MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

8804735

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

ATTN: Mr. Andy King

SAMPLE ID: MW-1

LAB NO: 4735
GROUP NO: 155
DATE SAMPLED: 03/11/88
TIME SAMPLED:
DATE RECEIVED: 03/18/88
DATE REPORTED: 03/30/88

FIELD DATA: Temp. 9.5°C pH 7.73 Units
Cond. 530 umhos/cm Level 185.0' 56.39m

CHEMICALS	RESULT AS RECEIVED	
Alkalinity, Bicarbonate	284	mg/lHCO_3
Alkalinity, Carbonate	0	mg/l$CaCO_3$
Solids, Total Dissolved	308	mg/l
Hardness, Total	190	mg/l$CaCO_3$
Nitrogen, Nitrite	0.05	mg/l
Nitrogen, Nitrate	0.42	mg/l
Nitrogen, Ammonia	<0.5	mg/l
Chloride	5.3	mg/l
Phosphorus, Total	<0.05	mg/l
Sulfate	6.6	mg/l
Sulfide-Direct	<0.1	mg/l
Fluoride	0.16	mg/l
Total Cations	6.80	meq/l
Total Anions	6.74	meq/l

METALS	RESULT AS RECEIVED	
Aluminum	<0.20	mg/l
Arsenic	<0.01	mg/l
Barium	<0.10	mg/l
Boron	0.24	mg/l
Cadmium	<0.005	mg/l
Calcium	34.0	mg/l
Chromium	<0.05	mg/l
Copper	<0.03	mg/l
Iron, Diss.	0.05	mg/l
Lead	<0.005	mg/l
Magnesium	25.5	mg/l
Manganese	<0.01	mg/l
Mercury	<0.50	ug/l
Molybdenum	<0.10	mg/l
Nickel	<0.05	mg/l
Potassium	6.4	mg/l
Selenium	<0.005	mg/l
Sodium	32.5	mg/l
Zinc	0.74	mg/l

Reviewed and approved by,

David A. Janusz
Supervisor, Inorganic Division

Respectfully submitted,

William O. Moellmer, Ph.D.
Technical Manager

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300
SINCE 1908
Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020, HUNTINGTON, UT 84528
TELEPHONE: (801) 653-2311

April 12, 1989

Job No.: 59 9577

Sample ID: GENWAL COAL CO.

Date Rec'd: April 7, 1989

MW-1
Rec'd 1350 hr.
No Sampling Time

Date Sampled: March 31, 1989

Sampled By: GENWAL COAL CO.

GENWAL COAL CO.
P.O. Box 1201
Huntington UT 84528
Allen Childs

WATER ANALYSIS

Alk., Bicarbonate	301	mg/l HCO3	Iron, Dissolved	0.02<	mg/l
Alk., Carbonate	1<	mg/l CaCO3	Magnesium	16.50	mg/l
Anions, Total	5.60	meq/l	Manganese	0.01<	mg/l
Calcium	23.8	mg/l	Potassium	4.50	mg/l
Cations, Total	5.66	meq/l	Sodium	69.70	mg/l
Chloride	10.0	mg/l	Solids, Dissolved	312.0	mg/l
Hardness, Total	127	mg/l CaCO3	Sulfate	24.0	mg/l

ANALYST: D. Tipson

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Huntington Laboratory

Original Copy Watermarked
For Your Protection

OVER 40 BRANCH LABORATORIES STRATEGICALLY LOCATED IN PRINCIPAL COAL MINING AREAS,
TIDEWATER AND GREAT LAKES PORTS, AND RIVER LOADING FACILITIES

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

8804736

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

ATTN: Mr. Andy King

SAMPLE ID: DH-1

LAB NO: 4736
GROUP NO: 155
DATE SAMPLED: 03/11/88
TIME SAMPLED:
DATE RECEIVED: 03/18/88
DATE REPORTED: 03/30/88

FIELD DATA: Temp. 5.4°C pH 8.25 Units
Cond. 1125 umhos/cm Flow ~~<1 GPM~~

CHEMICALS	RESULT AS RECEIVED	
Alkalinity, Bicarbonate	521	mg/l HCO_3
Alkalinity, Carbonate	0	mg/l $CaCO_3$
Solids, Total Dissolved	516	mg/l
Hardness, Total	500	mg/l $CaCO_3$
Nitrogen, Nitrite	<0.05	mg/l
Nitrogen, Nitrate	0.31	mg/l
Nitrogen, Ammonia	<0.5	mg/l
Chloride	10.0	mg/l
Phosphorus, Total	<0.05	mg/l
Sulfate	88.5	mg/l
Sulfide-Direct	<0.1	mg/l
Fluoride	0.12	mg/l
Total Cations	10.68	meq/l
Total Anions	10.82	meq/l

METALS	RESULT AS RECEIVED	
Aluminum	<0.20	mg/l
Arsenic	<0.01	mg/l
Barium	<0.10	mg/l
Boron	0.24	mg/l
Cadmium	<0.005	mg/l
Calcium	60.0	mg/l
Chromium	<0.05	mg/l
Copper	<0.03	mg/l
Iron, Diss.	0.05	mg/l
Lead	<0.005	mg/l
Magnesium	85.1	mg/l
Manganese	<0.01	mg/l
Mercury	<0.50	ug/l
Molybdenum	<0.10	mg/l
Nickel	<0.05	mg/l
Potassium	8.0	mg/l
Selenium	<0.005	mg/l
Sodium	14.1	mg/l
Zinc	0.01	mg/l

Reviewed and approved by,

David A. Janusz
Supervisor, Inorganic Division

Respectfully submitted,

William O. Moellmer, Ph.D.
Technical Manager

QA/B

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

8805238

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

ATTN: Mr. Andy King

SAMPLE ID: MW-1

LAB NO: 5238
GROUP NO: 308
DATE SAMPLED: 05/31/88
TIME SAMPLED:
DATE RECEIVED: 06/23/88
DATE REPORTED: 06/28/88

FIELD DATA: Temp. 8.2°C pH 8.6 Units
Cond. 350 umhos/cm Flow N/A – 185.5' - DEPTH 56.54m

CHEMICALS	RESULT AS RECEIVED	
Alkalinity, Bicarbonate	284	mg/lHCO_3
Alkalinity, Carbonate	0	mg/l$CaCO_3$
Solids, Total Dissolved	240	mg/l
Hardness, Total	185	mg/l$CaCO_3$
Nitrogen, Nitrite	<0.05	ml/lN
Nitrogen, Nitrate	<0.05	mg/lN
Nitrogen, Ammonia	<0.5	mg/lN
Chloride	4.51	mg/l
Phosphorus, Total	<0.05	mg/lP
Sulfate	5.7	mg/l
Sulfide	<0.1	mg/l
Fluoride	0.22	mg/l
Total Cations	4.91	meq/l
Total Anions	5.31	meq/l

METALS	RESULT AS RECEIVED	
Aluminum	<0.10	mg/l
Arsenic	<0.004	mg/l
(<) Barium	0.45	mg/l
Boron	<0.20	mg/l
Cadmium	<0.005	mg/l
Calcium	34.2	mg/l
Chromium	<0.05	mg/l
Copper	<0.03	mg/l
Iron	0.14	mg/l
Lead	<0.05	mg/l
Magnesium	24.2	mg/l
(<) Manganese	0.01	mg/l
Mercury	<0.50	ug/l
Molybdenum	<0.10	mg/l
Nickel	<0.05	mg/l
Potassium	6.3	mg/l
Selenium	<0.004	mg/l
Sodium	33.4	mg/l
Zinc	0.57	mg/l

Reviewed and approved by,

David A. Janusz
Supervisor, Inorganic Division

Respectfully submitted by,

William O. Moellmer, Ph.D
Technical Manager

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

8805109

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

ATTN: Mr. Andy King

SAMPLE ID: DH-1

LAB NO: 5109
GROUP NO: 282
DATE SAMPLED: 05/31/88
TIME SAMPLED:
DATE RECEIVED: 06/01/88
DATE REPORTED: 06/07/88

FIELD DATA: X Temp. 7.0°C X pH 7.92 Units
X Cond. 1100 umhos/cm X Flow ~~<.2 gpm~~

CHEMICALS	RESULT AS RECEIVED	
pH	7.92	
Alkalinity, Bicarbonate	605	mg/lHCO_3
Alkalinity, Carbonate	0	mg/l$CaCO_3$
Solids, Total Dissolved	596	mg/l
Hardness, Total	585	mg/l$CaCO_3$
Nitrogen, Nitrite	<0.05	ml/lN
Nitrogen, Nitrate	0.13	mg/lN
Nitrogen, Ammonia	<0.50	mg/lN
Chloride	11.8	mg/l
Phosphorus, Total	<0.05	mg/lP
Sulfate	63.0	mg/l
Total Cations	12.60	meq/l
Total Anions	12.58	meq/l

METALS	RESULT AS RECEIVED	
Sulfide	<0.10	mg/l
Fluoride	0.16	mg/l
Aluminum	<0.10	mg/l
Arsenic	<0.004	mg/l
Barium	<0.10	mg/l
Boron	<0.20	mg/l
Cadmium	<0.005	mg/l
Calcium	92.0	mg/l
Chromium	<0.05	mg/l
Copper	<0.03	mg/l
Iron	<0.05	mg/l
Lead	<0.05	mg/l
Magnesium	86.3	mg/l
Manganese	0.03	mg/l
X Mercury	<0.50	ug/l
Molybdenum	<0.10	mg/l
Nickel	<0.05	mg/l
Potassium	11.0	mg/l
Selenium	<0.004	mg/l
Sodium	14.2	mg/l
Zinc	<0.01	mg/l

Reviewed and approved by,

David A. Janusz
Supervisor, Inorganic Division

Respectfully submitted by,

William O. Moellmer, Ph.D
Technical Manager

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

8806222

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

ATTN: Mr. Andy King

SAMPLE ID: MW-1

LAB NO:	6222
GROUP NO:	528
DATE SAMPLED:	09/28/88
TIME SAMPLED:	
DATE RECEIVED:	10/09/88
DATE REPORTED:	10/15/88
DISPOSAL DATE:	11/14/88

FIELD DATA: Temp. 19.0 Deg C; Cond. 460 umhos/cm; pH 7.13; Flow; 186.7' - DEPTH 56.91 m

ANALYSIS	RESULT AS RECEIVED
Alkalinity, Bicarbonate	295 mg/l HCO3
Alkalinity, Carbonate	0 mg/l CaCO3
Solids, Total Dissolved	240 mg/l
Hardness, Total	185 mg/l Caco3
Nitrogen, Nitrite	<0.05 mg/l N
Nitrogen, Nitrate	0.21 mg/l N
Nitrogen, Ammonia	<0.05 mg/l N
Chloride	5.3 mg/l
Phosphorus, Total	<0.05 mg/l P
Sulfate	5.1 mg/l
Sulfide	<0.4 mg/l
Fluoride	0.26 mg/l

METALS	RESULT AS RECEIVED
Aluminum	<0.10 mg/l
Arsenic	<0.004 mg/l
Barium	0.26 mg/l
Boron	0.42 mg/l
Cadmium	<0.005 mg/l
Calcium	34.0 mg/l
Chromium	<0.05 mg/l
Copper	<0.03 mg/l
Iron	<0.05 mg/l
Lead	<0.05 mg/l
Magnesium	24.3 mg/l
Manganese	0.02 mg/l
Mercury	<0.001 mg/l
Molybdenum	<0.10 mg/l
Nickel	<0.05 mg/l
Potassium	4.7 mg/l
Selenium	<0.004 mg/l
Sodium	44.0 mg/l
Zinc	0.83 mg/l

Reviewed and approved by,

David A. Janusz
Inorganic Division

Respectfully submitted,

William O. Moellmer, Ph.D.
Laboratory Director

MOUNTAIN STATES ANALYTICAL

QA

ANALYTICAL REPORT

8804223

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

ATTN: Mr. Andy King

LAB NO: 6223
GROUP NO: 528
DATE SAMPLED: 09/28/88
TIME SAMPLED:
DATE RECEIVED: 10/09/88
DATE REPORTED: 10/15/88
DISPOSAL DATE: 11/14/88

SAMPLE ID: DH-1

FIELD DATA: Temp. 8.2 Deg C; Cond. 460 umhos/cm; pH 8.23; Flow ~~<1~~

ANALYSIS	RESULT AS RECEIVED
Alkalinity, Bicarbonate	312 mg/l HCO3
Alkalinity, Carbonate	0 mg/l CaCO3
Solids, Total Dissolved	556 mg/l
Hardness, Total	550 mg/l Caco3
Nitrogen, Nitrite	<0.05 mg/l N
Nitrogen, Nitrate	0.35 mg/l N
Nitrogen, Ammonia	<0.05 mg/l N
Chloride	10.4 mg/l
Phosphorus, Total	<0.05 mg/l P
Sulfate	82.5 mg/l
Sulfide	<0.4 mg/l
Fluoride	0.22 mg/l

METALS	RESULT AS RECEIVED
Aluminum	<0.10 mg/l
Arsenic	<0.004 mg/l
Barium	<0.10 mg/l
Boron	0.58 mg/l
Cadmium	<0.005 mg/l
Calcium	84.0 mg/l
Chromium	<0.05 mg/l
Copper	<0.03 mg/l
Iron	<0.05 mg/l
Lead	<0.05 mg/l
Magnesium	82.7 mg/l
Manganese	<0.01 mg/l
Mercury	<0.001 mg/l
Molybdenum	<0.10 mg/l
Nickel	<0.05 mg/l
Potassium	7.5 mg/l
Selenium	<0.004 mg/l
Sodium	14.8 mg/l
Zinc	<0.01 mg/l

Reviewed and approved by,

David A. Janusz
Inorganic Division

Respectfully submitted,

William O. Moellmer, Ph.D.
Laboratory Director

QA 7/13

ck

MOUNTAIN STATES ANALYTICAL

ANALYTICAL REPORT

8806500

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

ATTN: Mr. Andy King

SAMPLE ID: MW-1

LAB NO:	6500
GROUP NO:	616
DATE SAMPLED:	11/03/88
TIME SAMPLED:	
DATE RECEIVED:	11/10/88
DATE REPORTED:	11/30/88
DISPOSAL DATE:	12/30/88

FIELD DATA: Temp. 10.9 Deg C; Cond. 460 umhos/cm; pH ~~10.9~~; Flow N/A

ANALYSIS	RESULT AS RECEIVED
Alkalinity, Bicarbonate	282 mg/l HCO3
Alkalinity, Carbonate	0 mg/l CaCO3
Solids, Total Dissolved	196 mg/l
Hardness, Total	150 mg/l Caco3
Nitrogen, Nitrite	<0.05 mg/l N
Nitrogen, Nitrate	0.20 mg/l N
Nitrogen, Ammonia	<0.05 mg/l N
Chloride	3.5 mg/l
Phosphorus, Total	<0.05 mg/l P
Sulfate	5.7 mg/l
Sulfide	1.6 mg/l
Fluoride	0.20 mg/l
Total Cations	4.80 meg/l
Total Anions	4.85 meg/l

METALS	RESULT AS RECEIVED
Aluminum	<0.1 mg/l
Arsenic	<0.01 mg/l
Barium	0.5 mg/l
Boron	0.09 mg/l
Cadmium	<0.005 mg/l
Calcium	32.0 mg/l
Chromium	<0.05 mg/l
Copper	<0.03 mg/l
Iron	<0.05 mg/l
Lead	<0.05 mg/l
Magnesium	17.0 mg/l
Manganese	<0.01 mg/l
Mercury	<0.0005 mg/l
Molybdenum	<0.1 mg/l
Nickel	<0.05 mg/l
Potassium	4.3 mg/l
Selenium	<0.005 mg/l
Sodium	39.1 mg/l
Zinc	1.47 mg/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

8801501

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

ATTN: Mr. Andy King

SAMPLE ID: DH-1

LAB NO: 6501
GROUP NO: 616
DATE SAMPLED: 11/03/88
TIME SAMPLED:
DATE RECEIVED: 11/10/88
DATE REPORTED: 12/08/88
DISPOSAL DATE: 01/07/89

FIELD DATA: Temp. 7.6 Deg C Cond. 1039 umhos/cm
pH 8.10 Flow <.25 gpm

ANALYSIS	RESULT AS RECEIVED
Alkalinity, Bicarbonate	560 mg/l HCO3
Alkalinity, Carbonate	0 mg/l CaCO3
Solids, Total Dissolved	528 mg/l
Hardness, Total	480 mg/l Caco3
Nitrogen, Nitrite	<0.05 mg/l N
Nitrogen, Nitrate	0.28 mg/l N
Nitrogen, Ammonia	<0.05 mg/l N
Chloride	8.1 mg/l
Phosphorus, Total	<0.05 mg/l P
(<) Sulfate	91.2 mg/l
Sulfide	<0.1 mg/l
Fluoride	0.15 mg/l
Total Cations	10.40 meg/l
Total Anions	11.32 meg/l

METALS	RESULT AS RECEIVED
Aluminum	<0.1 mg/l
Arsenic	<0.01 mg/l
Barium	<0.1 mg/l
Boron	0.14 mg/l
Cadmium	<0.005 mg/l
Calcium	58.0 mg/l
Copper	<0.03 mg/l
Iron	<0.05 mg/l
Lead	<0.05 mg/l
Magnesium	81.5 mg/l
Manganese	0.06 mg/l
Mercury	<0.0005 mg/l
Molybdenum	<0.1 mg/l
Nickel	<0.05 mg/l
Potassium	7.8 mg/l
Selenium	<0.005 mg/l
Sodium	14.1 mg/l
Zinc	<0.01 mg/l

Respectfully submitted,

Warner R. Woolfenden, Ph.D.
Technical Director