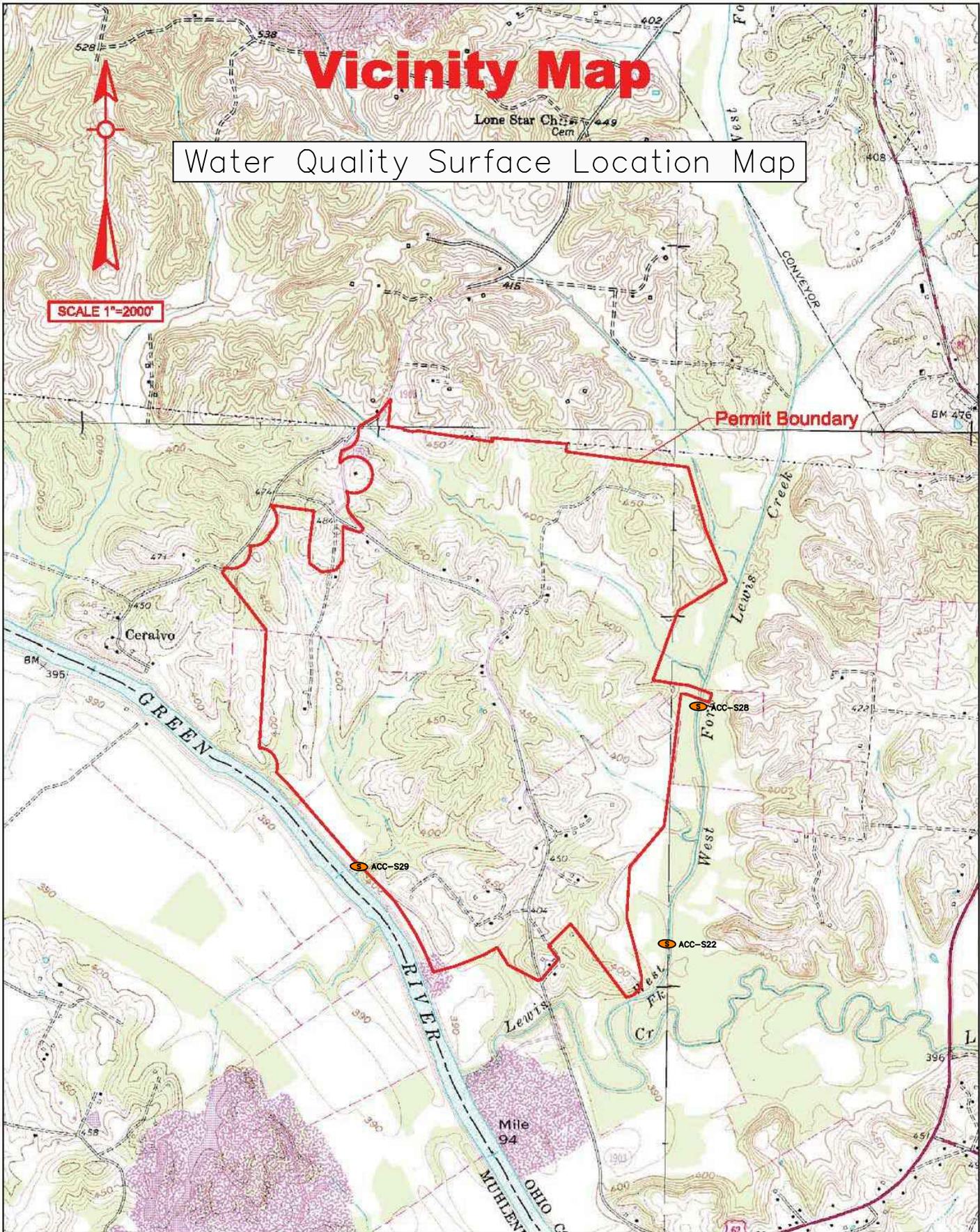


# Vicinity Map

## Water Quality Surface Location Map

SCALE 1"=2000'

Permit Boundary



**T.H.E. Engineers, Inc.**

PROJECT: LEWIS CREEK WEST-SITE PROPOSED STREAMS

STREAM: UT'S OF LEWIS CK., W.F. LEWIS CK., GREEN RIVER

COUNTY: OHIO

STATE: KY

NEAR: CENTERTOWN

ITEM: VICINITY MAP

EXHIBIT 1

DATE:



Analysis Report

May 23, 2012

ARMSTRONG COAL COMPANY INC
407 BROWN ROAD
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID: ACC-S22
Date Sampled: May 16, 2012
Date Received: May 17, 2012
Product Description: WATER
Sample Point: ACC-S22
Mine: Lewis Creek W
Field - pH: 7.7
Field - Temperature: 20.5
Field - Flow: 5
Field - Conductivity: 1138
Field - Dis. Oxygen: -
Water Elevation:
Permit #: Lewis Creek W

SGS Minerals Sample ID: 511-1282756-001

Table with columns: TESTS, RESULT, UNIT, METHOD, REPORTING LIMIT, DATE, ANALYZED TIME, ANALYST. Rows include: Acidity as mg CaCO3/L, Sulfate, SO4, Total Suspended Solids, Alkalinity, mg CaCO3/L (pH 4.5), METALS BY ICP, Iron, Fe - Total, Manganese, Mn - Total.

Ron Christian (handwritten signature)

Ron Christian
Water Lab Manager

SGS North America Inc. Minerals Services Division
618 Bob Posey Street Henderson KY 42420 t (270) 827-1187 f (270) 826-0719 www.sgs.com/minerals

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# Analysis Report

February 24, 2012

**ARMSTRONG COAL COMPANY INC**  
407 BROWN ROAD  
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT  
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID:	ACC-S22	Sample Point:	ACC-S22
Date Sampled:	Feb 6, 2012	Mine:	Lewis Creek Surface
Date Received:	Feb 7, 2012	Field - pH:	8.18
Product Description:	WATER	Field - Temperature:	10.9
		Field - Flow:	12
		Field - Conductivity:	520
		Field - Dis. Oxygen:	-
		Water Elevation:	
		Permit #:	892-0111

### SGS Minerals Sample ID: 511-127772-001

<u>TESTS</u>	<u>RESULT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>REPORTING</u>		<u>ANALYZED</u>		
				<u>LIMIT</u>	<u>DATE</u>	<u>TIME</u>	<u>ANALYST</u>	
Acidity as mg CaCO3/L	-54	mg/L	SM 2310	-998	2012-02-09	18:19:53	MF	
Sulfate, SO4	161	mg/L	ASTM D516	10	2012-02-16	15:45:00	SN	
Total Suspended Solids	13	mg/L	SM 2540 D	2	2012-02-07	13:26:42	MF	
Alkalinity, mg CaCO3/L (pH 4.5)	60	mg/L	SM 2320	0.01	2012-02-09	12:33:23	MF	
<b>METALS BY ICP</b>								
Iron, Fe - Total	0.76	mg/L	EPA 200.7	0.05	2012-01-24	13:20:00	RC	
Manganese, Mn - Total	0.60	mg/L	EPA 200.7	0.02	2012-01-24	13:20:00	RC	

Ron Christian  
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# Analysis Report

October 20, 2011

**ARMSTRONG COAL COMPANY INC**  
407 BROWN ROAD  
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT  
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID:	ACC-S22	Sample Point:	ACC-S22
Date Sampled:	Oct 17, 2011	Mine:	Lewis Creek Surface
Date Received:	Oct 19, 2011	Field - pH:	7.56
Product Description:	WATER	Field - Temperature:	17.6
		Field - Flow:	0.444
		Field - Conductivity:	2043
		Field - Dis. Oxygen:	-
		Water Elevation:	
		Permit #:	892-0111

### SGS Minerals Sample ID: 511-1172418-003

<u>TESTS</u>	<u>RESULT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>REPORTING</u>	<u>ANALYZED</u>		
				<u>LIMIT</u>	<u>DATE</u>	<u>TIME</u>	<u>ANALYST</u>
Acidity as mg CaCO3/L	-180	mg/L	SM 2310	-998	2011-10-19	13:29:47	MF
Sulfate, SO4	1270	mg/L	ASTM D516	10	2011-10-20	14:36:00	SN
Total Suspended Solids	23	mg/L	SM 2540 D	2	2011-10-19	13:21:00	SN
Alkalinity, mg CaCO3/L (pH 4.5)	184	mg/L	SM 2320	0.01	2011-10-19	10:42:44	MF
<b>METALS BY ICP</b>							
Iron, Fe - Total	0.89	mg/L	EPA 200.7	0.05	2011-10-20	12:46:00	RC
Manganese, Mn - Total	2.08	mg/L	EPA 200.7	0.02	2011-10-20	12:46:00	RC

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# Analysis Report

October 20, 2011

**ARMSTRONG COAL COMPANY INC**  
407 BROWN ROAD  
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT  
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID:	ACC-S28	Sample Point:	ACC-S28
Date Sampled:	Oct 17, 2011	Mine:	Lewis Creek Surface
Date Received:	Oct 19, 2011	Field - pH:	7.34
Product Description:	WATER	Field - Temperature:	18.8
		Field - Flow:	0.444
		Field - Conductivity:	2074
		Field - Dis. Oxygen:	—
		Water Elevation:	
		Permit #:	892-0111

### SGS Minerals Sample ID: 511-1172418-002

<u>TESTS</u>	<u>RESULT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>REPORTING</u>		<u>ANALYZED</u>	
				<u>LIMIT</u>	<u>DATE</u>	<u>TIME</u>	<u>ANALYST</u>
Acidity as mg CaCO3/L	-221	mg/L	SM 2310	-998	2011-10-19	13:29:47	MF
Sulfate, SO4	1426	mg/L	ASTM D516	10	2011-10-20	14:36:00	SN
Total Suspended Solids	15	mg/L	SM 2540 D	2	2011-10-19	13:21:00	SN
Alkalinity, mg CaCO3/L (pH 4.5)	226	mg/L	SM 2320	0.01	2011-10-19	10:42:44	MF
<b>METALS BY ICP</b>							
Iron, Fe - Total	1.77	mg/L	EPA 200.7	0.05	2011-10-20	12:46:00	RC
Manganese, Mn - Total	2.69	mg/L	EPA 200.7	0.02	2011-10-20	12:46:00	RC

Ron Christian  
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# Analysis Report

May 23, 2012

**ARMSTRONG COAL COMPANY INC**  
407 BROWN ROAD  
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT  
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID:	ACC-S28	Sample Point:	ACC-S28
Date Sampled:	May 16, 2012	Mine:	Lewis Creek W
Date Received:	May 17, 2012	Field - pH:	7.63
Product Description:	WATER	Field - Temperature:	50.5
		Field - Flow:	4
		Field - Conductivity:	1147
		Field - Dis. Oxygen:	—
		Water Elevation:	
		Permit #:	Lewis Creek W

### SGS Minerals Sample ID: 511-1282756-002

<u>TESTS</u>	<u>RESULT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>REPORTING</u>		<u>ANALYZED</u>	
				<u>LIMIT</u>	<u>DATE</u>	<u>TIME</u>	<u>ANALYST</u>
Acidity as mg CaCO3/L	-181	mg/L	SM 2310	-998	2012-05-17	13:57:58	SN
Sulfate, SO4	447.9	mg/L	EPA 300.0	0.5	2012-05-22	17:46:16	SN
Total Suspended Solids	19	mg/L	SM 2540 D	2	2012-05-17	12:05:00	RC
Alkalinity, mg CaCO3/L (pH 4.5)	188	mg/L	SM 2320	0.01	2012-05-17	10:44:43	SN
<b>METALS BY ICP</b>							
Iron, Fe - Total	1.30	mg/L	EPA 200.7	0.05	2012-05-23	11:01:17	RC
Manganese, Mn - Total	0.88	mg/L	EPA 200.7	0.02	2012-05-23	11:01:17	RC

Ron Christian  
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# Analysis Report

February 24, 2012

**ARMSTRONG COAL COMPANY INC**  
407 BROWN ROAD  
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT  
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID:	ACC-S28	Sample Point:	ACC-S28
Date Sampled:	Feb 6, 2012	Mine:	Lewis Creek Surface
Date Received:	Feb 7, 2012	Field - pH:	8.46
Product Description:	WATER	Field - Temperature:	10.9
		Field - Flow:	11
		Field - Conductivity:	521
		Field - Dis. Oxygen:	-
		Water Elevation:	
		Permit #:	892-0111

### SGS Minerals Sample ID: 511-127772-002

<u>TESTS</u>	<u>RESULT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>REPORTING</u>		<u>ANALYZED</u>	
				<u>LIMIT</u>	<u>DATE</u>	<u>TIME</u>	<u>ANALYST</u>
Acidity as mg CaCO3/L	-56	mg/L	SM 2310	-998	2012-02-09	18:19:53	MF
Sulfate, SO4	162	mg/L	ASTM D516	10	2012-02-16	15:45:00	SN
Total Suspended Solids	9	mg/L	SM 2540 D	2	2012-02-07	13:26:42	MF
Alkalinity, mg CaCO3/L (pH 4.5)	62	mg/L	SM 2320	0.01	2012-02-09	12:33:23	MF
<b>METALS BY ICP</b>							
Iron, Fe - Total	1.40	mg/L	EPA 200.7	0.05	2012-01-24	13:20:00	RC
Manganese, Mn - Total	0.49	mg/L	EPA 200.7	0.02	2012-01-24	13:20:00	RC

Ron Christian  
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# Analysis Report

September 01, 2011

**ARMSTRONG COAL COMPANY INC**  
407 BROWN ROAD  
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT  
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID:	ACC-S28	Sample Point:	ACC-S28
Date Sampled:	Aug 18, 2011	Mine:	Lewis Creek Surface
Date Received:	Aug 19, 2011	Field - pH:	8.12
Product Description:	WATER	Field - Temperature:	24.1
		Field - Flow:	0.444
		Field - Conductivity:	2052
		Field - Dis. Oxygen:	—
		Water Elevation:	
		Permit #:	892-0111

### SGS Minerals Sample ID: 511-1169141-001

<u>TESTS</u>	<u>RESULT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>REPORTING</u>	<u>ANALYZED</u>		
				<u>LIMIT</u>	<u>DATE</u>	<u>TIME</u>	<u>ANALYST</u>
Acidity as mg CaCO3/L	-179	mg/L	SM 2310	-998	2011-08-19	16:37:21	SN
Sulfate, SO4	1212	mg/L	ASTM D516	10	2011-09-01	15:09:00	RC
Total Suspended Solids	32	mg/L	SM 2540 D	2	2011-08-19	16:40:00	SN
Alkalinity, mg CaCO3/L (pH 4.5)	194	mg/L	SM 2320	0.01	2011-08-19	12:41:23	SN
<b>METALS BY ICP</b>							
Iron, Fe - Total	<0.05	mg/L	EPA 200.7	0.05	2011-09-01	12:55:00	RC
Manganese, Mn - Total	0.08	mg/L	EPA 200.7	0.02	2011-09-01	12:55:00	RC

Ron Christian  
Water Lab Manager

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# Analysis Report

June 17, 2011

**ARMSTRONG COAL COMPANY INC**  
407 BROWN ROAD  
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT  
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID:	ACC-528	Sample Point:	ACC-528
Date Sampled:	Jun 3, 2011	Field - pH:	7.59
Date Received:	Jun 7, 2011	Field - Temperature:	26.2
Product Description:	WATER	Field - Flow:	0.288
		Field - Conductivity:	1203
		Field - Dis. Oxygen:	—
		Water Elevation:	—
		Permit #:	---

### SGS Minerals Sample ID: 511-1165183-002

<u>TESTS</u>	<u>RESULT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>REPORTING</u>	<u>ANALYZED</u>		
				<u>LIMIT</u>	<u>DATE</u>	<u>TIME</u>	<u>ANALYST</u>
Sulfate, SO4	493	mg/L	ASTM D516	10	2011-06-16	13:49:00	SN
Acidity as mg CaCO3/L	-98	mg/L	SM 2310	-998	2011-06-09	13:58:00	SN
Total Suspended Solids	39	mg/L	SM 2540 D	2	2011-06-08	14:29:00	SN
Alkalinity, mg CaCO3/L (pH 4.5)	108	mg/L	SM 2320	0.01	2011-06-09	13:58:00	SN
<b>METALS BY ICP</b>							
Iron, Fe - Total	0.55	mg/L	EPA 200.7	0.05	2011-06-17	13:03:00	RC
Manganese, Mn - Total	0.42	mg/L	EPA 200.7	0.02	2011-06-17	13:03:00	RC

Ron Christian  
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# Analysis Report

June 21, 2012

**ARMSTRONG COAL COMPANY INC**  
407 BROWN ROAD  
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT  
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID:	ACC-S29	Sample Point:	ACC-S29
Date Sampled:	Jun 15, 2012	Mine:	Lewis Creek West
Date Received:	Jun 18, 2012	Field - pH:	7.01
Product Description:	WATER	Field - Temperature:	19.5
		Field - Flow:	0.0044
		Field - Conductivity:	141
		Field - Dis. Oxygen:	—
		Water Elevation:	
		Permit #:	892-0115

### SGS Minerals Sample ID: 511-1284192-001

<u>TESTS</u>	<u>RESULT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>REPORTING</u>		<u>ANALYZED</u>	
				<u>LIMIT</u>	<u>DATE</u>	<u>TIME</u>	<u>ANALYST</u>
Acidity as mg CaCO3/L	-28	mg/L	SM 2310	-998	2012-06-18	09:29:12	SN
Sulfate, SO4	7.1	mg/L	EPA 300.0	2	2012-06-19	21:37:54	SN
Total Suspended Solids	251	mg/L	SM 2540 D	2	2012-06-18	10:45:30	RC
Alkalinity, mg CaCO3/L (pH 4.5)	44	mg/L	SM 2320	0.01	2012-06-18	08:24:47	SN
<b>METALS BY ICP</b>							
Iron, Fe - Total	6.44	mg/L	EPA 200.7	0.05	2012-06-21	12:32:55	RC
Manganese, Mn - Total	2.30	mg/L	EPA 200.7	0.02	2012-06-21	12:32:55	RC

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# Analysis Report

May 23, 2012

**ARMSTRONG COAL COMPANY INC**  
407 BROWN ROAD  
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT  
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID:	ACC-S29	Sample Point:	ACC-S29
Date Sampled:	May 16, 2012	Mine:	Lewis Creek W
Date Received:	May 17, 2012	Field - pH:	7.9
Product Description:	WATER	Field - Temperature:	22.6
		Field - Flow:	0.1111
		Field - Conductivity:	91
		Field - Dis. Oxygen:	—
		Water Elevation:	
		Permit #:	Lewis Creek W

### SGS Minerals Sample ID: 511-1282756-003

<u>TESTS</u>	<u>RESULT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>REPORTING</u>		<u>ANALYZED</u>	
				<u>LIMIT</u>	<u>DATE</u>	<u>TIME</u>	<u>ANALYST</u>
Acidity as mg CaCO3/L	-20	mg/L	SM 2310	-998	2012-05-17	13:57:58	SN
Sulfate, SO4	12.0	mg/L	EPA 300.0	0.5	2012-05-22	17:46:16	SN
Total Suspended Solids	37	mg/L	SM 2540 D	2	2012-05-17	12:05:00	RC
Alkalinity, mg CaCO3/L (pH 4.5)	26	mg/L	SM 2320	0.01	2012-05-17	10:44:43	SN
<b>METALS BY ICP</b>							
Iron, Fe - Total	2.75	mg/L	EPA 200.7	0.05	2012-05-23	11:01:17	RC
Manganese, Mn - Total	0.78	mg/L	EPA 200.7	0.02	2012-05-23	11:01:17	RC

Ron Christian  
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# Analysis Report

February 29, 2012

**ARMSTRONG COAL COMPANY INC**  
407 BROWN ROAD  
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT  
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID:	ACC-S29	Sample Point:	ACC-S29
Date Sampled:	Feb 20, 2012	Mine:	Lewis Creek W
Date Received:	Feb 21, 2012	Field - pH:	7.39
Product Description:	WATER	Field - Temperature:	4.1
		Field - Flow:	0.1667
		Field - Conductivity:	80
		Field - Dis. Oxygen:	-
		Water Elevation:	
		Permit #:	Lewis Creek W

### SGS Minerals Sample ID: 511-1278484-001

<u>TESTS</u>	<u>RESULT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>REPORTING</u>		<u>ANALYZED</u>	
				<u>LIMIT</u>	<u>DATE</u>	<u>TIME</u>	<u>ANALYST</u>
Acidity as mg CaCO3/L	-15	mg/L	SM 2310	-998	2012-02-21	15:38:04	MF
Sulfate, SO4	12	mg/L	ASTM D516	10	2012-02-22	16:00:00	MF
Total Suspended Solids	6	mg/L	SM 2540 D	2	2012-02-21	14:22:33	SN
Alkalinity, mg CaCO3/L (pH 4.5)	11	mg/L	SM 2320	0.01	2012-02-21	12:16:41	MF
<b>METALS BY ICP</b>							
Iron, Fe - Total	0.62	mg/L	EPA 200.7	0.05	2012-02-29	12:15:00	RC
Manganese, Mn - Total	0.27	mg/L	EPA 200.7	0.02	2012-02-29	12:15:00	RC

Ron Christian  
Water Lab Manager

SGS North America Inc. Minerals Services Division  
618 Bob Posey Street Henderson KY 42420 t (270) 827-1187 f (270) 826-0719 www.sgs.com/minerals

Member of the SGS Group (Société Générale de Surveillance)

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Analysis Report

November 01, 2011

ARMSTRONG COAL COMPANY INC
407 BROWN ROAD
MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID: ACC-S29
Date Sampled: Oct 24, 2011
Date Received: Oct 26, 2011
Product Description: WATER

Sample Point: ACC-S29
Mine: Lewis Creek W
Field - pH: 7.97
Field - Temperature: 17.4
Field - Flow: 0.055
Field - Conductivity: 120
Field - Dis. Oxygen: -
Water Elevation:
Permit #: Lewis Creek W

SGS Minerals Sample ID: 511-1172789-001

Table with columns: TESTS, RESULT, UNIT, METHOD, REPORTING LIMIT, DATE, ANALYZED TIME, ANALYST. Rows include Acidity, Sulfate, Total Suspended Solids, Alkalinity, Iron, Fe - Total, and Manganese, Mn - Total.

Ron Christian (Handwritten signature)

Ron Christian
Water Lab Manager

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# Analysis Report

June 17, 2011

**ARMSTRONG COAL COMPANY INC**  
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MADISONVILLE KY 42431

Page 1 of 1

ATTN: DARRIN PARRENT  
PERMIT/RECLAMATION SUPERVISOR

Client Sample ID:	ACC-529	Sample Point:	ACC-529
Date Sampled:	Jun 3, 2011	Field - pH:	7.81
Date Received:	Jun 7, 2011	Field - Temperature:	26.4
Product Description:	WATER	Field - Flow:	2
		Field - Conductivity:	236
		Field - Dis. Oxygen:	—
		Water Elevation:	—
		Permit #:	---

### SGS Minerals Sample ID: 511-1165183-003

<u>TESTS</u>	<u>RESULT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>REPORTING</u>	<u>ANALYZED</u>		
				<u>LIMIT</u>	<u>DATE</u>	<u>TIME</u>	<u>ANALYST</u>
Sulfate, SO4	17	mg/L	ASTM D516	10	2011-06-16	13:49:00	SN
Acidity as mg CaCO3/L	-80	mg/L	SM 2310	-998	2011-06-09	13:58:00	SN
Total Suspended Solids	110	mg/L	SM 2540 D	2	2011-06-08	14:29:00	SN
Alkalinity, mg CaCO3/L (pH 4.5)	87	mg/L	SM 2320	0.01	2011-06-09	13:58:00	SN
<b>METALS BY ICP</b>							
Iron, Fe - Total	0.38	mg/L	EPA 200.7	0.05	2011-06-17	13:03:00	RC
Manganese, Mn - Total	<0.02	mg/L	EPA 200.7	0.02	2011-06-17	13:03:00	RC

Ron Christian  
Water Lab Manager

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