MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

8804734

CLIENT: Genwal Coal Company
P.O. Box 1201
Huntington, Utah 84528

ATTN: Mr. Andy King

SAMPLE ID: Lower Flume

LAB NO: 4734
GROUP NO: 155
DATE SAMPLED: 03/11/88
TIME SAMPLED:
DATE RECEIVED: 03/18/88
DATE REPORTED: 03/30/88

FIELD DATA: Temp. 3.0°C | pH 8.24 Units | Cond. 743 umhos/cm | Flow .17

3' FLUME
0.75 CFS

CHEMICALS	RESULT AS RECEIVED	
Alkalinity, Bicarbonate	289	mg/l HCO_3
Alkalinity, Carbonate	0	mg/l $CaCO_3$
Solids, Total Dissolved	384	mg/l
Solids, Total Suspended	10.0	mg/l
Solids, Settleable	<0.1	ml/l
Hardness, Total	310	mg/l $CaCO_3$
Chloride	5.8	mg/l
Oil & Grease	<2.0	mg/l
Sulfate	91.0	mg/l
Total Cations	6.80	meq/l
Total Anions	6.74	meq/l

METALS	RESULT AS RECEIVED	
Calcium	64.0	mg/l
Iron, Diss	<0.05	mg/l
Magnesium	36.5	mg/l
Manganese	<0.01	mg/l
Potassium	3.3	mg/l
Sodium	10.6	mg/l

$Q = 4WH_a^{1.522W^{.026}}$

$Q = 4(3)(.17)^{1.522(3)^{.026}}$

$Q = 0.75$

Reviewed and approved by,

David A. Janusz
Supervisor, Inorganic Division

Respectfully submitted,

William O. Moellmer, Ph.D.
Technical Manager

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

8804733

CLIENT: Genwal Coal Company
P.O. Box 1201
Huntington, Utah 84528

ATTN: Mr. Andy King

SAMPLE ID: Upper Flume

LAB NO: 4733
GROUP NO: 155
DATE SAMPLED: 03/11/88
TIME SAMPLED:
DATE RECEIVED: 03/18/88
DATE REPORTED: 03/30/88

FIELD DATA: Temp. 1.6°C; Cond. 755 umhos/cm; pH 8.55 Units; Flow .25

3' FLUME
1.37 CFS

CHEMICALS	RESULT AS RECEIVED	
Alkalinity, Bicarbonate	284	mg/l HCO_3
Alkalinity, Carbonate	0	mg/l $CaCO_3$
Solids, Total Dissolved	296	mg/l
Solids, Total Suspended	<5.0	mg/l
Solids, Settleable	<0.1	ml/l
Hardness, Total	215	mg/l $CaCO_3$
Chloride	4.4	mg/l
Oil & Grease	<2.0	mg/l
Sulfate	35.1	mg/l
Total Cations	4.53	meq/l
Total Anions	5.51	meq/l

METALS	RESULT AS RECEIVED	
Calcium	58.0	mg/l
Iron, Diss	<0.05	mg/l
Magnesium	17.0	mg/l
Manganese	0.01	mg/l
Potassium	1.6	mg/l
Sodium	4.3	mg/l

Reviewed and approved by,

David A. Janusz
Supervisor, Inorganic Division

Respectfully submitted,

William O. Moellmer, Ph.D.
Technical Manager

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

CLIENT: Genwal Coal Company
P.O. Box 1201
Huntington, Utah 84528

ATTN: Mr. Andy King

SAMPLE ID: Upper Flume

LAB NO: 5110
GROUP NO: 282
DATE SAMPLED: 05/31/88
TIME SAMPLED:
DATE RECEIVED: 06/01/88
DATE REPORTED: 06/07/88

FIELD DATA: Temp. 3.5°C; Cond. 463 umhos/cm; pH 8.20 Units; Flow 1.25

3' FLUME
17.02 CFS

CHEMICALS	RESULT AS RECEIVED		METALS	RESULT AS RECEIVED	
Alkalinity, Bicarbonate	264	mg/l HCO_3	Calcium	62.0	mg/l
Alkalinity, Carbonate	0	mg/l $CaCO_3$	Iron, Diss	<0.05	mg/l
Solids, Total Dissolved	276	mg/l	Magnesium	21.9	mg/l
Solids, Total Suspended	6.0	mg/l	Manganese	0.01	mg/l
Solids, Settleable	<0.1	ml/l	Potassium	5.0	mg/l
Hardness, Total	245	mg/l $CaCO_3$	Sodium	4.8	mg/l
Chloride	5.7	mg/l			
Oil & Grease	<2.0	mg/l			
Sulfate	16.2	mg/l			
Total Cations	5.24	meq/l			
Total Anions	4.83	meq/l			

$Q = 4WH_a^{1.522W^{.026}}$

$Q = 4(3)(1.25)^{1.522(3)^{.026}}$

$Q = 17.02$

Reviewed and approved by,

David A. Janusz
Supervisor, Inorganic Division

Respectfully submitted,

William O. Moellmer, Ph.D.
Technical Manager

CK

QA 7B

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

8805111

CLIENT: Genwal Coal Company
P.O. Box 1201
Huntington, Utah 84528

ATTN: Mr. Andy King

SAMPLE ID: Lower Flume

LAB NO: 5111
GROUP NO: 282
DATE SAMPLED: 05/31/88
TIME SAMPLED:
DATE RECEIVED: 06/01/88
DATE REPORTED: 06/07/88

FIELD DATA: Temp. 3.6°C
Cond. 528 umhos/cm
pH 8.14 Units
Flow .78

3' FLUME
8.30 CFS

CHEMICALS	RESULT AS RECEIVED	
Alkalinity, Bicarbonate	269	mg/l HCO_3
Alkalinity, Carbonate	0	mg/l $CaCO_3$
Solids, Total Dissolved	252	mg/l
Solids, Total Suspended	7.0	mg/l
Solids, Settleable	<0.1	ml/l
Hardness, Total	250	mg/l $CaCO_3$
Chloride	4.1	mg/l
Oil & Grease	<2.0	mg/l
Sulfate	18.0	mg/l
Total Cations	5.27	meq/l
Total Anions	4.91	meq/l

METALS	RESULT AS RECEIVED	
Calcium	64.0	mg/l
Iron, Diss	<0.05	mg/l
Magnesium	21.9	mg/l
Manganese	0.02	mg/l
Potassium	2.8	mg/l
Sodium	4.7	mg/l

Reviewed and approved by,

David A. Janusz
Supervisor, Inorganic Division

Respectfully submitted,

William O. Moellmer, Ph.D.
Technical Manager

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

8806220

CLIENT: Genwal Coal Co.
P.O.Box 1201
Huntington, UT 84528

ATTN: Mr. Andy King

LAB NO: 6220
GROUP NO: 528
DATE SAMPLED: 09/30/88
TIME SAMPLED:
DATE RECEIVED: 10/06/88
DATE REPORTED: 10/14/88
DISPOSAL DATE: 11/13/88

Field Data

Temp.	9.8 C	Cond.	430 umhos
pH	7.73	Flow	.15 ~~gpm~~

3' FLUME 0.68 CFS 305.18 GPM

SAMPLE ID: UPPER

ANALYSIS	RESULT AS RECEIVED		
ALKALINITY, BICARBONATE	235	mg/l	HCO3
ALKALINITY, CARBONATE	24	mg/l	CaCO3
SOLIDS, T. DISSOLVED	232	mg/l	
SOLIDS, T. SUSPENDED	<5.0	mg/l	
SOLIDS, SETTLEABLE	<0.1	ml/l	
HARDNESS, TOTAL	255	mg/l	CaCO3
CHLORIDE	8.0	mg/l	
OIL & GREASE	<2.0	mg/l	
SULFATE	27.1	mg/l	
CALCIUM	56.0	mg/l	
(TOTAL) IRON, DISS.	<0.05	mg/l	
MAGNESIUM	28.0	mg/l	
MANGANESE	<0.01	mg/l	
POTASSIUM	1.2	mg/l	
SODIUM	5.3	mg/l	

Reviewed and approved by,

David A. Janusz
Inorganic Division

Respectfully submitted,

William O. Moellmer, Ph.D.
Laboratory Director

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

8806221

CLIENT: Genwal Coal Co.
P.O.Box 1201
Huntington, UT 84528

ATTN: Mr. Andy King

LAB NO: 6221
GROUP NO: 528
DATE SAMPLED: 09/30/88
TIME SAMPLED:
DATE RECEIVED: 10/06/88
DATE REPORTED: 10/14/88
DISPOSAL DATE: 11/13/88

Field Data

Temp. 9.9 C Cond. 483 umhos
pH 7.68 (<1) Flow .13 ~~gpm~~

3' FLUME
0.49 CFS
220.6 GPM

SAMPLE ID: LOWER

ANALYSIS	RESULT AS RECEIVED		
ALKALINITY, BICARBONATE	267	mg/l	HCO3
ALKALINITY, CARBONATE	16	mg/l	CaCO3
SOLIDS, T. DISSOLVED	256	mg/l	
SOLIDS, T. SUSPENDED	<5.0	mg/l	
SOLIDS, SETTLEABLE	<0.1	ml/l	
HARDNESS, TOTAL	255	mg/l	CaCO3
CHLORIDE	5.6	mg/l	
OIL & GREASE	,2.0	mg/l	
SULFATE	38.1	mg/l	
CALCIUM	60.0	mg/l	
IRON, DISS.	<0.05	mg/l	
MAGNESIUM	25.5	mg/l	
MANGANESE	<0.01	mg/l	
POTASSIUM	1.6	mg/l	
SODIUM	6.9	mg/l	

Reviewed and approved by,

David A. Janusz
Inorganic Division

$Q = 4WH_a^{1.522W^{0.026}}$ $W = 3$, $H_a = .13$

$Q = 4(3)(.13)^{1.522(3)^{.026}}$

$Q = 0.49$

Respectfully submitted,

William O. Moellmer, Ph.D.
Laboratory Director

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

OAB 880498

CLIENT: Genwal Coal Co.
P.O.Box 1201
Huntington, UT 84528

ATTN: Mr. Andy King

SAMPLE ID: UPPER

LAB NO: 6498
GROUP NO: 616
DATE SAMPLED: 11/02/88
TIME SAMPLED:
DATE RECEIVED: 11/10/88
DATE REPORTED: 11/30/88
DISPOSAL DATE: 12/30/88

3' FLUME HT: 0.15
0.01 CFS
273.77 GPM

FIELD DATA: Temp. 6.7 Deg C; Cond. 478 umhos/cm; pH 8.4; Flow ~~0.18~~

ANALYSIS	RESULT AS RECEIVED	METALS	RESULT AS RECEIVED
Alkalinity, Bicarbonate	246 mg/l HCO3	Calcium	50.0 mg/l
Alkalinity, Carbonate	0 mg/l CaCO3	Iron	<0.05 mg/l
Solids, Total Dissolved	252 mg/l	Magnesium	30.4 mg/l
Solids, Total Suspended	<5.0 mg/l	Manganese	<0.01 mg/l
Solids, Settleable	<0.1 ml/l	Potassium	1.1 mg/l
Hardness, Total	250 mg/l CaCO3	Sodium	4.1 mg/l
Chloride	3.4 mg/l		
Oil & Grease	<2.0 mg/l		
Sulfate	32.2 mg/l		
Total Cations	5.21 meg/l		
Total Anions	4.81 meg/l		

Respectfully submitted,

Warner Woolfenden

Warner R. Woolfenden, Ph.D.
Technical Director

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

QA MB

8806499

CLIENT: Genwal Coal Co.
P.O.Box 1201
Huntington, UT 84528

ATTN: Mr. Andy King

SAMPLE ID: LOWER

LAB NO:	6499
GROUP NO:	616
DATE SAMPLED:	11/02/88
TIME SAMPLED:	
DATE RECEIVED:	11/10/88
DATE REPORTED:	11/30/88
DISPOSAL DATE:	12/30/88

FIELD DATA: Temp. 6.8 Deg C; Cond. 670 umhos/cm; pH 8.4; Flow 0.14

3' FLUME
0.55 CFS
246.84 GPM

ANALYSIS	RESULT AS RECEIVED	METALS	RESULT AS RECEIVED
Alkalinity, Bicarbonate	298 mg/l HCO3	Calcium	60.0 mg/l
Alkalinity, Carbonate	0 mg/l CaCO3	Iron	<0.05 mg/l
Solids, Total Dissolved	330 mg/l	Magnesium	42.6 mg/l
Solids, Total Suspended	<5.0 mg/l	Manganese	<0.01 mg/l
Solids, Settleable	<0.1 ml/l	Potassium	2.5 mg/l
Hardness, Total	325 mg/l CaCO3	Sodium	8.6 mg/l
Chloride	4.2 mg/l		
Oil & Grease	<2.0 mg/l		
Sulfate	73.3 mg/l		
Total Cations	6.93 meg/l		
Total Anions	6.55 meg/l		

Respectfully submitted,

Warner R. Woolfenden, Ph.D.
Technical Director