Rick ~~Dave Black~~ - Route to mine file

ACT/007/004 #7

ENVIRONMENTAL INDUSTRIAL SERVICES

P.O. Box 358 - Desert Lake Road - Elmo, Utah 84521 - Telephone (801) 653-2606

Mel Coonrod - Vice-President

RECEIVED
OCT 30 1990
DIVISION OF OIL GAS & MINING
SALT LAKE CITY, UTAH

October 30, 1990

Mr. Lowell Braxton
Utah Division of Oil, Gas & Mining
355 West North Temple
#3 Triad Center Suite 350
Salt Lake City, Utah 84180-1203

Re: Third Quarter Water Data
Castle Gate Coal Company

Dear Mr. Braxton:

Please find enclosed the Third Quarter 1990 Water data for Castle Gate Coal Company

If you have any questions, please feel free to call me at 801 653-2606.

Sincerely,

Melvin A. Coonrod

Melvin A. Coonrod

MAC/njc

cc: Castle Gate Coal Co.
File

WATER MONITORING REPORT

Property: Castle Gate
Station: B-5
Location: Lower Price River
Type: River
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	09/29/90	00/00/00	Mean
Flow [gpm]	>5 cfs	>10 cfs	>10 cfs		
PH	7.8	8	8.1		
Sp. Cond. [ohms]	1290	400	440		
Temp. [C]	2	4	5		
Diss. O [ppm]	8	10	9		
Lab. Meas. [mg/l]					
TDS	369	242	257		
TSS	27	63	49		
O & G	<5	20.8	<5		
Al CaCO3	240.66	179.54	181		
Hd CaCO3	275.78	220.88	213		
Ac CaCO3	0	0	0		
HCO3	293.6	209.7	221		
CO3	0	4.6	0		
Cl	19.3	8.4	18.9		
SO4	74.5	72.4	39.1		
Ca	67.4	52.2	46.6		
Mg	26.2	22.0	23.5		
K	2.1	1.9	2.2		
Na	34.9	15	17.6		
Cat/An	1.27	2.07	1.06		
Fe	.18	.99	1.01		
Mn	<.02	.06	.04		

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT:	Castlegate Coal	DATE REPORTED:	10/23/90
ID:	N/A		
SITE:	B-5	DATE RECEIVED:	10/08/90
LAB NO:	F5220	DATE COLLECTED:	09/29/90

Lab pH (s.u.).....	7.93
Lab conductivity, umhos/cm.....	481
Lab resistivity, ohm-m.....	20.8
Total dissolved solids (180), mg/l..	280
Total dissolved solids (calc), mg/l.	257
Total suspended solids, mg/l.....	49
Total alkalinity as CaCO3, mg/l.....	181
Total acidity as CaCO3, mg/l.....	0
Total hardness as CaCO3, mg/l.....	213
Sodium absorption ratio.....	0.525
Oil and grease (gravimetric), mg/l..	<5

	mg/l	meq/l
Bicarbonate as HCO3.....	221	3.63
Carbonate as CO3.....	0	0
Chloride.....	18.9	0.53
Sulfate.....	39.1	0.81
Calcium.....	46.6	2.32
Magnesium.....	23.5	1.93
Potassium.....	2.2	0.06
Sodium.....	17.6	0.77
Major cations.....		5.08
Major anions.....		4.97
Cation/anion difference.....		1.06 %

Trace metals by AA (total concentration), mg/l

	Analytical Result:	Detection Limit:
Iron (Fe).....	1.01	<0.04
Manganese (Mn).....	0.04	<0.02

C. Neal Schaeffer
Lab Director

T.I.S. Hydrology
Field Measurements Form

Date 9/29/90 Station # B-5

Company Earth Gate

Time 17:40

Flow/Depth >10CFS

pH 6.1

Specific Conductivity 440

Water Temperature 5°

Air Temperature 74

Dissolved Oxygen 9

Type: Spring ✓ Stream___ Well___ Discharge___ [illegible]

Collection Point below Plant

Appearance of Water: Clear___ Milky ✓ Cloudy___ [illegible]

Quality Sample Taken: Yes ✓ No___

Pump Reading

Comments

Field Monitor [signature]

When Sample or Measurements Not Taken:

Reason:

I = Dry [illegible] = Frozen [illegible] = Inaccessible N/A = [illegible]

WATER MONITORING REPORT

Property: Castle Gate
Station: B-6
Location: Upper Price River
Type: River
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	09/29/90	00/00/00	Mean
Flow [gpm]	>5 cfs	>10 cfs	>10 cfs		
PH	7.8	8	7.9		
Sp. Cond. [ohms]	1250	540	410		
Temp. [C]	2	3	5		
Diss. O [ppm]	9	10	9		
Lab. Meas. [mg/l]					
TDS	381	234	256		
TSS	17	101	54		
O & G	N/A	5	Broken		
Al CaCO3	244.48	191	192		
Hd CaCO3	288.41	210.84	213		
Ac CaCO3	0	0	0		
HCO3	298.3	214.4	234		
CO3	0	9.2	0		
Cl	36.4	12.6	14.7		
SO4	65.4	36.2	37.9		
Ca	72.4	36.1	49.8		
Mg	26.2	29.3	21.5		
K	3	1.5	1.99		
Na	31.2	14.6	14.9		
Cat/An	.54	.40	.78		
Fe	.44	.58	.88		
Mn	<.02	.07	.05		

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Castlegate Coal
ID: N/A
SITE: B-6
LAB NO: F5221

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/08/90
DATE COLLECTED: 09/29/90

Lab pH (s.u.).....	7.98
Lab conductivity, umhos/cm.....	484
Lab resistivity, ohm-m.....	20.7
Total dissolved solids (180), mg/l..	274
Total dissolved solids (calc), mg/l.	256
Total suspended solids, mg/l.....	54
Total alkalinity as CaCO3, mg/l.....	192
Total acidity as CaCO3, mg/l.....	0
Total hardness as CaCO3, mg/l.....	213
Sodium absorption ratio.....	0.444
Oil and grease (gravimetric), mg/l..	N/A *

	mg/l	meq/l
Bicarbonate as HCO3.....	234	3.83
Carbonate as CO3.....	0	0
Chloride.....	14.7	0.41
Sulfate.....	37.9	0.79
Calcium.....	49.8	2.48
Magnesium.....	21.5	1.77
Potassium.....	1.99	0.05
Sodium.....	14.9	0.65
Major cations.....		4.96
Major anions.....		5.03
Cation/anion difference.....		0.78 %

Trace metals by AA (total concentration), mg/l

	Analytical Result:	Detection Limit:
Iron (Fe).....	0.88	<0.04
Manganese (Mn).....	0.05	<0.02

* Oil & Grease bottle was broke during shipping.

C. Neal Schaeffer
Lab Director

E.I.S. Hydrology
Field Measurements Form

Date 9/29/90 Station # B-6

Company Castle Gate

Time 18:27

Flow/Depth 710 CFM

pH 7.9

Specific Conductivity 410

Water Temperature 50

Air Temperature 62

Dissolved Oxygen 9

Type: Spring___ Stream ✓ Well___ Discharge___ N/A

Collection Point Above Property

Appearance of Water: Clear___ Milky ✓ Cloudy___ Other

Quality Sample Taken: Yes ✓ No___

Pump Reading

Comments

Field Monitor

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate Coal
Station: B-11
Location: Lower Hardscrabble
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/14/90	09/29/90	00/00/00	Mean
Flow [gpm]	DRY	DRY	DRY		
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 9/29/90 Station # B-11

Company Castle Gate

Time 14:50

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ N[illegible]

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ [illegible]

Quality Sample Taken: Yes___ No___

Pump Reading

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason: D

L = Low F = Frozen N/A = Not accessable N/R = Not [illegible]

WATER MONITORING REPORT

Property: Castle Gate Coal
Station: B-12
Location: Upper Hardscrabble
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/14/90	09/29/90	00/00/00	Mean
Flow [gpm]	DRY	DRY	DRY		
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 9/28/90 Station = B-12

Company Earth Tech

Time 15:10

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ N/A___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Other___

Quality Sample Taken: Yes___ No ___

Pump Reading

Comments

Field Monitor

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not accessible N/R = Not required

WATER MONITORING REPORT

Property: Castle Gate
Station: B-17
Location: No. 5 Mine Rd. Junction
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	09/29/90	00/00/00	Mean
Flow [gpm]	DRY	DRY	DRY		
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 9/28/90 Station # B-17

Company Castle Rock

Time 10:40

Flow/Depth X

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ [illegible]

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ [illegible]

Quality Sample Taken: Yes ✓ No___

Pump Reading

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason: X

D = Dry F = Frozen N/A = Not Accessable N/R = Not [illegible]

WATER MONITORING REPORT

Property: Castle Gate
Station: B-22
Location: Crandall - Culvert
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30.90	09/29/90	00/00/00	Mean
Flow [gpm]	FROZEN	1.2	.2		
PH		7.8	8.1		
Sp. Cond. [ohms]		1090	1900		
Temp. [C]		4	5		
Diss. O [ppm]		N/R	N/R		
Lab. Meas. [mg/l]					
TDS		829	836		
TSS		102	15		
O & G		N/R	N/R		
Al CaCO3		370.54	424		
Hd CaCO3		692.76	699		
Ac CaCO3		0	0		
HCO3		452.1	517		
CO3		0	0		
Cl		29.4	29.4		
SO4		324.7	295		
Ca		124.5	140		
Mg		92.9	85.1		
K		6.7	6.71		
Na		28.1	25.4		
Cat/An		.81	.7		
Fe		2.95	3.72		
Mn		.37	.44		

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Castlegate Coal
ID: N/A
SITE: B-22
LAB NO: F5222

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/08/90
DATE COLLECTED: 09/29/90

Lab pH (s.u.)	7.26
Lab conductivity, umhos/cm	1340
Lab resistivity, ohm-m	7.45
Total dissolved solids (180), mg/l	890
Total dissolved solids (calc), mg/l	836
Total suspended solids, mg/l	15
Total alkalinity as CaCO3, mg/l	424
Total acidity as CaCO3, mg/l	0
Total hardness as CaCO3, mg/l	699
Sodium absorption ratio	0.418

	mg/l	meq/l
Bicarbonate as HCO3	517	8.48
Carbonate as CO3	0	0
Chloride	29.4	0.83
Sulfate	295	6.16
Calcium	140	6.97
Magnesium	85.1	7
Potassium	6.71	0.17
Sodium	25.4	1.1
Major cations		15.3
Major anions		15.5
Cation/anion difference		0.7 %

Trace metals by AA (total concentration), mg/l

	Analytical Result:	Detection Limit:
Iron (Fe)	3.72	<0.04
Manganese (Mn)	0.44	<0.02

C. Neal Schaeffer
Lab Director

E.I.S. Hydrology
Field Measurements Form

Date 9/29/80 Station # B-22

Company Castle Cole

Time 14:35

Flow/Depth .2 gpm

pH 8.1

Specific Conductivity 1700

Water Temperature 50

Air Temperature 70

Dissolved Oxygen 6

Type: Spring___ Stream ✓ Well___ Discharge___ Mine___

Collection Point Release Prop

Appearance of Water: Clear ✓ Milky___ Cloudy___ Oil___

Quality Sample Taken: Yes ✓ No___

Pump Pending___

Comments___

Field Monitor [signature]

When Sample or Measurements Not Taken:

Reason: ___

D = Dry F = Frozen N/A = Not accessible N/R = Not required

TER MONITORING REPORT

Property: Castle Gate
Station: B-25
Location: Crandall Creek Above Mine
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	09/29/90	00/00/00	Mean
Flow [gpm]	DRY	DRY	DRY		
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date: 4/29/96 Station # B-25

Company: Castle Creek

Time: 7:10

Flow/Depth: D

pH:

Specific Conductivity:

Water Temperature:

Air Temperature:

Dissolved Oxygen:

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point:

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Temp Reading:

Comments:

Field Monitor: H. O'Connor

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: B-26
Location: Spring Adj. Topsoil Pile
Type: Spring
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	09/29/90	00/00/00	Mean
Flow [gpm]	DRY	DRY	DRY		
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 9/29/90 Station = B-26

Company [illegible]

Time 11:10

Flow/Depth 0

pH

Specific Conductivity

Water Temperature 67

Air Temperature '

Dissolved Oxygen

Type: Spring ___ Stream ✓ Well ___ Discharge ___ [illegible]

Collection Point

Appearance of Water: Clear ___ Milky ___ Cloudy ___ [illegible]

Quality Sample Taken: Yes ___ No ✓

Pump Reading

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason: 0

D = Dry F = Frozen N/A = Not accessable N/R = Not [illegible]

WATER MONITORING REPORT

Property: Castle Gate
Station: B-28
Location: Above Property
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	09/29/90	00/00/00	Mean
Flow [gpm]	DRY	DRY	DRY		
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 9/29/92 Station # B-25

Company Faith Eale

Time

Flow/Depth Dry

PH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Pump Reading

Comments

Field Monitor

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: BM-30
Location: Inflow to Sed. Pond
Type: Disturbed
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	09/29/90	00/00/00	Mean
Flow [gpm]	DRY	DRY	DRY		
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 9/29/90 Station # BM-30

Company [illegible]

Time 14:40

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ [illegible]

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ [illegible]

Quality Sample Taken: Yes___ No ✓

Pump Reading

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/B = [illegible]

WATER MONITORING REPORT

Property: Castle Gate
Station: BM-31
Location: Above Spring Glen
Type: Spring
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	09/29/90	00/00/00	Mean
Flow [gpm]	Inaccess	DRY	DRY		
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Ecology
Field Measurements Form

Date 9/24/90 Station = BM-31

Company Earth Tech

Time 11:20

Flow/Depth Ø

pH

Specific Conductivity

Water Temperature

Air Temperature 62

Dissolved Oxygen

Type: Spring ✓ Stream___ Well___ Discharge___ Misc

Collection Point Source

Appearance of Water: Clear___ Milky___ Cloudy___ Oily

Quality Sample Taken: Yes___ No ✓

Pump Reading

Comments

Field Monitor [signature]

When Sample or Measurements Not Taken:

Reason: Ø

D = Dry F = Frozen N/A = Not Accessible N/P = No [illegible]

WATER MONITORING REPORT

Property: Castle Gate
Station: BM-32
Location: Above Rock Bridge
Type: Spring
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	09/29/90	00/00/00	Mean
Flow [gpm]	DRY	2	DRY		
PH		7.9			
Sp. Cond. [ohms]		2600			
Temp. [C]		5			
Diss. O [ppm]		N/R			
Lab. Meas. [mg/l]					
TDS		1604			
TSS		1			
O & G		N/R			
Al CaCO3		382			
Hd CaCO3		1194.8			
Ac CaCO3		0			
HCO3		447.4			
CO3		9.2			
Cl		50.4			
SO4		902			
Ca		152.6			
Mg		198.0			
K		13.9			
Na		58.3			
Cat/An		1.95			
Fe		.09			
Mn		.02			

E.I.S. Hydrology
Field Measurements Form

Date 9/29/90 Station # BM-32

Company Castle Lake

Time 10:55

Flow/Depth 0

pH

Specific Conductivity

Water Temperature

Air Temperature 64

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ [illegible]

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ [illegible]

Quality Sample Taken: Yes___ No ✓

Pump Reading

Comments

Field Monitor [signature]

When Sample or Measurement Not Taken:

Reason: 0

D = Dry F = Frozen [illegible] = Not Accessable N/R = Not [illegible]

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

Client: Castle Gate Coal Co.

Date reported: 07/25/90
Date received: 06/04/90
Date collected: 05/30/90

Analysis requested: Settleable solids. *

Lab #:	Sample site:	Sample ID:	Result:
F4307	B-5	N/A	<5.0 * ml/l
F4308	B-6	N/A	<5.0 * ml/l
F4309	B-22	N/A	<5.0 * ml/l
F4310	Rockspring B-2	N/A	<5.0 * ml/l

* Results estimated from settled material in sample containers. Approximately half of the original 1/2-gallon sample was used in other analyses. No sample displayed over 1ml of settled solids in the sample containers. These results should be considered conservative estimates. We did not follow an approved method.

C. Neal Schaeffer
Senior Chemist

E.I.S. Hydrology
Field Measurements Form

Date 9/28/90 Station # B-22

Company Castle Oak

Time 1420

Flow/Depth 0

pH

Specific Conductivity

Water Temperature 67

Air Temperature

Dissolved Oxygen

Type: Spring ✓ Stream___ Well___ Discharge___ [illegible]

Collection Point T.P. Pipe

Appearance of Water: Clear___ Milky___ Cloudy___ [illegible]

Quality Sample Taken: Yes___ No ✓

Pump Reading

Comments

Field Monitor [signature]

When Sample or Measurements Not Taken:

Reason: 0

D = Dry F = Frozen N/A = Not Accessable N/I = Not Installed

E.I.S. Hydrology
Field Measurements Form

Date 9/29/90 Station = B-26

Company Castle Gate Coal

Time 14:07

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature 67°

Dissolved Oxygen

Type: Spring___ Stream✓ Well___ Discharge___ Other___

Collection Point Above Property

Appearance of Water: Clear___ Milky___ Cloudy___ Other___

Quality Sample Taken: Yes___ No✓

Pump Reading

Comments Bubbles of Water - No Flow

Field Monitor [signature]

When Sample or Measurements Not Taken:

Reason: D

D = Dry F = Frozen N/A = Not Accessable N/E = Not Encountered

Mine file UB
cc Coon letter Pam G/K

ENVIRONMENTAL INDUSTRIAL SERVICES

P.O. Box 358 - Desert Lake Road - Elmo, Utah 84521 - Telephone (801) 653-2606

Mel Coonrod - Vice-President

JUL 30 1990

Act/007/004
#7

July 29, 1990

Mr. Lowell Braxton
Utah Division of Oil, Gas & Mining
355 West North Temple
#3 Triad Center Suite 350
Salt Lake City, Utah 84180-1203

Re: Second Quarter Water Data
Castle Gate Coal Company

Dear Mr. Braxton:

Please find enclosed the Second Quarter 1990 Water data for Castle Gate Coal Company.

If you have any questions, please feel free to call me at 801 653-2606.

Sincerely,

Melvin A. Coonrod

MAC/njc

cc: Castle Gate Coal Co.
File

WATER MONITORING REPORT

Property: Castle Gate
Station: B-5
Location: Lower Price River
Type: River
Frequency: Quarterly

JUL 13 1990

Field Measurements	Date Sampled 03/09/90	05/30/90	00/00/00	00/00/00	Mean
Flow [gpm]	>5 cfs	> 10 cfs			
PH	7.8	8			
Sp. Cond. [ohms]	1290	400			
Temp. [C]	2	4			
Diss. O [ppm]	8	10			
Lab. Meas. [mg/l]					
TDS	369	242			
TSS	27	63			
O & G	<5	20.8			
Al CaCO3	240.66	179.54			
Hd CaCO3	275.78	220.88			
Ac CaCO3	0	0			
HCO3	293.6	209.7			
CO3	0	4.6			
Cl	19.3	8.4			
SO4	74.5	72.4			
Ca	67.4	52.2			
Mg	26.2	22.0			
K	2.1	1.9			
Na	34.9	15			
Cat/An	1.27	2.07			
Fe	.18	.99			
Mn	<.02	.06			

E.I.S. Hydrology
Field Measurements Form

Date 8/30/90 Station # B-5

Company Castle Cole

Time 10:15

Flow/Depth > 10CFS

pH 8.0

Specific Conductivity 400

Water Temperature 40

Air Temperature 56

Dissolved Oxygen 10

Type: Spring___ Stream ✓ Well___ Discharge___ NPDES___

Collection Point Lower Pine Pt.

Appearance of Water: Clear ✓ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes ✓ No___

Pump Healing

Comments

Field Monitor M. Coomoc

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT:	Castle Gate	DATE REPORTED:	06/14/90
ID:	N/A		
SITE:	B-5	DATE RECEIVED:	06/04/90
LAB NO:	F4307	DATE COLLECTED:	05/30/90

Lab pH (s.u.).....	8.35
Lab conductivity, umhos/cm.....	463
Lab resistivity, ohm-m.....	21.5983
Total dissolved solids (180), mg/l..	242
Total dissolved solids (calc), mg/l.	280
Total suspended solids, mg/l.....	63
Total alkalinity as CaCO3, mg/l.....	179.54
Total acidity as CaCO3, mg/l.....	0.00
Total hardness as CaCO3, mg/l.....	220.88
Sodium absorption ratio.....	0.44
Oil and grease (gravimetric), mg/l..	20.8

	mg/l	meq/l
Bicarbonate as HCO3.....	209.7	3.44
Carbonate as CO3.....	4.6	0.15
Chloride.....	8.4	0.24
Sulfate.....	72.4	1.51
Calcium.....	52.2	2.61
Magnesium.....	22.0	1.81
Potassium.....	1.9	0.05
Sodium.....	15.0	0.65
Major cations.....		5.12
Major anions.....		5.34
Cation/anion difference.....		2.07 %

Trace metals by AA (total concentration), mg/l

	Analytical Result:	Detection Limit:
Iron (Fe).....	0.99	<0.04
Manganese (Mn).....	0.06	<0.02

C. Neal Schaeffer
Lab Director

WATER MONITORING REPORT

Property: Castle Gate
Station: B-6
Location: Upper Price River
Type: River
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	00/00/00	00/00/00	Mean
Flow [gpm]	>5 cfs	>10 cfs			
PH	7.8	8			
Sp. Cond. [ohms]	1250	540			
Temp. [C]	2	3			
Diss. O [ppm]	9	10			
Lab. Meas. [mg/l]					
TDS	381	234			
TSS	17	101			
O & G	N/A	5			
Al CaCO3	244.48	191			
Hd CaCO3	288.41	210.84			
Ac CaCO3	0	0			
HCO3	298.3	214.4			
CO3	0	9.2			
Cl	36.4	12.6			
SO4	65.4	36.2			
Ca	72.4	36.1			
Mg	26.2	29.3			
K	3	1.5			
Na	31.2	14.6			
Cat/An	.54	.40			
Fe	.44	.58			
Mn	<.02	.07			

E.I.S. Hydrology
Field Measurements Form

Date 5-30-96 Station # B-6

Company [illegible]

Time 2:00

Flow/Depth >10CFS

pH 8

Specific Conductivity 340

Water Temperature 30

Air Temperature 55

Dissolved Oxygen 10

Type: Spring___ Stream ✓ Well___ Discharge___ NPIES___

Collection Point [illegible]

Appearance of Water: Clear___ Milky ✓ Cloudy___ Opaque___

Quality Sample Taken: Yes ✓ No___

Fury Reading

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Castle Gate
ID: N/A
SITE: B-6
LAB NO: F4308

DATE REPORTED: 06/14/90
DATE RECEIVED: 06/04/90
DATE COLLECTED: 05/30/90

Lab pH (s.u.).....	8.32
Lab conductivity, umhos/cm.....	467
Lab resistivity, ohm-m.....	21.4133
Total dissolved solids (180), mg/l..	234
Total dissolved solids (calc), mg/l.	245
Total suspended solids, mg/l.....	101
Total alkalinity as CaCO3, mg/l.....	191.00
Total acidity as CaCO3, mg/l.....	0.00
Total hardness as CaCO3, mg/l.....	210.84
Sodium absorption ratio.....	0.44
Oil and grease (gravimetric), mg/l..	5.0

	mg/l	meq/l
Bicarbonate as HCO3.....	214.4	3.51
Carbonate as CO3.....	9.2	0.31
Chloride.....	12.6	0.36
Sulfate.....	36.2	0.75
Calcium.....	36.1	1.80
Magnesium.....	29.3	2.41
Potassium.....	1.5	0.04
Sodium.....	14.6	0.64
Major cations.....		4.89
Major anions.....		4.93
Cation/anion difference.....		0.40 %

Trace metals by AA (total concentration), mg/l

	Analytical Result:	Detection Limit:
Iron (Fe).....	0.58	<0.04
Manganese (Mn).....	0.07	<0.02

C. Neal Schaeffer
Lab Director

WATER MONITORING REPORT

Property: Castle Gate
Station: B-17
Location: No. 5 Mine Rd. Junction
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	00/00/00	00/00/00	Mean
Flow [gpm]	DRY	DRY			
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 5/30/90 Station # B-17

Company [illegible]

Time

Flow/Depth 0

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Pump Reading

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: B-22
Location: Crandall - Culvert
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30.90	00/00/00	00/00/00	Mean
Flow [gpm]	FROZEN	1.2			
PH		7.8			
Sp. Cond. [ohms]		1090			
Temp. [C]		4			
Diss. O [ppm]		N/R			
Lab. Meas. [mg/l]					
TDS		829			
TSS		102			
O & G		N/R			
Al CaCO3		370.54			
Hd CaCO3		692.76			
Ac CaCO3		0			
HCO3		452.1			
CO3		0			
Cl		29.4			
SO4		324.7			
Ca		124.5			
Mg		92.9			
K		6.7			
Na		28.1			
Cat/An		.81			
Fe		2.95			
Mn		.37			

E.I.S. Hydrology
Field Measurements Form

Date 5/30/90 Station # B-22

Company Castle Gate

Time 12:00

Flow/Depth 1.2 gpm

pH 7.8

Specific Conductivity 1090

Water Temperature 40

Air Temperature 55

Dissolved Oxygen NA

Type: Spring ✓ Stream___ Well___ Discharge___ NPDES___

Collection Point Below T. Soil Pile

Appearance of Water: Clear ✓ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes ✓ No___

Pump Reading

Comments Heavy A.M Rain - mixed sample.

Field Monitor [signature]

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT:	Castle Gate	DATE REPORTED:	06/14/90
ID:	N/A		
SITE:	B-22	DATE RECEIVED:	06/04/90
LAB NO:	F4309	DATE COLLECTED:	05/30/90

Lab pH (s.u.).....	7.76
Lab conductivity, umhos/cm.....	1402
Lab resistivity, ohm-m.....	7.1327
Total dissolved solids (180), mg/l..	840
Total dissolved solids (calc), mg/l.	829
Total suspended solids, mg/l.....	102
Total alkalinity as CaCO3, mg/l.....	370.54
Total acidity as CaCO3, mg/l.....	0.00
Total hardness as CaCO3, mg/l.....	692.76
Sodium absorption ratio.....	0.46

	mg/l	meq/l
Bicarbonate as HCO3.....	452.1	7.41
Carbonate as CO3.....	0.0	0.00
Chloride.....	29.4	0.83
Sulfate.....	324.7	6.76
Calcium.....	124.5	6.21
Magnesium.....	92.9	7.64
Potassium.....	6.7	0.17
Sodium.....	28.1	1.22
Major cations.....		15.25
Major anions.....		15.00
Cation/anion difference.....		0.81 %

Trace metals by AA (total concentration), mg/l

	Analytical Result:	Detection Limit:
Iron (Fe).....	2.95	<0.04
Manganese (Mn).....	0.37	<0.02

C. Neal Schaeffer
Lab Director

WAT[illegible] MONITORING REPORT

Property: Castle Gate
Station: B-25
Location: Crandall Creek Above Mine
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	06/30/90	00/00/00	00/00/00	Mean
Flow [gpm]	DRY	DRY			
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 7/30/00 Station # B-25

Company [illegible]

Time 12:46

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPIES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Pump Reading

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason: D

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: B-26
Location: Spring Adj. Topsoil Pile
Type: Spring
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	00/00/00	00/00/00	Mean
Flow [gpm]	DRY	DRY			
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 7/30/90 Station # B-06

Company [illegible]

Time 12:15

Flow/Depth 0

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPLES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No ✓

Pump Reading

Comments

Field Monitor [signature]

When Sample or Measurements Not Taken:

Reason: 0

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: B-28
Location: Above Property
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	00/00/00	00/00/00	Mean
Flow [gpm]	DRY	DRY			
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 0/20/00 Station = B-2B

Company [illegible]

Time [illegible]

Flow/Depth 0

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Flow Reading

Comments

Field Monitor [signature]

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: BM-30
Location: Inflow to Sed. Pond
Type: Disturbed
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	00/00/00	00/00/00	Mean
Flow [gpm]	DRY	DRY			
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 8/20/20 Station # BM-30

Company [illegible]

Time 1415

Flow/Depth 0

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Pump Reading

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

[illegible]ER MONITORING REPORT [illegible]

Property: Castle Gate
Station: BM-31
Location: Above Spring Glen
Type: Spring
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	00/00/00	00/00/00	Mean
Flow [gpm]	Inaccess	DRY			
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 6/30/90 Station # KM-(3)

Company

Time

Flow/Depth Dry

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Pump Reading

Comments

Field Monitor

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

[redacted]ER MONITORING REPORT [redacted]

Property: Castle Gate
Station: BM-32
Location: Above Rock Bridge
Type: Spring
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/30/90	00/00/00	00/00/00	Mean
Flow [gpm]	DRY	2			
PH		7.9			
Sp. Cond. [ohms]		2600			
Temp. [C]		5			
Diss. O [ppm]		N/R			

Lab. Meas. [mg/l]					
TDS		1604			
TSS		1			
O & G		N/R			
Al CaCO3		382			
Hd CaCO3		1194.8			
Ac CaCO3		0			
HCO3		447.4			
CO3		9.2			
Cl		50.4			
SO4		902			
Ca		152.6			
Mg		198.0			
K		13.9			
Na		58.3			
Cat/An		1.95			
Fe		.09			
Mn		.02			

E.I.S. Hydrology
Field Measurements Form

Date 8/30/93

Station # Rock Sp. BM 32

Company [illegible]

Time 12:20

Flow/Depth 2 gpm

pH 7.9

Specific Conductivity 2600

Water Temperature 5

Air Temperature 59

Dissolved Oxygen NM

Type: Spring ✓ Stream___ Well___ Discharge___ NPDES___

Collection Point Source

Appearance of Water: Clear ✓ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes ✓ No___

Pump Reading

Comments

Field Monitor [signature]

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT:	Castle Gate	DATE REPORTED:	06/14/90
ID:	N/A		
SITE:	Rock Spring B32	DATE RECEIVED:	06/04/90
LAB NO:	F4310	DATE COLLECTED:	05/30/90

Lab pH (s.u.).....	8.32
Lab conductivity, umhos/cm.....	2179
Lab resistivity, ohm-m.....	4.5893
Total dissolved solids (180), mg/l..	1638
Total dissolved solids (calc), mg/l.	1604
Total suspended solids, mg/l.....	1
Total alkalinity as CaCO3, mg/l.....	382.00
Total acidity as CaCO3, mg/l.....	0.00
Total hardness as CaCO3, mg/l.....	1194.76
Sodium absorption ratio.....	0.73

	mg/l	meq/l
Bicarbonate as HCO3.....	447.4	7.33
Carbonate as CO3.....	9.2	0.31
Chloride.....	50.4	1.42
Sulfate.....	902.0	18.79
Calcium.....	152.6	7.62
Magnesium.....	198.0	16.28
Potassium.....	13.9	0.35
Sodium.....	58.3	2.54
Major cations.....		26.79
Major anions.....		27.85
Cation/anion difference.....		1.95 %

Trace metals by AA (total concentration), mg/l

	Analytical Result:	Detection Limit:
Iron (Fe).....	0.09	<0.04
Manganese (Mn).....	0.02	<0.02

C. Neal Schaeffer
Lab Director

WATER MONITORING REPORT

Property: Castle Gate Coal
Station: B-12
Location: Upper Hardscrabble
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/14/90	00/00/00	00/00/00	Mean
Flow [gpm]	DRY	DRY			
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 5/14/90 Station = B-15

Company [illegible]

Time

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Pump Reading

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

E.I.S. Hydrology
Field Measurements Form

Date 3/09/90 Station # B-12

Company Castle Gate

Time

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Pump Reading

Comments

Field Monitor

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

[illegible]ER MONITORING REPORT

Property: Castle Gate Coal
Station: B-11
Location: Lower Hardscrabble
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	05/14/90	00/00/00	00/00/00	Mean
Flow [gpm]	DRY	DRY			
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 5/14/90 Station # B-11

Company Castle Gate

Time

Flow/Depth 0

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Pump Reading

Comments

Field Monitor

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

E.I.S. Hydrology
Field Measurements Form

Date 3/09/90 Station # B-11

Company Castle Gate

Time

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Pump Reading

Comments

Field Monitor

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

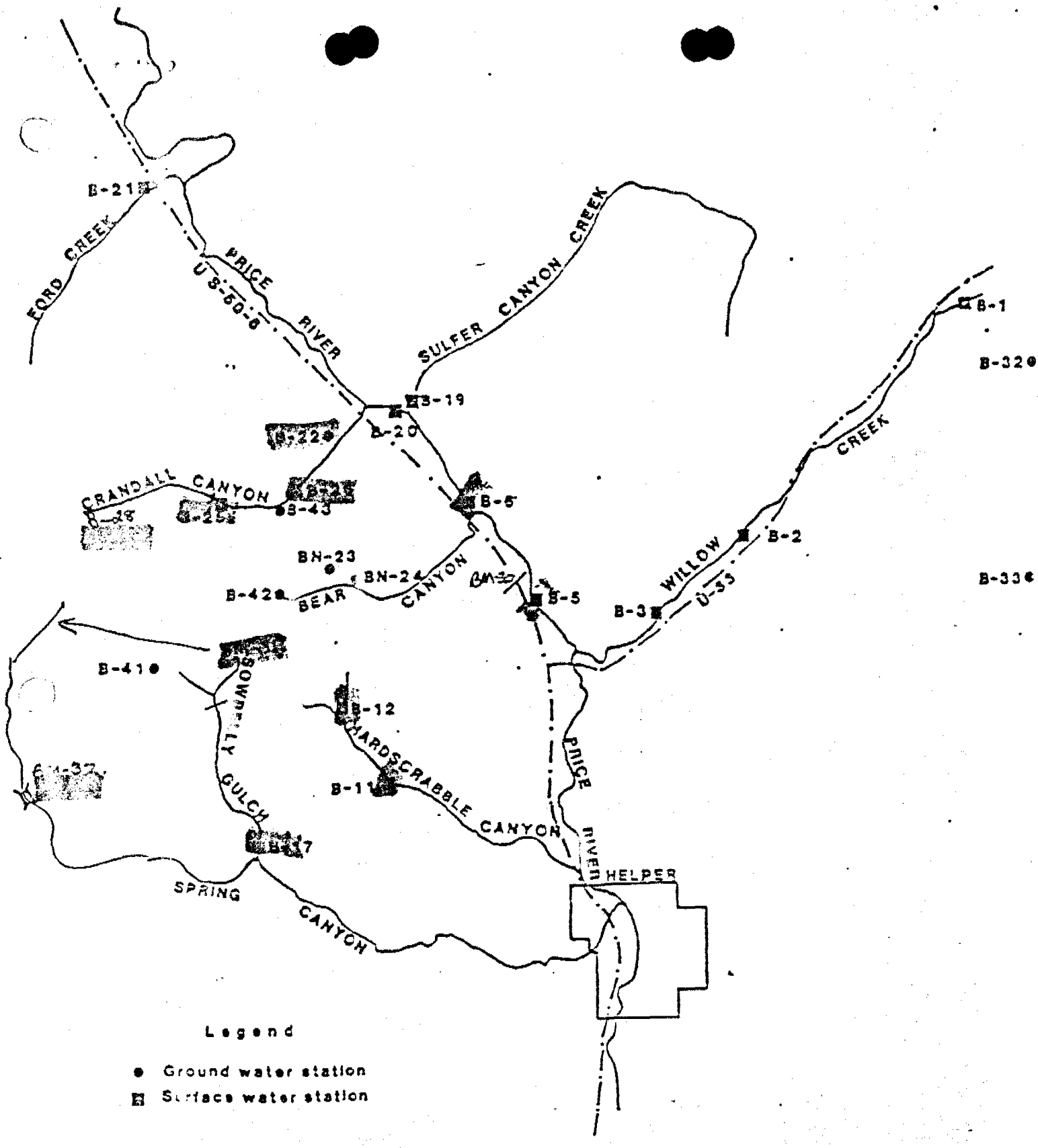

Figure 7-13. Water sampling station locations for Price River Coal Company from January, 1980 through March, 1984.

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

Client: Castle Gate Coal Co.

Date reported: 07/25/90
Date received: 06/04/90
Date collected: 05/30/90

Analysis requested: Settleable solids. *

Lab #:	Sample site:	Sample ID:	Result:
F4307	B-5	N/A	<5.0 * ml/l
F4308	B-6	N/A	<5.0 * ml/l
F4309	B-22	N/A	<5.0 * ml/l
F4310	Rockspring B-2	N/A	<5.0 * ml/l

* Results estimated from settled material in sample containers. Approximately half of the original 1/2-gallon sample was used in other analyses. No sample displayed over 1ml of settled solids in the sample containers. These results should be considered conservative estimates. We did not follow an approved method.

C. Neal Schaeffer
Senior Chemist

Mine file
cc Charlotte D. Hadduck

File ACT/007/004 #7

ENVIRONMENTAL INDUSTRIAL SERVICES

P.O. Box 358 - Desert Lake Road - Elmo, Utah 84521 - Telephone (801) 653-2606

Mel Coonrod - Vice-President

Rick,
Review & File

April 23, 1990

RECEIVED
MAY 07 1990
DIVISION OF
OIL, GAS & MINING

Mr. Lowell Braxton
Utah Division of Oil, Gas & Mining
355 West North Temple
#3 Triad Center Suite 350
Salt Lake City, Utah 84180-1203

Re: First Quarter Water Data
Castle Gate Coal Company

Dear Mr. Braxton:

Please find enclosed the First Quarter 1990 Water data for Castle Gate Coal Company.

If you have any questions, please feel free to call me at 801 653-2606.

Sincerely,

Melvin A. Coonrod

MAC/njc

cc: Castle Gate Coal Co.
File

WATER MONITORING REPORT

Property: Castle Gate
Station: B-5
Location: Lower Price River
Type: River
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	00/00/00	00/00/00	00/00/00	Mean
Flow [gpm]	>5 cfs				
PH	7.8				
Sp. Cond. [ohms]	1290				
Temp. [C]	2				
Diss. O [ppm]	8				
Lab. Meas. [mg/l]					
TDS	369				
TSS	27				
O & G	<5				
Al CaCO3	240.66				
Hd CaCO3	275.78				
Ac CaCO3	0				
HCO3	293.6				
CO3	0				
Cl	19.3				
SO4	74.5				
Ca	67.4				
Mg	26.2				
K	2.1				
Na	34.9				
Cat/An	1.27				
Fe	.18				
Mn	<.02				

E.I.S. Hydrology
Field Measurements Form

Date 3/9/90 Station # B-5

Company Castle Gate

Time 11:00

Flow/Depth 75 cfs

pH 7.8

Specific Conductivity 1290

Water Temperature 8°

Air Temperature 44

Dissolved Oxygen 8

Type: Spring___ Stream ✓ Well___ Discharge___ NPDES___

Collection Point below Prop. River Bridge

Appearance of Water: Clear___ Milky ✓ Cloudy___ Opaque___

Quality Sample Taken: Yes ✓ No___

Pump Reading N/A

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Castle Gate
ID:
SITE: B_5
LAB NO: F4025

DATE REPORTED: 03/23/90
DATE RECEIVED: 03/20/90
DATE COLLECTED: 03/09/90

Lab pH (s.u.).....	8.04
Lab Conductivity, umhos/cm.....	707
Lab resistivity, ohm-m.....	14.1443
Total Dissolved Solids (180), mg/l..	396
Total Dissolved Solids (calc), mg/l.	369
Total Suspended Solids, mg/l.....	27
Settleable solids, ml/l.....	<0.1
Total Alkalinity as CaCO3, mg/l.....	240.66
Total Acidity as CaCO3, mg/l.....	0.00
Total Hardness as CaCO3, mg/l.....	275.78
Sodium Absorption Ratio.....	0.91
Oil and Grease (gravimetric), mg/l..	<5.0

	mg/l	meq/l
Bicarbonate as HCO3.....	293.6	4.81
Carbonate as CO3.....	0.0	0.00
Chloride.....	19.3	0.54
Sulfate.....	74.5	1.55
Calcium.....	67.4	3.36
Magnesium.....	26.2	2.15
Potassium.....	2.1	0.05
Sodium.....	34.9	1.52
Major Cations.....		7.09
Major Anions.....		6.91
Cation/Anion Difference.....		1.27 %

Trace metals by AA (Dissolved Concentration), mg/l

	Analytical Result:	Detection Limit:
Iron (Fe).....	0.18	<0.04
Manganese (Mn).....	ND	<0.02

Trace metals by AA (Total Concentration), mg/l

	Analytical Result:	Detection Limit:
Iron (Fe).....	0.55	<0.04
Manganese (Mn).....	0.03	<0.02

C. Neal Schaeffer
Lab Director

WATER MONITORING REPORT

Property: Castle Gate
Station: B-6
Location: Upper Price River
Type: River
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	00/00/00	00/00/00	00/00/00	Mean
Flow [gpm]	>5 cfs				
PH	7.8				
Sp. Cond. [ohms]	1250				
Temp. [C]	2				
Diss. O [ppm]	9				
Lab. Meas. [mg/l]					
TDS	381				
TSS	17				
O & G	N/A				
Al CaCO3	244.48				
Hd CaCO3	288.41				
Ac CaCO3	0				
HCO3	298.3				
CO3	0				
Cl	36.4				
SO4	65.4				
Ca	72.4				
Mg	26.2				
K	3				
Na	31.2				
Cat/An	.54				
Fe	.44				
Mn	<.02				

E.I.S. Hydrology
Field Measurements Form

Date 3/9/90 Station # B-6

Company Castle Gate

Time 10:30

Flow/Depth > 5 cfs app.

pH 7.8

Specific Conductivity 1250

Water Temperature 2°

Air Temperature 44°

Dissolved Oxygen 9

Type: Spring___ Stream ✓ Well___ Discharge___ NPDES___

Collection Point Above Prop. Price River

Appearance of Water: Clear___ Milky ✓ Cloudy___ Opaque___

Quality Sample Taken: Yes ✓ No___

Pump Reading N.A.

Comments River - very low -

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason: _____

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Castle Gate
ID:
SITE: B-6
LAB NO: F4026

DATE REPORTED: 03/23/90
DATE RECEIVED: 03/20/90
DATE COLLECTED: 03/09/90

Lab pH (s.u.)	8.06
Lab Conductivity, umhos/cm	705
Lab resistivity, ohm-m	14.1844
Total Dissolved Solids (180), mg/l	392
Total Dissolved Solids (calc), mg/l	381
Total Suspended Solids, mg/l	17
Settleable solids, ml/l	<0.1
Total Alkalinity as CaCO3, mg/l	244.48
Total Acidity as CaCO3, mg/l	0.00
Total Hardness as CaCO3, mg/l	288.41
Sodium Absorption Ratio	0.80

	mg/l	meq/l
Bicarbonate as HCO3	298.3	4.89
Carbonate as CO3	0.0	0.00
Chloride	36.4	1.03
Sulfate	65.4	1.36
Calcium	72.4	3.61
Magnesium	26.2	2.15
Potassium	3.0	0.08
Sodium	31.2	1.36
Major Cations		7.20
Major Anions		7.28
Cation/Anion Difference		0.54 %

Trace metals by AA (Dissolved Concentration), mg/l

	Analytical Result:	Detection Limit:
Iron (Fe)	0.11	<0.04
Manganese (Mn)	ND	<0.02

Trace metals by AA (Total Concentration), mg/l

	Analytical Result:	Detection Limit:
Iron (Fe)	0.44	<0.04
Manganese (Mn)	ND	<0.02

C. Neal Schaeffer
Lab Director

WATER MONITORING REPORT

Property: Castle Gate
Station: B-17
Location: No. 5 Mine Rd. Junction
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	00/00/00	00/00/00	00/00/00	Mean
Flow [gpm]	DRY				
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 3/9/90 Station # B-17

Company Earth Sciences

Time 12:10

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream ✓ Well___ Discharge___ NPDES___

Collection Point Junction in Road to mine

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No ✓

Pump Reading

Comments No Snow in channel dry -

Field Monitor M. Connor

When Sample or Measurements Not Taken:

Reason: D

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: B-22
Location: Crandall - Culvert
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	00/00/00	00/00/00	00/00/00	Mean
Flow [gpm]	FROZEN				
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 3/9/90 Station # B-22

Company Castle Gate

Time 11:20

Flow/Depth Frozen

pH

Specific Conductivity

Water Temperature

Air Temperature NA

Dissolved Oxygen NA

Type: Spring___ Stream ✓ Well___ Discharge___ NPDES___

Collection Point Culvert above Hwy 50-6

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No ✓

Pump Reading

Comments Channel Frozen no Flow

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason: F

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: B-25
Location: Crandall Creek Above Mine
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	00/00/00	00/00/00	00/00/00	Mean
Flow [gpm]	DRY				
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 3/9/90 Station # B-25

Company Castle Gate

Time 11:39

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature 44°

Dissolved Oxygen

Type: Spring___ Stream ✓ Well___ Discharge___ NPDES___

Collection Point Hoover Property - Cardinal Eng.

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No ✓

Pump Reading

Comments Channel snow packed - No flow in to flume

Field Monitor M. L. Toomroe

When Sample or Measurements Not Taken:

Reason: D

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: B-26
Location: Spring Adj. Topsoil Pile
Type: Spring
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	00/00/00	00/00/00	00/00/00	Mean
Flow [gpm]	DRY				
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 3/9/90 Station # B-26

Company Castle Gate Coal

Time 11:28

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring ✓ Stream___ Well___ Discharge___ NPDES___

Collection Point Adjacent to Top Soil pile

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Pump Reading N/A

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason: D

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: B-28
Location: Above Property
Type: Int. Stream
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	00/00/00	00/00/00	00/00/00	Mean
Flow [gpm]	DRY				
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 3/9/90 Station # B-18

Company Castle Gate

Time 12:20

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream ✓ Well___ Discharge___ NPDES___

Collection Point Above Property

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No ✓

Pump Reading

Comments Channel - 90% snow cover
No Flow

Field Monitor M. Connor

When Sample or Measurements Not Taken:

Reason: D

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: BM-30
Location: Inflow to Sed. Pond
Type: Disturbed
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	00/00/00	00/00/00	00/00/00	Mean
Flow [gpm]	DRY				
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 3/9/90 Station # SM-30

Company Castle Gate Coal

Time 9:20

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature 34°

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge ✓ NPDES___

Collection Point To Flow to Pond

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No ✓

Pump Reading

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason: D.

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: BM-31
Location: Above Spring Glen
Type: Spring
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	00/00/00	00/00/00	00/00/00	Mean
Flow [gpm]	Inaccess				
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 3/9/90 Station # BM-31

Company Castle Gate Coal

Time 13:15

*Flow/Depth N/A

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No ✓

Pump Reading N/A

*Comments Road was blocked at upper Reclaim site approx. 2 miles below gate - snow drift

Field Monitor M. O'Connor

When Sample or Measurements Not Taken:

Reason: N/A.

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: Castle Gate
Station: BM-32
Location: Above Rock Bridge
Type: Spring
Frequency: Quarterly

Field Measurements	Date Sampled 03/09/90	00/00/00	00/00/00	00/00/00	Mean
Flow [gpm]	DRY				
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					
Lab. Meas. [mg/l]					
TDS					
TSS					
O & G					
Al CaCO3					
Hd CaCO3					
Ac CaCO3					
HCO3					
CO3					
Cl					
SO4					
Ca					
Mg					
K					
Na					
Cat/An					
Fe					
Mn					

E.I.S. Hydrology
Field Measurements Form

Date 3/9/90 Station # BM-32

Company Castle Rock

Time 5:05

Flow/Depth D

pH

Specific Conductivity

Water Temperature

Air Temperature

Dissolved Oxygen

Type: Spring ✓ Stream___ Well___ Discharge___ NPDES___

Collection Point Above Back Bridge

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No ✓

Pump Reading

Comments Channel snow on ice packed to flow of very water - Spring or melt.

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason: D

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

E.I.S. Hydrology
Field Measurements Form

Date 3/9/90 Station # B-5

Company Cattle Call

Time 1100

Flow/Depth >50 cfs

pH 7.8

Specific Conductivity 1290

Water Temperature 8°

Air Temperature 44

Dissolved Oxygen 8

Type: Spring___ Stream ✓ Well___ Discharge___ NPDES___

Collection Point below Rogue River Bridge

Appearance of Water: Clear___ Milky ✓ Cloudy___ Opaque___

Quality Sample Taken: Yes ✓ No___

Pump Reading N/A

Comments

Field Monitor [illegible]

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

CASTLE GATE COAL COMPANY
P.O. Box 449
Helper, Utah 84526

Mine file act/007/004 #7
cc Owen letter S. Linder

To: MR. LOWELL BRAXTON Date: JANUARY 9, 1990

From: THOMAS A. MCKENNA Subject: 4TH QUARTER WATER REPORTS

MESSAGE: ENCLOSED ARE THE 4TH QUARTER / ANNUAL REPORT FOR CASTLE GATE COAL COMPANY'S WATER MONITORING PROGRAM AS REQUIRED BY PERMIT ACT 007/004.

RECEIVED
JAN 12 1990
DIVISION OF
OIL, GAS & MINING

Signed: Thomas A. McKenna

#P078-522-156

CASTLE GATE COAL COMPANY
1989 WATER SAMPLE SUMMARY

SAMPLE SITE	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
B-5	X	X	X	X
B-6	X	X	X	X
B-11	O	O	O	O
B-12	O	O	O	O
B-17	O	O	O	O
B-22	X	X	X	O
B-25	O	O	O	O
B-26	O	O	X	O
B-28	O	O	O	O
BM-30	O	O	O	O
BM-31	X	X	X	X
BM-32	X	X	O	O

X - SAMPLED.
O - DRY.

© WILSON JONES COMPANY G7506 GREEN MADE IN U.S.A.

Inter-Mountain Laboratories, Inc.
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CASTLE GATE COAL COMPANY

Sample Site : Price River B-5

****

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Mean
Date Sampled (mo/da/yr) :	04/10/89	06/21/89	09/21/89	12/12/89	
Field pH (s.u.) :	NA	6	6	7	3.25
Field Temperature (C) :	9.0	NA	9	2	5
Field Cond (umhos/cm) :	408	314	293	680	423.75
Flow (cfs) :	10	<100	<100	<100	2.5
Lab Number :	F1289	F1638	3225	3690	
pH (s.u.) :	8.2	7.45	7.89	8.09	7.91
T.Suspended Solids (mg/l) :	382	56.0	602	6	261.50
Settleable Solids (ug/ml) :	0.6	0.3	0.4	N/A	0.33
T.Dissolved Solids (mg/l) :	248	234	200	376	264.50
Oil & Grease (mg/l) :	6.4	1.8	<0.5	<0.5	2.05
Acidity (mg/l) :	<0.1	<0.1	<0.1	<0.1	<0.1
Total Hardness (mg/l) :	262	191	189	299	235.25
Total Alkalinity (mg/l) :	257	173	170	251	212.75
Bicarbonate-HCO3 (mg/l) :	314	211	208	306	259.75
Carbonate-CO3 (mg/l) :	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride (mg/l) :	13	10.64	8.43	18	12.52
Sulfate (mg/l) :	46	31.69	31.69	67	44.10
Calcium (mg/l) :	60	48.37	48.85	67	56.06
Magnesium (mg/l) :	28	17.16	16.44	32	23.40
Potassium (mg/l) :	2	2.11	2.49	2.76	2.34
Sodium (mg/l) :	27	8.50	12.1	25.5	18.28
Major Cations (meq/l) :	6.49	4.25	4.38	7.16	5.57
Major Anions (meq/l) :	6.49	4.41	4.3	6.91	5.53
Cation/Anion Diff (%) :	0.00	1.88	0.87	1.7	1.11
					0.00
D. Iron (mg/l) :	0.07	0.03	0.31	0.06	0.12
T. Iron (mg/l) :	5.37	0.91	25.51	0.16	7.99
T. Manganese (mg/l) :		0.14	0.56	0.03	0.24

C. Neal Schaeffer
Senior Chemist

Inter-Mountain Laboratories, Inc.
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CASTLE GATE COAL COMPANY

Sample Site : Price River B-6

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Mean
Date Sampled (mo/da/yr) :	04/10/89	06/21/89	09/21/89	12/12/89	
Field pH (s.u.) :	NA	6	6	7	4.75
Field Temperature (C) :	9.0	14	9	2	8.5
Field Cond (umhos/cm) :	400	307	276	647	407.50
Flow (cfs) :	10+	<100	<100	<100	<100
Lab Number :	F1290	F1639	F3226	F3691	
pH (s.u.) :	8.3	7.37	7.90	8.26	7.96
T.Suspended Solids (mg/l) :	326	67.0	544	13	237.50
Settleable Solids (ug/ml) :	0.7	0.35	0.5	N/A	0.39
T.Dissolved Solids (mg/l) :	236	218	214	394	265.50
Oil & Grease (mg/l) :	<5.0	1.6	<5.0	<5.0	0.40
Acidity (mg/l) :	<0.1	<0.1	<0.1	<0.1	0.00
Total Hardness (mg/l) :	262	194	206	303	241.25
Total Alkalinity (mg/l) :	246	172	185	266	217.25
Bicarbonate-HCO3 (mg/l) :	300	209	226	324	264.75
Carbonate-CO3 (mg/l) :	<0.1	<0.1	<0.1	<0.1	0.00
Chloride (mg/l) :	12	9.57	9.91	19.82	12.83
Sulfate (mg/l) :	49	29.63	29.63	61.31	42.39
Calcium (mg/l) :	59	50.01	50.53	69.6	57.29
Magnesium (mg/l) :	28	16.86	19.51	31.82	24.05
Potassium (mg/l) :	2	2.1	2.3	2.53	2.23
Sodium (mg/l) :	26	7.80	10.9	21.4	16.53
Major Cations (meq/l) :	6.44	4.27	4.66	7.06	5.61
Major Anions (meq/l) :	6.30	4.32	4.61	7.15	5.60
Cation/Anion Diff (%) :	1.10	0.12	0.57	0.63	0.61
					0.00
D. Iron (mg/l) :	<0.05	0.03	0.27	0.09	0.10
T. Iron (mg/l) :	3.47	0.49	27.02	0.19	7.79
T. Manganese (mg/l) :		0.12	0.57	0.06	0.25

C. Neal Schaeffer
Senior Chemist

Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CASTLE GATE COAL COMPANY

Sample Site : B-22

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Mean
Date Sampled (mo/da/yr) :	04/10/89	06/21/89	09/21/89	N/A	
Field pH (s.u.) :	NA	6.8	6	N/A	6.4
Field Temperature (C) :	6.0		12	N/A	9
Field Cond (umhos/cm) :	946	1110	200	N/A	752
Flow (cfs) :	<1.0		16	N/A	
Lab Number :	F1291	F1640	F3227	N/A	
pH (s.u.) :	8.0	7.46	7.38	N/A	7.61
T.Suspended Solids (mg/l) :	5	2.0	216	N/A	74
Settleable Solids (ug/ml) :	<0.1	0.1	<0.1	N/A	<0.1
T.Dissolved Solids (mg/l) :	1500	854	173	N/A	842
Oil & Grease (mg/l) :	6.2	1.1	<5.0	N/A	2.4
Acidity (mg/l) :	<0.1	<0.1	<0.1	N/A	<0.1
Total Hardness (mg/l) :	1064	697	141.47	N/A	634
Total Alkalinity (mg/l) :	263	415	109.10	N/A	262
Bicarbonate-HCO3 (mg/l) :	320	506.46	133.10	N/A	320
Carbonate-CO3 (mg/l) :	0	0	0	N/A	0
Chloride (mg/l) :	45	28.71	14.76	N/A	29.49
Sulfate (mg/l) :	45	306.98	33.74	N/A	129
Calcium (mg/l) :	171	114.77	28.63	N/A	104.8
Magnesium (mg/l) :	155	99.84	17.03	N/A	91
Potassium (mg/l) :	14	7.26	4.56	N/A	8.6
Sodium (mg/l) :	54	28.20	8.7	N/A	30.3
Major Cations (meq/l) :	23.98	15.35	3.32	N/A	14.22
Major Anions (meq/l) :	23.00	15.51	3.3	N/A	13.94
Cation/Anion Diff (%) :	2.09	0.51	0.35	N/A	0.98
D. Iron (mg/l) :	<0.05	0.03	1.36	N/A	0.46
T. Iron (mg/l) :	0.16	2.2	24.18	N/A	8.85
T. Manganese (mg/l) :		0.38	0.14	N/A	0.17

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CASTLE GATE COAL COMPANY

Sample Site : B-26

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Mean
Date Sampled (mo/da/yr) :	N/A	N/A	09/21/89	N/A	09/21/89
Field pH (s.u.) :	N/A	N/A	6	N/A	6
Field Temperature (C) :	N/A	N/A	8	N/A	8
Field Cond (umhos/cm) :	N/A	N/A	332	N/A	332
Flow (cfs) :	N/A	N/A	1	N/A	1
Lab Number :	N/A	N/A	F3228	N/A	F3228
pH (s.u.) :	N/A	N/A	7.28	N/A	7.28
T.Suspended Solids (mg/l) :	N/A	N/A	146	N/A	146
Settleable Solids (ug/ml) :	N/A	N/A	<0.1	N/A	<0.1
T.Dissolved Solids (mg/l) :	N/A	N/A	270	N/A	270
Oil & Grease (mg/l) :	N/A	N/A	<0.5	N/A	<0.5
Acidity (mg/l) :	N/A	N/A	0	N/A	0
Total Hardness (mg/l) :	N/A	N/A	116	N/A	116
Total Alkalinity (mg/l) :	N/A	N/A	98	N/A	98
Bicarbonate-HCO3 (mg/l) :	N/A	N/A	119.79	N/A	119.79
Carbonate-CO3 (mg/l) :	N/A	N/A	0	N/A	0
Chloride (mg/l) :	N/A	N/A	9.91	N/A	9.91
Sulfate (mg/l) :	N/A	N/A	108.22	N/A	108.22
Calcium (mg/l) :	N/A	N/A	32	N/A	32
Magnesium (mg/l) :	N/A	N/A	8.74	N/A	8.74
Potassium (mg/l) :	N/A	N/A	5.17	N/A	5.17
Sodium (mg/l) :	N/A	N/A	48.5	N/A	48.5
Major Cations (meq/l) :	N/A	N/A	4.56	N/A	4.56
Major Anions (meq/l) :	N/A	N/A	4.50	N/A	4.50
Cation/Anion Diff (%) :	N/A	N/A	0.66	N/A	0.66
D. Iron (mg/l) :	N/A	N/A	0.5	N/A	0.5
T. Iron (mg/l) :	N/A	N/A	8.19	N/A	8.19
T. Manganese (mg/l) :	N/A	N/A	0.09	N/A	0.09

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CASTLE GATE COAL COMPANY

Sample Site : BM-31

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Mean
Date Sampled (mo/da/yr) :	04/11/89	06/21/89	09/21/89	12/12/89	
Field pH (s.u.) :	6.5	6.5	7	6	6.5
Field Temperature (C) :	13.0	NA	15	-2	6.75
Field Cond (umhos/cm) :	1035	1065	1082	1285	1116.75
Flow (cfs) :	5.00	NA	5	3	3.25
Lab Number :	F1292	F1641	F3229	F3692	
pH (s.u.) :	7.8	7.48	7.46	7.96	7.68
T.Suspended Solids (mg/l) :	2	0.5	3	17	5.63
Settleable Solids (ug/ml) :	<0.1	<0.1	<0.1	N/A	<0.1
T.Dissolved Solids (mg/l) :	784	888	868	847	846.75
Oil & Grease (mg/l) :	<0.5	1.7	<0.5	<0.5	0.43
Acidity (mg/l) :	<0.1	<0.1	<0.1	<0.1	<0.1
Total Hardness (mg/l) :	706	701	726	724	714.25
Total Alkalinity (mg/l) :	431	415	425	430	425.25
Bicarbonate-HCO3 (mg/l) :	526	506.46	519.10	525	519.14
Carbonate-CO3 (mg/l) :	0	0	0	0	0.00
Chloride (mg/l) :	39	40	30	30	34.75
Sulfate (mg/l) :	295	298	282	292	291.75
Calcium (mg/l) :	149	121	152	147	142.25
Magnesium (mg/l) :	81	97	84	87	87.25
Potassium (mg/l) :	7	6.45	6.19	6.23	6.47
Sodium (mg/l) :	31	30.40	28.6	28	29.50
Major Cations (meq/l) :	15.66	15.51	15.93	15.84	15.74
Major Anions (meq/l) :	15.86	15.67	15.22	15.52	15.57
Cation/Anion Diff (%) :	0.63	0.51	2.27	1.04	1.11
D. Iron (mg/l) :	0.05	0.04	<0.05	0.49	0.15
T. Iron (mg/l) :	0.14	0.2	0.11	0.65	0.28
T. Manganese (mg/l) :		0.03	<0.02	0.06	0.02

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CASTLE GATE COAL COMPANY

Sample Site : BM-32

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Mean
Date Sampled (mo/da/yr) :	04/11/89	06/21/89	N/A	N/A	
Field pH (s.u.) :	6.0	6	N/A	N/A	6
Field Temperature (C) :	13.0	N/A	N/A	N/A	13.0
Field Cond (umhos/cm) :	1578	1509	N/A	N/A	1543.5
Flow (cfs) :	1.00	N/A	N/A	N/A	1.00
Lab Number :	F1293	F1642	N/A	N/A	
pH (s.u.) :	7.7	7.83	N/A	N/A	7.77
T.Suspended Solids (mg/l) :	26	0.5	N/A	N/A	13.25
Settleable Solids (ug/ml) :	<0.1	<0.1	N/A	N/A	<0.1
T.Dissolved Solids (mg/l) :	828	1678	N/A	N/A	1253
Oil & Grease (mg/l) :	<5	1.8	N/A	N/A	0.9
Acidity (mg/l) :	<0.1	<0.1	N/A	N/A	<0.1
Total Hardness (mg/l) :	757	1205	N/A	N/A	981
Total Alkalinity (mg/l) :	444	411	N/A	N/A	428
Bicarbonate-HCO3 (mg/l) :	542	502	N/A	N/A	522
Carbonate-CO3 (mg/l) :	0	0	N/A	N/A	0
Chloride (mg/l) :	27	48	N/A	N/A	38
Sulfate (mg/l) :	336	840	N/A	N/A	588
Calcium (mg/l) :	141	168	N/A	N/A	155
Magnesium (mg/l) :	98	191	N/A	N/A	145
Potassium (mg/l) :	7	13	N/A	N/A	10
Sodium (mg/l) :	30	53.00	N/A	N/A	42
Major Cations (meq/l) :	16.62	26.75	N/A	N/A	21.69
Major Anions (meq/l) :	16.63	27.08	N/A	N/A	21.86
Cation/Anion Diff (%) :	0.03	0.61	N/A	N/A	0.32
D. Iron (mg/l) :	<0.05	0.04	N/A	N/A	0.02
T. Iron (mg/l) :	0.4	1.25	N/A	N/A	0.83
T. Manganese (mg/l) :		0.18	N/A	N/A	0.18

C. Neal Schaeffer
Senior Chemist

Castle Gate Coal Company

Field Measurements Form

B-5
Station #

Date 12-12-89

Company CASTLE GATE

Flow/Depth <100 CFS

pH 7

Sp. Cond. 680 µS

W. Temp. 0° C

Air Temp. 2° C

Diss. O

Time 12:15 AM

Type: Spring___ Stream X Well___ Discharge___ NPDES___

Collection Point: PRICE RIVER - BELOW PLANT.

Appearance of Water: Clear X Milky___ Cloudy___ Opaque___

Weather: Clear X Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes X No ____

Comments

Field Monitor J.A.M.

Pump Reading

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm

Castle Gate Coal Company

Field Measurements Form

B-6
Station #

Date 12-12-89

Company CASTLE GATE

Flow/Depth < 100 CFS

pH 7

Sp. Cond. 647 µS

W. Temp. 0°C

Air Temp. 2°C

Diss. O

Time 12:00 NOON

Type: Spring___ Stream X Well___ Discharge___ NPDES___

Collection Point: PRICE RIVER - ABOVE PLANT.

Appearance of Water: Clear X Milky___ Cloudy___ Opaque___

Weather: Clear X Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes X No ____

Comments

Field Monitor N.M.

Pump Reading

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm

Castle Gate Coal Company

Field Measurements Form

B-11
Station #

Date 12-5-89

Company CASTLE GATE

Flow/Depth

pH

Sp. Cond.

W. Temp.

Air Temp.

Diss. O

Time 1:15 PM

Type: Spring___ Stream X Well___ Discharge___ NPDES___

Collection Point: HANDSCRABBLE - LEFT OF ROAD.

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Weather: Clear X Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes ____ No X

Comments

Field Monitor J.A.M.

Pump Reading

When Sample or Measurements Not Taken:

Reason:

(D = Dry) F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm

Castle Gate Coal Company

Field Measurements Form

B-12
Station #

Date 12-5-89

Company CASTLE GATE

Flow/Depth

pH

Sp. Cond.

W. Temp.

Air Temp.

Diss. O

Time 1:30 PM

Type: Spring___ Stream X Well___ Discharge___ NPDES___

Collection Point: HARDSCRABBLE - LEFT OF UPPER SUBSTATION.

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Weather: Clear X Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes ____ No X

Comments

Field Monitor J.A.M.

Pump Reading

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm

Castle Gate Coal Company

Field Measurements Form

B-17
Station #

Date 12-5-89

Company CASTLE GATE

Flow/Depth

pH

Sp. Cond.

W. Temp.

Air Temp.

Diss. O

Time 11:00 AM

Type: Spring___ Stream X Well___ Discharge___ NPDES___

Collection Point: SOWBELLY - BELOW MAIN GATE ON RIGHT.

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Weather: Clear X Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes ____ No X

Comments

Field Monitor G.A.M

Pump Reading

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm

Castle Gate Coal Company

Field Measurements Form

B-22
Station #

Date 12-5-89

Company CASTLE GATE

Flow/Depth

pH

Sp. Cond.

W. Temp.

Air Temp.

Diss. O

Time 11:30 AM

Type: Spring X Stream___ Well___ Discharge___ NPDES___

Collection Point: CRANDALL - ON LEFT AT BASE OF SOIL PILE,

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Weather: Clear X Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes ____ No X

Comments

Field Monitor N.A.M.

Pump Reading

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm

Castle Gate Coal Company

Field Measurements Form

B-25
Station #

Date 12-5-89

Company CASTLE GATE

Flow/Depth

pH

Sp. Cond.

W. Temp.

Air Temp.

Diss. O

Time 11:35 AM

Type: Spring___ Stream X Well___ Discharge___ NPDES___

Collection Point: CRANDALL - ON LEFT ABOVE INTAKE SHAFT,

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Weather: Clear X Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes ____ No X

Comments

Field Monitor R.M.

Pump Reading

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm

Castle Gate Coal Company

Field Measurements Form

B-26
Station #

Date 12-5-89

Company CASTLE GATE

Flow/Depth

pH

Sp. Cond.

W. Temp.

Air Temp.

Diss. O

Time 11:40 AM

Type: Spring___ Stream X Well___ Discharge___ NPDES___

Collection Point: CRANDALL - ON LEFT BELOW RETURN SHAFT.

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Weather: Clear X Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes ____ No X

Comments

Field Monitor J.A.M.

Pump Reading

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm

Castle Gate Coal Company

Field Measurements Form

B-2B
Station #

Date 12-5-89

Company CASTLE GATE

Flow/Depth

pH

Sp. Cond.

W. Temp.

Air Temp.

Diss. O

Time 11:15 AM

Type: Spring___ Stream X Well___ Discharge___ NPDES___

Collection Point: SOWBELLY – TOP OF OLD YARD AT FORKS.

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Weather: Clear X Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes ____ No X

Comments

Field Monitor D.A.M.

Pump Reading

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm

Castle Gate Coal Company

Field Measurements Form

B4 - 30
Station #

Date 12 - 5 - 89

Company CASTLE GATE

Flow/Depth

pH

Sp. Cond.

W. Temp.

Air Temp.

Diss. O

Time 10:45 AM

Type: Spring___ Stream___ Well___ Discharge X NPDES___

Collection Point: PRICE CANYON

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Weather: Clear X Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes ____ No X

Comments

Field Monitor R.M.

Pump Reading

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm

Castle Gate Coal Company

Field Measurements Form

BM-31
Station #

Date 12-12-89

Company CASTLE GATE

Flow/Depth 3 GPM

pH 6

Sp. Cond. 1285

W. Temp. 6°C

Air Temp. -2°C

Diss. O

Time 3:15 PM

Type: Spring___ Stream___ Well___ Discharge X NPDES___

Collection Point: SPRING CANYON - MUTUAL, ON LEFT, STEEL PORTAL COVER.

Appearance of Water: Clear X Milky___ Cloudy___ Opaque___

Weather: Clear X Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes X No ____

Comments

Field Monitor Nam.

Pump Reading

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm

Castle Gate Coal Company

Field Measurements Form

BM-32
Station #

Date 12-12-89

Company CASTLE GATE

Flow/Depth

pH

Sp. Cond.

W. Temp.

Air Temp.

Diss. O

Time 3:45 pm

Type: Spring X Stream___ Well___ Discharge___ NPDES___

Collection Point: SPRING CANYON - STANDARDVILLE

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Weather: Clear___ Part. Cloudy___ Overcast___ Rain___ Snow___

Quality Sample Taken: Yes _____ No X

Comments

Field Monitor J.A.M.

Pump Reading

When Sample or Measurements Not Taken:

Reason:

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

cc5.fm