SW-11 89→97

1930497 - R8 SEMS

Business Phone 605-341-7284
Hours 8:00 — 5:00 — M-F

twin city testing corporation

COAL — ORES — ENVIRONMENTAL WATERS — FEEDS — SOILS

1854 Lombardy Dr
Rapid City, South Dakota 57701

Job # 6110-89-13

JAMES H. TRAVIS
Laboratory Manager

REPORT DATE: 10/5/89
COMPANY: Brohm Mining Co. Scott Wanstedt
ADDRESS: PO Box 485
CITY-STATE: Deadwood, S.D. 57732
SAMPLE #: SW 11
SAMPLE DATE-TIME: 8/30/89
DATE RECEIVED: 8/31/89

LABORATORY #: 4818

PARAMETER -- Minerals	RESULT
Alkalinity (CaCO3), mg/l	124
Bicarbonate (HCO3), mg/l	151
Carbonate (CO3), mg/l	0
Chloride (C1), mg/l	
Fluoride (F), mg/l	
Sulfate (SO4), mg/l	11
Calcium (Ca), mg/l	
Magnesium (Mg), mg/l	
Potassium (K), mg/l	
Sodium (Na), mg/l	3
Major Anions, MEQ/L	
Major Cations, MEQ/L	
Cation - Anion Balance, %	
PARAMETER -- MISCELLANEOUS	
pH, Units	7.85
Conductivity, umhos/cm	250
Cyanide, Total, mg/l	<0.01
Cyanide, WAD, mg/l	
Cyanide, Free, mg/l	
Hardness (CaCO3), GPG: mg/l	
Oil & Grease, mg/l	
Solids, Dissolved, mg/l	188
Solids, Suspended, mg/l	<1
Turbidity, NTU	

REVIEWED BY: J. H. Travis

METALS:
Tot X Tot Rec ___ Diss ___ EP Tox ___

Antimony (Sb), mg/l	
Aluminum (A1), mg/l	
Arsenic (As), mg/l	<0.005
Barium (Ba), mg/l	
Beryllium (Be), mg/l	
Boron (B), mg/l	
Cadmium (Cd), mg/l	0.0006
Chromium (Cr), mg/l	
Cobalt (Co), mg/l	
Copper (Cu), mg/l	<0.005
Gold (Au), mg/l	
Iron (Fe), mg/l	
Lead (Pb), mg/l	
Lithium (Li), mg/l	
Manganese (Mn), mg/l	
Mercury (Hg), mg/l	
Molybdenum (Mo), mg/l	
Nickel (Ni), mg/l	
Selenium (Se), mg/l	<0.002
Silicon (Si), mg/l	
Silver (Ag), mg/l	
Strontium (Sr), mg/l	
Vanadium (V), mg/l	
Zinc (Zn), mg/l	0.03
PARAMETER --Nutrients	
Nitrogen, Ammonia, mg/l	
Nitrogen, Nitrate, mg/l	<0.10
Nitrogen, Nitrite, mg/l	
Nitrogen, Total Kjeldahl, mg/l	
Phosphorus, Ortho, mg/l	
Phosphorus, Total, mg/l	

RECEIVED OCT 1 1989 BROHM MINING CO.

RECEIVED
OCT 1 1990
BROHM MINING CO.

twin city testing corporation

Business Phone 605-341-7284
Hours 8:00 — 5:00 — M-F

COAL — ORES — ENVIRONMENTAL WATERS — FEEDS — SOILS

1854 Lombardy Dr
Rapid City, South Dakota 57701

Job # 6110-89-13

JAMES H. TRAVIS
Laboratory Manager

REPORT DATE: 10/5/89

COMPANY: Brohm Mining Co. Scott Wanstedt

ADDRESS: PO Box 485

CITY-STATE: Deadwood, S.D. 57732

SAMPLE #: SW-11

SAMPLE DATE-TIME: 8/30/89

DATE RECEIVED: 8/31/89

LABORATORY #: 4819

	PARAMETER -- Minerals	RESULT
	Alkalinity (CaCO3), mg/l	
	Bicarbonate (HCO3), mg/l	
	Carbonate (CO3), mg/l	
	Chloride (C1), mg/l	
	Fluoride (F), mg/l	
	Sulfate (SO4), mg/l	
	Calcium (Ca), mg/l	
	Magnesium (Mg), mg/l	
	Potassium (K), mg/l	
	Sodium (Na), mg/l	
	Major Anions, MEQ/L	
	Major Cations, MEQ/L	
	Cation - Anion Balance, %	
	PARAMETER -- MISCELLANEOUS	
	pH, Units	
	Conductivity, umhos/cm	
	Cyanide, Total, mg/l	
	Cyanide, WAD, mg/l	
	Cyanide, Free, mg/l	
	Hardness (CaCO3), GPG: mg/l	
	Oil & Grease, mg/l	
	Solids, Dissolved, mg/l	
	Solids, Suspended, mg/l	
	Turbidity, NTU	
	REVIEWED BY	

METALS:

Tot ___ Tot Rec ___ Diss X EP Tox ___

	Antimony (Sb), mg/l	
	Aluminum (A1), mg/l	
	Arsenic (As), mg/l	<0.005
	Barium (Ba), mg/l	
	Beryllium (Be), mg/l	
	Boron (B), mg/l	
	Cadmium (Cd), mg/l	<0.0005
	Chromium (Cr), mg/l	
	Cobalt (Co), mg/l	
	Copper (Cu), mg/l	<0.005
	Gold (Au), mg/l	
	Iron (Fe), mg/l	
	Lead (Pb), mg/l	
	Lithium (Li), mg/l	
	Manganese (Mn), mg/l	
	Mercury (Hg), mg/l	
	Molybdenum (Mo), mg/l	
	Nickel (Ni), mg/l	
	Selenium (Se), mg/l	<0.002
	Silicon (Si), mg/l	
	Silver (Ag), mg/l	
	Strontium (Sr), mg/l	
	Vanadium (V), mg/l	
	Zinc (Zn), mg/l	<0.005
	PARAMETER --Nutrients	
	Nitrogen, Ammonia, mg/l	
	Nitrogen, Nitrate, mg/l	
	Nitrogen, Nitrite, mg/l	
	Nitrogen, Total Kjeldahl, mg/l	
	Phosphorus, Ortho, mg/l	
	Phosphorus, Total, mg/l	

RECEIVED
OCT 1 1989
BROHM MINING CO.

RECEIVED
OCT 11 1999
BROHM MINING CO.

SURFACE WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 01 / 24 / 89

Time 13:20

Sampler SW
(Initials)

Sampling Station Number..... SW-11

Temperature (degrees C)..... .5

pH..... 8.01

Conductivity (umhos/cm)..... 268

Flow (gpm)..... 1 (visual est.)

Water Sample (Yes/No)..... Yes

Filtered Metals (Yes/No)..... Yes

Number/Type Bottles..... 5 (CN)

Comments.....

unable to get good measure of flow due to pipes frozen

- took sample from small pocket between rocks in spring channel

SURFACE WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 4 / 29 / 89

Time 9:15

Sampler SW
(Initials)

Sampling Station Number..... SW-11

Temperature (degrees C)..... 2.0

pH..... 7.34

Conductivity (umhos/cm)..... 180.5

Flow (gpm)..... -32 gpm visual est

Water Sample (Yes/No)..... (Yes)

Filtered Metals (Yes/No)..... (Yes)

Number/Type Bottles..... 5 (CN)

Comments.....

heavy snow over site making it difficult to estimate / measure flow

GROUND-WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 5 / 31 /8 9

Time 10:20

Sampler SW
(Initials)

Sampling Station Number..... SW-11

Temperature (degrees C)..... 5.0

pH..... 7.56

Conductivity (umhos/cm)..... 161.5

Depth to Water (ft).....

Water Sample (Yes/No).....

Filtered Metals (Yes/No).....

Number/Type Bottles..... 5 (CN)

Comments.....

Terrible Creek

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 6/1/89

Sampler: SW

Station No.: SW-11

Gauge Height: NA

Meter Used: visual

Stream Width: —

Total Flow: 35 gpm

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
					TOTAL	

Comments: site difficult to measure flow due to inconsistency in stream bed & fast flow conditions

SURFACE WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 8 / 30 / 89

Time 11:25

Sampler MA
(Initials)

Sampling Station Number..... SW-11

Temperature (degrees C)..... 18.9

pH..... 7.59

Conductivity (umhos/cm)..... 250

Flow (gpm)..... .30 gpm

Water Sample (Yes/No)..... Yes

Filtered Metals (Yes/No)..... Yes

Number/Type Bottles.....

Comments.....

flow ≥ .30 gpm

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 2-25-90

Sampler: mt

Station No.: SW-11

Gauge Height: ______

Meter Used: ______

Stream Width: ______

Total Flow: .032

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
0-.2	.1	.2	.1	.02	1.6	.032
					TOTAL	.032

Comments: ______

SURFACE WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 4 / 16 / 90

Time 1520

Sampler MB, MK, MA,
(Initials)

Sampling Station Number..... SW-11

Temperature (degrees C).....

pH..... 7.16

Conductivity (umhos/cm)..... 115

Flow (gpm).....

Water Sample (Yes/No).....

Filtered Metals (Yes/No).....

Number/Type Bottles..... CN min Diss Total Nut

Comments.....

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 5-9-90

Meter Used:

Sampler: mt.

Stream Width: 6"

Station No.: 2iw-11

Total Flow: 20 gpm

Gauge Height:

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
	estimate	20 gpm				
	1gal 3sec.					
					est.	
					TOTAL	20gpm

Comments:

GROUND-WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 6 / 4 / 1990

Time _____

Sampler mt
(Initials)

Sampling Station Number..... SW-11

Temperature (degrees C)..... 16

pH..... 7.7

Conductivity (umhos/cm)..... 168

Depth to Water (ft)..... _____

Water Sample (Yes/No)..... _____

Filtered Metals (Yes/No)..... _____

Number/Type Bottles..... _____

Comments..... _____

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 6-5-90

Meter Used: est. Beaker

Sampler: mt.

Stream Width: 4"

Station No.. SW-11

Total Flow: 10 gpm est

Gauge Height: _____

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
	est.	10 gpm				
					TOTAL	10 gpm

Comments: _____

SURFACE WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 8 / 29 / 8 90

Time 3:00

Sampler mt.
(Initials)

Sampling Station Number..... SW-11

Temperature (degrees C)..... 18

pH..... 7.83

Conductivity (umhos/cm)..... 267

Flow (gpm).....

Water Sample (Yes/No).....

Filtered Metals (Yes/No).....

Number/Type Bottles..... CN min Diss total Nut

Comments.....

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 8-29-90

Sampler: mt.

Station No.. SW-11

Gauge Height: _____

Meter Used: _____

Stream Width: _____

Total Flow: _____

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
					6.6	
					6.62	
					6.7	
					6.3	
					6.7	
					12 Sec 1 gal	
					60 ÷ 49	
					1 gal 48 sec.	
					TOTAL	1.25

Comments: _____

MID-CONTINENT
TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS
AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-11
SAMPLE DATE: 04/16/90
SAMPLE TIME:

LAB NUMBER: 19900417111
REPORT DATE: 04/19/90

MARTY TALLEY
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	156.
Hardness	.
PH	7.26
Solids, Dissolved, mg/l	104.
Solids, Suspended, mg/l	13.
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	68.0
Bicarbonate	83.0
Carbonate, mg/l	0.
Chloride, mg/l	.5
Cyanide, Total, mg/l	.0013
Cyanide, WAD, mg/l	.0013
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	14.0

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	<.001
Barium	.026	.
Beryllium	.	.
Boron	.	.
Cadmium	.001	.004
Calcium	20.8	21.8
Chromium	.0005	.
Cobalt	.	.
Copper	.002	.002
Gold	<.001	<.001
Iron	.	.
Lead	<.001	.
Lithium	.	.
Manganese	.	.
Magnesium	3.02	3.51.
Mercury	.	
Molybdenum	.	.
Nickel	.	.
Potassium	1.53	1.48
Selenium	<.001	<.001
Silicon	.	.
Silver	.0005	.
Sodium	4.29	4.10
Strontium	.	.
Vanadium	.	.
Zinc	<.005	.023

Dean Durand
4-19-90

MID-CONTINENT TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-11
SAMPLE DATE: 04/16/90
SAMPLE TIME:

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REPORT DATE: 04/19/90

MARTY TALLEY
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	156.
Hardness	.
PH	7.26
Solids, Dissolved, mg/l	104.
Solids, Suspended, mg/l	13.
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	68.0
Bicarbonate	83.0
Carbonate, mg/l	0.
Chloride, mg/l	.5
Cyanide, Total, mg/l	.0013
Cyanide, WAD, mg/l	.0013
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	14.0

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	<.001
Barium	.026	.
Beryllium	.	.
Boron	.	.
Cadmium	.001	.004
Calcium	20.8	21.8
Chromium	.0005	.
Cobalt	.	.
Copper	.002	.002
Gold	<.001	<.001
Iron	.	.
Lead	<.001	.
Lithium	.	.
Manganese	.	.
Magnesium	3.02	3.51.
Mercury	.	
Molybdenum	.	.
Nickel	.	.
Potassium	1.53	1.48
Selenium	<.001	<.001
Silicon	.	.
Silver	.0005	.
Sodium	4.29	4.10
Strontium	.	.
Vanadium	.	.
Zinc	<.005	.023

Dean Durand
4-19-90

MID-CONTINENT
TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS
AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-11
SAMPLE DATE: 04/16/90
SAMPLE TIME:

LAB NUMBER: 19900417111
REPORT DATE: 04/25/90

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	156.
Hardness	.
PH	7.26
Solids, Dissolved, mg/l	104.
Solids, Suspended, mg/l	13.
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	68.0
Bicarbonate	83.0
Carbonate, mg/l	0.
Chloride, mg/l	.5
Cyanide, Total, mg/l	.0013
Cyanide, WAD, mg/l	.0013
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	14.0

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	<.001
Barium	.026	.
Beryllium	.	.
Boron	.	.
Cadmium	.001	.004
Calcium	20.8	21.8
Chromium	.0005	.
Cobalt	.	.
Copper	.002	.002
Gold	<.001	<.001
Iron	.	.
Lead	<.001	.
Lithium	.	.
Manganese	.	.
Magnesium	3.02	3.51.
Mercury	.	<.0002
Molybdenum	.	.
Nickel	.	.
Potassium	1.53	1.48
Selenium	<.001	<.001
Silicon	.	.
Silver	.0005	.
Sodium	4.29	4.10
Strontium	.	.
Vanadium	.	.
Zinc	<.005	.023

Amy McDougal 4-25-90

MID-CONTINENT TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-11
SAMPLE DATE: 04/16/90
SAMPLE TIME:

LAB NUMBER: 19900417111
REPORT DATE: 04/25/90

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	156.
Hardness	.
PH	7.26
Solids, Dissolved, mg/l	104.
Solids, Suspended, mg/l	13.
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	68.0
Bicarbonate	83.0
Carbonate, mg/l	0.
Chloride, mg/l	.5
Cyanide, Total, mg/l	.0013
Cyanide, WAD, mg/l	.0013
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	14.0

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	<.001
Barium	.026	.
Beryllium	.	.
Boron	.	.
Cadmium	.001	.004
Calcium	20.8	21.8
Chromium	.0005	.
Cobalt	.	.
Copper	.002	.002
Gold	<.001	<.001
Iron	.	.
Lead	<.001	.
Lithium	.	.
Manganese	.	.
Magnesium	3.02	3.51.
Mercury	.	<.0002
Molybdenum	.	.
Nickel	.	.
Potassium	1.53	1.48
Selenium	<.001	<.001
Silicon	.	.
Silver	.0005	.
Sodium	4.29	4.10
Strontium	.	.
Vanadium	.	.
Zinc	<.005	.023

Mary M. Boyd 4-25-90

MID-CONTINENT
TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS
AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-11
SAMPLE DATE: 06/04/90
SAMPLE TIME:

LAB NUMBER: 19900605111
REPORT DATE: 06/07/90

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	168.
Hardness	.
PH	6.97
Solids, Dissolved, mg/l	108.
Solids, Suspended, mg/l	<.50
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	70.0
Bicarbonate	85.4
Carbonate, mg/l	0.0
Chloride, mg/l	.
Cyanide, Total, mg/l	<.010
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	11.1

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	.002
Barium	.052	.
Beryllium	.	.
Boron	.	.
Cadmium	<.001	.003
Calcium	.	.
Chromium	<.001	.
Cobalt	.	.
Copper	<.001	.016
Gold	.	.
Iron	.	.
Lead	<.001	.
Lithium	.	.
Manganese	.	.
Magnesium	.	.
Mercury	.	<.0002
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	<.001	<.001
Silicon	.	.
Silver	<.001	.
Sodium	3.72	.
Strontium	.	.
Vanadium	.	.
Zinc	.006	.026

Amy McDougal
06-07-90

MID-CONTINENT TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-11
SAMPLE DATE: 06/04/90
SAMPLE TIME:

LAB NUMBER: 19900605111
REPORT DATE: 06/07/90

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	168.
Hardness	.
PH	6.97
Solids, Dissolved, mg/l	108.
Solids, Suspended, mg/l	<.50
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	70.0
Bicarbonate	85.4
Carbonate, mg/l	0.0
Chloride, mg/l	.
Cyanide, Total, mg/l	<.010
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	11.1

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	.002
Barium	.052	.
Beryllium	.	.
Boron	.	.
Cadmium	<.001	.003
Calcium	.	.
Chromium	<.001	.
Cobalt	.	.
Copper	<.001	.016
Gold	.	.
Iron	.	.
Lead	<.001	.
Lithium	.	.
Manganese	.	.
Magnesium	.	.
Mercury	.	<.0002
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	<.001	<.001
Silicon	.	.
Silver	<.001	.
Sodium	3.72	.
Strontium	.	.
Vanadium	.	.
Zinc	.006	.026

Amy M. Doyle
06-07-90

MID-CONTINENT
TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS
AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-11
DESCRITPION:
SAMPLE DATE: 08/29/90
SAMPLE TIME:

ACCOUNT NUMBER: W1000
LAB NUMBER: 19900831103
REPORT DATE: 08/31/90

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	238.
Hardness	.
PH	7.16
Solids, Dissolved, mg/l	160.
Solids, Suspended, mg/l	2.00
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	118.
Bicarbonate	144.
Carbonate, mg/l	0.0
Chloride, mg/l	.
Cyanide, Total, mg/l	<.010
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	<5.00

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	.021
Barium	.045	.
Beryllium	.	.
Boron	.	.
Cadmium	<.001	<.001
Calcium	.	.
Chromium	<.001	.
Cobalt	.	.
Copper	.003	.011
Gold	.	.
Iron	.	.
Lead	<.001	.
Lithium	.	.
Manganese	.	.
Magnesium	.	.
Mercury	.	<.0002
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	<.001	<.001
Silicon	.	.
Silver	<.001	.
Sodium	3.02	.
Strontium	.	.
Vanadium	.	.
Zinc	.023	.024

Mary M. Pagel
08-31-90

MID-CONTINENT TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-11
DESCRITPION:
SAMPLE DATE: 08/29/90
SAMPLE TIME:

ACCOUNT NUMBER: W1000
LAB NUMBER: 19900831103
REPORT DATE: 08/31/90

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

BROHM MINING CO
SEP - 4 1990
RECEIVED

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	238.
Hardness	.
PH	7.16
Solids, Dissolved, mg/l	160.
Solids, Suspended, mg/l	2.00
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	118.
Bicarbonate	144.
Carbonate, mg/l	0.0
Chloride, mg/l	.
Cyanide, Total, mg/l	<.010
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	<5.00

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	.021
Barium	.045	.
Beryllium	.	.
Boron	.	.
Cadmium	<.001	<.001
Calcium	.	.
Chromium	<.001	.
Cobalt	.	.
Copper	.003	.011
Gold	.	.
Iron	.	.
Lead	<.001	.
Lithium	.	.
Manganese	.	.
Magnesium	.	.
Mercury	.	<.0002
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	<.001	<.001
Silicon	.	.
Silver	<.001	.
Sodium	3.02	.
Strontium	.	.
Vanadium	.	.
Zinc	.023	.024

Mary M. Pagel
08-31-90

RECEIVED
SEP - 5 1990
BROHM MINING CO.

MID-CONTINENT
TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS
AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-11
DESCRITPION:
SAMPLE DATE: 04/23/91
SAMPLE TIME:
SAMPLED BY:

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

ACCOUNT NUMBER: W1000
LAB NUMBER: 19910424111
DATE RECEIVED: 04/24/91
TIME RECEIVED: 01:00 PM
REPORT DATE: 04/25/91

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	143.
Hardness	.
PH	7.65
Solids, Dissolved, mg/l	95.8
Solids, Suspended, mg/l	<5.0
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	.
Bicarbonate	73.2
Carbonate, mg/l	0.0
Chloride, mg/l	<.50
Cyanide, Total, mg/l	<.010
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	<10.0

METALS mg/l	DISSOLVED	TOTAL
Aluminum	.	.
Antimony	.	.
Arsenic	.001	.002
Barium	.	.
Beryllium	.	.
Boron	.	.
Cadmium	<.001	.001
Calcium	16.4	.
Chromium	.	.
Cobalt	.	.
Copper	.003	.006
Gold	<.001	<.001
Iron	.	.
Lead	.	.
Lithium	.	.
Magnesium	2.64	.
Manganese	.	.
Mercury	.	.
Molybdenum	.	.
Nickel	.	.
Potassium	1.26	.
Selenium	<.005	<.005
Silicon	.	.
Silver	.	.
Sodium	2.60	.
Strontium	.	.
Vanadium	.	.
Zinc	<.050	<.050

APPROVED BY: Dean Sarand

DATE: 4/25/91