KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-01**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/5/02 Finished 3/5/02

Sec. 17 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Pruitt

Drilling Fluid: Air/Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	15.0	15.0		CL	Clay, yellowish gray, soft
15.0	20.0	5.0		CL	Clay, gray, soft, sandy
20.0	30.0	10.0		CL	Clay, yellowish gray, soft
30.0	34.0	4.0		CL	Clay, gray, soft
34.0	51.5	17.5	D	CO	Lignite, brown
51.5	70.0	18.5		CL	Clay, gray TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-01c**

Type Core

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/27/02 Finished 3/27/02

Sec. 17 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Gjere

Drilling Fluid: Air/Water Injection

Surface Owner Signed

Page 1 of 2 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	33.0				Drill out to core point
33.0	47.5				Cored 14.5'; Recovered 13.6': coal core is intact; appears that
					some of shale roof was lost
33.0	33.6	0.6		CL	Clay, gray, core is broken & highly fractured; probably lost core here
33.6	34.5	0.9			Lost
34.5	36.0	1.5		CL	Clay, gray
36.0	36.6	0.6	D	CO	Lignite, brown, shaley, fissile, high pyrite concentrations
36.6	43.0	6.4	D	CO	Lignite, brown, retains moisture somewhat more
					than the lower section of the core, (somewhat oxidized)
43.0	47.5	4.5	D	CO	Lignite, brown, banded with light brown layers;
					thin pyrite bands at 44.2' and 45.5'
					surface moisture wicks away much faster than the top part of the core

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

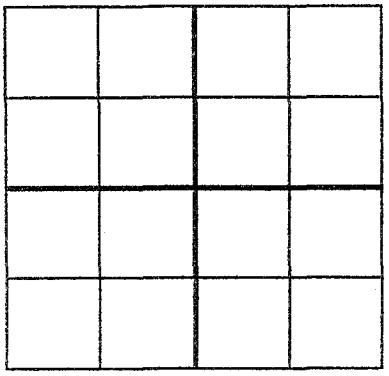
Date 3/27/02

Property South Heart Page No. 2 of Hole No. Sh02-01c

Depth From	Depth To	Thick.	Seam	Lith Type	Description
47.5	54.5				Cored 7.0' Recovered 6.3' core is intact; driller thought he had
					about 0.5' of clay floor but nothing was there - probably lost the floor
47.5	53.8	6.3	D	CO	Lignite, brown, banded; lower 0.6' is more fissile
53.8	54.5	0.7			Lost TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG



Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-02a**

Type Piezometer well

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/27/02 Finished 3/27/02

Sec. 17 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by R. Schmid

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title Hydrogeologist - Water Supply Inc

Depth From	Depth To	Thick.	Seam	Lith Type	Description
					Completed as a monitor well in sand below the D seam
					See log by Roger Schmid - West well 2A

BOARD OF WATER WELL CONTRACTORS

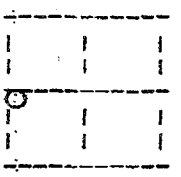
900 E. BOULEVARD AVE., DEPT. 770 * BISMARCK, NORTH DAKOTA 58505-0850

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Board of Water Well Contractors within 30 days after completion or abandonment of the well.

1. WELL OWNER
Name Kienergy Inc
Address 203 S Main, Suite 2004
Sheridan, WY 82801

2. WELL LOCATION West well 2A 139-98-17CBB



County Stark
SW1/4 NW1/4 NW1/4 Sec. 17 Twp. 139 N. Rge. 98 W

3. PROPOSED USE
__ Geothermal X Monitoring
__ Domestic __ Irrigation __ Industrial
__ Stock __ Municipal __ Test Hole

4. METHOD DRILLED
__ Cable __ Reverse Rotary __ Bored
X Forword Rotary __ Jetted __ Auger
If other, specify

5. WATER QUALITY
Was a water sample collected for:
Chemical analyses? __ Yes X No
Bacteriological Analyses? __ Yes X No
If so, to what laboratory was it sent?

6. WELL CONSTRUCTION
Diameter of Hole 5 inches Depth 240 feet
Casing: __ Steel X Plastic __ Concrete
X Threaded __ Welded __ Other
If other, specify

Pipe Weight:	Diameter:	From:	To:
lb/ft	2 inches	+2.2 feet	217.5 feet
lb/ft	2 inches	227.5 feet	232.5 feet
lb/ft	inches	feet	feet

Was perforated pipe used? __ Yes X No
Perforated pipe set from ft to feet
Was casing left open end? __ Yes X No
Was a well screen installed? X Yes __ No
Material PVC Diameter 2 inches
Slot Size 10 set from 217.5 feet to 227.5 feet
Slot Size set from feet to feet
Was packer or seal used? __ Yes X No
If so, what material Depth ft
Type of well: Straight screen __ Gravel packed X 20-40
Depth grouted: From 0 To 207
Grouting material: Cement __ Other X
If other explain: Bentonite Chips
Well head completion: Pitless unit
12" above grade Other X
If other, specify 2.2' above grade
Was pump installed? __ yes X No
Was well disinfected upon completion? __ yes X No

WSIQZ\WDRPT01

7. WATER LEVEL
Static water level 139.7 Feet below surface
If flowing: closed-in pressure psi
GPM flow through inch pipe
Controlled by: Valve Reducers Other
If other, specify

8. WELL TEST DATA
Pump Bailer Other
Pumping level below land surface
ft. after hrs. pumping gpm
ft. after hrs. pumping gpm
ft. after hrs. pumping gpm

9. WELL LOG

Formation	Depth (Ft.) To
Silt, yellowish brown, oxidized	10
Clay, yellowish brown, oxidized	15
Clay, brown, Shale	23
Rock	23.5
Shale, brownish gray	28
Shale, light gray	35
Lignite	37
Shale, gray w/lignite lenses	66
Lignite	72.5
Shale, gray	95.5
Lignite	97
Shale, gray, rock at 113	130
Sand, silty, gray	139
Lignite	156
Shale, gray	190
Shale, silty, gray	197
Sand, fine, silty	227
Sandstone rock	228
Sand, fine	233
Shale, green	240

(use separate sheet if necessary)

10. DATE COMPLETED 27 Mar 02

11. WAS THE HOLE PLUGGED OR ABANDONED?
__ Yes X No
If so, how?

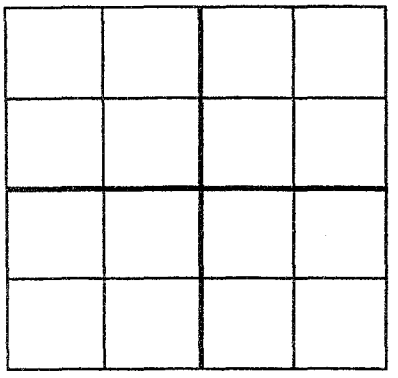
12. REMARKS 400# of Abrasives Inc sand pack to 207', 625# bentonite chips to surface.

13. DRILLER'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge

Driller's or Firm's Name: MoHL DRILLING, INC. Certificate No.: 105
Address: Beulah ND 58523
Signed by: [signature] Date: 04-04-02

KIEWIT MINING GROUP INC.

LITHOLOGY LOG



Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **SH02-02b**

Type Piezometer well

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/28/02 Finished 3/28/02

Sec. 17 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by R. Schmid

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title Hydrogeologist - Water Supply Inc

Depth From	Depth To	Thick.	Seam	Lith Type	Description
					Completed as a monitor well in coal aboe the D seam
					See log by Roger Schmid - East Well 2C

BOARD OF WATER WELL CONTRACTORS

900 E. BOULEVARD AVE, DEPT. 770 * BISMARCK, NORTH DAKOTA 58505-0850

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Board of Water Well Contractors within 30 days after completion or abandonment of the well.

1. WELL OWNER

Name Kienergy Inc

Address 203 S Main, Suite 2004

Sheridan, WY 82801

2. WELL LOCATION East well 2C 139-98-17CBB

County Stark

SW1/4 NW1/4 NW1/4 Sec. 17 Twp. 139 N. Rge. 98 W

3. PROPOSED USE ___ Geothermal X Monitoring

___ Domestic ___ Irrigation ___ Industrial

___ Stock ___ Municipal ___ Test Hole

4. METHOD DRILLED

___ Cable ___ Reverse Rotary ___ Bored

X Forword Rotary ___ Jetted ___ Auger

If other, specify _____

5. WATER QUALITY

Was a water sample collected for:

Chemical analyses? ___ Yes X No

Bacteriological Analyses? ___ Yes X No

If so, to what laboratory was it sent?

_____

6. WELL CONSTRUCTION

Diameter of Hole 5 inches Depth 73 feet

Casing: ___ Steel X Plastic ___ Concrete

X Threaded ___ Welded ___ Other

If other, specify _____

Pipe Weight:	Diameter:	From:	To:
___ lb/ft	2 inches	+2 feet	68 feet
___ lb/ft	___ inches	___ feet	___ feet
___ lb/ft	___ inches	___ feet	___ feet

Was perforated pipe used? ___ Yes X No

Perforated pipe set from ___ ft to ___ feet

Was casing left open end? ___ Yes X No

Was a well screen installed? X Yes ___ No

Material PVC Diameter 2 inches

Slot Size 10 set from 68 feet to 73 feet

Slot Size ___ set from ___ feet to ___ feet

Was packer or seal used? ___ Yes X No

If so, what material _____ Depth ___ ft

Type of well: Straight screen ___ Gravel packed X 20-40

Depth grouted: From 0 To ?? ft

Grouting material: Cement ___ Other X

If other explain: Bentonite Chips

Well head completion: Pitless unit _____

12" above grade _____ Other X

If other, specify 2' above grade

Was pump installed? ___ yes X No

Was well disinfected upon completion? ___ yes X No

WS1QZ\WDRPT01

7. WATER LEVEL

Static water level _____ Feet below surface

If flowing: closed-in pressure _____ psi

GPM flow _____ through _____ inch pipe

Controlled by: ___ Valve ___ Reducers ___ Other

If other, specify _____

8. WELL TEST DATA

___ Pump ___ Bailer ___ Other

Pumping level below land surface

___ ft. after ___ hrs. pumping ___ gpm

___ ft. after ___ hrs. pumping ___ gpm

___ ft. after ___ hrs. pumping ___ gpm

9. WELL LOG

Formation	Depth (Ft.) To
Silt, yellowish brown, oxidized	10
Clay, yellowish brown, oxidized	15
Clay, brown, Shale	23
Rock	23.5
Shale, brownish gray	28
Shale, light gray	35
Lignite	37
Shale, gray w/lignite lenses	66
Lignite	72.5
Shale, gray	73

(use separate sheet if necessary)

10. DATE COMPLETED 28 Mar 02

11. WAS THE HOLE PLUGGED OR ABANDONED?

___ Yes X No

If so, how? _____

12. REMARKS 120# of Abrasives Inc sand pack to ??', 450# bentonite chips to 2', cuttings to surface.

13. DRILLER'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge

Driller's or Firm's Name: MoHL Drilling Inc Certificate No. 105

Address: Beulah ND 58523

Signed by: John R Mohl Date: 04-04-02

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-02c**

Type Core/Piez. Well

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/28/02 Finished 3/28/02

Sec. 17 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Gjere & R. Schmid

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	139.0				Drill out to core point
139.0	153.0				Cored 14.0' - recovered 13.7'
139.0	139.3	0.30		IC	Lost - a small rock fell in and rolled around on top of core
139.3	139.7	0.40		CL	Clay, gray, soft
139.7	140.4	0.70	D	CO	Lignite, brown, fissile, high pyrite concentrations
140.4	153.0	12.60	D	CO	Lignite, brown, banded, thin fissile zones throughout
					some pyrite scale in vertical fracture
153.0	158.0				Cored 5.0' - recovered 4.1'
153.0	156.5	3.50	D	CO	Lignite, brown, large pyrite band at 153.3'
156.5	157.1	0.60	D	CO	Lignite, brown, fissile and shaley, heavy pyrite concentration in
					vertical fractures
157.1	158.0	0.90		IC	Lost TDD
					completed as a monitor well - see log by R. Schmid - Center well 2B

BOARD OF WATER WELL CONTRACTORS

900 E. BOULEVARD AVE., DEPT. 770 * BISMARCK, NORTH DAKOTA 58505-0850

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Board of Water Well Contractors within 30 days after completion or abandonment of the well.

1. WELL OWNER

Name: Kienergy Inc

Address: 203 S Main, Suite 2004

Sheridan, WY 82801

2. WELL LOCATION — Center well 2B 139-98-17CBB

County: Stark

SW1/4 NW1/4 NW1/4 Sec. 17 Twp. 139 N. Rge. 98 W

3. PROPOSED USE

__ Geothermal X Monitoring

__ Domestic __ Irrigation __ Industrial

__ Stock __ Municipal __ Test Hole

4. METHOD DRILLED

__ Cable __ Reverse Rotary __ Bored

X Edward Rotary __ Jetted __ Auger

If other, specify: _____

5. WATER QUALITY

Was a water sample collected for:

Chemical analyses? __ Yes X No

Bacteriological Analyses? __ Yes X No

If so, to what laboratory was it sent?

_____

6. WELL CONSTRUCTION

Diameter of Hole 5 5/8 inches Depth 158 feet

Casing: __ Steel X Plastic __ Concrete

X Threaded __ Welded __ Other

If other, specify: _____

Pipe Weight:	Diameter:	From:	To:
____ lb/ft	2 inches	+2 feet	147 feet
____ lb/ft	____ inches	____ feet	____ feet
____ lb/ft	____ inches	____ feet	____ feet

Was perforated pipe used? __ Yes X No

Perforated pipe set from ____ ft to ____ feet

Was casing left open end? __ Yes X No

Was a well screen installed? X Yes __ No

Material PVC Diameter 2 inches

Slot Size 10 set from 147 feet to 157 feet

Slot Size ____ set from ____ feet to ____ feet

Was packer or seal used? __ Yes X No

If so, what material ____ Depth ____ ft

Type of well: Straight screen __ Gravel packed X

Depth grouted: From 0 To 142

Grouting material: Cement ____ Other X

If other explain: Bentonite Chips

Well head completion: Pitless unit ____

12" above grade ____ Other X

If other, specify: 2' above grade

Was pump installed? __ yes X No

Was well disinfected upon completion? __ yes X No

WSIQZ\WDRPT01

7. WATER LEVEL

Static water level ____ Feet below surface

If flowing: closed-in pressure ____ psi

GPM flow ____ through ____ inch pipe

Controlled by: ____ Valve ____ Reducers ____ Other

If other, specify: _____

8. WELL TEST DATA

____ Pump ____ Bailer ____ Other

Pumping level below land surface

____ ft. after ____ hrs. pumping ____ gpm

____ ft. after ____ hrs. pumping ____ gpm

____ ft. after ____ hrs. pumping ____ gpm

9. WELL LOG

Formation	Depth (Ft.) To
Silt, yellowish brown, oxidized	10
Clay, yellowish brown, oxidized	15
Clay, brown, Shale	23
Rock	23.5
Shale, brownish gray	28
Shale, light gray	35
Lignite	37
Shale, gray w/lignite lenses	66
Lignite	72.5
Shale, gray	95.5
Lignite	97
Shale, gray, rock at 113	130
Sand, silty, gray	139
Lignite	156
Shale, gray	158

(use separate sheet if necessary)

10. DATE COMPLETED 28 Mar 02

11. WAS THE HOLE PLUGGED OR ABANDONED?

____ Yes X No

If so, how? _____

12. REMARKS 280# of Abrasives Inc sand pack to 142', 1,400# bentonite chips to 3', cuttings to surface

13. DRILLER'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge

Driller's or Firm's Name: MoHL Drilling, Inc Certificate No.: 105

Address: Beulah ND 58523

Signed by: John R Mohl Date: 04-04-02

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-03**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/4/02 Finished 3/4/02

Sec. 17 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Pruitt

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	5.0	5.0		TS	Soil material, black to brown
5.0	13.5	8.5		CL	Clay, tan, soft
13.5	17.0	3.5	F	CO	Lignite, soft, oxidized
17.0	35.0	18.0		CL	Clay, gray, soft
35.0	38.5	3.5		CL	Clay, gray, sandy
38.5	39.5	1.0	E	CO	Lignite
39.5	80.0	40.5		SS	Sandstone, gray, fine grained, soft, not well cemented
80.0	103.0	23.0		SS	Sandstone, gray, coarser grained, not well cemented
103.0	105.0	2.0		SS	Sandstone, gray, hard, well cemented
105.0	108.0	3.0		SH	Shale, gray
108.0	116.5	8.5		SS	Sandstine, gray, grading to clay
116.5	134.0	17.5	D	CO	Lignite
134.0	143.0	9.0		SS	Sandstone, gray
143.0	150.0	7.0		CL	Clay, gray TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-03c**

Type Core

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/19/02 Finished 3/19/02

Sec. 17 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Gjere

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 2 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	115.0				Drill out to core point
115.0	129.0				Cored 14.0', recovered 12.6' - driller said he cored slightly more
					than 1' of roof
115.0	116.4	1.4			Lost; soft, sandy roof?
116.4	124.0	7.6	D	CO	Lignite, brown, a 0.05' pyrite on top of seam (not included in the
					interval alanyzed since it would be cleaned off). This interval is a little
					softer & exhibits more vertical fractures than the lower part of the seam.
					Pyrite nodules at 19.8' and 122.0' - 122.3'.
124.0	129.0	5.0	D	CO	Lignite, brown, harder than above described zone. Exhibits dark and
					light brown bands - has a woody texture. Moisture seems to wick
					away from the surface

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Date 3/19'02

Property South Heart Page No. 2 of Hole No. Sh02-03c

Depth From	Depth To	Thick.	Seam	Lith Type	Description
129.0	135.0				Cored 6.0', Recovered 6.0'
129.0	134.0	5.0	D	CO	Lignite, brown, banded, woody texture
					thin pyrite nodules at 129.3' and 131.1'
134.0	134.4	0.4		SH	Shale, black, carbonaceous
134.4	135.0	0.6		SH	Shale, gray TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-04**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/5/02 Finished 3/5/02

Sec. 17 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Pruitt

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	28.0	28.0		CL	Clay, yellowish gray, soft
28.0	30.0	2.0	F	CO	Lignite, brown
30.0	72.5	42.5		CL	Clay, gray
72.5	79.0	6.5	E	CO	Lignite, brown
79.0	102.0	23.0		CL	Clay, gray
102.0	104.0	2.0	E1	CO	Lignite, brown
104.0	110.0	6.0		CL	Clay, gray
110.0	115.0	5.0		SS	Sandstone, gray, soft
115.0	125.0	10.0		CL	Clay, gray, sandy
125.0	140.0	15.0		CL	Clay, gray
140.0	157.0	17.0	D	CO	Lignite, brown
157.0	170.0	13.0		CL	Clay, gray TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-04c**

Type Core

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/19/02 Finished 3/19/02

Sec. 17 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Gjere

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 2 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	71.0				Drill out to core point 1
71.0	81.0				Cored 10.0' - recovered 10.0'
71.0	72.8	1.8		CL	Clay, gray, soft
72.8	73.3	0.5	E	CO	Lignite, brown
73.3	73.5	0.2	E	CL	Clay, brownish gray
73.5	79.6	6.1	E	CO	Lignite, brown, high pyrite zone 79.1' to 79.6'
79.6	80.4	0.8		CL	Clay, gray
80.4	80.7	0.3		CO	Lignite, brown, shaley, soft
80.7	81.0	0.3		CL	Clay, soft
81.0	101.0				Drill out to core point 2

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Date 3/19/01

Property: South Heart Page No. 2 of Hole No. Sh02-04c

Depth From	Depth To	Thick.	Seam	Lith Type	Description
101.0	107.3				Cored 6.3' - recovered 6.3'
101.0	102.9	1.9		CL	Clay, gray
102.9	104.8	1.9	E1	CO	Lignite, brown, soft, woody
104.8	106.0	1.2		CL	Clay, gray, banded with thin stringers of carbonaceous material.
106.0	106.9	0.9		CO	Lignite, brown, soft, shaley - banded with thin, gray clay
106.9	107.3	0.4		CL	Clay, gray
107.3	140.0				Drill out to core point 3
140.0	154.5				Cored 14.5' - recovered 14.5'
140.0	140.5	0.5		CO	Lignite, brown, fissile, very high pyrite concetrations
140.5	154.5	14.0	D	CO	Lignite, brown, banded, fissile in thin zones,
					pyrite nodules at 141.1', 143.2', 151.3' and 154.0'
154.5	158.5				Cored 4.0' - recovered 4.0'
154.5	157.5	3.0	D	CO	Lignite, brown, more fissile than above described zone, soft
157.5	158.0	0.5		CL	Clay, brown, coaly
158.0	158.5	0.5		CL	Clay, gray TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-05**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/4/02 Finished 3/4/02

Sec. 9 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Pruitt

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	10.0	10.0		CL	Clay, brownis-gray, soft
10.0	14.0	4.0		CL	Clay, gray, soft
14.0	20.0	6.0	E	CO	Lignite, brown, soft, oxidized
20.0	37.0	17.0		CL	Clay, gray
37.0	39.0	2.0	E1	CO	Lignite, brown, shaley
39.0	75.0	36.0		CL	Clay, gray
75.0	87.5	12.5		IC	Lost circulation - no returns
87.5	104.0	16.5	D	CO	No returns - coal picks taken from geophysiscal logs
104.0	120.0	16.0		CL	Clay, gray TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-05c**

Type Core

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/18/02 Finished 3/18/02

Sec. 9 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Gjere

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 2 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	36.0				Drill out to core point 1
36.0	41.0				Cored 5.0' - recovered 4.6'
36.0	37.4	1.4		CL	Clay, gray soft
37.4	39.4	2.0	E1	CO	Lignite, brown, soft, woody texture - pyrite band at 38.8'
39.4	39.8	0.4		CL	Clay, gray, soft, grading to carbonaceous
39.8	40.6	0.8		CO	Lignite, brown, soft, grading to carbonaceous shale at bottom
40.6	41.0	0.4		IC	Lost
41.0	86.5				Drill out to core point 2
86.5	100.5				Cored 14.0' - recovered 13.2'
					probably lost roof since driller thought we had about 1' of clay
					before hitting the coal

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Date 3/18/02

Property: South Heart Page No. 2 of Hole No. Sh02-05c

Depth From	Depth To	Thick.	Seam	Lith Type	Description
86.5	87.4	0.9		IC	Lost core
87.4	87.8	0.4	D	CO	Lignite, brown, fissile, very high pyrite concentration
87.8	88.4	0.5	D	CO	Lignite, dull brown, fissile
88.4	94.8	6.4	D	CO	Lignite, brown, dull luster, top 6" has numerous clay partings
94.8	100.5	5.7	D	CO	Lignite, brown, thin bands of bright coal; pyrite nodules at 98.5'
100.5	105.5				Cored 5.0' - recovered 4.3' driller said about 0.5' of floor was cored.
100.5	102.9	2.3	D	CO	Lignite, dull brown, fissile
102.9	103.0	0.1	D	CL	Clay, gray, high pyrite content
103.0	104.9	1.9	D	CO	Lignite, brown, dull, soft
104.9	105.5	0.6		IC	Lost core TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-06**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/4/02 Finished 3/4/02

Sec. 16 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	13.0			CL	Clay, yellowish gray, soft
13.0	38.0			CL	Clay, gray
38.0	42.0		E	CO	Lignite, brown, soft
42.0	72.0			CL	Clay, gray, sandy
72.0	76.0		E1	CO	Lignite, brown, top 2' is punky
76.0	80.0			CL	Clay, gray
80.0	85.0			SS	Sanstone, gray, soft, clayey
85.0	115.0			CL	Clay, gray
115.0	135.0		D	CO	Lignite, brown
135.0	155.0			CL	Clay, gray TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-07**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/4/02 Finished 3/4/02

Sec. 16 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Pruitt

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	4.0	4.0		TS	Topsoil
4.0	21.0	17.0		CL	Clay, tan, soft
21.0	45.0	24.0		SS	Sandstone, tan, soft, weathered
45.0	60.0	15.0	D	CO	Lignite, brown, top 1' - 2' is soft, weathered
60.0	90.0	30.0		CL	clay, gray, soft TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-07c**

Type Core

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/27/02 Finished 3/27/02

Sec. 16 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Gjere

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	44.0				Drill out to core point
44.0	58.0				Cored 14.0' - recovered 12.1'
44.0	45.2	1.2		SS	Sandstone, yellowish-gray, very soft, weathered - interface with lignite
					is broken, crumbly, and mashed.
45.2	47.1	1.9	D	CO	Lost, Weathered coal? - based on geophysical log interpretations
47.1	52.6	5.5	D	CO	Lignite, dull brown, crumbly, yellow stains throughout, weathered
52.6	58.0	5.4	D	CO	Lignite, brown, banded, vertical fractures, pyrite band at 57.5'
58.0	61.0				Cored 3.0' - recovered 2.9'
58.0	59.0	1.0	D	CO	Lignite, brown, fissile, thin clay partings throughout
59.0	59.6	0.6	D	CO	Lignite, dul
59.6	60.9	1.3		CL	Clay, gray
60.9	61.0	0.1		IC	Lost TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-08**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/4/02 Finished 3/4/02

Sec. 15 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	11.5	11.5		CL	Clay, tan to gray, soft
11.5	17.0	5.5	E	CO	Lignite, top 3' - 4' is very soft, weathered
17.0	37.0	20.0		CL	Clay, gray, sandy
37.0	39.0	2.0	E1	CO	Lignite
39.0	88.0	49.0		CL	Clay, gray, sandy
88.0	104.5	16.5	D	CO	
104.5	120.0	15.5		Cl	Clay, gray TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-11c**

Type Core/Piez. Well

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/28/02 Finished 3/28/02

Sec. 23 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by R. Schmid & B. Gjere

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 2 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	47.0				Drill out to core point
47.0	61.0				Cored 14.0' - recovered 13.6'
47.0	47.4	0.4		IC	Lost, should have had about 0.5' of roof - small rock on top of core
47.4	48.0	0.6	D	CO	Lignite, black to brown, fissile
48.0	55.5	7.5	D	CO	Lignite, brown, banded, vertical fractures
					bands of high pyrite concentration at 53' and 54'
55.5	57.0	1.5	D	CS	Carbonaceous clay, black, soft, (blackjack)
57.0	57.1	0.1	D	CL	Clay, tan, bentonitic
57.1	58.8	1.7	D	CO	Lignite, dull black, shaley, fissile
58.8	59.4	0.6	D	CO	Lignite, brown, soft, fissile
59.4	61.0	1.6	D	CO	Lignite, dull black, shaley, fissile

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Date 3/28/02

Property: South Heart Page No. 2 of Hole No. Sh02-11c

Depth From	Depth To	Thick.	Seam	Lith Type	Description
61.0	70.0				Cored 9.0' - recovered 8.6'
61.0	68.8	7.8	D	CO	Lignite, brown, banded, thin fissile zones throughout
					thin clay stringers at 64.4' and 66.0'
68.8	69.6	0.8	D	CO	Lignite, brown, woody texture, pyrite scale in vertical fracture
69.6	70.0	0.4		IC	Lost TDD
					completed as a monitor well
					see Sh02-11b by Roger Schmid

Sh02-11a

BOARD OF WATER WELL CONTRACTORS

900 E. BOULEVARD AVE., DEPT. 770 • BISMARCK, NORTH DAKOTA 58505-0850

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Board of Water Well Contractors within 30 days after completion or abandonment of the well.

1. WELL OWNER

Name Kienergy Inc

Address 203 S Main, Suite 2004

Sheridan, WY 82801

2. WELL LOCATION South well 11A 139-98-23AAA

County Stark

NE1/4 NE1/4 NE1/4 Sec. 23 Twp. 139 N. Rge. 98 W

3. PROPOSED USE ___ Geothermal X Monitoring ___ Domestic ___ Irrigation ___ Industrial ___ Stock ___ Municipal ___ Test Hole

4. METHOD DRILLED ___ Cable ___ Reverse Rotary ___ Bored X Forword Rotary ___ Jetted ___ Auger

If other, specify

5. WATER QUALITY

Was a water sample collected for:

Chemical analyses? ___ Yes X No

Bacteriological Analyses? ___ Yes X No

If so, to what laboratory was it sent?

6. WELL CONSTRUCTION

Diameter of Hole 5 inches Depth 195 feet

Casing: ___ Steel X Plastic ___ Concrete X Threaded ___ Welded ___ Other

If other, specify

Pipe Weight:	Diameter:	From:	To:
___ lb/ft	2 inches	+2 feet	175 feet
___ lb/ft	2 inches	185 feet	190 feet
___ lb/ft	___ inches	___ feet	___ feet

Was perforated pipe used? ___ Yes X No

Perforated pipe set from ___ ft to ___ feet

Was casing left open end? ___ Yes X No

Was a well screen installed? X Yes ___ No

Material PVC Diameter 2 inches

Slot Size 10 set from 175 feet to 185 feet

Slot Size ___ set from ___ feet to ___ feet

Was packer or seal used? ___ Yes X No

If so, what material ___ Depth ___ ft

Type of well: Straight screen ___ Gravel packed X

Depth grouted: From 0 To 173

Grouting material: Cement ___ Other X

If other explain: Bentonite Chips

Well head completion: Pitless unit ___

12" above grade ___ Other X

If other, specify 2' above grade

Was pump installed? ___ yes X No

Was well disinfected upon completion? ___ yes X No

WSIQZ\WDRPT01

7. WATER LEVEL

Static water level ___ Feet below surface

If flowing: closed-in pressure ___ psi

GPM flow ___ through ___ inch pipe

Controlled by: ___ Valve ___ Reducers ___ Other

If other, specify

8. WELL TEST DATA

___ Pump ___ Bailer ___ Other

Pumping level below land surface

___ ft. after ___ hrs. pumping ___ gpm

___ ft. after ___ hrs. pumping ___ gpm

___ ft. after ___ hrs. pumping ___ gpm

9. WELL LOG

Formation	Depth (Ft.) To
Clay, silty to sandy, yellowish brown, oxidized	10
Shale, yellowish brown, oxidized	18
Shale, silty, brown, w/ organics	21
Silt, sandy, gray	42
Sand, silty gray	48
Lignite	69.5
Shale, light gray	72
Lignite & brown organic shale	74
Silt, sandy, gray	76
Shale, silty, gray, lime rock at 100' & lignite at 108'	108
Shale, greenish gray	112
Shale, silty, gray	129
Sandstone	131
Shale, silty, gray	166
Shale, brown, organic	170
Shale, silty, gray w/lignite seam	172
Lignite	185
Shale, gray	195

(use separate sheet if necessary)

10. DATE COMPLETED 28 Mar 02

11. WAS THE HOLE PLUGGED OR ABANDONED? ___ Yes X No

If so, how?

12. REMARKS 1,240# of Abrasives Inc sand pack to 173', 550# bentonite chips to 3', cuttings to surface.

20-40

13. DRILLER'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge

Driller's or Firm's Name MOHL DRILLING, INC Certificate No. 105

Address Beulah ND 58523

Signed by John R Mohl Date 04-04-02

TOTAL P.06

DH02-116

BOARD OF WATER WELL CONTRACTORS
900 E. BOULEVARD AVE., DEPT. 770 * BISMARCK, NORTH DAKOTA 58505-0850

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Board of Water Well Contractors within 30 days after completion or abandonment of the well.

1. WELL OWNER
Name Kienergy Inc
Address 203 S Main, Suite 2004
Sheridan, WY 82801

2. WELL LOCATION North well 11B 139-98-23AAA

County Stark
NE1/4 NE1/4 NE1/4 Sec. 23 Twp. 139 N. Rge. 98 W

3. PROPOSED USE
__ Geothermal X Monitoring
__ Domestic __ Irrigation __ Industrial
__ Stock __ Municipal __ Test Hole

4. METHOD DRILLED
__ Cable __ Reverse Rotary __ Bored
X Forward Rotary __ Jetted __ Auger
If other, specify

5. WATER QUALITY
Was a water sample collected for:
Chemical analyses? __ Yes X No
Bacteriological Analyses? __ Yes X No
If so, to what laboratory was it sent?

6. WELL CONSTRUCTION
Diameter of Hole 5 3/8 inches Depth 72 feet
Casing: __ Steel X Plastic __ Concrete
X Threaded __ Welded __ Other
If other, specify

Pipe Weight:	Diameter:	From:	TO:
lb/ft	2 inches	+2 feet	60 feet
lb/ft	inches	feet	feet
lb/ft	inches	feet	feet

Was perforated pipe used? __ Yes X No
Perforated pipe set from ft to feet
Was casing left open end? __ Yes X No
Was a well screen installed? X Yes __ No
Material PVC Diameter 2 inches
Slot Size 10 set from 60 feet to 70 feet
Slot Size set from feet to feet
Was packer or seal used? __ Yes X No
If so, what material Depth ft
Type of well: Straight screen Gravel packed X
Depth grouted: From 0 To 46
Grouting material: Cement Other X
If other explain: Bentonite Chips
Well head completion: Pitless unit
12" above grade Other X
If other, specify 2' above grade
Was pump installed? __ yes X No
Was well disinfected upon completion? __ yes X No
WSIQZ\WDRPT01

7. WATER LEVEL
Static water level Feet below surface
If flowing: closed-in pressure psi
GPM flow through inch pipe
Controlled by: Valve Reducers Other
If other, specify

8. WELL TEST DATA
Pump Bailer Other
Pumping level below land surface
ft. after hrs. pumping gpm
ft. after hrs. pumping gpm
ft. after hrs. pumping gpm

9. WELL LOG

Formation	Depth (Ft.) To
Clay, silty to sandy, yellowish brown, oxidized	10
Shale, yellowish brown, oxidized	18
Shale, silty, brown, w/ organics	21
Silt, sandy, gray	42
Sand, silty gray	48
Lignite	69.5
Shale, light gray	72

(use separate sheet if necessary)

10. DATE COMPLETED 28 Mar 02

11. WAS THE HOLE PLUGGED OR ABANDONED?
__ Yes X No
If so, how?

12. REMARKS 240# of Abrasives Inc sand pack to 46', 300# bentonite chips to 3', cuttings to surface.

20-40

13. DRILLER'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge

Driller's or Firm's Name: MoHL DRILLING INC
Certificate No.: 105
Address: BEULAH ND 58523
Signed by: John R Mohl
Date: 04-04-02

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-13**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/4/02 Finished 3/4/02

Sec. 21 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Pruitt

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	5.0	5.0		TS	Topsoil
5.0	25.0	20.0		CL	Clay, tan, soft
25.0	26.5	1.5		CL	Clay, gray
26.5	31.1	4.6	F	CO	Lignite
31.1	133.5	102.4		SS	Sandstone, gray, fine grained, soft, clayey from 75' - 85'
133.5	151.0	17.5	D	CO	Lignite
151.0	165.0	14.0		CL	Clay, gray TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Property **South Heart** Hole No. **Sh02-13c**

Type Core

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/19/02 Finished 3/19/02

Sec. 21 T. 139 N. R. 98 W State ND

Locate hole within section; when hole is not vertical, give direction & angle

Method of drilling Rotary Logged by B. Gjere

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 2 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	26.0				Drill out to first core point
26.0	32.0				Cored 7.0' - recovered 7.0'
26.0	26.6	0.6		CL	Clay, gray, soft
26.6	31.7	5.1		CO	Lignite, brown,
					top 3' is weathered; bottom 2' is solid and banded
					high pyrite content at 27.3' and 28.9'
31.7	32.6	0.9		CL	Clay, gray, soft
32.6	33.0	0.4		SH	Shale, carbonaceous, fissile
33.0	133.0				Drill out to second core point

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Date 3/19/02

Property: South Heart Page No. 2 of Hole No. Sh02-13c

Depth From	Depth To	Thick.	Seam	Lith Type	Description
133.0	147.0				Cored 14' - recovered 14'
133.0	133.5	0.5	D	CO	Lignite, brown, fissile, high pyrite content
133.5	143.0	9.5	D	CO	Lignite, brown, pyrite scale in verticla fracture
143.0	147.0	4.0	D	CO	Lignite, brown, banded light brown, the surface of this segment
					drys much more quickly than the top segment
147.0	152.0				Cored 5' - recovered 5'
147.0	150.8	3.8	D	CO	Lignite, brown, woody texture, fissile zone at 149'-149.4'
150.8	152.0	1.2		CL	Clay, gray TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-14**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/26/02 Finished 3/26/02

Sec. 21 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Gjere

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	4.0	4.0		TS	Topsoil, loamy
4.0	5.0	1.0		CL	Clay, gray, soft
5.0	7.0	2.0		CO	Lignite, soft, weathered
7.0	39.5	32.5		CL	Clay, gray, soft, silty
39.5	41.0	1.5	E	CO	Lignite, soft, shaley
41.0	65.0	24.0		CL	Clay, tan, silty
65.0	67.0	2.0	E1	CO	Lignite, soft, shaley
67.0	69.0	2.0		CL	Clay, gray
69.0	98.5	29.5		ST	Siltstone, gray, sandy
98.5	117.0	18.5	D	CO	Lignite, brown
117.0	130.0	13.0		CL	Clay, gray TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-14c**

Type Core

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/26/02 Finished 3/26/02

Sec. 21 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Gjere

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	99.5				Drill out to core point - just topped coal (about 0.2')
					(went up about 1' vertical, but coal was about the same depth)
99.5	113.5				Cored 14' - recovered 13.7'
99.5	106.7	7.2	D	CO	Lignite, brown, soft, fractured, thin (0.1') parting at 100.5' and 101.4'
106.7	107.3	0.6	D	CO	Lignite, brown, banded
107.3	113.5	6.2	D	CO	Lignite, brown, banded, surface dries quickly,
					pyrite scale in vertical fractures from 109' to 113'
113.5	118.5				Cored 5' - recovered 4.9'
113.5	118.4	4.9	D	CO	Lignite, brown, soft friable zones at 114.5' and 116.5'
					0.1' pyrite band at 117.1'
118.4	118.5			IC	Lost TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-15**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/5/02 Finished 3/5/02

Sec. 23 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by Pruitt - Mohl

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	7.5	7.5		TS	Topsoil, loamy
7.5	20.0	12.5		CL	Clay, tan, soft
20.0	30.0	10.0		SS	Sand, tan, soft
30.0	37.0	7.0		GR	Gravel, 1/8" - to 1/4", subrounded
37.0	50.0	13.0	D	CO	Lignite, also blowing up a lot of gravel
50.0	60.0	10.0		IC	Lost circulation TDD
					No geophysical log - too much caving

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **SH02-16**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/5/02 Finished 3/5/02

Sec. 22 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by Mohl

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	1.0	1.0		TS	Topsoil
1.0	40.0	39.0		SS	Sand, gray, soft, a lot of coal detritus in the grains
40.0	50.0	10.0		GR	Gravels, subrounded, coal fragments in gravels
					TDD
					Hole is unstable and caving - cannot make a connection
					Abandon hole
					No geophysical log

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-16b**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/26/02 Finished 3/26/02

Sec. 22 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Gjere

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
					Off set about 20' from 16a and try again
0.0	1.0			TS	Topsoil, loamy
1.0	18.0			AL	Alluvial material, soft, gray, silty
18.0	30.0			GR	Gravels, subrounded, sand, - particles include coal fragments,
					scoria, ss, etc. Return water is dark gray
					tried to get a geophysical log - hole was caving at 27' -
					very unstable - abandon

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-17**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/5/02 Finished 3/5/02

Sec. 23 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Pruitt

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 1 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	10.0	10.0		TS	Topsoil, loamy
10.0	32.0	22.0		CL	Clay, tan, soft
32.0	40.0	8.0		CL	Clay, gray,
40.0	50.0	10.0		SS	Sand, gray, fine grained, silty
50.0	68.0	18.0	D	CO	Lignite
68.0	80.0	12.0		CL	Clay, gray, TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **SH02-17c**

Type Core

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/25/02 Finished 3/25/02

Sec. 23 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Gjere

Drilling Fluid: Air - Water Injection

Surface Owner Signed

Page 1 of 2 Title

Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	48.0				Drill out to core point
48.0	62.0				Cored 14' - recovered 12.1' probably lost the top soft sand;
					should have had about 1.5' - 2.0' of roof
48.0	49.9	1.9		IC	Lost
49.9	50.2	0.3	D	CO	Lignite, very high pyrite concentration
50.2	50.6	0.4	D	CO	Lignite, brown,
50.6	50.8	0.2	D	CO	Lignite, very high pyrite concentration
50.8	56.7	5.9	D	CO	Lignite, brown, banded,
56.7	56.8	0.1	D	CL	Clay, gray
56.8	57.2	0.4	D	CO	Lignite, brown
57.2	58.0	0.8	D	SH	Shale, cart
58.0	62.0	4.0	D	CO	Lignite, brown, banded,

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Date 3/25/02

Property: South Heart Page No. 2 of Hole No. Sh02-17c

Depth From	Depth To	Thick.	Seam	Lith Type	Description
62.0	69.0				Cored 7' - recovered 7'
62.0	68.0	6.0	D	CO	Lignite, brown, banded, pyrite nodule at 62.9'
68.0	69.0	1.0		CL	Clay, gray, soft TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-18a**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/26/02 Finished 3/26/02

Sec. 28 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Gjere

Drilling Fluid: Air - Water Injection

Surface Owner Signed

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Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	4.0	4.0		TS	Topsoil, loamy
4.0	10.0	6.0		CL	Clay, gray
10.0	22.0	12.0		CL	Clay, tan, soft, alluvial
22.0	30.0	8.0		SL	Silt, gray, sandy, soft
30.0	42.0	12.0		SS	Sand, dark gray, medium grained
42.0	52.0	10.0		GR	Gravels, sand, fragments of scoria, chips of coal
52.0	53.0	1.0		SS	Sandstone, hard
53.0	60.0	7.0		SS	Sand, gray, fine grained, soft TDD

KIEWIT MINING GROUP INC.

LITHOLOGY LOG

Locate hole within section; when hole is not vertical, give direction & angle

Property **South Heart** Hole No. **Sh02-22**

Type Rotary

Lessee or permittee

Address

Driller John Mohl

Commenced drilling 3/5/02 Finished 3/5/02

Sec. 27 T. 139 N. R. 98 W State ND

Method of drilling Rotary Logged by B. Pruitt

Drilling Fluid: Air - Water Injection

Surface Owner Signed

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Depth From	Depth To	Thick.	Seam	Lith Type	Description
0.0	16.0	16.0		CL	Brown to gray, soft
16.0	18.0	2.0	E	CO	Lignite, soft, shaley
18.0	35.0	17.0		SS	Sand, gray
35.0	39.0	4.0		CL	Clay, gray
39.0	42.0	3.0	E1	CO	Lignite, soft, shaley
42.0	45.0	3.0		CL	Clay, gray
45.0	50.0	5.0		SS	Sand, gray
50.0	75.0	25.0		CL	Clay, gray
75.0	90.5	15.5		SS	Sand, gray
90.5	104.5	14.0	D	CO	Lignite
104.5	120.0	15.5		CL	Clay, gray TDD