SEQ NO = 1 DRILL HOLE NO = FC 382 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 29

SECTION CODE = SURFACE ELEV. = 6065.58 HOW DET. = 0

N-COORD = 197333 E-COORD = 2065383 SOURCE = 0 LOCATION = 0

THK CORED = .00 THK N-CORED = .00 USGS = SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 382 FORMAT = B PROPERTY OR FARM = DRILLER = GORDON

DRILL CONTR = WARDLAW CON. DATE DRILLED = 1275

TWP OR PLACE = COMMENTS = COMPOSITE LOG

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 382	C	.00	20.00	20.00	SH	SDY GRY		0	PLUGGED
4	FC 382	C	20.00	100.00	80.00	SH	GRY		0	PLUGGED
5	FC 382	C	100.00	109.80	9.80	SH	DRK GRY MED HRD		0	FSL SLY
6	FC 382	C	109.80	110.00	.20	SH			0	LOST
7	FC 382	C	110.00	200.00	90.00	SH	GRY		0	PLUGGED
8	FC 382	C	200.00	209.30	9.30	SH	DRK GRY HRD SLY		0	FSL
9	FC 382	C	209.30	210.00	.70	SH			0	LOST
10	FC 382	C	210.00	300.00	90.00	SH	GRY		0	PLUGGED
11	FC 382	C	300.00	309.30	9.30	ST	DRK GRY HRD FSL		0	
12	FC 382	C	309.30	310.00	.70	ST			0	LOST
13	FC 382	C	310.00	400.00	90.00	SH	GRY		0	PLUGGED
14	FC 382	C	400.00	405.50	5.50	SH	DRK GRY MED HRD		0	SLY
15	FC 382	C	405.50	410.00	4.50	ND			0	LOST
16	FC 382	C	410.00	494.90	84.90	SH	GRY		0	PLUGGED
17	FC 382	C	494.90	501.00	6.10	SS	GRY	TF	0	PLUGGED
18	FC 382	C	501.00	533.78	32.78	SS	FGR MGR HRD LIT		0	GRY
19	FC 382	C	533.78	534.08	.30	CO	FRK SLY		0	
20	FC 382	C	534.08	536.15	2.07	SH	BLK CRB MED HRD		0	COI
21	FC 382	C	536.15	536.81	.66	BO			0	
22	FC 382	C	536.81	538.91	2.10	CO	PYS	K	1	
23	FC 382	C	538.91	539.79	.88	SH	DRK GRY HRD CRB		0	
24	FC 382	C	539.79	540.69	.90	BO			0	
25	FC 382	C	540.69	542.70	2.01	CO	CAS FRK PYS	K	3	
26	FC 382	C	542.70	543.03	.33	SH	BLK CRB		0	
27	FC 382	C	543.03	543.43	.40	SS	LIT GRY FGR CRB		0	
28	FC 382	C	543.43	543.70	.27	SH	CRB BLK		0	
29	FC 382	C	543.70	544.08	.38	SH	DRK GRY CRB		0	
30	FC 382	C	544.08	546.25	2.17	SH	GRY MED HRD		0	
31	FC 382	C	546.25	547.14	.89	SH	DRK GRY COI MED		0	HRD
32	FC 382	C	547.14	550.17	3.03	SS	FGR LIT GRY SHY		0	
33	FC 382	C	550.17	551.00	.83	SH	DRK GRY MED HRD		0	SDY
34	FC 382	C	551.00	551.90	.90	ST	DRK GRY HRD COI		0	
35	FC 382	C	551.90	553.79	1.89	SS	FGR LIT GRY FRK		0	CAS CRB
36	FC 382	C	553.79	557.78	3.99	SH	DRK GRY MED HRD		0	FSL

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 382	C	557.78	558.13	.35	ST	DRK GRY CRB		0	
38	FC 382	C	558.13	559.80	1.67	SH	BLK CRB MED HRD		0	
39	FC 382	C	559.80	560.48	.68	BO	FRK	J	1	
40	FC 382	C	560.48	562.80	2.32	SH	GRY MED HRD CRB		0	
41	FC 382	C	562.80	564.65	1.85	BO	PYS	J	3	
42	FC 382	C	564.65	565.05	.40	SH	BLK MED HRD CRB		0	
43	FC 382	C	565.05	565.83	.78	SS	LIT GRY MGR		0	
44	FC 382	C	565.83	565.98	.15	SH	BLK MED HRD CRB		0	
45	FC 382	C	565.98	571.16	5.18	CO	FRK MED HRD CAS	UI	0	FRK
46	FC 382	C	571.16	571.66	.50	BO	CRB		0	
47	FC 382	C	571.66	572.16	.50	CO	FRK MED HRD		0	
48	FC 382	C	572.16	572.48	.32	BO			0	
49	FC 382	C	572.48	577.63	5.15	CO	FRK MED HRD	LI	1	
50	FC 382	C	577.63	577.81	.18	SH	BLK CRB MED HRD		0	
51	FC 382	C	577.81	578.93	1.12	ST	GRY HRD		0	
52	FC 382	C	578.93	583.92	4.99	SS	LIT GRY FGR CRB		0	
53	FC 382	C	583.92	584.46	.54	SH	BLK HRD		0	
54	FC 382	C	584.46	592.47	8.01	CO	CAS FRK HRD	LI	5	
55	FC 382	C	592.47	592.59	.12	BO	BLK CRB		0	
56	FC 382	C	592.59	596.05	3.46	SH	GRY MED HRD SLK		0	
57	FC 382	C	596.05	605.50	9.45	ST	LIT GRY SLK SDY		0	CRB
58	FC 382	C	605.50	611.94	6.44	SH	DRK GRY MED HRD		0	SLK FRK
59	FC 382	C	611.94	612.64	.70	SS	FGR LIT GRY HRD		0	
60	FC 382	C	612.64	613.59	.95	ST	MED HRD LIT GRY		0	
61	FC 382	C	613.59	615.50	1.91	SH	GRY MED HRD BH		0	SLK

			SEAM CODE	SAMP NO	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	ANALYSIS CODE	PROXIMATE ANALYSIS %MOIS	%VOL	%CARB	%ASH	%SUL	BTU	EQUIL. MOIST	F P
1	FC 382	D	J	1	565.80	568.00	2	.0	.0	.0	.0	.00	0	.00	
2	FC 382	D	J	2	565.00	568.00	2	.0	.0	.0	.0	.00	0	.00	
3	FC 382	D	J	3	568.00	570.00	2	.0	.0	.0	.0	.00	0	.00	
4	FC 382	D	J	4	570.00	572.00	2	.0	.0	.0	.0	.00	0	.00	
5	FC 382	D	J	5	572.00	574.00	2	.0	.0	.0	.0	.00	0	.00	
6	FC 382	D	J	6	574.00	576.00	2	.0	.0	.0	.0	.00	0	.00	
7	FC 382	D	J	7	576.00	577.63	2	.0	.0	.0	.0	.00	0	.00	
8	FC 382	D	IJ	8	577.63	577.81	2	.0	.0	.0	.0	.00	0	.00	
9	FC 382	D	IJ	9	583.92	584.46	2	.0	.0	.0	.0	.00	0	.00	
10	FC 382	D	I	0	584.46	587.00	2	.0	.0	.0	.0	.00	0	.00	
11	FC 382	D	I	A	587.00	589.00	2	.0	.0	.0	.0	.00	0	.00	
12	FC 382	D	I	B	589.00	590.50	2	.0	.0	.0	.0	.00	0	.00	
13	FC 382	D	I	C	591.00	593.00	2	.0	.0	.0	.0	.00	0	.00	
14	FC 382	D	I	D	593.00	593.60	2	.0	.0	.0	.0	.00	0	.00	

			SEAM CODE	SAMP NO	SP GR	TYPE CODE	FLOAT SINK DATA % WT.	% VOL	% ASH	% SUL	BTU	SCREEN SIZE
			SEAM CODE	SAMP NO	SP GR	TYPE CODE	FLOAT SINK DATA % WT.	% VOL	% ASH	% SUL	BTU	SCREEN SIZE
1	FC 382	G	J	1	000999	DF	0000	.00	55.14	.21	5542	2000
2	FC 382	G	J	2	000160	DF	9680	.00	7.85	.55	13237	2000
3	FC 382	G	J	2	160999	DS	0320	.00	40.50	.30	7668	2000
4	FC 382	G	J	2	000999	DF	0000	.00	8.89	.54	13059	2000
5	FC 382	G	J	3	000160	DF	9870	.00	6.39	.38	12638	2000
6	FC 382	G	J	3	160999	DS	0130	.00	30.57	.33	8196	2000
7	FC 382	G	J	3	000999	DF	0000	.00	6.70	.38	12580	2000
8	FC 382	G	J	4	000160	DF	7520	.00	8.33	.33	12309	2000
9	FC 382	G	J	4	160999	DS	2480	.00	43.58	.24	7232	2000
10	FC 382	G	J	4	000999	DF	0000	.00	17.07	.31	11050	2000
11	FC 382	G	J	5	000160	DF	9170	.00	6.39	.35	13396	2000
12	FC 382	G	J	5	160999	DS	0830	.00	44.11	.20	6339	2000
13	FC 382	G	J	5	000999	DF	0000	.00	9.52	.34	12810	2000
14	FC 382	G	J	6	000160	DF	9630	.00	4.10	.35	12946	2000
15	FC 382	G	J	6	160999	DS	0370	.00	23.80	.15	8898	2000
16	FC 382	G	J	6	000999	DF	0000	.00	4.83	.34	12796	2000
17	FC 382	G	J	7	000160	DF	9880	.00	7.13	.45	13360	2000
18	FC 382	G	J	7	160999	DS	0120	.00	20.80	.41	10886	2000
19	FC 382	G	J	7	000999	DF	0000	.00	7.29	.45	13330	2000
20	FC 382	G	I	8	000999	DF	0000	.00	75.54	.42	2144	2000
21	FC 382	G	I	9	000999	DF	0000	.00	63.43	1.27	4564	2000
22	FC 382	G	I	0	000160	DF	8149	.00	7.05	.54	13376	2000
23	FC 382	G	I	0	160999	DS	1851	.00	54.66	.28	5771	2000
24	FC 382	G	I	0	000999	DF	0000	.00	15.86	.49	11968	2000
25	FC 382	G	I	A	000160	DF	9780	.00	6.62	.44	13472	2000
26	FC 382	G	I	A	160999	DS	0220	.00	30.23	.70	8050	2000
27	FC 382	G	I	A	000999	DF	0000	.00	7.14	.45	13353	2000
28	FC 382	G	I	B	000160	DF	9640	.00	7.34	.47	13846	2000
29	FC 382	G	I	B	160999	DS	0360	.00	31.99	.56	7461	2000
30	FC 382	G	I	B	000999	DF	0000	.00	8.23	.47	13616	2000
31	FC 382	G	I	C	000160	DF	3380	.00	5.69	.54	13507	2000
32	FC 382	G	I	C	160999	DS	6620	.00	86.72	.21	754	2000
33	FC 382	G	I	C	000999	DF	0000	.00	59.33	.32	5065	2000
34	FC 382	G	I	D	000999	DF	0000	.00	91.42	.33	0	2000

SEQ NO = 1 DRILL HOLE NO = FC 384 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 29

SECTION CODE = SURFACE ELEV. = 5964.96 HOW DET. = 6

N-COORD = 195268 E-COORD = 2065430 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 384 FORMAT = B PROPERTY OR FARM = PETTY,G. DRILLER = BUTTS,Q.

DRILL CONTR = STORM DRILLI DATE DRILLED = 0876

TWP OR PLACE = COMMENTS = EM LONGWALL

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS		SEAM CODE	CORR.	COMMENTS
3	FC 384	C	.00	280.00	280.00	SH	SDY			0	
4	FC 384	C	280.00	309.00	29.00	SS	GRY		TF	0	
5	FC 384	C	309.00	314.00	5.00	CO			K	0	
6	FC 384	C	314.00	394.80	80.80	ST				0	
7	FC 384	C	394.80	396.50	1.70	CO			J	0	
8	FC 384	C	396.50	397.50	1.00	CL				0	
9	FC 384	C	397.50	403.00	5.50	CO			UI	0	
10	FC 384	C	403.00	418.00	15.00	CO			LI	0	
11	FC 384	C	418.00	418.20	.20	SH	CRB			0	
12	FC 384	C	418.20	427.50	9.30	CL				0	
13	FC 384	C	427.50	430.00	2.50	SH	GRY			0	
14	FC 384	C	430.00	431.50	1.50	CL				0	
15	FC 384	C	431.50	433.80	2.30	SS	GRY			0	
16	FC 384	C	433.80	436.60	2.80	SH	SDY			0	
17	FC 384	C	436.60	437.50	.90	CL				0	
18	FC 384	C	437.50	441.50	4.00	SS	GRY	BH		0	

			SEAM CODE	SAMP NO	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	ANALYSIS CODE	PROXIMATE ANALYSIS %MOIS	%VOL	%CARB	%ASH	%SUL	BTU	EQUIL. MOIST	F P
1	FC 384	D	IJ	1	394.30	394.80	2	.0	.0	.0	.0	.00	0	.00	
2	FC 384	D	IJ	2	394.80	396.50	2	.0	.0	.0	.0	.00	0	.00	
3	FC 384	D	IJ	3	396.50	397.50	2	.0	.0	.0	.0	.00	0	.00	
4	FC 384	D	IJ	4	397.50	400.00	2	.0	.0	.0	.0	.00	0	.00	
5	FC 384	D	IJ	5	400.00	402.00	2	.0	.0	.0	.0	.00	0	.00	
6	FC 384	D	IJ	6	402.00	404.00	2	.0	.0	.0	.0	.00	0	.00	
7	FC 384	D	IJ	7	404.00	406.00	2	.0	.0	.0	.0	.00	0	.00	
8	FC 384	D	IJ	8	406.00	408.00	2	.0	.0	.0	.0	.00	0	.00	
9	FC 384	D	IJ	9	408.00	410.00	2	.0	.0	.0	.0	.00	0	.00	
10	FC 384	D	IJ	0	410.00	412.00	2	.0	.0	.0	.0	.00	0	.00	
11	FC 384	D	IJ	A	412.00	414.00	2	.0	.0	.0	.0	.00	0	.00	
12	FC 384	D	IJ	B	414.00	416.00	2	.0	.0	.0	.0	.00	0	.00	
13	FC 384	D	IJ	C	416.00	418.00	2	.0	.0	.0	.0	.00	0	.00	

14	FC 384	D	IJ	D	418.00	418.50	2	.0	.0	.0	.0	.00	0	.00

FLOAT SINK DATA

			SEAM CODE	SAMP ID	SP GR	TYPE CODE	% WT.	% VOL	% ASH	% SUL	BTU	SCREEN SIZE
1	FC 384	G	IJ	1	000999	DF	0000	.00	87.96	.47	674	1000
2	FC 384	G	IJ	2	000160	DF	9035	.00	10.58	1.65	12779	1000
3	FC 384	G	IJ	2	160999	DS	0965	.00	47.10	9.55	6807	1000
4	FC 384	G	IJ	2	000999	DF	0000	.00	14.10	2.41	12203	1000
5	FC 384	G	IJ	3	000999	DF	0000	.00	79.38	9.71	1130	1000
6	FC 384	G	IJ	4	000160	DF	9701	.00	6.64	.94	13504	1000
7	FC 384	G	IJ	4	160999	DS	0299	.00	37.27	10.56	8003	1000
8	FC 384	G	IJ	4	000999	DF	0000	.00	7.56	1.23	13340	1000
9	FC 384	G	IJ	5	000160	DF	9733	.00	6.14	1.02	13644	1000
10	FC 384	G	IJ	5	160999	DS	0267	.00	43.72	1.01	7988	1000
11	FC 384	G	IJ	5	000999	DF	0000	.00	7.14	1.02	13493	1000
12	FC 384	G	IJ	6	000160	DF	7888	.00	8.79	1.16	13195	1000
13	FC 384	G	IJ	6	160999	DS	2112	.00	68.02	.35	2913	1000
14	FC 384	G	IJ	6	000999	DF	0000	.00	21.30	.99	11023	1000
15	FC 384	G	IJ	7	000160	DF	9208	.00	7.11	.66	13480	1000
16	FC 384	G	IJ	7	160999	DS	0792	.00	48.01	14.36	6674	1000
17	FC 384	G	IJ	7	000999	DF	0000	.00	10.35	1.75	12941	1000
18	FC 384	G	IJ	8	000160	DF	9288	.00	8.42	1.03	13377	1000
19	FC 384	G	IJ	8	160999	DS	0712	.00	40.81	.90	7035	1000
20	FC 384	G	IJ	8	000999	DF	0000	.00	10.73	1.02	12925	1000
21	FC 384	G	IJ	9	000160	DF	9860	.00	9.99	.51	13132	1000
22	FC 384	G	IJ	9	160999	DS	0140	.00	38.16	.68	7966	1000
23	FC 384	G	IJ	9	000999	DF	0000	.00	10.38	.51	13060	1000
24	FC 384	G	IJ	0	000160	DF	9794	.00	6.05	.52	13765	1000
25	FC 384	G	IJ	0	160999	DS	0206	.00	31.08	1.89	7905	1000
26	FC 384	G	IJ	0	000999	DF	0000	.00	6.57	.55	13644	1000
27	FC 384	G	IJ	A	000160	DF	8669	.00	9.47	.60	13183	1000
28	FC 384	G	IJ	A	160999	DS	1331	.00	52.46	.40	6094	1000
29	FC 384	G	IJ	A	000999	DF	0000	.00	15.19	.57	12240	1000
30	FC 384	G	IJ	B	000160	DF	9790	.00	6.72	.59	13508	1000
31	FC 384	G	IJ	B	160999	DS	0210	.00	34.94	.91	7278	1000
32	FC 384	G	IJ	B	000999	DF	0000	.00	7.31	.60	13377	1000
33	FC 384	G	IJ	C	000160	DF	9873	.00	6.58	.61	13482	1000
34	FC 384	G	IJ	C	160999	DS	0127	.00	42.27	2.03	7451	1000
35	FC 384	G	IJ	C	000999	DF	0000	.00	7.03	.63	13405	1000
36	FC 384	G	IJ	D	000999	DF	0000	.00	89.40	.25	413	1000

SEQ NO = 1 DRILL HOLE NO = FC 385 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 28

SECTION CODE = SURFACE ELEV. = 6036.29 HOW DET. = 6

N-COORD = 196269 E-COORD = 2068185 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 385 FORMAT = B PROPERTY OR FARM = KEMMERER DRILLER = BUTTS,Q.

DRILL CONTR = STORM DRILLI DATE DRILLED = 0776

TWP OR PLACE = COMMENTS = EM LONGWALL

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 385	C	.00	263.00	263.00	SH	SDY		0	
4	FC 385	C	263.00	317.00	54.00	SS	SAP	TF	0	
5	FC 385	C	317.00	323.00	6.00	SH	SDY		0	
6	FC 385	C	323.00	333.00	10.00	SS	SAP WTR		0	
7	FC 385	C	333.00	346.50	13.50	SS	GRY		0	
8	FC 385	C	346.50	353.00	6.50	SH	SDY		0	
9	FC 385	C	353.00	353.60	.60	SS	GRY		0	
10	FC 385	C	353.60	356.00	2.40	SH	CRB		0	
11	FC 385	C	356.00	360.00	4.00	CO	SHY	J	0	
12	FC 385	C	360.00	362.00	2.00	CL			0	
13	FC 385	C	362.00	367.00	5.00	CO		UI	0	
14	FC 385	C	367.00	369.00	2.00	SH	CAR COL		0	
15	FC 385	C	369.00	382.00	13.00	CO		LI	0	
16	FC 385	C	382.00	388.00	6.00	SH	CAR		0	
17	FC 385	C	388.00	396.50	8.50	SS			0	
18	FC 385	C	396.50	402.00	5.50	SS	FGR BH		0	

			SEAM CODE	SAMP NO	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	ANALYSIS CODE	PROXIMATE ANALYSIS %MOIS	%VOL	%CARB	%ASH	%SUL	BTU	EQUIL. MOIST	F P
1	FC 385	D	IJ	1	358.80	359.30	2	.0	.0	.0	.0	.00	0	.00	
2	FC 385	D	IJ	2	359.30	361.00	2	.0	.0	.0	.0	.00	0	.00	
3	FC 385	D	IJ	3	361.00	363.00	2	.0	.0	.0	.0	.00	0	.00	
4	FC 385	D	IJ	4	363.00	365.00	2	.0	.0	.0	.0	.00	0	.00	
5	FC 385	D	IJ	5	365.00	367.00	2	.0	.0	.0	.0	.00	0	.00	
6	FC 385	D	IJ	6	367.00	369.00	2	.0	.0	.0	.0	.00	0	.00	
7	FC 385	D	IJ	7	369.00	371.00	2	.0	.0	.0	.0	.00	0	.00	
8	FC 385	D	IJ	8	371.00	373.00	2	.0	.0	.0	.0	.00	0	.00	
9	FC 385	D	IJ	9	373.00	375.00	2	.0	.0	.0	.0	.00	0	.00	
10	FC 385	D	IJ	0	375.00	377.50	2	.0	.0	.0	.0	.00	0	.00	
11	FC 385	D	IJ	A	377.50	378.00	2	.0	.0	.0	.0	.00	0	.00	

			SEAM CODE	SAMP NO	SP GR	TYPE CODE	FLOAT SINK DATA % WT.	% VOL	% ASH	% SUL	BTU	SCREEN SIZE

			SEAM CODE	SAMP NO	SP GR	TYPE CODE	FLOAT SINK DATA % WT.	% VOL	% ASH	% SUL	BTU	SCREEN SIZE

1	FC 385	G	IJ	1	000999	DF	0000	.00	69.65	3.31	3354	0000
2	FC 385	G	IJ	2	000160	DF	9937	.00	9.70	1.61	12951	0000
3	FC 385	G	IJ	2	160999	DF	0063	.00	30.14	8.83	9589	0000
4	FC 385	G	IJ	2	000999	DF	0000	.00	9.83	1.66	12930	0000
5	FC 385	G	IJ	3	000160	DF	9683	.00	7.01	1.53	13318	0000
6	FC 385	G	IJ	3	160999	DS	0317	.00	38.82	8.80	7285	0000
7	FC 385	G	IJ	3	000999	DF	0000	.00	8.02	1.76	13127	0000
8	FC 385	G	IJ	4	000160	DF	9349	.00	8.52	1.57	13352	0000
9	FC 385	G	IJ	4	160999	DS	0651	.00	52.78	.92	4953	0000
10	FC 385	G	IJ	4	000999	DF	0000	.00	11.40	1.53	12805	0000
11	FC 385	G	IJ	5	000160	DF	8953	.00	13.52	1.12	12397	0000
12	FC 385	G	IJ	5	160999	DS	1047	.00	42.53	.80	7083	0000
13	FC 385	G	IJ	5	000999	DF	0000	.00	16.56	1.09	11841	0000
14	FC 385	G	IJ	6	000160	DF	9666	.00	6.04	1.43	13534	0000
15	FC 385	G	IJ	6	160999	DS	0334	.00	35.08	1.89	6610	0000
16	FC 385	G	IJ	6	000999	DF	0000	.00	7.01	1.45	13303	0000
17	FC 385	G	IJ	7	000160	DF	9828	.00	6.57	.72	13587	0000
18	FC 385	G	IJ	7	160999	DS	0172	.00	27.48	1.57	8576	0000
19	FC 385	G	IJ	7	000999	DF	0000	.00	6.93	.73	13501	0000
20	FC 385	G	IJ	8	000160	DF	9664	.00	8.14	.58	13182	0000
21	FC 385	G	IJ	8	160999	DS	0336	.00	48.61	28.82	6237	0000
22	FC 385	G	IJ	8	000999	DF	0000	.00	9.50	1.53	12949	0000
23	FC 385	G	IJ	9	000160	DF	9844	.00	4.10	.61	13872	0000
24	FC 385	G	IJ	9	160999	DS	0156	.00	26.97	1.04	8716	0000
25	FC 385	G	IJ	9	000999	DF	0000	.00	4.46	.62	13792	0000
26	FC 385	G	IJ	0	000160	DF	9885	.00	4.68	.68	13837	0000
27	FC 385	G	IJ	0	160999	DS	0115	.00	36.82	1.55	7943	0000
28	FC 385	G	IJ	0	000999	DF	0000	.00	5.05	.69	13769	0000
29	FC 385	G	IJ	A	000999	DF	0000	.00	87.19	.27	730	0000

SEQ NO = 1 DRILL HOLE NO = FC 386 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 29

SECTION CODE = SURFACE ELEV. = 6051.96 HOW DET. = 6

N-COORD = 197156 E-COORD = 2068065 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 386 FORMAT = B PROPERTY OR FARM = JENSEN,D. DRILLER = WARDLAW,M.

DRILL CONTR = WARDLAW DRIL DATE DRILLED = 0876

TWP OR PLACE = COMMENTS = EM LONGWALL

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 386	C	.00	36.00	36.00	SH	SDY		0	
4	FC 386	C	36.00	38.00	2.00	SS	GRY		0	
5	FC 386	C	38.00	308.00	270.00	SH	SDY		0	
6	FC 386	C	308.00	363.00	55.00	SS	GRY	TF	0	
7	FC 386	C	363.00	385.40	22.40	SS	SAP		0	
8	FC 386	C	385.40	393.10	7.70	SH	SDY		0	
9	FC 386	C	393.10	404.80	11.70	SS	GRY		0	
10	FC 386	C	404.80	407.70	2.90	SH	SDY		0	
11	FC 386	C	407.70	430.00	22.30	SS	GRY		0	
12	FC 386	C	430.00	432.70	2.70	SH	SDY		0	
13	FC 386	C	432.70	436.50	3.80	SS	GRY		0	
14	FC 386	C	436.50	440.30	3.80	CO		J	0	
15	FC 386	C	440.30	441.70	1.40	CL			0	
16	FC 386	C	441.70	448.00	6.30	CO		UI	0	
17	FC 386	C	448.00	453.00	5.00	CO		LI	1	
18	FC 386	C	453.00	454.40	1.40	SS	GRY		0	
19	FC 386	C	454.40	463.30	8.90	CO		LI	5	
20	FC 386	C	463.30	463.80	.50	CL			0	
21	FC 386	C	463.80	465.40	1.60	SH	GRY		0	
22	FC 386	C	465.40	485.00	19.60	SH	SDY BH		0	

			SEAM CODE	SAMP NO	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	ANALYSIS CODE	PROXIMATE ANALYSIS %MOIS	%VOL	%CARB	%ASH	%SUL	BTU	EQUIL. MOIST	F P
1	FC 386	D	J	1	436.00	436.50	2	.0	.0	.0	.0	.00	0	.00	
2	FC 386	D	J	2	436.50	438.50	2	.0	.0	.0	.0	.00	0	.00	
3	FC 386	D	J	3	438.50	440.30	2	.0	.0	.0	.0	.00	0	.00	
4	FC 386	D	J	4	440.30	441.70	2	.0	.0	.0	.0	.00	0	.00	
5	FC 386	D	J	5	441.70	443.00	2	.0	.0	.0	.0	.00	0	.00	
6	FC 386	D	I	6	443.00	445.00	2	.0	.0	.0	.0	.00	0	.00	
7	FC 386	D	I	7	445.00	447.00	2	.0	.0	.0	.0	.00	0	.00	
8	FC 386	D	I	8	447.00	449.00	2	.0	.0	.0	.0	.00	0	.00	
9	FC 386	D	I	9	449.00	451.00	2	.0	.0	.0	.0	.00	0	.00	

10	FC 386	D	I	O	451.00	453.00	2	.0	.0	.0	.0	.00	0	.00
11	FC 386	D	IJ	A	453.00	454.40	2	.0	.0	.0	.0	.00	0	.00
12	FC 386	D	IJ	B	454.40	457.00	2	.0	.0	.0	.0	.00	0	.00
13	FC 386	D	IJ	C	457.00	459.00	2	.0	.0	.0	.0	.00	0	.00
14	FC 386	D	IJ	D	459.00	461.00	2	.0	.0	.0	.0	.00	0	.00
15	FC 386	D	IJ	E	461.00	463.30	2	.0	.0	.0	.0	.00	0	.00
16	FC 386	D	IJ	F	463.50	463.80	2	.0	.0	.0	.0	.00	0	.00

FLOAT SINK DATA

			SEAM CODE	SAMP NO	SP GR	TYPE CODE	% WT.	% VOL	% ASH	% SUL	BTU	SCREEN SIZE
1	FC 386	G	IJ	1	000999	DF	0000	.00	76.35	6.42	2797	0000
2	FC 386	G	IJ	2	000160	DF	8760	.00	11.42	2.75	12734	0000
3	FC 386	G	IJ	2	160999	DS	4240	.00	64.57	5.47	3962	0000
4	FC 386	G	IJ	2	000999	DF	0000	.00	33.96	3.90	9015	0000
5	FC 386	G	IJ	3	000160	DF	8491	.00	9.54	2.42	13031	0000
6	FC 386	G	IJ	3	160999	DS	1509	.00	55.85	4.22	5428	0000
7	FC 386	G	IJ	3	000999	DF	0000	.00	16.53	2.69	11884	0000
8	FC 386	G	IJ	4	000999	DF	0000	.00	86.72	6.97	446	0000
9	FC 386	G	IJ	5	000160	DF	9748	.00	10.21	1.81	12880	0000
10	FC 386	G	IJ	5	160999	DS	0252	.00	46.41	11.18	7133	0000
11	FC 386	G	IJ	5	000999	DF	0000	.00	11.12	2.05	12735	0000
12	FC 386	G	IJ	6	000160	DF	9881	.00	7.01	1.54	13384	0000
13	FC 386	G	IJ	6	160999	DS	0119	.00	36.00	5.27	8577	0000
14	FC 386	G	IJ	6	000999	DF	0000	.00	7.35	1.58	13327	0000
15	FC 386	G	IJ	7	000160	DF	8569	.00	7.63	1.65	13455	0000
16	FC 386	G	IJ	7	160999	DS	1431	.00	54.44	1.32	5256	0000
17	FC 386	G	IJ	7	000999	DF	0000	.00	14.33	1.60	12282	0000
18	FC 386	G	IJ	8	000160	DF	9043	.00	7.55	1.15	13357	0000
19	FC 386	G	IJ	8	160999	DS	0957	.00	61.61	1.26	4253	0000
20	FC 386	G	IJ	8	000999	DF	0000	.00	12.72	1.16	12486	0000
21	FC 386	G	IJ	9	000160	DF	9611	.00	5.35	1.74	13789	0000
22	FC 386	G	IJ	9	160999	DS	0389	.00	56.23	16.73	5112	0000
23	FC 386	G	IJ	9	000999	DF	0000	.00	7.33	2.32	13452	0000
24	FC 386	G	IJ	O	000160	DF	9690	.00	8.71	1.26	13231	0000
25	FC 386	G	IJ	O	160999	DS	0310	.00	40.11	6.97	8310	0000
26	FC 386	G	IJ	O	000999	DF	0000	.00	9.68	1.44	13079	0000
27	FC 386	G	IJ	A	000999	DF	0000	.00	77.29	.90	3014	0000
28	FC 386	G	IJ	B	000160	DF	9343	.00	7.41	1.00	13419	0000
29	FC 386	G	IJ	B	160999	DS	0657	.00	50.59	5.97	6746	0000
30	FC 386	G	IJ	B	000999	DF	0000	.00	10.25	1.33	12981	0000
31	FC 386	G	IJ	C	000160	DF	9746	.00	5.56	.60	13634	0000
32	FC 386	G	IJ	C	160999	DS	0254	.00	29.35	.85	8276	0000
33	FC 386	G	IJ	C	000999	DF	0000	.00	6.16	.61	1348	0000
34	FC 386	G	IJ	D	000160	DF	9840	.00	4.22	.59	13884	0000
35	FC 386	G	IJ	D	160999	DS	0160	.00	29.21	1.27	8481	0000
36	FC 386	G	IJ	D	000999	DF	0000	.00	4.62	.50	13798	0000
37	FC 386	G	IJ	E	000160	DF	9705	.00	4.42	.59	13829	0000
38	FC 386	G	IJ	E	160999	DS	0295	.00	64.17	1.31	4156	0000
39	FC 386	G	IJ	E	000999	DF	0000	.00	6.18	.61	13544	0000
40	FC 386	G	IJ	F	000999	DF	0000	.00	91.29	.25	33	0000

SEQ NO = 1 DRILL HOLE NO = FC 442 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 29

SECTION CODE = SURFACE ELEV. = 6111.30 HOW DET. = 6

N-COORD = 197597 E-COORD = 2069249 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = EMERY WEST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 442 FORMAT = B PROPERTY OR FARM = DRILLER = HARRIS

DRILL CONTR = HARRIS DATE DRILLED = 1278

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 442	C	.00	38.00	38.00	SS			0	
4	FC 442	C	38.00	300.00	262.00	SH			0	
5	FC 442	C	300.00	380.00	80.00	SH			0	
6	FC 442	C	380.00	410.00	30.00	SS		TF	0	
7	FC 442	C	410.00	425.00	15.00	SH			0	
8	FC 442	C	425.00	440.00	15.00	SS			0	
9	FC 442	C	440.00	457.70	17.70	SS			0	
10	FC 442	C	457.70	459.40	1.70	CO	SHY	J	0	
11	FC 442	C	459.40	460 00	.60	SH		J	0	
12	FC 442	C	460.00	462 00	2.00	CO	SHY	J	0	
13	FC 442	C	462.00	464.00	2.00	FC			0	
14	FC 442	C	464.00	466.65	2.65	CO		UI	0	
15	FC 442	C	466.65	467.80	1.15	ND		UI	0	
16	FC 442	C	467.80	470.00	2.20	CO		UI	0	
17	FC 442	C	470.00	473.92	3.92	CO		LI	1	
18	FC 442	C	473.92	475.08	1.16	SS			0	
19	FC 442	C	475.08	484.00	8.92	CO		LI	5	
20	FC 442	C	484.00	484.83	.83	FC			0	
21	FC 442	C	484.83	486.91	2.08	SH			0	
22	FC 442	C	486.91	488.50	1.59	SS		BH	0	

SEQ NO = 1 DRILL HOLE NO = FC 448A FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 21

SECTION CODE = SURFACE ELEV. = 6107.30 HOW DET. = 6

N-COORD = 200009 E-COORD = 2070570 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 448A FORMAT = B PROPERTY OR FARM = DRILLER = HARRIS

DRILL CONTR = HARRIS DATE DRILLED = 0179

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS		SEAM CODE	CORR.	COMMENTS
3	FC 448A	C	.00	38.00	38.00	OB				0	
4	FC 448A	C	38.00	410.00	372.00	SH				0	
5	FC 448A	C	410.00	460.80	50.80	SS			TF	0	
6	FC 448A	C	460.80	464.80	4.00	CO			J	0	
7	FC 448A	C	464.80	465.70	.90	ST			J	0	
8	FC 448A	C	465.70	467.20	1.50	CO			J	0	
9	FC 448A	C	467.20	475.40	8.20	SS				0	
10	FC 448A	C	475.40	479.90	4.50	CO			UI	0	
11	FC 448A	C	479.90	480.10	.20	SH				0	
12	FC 448A	C	480.10	483.65	3.55	CO			LI	1	
13	FC 448A	C	483.65	492.00	8.35	SS				0	
14	FC 448A	C	492.00	494.80	2.80	SH				0	
15	FC 448A	C	494.80	503.10	8.30	CO			LI	5	
16	FC 448A	C	503.10	503.70	.60	ND				0	LOSS
17	FC 448A	C	503.70	505.00	1.30	FC				0	
18	FC 448A	C	505.00	509.40	4.40	SS				0	
19	FC 448A	C	509.40	552.00	42.60	SS				0	
20	FC 448A	C	552.00	572.00	20.00	ND				0	
21	FC 448A	C	572.00	592.00	20.00	SS				0	
22	FC 448A	C	592.00	632.00	40.00	ND				0	
23	FC 448A	C	632.00	640.00	8.00	SS				0	
24	FC 448A	C	640.00	670.00	30.00	SS	SHY			0	
25	FC 448A	C	670.00	680.00	10.00	CO			C	0	
26	FC 448A	C	680.00	800.00	120.00	SH	SDY	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 449 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 10

SECTION CODE = SURFACE ELEV. = 6190.10 HOW DET. = 6

N-COORD = 210516 E-COORD = 2073531 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = EMERY EAST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 449 FORMAT = B PROPERTY OR FARM = DRILLER = POLLEY

DRILL CONTR = WHINNEN-WARD DATE DRILLED = 0479

TWP OR PLACE = COMMENTS = PIPE IN HOLE

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS		SEAM CODE	CORR.	COMMENTS
3	FC 449	C	.00	20.30	20.30	OB				0	
4	FC 449	C	20.30	751.50	731.20	SH				0	
5	FC 449	C	751.50	792.50	41.00	SS			TF	0	
6	FC 449	C	792.50	811.90	19.40	SS	COS			0	
7	FC 449	C	811.90	815.10	3.20	CO			UI	0	
8	FC 449	C	815.10	822.10	7.00	SH				0	
9	FC 449	C	822.10	826.30	4.20	CO			LI	0	
10	FC 449	C	826.30	847.10	20.80	SH	SDY			0	
11	FC 449	C	847.10	850.10	3.00	SS				0	
12	FC 449	C	850.10	850.40	.30	SH				0	
13	FC 449	C	850.40	854.80	4.40	CO			G	0	
14	FC 449	C	854.80	867.20	12.40	SH	COS			0	
15	FC 449	C	867.20	989.30	122.10	SS	COS			0	
16	FC 449	C	989.30	1080.00	90.70	SH	COS	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 450 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 17

SECTION CODE = SURFACE ELEV. = 6272.50 HOW DET. = 6

N-COORD = 208493 E-COORD = 2065907 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = EMERY WEST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 450 FORMAT = B PROPERTY OR FARM = DRILLER = GORDON

DRILL CONTR = WHINNEN-WARD DATE DRILLED = 0479

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 450	C	.00	49.00	49.00	OB			0	
4	FC 450	C	49.00	1005.00	956.00	SH			0	
5	FC 450	C	1005.00	1033.00	28.00	SS			0	
6	FC 450	C	1033.00	1044.20	11.20	SH			0	
7	FC 450	C	1044.20	1048.00	3.80	CO		K	0	
8	FC 450	C	1048.00	1084.00	36.00	SH			0	
9	FC 450	C	1084.00	1086.50	2.50	SS			0	
10	FC 450	C	1086.50	1090.70	4.20	SH			0	
11	FC 450	C	1090.70	1092.60	1.90	CO		LI	1	
12	FC 450	C	1092.60	1093.70	1.10	BO			0	
13	FC 450	C	1093.70	1094.50	.80	SH			0	
14	FC 450	C	1094.50	1127.00	32.50	SS	FGR SHY		0	
15	FC 450	C	1127.00	1152.00	25.00	SS	MGR		0	
16	FC 450	C	1152.00	1200.00	48.00	SH			0	
17	FC 450	C	1200.00	1207.10	7.10	SH			0	
18	FC 450	C	1207.10	1207.30	.20	CO		G	0	
19	FC 450	C	1207.30	1207.50	.20	SS		G	0	
20	FC 450	C	1207.50	1213.00	5.50	CO		G	0	
21	FC 450	C	1213.00	1214.40	1.40	CO		G	0	
22	FC 450	C	1214.40	1215.40	1.00	CL			0	
23	FC 450	C	1215.40	1248.00	32.60	SH			0	
24	FC 450	C	1248.00	1250.40	2.40	CO		D	0	
25	FC 450	C	1250.40	1252.10	1.70	FC			0	
26	FC 450	C	1252.10	1259.40	7.30	CO		C	0	
27	FC 450	C	1259.40	1267.00	7.60	SH			0	
28	FC 450	C	1267.00	1280.70	13.70	SH			0	
29	FC 450	C	1280.70	1286.00	5.30	CO		B	0	
30	FC 450	C	1286.00	1323.20	37.20	SH			0	
31	FC 450	C	1323.20	1326.10	2.90	CO		A	0	
32	FC 450	C	1326.10	1340.00	13.90	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 451 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 19

SECTION CODE = SURFACE ELEV. = 6066.10 HOW DET. = 6

N-COORD = 200557 E-COORD = 2059158 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = EMERY WEST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 451 FORMAT = B PROPERTY OR FARM = OLSON DRILLER = WARDLAW

DRILL CONTR = WARDLAW DATE DRILLED = 0479

TWP OR PLACE = COMMENTS = WATER WELL

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 451	C	.00	30.00	30.00	OB			0	
4	FC 451	C	30.00	393.00	363.00	SH			0	
5	FC 451	C	393.00	397.00	4.00	SS			0	
6	FC 451	C	397.00	756.50	359.50	SH			0	
7	FC 451	C	756.50	780.00	23.50	SS		TF	0	
8	FC 451	C	780.00	794.40	14.40	SS	SHY		0	
9	FC 451	C	794.40	795.00	.60	ND			0	
10	FC 451	C	795.00	795.80	.80	SH			0	
11	FC 451	C	795.80	796.40	.60	SH			0	
12	FC 451	C	796.40	803.50	7.10	SS			0	
13	FC 451	C	803.50	804.00	.50	BO			0	
14	FC 451	C	804.00	807.30	3.30	CO		K	0	
15	FC 451	C	807.30	807.70	.40	BO			0	
16	FC 451	C	807.70	815.00	7.30	SS			0	
17	FC 451	C	815.00	823.00	8.00	CL			0	
18	FC 451	C	823.00	840.00	17.00	SH			0	
19	FC 451	C	840.00	841.80	1.80	SS	GRY		0	
20	FC 451	C	841.80	845.90	4.10	SS	BUR		0	
21	FC 451	C	845.90	849.80	3.90	SS	SHY		0	
22	FC 451	C	849.80	849.80	.00	CO	EXH	J	0	
23	FC 451	C	849.80	850.00	.20	SH			0	
24	FC 451	C	850.00	851.40	1.40	CO		UI	0	
25	FC 451	C	851.40	868.60	17.20	SS	BUR RTD		0	
26	FC 451	C	868.60	870.70	2.10	CO		LI	1	
27	FC 451	C	870.70	871.00	.30	SS		LI	1	
28	FC 451	C	871.00	874.00	3.00	CO		LI	1	
29	FC 451	C	874.00	876.20	2.20	SH	COS		0	
30	FC 451	C	876.20	922.00	45.80	SH	HRD		0	
31	FC 451	C	922.00	924.00	2.00	SS	HRD		0	
32	FC 451	C	924.00	970.00	46.00	SS			0	
33	FC 451	C	970.00	986.60	16.60	SS	MGR		0	
34	FC 451	C	986.60	991.60	5.00	CO		G	0	
35	FC 451	C	991.60	994.00	2.40	SH			0	
36	FC 451	C	994.00	1030.00	36.00	SH			0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 451	C	1030.00	1033.00	3.00	CO		D	0	
38	FC 451	C	1033.00	1034.00	1.00	FC			0	
39	FC 451	C	1034.00	1040.00	6.00	CO		C	0	
40	FC 451	C	1040.00	1048.00	8.00	SH			0	
41	FC 451	C	1048.00	1073.00	25.00	SS			0	
42	FC 451	C	1073.00	1080.00	7.00	SH			0	
43	FC 451	C	1080.00	1089.00	9.00	SS			0	
44	FC 451	C	1089.00	1093.00	4.00	CO		A	0	
45	FC 451	C	1093.00	1094.00	1.00	SH			0	
46	FC 451	C	1094.00	1094.80	.80	CO			0	
47	FC 451	C	1094.80	1102.00	7.20	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 452 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 19

SECTION CODE = SURFACE ELEV. = 6195.50 HOW DET. = 6

N-COORD = 201159 E-COORD = 2062397 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = EMERY WEST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 452 FORMAT = B PROPERTY OR FARM = DRILLER = M. WARDLAW

DRILL CONTR = WARDLAW DATE DRILLED = 0000

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 452	C	.00	50.00	50.00	OB			0	
4	FC 452	C	50.00	785.00	735.00	SH			0	
5	FC 452	C	785.00	810.50	25.50	SS		TF	0	
6	FC 452	C	810.50	811.00	.50	CO		K	0	
7	FC 452	C	811.00	811.30	.30	SS		K	0	
8	FC 452	C	811.30	812.40	1.10	CO		K	0	
9	FC 452	C	812.40	893.00	80.60	ST			0	
10	FC 452	C	893.00	906.00	13.00	SS			0	
11	FC 452	C	906.00	910.00	4.00	CO		UI	0	
12	FC 452	C	910.00	912.00	2.00	SH			0	
13	FC 452	C	912.00	915.50	3.50	CO		LI	1	
14	FC 452	C	915.50	931.00	15.50	SH			0	
15	FC 452	C	931.00	1021.00	90.00	SS			0	
16	FC 452	C	1021.00	1044.50	23.50	SH			0	
17	FC 452	C	1044.50	1050.05	5.55	CO		G	0	
18	FC 452	C	1050.05	1085.00	34.95	ST			0	
19	FC 452	C	1085.00	1087.00	2.00	CO		D	0	
20	FC 452	C	1087.00	1089.00	2.00	FC			0	
21	FC 452	C	1089.00	1093.00	4.00	CO		C	0	
22	FC 452	C	1093.00	1093.50	.50	FC		C	0	
23	FC 452	C	1093.50	1095.50	2.00	CO		C	0	
24	FC 452	C	1095.50	1111.00	15.50	ST			0	
25	FC 452	C	1111.00	1130.00	19.00	SS			0	
26	FC 452	C	1130.00	1137.80	7.80	CO		A	0	
27	FC 452	C	1137.80	1183.00	45.20	SS			0	
28	FC 452	C	1183.00	1205.00	22.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 458 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 32

SECTION CODE = SURFACE ELEV. = 5934.30 HOW DET. = 6

N-COORD = 191436 E-COORD = 2066675 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 458 FORMAT = B PROPERTY OR FARM = DRILLER = M. WARDLAW

DRILL CONTR = WARDLAW DATE DRILLED = 0579

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 458	C	.00	19.00	19.00	OB			0	
4	FC 458	C	19.00	63.00	44.00	SH			0	
5	FC 458	C	63.00	125.00	62.00	SS		TF	0	
6	FC 458	C	125.00	125.70	.70	CO		J	1	
7	FC 458	C	125.70	130.03	4.33	SH			0	
8	FC 458	C	130.03	131.20	1.17	CO		J	3	
9	FC 458	C	131.20	132.30	1.10	SS			0	
10	FC 458	C	132.30	136.40	4.10	CO		UI	0	
11	FC 458	C	136.40	138.40	2.00	CO		UI	0	
12	FC 458	C	138.40	142.00	3.60	SH			0	
13	FC 458	C	142.00	154.10	12.10	CO		LI	0	
14	FC 458	C	154.10	155.50	1.40	FC			0	
15	FC 458	C	155.50	199.10	43.60	SH			0	
16	FC 458	C	199.10	200.00	.90	CO		G	0	
17	FC 458	C	200.00	200.10	.10	SS		G	0	
18	FC 458	C	200.10	205.45	5.35	CO		G	0	
19	FC 458	C	205.45	205.90	.45	CL			0	
20	FC 458	C	205.90	242.30	36.40	SH			0	
21	FC 458	C	242.30	243.40	1.10	SS			0	
22	FC 458	C	243.40	250.80	7.40	SS			0	
23	FC 458	C	250.80	251.60	.80	SH			0	
24	FC 458	C	251.60	253.60	2.00	CO		D	0	
25	FC 458	C	253.60	254.40	.80	SS			0	
26	FC 458	C	254.40	261.10	6.70	CO		C	0	
27	FC 458	C	261.10	261.80	.70	CL			0	
28	FC 458	C	261.80	265.00	3.20	ND			0	
29	FC 458	C	265.00	279.00	14.00	SH			0	
30	FC 458	C	279.00	400.00	121.00	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 460B FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 33

SECTION CODE = SURFACE ELEV. = 6051.00 HOW DET. = 6

N-COORD = 190382 E-COORD = 2068530 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 460B FORMAT = B PROPERTY OR FARM = DRILLER = L. POLLEY

DRILL CONTR = WHINNEN-WARD DATE DRILLED = 0579

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 460B	C	.00	50.00	50.00	SS		TF	0	
4	FC 460B	C	50.00	99.50	49.50	SS			0	
5	FC 460B	C	99.50	100.90	1.40	CO		UJ	0	
6	FC 460B	C	100.90	101.20	.30	BO			0	
7	FC 460B	C	101.20	102.70	1.50	SH			0	
8	FC 460B	C	102.70	103.70	1.00	SH			0	
9	FC 460B	C	103.70	105.00	1.30	SH			0	
10	FC 460B	C	105.00	108.30	3.30	SS			0	
11	FC 460B	C	108.30	109.20	.90	SH			0	
12	FC 460B	C	109.20	110.00	.80	ND			0	
13	FC 460B	C	110.00	115.00	5.00	SH			0	
14	FC 460B	C	115.00	118.60	3.60	SS			0	
15	FC 460B	C	118.60	119.20	.60	SH			0	
16	FC 460B	C	119.20	125.10	5.90	CO		UI	0	
17	FC 460B	C	125.10	125.40	.30	BO			0	
18	FC 460B	C	125.40	136.50	11.10	SH			0	
19	FC 460B	C	136.50	149.80	13.30	CO		LI	0	
20	FC 460B	C	149.80	150.00	.20	BO			0	
21	FC 460B	C	150.00	150.80	.80	SH			0	
22	FC 460B	C	150.80	158.00	7.20	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 461 FORMAT = A STATE = 43 COUNTY = 015 TWP = 23S RANGE = 6E SECTION = 05

SECTION CODE = SURFACE ELEV. = 6024.00 HOW DET. = 6

N-COORD = 187096 E-COORD = 2063658 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 461 FORMAT = B PROPERTY OR FARM = DRILLER = M. WARDLAW

DRILL CONTR = WHINNEN-WARD DATE DRILLED = 0579

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 461	C	.00	34.00	34.00	SH			0	
4	FC 461	C	34.00	177.00	143.00	SS		TF	0	
5	FC 461	C	177.00	178.50	1.50	CO			0	
6	FC 461	C	178.50	190.00	11.50	SS			0	
7	FC 461	C	190.00	195.70	5.70	SS			0	
8	FC 461	C	195.70	199.20	3.50	SS			0	
9	FC 461	C	199.20	206.40	7.20	CO		UI	0	
10	FC 461	C	206.40	207.20	.80	CL			0	
11	FC 461	C	207.20	214.00	6.80	SH			0	
12	FC 461	C	214.00	235.70	21.70	SS			0	
13	FC 461	C	235.70	236.30	.60	BO			0	
14	FC 461	C	236.30	237.20	.90	SH			0	
15	FC 461	C	237.20	239.30	2.10	CO		LI	1	
16	FC 461	C	239.30	240.00	.70	BO		LI	1	
17	FC 461	C	240.00	243.20	3.20	CO		LI	1	
18	FC 461	C	243.20	246.40	3.20	BO			0	
19	FC 461	C	246.40	286.00	39.60	SS			0	
20	FC 461	C	286.00	324.40	38.40	SS			0	
21	FC 461	C	324.40	330.00	5.60	SS			0	
22	FC 461	C	330.00	334.00	4.00	SS			0	
23	FC 461	C	334.00	334.40	.40	SH			0	
24	FC 461	C	334.40	336.50	2.10	SS			0	
25	FC 461	C	336.50	337.00	.50	SH			0	
26	FC 461	C	337.00	338.80	1.80	CO		G	0	
27	FC 461	C	338.80	340.00	1.20	ND		G	0	
28	FC 461	C	340.00	343.00	3.00	CO		G	0	
29	FC 461	C	343.00	343.20	.20	BO			0	
30	FC 461	C	343.20	346.00	2.80	CL			0	
31	FC 461	C	346.00	380.00	34.00	SS			0	
32	FC 461	C	380.00	387.20	7.20	SH			0	
33	FC 461	C	387.20	390.60	3.40	SS			0	
34	FC 461	C	390.60	392.80	2.20	CO		D	0	
35	FC 461	C	392.80	393.10	.30	FC		D	0	
36	FC 461	C	393.10	394.20	1.10	CO		D	0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 461	C	394.20	395.00	.80	ND			0	
38	FC 461	C	395.00	401.20	6.20	CO	SHY	C	0	
39	FC 461	C	401.20	403.10	1.90	CL			0	
40	FC 461	C	403.10	404.00	.90	ND			0	
41	FC 461	C	404.00	415.00	11.00	SH			0	
42	FC 461	C	415.00	423.20	8.20	SS			0	
43	FC 461	C	423.20	425.70	2.50	CO		A	0	
44	FC 461	C	425.70	429.50	3.80	CO		A	0	
45	FC 461	C	429.50	430.00	.50	ND		A	0	
46	FC 461	C	430.00	435.20	5.20	CO		A	0	
48	FC 461	C	435.20	445.00	9.80	SS	BH		0	

SEQ NO. = 1 DRILL HOLE NO = FC 463 FORMAT = A STATE = 43 COUNTY = 015 TWP = 23S RANGE = 6E SECTION = 06

SECTION CODE = SURFACE ELEV. = 6116.00 HOW DET. = 6

N-COORD = 185417 E-COORD = 2061297 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 463 FORMAT = B PROPERTY OR FARM = DRILLER = DALTON

DRILL CONTR = WARDLAW DATE DRILLED = 0579

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 463	C	.00	270.00	270.00	SH			0	
4	FC 463	C	270.00	306.50	36.50	SS		TF	0	
5	FC 463	C	306.50	334.00	27.50	SH			0	
6	FC 463	C	334.00	364.00	30.00	SS			0	
7	FC 463	C	364.00	368.00	4.00	SH			0	
8	FC 463	C	368.00	370.50	2.50	CO		K	0	
9	FC 463	C	370.50	374.60	4.10	SS			0	
10	FC 463	C	374.60	377.00	2.40	SH			0	
11	FC 463	C	377.00	378.90	1.90	CO		J	0	
12	FC 463	C	378.90	384.10	5.20	SS			0	
13	FC 463	C	384.10	385.40	1.30	CO		UI	0	
14	FC 463	C	385.40	385.80	.40	BO		UI	0	
15	FC 463	C	385.80	391.00	5.20	CO		UI	0	
16	FC 463	C	391.00	410.00	19.00	SH			0	
17	FC 463	C	410.00	435.60	25.60	SS			0	
18	FC 463	C	435.60	435.90	.30	CO			0	
19	FC 463	C	435.90	436.60	.70	BO			0	
20	FC 463	C	436.60	439.00	2.40	CO		LI	1	
21	FC 463	C	439.00	439.60	.60	BO		LI	1	
22	FC 463	C	439.60	443.50	3.90	CO		LI	1	
23	FC 463	C	443.50	449.00	5.50	SH			0	
24	FC 463	C	449.00	452.00	3.00	CO		LI	5	
25	FC 463	C	452.00	503.00	51.00	SH			0	
26	FC 463	C	503.00	516.20	13.20	SS			0	
27	FC 463	C	516.20	518.20	2.00	SH			0	
28	FC 463	C	518.20	522.00	3.80	CO		G	0	
29	FC 463	C	522.00	569.00	47.00	SH			0	
30	FC 463	C	569.00	578.40	9.40	SS			0	
31	FC 463	C	578.40	582.10	3.70	CO		D	0	
32	FC 463	C	582.10	585.00	2.90	SH			0	
33	FC 463	C	585.00	589.00	4.00	CO		C	0	
34	FC 463	C	589.00	609.00	20.00	SH			0	
35	FC 463	C	609.00	615.00	6.00	SS			0	
36	FC 463	C	615.00	618.00	3.00	SH			0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 463	C	618.00	628.00	10.00	CO		A	0	
38	FC 463	C	628.00	634.00	6.00	SH			0	
39	FC 463	C	634.00	639.00	5.00	CO		LA	0	
40	FC 463	C	639.00	641.00	2.00	SH			0	
41	FC 463	C	641.00	647.00	6.00	SS			0	
42	FC 463	C	647.00	654.00	7.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 469 FORMAT = A STATE = 43 COUNTY = 015 TWP = 23S RANGE = 6E SECTION = 08

SECTION CODE = SURFACE ELEV. = 6140.50 HOW DET. = 6

N-COORD = 178295 E-COORD = 2063986 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 469 FORMAT = B PROPERTY OR FARM = DRILLER = GORDON

DRILL CONTR = WHINNEN-WARD DATE DRILLED = 0579

TWP OR PLACE = STRIP 2 COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 469	C	.00	35.00	35.00	SS		TF	0	
4	FC 469	C	35.00	45.00	10.00	SH			0	
5	FC 469	C	45.00	75.00	30.00	SS			0	
6	FC 469	C	75.00	82.00	7.00	SH			0	
7	FC 469	C	82.00	85.00	3.00	CO		UI	0	
8	FC 469	C	85.00	120.00	35.00	SH			0	
9	FC 469	C	120.00	136.00	16.00	SS			0	
10	FC 469	C	136.00	143.30	7.30	SS			0	
11	FC 469	C	143.30	146.10	2.80	CO		LI	1	
12	FC 469	C	146.10	147.40	1.30	SH			0	
13	FC 469	C	147.40	155.00	7.60	ST			0	
14	FC 469	C	155.00	158.00	3.00	CO	SHY	LI	5	
15	FC 469	C	158.00	183.50	25.50	SS			0	
16	FC 469	C	183.50	234.00	50.50	SH			0	
17	FC 469	C	234.00	236.50	2.50	CO		G	0	
18	FC 469	C	236.50	258.00	21.50	SH			0	
19	FC 469	C	258.00	259.00	1.00	BO		D	0	
20	FC 469	C	259.00	264.00	5.00	CO		D	0	
21	FC 469	C	264.00	264.90	.90	SH			0	
22	FC 469	C	264.90	268.20	3.30	CO		C	0	
23	FC 469	C	268.20	279.00	10.80	SH			0	
24	FC 469	C	279.00	296.70	17.70	SS			0	
25	FC 469	C	296.70	299.10	2.40	SH			0	
26	FC 469	C	299.10	305.00	5.90	SH			0	
27	FC 469	C	305.00	305.80	.80	SH			0	
28	FC 469	C	305.80	307.20	1.40	SS			0	
29	FC 469	C	307.20	307.60	.40	SH			0	
30	FC 469	C	307.60	313.50	5.90	CO		A	0	
31	FC 469	C	313.50	325.00	11.50	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 470 FORMAT = A STATE = 43 COUNTY = 015 TWP = 23S RANGE = 6E SECTION = 07

SECTION CODE = SURFACE ELEV. = 6041.90 HOW DET. = 6

N-COORD = 178396 E-COORD = 2061645 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 470 FORMAT = B PROPERTY OR FARM = DRILLER = GORDON

DRILL CONTR = WHINNEN-WARD DATE DRILLED = 0679

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 470	C	.00	39.00	39.00	SH			0	
4	FC 470	C	39.00	41.00	2.00	CO		M	0	
5	FC 470	C	41.00	78.40	37.40	SH			0	
6	FC 470	C	78.40	80.40	2.00	CO			0	
7	FC 470	C	80.40	81.60	1.20	SH			0	
8	FC 470	C	81.60	83.00	1.40	CO			0	
9	FC 470	C	83.00	90.10	7.10	SH			0	
10	FC 470	C	90.10	93.00	2.90	CO		UI	0	
11	FC 470	C	93.00	158.80	65.80	SS			0	
12	FC 470	C	158.80	162.15	3.35	CO		LI	1	
13	FC 470	C	162.15	163.25	1.10	CL			0	
14	FC 470	C	163.25	167.30	4.05	CO		LI	5	
15	FC 470	C	167.30	167.80	.50	CL			0	
16	FC 470	C	167.80	175.00	7.20	SS			0	
17	FC 470	C	175.00	244.00	69.00	SH			0	
18	FC 470	C	244.00	245.90	1.90	CO		G	0	
19	FC 470	C	245.90	256.00	10.10	SH			0	
20	FC 470	C	256.00	271.10	15.10	SS			0	
21	FC 470	C	271.10	272.40	1.30	SH			0	
22	FC 470	C	272.40	275.00	2.60	SH			0	
23	FC 470	C	275.00	279.60	4.60	CO		D	0	
24	FC 470	C	279.60	280.40	.80	FC			0	
25	FC 470	C	280.40	283.80	3.40	CO		C	0	
26	FC 470	C	283.80	284.30	.50	FC		C	0	
27	FC 470	C	284.30	287.00	2.70	ND	CLY		0	
28	FC 470	C	287.00	296.00	9.00	SH			0	
29	FC 470	C	296.00	350.00	54.00	SS			0	
30	FC 470	C	350.00	351.50	1.50	SH			0	
31	FC 470	C	351.50	359.75	8.25	CO		A	0	
32	FC 470	C	359.75	372.00	12.25	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 472 FORMAT = A STATE = 43 COUNTY = 015 TWP = 23S RANGE = 6E SECTION = 06

SECTION CODE = SURFACE ELEV. = 6035.00 HOW DET. = 6

N-COORD = 187836 E-COORD = 2059463 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 472 FORMAT = B PROPERTY OR FARM = DRILLER = DALTON

DRILL CONTR = WARDLAW DATE DRILLED = 0679

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 472	C	.00	10.00	10.00	OB			0	
4	FC 472	C	10.00	57.00	47.00	IN			0	
5	FC 472	C	57.00	356.50	299.50	SH			0	
6	FC 472	C	356.50	426.50	70.00	SS		TF	0	
7	FC 472	C	426.50	433.60	7.10	SH			0	
8	FC 472	C	433.60	435.00	1.40	CO			0	
9	FC 472	C	435.00	442.50	7.50	SH	PYT		0	
10	FC 472	C	442.50	444.30	1.80	SS	PYT RTD		0	
11	FC 472	C	444.30	444.50	.20	SH			0	
12	FC 472	C	444.50	446.10	1.60	CO		K	0	
13	FC 472	C	446.10	446.70	.60	FC		K	0	
14	FC 472	C	446.70	448.70	2.00	CO	FRK PYT	K	0	
15	FC 472	C	448.70	449.00	.30	SH			0	
16	FC 472	C	449.00	450.00	1.00	ND			0	
17	FC 472	C	450.00	452.10	2.10	SH			0	
18	FC 472	C	452.10	456.40	4.30	SS	LFS		0	
19	FC 472	C	456.40	457.50	1.10	SH			0	
20	FC 472	C	457.50	457.90	.40	SS	LFS		0	
21	FC 472	C	457.90	459.00	1.10	ND			0	
22	FC 472	C	459.00	460.60	1.60	SS	LFS		0	
23	FC 472	C	460.60	461.40	.80	SS	COS		0	
24	FC 472	C	461.40	462.20	.80	SH	LFS		0	
25	FC 472	C	462.20	463.40	1.20	SH			0	
26	FC 472	C	463.40	465.20	1.80	SH			0	
27	FC 472	C	465.20	469.20	4.00	CO		J	0	
28	FC 472	C	469.20	472.20	3.00	SH	CAR COL		0	
29	FC 472	C	472.20	475.70	3.50	CO		UI	0	
30	FC 472	C	475.70	477.20	1.50	SH	CAR COL		0	
31	FC 472	C	477.20	489.00	11.80	CO		LI	0	
32	FC 472	C	489.00	489.80	.80	SH	SFT		0	
33	FC 472	C	489.80	490.20	.40	ND			0	
34	FC 472	C	490.20	510.00	19.80	SH			0	
35	FC 472	C	510.00	532.10	22.10	SS			0	
36	FC 472	C	532.10	534.00	1.90	SH			0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 472	C	[illegible]	[illegible]	2.60	SH			0	
38	FC 472	C	[illegible]	540.00	3.40	SH			0	
39	FC 472	C	540.00	540.60	.60	SH			0	
40	FC 472	C	540.60	541.20	.60	SH			0	
41	FC 472	C	541.20	543.20	2.00	SS			0	
42	FC 472	C	543.20	546.50	3.30	SH			0	
43	FC 472	C	546.50	547.20	.70	BO			0	
44	FC 472	C	547.20	549.20	2.00	CO		G	0	
45	FC 472	C	549.20	551.00	1.80	ND		G	0	
46	FC 472	C	551.00	552.30	1.30	CO		G	0	
47	FC 472	C	552.30	552.90	.60	BO			0	
48	FC 472	C	552.90	553.50	.60	SH			0	
49	FC 472	C	553.50	562.70	9.20	SS			0	
50	FC 472	C	562.70	565.00	2.30	ND			0	
51	FC 472	C	565.00	590.00	25.00	SS			0	
52	FC 472	C	590.00	601.00	11.00	SH			0	
53	FC 472	C	601.00	602.50	1.50	SS	BUR RTD		0	
54	FC 472	C	602.50	603.50	1.00	SS			0	
55	FC 472	C	603.50	621.60	18.10	SS			0	
56	FC 472	C	621.60	626.10	4.50	CO	PYT	D	0	
57	FC 472	C	626.10	627.40	1.30	SH			0	
59	FC 472	C	627.40	630.20	2.80	CO		C	0	
60	FC 472	C	630.20	630.60	.40	BO		C	0	
61	FC 472	C	630.60	632.00	1.40	CO		C	0	
62	FC 472	C	469.20	472.20	3.00	SH	CAR COL		0	
63	FC 472	C	632.00	632.50	.50	SH			0	
64	FC 472	C	632.50	633.20	.70	CO			0	
65	FC 472	C	633.20	636.20	3.00	SH			0	
66	FC 472	C	636.20	640.00	3.80	SH	CLS		0	
67	FC 472	C	640.00	647.10	7.10	SH	BUR		0	
68	FC 472	C	647.10	655.80	8.70	SS	BUR RTD		0	
69	FC 472	C	655.80	660.00	4.20	ND			0	
70	FC 472	C	660.00	695.00	35.00	SS	MGR		0	
71	FC 472	C	695.00	697.00	2.00	SS	MGR BUR		0	
72	FC 472	C	697.00	698.60	1.60	SS	CGR HRD		0	
73	FC 472	C	698.60	707.80	9.20	CO		A	0	
74	FC 472	C	707.80	710.00	2.20	ND		A	0	
75	FC 472	C	710.00	711.20	1.20	CO		A	0	
76	FC 472	C	711.20	711.40	.20	SH			0	
77	FC 472	C	711.40	713.80	2.40	SH	COS		0	
78	FC 472	C	713.80	719.00	5.20	ND			0	
79	FC 472	C	719.00	725.00	6.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 473 FORMAT = A STATE = 43 COUNTY = 015 TWP = 23S RANGE = 6E SECTION = 31

SECTION CODE = SURFACE ELEV. = 5984.10 HOW DET. = 6

N-COORD = 189730 E-COORD = 2062451 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 473 FORMAT = B PROPERTY OR FARM = DRILLER = WARDLAW

DRILL CONTR = WARDLAW DATE DRILLED = 0679

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 473	C	.00	30.00	30.00	OB			0	
4	FC 473	C	30.00	224.00	194.00	SH			0	
5	FC 473	C	224.00	224.00	.00	SS		TF	0	
6	FC 473	C	224.00	310.00	86.00	SS			0	
7	FC 473	C	310.00	323.00	13.00	SS	LFS		0	
8	FC 473	C	323.00	323.50	.50	ND			0	
9	FC 473	C	323.50	324.20	.70	SS	LFS PYT		0	
10	FC 473	C	324.20	327.00	2.80	CO	PYT		0	
11	FC 473	C	327.00	328.40	1.40	SH	PYT		0	
12	FC 473	C	328.40	329.50	1.10	SH			0	
13	FC 473	C	329.50	340.00	10.50	SH			0	
14	FC 473	C	340.00	340.30	.30	SH			0	
15	FC 473	C	340.30	341.40	1.10	SS	LFS		0	
16	FC 473	C	341.40	341.60	.20	BO			0	
17	FC 473	C	341.60	342.10	.50	CO			0	
18	FC 473	C	342.10	343.20	1.10	SH	COS		0	
19	FC 473	C	343.20	347.10	3.90	SS	LFS COS		0	
20	FC 473	C	347.10	347.40	.30	SH			0	
21	FC 473	C	347.40	347.90	.50	SH			0	
22	FC 473	C	347.90	349.10	1.20	SH			0	
23	FC 473	C	349.10	350.00	.90	ND			0	
24	FC 473	C	350.00	350.80	.80	SS	FGR		0	
25	FC 473	C	350.80	352.50	1.70	SH			0	
26	FC 473	C	352.50	354.60	2.10	CO		K	0	
27	FC 473	C	354.60	354.80	.20	CL		K	0	
28	FC 473	C	354.80	357.10	2.30	CO		K	0	
29	FC 473	C	357.10	358.00	.90	SH			0	
30	FC 473	C	358.00	358.20	.20	BO			0	
31	FC 473	C	358.20	359.00	.80	SH			0	
32	FC 473	C	359.00	360.00	1.00	ND			0	
33	FC 473	C	360.00	360.60	.60	SH			0	
34	FC 473	C	360.60	363.90	3.30	SS	LFS		0	
35	FC 473	C	363.90	364.60	.70	SH			0	
36	FC 473	C	364.60	365.00	.40	ND			0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 473	C	365.00	367.60	2.60	SH			0	
38	FC 473	C	367.60	368.65	1.05	CO		J	0	
39	FC 473	C	368.65	368.70	.05	SH		J	0	
40	FC 473	C	368.70	369.10	.40	CO		J	0	
41	FC 473	C	369.10	369.30	.20	SH		J	0	
42	FC 473	C	369.30	372.00	2.70	CO	PYT	J	0	
43	FC 473	C	372.00	372.80	.80	FC			0	
44	FC 473	C	372.80	379.00	6.20	CO		UI	0	
45	FC 473	C	379.00	379.35	.35	CL			0	
46	FC 473	C	379.35	388.60	9.25	CO		LI	0	
47	FC 473	C	388.60	389.00	.40	BO			0	
48	FC 473	C	389.00	396.00	7.00	SH			0	
49	FC 473	C	396.00	430.00	34.00	SH			0	
50	FC 473	C	430.00	432.30	2.30	SS	LFS SHS		0	
51	FC 473	C	432.30	435.10	2.80	SH			0	
52	FC 473	C	435.10	435.30	.20	SS			0	
53	FC 473	C	435.30	436.10	.80	SH			0	
54	FC 473	C	436.10	437.70	1.60	FC			0	
55	FC 473	C	437.70	438.20	.50	SS			0	
56	FC 473	C	438.20	440.00	1.80	ND			0	
57	FC 473	C	440.00	440.30	.30	SH			0	
58	FC 473	C	440.30	441.80	1.50	SS			0	
59	FC 473	C	441.80	446.20	4.40	SS	LFS		0	
60	FC 473	C	446.20	452.40	6.20	SH			0	
61	FC 473	C	452.40	452.80	.40	BO			0	
62	FC 473	C	452.80	453.30	.50	CO		G	0	
63	FC 473	C	453.30	453.50	.20	FC		G	0	
64	FC 473	C	453.50	458.40	4.90	CO		G	0	
65	FC 473	C	458.40	460.00	1.60	ND			0	
66	FC 473	C	460.00	473.50	13.50	BO			0	
67	FC 473	C	473.50	482.50	9.00	SH			0	
68	FC 473	C	482.50	483.20	.70	SH	FRK		0	
69	FC 473	C	483.20	483.60	.40	FC			0	
70	FC 473	C	483.60	485.10	1.50	CO	PYT	D	0	
71	FC 473	C	485.10	485.30	.20	BO		D	0	
72	FC 473	C	485.30	487.40	2.10	CO	PYT	D	0	
73	FC 473	C	487.40	487.80	.40	BO		D	0	
74	FC 473	C	487.80	488.80	1.00	CO	PYT	D	0	
75	FC 473	C	488.80	489.20	.40	BO		D	0	
76	FC 473	C	489.20	490.20	1.00	CO		D	0	
77	FC 473	C	490.20	490.80	.60	SH			0	
78	FC 473	C	490.80	492.00	1.20	SH			0	
79	FC 473	C	492.00	495.00	3.00	CO		C	0	
80	FC 473	C	495.00	498.50	3.50	CO		C	0	
81	FC 473	C	498.50	509.00	10.50	SH			0	
82	FC 473	C	509.00	518.00	9.00	SS			0	
83	FC 473	C	518.00	536.00	18.00	SH	LFS RTD		0	
84	FC 473	C	536.00	537.70	1.70	SS	RTD COS		0	
85	FC 473	C	537.70	544.00	6.30	CO	FRK	A	0	
86	FC 473	C	544.00	544.90	.90	BO			0	
87	FC 473	C	544.90	550.00	5.10	SS	BRN RTD		0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS		SEAM CODE	CORR.	COMMENTS
88	FC 473	C	550.00	558.00	8.00	SS	GRY	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 475 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 31

SECTION CODE = SURFACE ELEV. = 6069.30 HOW DET. = 6

N-COORD = 189872 E-COORD = 2058089 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 475 FORMAT = B PROPERTY OR FARM = DRILLER = POLLEY

DRILL CONTR = WHINNEN-WARD DATE DRILLED = 0679

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 475	C	.00	22.00	22.00	OB			0	
4	FC 475	C	22.00	570.00	548.00	SH			0	
5	FC 475	C	570.00	570.00	.00	SS		TF	0	
6	FC 475	C	570.00	619.40	49.40	SS	MGR BUR		0	
7	FC 475	C	619.40	622.60	3.20	SS	SHY		0	
8	FC 475	C	622.60	623.50	.90	SS	SHY COS		0	
9	FC 475	C	623.50	625.00	1.50	CO	FRK	UK	0	
10	FC 475	C	625.00	629.00	4.00	SH			0	
11	FC 475	C	629.00	629.60	.60	CO	FRK		0	
12	FC 475	C	629.60	634.00	4.40	SS	LFS BUR COS		0	
13	FC 475	C	634.00	640.00	6.00	ND			0	
14	FC 475	C	640.00	641.80	1.80	CO		K	0	
15	FC 475	C	641.80	642.20	.40	BO		K	0	
16	FC 475	C	642.20	643.40	1.20	CO		K	0	
17	FC 475	C	643.40	644.40	1.00	SH			0	
18	FC 475	C	644.40	649.40	5.00	SS	BUR LFS		0	
19	FC 475	C	649.40	652.70	3.30	ND	SHY		0	
20	FC 475	C	652.70	655.70	3.00	SH	BUR		0	
21	FC 475	C	655.70	659.52	3.82	CO	FRK	J	0	
22	FC 475	C	659.52	659.60	.08	FC			0	
23	FC 475	C	659.60	660.00	.40	CO		UI	0	
24	FC 475	C	660.00	663.52	3.52	CO		UI	0	
25	FC 475	C	663.52	667.03	3.51	ND		UI	0	
26	FC 475	C	667.03	677.80	10.77	CO		LI	0	
27	FC 475	C	677.80	678.00	.20	CL			0	
28	FC 475	C	678.00	682.00	4.00	ND			0	
29	FC 475	C	682.00	692.00	10.00	SH			0	
30	FC 475	C	692.00	701.00	9.00	SS			0	
31	FC 475	C	701.00	716.00	15.00	SH			0	
32	FC 475	C	716.00	727.00	11.00	SS	SHY FGR		0	
33	FC 475	C	727.00	749.00	22.00	SS	MGR		0	
34	FC 475	C	749.00	751.00	2.00	ND			0	
35	FC 475	C	751.00	752.70	1.70	SS	MGR		0	
36	FC 475	C	752.70	753.20	.50	BO			0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 475	C	753.20	758.50	5.30	CO	PYT	G	0	
38	FC 475	C	758.50	760.20	1.70	BO			0	
39	FC 475	C	760.20	761.40	1.20	SS	LFS		0	
40	FC 475	C	761.40	762.50	1.10	BO			0	
41	FC 475	C	762.50	764.00	1.50	ND			0	
42	FC 475	C	764.00	782.00	18.00	SS	LFS		0	
43	FC 475	C	782.00	790.40	8.40	SS	MGR		0	
44	FC 475	C	790.40	792.00	1.60	ND			0	
45	FC 475	C	792.00	803.00	11.00	SS	MGR		0	
46	FC 475	C	803.00	806.00	3.00	CO		D	0	
47	FC 475	C	806.00	807.00	1.00	FC			0	
48	FC 475	C	807.00	812.60	5.60	CO		C	0	
49	FC 475	C	812.60	813.40	.80	FC		C	0	
50	FC 475	C	813.40	816.80	3.40	CO		C	0	
51	FC 475	C	816.80	817.40	.60	BO			0	
52	FC 475	C	817.40	824.00	6.60	SS	FGR BUR		0	
53	FC 475	C	824.00	830.00	6.00	SH			0	
54	FC 475	C	830.00	845.00	15.00	SS			0	
55	FC 475	C	845.00	856.50	11.50	SH	COS		0	
56	FC 475	C	856.50	861.00	4.50	CO		A	0	
57	FC 475	C	861.00	865.70	4.70	ND		A	0	
58	FC 475	C	865.70	868.00	2.30	CO	FRK PYT	A	0	
59	FC 475	C	868.00	868.40	.40	BO			0	
60	FC 475	C	868.40	870.10	1.70	LS	PYT		0	
61	FC 475	C	870.10	876.00	5.90	ND	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 476 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 31

SECTION CODE = SURFACE ELEV. = 6045.90 HOW DET. = 6

N-COORD. = 191391 E-COORD = 2057829 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 476 FORMAT = B PROPERTY OR FARM = DRILLER = DALTON

DRILL CONTR = WARDLAW DATE DRILLED = 0679

TWP OR PLACE = COMMENTS = STRONG ARTESIAN

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 476	C	.00	30.00	30.00	OB			0	
4	FC 476	C	30.00	576.00	546.00	SH			0	
5	FC 476	C	576.00	576.00	.00	SS		TF	0	
6	FC 476	C	576.00	627.00	51.00	SS	MGR		0	
7	FC 476	C	627.00	648.60	21.60	SS	LFS RTD COS		0	
8	FC 476	C	648.60	649.10	.50	CO			0	
9	FC 476	C	649.10	650.60	1.50	SH			0	
10	FC 476	C	650.60	653.00	2.40	CO	FRK	K	1	
11	FC 476	C	653.00	654.80	1.80	SH	COS		0	
12	FC 476	C	654.80	661.00	6.20	ND	SHY		0	
13	FC 476	C	661.00	663.00	2.00	SH	RTD		0	
14	FC 476	C	663.00	666.80	3.80	CO	FRK PYT	K	3	
15	FC 476	C	666.80	667.50	.70	SH			0	
16	FC 476	C	667.50	669.80	2.30	SS	RTD PYT		0	
17	FC 476	C	669.80	676.00	6.20	ND	SHY		0	
18	FC 476	C	676.00	679.40	3.40	SH			0	
19	FC 476	C	679.40	682.20	2.80	CO		J	0	
20	FC 476	C	682.20	682.40	.20	FC		J	0	
21	FC 476	C	682.40	683.40	1.00	CO		J	0	
22	FC 476	C	683.40	687.00	3.60	SH			0	
23	FC 476	C	687.00	691.60	4.60	CO		UI	0	
24	FC 476	C	691.60	692.80	1.20	SH	CRB		0	
25	FC 476	C	692.80	703.40	10.60	CO		LI	0	
26	FC 476	C	703.40	706.00	2.60	ND			0	
27	FC 476	C	706.00	723.00	17.00	SH			0	
28	FC 476	C	723.00	754.00	31.00	SH			0	
29	FC 476	C	754.00	774.00	20.00	SS	CGR		0	
30	FC 476	C	774.00	774.40	.40	CN			0	
31	FC 476	C	774.40	774.70	.30	SS			0	
32	FC 476	C	774.70	775.00	.30	CN			0	
33	FC 476	C	775.00	775.50	.50	CO		G	0	
34	FC 476	C	775.50	776.00	.50	ND		G	0	
35	FC 476	C	776.00	777.00	1.00	CO		G	0	
36	FC 476	C	777.00	781.00	4.00	ND		G	0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 476	C	781.00	783.00	2.00	ND	SHY		0	
38	FC 476	C	783.00	795.00	12.00	SH			0	
39	FC 476	C	795.00	822.00	27.00	SS	CGR		0	
40	FC 476	C	822.00	826.00	4.00	ND			0	
41	FC 476	C	826.00	828.50	2.50	SS	MGR		0	
42	FC 476	C	828.50	828.80	.30	BO			0	
43	FC 476	C	828.80	832.50	3.70	CO	FRK	D	0	
44	FC 476	C	832.50	834.00	1.50	FC	FRK		0	
45	FC 476	C	834.00	840.00	6.00	CO	FRK	C	0	
46	FC 476	C	840.00	850.00	10.00	SH			0	
47	FC 476	C	850.00	873.00	23.00	SH			0	
48	FC 476	C	873.00	874.00	1.00	SH			0	
49	FC 476	C	874.00	876.00	2.00	CO			0	
50	FC 476	C	876.00	892.00	16.00	SH			0	
51	FC 476	C	892.00	896.00	4.00	CO		A	0	
52	FC 476	C	896.00	925.00	29.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 478 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 15

SECTION CODE = SURFACE ELEV. = 6162.00 HOW DET. = 6

N-COORD = 209926 E-COORD = 2077075 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = EMERY EAST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 478 FORMAT = B PROPERTY OR FARM = DRILLER = WARDLAW

DRILL CONTR = WARDLAW DATE DRILLED = 0779

TWP OR PLACE = COMMENTS = E-LOG INTERPRETA

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 478	C	.00	19.00	19.00	OB			0	
4	FC 478	C	19.00	569.00	550.00	SH			0	
5	FC 478	C	569.00	616.00	47.00	SS		TF	0	
6	FC 478	C	616.00	633.00	17.00	SH			0	
7	FC 478	C	633.00	644.00	11.00	SS			0	
8	FC 478	C	644.00	646.00	2.00	SH			0	
9	FC 478	C	646.00	648.50	2.50	CO		UI	0	
10	FC 478	C	648.50	650.00	1.50	SH			0	
11	FC 478	C	650.00	657.90	7.90	CO		LI	1	
12	FC 478	C	657.90	680.00	22.10	SH			0	
13	FC 478	C	680.00	685.00	5.00	CO		LI	5	
14	FC 478	C	685.00	702.50	17.50	SH			0	
15	FC 478	C	702.50	707.30	4.80	CO	SHY	G	0	
16	FC 478	C	707.30	777.00	69.70	SS			0	
17	FC 478	C	777.00	778.00	1.00	CO		D	0	
18	FC 478	C	778.00	780.00	2.00	SH			0	
19	FC 478	C	780.00	787.00	7.00	CO		C	0	
20	FC 478	C	787.00	805.30	18.30	SS	SHY		0	
21	FC 478	C	805.30	808.30	3.00	BO			0	
22	FC 478	C	808.30	820.00	11.70	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 479 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 14

SECTION CODE = SURFACE ELEV. = 6148.00 HOW DET. = 6

N-COORD = 207534 E-COORD = 2080076 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 479 FORMAT = B PROPERTY OR FARM = DRILLER = GORDON

DRILL CONTR = WHINNEN-WARD DATE DRILLED = 0679

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 479	C	.00	23.00	23.00	OB			0	
4	FC 479	C	23.00	321.00	298.00	SH			0	
5	FC 479	C	321.00	363.50	42.50	SS		TF	0	
6	FC 479	C	363.50	364.45	.95	CO			0	
7	FC 479	C	364.45	374.00	9.55	SH			0	
8	FC 479	C	374.00	382.00	8.00	CO	PYT	UI	0	
9	FC 479	C	382.00	416.00	34.00	SH			0	
10	FC 479	C	416.00	418.00	2.00	SS			0	
11	FC 479	C	418.00	456.00	38.00	SH			0	
12	FC 479	C	456.00	456.00	.00	CO	EXH	G	0	
13	FC 479	C	456.00	535.00	79.00	SS			0	
14	FC 479	C	535.00	539.20	4.20	SH	PYT		0	
15	FC 479	C	539.20	540.50	1.30	CO	PYT FRK		0	
16	FC 479	C	540.50	541.10	.60	SH			0	
17	FC 479	C	541.10	542.50	1.40	CO	PYT FRK		0	
18	FC 479	C	542.50	542.70	.20	FC			0	
19	FC 479	C	542.70	544.80	2.10	CO	PYT FRK	C	0	
20	FC 479	C	544.80	545.20	.40	BO		C	0	
21	FC 479	C	545.20	547.00	1.80	CO	PYT FRK BNY	C	0	
22	FC 479	C	547.00	548.20	1.20	SH		C	0	
23	FC 479	C	548.20	549.00	.80	CO		C	0	
24	FC 479	C	549.00	549.70	.70	SH			0	
25	FC 479	C	549.70	551.50	1.80	SH	BNY		0	
26	FC 479	C	551.50	551.70	.20	CO	PYT		0	
27	FC 479	C	551.70	552.80	1.10	SH			0	
28	FC 479	C	552.80	554.20	1.40	CO	FRK PYT	A	0	
29	FC 479	C	554.20	554.80	.60	SH	PYT	A	0	
30	FC 479	C	554.80	558.30	3.50	CO	FRK PYT	A	0	
31	FC 479	C	558.30	561.40	3.10	SH			0	
32	FC 479	C	561.40	567.00	5.60	SS	LFS FGR BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 480 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 15

SECTION CODE = SURFACE ELEV. = 6147.00 HOW DET. = 6

N-COORD = 206896 E-COORD = 2075706 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = EMERY EAST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 480 FORMAT = B PROPERTY OR FARM = DRILLER = POLLEY

DRILL CONTR = WHINNEN-WARD DATE DRILLED = 0779

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 480	C	.00	510.00	510.00	SH			0	
4	FC 480	C	510.00	535.00	25.00	SS		TF	0	
5	FC 480	C	535.00	537.40	2.40	SH			0	
6	FC 480	C	537.40	545.80	8.40	SH			0	
7	FC 480	C	545.80	548.80	3.00	BO			0	
8	FC 480	C	548.80	550.80	2.00	CO		J	0	549
9	FC 480	C	550.80	551.10	.30	BO			0	
10	FC 480	C	551.10	552.40	1.30	SH			0	
11	FC 480	C	552.40	552.70	.30	CO			0	
12	FC 480	C	552.70	553.20	.50	BO			0	
13	FC 480	C	553.20	556.20	3.00	SS			0	
14	FC 480	C	556.20	559.00	2.80	ND			0	
15	FC 480	C	559.00	560.10	1.10	SH			0	
16	FC 480	C	560.10	566.20	6.10	CO		UI	0	560
17	FC 480	C	566.20	573.00	6.80	SH			0	
18	FC 480	C	573.00	574.90	1.90	SH			0	
19	FC 480	C	574.90	575.60	.70	SH			0	
20	FC 480	C	575.60	577.60	2.00	SH			0	
21	FC 480	C	577.60	584.50	6.90	CO		LI	0	578
22	FC 480	C	584.50	586.50	2.00	SH			0	
23	FC 480	C	586.50	623.50	37.00	SS			0	
24	FC 480	C	623.50	624.90	1.40	SH			0	
25	FC 480	C	624.90	625.50	.60	SH			0	
26	FC 480	C	625.50	626.00	.50	BO			0	
27	FC 480	C	626.00	629.50	3.50	CO		G	0	
28	FC 480	C	629.50	631.40	1.90	BO			0	
29	FC 480	C	631.40	632.20	.80	SH			0	
30	FC 480	C	632.20	713.80	81.60	SS			0	
31	FC 480	C	713.80	715.80	2.00	SH			0	
32	FC 480	C	715.80	717.20	1.40	CO			0	
33	FC 480	C	717.20	718.20	1.00	FC			0	
34	FC 480	C	718.20	721.80	3.60	CO			0	
35	FC 480	C	721.80	722.20	.40	SH		C	0	
36	FC 480	C	722.20	725.40	3.20	CO		C	0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 480	C	725.40	732.00	6.60	SH			0	
38	FC 480	C	732.00	749.00	17.00	SS			0	
39	FC 480	C	749.00	749.00	.00	CO	EXH	A	0	
40	FC 480	C	749.00	752.20	3.20	SH			0	
41	FC 480	C	752.20	754.00	1.80	SH			0	
42	FC 480	C	754.00	763.50	9.50	SS			0	
43	FC 480	C	763.50	767.00	3.50	SH			0	
44	FC 480	C	767.00	774.00	7.00	SS			0	
45	FC 480	C	774.00	775.90	1.90	SH			0	
46	FC 480	C	775.90	779.90	4.00	SS			0	
47	FC 480	C	779.90	784.00	4.10	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 481 FORMAT = A STATE = 43 COUNTY = 015 TWP = 23S RANGE = 6E SECTION = 07

SECTION CODE = SURFACE ELEV. = 6107.70 HOW DET. = 6

N-COORD = 183038 E-COORD = 2060202 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 481 FORMAT = B PROPERTY OR FARM = DRILLER = GORDON

DRILL CONTR = WHINNEN-WARD DATE DRILLED = 0779

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 481	C	.00	255.00	255.00	SH			0	
4	FC 481	C	255.00	288.00	33.00	SS		TF	0	
5	FC 481	C	288.00	294.60	6.60	SH			0	
6	FC 481	C	294.60	296.20	1.60	SH			0	
7	FC 481	C	296.20	297.40	1.20	CO			0	
8	FC 481	C	297.40	298.00	.60	SH			0	
9	FC 481	C	298.00	299.00	1.00	SH			0	
10	FC 481	C	299.00	304.80	5.80	SS			0	
11	FC 481	C	304.80	306.00	1.20	CO			0	
12	FC 481	C	306.00	310.70	4.70	SH			0	
13	FC 481	C	310.70	313.90	3.20	SS			0	
14	FC 481	C	313.90	318.00	4.10	SH			0	
15	FC 481	C	318.00	345.60	27.60	SS			0	
16	FC 481	C	345.60	347.30	1.70	SH			0	
17	FC 481	C	347.30	348.40	1.10	CO			0	
18	FC 481	C	348.40	349.00	.60	SH			0	
19	FC 481	C	349.00	350.40	1.40	CO			0	
20	FC 481	C	350.40	352.00	1.60	SH			0	
21	FC 481	C	352.00	355.40	3.40	SS			0	
22	FC 481	C	355.40	356.40	1.00	SH			0	
23	FC 481	C	356.40	357.90	1.50	SH			0	
24	FC 481	C	357.90	359.50	1.60	CO			0	
25	FC 481	C	359.50	360.50	1.00	SH			0	
26	FC 481	C	360.50	362.20	1.70	SS			0	
27	FC 481	C	362.20	363.00	.80	SH			0	
28	FC 481	C	363.00	366.70	3.70	SH			0	
29	FC 481	C	366.70	369.40	2.70	SS			0	
30	FC 481	C	369.40	371.20	1.80	SH			0	
31	FC 481	C	371.20	372.20	1.00	SS			0	
32	FC 481	C	372.20	377.30	5.10	SH			0	
33	FC 481	C	377.30	379.00	1.70	SH			0	
34	FC 481	C	379.00	379.40	.40	BO			0	
35	FC 481	C	379.40	381.00	1.60	CO			0	
36	FC 481	C	381.00	383.00	2.00	SH			0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 481	C	383.00	384.60	1.60	CO			0	
38	FC 481	C	384.60	385.10	.50	BO			0	
39	FC 481	C	385.10	386.50	1.40	SH			0	
40	FC 481	C	386.50	390.30	3.80	CO		UI	0	
41	FC 481	C	390.30	390.90	.60	SH			0	
42	FC 481	C	390.90	391.50	.60	SH			0	
43	FC 481	C	391.50	395.00	3.50	SH			0	
44	FC 481	C	395.00	402.00	7.00	SH			0	
45	FC 481	C	402.00	404.10	2.10	CO		LI	1	
46	FC 481	C	404.10	405.00	.90	BO	SHY		0	
47	FC 481	C	405.00	409.80	4.80	CO		LI	5	
48	FC 481	C	409.80	410.70	.90	SH			0	
49	FC 481	C	410.70	412.00	1.30	SH			0	
50	FC 481	C	412.00	463.00	51.00	SH			0	
51	FC 481	C	463.00	463.30	.30	SS			0	
52	FC 481	C	463.30	464.10	.80	SH			0	
53	FC 481	C	464.10	485.00	20.90	SS			0	
54	FC 481	C	485.00	491.70	6.70	SH			0	
55	FC 481	C	491.70	496.00	4.30	CO		G	0	
56	FC 481	C	496.00	499.50	3.50	SH			0	
57	FC 481	C	499.50	553.70	54.20	SS			0	
58	FC 481	C	553.70	558.90	5.20	CO		D	0	
59	FC 481	C	558.90	560.10	1.20	SH			0	
60	FC 481	C	560.10	562.50	2.40	CO		C	0	
61	FC 481	C	562.50	562.90	.40	SH		C	0	
62	FC 481	C	562.90	564.20	1.30	CO		C	0	
63	FC 481	C	564.20	566.00	1.80	SH		C	0	
64	FC 481	C	566.00	570.00	4.00	CO		C	0	
65	FC 481	C	570.00	570.30	.30	FC			0	
66	FC 481	C	570.30	572.00	1.70	SH			0	
67	FC 481	C	572.00	578.00	6.00	SH			0	
68	FC 481	C	578.00	581.00	3.00	SH			0	
69	FC 481	C	581.00	582.60	1.60	SH			0	
70	FC 481	C	582.60	583.20	.60	CO			0	
71	FC 481	C	583.20	584.90	1.70	SH			0	
72	FC 481	C	584.90	588.10	3.20	SH			0	
73	FC 481	C	588.10	601.00	12.90	CO		A	0	
74	FC 481	C	601.00	607.00	6.00	SH			0	
75	FC 481	C	607.00	611.00	4.00	SH			0	
76	FC 481	C	611.00	613.00	2.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 482 FORMAT = A STATE = 43 COUNTY = 041 TWP = 23S RANGE = 5E SECTION = 13

SECTION CODE = SURFACE ELEV. = 6141.00 HOW DET. = 6

N-COORD = 178035 E-COORD = 2052363 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 482 FORMAT = B PROPERTY OR FARM = DRILLER = DALTON

DRILL CONTR = WARDLAW DATE DRILLED = 0779

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 482	C	.00	367.50	367.50	OB			0	
4	FC 482	C	367.50	370.00	2.50	SS		TF	0	
5	FC 482	C	370.00	370.90	.90	SH			0	
6	FC 482	C	370.90	374.80	3.90	CO		M	0	
7	FC 482	C	374.80	376.50	1.70	SS			0	
8	FC 482	C	376.50	385.50	9.00	SH			0	
9	FC 482	C	385.50	478.00	92.50	SS			0	
10	FC 482	C	478.00	500.50	22.50	SH			0	
11	FC 482	C	500.50	502.00	1.50	CO			0	
12	FC 482	C	502.00	519.80	17.80	SH			0	
13	FC 482	C	519.80	522.10	2.30	CO		UI	0	
14	FC 482	C	521.00	523.50	2.50	SH			0	
15	FC 482	C	523.50	529.00	5.50	SH			0	
16	FC 482	C	529.00	542.00	13.00	SS			0	
17	FC 482	C	542.00	547.50	5.50	CO		LI	0	
18	FC 482	C	547.50	620.50	73.00	SH			0	
19	FC 482	C	620.50	622.50	2.00	CO		G	0	
20	FC 482	C	622.50	638.50	16.00	SH			0	
21	FC 482	C	638.50	654.80	16.30	SS			0	
22	FC 482	C	654.80	659.50	4.70	SH			0	
23	FC 482	C	659.50	666.80	7.30	SH			0	
24	FC 482	C	666.80	668.40	1.60	CO		D	0	
25	FC 482	C	668.40	669.20	.80	CL			0	
26	FC 482	C	669.20	670.00	.80	SH			0	
27	FC 482	C	670.00	671.70	1.70	SH			0	
28	FC 482	C	671.70	687.50	15.80	SH			0	
29	FC 482	C	687.50	697.50	10.00	SH			0	
30	FC 482	C	697.50	724.00	26.50	SS			0	
31	FC 482	C	724.00	735.00	11.00	CO		A	0	
32	FC 482	C	735.00	737.70	2.70	SH			0	
33	FC 482	C	737.70	748.00	10.30	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 483 FORMAT = A STATE = 43 COUNTY = 041 TWP = 23S RANGE = 5E SECTION = 13

SECTION CODE = SURFACE ELEV. = 6082.00 HOW DET. = 6

N-COORD = 177744 E-COORD = 2054480 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 483 FORMAT = B PROPERTY OR FARM = DRILLER = WARDLAW

DRILL CONTR = WARDLAW DATE DRILLED = 0779

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 483	C	.00	205.00	205.00	SH			0	
4	FC 483	C	205.00	236.00	31.00	SS		TF	0	
5	FC 483	C	236.00	238.00	2.00	CO		M	0	
6	FC 483	C	238.00	291.00	53.00	SS			0	
7	FC 483	C	291.00	315.50	24.50	SH			0	
8	FC 483	C	315.50	321.90	6.40	SS			0	
9	FC 483	C	321.90	326.00	4.10	SH			0	
10	FC 483	C	326.00	335.50	9.50	SH			0	
11	FC 483	C	335.50	338.40	2.90	SS			0	
12	FC 483	C	338.40	340.00	1.60	SH			0	
13	FC 483	C	340.00	347.00	7.00	SS			0	
14	FC 483	C	347.00	347.60	.60	SH			0	
15	FC 483	C	347.60	375.00	27.40	SS			0	
16	FC 483	C	375.00	379.00	4.00	SH			0	
17	FC 483	C	379.00	402.60	23.60	SS			0	
18	FC 483	C	402.60	403.10	.50	SH			0	
19	FC 483	C	403.10	405.50	2.40	SS			0	
20	FC 483	C	405.50	406.40	.90	SH			0	
21	FC 483	C	406.40	426.40	20.00	SS			0	
22	FC 483	C	426.40	428.80	2.40	CO		LI	1	
23	FC 483	C	428.80	429.70	.90	SS			0	
24	FC 483	C	429.70	435.00	5.30	CO		LI	5	
25	FC 483	C	435.00	447.70	12.70	SS			0	
26	FC 483	C	447.70	451.00	3.30	SH			0	
27	FC 483	C	451.00	462.00	11.00	SS			0	
28	FC 483	C	462.00	465.00	3.00	SH			0	
29	FC 483	C	465.00	465.20	.20	SS			0	
30	FC 483	C	465.20	465.80	.60	SH			0	
31	FC 483	C	465.80	466.40	.60	SS			0	
32	FC 483	C	466.40	473.40	7.00	SH			0	
33	FC 483	C	473.40	506.00	32.60	SH			0	
34	FC 483	C	506.00	510.50	4.50	CO		G	0	
35	FC 483	C	510.50	535.00	24.50	SH			0	
36	FC 483	C	535.00	536.40	1.40	CO		D	0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 483	C	536.40	537.10	.70	SH			0	
38	FC 483	C	537.10	537.60	.50	CO		C	0	
39	FC 483	C	537.60	538.10	.50	SH			0	
40	FC 483	C	538.10	545.00	6.90	SH			0	
41	FC 483	C	545.00	569.50	24.50	SS			0	
42	FC 483	C	569.50	571.80	2.30	SH			0	
43	FC 483	C	571.80	573.00	1.20	CL			0	
44	FC 483	C	573.00	580.00	7.00	SH			0	
45	FC 483	C	580.00	585.20	5.20	SH			0	
46	FC 483	C	585.20	586.70	1.50	SH			0	
47	FC 483	C	586.70	602.30	15.60	SS			0	
48	FC 483	C	602.30	606.60	4.30	SH			0	
49	FC 483	C	606.60	616.60	10.00	CO		A	0	
50	FC 483	C	616.60	620.00	3.40	SH			0	
51	FC 483	C	620.00	625.00	5.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 485 FORMAT = A STATE = 43 COUNTY = 041 TWP = 23S RANGE = 5E SECTION = 12

SECTION CODE = SURFACE ELEV. = 6094.00 HOW DET. = 6

N-COORD = 180776 E-COORD = 2056260 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 485 FORMAT = B PROPERTY OR FARM = DRILLER = POLLEY

DRILL CONTR = WHINNEN-WARD DATE DRILLED = 0779

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 485	C	.00	300.00	300.00	SH			0	
4	FC 485	C	300.00	303.80	3.80	SS		TF	0	
5	FC 485	C	303.80	305.10	1.30	CO			0	
6	FC 485	C	305.10	306.80	1.70	SH			0	
7	FC 485	C	306.80	309.90	3.10	CO			0	
8	FC 485	C	309.90	378.00	68.10	SS			0	
9	FC 485	C	378.00	407.50	29.50	SH	SDY		0	
10	FC 485	C	407.50	411.50	4.00	CO	SHY	UI	0	
11	FC 485	C	411.50	421.00	9.50	SH	SDY		0	
12	FC 485	C	421.00	479.40	58.40	SS			0	
13	FC 485	C	479.40	486.60	7.20	CO		LI	0	
14	FC 485	C	486.60	488.10	1.50	SH			0	
15	FC 485	C	488.10	531.00	42.90	SH			0	
16	FC 485	C	531.00	542.50	11.50	SS			0	
17	FC 485	C	542.50	549.00	6.50	SH			0	
18	FC 485	C	549.00	550.80	1.80	SH			0	
19	FC 485	C	550.80	554.90	4.10	SH			0	
20	FC 485	C	554.90	557.90	3.00	CO		G	0	
21	FC 485	C	557.90	562.60	4.70	SH			0	
22	FC 485	C	562.60	585.00	22.40	SH			0	
23	FC 485	C	585.00	587.70	2.70	SS			0	
24	FC 485	C	587.70	588.50	.80	SH			0	
25	FC 485	C	588.50	592.90	4.40	SS			0	
26	FC 485	C	592.90	595.90	3.00	SH			0	
27	FC 485	C	595.90	599.00	3.10	CO		D	0	
28	FC 485	C	599.00	601.50	2.50	SH			0	
29	FC 485	C	601.50	604.50	3.00	CO		C	0	
30	FC 485	C	604.50	624.00	19.50	SH			0	
31	FC 485	C	624.00	652.00	28.00	SS			0	
32	FC 485	C	652.00	656.50	4.50	SH			0	
33	FC 485	C	656.50	669.00	12.50	CO		A	0	
34	FC 485	C	669.00	674.00	5.00	SH			0	
35	FC 485	C	674.00	675.10	1.10	CO			0	
36	FC 485	C	675.10	679.00	3.90	SH			0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 485	C	679.00	682.30	3.30	SS			0	
38	FC 485	C	682.30	682.30	.00	BO			0	
39	FC 485	C	682.30	689.00	6.70	SS		BH	0	

SEQ NO = 1 DRILL HOLE NO = FC 486 FORMAT = A STATE = 43 COUNTY = 041 TWP = 23S RANGE = 5E SECTION = 13

SECTION CODE = SURFACE ELEV. = 6018.00 HOW DET. = 6

N-COORD = 177417 E-COORD = 2057455 SOURCE = 2 LOCATION = 1

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 486 FORMAT = B PROPERTY OR FARM = DRILLER = WARDLAW

DRILL CONTR = WARDLAW DATE DRILLED = 0779

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 486	C	.00	82.00	82.00	SH			0	
4	FC 486	C	82.00	86.50	4.50	CO		M	0	
5	FC 486	C	86.50	91.00	4.50	SH			0	
6	FC 486	C	91.00	196.50	105.50	SS			0	
7	FC 486	C	196.50	201.60	5.10	SH			0	
8	FC 486	C	201.60	243.90	42.30	SS			0	
9	FC 486	C	243.90	260.20	16.30	SH			0	
10	FC 486	C	260.20	260.60	.40	CO			0	
11	FC 486	C	260.60	270.00	9.40	SH			0	
12	FC 486	C	270.00	271.70	1.70	CO		LI	1	
13	FC 486	C	271.70	272.20	.50	SH			0	
14	FC 486	C	272.20	280.00	7.80	CO		LI	5	
15	FC 486	C	280.00	287.50	7.50	SH			0	
16	FC 486	C	287.50	335.00	47.50	SH			0	
17	FC 486	C	335.00	345.00	10.00	SH			0	
18	FC 486	C	345.00	349.20	4.20	FC			0	
19	FC 486	C	349.20	350.30	1.10	CO		G	0	
20	FC 486	C	350.30	351.00	.70	SH			0	
21	FC 486	C	351.00	367.50	16.50	SH			0	
22	FC 486	C	367.50	391.80	24.30	SS			0	
23	FC 486	C	391.80	393.00	1.20	SH			0	
24	FC 486	C	393.00	395.30	2.30	SH			0	
25	FC 486	C	395.30	399.50	4.20	SH			0	
26	FC 486	C	399.50	402.20	2.70	SS			0	
27	FC 486	C	402.20	403.60	1.40	SH			0	
28	FC 486	C	403.60	408.00	4.40	CO		D	0	
29	FC 486	C	408.00	410.00	2.00	SH			0	
30	FC 486	C	410.00	413.00	3.00	CO		C	0	
31	FC 486	C	413.00	418.00	5.00	SS			0	
32	FC 486	C	418.00	422.00	4.00	SH			0	
33	FC 486	C	422.00	432.00	10.00	SS			0	
34	FC 486	C	432.00	435.00	3.00	SH			0	
35	FC 486	C	435.00	435.60	.60	CO			0	
36	FC 486	C	435.60	442.40	6.80	SH			0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 486	C	442.40	444.00	1.60	SH			0	
38	FC 486	C	444.00	451.00	7.00	SH			0	
39	FC 486	C	451.00	451.90	.90	FC			0	
40	FC 486	C	451.90	452.20	.30	SH			0	
41	FC 486	C	452.20	456.10	3.90	SS			0	
42	FC 486	C	456.10	456.90	.80	FC			0	
43	FC 486	C	456.90	457.60	.70	CO			0	
44	FC 486	C	457.60	458.60	1.00	SH			0	
45	FC 486	C	458.60	473.10	14.50	CO		A	0	
46	FC 486	C	473.10	481.50	8.40	SH			0	
47	FC 486	C	481.50	540.00	58.50	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 489 FORMAT = A STATE = 43 COUNTY = 041 TWP = 23S RANGE = 6E SECTION = 07

SECTION CODE = SURFACE ELEV. = 6035.00 HOW DET. = 7

N-COORD = 180436 E-COORD = 2058299 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 489 FORMAT = B PROPERTY OR FARM = FEDERAL DRILLER = PO

DRILL CONTR = WHINNEN DATE DRILLED = 0879

TWP OR PLACE = COMMENTS = WEAK ARTESIAN

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 489	C	.00	21.00	21.00	OB			0	
4	FC 489	C	21.00	162.00	141.00	SH			0	
5	FC 489	C	162.00	165.00	3.00	SS		TF	0	
6	FC 489	C	165.00	167.00	2.00	CO			0	
7	FC 489	C	167.00	169.80	2.80	SS			0	
8	FC 489	C	169.80	174.00	4.20	CO			0	
9	FC 489	C	174.00	180.00	6.00	SH			0	
10	FC 489	C	180.00	212.00	32.00	SS			0	
11	FC 489	C	212.00	251.00	39.00	SH	COL		0	
12	FC 489	C	251.00	329.40	78.40	SS			0	
13	FC 489	C	329.40	332.40	3.00	SH	COL		0	
14	FC 489	C	332.40	334.30	1.90	CO		I	0	
15	FC 489	C	334.30	335.00	.70	ND	COL	I	0	
16	FC 489	C	335.00	338.00	3.00	ND	SHY		0	
17	FC 489	C	338.00	338.90	.90	BO			0	
18	FC 489	C	338.90	340.30	1.40	BO	SHY		0	
19	FC 489	C	340.30	340.60	.30	CO			0	
20	FC 489	C	340.60	343.00	2.40	ND			0	
21	FC 489	C	343.00	344.10	1.10	SH	COL		0	
22	FC 489	C	344.10	348.00	3.90	ND			0	
23	FC 489	C	348.00	386.00	38.00	SH			0	
24	FC 489	C	386.00	397.00	11.00	SS			0	
25	FC 489	C	397.00	406.50	9.50	SH			0	
26	FC 489	C	406.50	409.50	3.00	CO		G	0	
27	FC 489	C	409.50	412.40	2.90	SH	CLY		0	
28	FC 489	C	412.40	415.00	2.60	ND			0	
29	FC 489	C	415.00	456.00	41.00	SS			0	
30	FC 489	C	456.00	470.40	14.40	SH			0	
31	FC 489	C	470.40	475.00	4.60	CO		D	0	
32	FC 489	C	475.00	476.20	1.20	FC			0	
33	FC 489	C	476.20	479.00	2.80	CO		C	0	
34	FC 489	C	479.00	484.30	5.30	SH			0	
35	FC 489	C	484.30	486.00	1.70	ND			0	
36	FC 489	C	486.00	503.00	17.00	SH			0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 489	C	503.00	506.00	3.00	SH			0	
38	FC 489	C	506.00	507.70	1.70	SS	RIP		0	
39	FC 489	C	507.70	513.50	5.80	SH	COL		0	
40	FC 489	C	513.50	516.00	2.50	ND			0	
41	FC 489	C	516.00	517.50	1.50	ND			0	
42	FC 489	C	517.50	518.50	1.00	SH	FRK		0	
43	FC 489	C	518.50	519.10	.60	CO			0	
44	FC 489	C	519.10	520.00	.90	SH			0	
45	FC 489	C	520.00	520.20	.20	SS			0	
46	FC 489	C	520.20	524.10	3.90	SS	LFS		0	
47	FC 489	C	524.10	524.30	.20	CO		A	0	
48	FC 489	C	524.30	525.60	1.30	SH		A	0	
49	FC 489	C	525.60	525.80	.20	FC		A	0	
50	FC 489	C	525.80	536.60	10.80	CO		A	0	
51	FC 489	C	536.60	539.00	2.40	ND			0	
52	FC 489	C	539.00	560.00	21.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 490 FORMAT = A STATE = 43 COUNTY = 015 TWP = 23S RANGE = 6E SECTION = 07

SECTION CODE = SURFACE ELEV. = 6010.00 HOW DET. = 7

N-COORD = 178236 E-COORD = 2058790 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 490 FORMAT = B PROPERTY OR FARM = FEDERAL DRILLER = WARDLAW

DRILL CONTR = WARDLAW DATE DRILLED = 0879

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 490	C	.00	20.00	20.00	OB			0	
4	FC 490	C	20.00	58.00	38.00	SH			0	
5	FC 490	C	58.00	63.50	5.50	CO	BNY	M	0	
6	FC 490	C	63.50	104.00	40.50	SH			0	
7	FC 490	C	104.00	129.00	25.00	SS			0	
8	FC 490	C	129.00	138.00	9.00	SH			0	
9	FC 490	C	138.00	157.00	19.00	SH			0	
10	FC 490	C	157.00	159.50	2.50	CO		UI	0	
11	FC 490	C	159.50	182.00	22.50	SH			0	
12	FC 490	C	182.00	184.00	2.00	SS			0	
13	FC 490	C	184.00	211.50	27.50	SS	LFS		0	
14	FC 490	C	211.50	225.30	13.80	SS	XBD ISP NBM		0	
15	FC 490	C	225.30	226.10	.80	SS	SHY LFS		0	
16	FC 490	C	226.10	227.10	1.00	SH			0	
17	FC 490	C	227.10	229.40	2.30	SS			0	
18	FC 490	C	229.40	232.00	2.60	SH			0	
19	FC 490	C	232.00	233.00	1.00	CO			0	
20	FC 490	C	233.00	236.20	3.20	SH			0	
21	FC 490	C	236.20	236.30	.10	PY			0	
22	FC 490	C	236.30	238.30	2.00	SH			0	
23	FC 490	C	238.30	242.50	4.20	SH			0	
24	FC 490	C	242.50	242.90	.40	SS	SHY LFS		0	
25	FC 490	C	242.90	247.10	4.20	CO		LI	1	
26	FC 490	C	247.10	247.50	.40	BO			0	
27	FC 490	C	247.50	248.70	1.20	SH			0	
28	FC 490	C	248.70	249.60	.90	CO		LI	5	
29	FC 490	C	249.60	250.00	.40	CO	SHY	LI	5	
30	FC 490	C	250.00	250.90	.90	CO		LI	5	
31	FC 490	C	250.90	251.20	.30	CO	SHY	LI	5	
32	FC 490	C	251.20	252.10	.90	CO		LI	5	
33	FC 490	C	252.10	252.80	.70	BO	SHY	LI	5	
34	FC 490	C	252.80	257.00	4.20	SH			0	
35	FC 490	C	257.00	318.00	61.00	SS			0	
36	FC 490	C	318.00	325.50	7.50	SH			0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 490	C	325.50	328.00	2.50	CO		G	0	
38	FC 490	C	328.00	343.00	15.00	SH			0	
39	FC 490	C	343.00	348.00	5.00	SS			0	
40	FC 490	C	348.00	350.00	2.00	SH			0	
41	FC 490	C	350.00	355.20	5.20	SH			0	
42	FC 490	C	355.20	356.40	1.20	SH			0	
43	FC 490	C	356.40	360.00	3.60	SH			0	
44	FC 490	C	360.00	365.00	5.00	SS	COS NBM		0	
45	FC 490	C	365.00	365.60	.60	SH			0	
46	FC 490	C	365.60	370.00	4.40	CO	PYT	D	0	
47	FC 490	C	370.00	370.30	.30	SH			0	
48	FC 490	C	370.30	371.40	1.10	SS	CLY		0	
49	FC 490	C	371.40	374.60	3.20	CO	PYT BNY	C	0	
50	FC 490	C	374.60	399.00	24.40	SS	SHS		0	
51	FC 490	C	399.00	400.40	1.40	CO			0	
52	FC 490	C	400.40	402.60	2.20	SH	PYT NTP		0	
53	FC 490	C	402.60	404.20	1.60	SS	XRD		0	
54	FC 490	C	404.20	407.40	3.20	SH			0	
55	FC 490	C	407.40	410.00	2.60	SH	NRC		0	
56	FC 490	C	410.00	412.30	2.30	SH	SSS		0	
57	FC 490	C	412.30	413.00	.70	SS	RIP		0	
58	FC 490	C	413.00	413.50	.50	SH			0	
59	FC 490	C	413.50	415.00	1.50	SS	RIP		0	
60	FC 490	C	415.00	417.00	2.00	SS	NRC		0	
61	FC 490	C	417.00	419.80	2.80	QU	RIP		0	
62	FC 490	C	419.80	421.00	1.20	SH			0	
63	FC 490	C	421.00	423.00	2.00	QU	RIP		0	
64	FC 490	C	423.00	424.30	1.30	SH	SDY		0	
65	FC 490	C	424.30	427.30	3.00	QU	RIP LFS NBM		0	
66	FC 490	C	427.30	431.00	3.70	SH	WBD NBM		0	
67	FC 490	C	431.00	433.00	2.00	SH	COS		0	
68	FC 490	C	433.00	433.60	.60	CO	SHY	A	0	
69	FC 490	C	433.60	434.00	.40	SH		A	0	
70	FC 490	C	434.00	435.40	1.40	CO	SHY	A	0	
71	FC 490	C	435.40	436.00	.60	FC		A	0	
72	FC 490	C	436.00	450.00	14.00	CO		A	0	
73	FC 490	C	450.00	450.40	.40	SH			0	
74	FC 490	C	450.40	460.00	9.60	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 492 FORMAT = A STATE = 43 COUNTY = 015 TWP = 23S RANGE = 6E SECTION = 06

SECTION CODE = SURFACE ELEV. = 6113.00 HOW DET. = 7

N-COORD = 184473 E-COORD = 2060570 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 492 FORMAT = B PROPERTY OR FARM = FEDERAL DRILLER = POLLEY

DRILL CONTR = WHINNEN DATE DRILLED = 0879

TWP OR PLACE = COMMENTS = LOST CIRC

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 492	C	.00	20.00	20.00	OB			0	
4	FC 492	C	20.00	280.00	260.00	SH			0	
5	FC 492	C	280.00	301.00	21.00	SS	SHY	TF	0	
6	FC 492	C	301.00	309.00	8.00	SS			0	
7	FC 492	C	309.00	340.00	31.00	SH			0	
8	FC 492	C	340.00	367.00	27.00	SH			0	
9	FC 492	C	367.00	373.00	6.00	SH	WAS		0	
10	FC 492	C	373.00	380.00	7.00	SS	SHS		0	
11	FC 492	C	380.00	382.00	2.00	SS			0	
12	FC 492	C	382.00	383.70	1.70	SH			0	
13	FC 492	C	383.70	384.50	.80	SH			0	
14	FC 492	C	384.50	384.80	.30	CO			0	
15	FC 492	C	384.80	385.90	1.10	SH	COS RTD		0	
16	FC 492	C	385.90	391.30	5.40	QU	RTD		0	
17	FC 492	C	391.30	392.20	.90	SH	COS		0	
18	FC 492	C	392.20	393.90	1.70	SH	NRC		0	
19	FC 492	C	393.90	394.30	.40	SH			0	
20	FC 492	C	394.30	394.50	.20	BO			0	
21	FC 492	C	394.50	395.80	1.30	CO			0	
22	FC 492	C	395.80	397.20	1.40	FC			0	
23	FC 492	C	397.20	397.60	.40	CO	PYT	J	0	
24	FC 492	C	397.60	398.50	.90	BO			0	
25	FC 492	C	398.50	401.20	2.70	SH	SSS		0	
26	FC 492	C	401.20	405.30	4.10	CO	FRK NTP	UI	0	
27	FC 492	C	405.30	409.00	3.70	SH	CUP NBM		0	
28	FC 492	C	409.00	425.00	16.00	SH			0	
29	FC 492	C	425.00	427.10	2.10	SH			0	
30	FC 492	C	427.10	430.00	2.90	SH			0	
31	FC 492	C	430.00	433.90	3.90	SH	SDY		0	
32	FC 492	C	433.90	434.20	.30	SH			0	
33	FC 492	C	434.20	436.40	2.20	SS	LFS		0	
34	FC 492	C	436.40	438.20	1.80	SH			0	
35	FC 492	C	438.20	438.50	.30	CO		LI	1	
36	FC 492	C	438.50	439.00	.50	ND		LI	1	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	FC 492	C	439.00	439.40	.40	BO	SHY	LI	1	
38	FC 492	C	439.40	441.50	2.10	CO		LI	1	
39	FC 492	C	441.50	442.00	.50	BO		LI	1	
40	FC 492	C	442.00	445.70	3.70	CO	FRB	LI	1	
41	FC 492	C	445.70	445.90	.20	BO			0	
42	FC 492	C	445.90	447.40	1.50	FC			0	
43	FC 492	C	447.40	449.90	2.50	SS			0	
44	FC 492	C	449.90	453.00	3.10	CO	ELO	LI	5	
45	FC 492	C	453.00	460.00	7.00	SH	BNY		0	
46	FC 492	C	460.00	464.00	4.00	SS			0	
47	FC 492	C	464.00	467.00	3.00	SH			0	
48	FC 492	C	467.00	473.00	6.00	SS			0	
49	FC 492	C	473.00	520.00	47.00	SH			0	
50	FC 492	C	520.00	523.00	3.00	QU			0	
51	FC 492	C	523.00	526.10	3.10	SH	FRK		0	
52	FC 492	C	526.10	529.30	3.20	CO	NRC NBM	G	0	
53	FC 492	C	529.30	540.00	10.70	SH			0	
54	FC 492	C	540.00	575.00	35.00	SH	LFS NBM		0	
55	FC 492	C	575.00	586.60	11.60	SS	SPC		0	
56	FC 492	C	586.60	587.30	.70	CO	FRB	D	0	
57	FC 492	C	587.30	590.00	2.70	CO	NRC ELO	D	0	
58	FC 492	C	590.00	592.70	2.70	CO		D	0	
59	FC 492	C	592.70	593.00	.30	FC			0	
60	FC 492	C	593.00	593.40	.40	CL	NRC		0	
61	FC 492	C	593.40	594.00	.60	FC			0	
62	FC 492	C	594.00	594.20	.20	SS			0	
63	FC 492	C	594.20	598.00	3.80	CO	FRK	C	0	
65	FC 492	C	598.00	599.20	1.20	CO		C	0	
66	FC 492	C	599.20	599.70	.50	CO	NRC	C	0	
67	FC 492	C	599.70	602.00	2.30	ND			0	
68	FC 492	C	602.00	603.20	1.20	SH			0	
69	FC 492	C	603.20	604.20	1.00	CO	BNY		0	
70	FC 492	C	604.20	605.40	1.20	CL			0	
71	FC 492	C	605.40	606.40	1.00	SS	RTD		0	
72	FC 492	C	606.40	608.50	2.10	SH	CLY		0	
73	FC 492	C	608.50	622.50	14.00	SH			0	
74	FC 492	C	622.50	623.00	.50	CO			0	
75	FC 492	C	623.00	623.60	.60	SH			0	
76	FC 492	C	623.60	623.90	.30	CO		A	0	
77	FC 492	C	623.90	624.50	.60	BO		A	0	
78	FC 492	C	624.50	627.10	2.60	CO		A	0	
79	FC 492	C	627.10	632.00	4.90	CO	NRC	A	0	
80	FC 492	C	632.00	638.40	6.40	CO		A	0	
81	FC 492	C	638.40	639.00	.60	BO			0	
82	FC 492	C	639.00	640.00	1.00	CO			0	
83	FC 492	C	640.00	641.80	1.80	BO	COS		0	
84	FC 492	C	641.80	647.00	5.20	SH			0	
85	FC 492	C	647.00	662.00	15.00	SH			0	
86	FC 492	C	662.00	668.00	6.00	SS			0	
87	FC 492	C	668.00	679.00	11.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = FC 496 FORMAT = A STATE = 43 COUNTY = 041 TWP = 23S RANGE = 5E SECTION = 23

SECTION CODE = SURFACE ELEV. = 6124.00 HOW DET. = 7

N-COORD = 171262 E-COORD = 2051691 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = FC 496 FORMAT = B PROPERTY OR FARM = FEDERAL DRILLER = L. POLLEY

DRILL CONTR = WHINNEN DATE DRILLED = 0879

TWP OR PLACE = COMMENTS = LOST CIRC.

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	FC 496	C	.00	22.00	22.00	OB			0	
4	FC 496	C	22.00	207.00	185.00	SH	GLC		0	
5	FC 496	C	207.00	240.00	33.00	SH	SDY GLC		0	
6	FC 496	C	240.00	341.00	101.00	SH			0	
7	FC 496	C	341.00	367.00	26.00	SS			0	
8	FC 496	C	367.00	373.50	6.50	SH	ELO		0	
9	FC 496	C	373.50	375.00	1.50	CO		LI	1	
10	FC 496	C	375.00	375.50	.50	SH		LI	1	
11	FC 496	C	375.50	377.50	2.00	CO		LI	1	
12	FC 496	C	377.50	378.00	.50	SH			0	
13	FC 496	C	378.00	383.00	5.00	CO		LI	5	
14	FC 496	C	383.00	407.50	24.50	SH			0	
15	FC 496	C	407.50	458.00	50.50	SH			0	
16	FC 496	C	458.00	473.50	15.50	SS	FRB		0	
17	FC 496	C	473.50	495.00	21.50	SH			0	
18	FC 496	C	495.00	520.00	25.00	SS			0	
19	FC 496	C	520.00	534.00	14.00	SH			0	
20	FC 496	C	534.00	544.00	10.00	SS	FRB		0	
21	FC 496	C	544.00	560.00	16.00	SH			0	
22	FC 496	C	560.00	594.00	34.00	SS	FRB		0	
23	FC 496	C	594.00	602.50	8.50	SH			0	
24	FC 496	C	602.50	609.50	7.00	CO		A	0	
25	FC 496	C	609.50	610.00	.50	SH			0	
26	FC 496	C	610.00	610.30	.30	CO			0	
27	FC 496	C	610.30	613.00	2.70	CL			0	
28	FC 496	C	613.00	615.00	2.00	SH			0	
29	FC 496	C	615.00	622.00	7.00	SS	ERB		0	
30	FC 496	C	622.00	625.00	3.00	SH			0	
31	FC 496	C	625.00	635.00	10.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = 79FC499 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 06E SECTION = 27

SECTION CODE = SURFACE ELEV. = 6058.00 HOW DET. = 6

N-COORD = 198010 E-COORD = 2073568 SOURCE = 2 LOCATION = 5

THK CORED = .00 THK N-CORED = .00 USGS = EMERY EAST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 79FC499 FORMAT = B PROPERTY OR FARM = CONSOL DRILLER = POLLEY

DRILL CONTR = WINNEN DATE DRILLED = 0979

TWP OR PLACE = COMMENTS = E LOG INTERP

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	79FC499	C	.00	20 00	20.00	OB			0	
4	79FC499	C	20.00	137 00	117.00	SH			0	
5	79FC499	C	137.00	137 00	.00	SS		TF	0	
6	79FC499	C	137.00	210.00	73.00	SS			0	
7	79FC499	C	210.00	211.80	1.80	SS	PYT		0	
8	79FC499	C	211.80	212.60	.80	SS	RTD		0	
9	79FC499	C	212.60	216.60	4.00	CO	PYT	J	0	
10	79FC499	C	216.60	217.90	1.30	CL	CAR		0	
11	79FC499	C	217.90	218.90	1.00	CO			0	
12	79FC499	C	218.90	219.70	.80	CL			0	
13	79FC499	C	219.70	220.00	.30	ND			0	
14	79FC499	C	220.00	220.50	.50	CL			0	
15	79FC499	C	220.50	224.50	4.00	CO		UI	0	
16	79FC499	C	224.50	237.70	13.20	CO		LI	0	
19	79FC499	C	237.70	240.00	2.30	SH	RTD		0	
20	79FC499	C	240.00	243.30	3.30	SS	CAR VRY FGR		0	
21	79FC499	C	243.30	280.00	36.70	ST			0	
22	79FC499	C	280.00	286.50	6.50	SH	CAR		0	
23	79FC499	C	286.50	287.30	.80	CO			0	
24	79FC499	C	287.30	287.50	.20	CL			0	
25	79FC499	C	287.50	288.40	.90	CO			0	
26	79FC499	C	288.40	294.50	6.10	SH	CAR		0	
27	79FC499	C	294.50	295.00	.50	CL			0	
28	79FC499	C	295.00	296.50	1.50	CO			0	
29	79FC499	C	296.50	320.00	23.50	SS	RAR COS		0	
30	79FC499	C	320.00	323.70	3.70	SS	COS		0	
31	79FC499	C	323.70	324.20	.50	CO	SDY	G	0	
32	79FC499	C	324.20	326.10	1.90	CO		G	0	
33	79FC499	C	326.10	327.10	1.00	SH	CAR		0	
34	79FC499	C	327.10	330.00	2.90	SH			0	
35	79FC499	C	330.00	345.00	15.00	SH			0	
36	79FC499	C	345.00	345.50	.50	CO		D	0	
37	79FC499	C	345.50	348.00	2.50	SH			0	
38	79FC499	C	348.00	351.00	3.00	CO		C	0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS		SEAM CODE	CORR.	COMMENTS
39	79FC499	C	351.00	351.30	.30	SH				0	
40	79FC499	C	351.30	353.30	2.00	CO			D	0	
41	79FC499	C	353.30	380.00	26.70	SH	SDY	BH		0	

SEQ NO = 1 DRILL HOLE NO = 79FC500 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 32

SECTION CODE = SURFACE ELEV. = 5950.00 HOW DET. = 6

N-COORD = 194021 E-COORD = 2065462 SOURCE = 2 LOCATION = 5

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 79FC500 FORMAT = B PROPERTY OR FARM = CONSOL DRILLER =

DRILL CONTR = DATE DRILLED = 0979

TWP OR PLACE = COMMENTS = E LOG INTERP

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	79FC500	C	.00	50.00	50.00	SL			0	
4	79FC500	C	50.00	214.00	164.00	SH			0	
5	79FC500	C	214.00	214.00	.00	SH		TF	0	
6	79FC500	C	214.00	302.00	88.00	SS			0	
7	79FC500	C	302.00	304.80	2.80	SS			0	
8	79FC500	C	304.80	305.80	1.00	CO		K	0	
9	79FC500	C	305.80	306.80	1.00	CL	CAR		0	
10	79FC500	C	306.80	308.80	2.00	SH			0	
11	79FC500	C	308.80	324.10	15.30	SS			0	
12	79FC500	C	324.10	324.10	.00	CO	EXH	J	0	
13	79FC500	C	324.10	330.10	6.00	SH			0	
14	79FC500	C	330.10	332.00	1.90	SH	ELO		0	
15	79FC500	C	332.00	339.30	7.30	SH			0	
16	79FC500	C	339.30	341.00	1.70	CO	ELO	UI	0	
17	79FC500	C	341.00	345.00	4.00	CO		UI	0	
18	79FC500	C	345.00	345.50	.50	PT			0	Mining interval
19	79FC500	C	345.50	352.00	6.50	CO		LI	1	
20	79FC500	C	352.00	352.40	.40	SH	CAR		0	
21	79FC500	C	352.40	356.90	4.50	CO		LI	5	
22	79FC500	C	356.90	357.00	.10	CL			0	
23	79FC500	C	357.00	402.80	45.80	SH	SDY ELO		0	
24	79FC500	C	402.80	407.00	4.20	CO	PYT	G	0	
25	79FC500	C	407.00	442.50	35.50	SH	ELO		0	
26	79FC500	C	442.50	445.60	3.10	CO	BKN ELO	D	0	
27	79FC500	C	445.60	448.00	2.40	CL			0	
28	79FC500	C	448.00	453.80	5.80	CO		C	0	
29	79FC500	C	453.80	475.00	21.20	CL			0	
30	79FC500	C	475.00	514.00	39.00	SS			0	
31	79FC500	C	514.00	569.10	55.10	SS			0	
32	79FC500	C	569.10	571.00	1.90	CO		A	0	
33	79FC500	C	571.00	575.00	4.00	SH			0	
34	79FC500	C	575.00	600.00	25.00	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = 79FC501 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 27

SECTION CODE = SURFACE ELEV. = 6080.00 HOW DET. = 6

N-COORD = 198689 E-COORD = 2072042 SOURCE = 2 LOCATION = 5

THK CORED = .00 THK N-CORED = .00 USGS = EMERY EAST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 79FC501 FORMAT = B PROPERTY OR FARM = CONSOL DRILLER =

DRILL CONTR = DATE DRILLED = 0979

TWP OR PLACE = STRIP 1 COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	79FC501	C	.00	40.00	40.00	SG			0	
4	79FC501	C	40.00	265.00	225.00	SH			0	
5	79FC501	C	265.00	265.00	.00	SS		TF	0	
6	79FC501	C	265.00	300.00	35.00	SS			0	
7	79FC501	C	300.00	334.00	34.00	SS			0	
8	79FC501	C	334.00	338.00	4.00	CO	PYT BNY	J	1	
9	79FC501	C	338.00	339.10	1.10	SH	SDY		0	
10	79FC501	C	339.10	341.00	1.90	CO	BNY	J	3	
11	79FC501	C	341.00	342.70	1.70	SH	ELO CAR		0	
12	79FC501	C	342.70	346.00	3.30	CO		UI	0	
13	79FC501	C	346.00	347.00	1.00	SH	ELO		0	
14	79FC501	C	347.00	360.50	13.50	CO		LI	0	
15	79FC501	C	360.50	361.00	.50	SH	CAR		0	
16	79FC501	C	361.00	362.00	1.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = 79FC502 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 28

SECTION CODE = SURFACE ELEV. = 6095.00 HOW DET. = 6

N-COORD = 199138 E-COORD = 2071060 SOURCE = 2 LOCATION = 5

THK CORED = .00 THK N-CORED = .00 USGS = EMERY WEST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 79FC502 FORMAT = B PROPERTY OR FARM = CONSOL DRILLER =

DRILL CONTR = DATE DRILLED = 0979

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	79FC502	C	.00	40.00	40.00	GR			0	
4	79FC502	C	40.00	340.00	300.00	SH			0	
5	79FC502	C	340.00	340.00	.00	SH		TF	0	
6	79FC502	C	340.00	380.00	40.00	SS			0	
7	79FC502	C	380.00	390.00	10.00	SS	CAR		0	
8	79FC502	C	390.00	408.00	18.00	SS			0	
9	79FC502	C	408.00	411.50	3.50	CO		J	1	
10	79FC502	C	411.50	413.20	1.70	SH	SDY		0	
11	79FC502	C	413.20	415.10	1.90	CO	PYT	J	3	
12	79FC502	C	415.10	425.30	10.20	SH	SDY PYT		0	
13	79FC502	C	425.30	428.50	3.20	CO		UI	0	
14	79FC502	C	428.50	432.50	4.00	CO		LI	1	
15	79FC502	C	432.50	434.00	1.50	SS	CAR		0	
16	79FC502	C	434.00	442.70	8.70	CO		LI	5	
17	79FC502	C	442.70	450.00	7.30	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = 79FC505 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 32

SECTION CODE = SURFACE ELEV. = 5961.30 HOW DET. = 6

N-COORD = 191269 E-COORD = 2063997 SOURCE = 2 LOCATION = 5

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 79FC505 FORMAT = B PROPERTY OR FARM = CONSOL DRILLER =

DRILL CONTR = DATE DRILLED = 0979

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	79FC505	C	.00	20.00	20.00	SG			0	
4	79FC505	C	20.00	183.00	163.00	SH			0	
5	79FC505	C	183.00	183.00	.00	SH		TF	0	
6	79FC505	C	183.00	227.80	44.80	SS			0	
7	79FC505	C	227.80	229.00	1.20	CO	ELO		0	
8	79FC505	C	229.00	270.40	41.40	ST	SHY CAR		0	
9	79FC505	C	270.40	271.60	1.20	CO		K	0	
10	79FC505	C	271.60	272.80	1.20	SH	CAR	K	0	
11	79FC505	C	272.80	274.00	1.20	CO		K	0	
12	79FC505	C	274.00	285.20	11.20	SH			0	
13	79FC505	C	285.20	286.50	1.30	SH	CAR		0	
14	79FC505	C	286.50	289.50	3.00	SH	CAR COL	J	0	
15	79FC505	C	289.50	291.00	1.50	SH			0	
16	79FC505	C	291.00	297.50	6.50	CO		UI	0	
17	79FC505	C	297.50	301.00	3.50	CL	CAR		0	
18	79FC505	C	301.00	309.00	8.00	CO		LI	0	
19	79FC505	C	309.00	309.70	.70	SH	CAR		0	
20	79FC505	C	309.70	319.00	9.30	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC523 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 06E SECTION = 21

SECTION CODE = SURFACE ELEV. = 6138.00 HOW DET. = 6

N-COORD = 199494 E-COORD = 2068623 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = EMERY EAST SZE.CD. =

SEQ NO. - 2 DRILL HOLE NO = 80FC523 FORMAT = B PROPERTY OR FARM = STALEY DRILLER =

DRILL CONTR = CORKILL DATE DRILLED = 0580

TWP OR PLACE = COMMENTS = CAVED

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC523	C	.00	50.00	50.00	OB	SFT		0	
4	80FC523	C	50.00	74.00	24.00	SH	SFT WAS		0	
5	80FC523	C	74.00	527.00	453.00	SH			0	
6	80FC523	C	527.00	527.00	.00	SS		TF	0	
7	80FC523	C	527.00	571.00	44.00	SS			0	
8	80FC523	C	571.00	574.80	3.80	BO		J	1	
9	80FC523	C	574.80	576.00	1.20	SH			0	
10	80FC523	C	576.00	577.50	1.50	BO		J	3	
11	80FC523	C	577.50	579.00	1.50	SH			0	
12	80FC523	C	579.00	582.00	3.00	BO		UI	0	
13	80FC523	C	582.00	587.00	5.00	CO		LI	1	
14	80FC523	C	587.00	602.00	15.00	ST			0	
15	80FC523	C	602.00	610.00	8.00	CO		LI	5	
16	80FC523	C	610.00	649.30	39.30	SH			0	
17	80FC523	C	649.30	652.70	3.40	CO		G	0	
18	80FC523	C	652.70	655.00	2.30	SH			0	
19	80FC523	C	655.00	700.00	45.00	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC544 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 32

SECTION CODE = SURFACE ELEV. = 5959.00 HOW DET. = 6

N-COORD = 190971 E-COORD = 2066965 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC544 FORMAT = B PROPERTY OR FARM = CONSOL DRILLER =

DRILL CONTR = POMCO DATE DRILLED = 0680

TWP OR PLACE = COMMENTS = PORTAL

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC544	C	.00	40.00	40.00	SL			0	
4	80FC544	C	40.00	60.00	20.00	SS			0	
5	80FC544	C	60.00	112.00	52.00	SH			0	
6	80FC544	C	112.00	112.00	.00	CO	EXH	J	0	
7	80FC544	C	112.00	116.00	4.00	SH			0	
8	80FC544	C	116.00	122.90	6.90	CO		UI	0	
9	80FC544	C	122.90	126.50	3.60	SH			0	
10	80FC544	C	126.50	139.00	12.50	CO		LI	0	
11	80FC544	C	139.00	160.00	21.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC552 FORMAT = A STATE = 43 COUNTY = 041 TWP = 22S RANGE = 6E SECTION = 31

SECTION CODE = SURFACE ELEV. = 6032.00 HOW DET. = 6

N-COORD = 194030 E-COORD = 2057567 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC552 FORMAT = B PROPERTY OR FARM = LEWIS DRILLER = DAN

DRILL CONTR = POMCO DATE DRILLED = 0680

TWP OR PLACE = COMMENTS = WTR LVL-15'

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC552	C	.00	40.00	40.00	SG			0	
4	80FC552	C	40.00	619.00	579.00	SH			0	
5	80FC552	C	619.00	699.00	80.00	SS	AQF	TF	0	
6	80FC552	C	699.00	705.30	6.30	SH			0	
7	80FC552	C	705.30	712.00	6.70	CO		K	0	
8	80FC552	C	712.00	725.00	13.00	ST	SDY		0	
9	80FC552	C	725.00	729.00	4.00	CO		J	0	
10	80FC552	C	729.00	733.00	4.00	ST	SHY		0	
11	80FC552	C	733.00	736.20	3.20	CO		UI	0	
12	80FC552	C	736.20	737.20	1.00	CO		UI	0	
13	80FC552	C	737.20	738.20	1.00	CO		UI	0	
14	80FC552	C	738.20	739.40	1.20	CO		UI	0	
15	80FC552	C	739.40	739.65	.25	SH	CAR		0	
16	80FC552	C	739.65	742.85	3.20	SH	CAR		0	
17	80FC552	C	742.85	743.10	.25	SH	CAR		0	
18	80FC552	C	743.10	744.10	1.00	CO		LI	0	
19	80FC552	C	744.10	745.10	1.00	CO		LI	0	
20	80FC552	C	745.10	747.10	2.00	CO		LI	0	
21	80FC552	C	747.10	749.00	1.90	CO		LI	0	
22	80FC552	C	749.00	751.10	2.10	CO		LI	0	
23	80FC552	C	751.10	752.50	1.40	CO		LI	0	
24	80FC552	C	752.50	753.50	1.00	CO		LI	0	
25	80FC552	C	753.50	753.75	.25	SH			0	
26	80FC552	C	753.75	790.00	36.25	SH	SLY		0	
27	80FC552	C	790.00	811.00	21.00	SS	FGR		0	
28	80FC552	C	811.00	813.00	2.00	SH			0	
29	80FC552	C	813.00	817.50	4.50	CO		G	0	
30	80FC552	C	817.50	826.00	8.50	SH			0	
31	80FC552	C	826.00	840.00	14.00	ST			0	
32	80FC552	C	840.00	865.30	25.30	SS	FUP		0	
33	80FC552	C	865.30	868.00	2.70	CO		D	0	
34	80FC552	C	868.00	872.70	4.70	CO		C	0	
35	80FC552	C	872.70	880.00	7.30	SH	CAR		0	
36	80FC552	C	880.00	900.00	20.00	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC553 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 06E SECTION = 31

SECTION CODE = SURFACE ELEV. = 6008.00 HOW DET. = 6

N-COORD = 194068 E-COORD = 2060000 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC553 FORMAT = B PROPERTY OR FARM = LEWIS DRILLER = JOHNSON

DRILL CONTR = POMCO DATE DRILLED = 0680

TWP OR PLACE = COMMENTS = ARTESIAN

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC553	C	.00	30.00	30.00	SL			0	
4	80FC553	C	30.00	517.00	487.00	SH			0	
5	80FC553	C	517.00	567.00	50.00	SS	SLY	TF	0	
6	80FC553	C	567.00	624.20	57.20	SS			0	
7	80FC553	C	624.20	627.00	2.80	SH			0	
8	80FC553	C	627.00	634.40	7.40	CO	PYT	K	0	
9	80FC553	C	634.40	640.00	5.60	SH			0	
10	80FC553	C	640.00	642.00	2.00	ST			0	
11	80FC553	C	642.00	643.75	1.75	SH	CAR		0	
12	80FC553	C	643.75	644.00	.25	SH	CAR		0	
13	80FC553	C	644.00	645.00	1.00	CO	SHY	J	0	
14	80FC553	C	645.00	646.00	1.00	CO		J	0	
15	80FC553	C	646.00	647.40	1.40	CO		J	0	
16	80FC553	C	647.40	649.70	2.30	SH	COL		0	
17	80FC553	C	649.70	651.00	1.30	CO	PYT	UI	0	
18	80FC553	C	651.00	653.00	2.00	CO		UI	0	
19	80FC553	C	653.00	655.00	2.00	CO		UI	0	
20	80FC553	C	655.00	657.00	2.00	CO		UI	0	
21	80FC553	C	657.00	659.00	2.00	BO	SHY		0	
22	80FC553	C	659.00	661.00	2.00	CO		LI	0	
23	80FC553	C	661.00	663.00	2.00	CO		LI	0	
24	80FC553	C	663.00	665.00	2.00	CO		LI	0	
25	80FC553	C	665.00	667.00	2.00	CO		LI	0	
26	80FC553	C	667.00	668.35	1.35	CO		LI	0	
27	80FC553	C	668.35	669.35	1.00	CO		LI	0	
28	80FC553	C	669.35	670.35	1.00	CO		LI	0	
29	80FC553	C	670.35	670.60	.25	SH	CAR		0	
30	80FC553	C	670.60	679.00	8.40	SH	CAR SLY		0	
31	80FC553	C	679.00	723.00	44.00	SH			0	
32	80FC553	C	723.00	729.00	6.00	CO		G	0	
33	80FC553	C	729.00	733.00	4.00	SH	CAR		0	
34	80FC553	C	733.00	770.00	37.00	SS	FUP		0	
35	80FC553	C	770.00	773.50	3.50	CO		D	0	
36	80FC553	C	773.50	781.00	7.50	CO		C	0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	80FC553	C	781.00	790.00	9.00	ST			0	
38	80FC553	C	790.00	840.00	50.00	SS	FUP		0	
39	80FC553	C	840.00	846.50	6.50	SH	SLY		0	
40	80FC553	C	846.50	849.00	2.50	CO		A	0	
41	80FC553	C	849.00	853.00	4.00	SH	SLY		0	
42	80FC553	C	853.00	860.00	7.00	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC565 FORMAT = A STATE = 43 COUNTY = 041 TWP = 22S RANGE = 06E SECTION = 31

SECTION CODE = SURFACE ELEV. = 5999.00 HOW DET. = 6

N-COORD = 194099 E-COORD = 2062540 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC565 FORMAT = B PROPERTY OR FARM = LEWIS DRILLER = KELLEY

DRILL CONTR = SUPERIOR DATE DRILLED = 0780

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC565	C	.00	20.00	20.00	SL			0	
4	80FC565	C	20.00	448.00	428.00	SH			0	
5	80FC565	C	448.00	502.00	54.00	ST	SDY	TF	0	
6	80FC565	C	502.00	518.00	16.00	SS			0	
7	80FC565	C	518.00	521.90	3.90	SH			0	
8	80FC565	C	521.90	522.15	.25	CO	BNY	K	0	
9	80FC565	C	522.15	523.15	1.00	CO		K	0	
10	80FC565	C	523.15	525.15	2.00	CO		K	0	
11	80FC565	C	525.15	527.15	2.00	CO		K	0	
12	80FC565	C	527.15	528.00	.85	CO		K	0	
13	80FC565	C	528.00	528.40	.40	SH	BRN	K	0	
14	80FC565	C	528.40	529.15	.75	CO		K	0	
15	80FC565	C	529.15	530.00	.85	CO		K	0	
16	80FC565	C	530.00	530.40	.40	SH	CAR		0	
17	80FC565	C	530.40	531.30	.90	SS			0	
18	80FC565	C	531.30	531.70	.40	SH			0	
19	80FC565	C	531.70	540.00	8.30	SS	MGR FUP		0	
20	80FC565	C	540.00	540.40	.40	SH			0	
21	80FC565	C	540.40	542.10	1.70	CO	BNY	J	0	
22	80FC565	C	542.10	543.00	.90	SH	BNY		0	
23	80FC565	C	543.00	551.90	8.90	CO		UI	0	
24	80FC565	C	551.90	552.10	.20	SH	BNY		0	
25	80FC565	C	552.10	557.30	5.20	CO		LI	1	
26	80FC565	C	557.30	558.40	1.10	SH	BNY		0	
27	80FC565	C	558.40	560.60	2.20	CO	BNY	LI	5	
28	80FC565	C	560.60	560.85	.25	SH	CAR		0	
29	80FC565	C	560.85	577.00	16.15	SH	CAR		0	
30	80FC565	C	577.00	625.00	48.00	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC565 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 06E SECTION = 31

SECTION CODE = SURFACE ELEV. = 6017.00 HOW DET. = 6

N-COORD = 193499 E-COORD = 2058858 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC566 FORMAT = B PROPERTY OR FARM = LEWIS DRILLER = GORDON

DRILL CONTR = POMCO DATE DRILLED = 0780

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC566	C	.00	13.00	13.00	SL			0	
4	80FC566	C	13.00	52.00	39.00	SH	WEA		0	
5	80FC566	C	52.00	558.00	506.00	SH			0	
6	80FC566	C	558.00	578.00	20.00	SS		TF	0	
7	80FC566	C	578.00	590.00	12.00	SS	AQF WAS		0	
8	80FC566	C	590.00	652.40	62.40	SS	FGR		0	
9	80FC566	C	652.40	653.50	1.10	SS	SLY CAR		0	
10	80FC566	C	653.50	655.00	1.50	CO			0	
11	80FC566	C	655.00	655.80	.80	SH	CAR		0	
12	80FC566	C	655.80	661.40	5.60	SS	CAR FGR		0	
13	80FC566	C	661.40	662.55	1.15	SH	CAR		0	
14	80FC566	C	662.55	662.80	.25	SH	CAR		0	
15	80FC566	C	662.80	663.80	1.00	CO		K	0	
16	80FC566	C	663.80	664.80	1.00	CO		K	0	
17	80FC566	C	664.80	665.80	1.00	CO		K	0	
18	80FC566	C	665.80	667.40	1.60	CO		K	0	
19	80FC566	C	667.40	667.60	.20	CO		K	0	
20	80FC566	C	667.60	668.60	1.00	CO	BNY	K	0	
21	80FC566	C	668.60	669.60	1.00	CO	CLY	K	0	
22	80FC566	C	669.60	669.85	.25	SS	FGR CAR		0	
23	80FC566	C	669.85	679.20	9.35	SS	FGR CAR		0	
24	80FC566	C	679.20	681.15	1.95	SH	CAR		0	
25	80FC566	C	681.15	681.40	.25	SH	CAR		0	
26	80FC566	C	681.40	682.40	1.00	CO	FRK	J	0	
27	80FC566	C	682.40	683.40	1.00	CO	BNY	J	0	
28	80FC566	C	683.40	684.40	1.00	CO	PYT BNY	J	0	
29	80FC566	C	684.40	685.40	1.00	CO	PYT BNY	J	0	
30	80FC566	C	685.40	685.65	.25	SH	CAR		0	
31	80FC566	C	685.65	686.45	.80	SH	CAR		0	
32	80FC566	C	686.45	686.70	.25	SH	CAR		0	
33	80FC566	C	686.70	687.70	1.00	CO	PYT	UI	0	
34	80FC566	C	687.70	688.70	1.00	CO	PYT	UI	0	
35	80FC566	C	688.70	689.00	.30	CO		UI	0	
36	80FC566	C	689.00	692.00	3.00	CO		UI	0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	80FC566	C	692.00	693.00	1.00	CO		UI	0	
38	80FC566	C	693.00	694.00	1.00	CO		UI	0	
39	80FC566	C	694.00	694.25	.25	SH	CAR		0	
40	80FC566	C	694.25	694.75	.50	SH	CAR		0	
41	80FC566	C	694.75	695.00	.25	SH	CAR		0	
42	80FC566	C	695.00	696.00	1.00	CO		LI	0	
43	80FC566	C	696.00	697.00	1.00	CO		LI	0	
44	80FC566	C	697.00	698.00	1.00	CO		LI	0	
45	80FC566	C	698.00	700.00	2.00	CO		LI	0	
46	80FC566	C	700.00	702.00	2.00	CO		LI	0	
47	80FC566	C	702.00	704.20	2.20	CO		LI	0	
48	80FC566	C	704.20	705.20	1.00	CO		LI	0	
49	80FC566	C	705.20	706.20	1.00	CO		LI	0	
50	80FC566	C	706.20	707.20	1.00	CO		LI	0	
51	80FC566	C	707.20	707.45	.25	SH	CAR		0	
52	80FC566	C	707.45	709.20	1.75	SH	CAR		0	
53	80FC566	C	709.20	711.50	2.30	SS	FGR		0	
54	80FC566	C	711.50	720.00	8.50	SH	SDY		0	
55	80FC566	C	720.00	745.00	25.00	SH			0	
56	80FC566	C	745.00	766.40	21.40	SH	SLY		0	
57	80FC566	C	766.40	772.30	5.90	CO		G	0	
58	80FC566	C	772.30	790.00	17.70	SH	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC567 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 30

SECTION CODE = SURFACE ELEV. = 6018.00 HOW DET. = 6

N-COORD = 195340 E-COORD = 2060130 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC567 FORMAT = B PROPERTY OR FARM = LEWIS DRILLER =

DRILL CONTR = CORKILL DATE DRILLED = 0780

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC567	C	.00	20.00	20.00	SL			0	
4	80FC567	C	20.00	570.00	550.00	SH			0	
5	80FC567	C	570.00	657.15	87.15	SS	FUP	TF	0	
6	80FC567	C	657.15	657.40	.25	SS			0	
7	80FC567	C	657.40	658.40	1.00	CO	BNY	K	0	
8	80FC567	C	658.40	659.40	1.00	CO	BNY	K	0	
9	80FC567	C	659.40	661.50	2.10	CO		K	0	
10	80FC567	C	661.50	663.50	2.00	CO		K	0	
11	80FC567	C	663.50	664.50	1.00	CO	PYT	K	0	
12	80FC567	C	664.50	665.50	1.00	CO	PYT	K	0	
13	80FC567	C	665.50	665.75	.25	ST	CAR		0	
14	80FC567	C	665.75	676.40	10.65	ST	CAR		0	
15	80FC567	C	676.40	679.15	2.75	SH	CAR		0	
16	80FC567	C	679.15	679.40	.25	SH	CAR		0	
17	80FC567	C	679.40	680.40	1.00	CO	BKN	J	0	
18	80FC567	C	680.40	681.00	.60	CO		J	0	
19	80FC567	C	681.00	681.80	.80	CO		J	0	
20	80FC567	C	681.80	682.05	.25	ST	CAR		0	
21	80FC567	C	682.05	682.75	.70	ST	CAR		0	
22	80FC567	C	682.75	683.00	.25	ST	CAR		0	
23	80FC567	C	683.00	684.00	1.00	CO		UI	0	
24	80FC567	C	684.00	685.00	1.00	CO		UI	0	
25	80FC567	C	685.00	687.00	2.00	CO		UI	0	
26	80FC567	C	687.00	689.00	2.00	CO	SLY	UI	0	
27	80FC567	C	689.00	691.00	2.00	CO	SHY	UI	0	
28	80FC567	C	691.00	693.00	2.00	CO	PYT	LI	0	
29	80FC567	C	693.00	695.00	2.00	CO		LI	0	
30	80FC567	C	695.00	695.80	.80	CO		LI	0	
31	80FC567	C	695.80	697.80	2.00	CO		LI	0	
32	80FC567	C	697.80	699.80	2.00	CO	BNY	LI	0	
33	80FC567	C	699.80	701.20	1.40	CO		LI	0	
34	80FC567	C	701.20	702.20	1.00	CO		LI	0	
35	80FC567	C	702.20	703.20	1.00	CO		LI	0	
36	80FC567	C	703.20	703.45	.25	SH	CAR		0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS		SEAM CODE	CORR.	COMMENTS
37	80FC567	C	703.45	705.00	1.55	SH	CAR			0	
38	80FC567	C	705.00	707.60	2.60	SS	FGR			0	
39	80FC567	C	707.60	716.00	8.40	SH	CAR			0	
40	80FC567	C	716.00	718.00	2.00	SS				0	
41	80FC567	C	718.00	728.00	10.00	ST				0	
42	80FC567	C	728.00	744.00	16.00	SS				0	
43	80FC567	C	744.00	755.20	11.20	SH				0	
44	80FC567	C	755.20	760.20	5.00	CO			G	0	
45	80FC567	C	760.20	785.00	24.80	ST				0	
46	80FC567	C	785.00	801.00	16.00	SS	FGR			0	
47	80FC567	C	801.00	804.90	3.90	SH				0	
48	80FC567	C	804.90	807.00	2.10	CO			D	0	
49	80FC567	C	807.00	808.30	1.30	SH	RAD			0	
50	80FC567	C	808.30	814.20	5.90	CO			C	0	
51	80FC567	C	814.20	821.00	6.80	SH				0	
52	80FC567	C	821.00	832.00	11.00	ST				0	
53	80FC567	C	832.00	874.00	42.00	SS	FUP			0	
54	80FC567	C	874.00	874.00	.00	CO	EXH		A	0	
55	80FC567	C	874.00	890.00	16.00	SS	FUP	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC569 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 06E SECTION = 31

SECTION CODE = SURFACE ELEV. = 5994.00 HOW DET. = 6

N-COORD = 193818 E-COORD = 2063019 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC569 FORMAT = B PROPERTY OR FARM = LEWIS DRILLER = KELLEY

DRILL CONTR = SUPERIOR DATE DRILLED = 0780

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC569	C	.00	15.00	15.00	SL			0	
4	80FC569	C	15.00	380.00	365.00	SH			0	
5	80FC569	C	380.00	448.75	68.75	SS	MGR	TF	0	
6	80FC569	C	448.75	449.00	.25	SS			0	
7	80FC569	C	449.00	450.00	1.00	CO	BKN		0	
8	80FC569	C	450.00	450.40	.40	CO	BKN		0	
9	80FC569	C	450.40	450.65	.25	SH	CAR		0	
10	80FC569	C	450.65	453.15	2.50	SH	CAR		0	
11	80FC569	C	453.15	453.40	.25	SH	CAR		0	
12	80FC569	C	453.40	455.40	2.00	CO		K	0	
13	80FC569	C	455.40	457.40	2.00	CO	PYT	K	0	
14	80FC569	C	457.40	458.20	.80	CO		K	0	
15	80FC569	C	458.20	459.00	.80	SH		K	0	
16	80FC569	C	459.00	459.70	.70	CO		K	0	
17	80FC569	C	459.70	460.70	1.00	CO	FRK	K	0	
18	80FC569	C	460.70	460.95	.25	SH	CAR		0	
19	80FC569	C	460.95	464.00	3.05	SS	FGR PYT		0	
20	80FC569	C	464.00	466.00	2.00	SH			0	
21	80FC569	C	466.00	468.10	2.10	SS	FGR		0	
22	80FC569	C	468.10	471.40	3.30	SH	LFS		0	
23	80FC569	C	471.40	472.50	1.10	SS	FGR		0	
24	80FC569	C	472.50	472.75	.25	SS	FGR		0	
25	80FC569	C	472.75	473.60	.85	CO		J	1	
26	80FC569	C	473.60	473.80	.20	CO		J	1	
27	80FC569	C	473.80	475.10	1.30	SH	COL		0	
28	80FC569	C	475.10	476.40	1.30	CO		J	3	
29	80FC569	C	476.40	477.75	1.35	SH	COL		0	
30	80FC569	C	477.75	479.75	2.00	CO		UI	0	
31	80FC569	C	479.75	481.75	2.00	CO		UI	0	
32	80FC569	C	481.75	483.60	1.85	CO		UI	0	
33	80FC569	C	483.60	485.60	2.00	CO		UI	0	
34	80FC569	C	485.60	487.60	2.00	CO	SHY PYT	UI	0	
35	80FC569	C	487.60	489.60	2.00	CO	SHY	UI	0	
36	80FC569	C	489.60	491.60	2.00	CO		LI	1	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	80FC569	C	491.60	493.60	2.00	CO		LI	1	
38	80FC569	C	493.60	494.60	1.00	CO		LI	1	
39	80FC569	C	494.60	494.85	.25	SH	CAR		0	
40	80FC569	C	494.85	495.20	.35	SH	CAR		0	
41	80FC569	C	495.20	495.50	.30	CO			0	
42	80FC569	C	495.50	497.60	2.10	SH	CAR		0	
43	80FC569	C	497.60	499.20	1.60	CO		LI	5	
44	80FC569	C	499.20	500.30	1.10	SH			0	
45	80FC569	C	500.30	501.40	1.10	CO			0	
46	80FC569	C	501.40	502.00	.60	SH	CAR		0	
47	80FC569	C	502.00	502.20	.20	CO			0	
48	80FC569	C	502.20	505.00	2.80	SH	CAR		0	
49	80FC569	C	505.00	516.00	11.00	SS			0	
50	80FC569	C	516.00	555.40	39.40	SH	SLY		0	
51	80FC569	C	555.40	559.50	4.10	CO		G	0	
52	80FC569	C	559.50	561.90	2.40	SH	CAR		0	
53	80FC569	C	561.90	562.00	.10	BO	BNY		0	
54	80FC569	C	562.00	586.10	24.10	SH			0	
55	80FC569	C	586.10	591.10	5.00	CO		D	0	
56	80FC569	C	591.10	595.00	3.90	CO		C	0	
57	80FC569	C	595.00	604.70	9.70	ST	CAR		0	
58	80FC569	C	604.70	710.00	105.30	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC576 FORMAT = A STATE = 43 COUNTY = 015 TWP = 23S RANGE = 06E SECTION = 70

SECTION CODE = SURFACE ELEV. = 6069.00 HOW DET. = 6

N-COORD = 179863 E-COORD = 2057337 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC576 FORMAT = B PROPERTY OR FARM = U0101213 DRILLER = JOHNSON

DRILL CONTR = POMCO DATE DRILLED = 0780

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC576	C	.00	212.00	212.00	SH			0	
4	80FC576	C	212.00	335.00	123.00	SS		TF	0	
5	80FC576	C	335.00	337.00	2.00	CO			0	
6	80FC576	C	337.00	350.00	13.00	ST	SHY		0	
7	80FC576	C	350.00	375.20	25.20	SS	CGR FUP		0	
8	80FC576	C	375.20	378.25	3.05	SH	CAR		0	
9	80FC576	C	378.25	378.50	.25	SH	CAR		0	
10	80FC576	C	378.50	379.50	1.00	CO		LI	1	
11	80FC576	C	379.50	381.50	2.00	CO	SLY	LI	1	
12	80FC576	C	381.50	382.00	.50	CO		LI	1	
13	80FC576	C	382.00	383.00	1.00	CO	SLY	LI	1	
14	80FC576	C	383.00	383.25	.25	SH	CAR COL		0	
15	80FC576	C	383.25	384.05	.80	SH	CAR COL		0	
16	80FC576	C	384.05	384.30	.25	SH	CAR COL		0	
17	80FC576	C	384.30	385.30	1.00	CO		LI	5	
18	80FC576	C	385.30	386.60	1.30	CO		LI	5	
19	80FC576	C	386.60	387.60	1.00	CO	BNY	LI	5	
20	80FC576	C	387.60	387.85	.25	SH			0	
21	80FC576	C	387.85	394.50	6.65	SH	SLY		0	
22	80FC576	C	394.50	396.00	1.50	ST			0	
23	80FC576	C	396.00	415.00	19.00	SH			0	
24	80FC576	C	415.00	450.00	35.00	SS	FUP		0	
25	80FC576	C	450.00	460.30	10.30	SH			0	
26	80FC576	C	460.30	464.00	3.70	CO		G	0	
27	80FC576	C	464.00	505.70	41.70	SH			0	
28	80FC576	C	505.70	510.00	4.30	CO		D	0	
29	80FC576	C	510.00	511.20	1.20	SH			0	
30	80FC576	C	511.20	514.00	2.80	CO		C	0	
31	80FC576	C	514.00	545.00	31.00	SH			0	
32	80FC576	C	545.00	565.00	20.00	SS	CAR		0	
33	80FC576	C	565.00	567.00	2.00	ST			0	
34	80FC576	C	567.00	567.40	.40	CO			0	
35	80FC576	C	567.40	572.75	5.35	SH			0	
36	80FC576	C	572.75	573.00	.25	SH	CAR		0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	80FC576	C	573.00	574.00	1.00	CO	BNY	A	0	
38	80FC576	C	574.00	575.00	1.00	CO		A	0	
39	80FC576	C	575.00	577.00	2.00	CO		A	0	
40	80FC576	C	577.00	579.00	2.00	CO		A	0	
41	80FC576	C	579.00	581.00	2.00	CO		A	0	
42	80FC576	C	581.00	583.00	2.00	CO	PYT	A	0	
43	80FC576	C	583.00	584.00	1.00	CO		A	0	
44	80FC576	C	584.00	585.00	1.00	CO		A	0	
45	80FC576	C	585.00	585.40	.40	CO	BNY	A	0	
46	80FC576	C	585.40	586.40	1.00	CO	BNY	A	0	
47	80FC576	C	586.40	587.40	1.00	CO	BNY	A	0	
48	80FC576	C	587.40	587.65	25	SH	CAR		0	
49	80FC576	C	587.65	589.60	1.95	SH			0	
50	80FC576	C	589.60	600.00	10.40	ST	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC584 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 28

SECTION CODE = SURFACE ELEV. = 6129.00 HOW DET. = 6

N-COORD = 198267 E-COORD = 2068094 SOURCE = 2 LOCATION = 6

THK CORED = .00 THK N-CORED = .00 USGS = WALKER FLAT SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC584 FORMAT = B PROPERTY OR FARM = CONSOL DRILLER =

DRILL CONTR = POMCO DATE DRILLED = 0780

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC584	C	.00	60.00	60.00	OB	SLY		0	
4	80FC584	C	60.00	458.00	398.00	SH			0	
5	80FC584	C	458.00	504.00	46.00	SS		TF	0	
6	80FC584	C	504.00	512.00	8.00	ST	SDY		0	
7	80FC584	C	512.00	515.00	3.00	CO			0	
8	80FC584	C	515.00	518.50	3.50	SH			0	
9	80FC584	C	518.50	534.00	15.50	SS			0	
10	80FC584	C	534.00	543.00	9.00	SH			0	
11	80FC584	C	543.00	559.00	16.00	SS			0	
12	80FC584	C	559.00	561.00	2.00	SH	CAR		0	
13	80FC584	C	561.00	564.30	3.30	CO		J	0	
14	80FC584	C	564.30	566.55	2.25	CL			0	
15	80FC584	C	566.55	566.80	.25	CL			0	
16	80FC584	C	566.80	567.80	1.00	CO	FRK	UI	0	
17	80FC584	C	567.80	568.80	1.00	CO		UI	0	
18	80FC584	C	568.80	570.80	2.00	CO		UI	0	
19	80FC584	C	570.80	572.80	2.00	CO		UI	0	
20	80FC584	C	572.80	574.10	1.30	CO		LI	1	
21	80FC584	C	574.10	575.10	1.00	CO	PYT	LI	1	
22	80FC584	C	575.10	576.10	1.00	CO		LI	1	
23	80FC584	C	576.10	577.10	1.00	CO		LI	1	
24	80FC584	C	577.10	578.10	1.00	CO	FRK	LI	1	
25	80FC584	C	578.10	578.35	.25	ST			0	
26	80FC584	C	578.35	581.15	2.80	ST	SDY		0	
27	80FC584	C	581.15	581.40	.25	ST	SDY		0	
28	80FC584	C	581.40	581.50	.10	ND		LI	5	
29	80FC584	C	581.50	582.50	1.00	CO	FRK	LI	5	
30	80FC584	C	582.50	583.50	1.00	CO	FRK	LI	5	
31	80FC584	C	583.50	585.50	2.00	CO	FRK	LI	5	
32	80FC584	C	585.50	587.00	1.50	CO	FRK	LI	5	
33	80FC584	C	587.00	588.00	1.00	CO	FRK	LI	5	
34	80FC584	C	588.00	589.00	1.00	CO	FRK	LI	5	
35	80FC584	C	589.00	590.00	1.00	CO	PYT FRK	LI	5	
36	80FC584	C	590.00	590.25	.25	SH	CAR		0	

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
37	80FC584	C	590.25	593.40	3.15	SH	CAR		0	
38	80FC584	C	593.40	596.00	2.60	SH		BH	0	

SEQ NO = 1 DRILL HOLE NO = 80FC622 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 30

SECTION CODE = SURFACE ELEV. = 6020.00 HOW DET. = 6

N-COORD = 198159 E-COORD = 2061019 SOURCE = 2 LOCATION = 5

THK CORED = .00 THK N-CORED = .00 USGS = EMERY WEST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC622 FORMAT = B PROPERTY OR FARM = CEDAR RIDGE DRILLER =

DRILL CONTR = SHARP DATE DRILLED = 1280

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC622	C	.00	50.00	50.00	OB			0	
4	80FC622	C	50.00	596.00	546.00	SH			0	
5	80FC622	C	596.00	596.00	.00	ST		TF	0	
6	80FC622	C	596.00	626.00	30.00	ST			0	
7	80FC622	C	626.00	643.00	17.00	SS			0	
8	80FC622	C	643.00	648.00	5.00	SH			0	
9	80FC622	C	648.00	653.30	5.30	CO		K	0	
10	80FC622	C	653.30	653.70	.40	SH	RAD		0	
11	80FC622	C	653.70	655.00	1.30	BO			0	
12	80FC622	C	655.00	666.30	11.30	ST	SDY		0	
13	30FC622	C	666.30	670.00	3.70	CO	BNY	J	0	
14	80FC622	C	670.00	674.00	4.00	SH	SLY		0	
15	80FC622	C	674.00	680.10	6.10	ST	SDY		0	
16	80FC622	C	680.10	683.40	3.30	CO		UI	0	
17	80FC622	C	683.40	685.50	2.10	BO			0	
18	80FC622	C	685.50	689.50	4.00	CO		LI	1	
19	30FC622	C	689.50	690.90	1.40	SH	CAR CLY		0	
20	80FC622	C	690.90	692.90	2.00	SH	SLY		0	
21	80FC622	C	692.90	693.60	.70	CO	BNY		0	
22	80FC622	C	693.60	699.00	5.40	ST			0	
23	80FC622	C	699.00	712.00	13.00	SS			0	
24	80FC622	C	712.00	715.00	3.00	ST			0	
25	80FC622	C	715.00	727.00	12.00	SS	SLY	BH	0	

SEQ NO = 1 DRILL HOLE NO = 80FC623 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 21

SECTION CODE = SURFACE ELEV. = 6137.00 HOW DET. = 6

N-COORD = 201830 E-COORD = 2069547 SOURCE = 2 LOCATION = 5

THK CORED = .00 THK N-CORED = .00 USGS = EMERY EAST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC623 FORMAT = B PROPERTY OR FARM = DRILLER =

DRILL CONTR = SHARP DATE DRILLED = 1280

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC623	C	.00	48.00	48.00	OB			0	
4	80FC623	C	48.00	64.00	16.00	SH	WEA		0	
5	80FC623	C	64.00	511.00	447.00	SH			0	
6	80FC623	C	511.00	511.00	.00	SS		TF	0	
7	80FC623	C	511.00	568.00	57.00	SS	VRY FGR		0	
8	80FC623	C	568.00	591.00	23.00	SS	FGR THB		0	
9	80FC623	C	591.00	595.00	4.00	BO			0	
10	80FC623	C	595.00	620.00	25.00	SS	MGR LFS		0	
11	80FC623	C	620.00	642.00	22.00	SS	XBD		0	
12	80FC623	C	642.00	648.30	6.30	ST	LFS		0	
13	80FC623	C	648.30	652.00	3.70	CO		UI	0	
14	80FC623	C	652.00	656.50	4.50	CO		LI	1	
15	80FC623	C	656.50	657.50	1.00	SH	CLY		0	
16	80FC623	C	657.50	659.50	2.00	SS	FGR LFS		0	
17	80FC623	C	659.50	661.20	1.70	SS	VRY FGR SLY		0	
18	80FC623	C	661.20	663.70	2.50	SH	SLY		0	
19	80FC623	C	663.70	664.70	1.00	CO	PYT	LI	5	
20	80FC623	C	664.70	671.90	7.20	CO		LI	5	
21	80FC623	C	671.90	674.70	2.80	CL			0	
22	80FC623	C	674.70	675.50	.80	BO			0	
23	80FC623	C	675.50	680.00	4.50	ST	SHY BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC624 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 21

SECTION CODE = SURFACE ELEV. = 6173.00 HOW DET. = 6

N-COORD = 203451 E-COORD = 2068159 SOURCE = 2 LOCATION = 5

THK CORED = .00 THK N-CORED = .00 USGS = EMERY EAST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC624 FORMAT = B PROPERTY OR FARM = ANDERSON DRILLER =

DRILL CONTR = JC DATE DRILLED = 1280

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC624	C	.00	85.00	85.00	OB			0	
4	80FC624	C	85.00	632.00	547.00	SH			0	
5	80FC624	C	632.00	670.00	38.00	SH	SLY		0	
6	80FC624	C	670.00	670.00	.00	SS		TF	0	
7	80FC624	C	670.00	695.00	25.00	ST			0	
8	80FC624	C	695.00	732.00	37.00	SS	THB		0	
9	80FC624	C	732.00	734.50	2.50	CO		UI	0	
10	80FC624	C	734.50	735.00	.50	BO			0	
11	80FC624	C	735.00	739.00	4.00	CO		LI	1	
12	80FC624	C	739.00	750.00	11.00	SS	VRY FGR SLY		0	
13	80FC624	C	750.00	750.20	.20	SH	BNY	LI	5	
14	80FC624	C	750.20	750.40	.20	BO		LI	5	
15	80FC624	C	750.40	751.90	1.50	CO		LI	5	
16	80FC624	C	751.90	756.00	4.10	SH			0	
17	80FC624	C	756.00	775.00	19.00	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC625 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 21

SECTION CODE = SURFACE ELEV. = 6133.00 HOW DET. = 6

N-COORD = 201046 E-COORD = 2069107 SOURCE = 2 LOCATION = 5

THK CORED = .00 THK N-CORED = .00 USGS = EMERY WEST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC625 FORMAT = B PROPERTY OR FARM = STALEY DRILLER =

DRILL CONTR = JC DATE DRILLED = 1280

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC625	C	.00	62.00	62.00	OB			0	
4	80FC625	C	62.00	511.00	449.00	SH			0	
5	80FC625	C	511.00	511.00	.00	SS		TF	0	
6	80FC625	C	511.00	554.00	43.00	SS	FGR		0	
7	80FC625	C	554.00	600.00	46.00	SS	THB		0	
8	80FC625	C	600.00	610.00	10.00	SH	SLY		0	
9	80FC625	C	610.00	616.00	6.00	ST			0	
10	80FC625	C	616.00	622.00	6.00	SH			0	
11	80FC625	C	622.00	623.00	1.00	SH	CAR		0	
12	80FC625	C	623.00	625.30	2.30	ST	CAR RTD BUR		0	
13	80FC625	C	625.30	628.20	2.90	CO		UI	0	
14	80FC625	C	628.20	628.50	.30	ND			0	
15	80FC625	C	628.50	633.00	4.50	CO		LI	1	
16	80FC625	C	633.00	634.60	1.60	SH	CAR		0	
17	80FC625	C	634.60	639.10	4.50	ST	SDY		0	
18	80FC625	C	639.10	641.60	2.50	ST	RTD		0	
19	80FC625	C	641.60	642.30	.70	BO			0	
20	80FC625	C	642.30	650.20	7.90	CO		LI	5	
21	80FC625	C	650.20	651.90	1.70	SH			0	
22	80FC625	C	651.90	654.10	2.20	ST			0	
23	80FC625	C	654.10	660.00	5.90	SS	BH		0	

SEQ NO = 1 DRILL HOLE NO = 80FC628 FORMAT = A STATE = 43 COUNTY = 015 TWP = 22S RANGE = 6E SECTION = 21

SECTION CODE = SURFACE ELEV. = 6116.00 HOW DET. = 6

N-COORD = 200663 E-COORD = 2070677 SOURCE = 2 LOCATION = 5

THK CORED = .00 THK N-CORED = .00 USGS = EMERY EAST SZE.CD. =

SEQ NO. = 2 DRILL HOLE NO = 80FC628 FORMAT = B PROPERTY OR FARM = ANDERSON DRILLER =

DRILL CONTR = JC DATE DRILLED = 1280

TWP OR PLACE = COMMENTS =

SEQ NO.	DRILL HOLE NUMBER	FORMAT	DEPTH FROM	DEPTH TO	THICKNESS	LITHOLOGY CODE	CHARACTERISTICS	SEAM CODE	CORR.	COMMENTS
3	80FC628	C	.00	25.00	25.00	OB			0	
4	80FC628	C	25.00	40.00	15.00	SH			0	
5	80FC628	C	40.00	434.00	394.00	SH	SLY		0	
6	80FC628	C	434.00	434.00	.00	SS		TF	0	
7	80FC628	C	434.00	501.00	67.00	SS	FGR THB		0	
8	80FC628	C	501.00	506.00	5.00	ST	SDY		0	
9	80FC628	C	506.00	514.00	8.00	SS			0	
10	80FC628	C	514.00	515.00	1.00	SH			0	
11	80FC628	C	515.00	518.00	3.00	BO	SHY	J	0	
12	80FC628	C	518.00	519.50	1.50	ST	SHY GRY		0	
13	80FC628	C	519.50	521.00	1.50	BO	SHY		0	
14	80FC628	C	521.00	525.30	4.30	ST	CAR		0	
15	80FC628	C	525.30	525.70	.40	SS	VRY FGR		0	
16	80FC628	C	525.70	528.00	2.30	CO	PYT	UI	0	
17	80FC628	C	528.00	528.50	.50	ND			0	
18	80FC628	C	528.50	533.00	4.50	CO		LI	1	
19	80FC628	C	533.00	535.60	2.60	SH	SLY		0	
20	80FC628	C	535.60	536.60	1.00	SH	CAR		0	
21	80FC628	C	536.60	540.60	4.00	SS	VRY FGR		0	
22	80FC628	C	540.60	543.60	3.00	SH	SLY CAR		0	
23	80FC628	C	543.60	544.00	.40	BO			0	
24	80FC628	C	544.00	550.50	6.50	CO		LI	5	
25	80FC628	C	550.50	551.80	1.30	CL			0	
26	80FC628	C	551.80	556.70	4.90	ST			0	
27	80FC628	C	556.70	560.00	3.30	SS	BH		0	

LOG OF BOREHOLE

BOREHOLE NO. ~~RD-1~~ RDA-1

PAGE 1 of 1

LOC. or COORDS.

GROUND ELEV. 5957.0

ORIG. GROUND SURFACE 5957.8

TOTAL DEPTH DRILLED 48'

SAMPLING METHOD Grab

DRILLING CONTRACTOR Zimmerman

RIG Bucyrus-Erie 22-W (Cable Tool)

BIT 5 5/8" x 21'7"

CASING 2" Dia. PVC

FLUID Water

	START	FINISH
DATE	4/25/82	4/25/
TIME	0810	1820

GEOPHYS. LOG None

HOW LEFT

DEPTH	RET	LOSS	PENE RATE	ROCK TYPE	SYM-BOL	DESCRIPTION
						0-10' SILTY CLAY Brown colored silty clay.
						10-20' SILTY CLAY WITH SAND Brown colored silty clay with less than 25% fine grained sand.
						20-33' Same as above (10-20').
						33-44' SAND AND GRAVEL WITH CLAY Light brown colored fine to medium grained moderately sorted sand with less than 20% fine gravel up to ½" and less than 15% clay. (Hole is making water)
						44' BLUECATE SHALE
						TOTAL DEPTH DRILLED 48'

LOCATION

LOGGED BY

CLIENT

JOB NO.

BOREHOLE NO. ~~RD-2~~ RDA-2

LOG OF BOREHOLE

PAGE 1 of 1

LOC. or COORDS.

GROUND ELEV. 5954.5
ORIG. GROUND SURFACE 5954.5
TOTAL DEPTH DRILLED 44'
SAMPLING METHOD Grab

DRILLING CONTRACTOR Zimmerman

RIG Bucyrus-Erie 22-W (Cable Tool)
BIT 5 5/8" x 21'7"
CASING 2" Dia. PVC
FLUID Water

	START	FINISH
DATE	4/24/82	4/24/8
TIME	1415	1820

GEOPHYS. LOG None
HOW LEFT

LOCATION
LOGGED BY
CLIENT
JOB NO.

DEPTH	RET	LOSS	PENE RATE	ROCK TYPE	SYM-BOL	DESCRIPTION
						0-20' SILTY CLAY Brown colored silty clay with less than 25% very fine grained sand.
						20-31' SILTY CLAY WITH SAND Same as above (0-20') with increasing fine grained sand
						31-41' SAND AND GRAVEL WITH CLAY Light brown colored fine to medium grained moderately sorted sand and subrounded to subangular gravel up to ½" with less than 15% clay. (Hole is making water)
						41' BLUEGATE SHALE
						TOTAL DEPTH DRILLED 44'

BOREHOLE NO. ~~RD-3~~ RDA-3

LOG OF BOREHOLE

PAGE 1 of 1

LOC. or COORDS. _____

GROUND ELEV. 5945.4
ORIG. GROUND SURFACE 5945.4
TOTAL DEPTH DRILLED 52'
SAMPLING METHOD Grab

DRILLING CONTRACTOR Zimmerman

RIG Bucyrus-Erie 22-W (Cable Tool)
BIT 5 5/8" x 21'7"
CASING 2" Dia. PVC
FLUID Water

	START	FINISH
DATE	4/23/82	4/24/8
TIME	1712	1254

GEOPHYS. LOG None
HOW LEFT _____

LOCATION _____
LOGGED BY _____
CLIENT _____
JOB NO. _____

DEPTH	RET	LOSS	PENE RATE	ROCK TYPE	SYM-BOL	DESCRIPTION
0'						0-15' SILTY CLAY Brown colored silty clay
10'						15-27' SILTY CLAY WITH SAND Brown colored silty clay with less than 25% fine grained sand.
20'						27-43' SILTY SAND WITH CLAY Brown colored sitly sand with less than 25% clay and less than 15% medium to coarse grained sand.
30'						
40'						43-49' SAND AND GRAVEL Light brown colored medium grained moderately sorted sand and subrounded to subangular gravel up to ½", with less than 15% clay. (Hole is making water) 49' BLUEGATE SHALE
50'						TOTAL DEPTH DRILLED 52'

LOG OF BOREHOLE

BOREHOLE NO. ~~RD-4~~ RDA-4

PAGE 1 of 1

LOC. or COORDS.

GROUND ELEV. 5943.1

ORIG. GROUND SURFACE 5943.1

TOTAL DEPTH DRILLED 54'

SAMPLING METHOD Grab

DRILLING CONTRACTOR Zimmerman

RIG Bucyrus-Erie 22-W (Cable Tool)

BIT 5 5/8" x 21'7"

CASING 2" Dia. PVC

FLUID Water

	START	FINISH
DATE	4/23/83	4/23/8
TIME	0910	1600

GEOPHYS. LOG None

HOW LEFT

LOCATION

LOGGED BY

CLIENT

JOB NO.

DEPTH	RET	LOSS	PENE RATE	ROCK TYPE	SYM-BOL	DESCRIPTION
						0-3'
						SOIL
						Soil- Sandy silt with some organic material.
						3-12'
						CLAY WITH SILTY SAND
						Brown colored clay with less than 50% silty and very fine grained sand.
						12-22'
						Same as above (3-12') with less sand.
						22-30'
						CLAY AND SAND
						Brown clay and fine grained sand with less than 25% medium to coarse grained sand.
						30-40'
						Same as above (22-30')
						40-44'
						SAND WITH CLAY
						Fine to medium grained sand with less than 25% grey clay (Hole is making some water)
						44-50'
						CLAY AND SAND WITH GRAVEL
						Brown colored clay and fine grained sand with less than 20% fine gravel.
						50'
						BLUEGATE SHALE
						TOTAL DEPTH DRILLED 54'

BOREHOLE NO. ~~RD-5~~ RDA-5

LOG OF BOREHOLE

PAGE 1 of 1

LOC. or COORDS.

GROUND ELEV. 5941.2
ORIG. GROUND SURFACE 5941.2
TOTAL DEPTH DRILLED 57'
SAMPLING METHOD Grab

DRILLING CONTRACTOR Zimmerman
RIG Bucyrus-Erie 22-W (Cable Tool)
BIT 5 5/8" x 21'7"
CASING 2" Dia. PVC
FLUID Water

	START	FINISH
DATE	4/22/82	4/22/8
TIME	0953	1930

GEOPHYS. LOG None
HOW LEFT

DEPTH	RET	LOSS	PENE RATE	ROCK TYPE	SYM-BOL	DESCRIPTION
						0-18' SILTY SAND WITH CLAY Brown colored silty sand with clay.
						18-23' CLAY Brown colored clay.
						23-28' CLAY WITH SILT Brown-grey colored clay with silt and interbeds of alkali deposits. 28-40' Same as above (23-28') Clay becoming very sticky.
						40-42' SANDY CLAY AND GRAVEL Brown colored clay with fine grained sand and subangula gravel up to ½". 42-43' CLAY AND GRAVEL Brown colored clay and gravel up to 3/8". 43-49' GRAVEL WITH SAND AND SILT Fine to medium gravel up to ½" with less than 25% fine grained sand and silt. 49' BLUEGATE SHALE
						TOTAL DEPTH DRILLED 57'

LOCATION

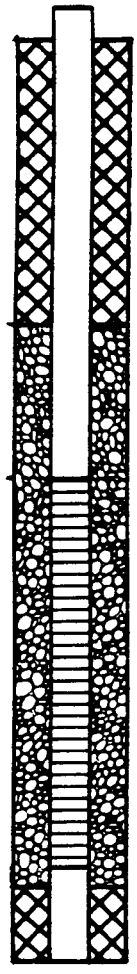
LOGGED BY

CLIENT

JOB NO.

WELL CONSTRUCTION SUMMARY

SKETCH of WELL



LOCATION or COORDINATES ~~RD-1~~ RDA-1

ELEVATION: GROUND LEVEL 5957.83
TOP OF CASING 5958.53

DRILLING SUMMARY:

TOTAL DEPTH DRILLED 48'

DRILLING CONTRACTOR Zimmerman

RIG (S) USED Bucyrus-Erie 22-W

SIZES (S) and TYPE (S) of BITS 5 5/8"

DRILLING FLUID Water

SAMPLING METHOD

SURFACE CASING 0-15' 6" casing

COMMENTS (problems, shutdowns, etc.)

TIME LOG:

	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING				
LOGGING				
CASING				
GRAVEL PACKING				
CEMENTING				
DEVELOPMENT				
OTHER:				

DEVELOPMENT:

METHOD Airlift

ADDITIVES

RESULTS

WELL DESIGN:

BASIS: Geologic Log X Geophysical Log

CASING STRING: C = casing ; S = screen

0	-	23	C				
23	-	43	S				
43	-	48	C				

CASING:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SCREEN:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SLOT SIZE #10 slot

PACKERS

CENTRALIZERS

GRAVEL PACK 30-50 sand 15'-44'

CEMENT 0-15' and 44'-48'

MISCELLANEOUS:

Bluegate shale at 44'

4-29-82

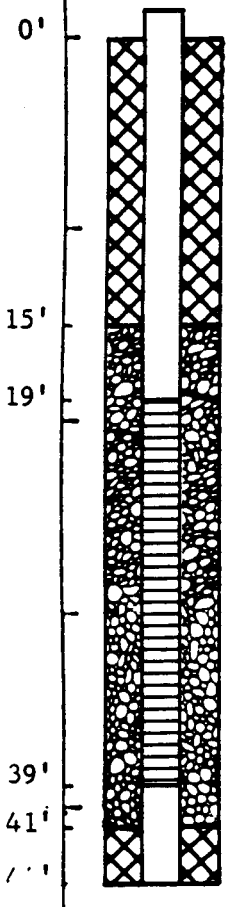
Static water level 16.6' below ground surface.

Ph= 7.9

Conductivity= 5150 umhos/cm

WELL CONSTRUCTION SUMMARY

SKETCH of WELL



LOCATION or COORDINATES ~~RD-2~~ RDA-2

ELEVATION: GROUND LEVEL 5954.52
TOP OF CASING 5955.72

DRILLING SUMMARY:

TOTAL DEPTH DRILLED 44'

DRILLING CONTRACTOR Zimmerman

RIG (S) USED Bucyrus-Erie 22-W

SIZES (S) and TYPE (S) of BITS 5 5/8"

DRILLING FLUID Water

SAMPLING METHOD

SURFACE CASING 0-15' 6" casing

COMMENTS (problems, shutdowns, etc.)

TIME LOG:

	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING				
LOGGING				
CASING				
GRAVEL PACKING				
CEMENTING				
DEVELOPMENT				
OTHER:				

DEVELOPMENT:

METHOD Airlift

ADDITIVES

RESULTS

WELL DESIGN:

BASIS: Geologic Log X Geophysical Log

CASING STRING: C = casing ; S = screen

0	19'	C			
19	39'	S			
39	44'	C			

CASING:
MATERIAL Schedule 40 PVC
DIMENSIONS 2" Dia.

SCREEN:
MATERIAL Schedule 40 PVC
DIMENSIONS 2" Dia.
SLOT SIZE #10 slot

PACKERS

CENTRALIZERS

GRAVEL PACK 30 - 50 sand 15'-41'

CEMENT 0-15' and 41-44'

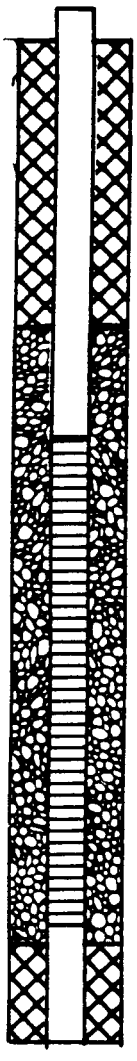
MISCELLANEOUS:

Bluegate shale at 41'
4-25-82
Ph= 12.7

4-29-82
Static water level 16' below ground surface.

WELL CONSTRUCTION SUMMARY

SKETCH of WELL



LOCATION or COORDINATES ~~RD-3~~ RDA-3

ELEVATION: GROUND LEVEL 5945.40
TOP OF CASING 5946.50

DRILLING SUMMARY:

TOTAL DEPTH DRILLED 52'

DRILLING CONTRACTOR Zimmerman

RIG (S) USED Bucyrus-Erie 22-W

SIZES (S) and TYPE (S) of BITS 5 5/8"

DRILLING FLUID Water

SAMPLING METHOD

SURFACE CASING 0-15' 6" casing

COMMENTS (problems, shutdowns, etc.)

TIME LOG:

	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING				
LOGGING				
CASING				
GRAVEL PACKING				
CEMENTING				
DEVELOPMENT				
OTHER:				

DEVELOPMENT:

METHOD Airlift

ADDITIVES

RESULTS

WELL DESIGN:

BASIS: Geologic Log X Geophysical Log

CASING STRING: C = casing ; S = screen

0	21'	C			
21'	46'	S			
46'	52'	C			

CASING:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SCREEN:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SLOT SIZE #10 slot

PACKERS

CENTRALIZERS

GRAVEL PACK 30-50 sand 15' to 47'

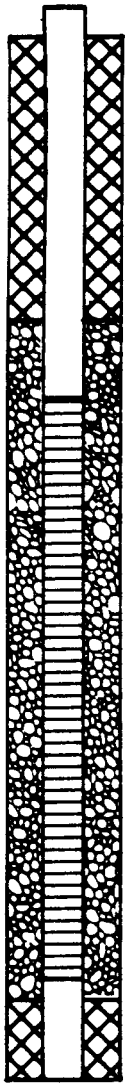
CEMENT 0-15' and 47-52'

MISCELLANEOUS:

Bluegate shale at 49'
4-29-82
Static water level 21.95' below ground surface.
Ph= 8.5
Conductivity= 7400 umhos/cm

WELL CONSTRUCTION SUMMARY

SKETCH of WELL



LOCATION or COORDINATES ~~RD-4~~ RDA-4

ELEVATION: GROUND LEVEL 5943.10
TOP OF CASING 5944.00

DRILLING SUMMARY:

TOTAL DEPTH DRILLED 54'

DRILLING CONTRACTOR Zimmerman

RIG (S) USED Bucyrus-Erie 22-W

SIZES (S) and TYPE (S) of BITS 5 5/8"

DRILLING FLUID Water

SAMPLING METHOD

SURFACE CASING 0-15' 6" casing

COMMENTS (problems, shutdowns, etc.)

TIME LOG:

	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING				
LOGGING				
CASING				
GRAVEL PACKING				
CEMENTING				
DEVELOPMENT				
OTHER:				

DEVELOPMENT:

METHOD Airlift

ADDITIVES

RESULTS

WELL DESIGN:

BASIS: Geologic Log X Geophysical Log

CASING STRING: C = casing ; S = screen

0	-	19	C		-		
19	-	49	S		-		
49	-	54	C		-		
	-				-		
	-				-		
	-				-		
	-				-		

CASING:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SCREEN:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SLOT SIZE #10 slot

PACKERS

CENTRALIZERS

GRAVEL PACK 30 - 50 sand 15'-50'

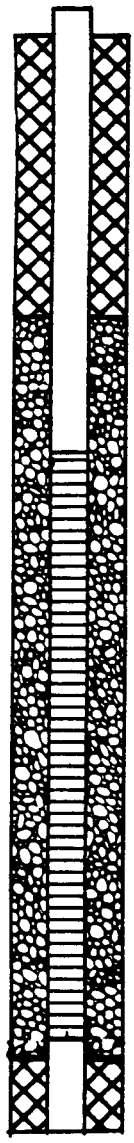
CEMENT 0'-15' and 50'-54'

MISCELLANEOUS:

Bluegate at 50'
4-25-82
Static water level 21.2' below ground surface.
4-29-82
Ph= 7.9
Conductivity= 1017.5 umhos/cm

WELL CONSTRUCTION SUMMARY

SKETCH of WELL



LOCATION or COORDINATES ~~RD-5~~ RDA-5

ELEVATION: GROUND LEVEL 5941.20
TOP OF CASING 5942.40

DRILLING SUMMARY:

TOTAL DEPTH DRILLED 57'

DRILLING CONTRACTOR Zimmerman

RIG (S) USED Bucyrus-Erie 22-W

SIZES (S) and TYPE (S) of BITS 5 5/8"

DRILLING FLUID Water

SAMPLING METHOD

SURFACE CASING 0-15' 6" Dia. Steel casing

COMMENTS (problems, shutdowns, etc.)

TIME LOG:

	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING				
LOGGING				
CASING				
GRAVEL PACKING				
CEMENTING				
DEVELOPMENT				
OTHER:				

DEVELOPMENT:

METHOD Airlift

ADDITIVES

RESULTS

WELL DESIGN:

BASIS: Geologic Log X Geophysical Log

CASING STRING: C = casing ; S = screen

0	-	22	C				
22	-	52	S				
52	-	57	C				

CASING:
MATERIAL Schedule 40 PVC
DIMENSIONS 2" Dia.

SCREEN:
MATERIAL Schedule 40 PVC
DIMENSIONS 2" Dia.
SLOT SIZE #10 slot.

PACKERS

CENTRALIZERS

GRAVEL PACK 30 - 50 sand 15'-53'

CEMENT 0-15' and 53'-57'

MISCELLANEOUS:

Bluegate shale at 53'

4-29-82

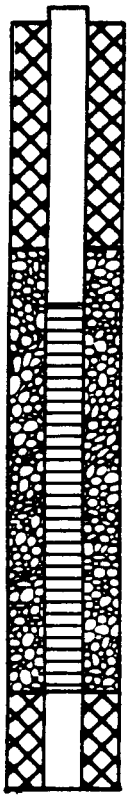
Static water level 18.4' below ground surface.

Ph= 8.3

Conductivity= 15300 umhos/cm

WELL CONSTRUCTION SUMMARY

SKETCH of WELL



LOCATION or COORDINATES ~~RD-6~~ RDA-6

ELEVATION: GROUND LEVEL 5940.40
TOP OF CASING 5942.00

DRILLING SUMMARY:

TOTAL DEPTH DRILLED 40'

DRILLING CONTRACTOR Zimmerman

RIG (S) USED Bucyrus-Erie 22-W (Cable Tool)

SIZES (S) and TYPE (S) of BITS 5 5/8"

DRILLING FLUID Water

SAMPLING METHOD

SURFACE CASING 0-10' 6" Steel casing.

COMMENTS (problems, shutdowns, etc.)

TIME LOG:

	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING				
LOGGING				
CASING				
GRAVEL PACKING				
CEMENTING				
DEVELOPMENT				
OTHER:				

DEVELOPMENT:

METHOD Airlift

ADDITIVES

RESULTS

WELL DESIGN:

BASIS: Geologic Log X Geophysical Log

CASING STRING: C = casing ; S = screen

0	-	15	C				
15	-	35	S				
35	-	40	C				

CASING:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SCREEN:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SLOT SIZE #10 Slot.

PACKERS

CENTRALIZERS

GRAVEL PACK 30-50 Sand 12-35'

CEMENT 0- 12' and 35-40'

MISCELLANEOUS:

Bluegate shale at 35.5'.
4-28-82
Static water level 12.2' below ground surface.
Ph= 10.7
Conductivity= 9922 umhos/cm

WELL RDA-1

WATER LEVEL DATA

WELL LOCATION N-193,948
E-2,064,708

ELEVATION:
MEASURING POINT 5958.53

MEASURING POINT TOC 0.7' AGL

GROUND LEVEL 5957.83

MINE Emery

WELL COMPLETION Uranium (Quinlan Hunt Ck.)

DATE	TIME	MEASURING DEVICE	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL DEPTH	WATER LEVEL ELEVATION	BY	COMMENTS
4-29-82		sonl-tect	17.3		16.6	5941.2		
6-16-82			16.08	- .7	15.38	5942.5		
7-26-82			18.17		17.47	5940.4		
8-24-82			15.58		14.88	5943.0		
9-21-82			15.42		14.72	5943.1		
10-13-82			17.42		16.72	5941.1		
11-19-82			16.25		15.55	5942.3		
12 9-82			16.16		15.46	5942.4		
1-19-83			16.42		15.72	5942.1		

CONSOLIDATION COAL CO. CONSOL WESTERN REGION

WELL RDA-2

WATER LEVEL DATA

WELL LOCATION N-193,573 E- 2,064,773

ELEVATION:
MEASURING POINT 5955.72

MEASURING POINT TOC 1.2' AGL

GROUND LEVEL 5954.52

MINE Bunny

WELL COMPLETION Alluvium (Quitchupah Cr.)

DATE	TIME	MEASURING DEVICE	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL DEPTH	WATER LEVEL ELEVATION	BY	COMMENTS
4-29-82			17.2	—	16.0	5938.5		
6-16-82		Sonl test	20.0	-1.2'	18.6	5935.7		
7-26-82			20.5		19.3	5935.2		
8-24-82			20.67		19.47	5935.1		
9-21-82			17.75		16.55	5938.0		
10-13-82			15.67		14.47	5940.1		
11-19-82			17.25		16.05	5938.5		
12-9-82			16.92		15.72	5938.8		
1-19-83			16.92		15.72	5938.8		

CONSOLIDATION COAL CO. CONSOL WESTERN REGION

WELL RDA-3

WATER LEVEL DATA

WELL LOCATION N- 193,438
E 2,065,795

ELEVATION:
MEASURING POINT 5946.50

MEASURING POINT TOC 1.1' AGL

GROUND LEVEL 5945.5

MINE Emery

WELL COMPLETION Alluvium (Quaternary)

DATE	TIME	MEASURING DEVICE	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL DEPTH	WATER LEVEL ELEVATION	BY	COMMENTS
4-29-82		—	23.05	—	21.95	5923.6		
6-15-82			22.92	-1.1'	21.82	5923.6		
7-30-82			26.00		24.90	5920.6		
8-13-82			23.60		22.50	5922.9		
9-21-82			23.50		22.40	5923.0		
10-13-82			24.67		23.57	5921.8		
11-19-82			23.50		21.90	5923.5		
12-7-82			22.92		21.82	5923.4		
1-19-83			22.75		21.65	5923.8		

CONSOLIDATION COAL CO. CONSOL WESTERN REGION

WELL RDA-4

WATER LEVEL DATA

WELL LOCATION N- 193,049
E- 2,066,002

ELEVATION:
MEASURING POINT 5944.00

MEASURING POINT TOC 0.9' AGL

GROUND LEVEL 5943.10

MINE Emery

WELL COMPLETION Rim Cr (R)

DATE	TIME	MEASURING DEVICE	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL DEPTH	WATER LEVEL ELEVATION	BY	COMMENTS
4-29-82		soil test	22.1	—	21.2	5921.9		
6-15-82			22.17	-0.9'	21.27	5921.4		
7-26-82			25.08		24.18	5918.9		
8 13-82			18.1		17.2	5925.9		
9-21-82			22.67		21.77	5921.3		
10-12-82			22.33		21.43	5921.7		
11-19-82			22.42		21.52	5921.6		
12 9-82			22.50		21.60	5921.0		
1-19-83			22.08		21.18	5921.9		

CONSOLIDATION COAL CO. CONSOL WESTERN REGION

WELL RDA-5

WATER LEVEL DATA

WELL LOCATION N-192,671
E-2,065,983

ELEVATION:
MEASURING POINT 5942.40

MEASURING POINT TOC 1.2' AGL

GROUND LEVEL 5941.20

MINE Pinney

WELL COMPLETION Qal (Quaternary)

DATE	TIME	MEASURING DEVICE	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL DEPTH	WATER LEVEL ELEVATION	BY	COMMENTS
4-29-82		Sonl test	19.6	—	18.4	5922.8		
6-15-82			19.75	-1.2'	18.55	5922.7		
7-26-82			22.50		21.30	5919.9		
8-13-82			20.30		19.10	5922.1		
9-21-82			20.00		18.80	5922.4		
10-13-82			20.50		19.30	5921.9		
11-17-82			20.50		19.30	5921.9		
12-9-82			20.66		19.46	5921.7		
1-19-83			20.42		19.22	5922.0		

CONSOLIDATION COAL CO. CONSOL WESTERN REGION

WELL RDA-6

WATER LEVEL DATA

WELL LOCATION N- 192,178
E- 2,065,515

ELEVATION:
MEASURING POINT 5942.00

MEASURING POINT TOC 1.6' AGL

GROUND LEVEL 5940.40

MINE

WELL COMPLETION

DATE	TIME	MEASURING DEVICE	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL DEPTH	WATER LEVEL ELEVATION	BY	COMMENTS
4-29-82		Sn[illegible] +	13.7	—	12.2	5928.2		
6-15-82			13.72	-1.6	12.32	5928.1		
7-26-82			14.33		12.73	5927.7		
8-13-82			14.60		13.00	5927.4		
9-21-82			14.42		12.82	5927.6		
10-13-82			14.42		12.82	5927.6		
11-19-82			14.42		12.82	5927.6		
12-9-82			14.92		13.32	5927.1		
1-19-83			14.50		12.90	5927.5		

CONSOLIDATION COAL CO. CONSOL WESTERN REGION

STANDARD LABORATORIES, INC.
P.O. Box 149 Huntington, UT 84528 801-654-2101
CONSOLIDATED COAL CO.
P. O. BOX 527
EMERY UTAH 84522

SAMPLE ID: ~~RD 1~~ RDA-1 LIGHT BROWN
DATE SAMPLED: 4. 29. 82
REPORT DATE: 5. 21. 82

LAB NUMBER W-2663
DATE REC'D: 4. 30. 82
SAMPLED BY: CONSOL

CHEMICAL ANALYSIS

NH3-N	0. 616	MG/L
BORON	0. 354	MG/L
CALCIUM	59. 9	MG/L
MAGNESIUM	77. 50	MG/L
POTASSIUM	24. 00	MG/L
SODIUM	676. 00	MG/L
SP. COND	5900	UHMOS/CM
TDS	4497. 0	MG/L
BICARB. ALK	517. 0	MG/L CACO3
CARBONATE ALK.	<1	MG/L CACO3
CHLORIDE	168. 0	MG/L
NO3-N	0. 357	MG/L
NO2-N	<0. 002	MG/L
SULFATE	2675. 0	MG/L
T. HARDNS	469. 0	MG/L CACO3

Dissolved Phos.	0.029 mg/l
Sulfide	1.8 mg/l S.

METALLIC ANALYSIS

ALUMINUM	<0. 05	MG/L
BARIUM	<0. 1	MG/L
CADMIUM	<0. 005	MG/L
CHROMIUM	<0. 05	MG/L
COPPER	<0. 02	MG/L
IRON	0. 19	MG/L
LEAD	<0. 001	MG/L
MANGANESE	0. 36	MG/L
MERCURY	<0. 0002	MG/L
MOLYBDENUM	<0. 1	MG/L
NICKEL	<0. 04	MG/L
SELENIUM	0. 0004	MG/L
ZINC	0. 049	MG/L

T. CATION 39. 4 MEQ/L
TDS/COND 0. 762

T. ANION 70. 5 MEQ/L
TDS BAL 4497: 3656

RAY A. SIM, MANAGER

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-2813

Date Rec. 6-16-82

Date Sampled 6-16-82 1035

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA-1

pH	7.0	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	5200	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	501	mg/l
Solids, Total Dissolved	4101	mg/l
Solids, Total Suspended		mg/l
Sulfate	2753	mg/l
Iron, dissolved	0.50	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese	0.57	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-2968

Date Rec. 07-26-82

Date Sampled 07-26-82

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA # 1

pH	7.2	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	5800	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	409	mg/l
Solids, Total Dissolved	4665	mg/l
Solids, Total Suspended		mg/l
Sulfate	2893	mg/l

Arsenic			mg/l
Beryllium			mg/l
Boron			mg/l
Cadmium			mg/l
Chromium			mg/l
Copper			mg/l
Iron	(dissolved)	0.46	mg/l
Lead			mg/l
Manganese	(dissolved)	0.53	mg/l
Mercury			µg/l
Nickel			mg/l
Selenium			mg/l
Zinc			mg/l

Respectfully submitted

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-3049

Date Rec. 8-24-82

Date Sampled 8-24-82

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA #1

pH	7.0	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	2700	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	400	mg/l
Solids, Total Dissolved	1590	mg/l
Solids, Total Suspended		mg/l
Sulfate	860	mg/l
Iron, dissolved	0.50	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese (Diss)	0.60	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Lab. No. W-3164

Date Rec. 9-21-82

Date Sampled 9-21-82

Sample ID RDA-1

pH	7.1	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	5800	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	320	mg/l
Solids, Total Dissolved	3450	mg/l
Solids, Total Suspended		mg/l
Sulfate	2100	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	0.63	mg/l
Lead		mg/l
Manganese (Dissolved)	0.57	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

RDA - 1

10/13/82

pH	7.0
conductivity (µmhos/cm)	5,100
Na	318
TDS	3,488
SO4	2,000
Fe-dis	0.60
Mn-dis	0.53

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
). Box 1140, Huntington, Utah 84528 801-653-2314

Client: Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID: RDA-1

Lab. No. 3391
Date Rec'd 11-29-82
Date Sampled 11-29-82
Time Sampled

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	5900	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.1	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	4.392	mg/l
Solids, Total Suspended		mg/l
Sulfate	[illegible]	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron Dissolve	0.57	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolve	0.49	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium	320	mg/l
Zinc		mg/l

Respectfully submitted

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3401

Date Rec'd 12-09-82

Date Sampled 12-09-82

Time Sampled

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: ~~RDA-A~~ RDA-1

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	5800	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.1	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	464	mg/l
Solids, Total Suspended	1900	mg/l
Sulfate		mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron Dissolved	0.50	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolved	0.43	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	318	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3526
Date Rec'd 1-19-83
Date Sampled 1-19-83
Time Sampled 1125

Client: Consolidation Coal Co.
Emery Mine
P.O. Box 527
Emery, Utah 84522

Sample ID: RDA # 1

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	5150	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.1	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	2800	mg/l
Solids, Total Suspended		mg/l
Sulfate	2100	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron, Dissolved	0.63	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese, Dissolved	0.47	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

STANDARD LABORATORIES, INC.
P.O. Box 149 Huntington, UT 84528 801-654-2271

CONSOLIDATION COAL CO.
P. O. BOX 527
EMERY UTAH 84522

RDA-2

SAMPLE ID: ~~RD-2~~ SL. DIRTY
DATE SAMPLED: 4. 29. 82
REPORT DATE: 5. 21. 82

LAB NUMBER W-2664
DATE REC'D: 4. 30. 82
SAMPLED BY: CONSOL

CHEMICAL ANALYSIS

NH3-N	1. 160	MG/L
BORON	0. 129	MG/L
CALCIUM	67. 4	MG/L
MAGNESIUM	2. 50	MG/L
POTASSIUM	75. 00	MG/L
SODIUM	732. 00	MG/L
SP. COND	5500	UHMOS/CM
TDS	3035. 0	MG/L
BICARB. ALK	1740. 0	MG/L CACO3
CARB. ALK	480. 0	MG/L CACO3
CHLORIDE	214. 0	MG/L
NO3-N	<0. 002	MG/L
NO2-N	<0. 002	MG/L
SULFATE	1399. 0	MG/L
T. HARDNS	180. 0	MG/L CACO3

Dissolved Phos.	<0.01 mg/l
Sulfide	2.0 mg/l S.
Phenolphthalein Alk.	240mg/l $CaCo_3$

METALLIC ANALYSIS

ALUMINUM	0. 23	MG/L
BARIUM	<0. 1	MG/L
CADMIUM	<0. 005	MG/L
CHROMIUM	<0. 05	MG/L
COPPER	<0. 02	MG/L
IRON	0. 27	MG/L
LEAD	<0. 001	MG/L
MANGANESE	0. 11	MG/L
MERCURY	<0. 0002	MG/L
MOLYBDENUM	<0. 1	MG/L
NICKEL	<0. 04	MG/L
SELENIUM	0. 0004	MG/L
ZINC	0. 019	MG/L

T. CATION 37. 3 MEQ/L
TDS/COND 0. 552

T. ANION 86. 1 MEQ/L
TDS BAL 3035: 2415

RAY A. SIM, MANAGER

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA-2

Lab. No. W-2814

Date Rec. 6-16-82

Date Sampled 6-16-82

pH	11.8	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	4900	µmhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	425	mg/l
Solids, Total Dissolved	3901	mg/l
Solids, Total Suspended		mg/l
Sulfate	1605	mg/l
Iron, dissolved	0.46	

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese	0.09	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-2981

Date Rec. 07-28-82

Date Sampled 07-28-82

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA # 2

pH	11.5	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	4800	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	488	mg/l
Solids, Total Dissolved	3821	mg/l
Solids, Total Suspended		mg/l
Sulfate	1610	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron (dissolved)	0.53	mg/l
Lead		mg/l
Manganese (dissolved)	0.09	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-3050

Date Rec. 8-24-82

Date Sampled 8-24-82

FOR Consolidation Coal Co.
P.O. Box 527
emery, Utah 84522

Sample ID RDA #2

pH	11.6	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	4400	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	510	mg/l
Solids, Total Dissolved	2520	mg/l
Solids, Total Suspended		mg/l
Sulfate	1[illegible]00	mg/l
Iron, dissolved	[illegible]	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese (Diss)	0.10	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-3165

Date Rec. 9-21-82

Date Sampled 9-21-82

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA-2

pH	11.0	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	7000	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	610	mg/l
Solids, Total Dissolved	4800	mg/l
Solids, Total Suspended		mg/l
Sulfate	2900	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	0.57	mg/l
Lead		mg/l
Manganese (Dissolved)	0.03	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

RDA - 2

10/13/82

pH	11.3
conductivity (µmhos/cm)	5,000
Na	700
TDS	2,790
SO4	2,200
Fe-dis	0.49
Mn-dis	0.10

NATIONAL 42-381 50 SHEETS 5 SQUARE 42-382 100 SHEETS 5 SQUARE 42-389 200 SHEETS 5 SQUARE

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: RDA-2

Lab. No. 3392
Date Rec'd 11-29-82
Date Sampled 11-29-82
Time Sampled

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	6300	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho	10.3	mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	3658	mg/l
Solids, Total Suspended		mg/l
Sulfate	2400	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron dissolve	0.50	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolve	0.12	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	653	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3402

Date Rec'd 12-09-82

Date Sampled 12-09-82

Time Sampled

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: RDA-2

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	5100	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	9.8	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	2728	mg/l
Solids, Total Suspended		mg/l
Sulfate	2000	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron Dissolved	0.53	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolved	0.10	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	923	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3527
Date Rec'd 1-19-83
Date Sampled 1-19-83
Time Sampled 1132

Client: Consolidation Coal Co.
Emery Mine
P. O. Box 527
Emery, Utah 84522

Sample ID: RDA # 2

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	5000	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	9.6	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	2660	mg/l
Solids, Total Suspended		mg/l
Sulfate	1800	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron, Dissolved	0.53	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese, Dissolved	0.11	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

STANDARD LABORATORIES, INC.
P.O. Box 149 Huntington, UT 84528 (801-654-2281)

CONSOL INTERNATIONAL CO.
P. O. BOX 527
EMERY UTAH 84522

RDA-3

SAMPLE ID: ~~RD-3~~ DARK BROWN
DATE SAMPLED: 4. 29. 82
REPORT DATE: 5. 25. 82

LAB NUMBER W-2665
DATE REC'D: 4. 30. 82
SAMPLED BY: CONSOL

CHEMICAL ANALYSIS

NH3-N	0. 221	MG/L
BORON	0. 292	MG/L
CALCIUM	54. 9	MG/L
MAGNESIUM	86. 50	MG/L
POTASSIUM	13. 50	MG/L
SODIUM	917. 00	MG/L
SP. COND	7000	UHMOS/CM
TDS	5297. 0	MG/L
BICARB. ALK	859. 0	MG/L CACO3 (HCO_3 1048mg/l)
CARBONATE ALK.	<1	MG/L CACO3
CHLORIDE	278. 0	MG/L
NO3-N	<0. 002	MG/L
D. PHOS	0. 000	MG/L
SULFATE	3271. 0	MG/L
T. HARDNS	505. 0	MG/L CACO3

Dissolved Phos. <0.01 mg/l

Sulfide 2.1 mg/l S.

METALLIC ANALYSIS

ALUMINUM	1. 40	MG/L
BARIUM	<0. 1	MG/L
CADMIUM	<0. 005	MG/L
COBALT	0. 00	MG/L
COPPER	<0. 02	MG/L
IRON	2. 10	MG/L
LEAD	<0. 001	MG/L
MANGANESE	0. 23	MG/L
MERCURY	<0. 0002	MG/L
MOLYBDENUM	<0. 1	MG/L
NICKEL	<0. 04	MG/L
SELENIUM	<0. 0003	MG/L
ZINC	0. 029	MG/L

T. CATION 50. 1 MEQ/L
TDS/COND 0. 757

T. ANION 92. 9 MEQ/L
TDS BAL 5297: 4607

RAY A. SIM, MANAGER

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-2803

Date Rec. 6-15-82

Date Sampled 6-15-82

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA-3

pH	7.1	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	5000	µmhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	358	mg/l
Solids, Total Dissolved	3841	mg/l
Solids, Total Suspended		mg/l
Sulfate	1988	mg/l
Iron, dissolved	1.14	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese	0.18	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Lab. No. 2969

Date Rec. 07-26-82

Date Sampled 07-26-82

Sample ID RDA # 3

pH	7.3	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	5500	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	393	mg/l
Solids, Total Dissolved	3861	mg/l
Solids, Total Suspended		mg/l
Sulfate	2493	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron (dissolved)	1.06	mg/l
Lead		mg/l
Manganese (dissolved)	0.16	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-3022

Date Rec. 8-13-82

Date Sampled 8-13-82 09:57

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA #3

pH	6.9	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	4390	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	311	mg/l
Solids, Total Dissolved	3000	mg/l
Solids, Total Suspended		mg/l
Sulfate	2520	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese (diss)	0.19	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l
Iron, dissolved	1.10	mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, Utah 84528 801-653-2314

FOR Consolidation Coal Co.
PO Box 527
Emery, Utah 84522

Lab. No. W-3166

Date Rec. 9-21-82

Date Sampled 9-21-82

Sample ID RDA-3

pH	7.6	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	4800	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	310	mg/l
Solids, Total Dissolved	3230	mg/l
Solids, Total Suspended		mg/l
Sulfate	2400	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	1.00	mg/l
Lead		mg/l
Manganese (Dissolved)	0.20	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

RDA - 3

10/13/82

pH	7.1
conductivity (µmhos/cm)	4,040
Na	280
TDS	3,226
SO4	1,900
Fe-dis	1.96
Mn-dis	0.17

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. ~~3392~~ 3393

Date Rec'd 11-29-82

Date Sampled 11-29-82

Time Sampled

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: RDA-3

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	4310	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.6	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	3385	mg/l
Solids, Total Suspended		mg/l
Sulfate	1900	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron Dissolve	1.62	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolve	0.15	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	[illegible]	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3403
Date Rec'd 12-09-82
Date Sampled 12-09-82
Time Sampled

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: RDA-3

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	4230	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.9	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	3612	mg/l
Solids, Total Suspended		mg/l
Sulfate	1720	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron Dissolved	1.50	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolved	0.17	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	290	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3528

Date Rec'd 1-19-83

Date Sampled 1-19-83

Time Sampled 1045

Client: Consolidation Coal Co.
Emery Mine
P.O. Box 527
Emery, Utah 84522

Sample ID: RDA # 3

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	4000	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.2	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	2300	mg/l
Solids, Total Suspended		mg/l
Sulfate	1700	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron, Dissolved	2.00	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese, Dissolved	2.18	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

STANDARD LABORATORIES, INC.
P.O. Box 1149, Huntington, UT 84528 801-653-2311

CONSOLIDATION COAL CO.
P. O. BOX 527
EMERY UTAH 84522

RDA-4

SAMPLE ID: ~~RD 4~~ DIRTY BROWN
DATE SAMPLED: 4. 29. 82
REPORT DATE: 5. 21. 82

LAB NUMBER W-2666
DATE REC'D: 4. 30. 82
SAMPLED BY: CONSOL

CHEMICAL ANALYSIS

NH3-N	0. 532 MG/L	Dissolved Phos.	<0.01 mg/l
BORON	0. 458 MG/L	Sulfide	2.1 mg/l S.
CALCIUM	51. 9 MG/L		
MAGNESIUM	90. 50 MG/L		
POTASSIUM	15. 50 MG/L		
SODIUM	1103. 00 MG/L		
SP. COND	10500 UHMOS/CM		
TDS	8340. 0 MG/L		
BICARB. ALK	550. 0 MG/L CACO3		
CARBONATE ALK.	<1 MG/L CACO3		
CHLORIDE	441. 0 MG/L		
NO3-N	2. 950 MG/L		
NO2-N	0. 020 MG/L		
SULFATE	5469. 0 MG/L		
T. HARDNS	502. 0 MG/L CACO3		

METALLIC ANALYSIS

ALUMINUM	0. 07 MG/L
BARIUM	<0. 1 MG/L
CADMIUM	<0. 005 MG/L
CHROMIUM	<0. 05 MG/L
COPPER	<0. 02 MG/L
IRON	0. 24 MG/L
LEAD	<0. 001 MG/L
MANGANESE	0. 45 MG/L
MERCURY	<0. 0002 MG/L
MOLYBDENUM	<0. 1 MG/L
NICKEL	<0. 04 MG/L
SELENIUM	0. 0007 MG/L
ZINC	0. 019 MG/L

T. CATION 58. 4 MEQ/L
TDS/COND 0. 794

T. ANION 137. 1 MEQ/L
TDS BAL 8340: 7155

RAY A. SIM, MANAGER

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

O. Box 1140, Huntington, Utah 84528 801-653-2314

FOR Consolidation Coal Co.
P.O. P.O. Box 527
Emery, Utah 84522

Sample ID RDA-4

Lab. No. W-2804

Date Rec. 6-15-82

Date Sampled 6-15-82 1230

pH	7.3	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	9810	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	665	mg/l
Solids, Total Dissolved	7641	mg/l
Solids, Total Suspended		mg/l
Sulfate	4761	mg/l
Iron, dissolved	0.73	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese	0.19	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-2970

Date Rec. 07-26-82

Date Sampled 07-26-82

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA # 4

pH	7.3	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	8900	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	660	mg/l
Solids, Total Dissolved	6486	mg/l
Solids, Total Suspended		mg/l
Sulfate	4893	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron (dissolved)	0.81	mg/l
Lead		mg/l
Manganese (dissolved)	0.18	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-3023

Date Rec. 8-13-82

Date Sampled 8-13-82 1011

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA #4

pH	7.2	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	8100	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	570	mg/l
Solids, Total Dissolved	4790	mg/l
Solids, Total Suspended		mg/l
Sulfate	4800	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese (diss)	0.20	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l
Iron, dissolved	0.30	mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-3167

Date Rec. 9-21-82

Date Sampled 9-21-82

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA-4

pH	7.2	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	7800	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	560	mg/l
Solids, Total Dissolved	5730	mg/l
Solids, Total Suspended		mg/l
Sulfate	3900	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	0.80	mg/l
Lead		mg/l
Manganese (Dissolved)	0.19	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

RDA - 4

10/13/82

pH	7.2
Conductivity (µmhos/cm)	7,900
Na	550
TDS	6,144
SO4	3,800
Fe-dis	0.85
Mn-dis	0.15

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: EDA-4

Lab. No. 3394
Date Rec'd 11-29-82
Date Sampled 11-29-82
Time Sampled

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	9000	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.4	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	5925	mg/l
Solids, Total Suspended		mg/l
Sulfate	[illegible]	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron Dissolve	0.87	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolve	0.15	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	582	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: RDA-4

Lab. No. 3404
Date Rec'd 12-09-82
Date Sampled 12-09-82
Time Sampled

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	8900	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.4	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	7066	mg/l
Solids, Total Suspended		mg/l
Sulfate	3.00	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron Dissolved	0.20	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolved	0.15	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	780	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3529

Date Rec'd 1-19-83

Date Sampled 1-19-83

Time Sampled 1110

Client: Consolidation Coal Co.
Emery Mine
P. O. Box 527
Emery, Utah 84522

Sample ID: RDA # 4

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	6300	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.3	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	3570	mg/l
Solids, Total Suspended		mg/l
Sulfate	2000	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron, Dissolved	0.33	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese, Dissolved	0.14	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, UT 84528 801-653-2311

CONSOLIDATION COAL CO.
P. O. BOX 527
EMERY UTAH 84522

RDA-5

SAMPLE ID: ~~RD-5~~ DARK BROWN
DATE SAMPLED: 4. 29. 82
REPORT DATE: 5. 21. 82

LAB NUMBER W-2667
DATE REC'D: 4. 30. 82
SAMPLED BY: CONSOL

CHEMICAL ANALYSIS

NH3-N	0. 426	MG/L
BORON	0. 758	MG/L
CALCIUM	44. 4	MG/L
MAGNESIUM	94. 00	MG/L
POTASSIUM	12. 00	MG/L
SODIUM	1348. 00	MG/L
SP. COND	25200	UHMOS/CM
TDS	19584. 0	MG/L
BICARB. ALK	1344. 0	MG/L CACO3
CARBONATE ALK.	<1	MG/L CACO3
CHLORIDE	1900. 0	MG/L
NO3-N	0. 105	MG/L
NO2-N	<0. 002	MG/L
SULFATE	14361. 0	MG/L
T. HARDNS	499. 0	MG/L CACO3

Dissolved Phos.	<0.01 mg/l
Sulfide	2.0 mg/l S.

METALLIC ANALYSIS

ALUMINUM	0. 24	MG/L
BARIUM	<0. 1	MG/L
CADMIUM	<0. 005	MG/L
CHROMIUM	<0. 05	MG/L
COPPER	<0. 02	MG/L
IRON	0. 46	MG/L
LEAD	<0. 001	MG/L
MANGANESE	0. 45	MG/L
MERCURY	<0. 0002	MG/L
MOLYBDENUM	<0. 1	MG/L
NICKEL	<0. 04	MG/L
SELENIUM	0. 0005	MG/L
ZINC	0. 037	MG/L

T. CATION 68. 9 MEQ/L
TDS/COND 0. 777

T. ANION 379. 4 MEQ/L
TDS BAL 19584:17747

RAY A. SIM, MANAGER

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA-5

Lab. No. W-2805

Date Rec. 6-15-82

Date Sampled 6-15-82 1239

pH	7.6	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	25500	µmhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	1280	mg/l
Solids, Total Dissolved	19634	mg/l
Solids, Total Suspended		mg/l
Sulfate	11983	mg/l
Iron, dissolved	0.81	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese	0.65	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-2971

Date Rec. 07-26-82

Date Sampled 07-26-82

FOR Consolidation coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA #5

pH	7.6	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	23,900	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	1282	mg/l
Solids, Total Dissolved	13,157	mg/l ?
Solids, Total Suspended		mg/l
Sulfate	11,485	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron (dissolved)	0.91	mg/l
Lead		mg/l
Manganese (dissolved)	0.66	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-3024

Date Rec. 8-13-82

Date Sampled 8-13-82 10:02

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA #5

pH	7.6	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	14200	µmhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	1093	mg/l
Solids, Total Dissolved	11010	mg/l
Solids, Total Suspended		mg/l
Sulfate	9490	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese (diss)	0.60	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l
Iron, dissolved	0.91	mg/l

Respectfully submitted

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STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, Utah 84528 801-653-2314

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA-5

Lab. No. W-3168

Date Rec. 9-21-82

Date Sampled 9-21-82

pH	7.6	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	19000	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	1100	mg/l
Solids, Total Dissolved	15120	mg/l
Solids, Total Suspended		mg/l
Sulfate	8000	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	1.00	mg/l
Lead		mg/l
Manganese (Dissolved)	0.73	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

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RDA - 5

10/13/82

pH	7.5
conductivity (µmhos/cm)	27,500
Na	1,050
TDS	17,360
SO4	8,900
Fe-dis	1.03
Mn-dis	0.74

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STANDARD LABORATORIES, INC.

). Box 1140, Huntington, Utah 84528 801-653-2314

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: ROA-5

Lab. No. 3395
Date Rec'd 11-29-82
Date Sampled 11-29-82
Time Sampled

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	40900	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.4	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	32175	mg/l
Solids, Total Suspended		mg/l
Sulfate	[illegible]	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron Dissolve	1.10	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolve	0.80	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	[illegible]	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted [signature]

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: RDA-5

Lab. No. 3405
Date Rec'd 12-09-82
Date Sampled 12-09-82
Time Sampled

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	37000	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.5	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	29040	mg/l
Solids, Total Suspended		mg/l
Sulfate	400	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron Dissolved	1.13	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolved	0.36	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	961	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3530

Date Rec'd 1-19-83

Date Sampled 1-19-83

Time Sampled 1033

Client: Consolidation Coal Co.
Emery Mine
P. O. Box 527
Emery, Utah 84522

Sample ID: RDA # 5

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	27000	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.5	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	21000	mg/l
Solids, Total Suspended		mg/l
Sulfate	[illegible]	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron, Dissolved	1.16	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese, Dissolved	0.80	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, UT 84528 801-653-2314

CONSOLIDATION COAL CO.
P. O. BOX 527
EMERY UTAH 84522

RDA-6

SAMPLE ID: ~~RD-6~~ DIRTY BROWN
DATE SAMPLED: 4. 29. 82
REPORT DATE: 5. 21. 82

LAB NUMBER W-2668
DATE REC'D: 4. 30. 82
SAMPLED BY: CONSOL

CHEMICAL ANALYSIS

NH3-N	0. 614	MG/L
BORON	0. 142	MG/L
CALCIUM	50. 1	MG/L
MAGNESIUM	82. 50	MG/L
POTASSIUM	22. 50	MG/L
SODIUM	1271. 00	MG/L
SP. COND	10100	UHMOS/CM
TDS	7607. 0	MG/L
BICARB. ALK	~~96. 0~~	MG/L CACO3 48
CARB. ALK	72. 0	MG/L CACO3
CHLORIDE	391. 0	MG/L
NO3-N	7. 300	MG/L
NO2-N	0. 013	MG/L
SULFATE	4926. 0	MG/L
T. HARDNS	465. 0	MG/L CACO3

Dissolved Phos.	<0.01 mg/l
Sulfide	2.0 mg/l S.
Phenolphthalein Alk.	36.0mg/l $CaCo_3$

48
72
120
156

METALLIC ANALYSIS

ALUMINUM	0. 16 MG/L
BARIUM	<0. 1 MG/L
CADMIUM	<0. 005 MG/L
CHROMIUM	<0. 05 MG/L
COPPER	<0. 02 MG/L
IRON	0. 37 MG/L
LEAD	<0. 001 MG/L
MANGANESE	0. 12 MG/L
MERCURY	<0. 0002 MG/L
MOLYBDENUM	<0. 1 MG/L
NICKEL	<0. 04 MG/L
SELENIUM	0. 0005 MG/L
ZINC	0. 030 MG/L

T. CATION 65. 2 MEQ/L
TDS/COND 0. 753

T. ANION 118. 0 MEQ/L
TDS BAL 7607: 6721

RAY A. SIM, MANAGER

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA-6

Lab. No. W-2806

Date Rec. 6-15-82

Date Sampled 6-15-82 1305

pH	8.3	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	18300	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	1318	mg/l
Solids, Total Dissolved	14570	mg/l
Solids, Total Suspended		mg/l
Sulfate	9230	mg/l
Iron, dissolved	0.46	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese	0.12	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-2972

Date Rec. 07-26-82

Date Sampled 07-26-82

FOR c
Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA # 6

pH	8.2	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	15,000	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	1324	mg/l
Solids, Total Dissolved	11,843	mg/l
Solids, Total Suspended		mg/l
Sulfate	8436	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron (dissloved)	0.44	mg/l
Lead		mg/l
Manganese (dissolved)	0.11	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-3025

Date Rec. 8-13-82

Date Sampled 8-13-82 10:30

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA #6

pH	8.2	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	17100	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	1300	mg/l
Solids, Total Dissolved	9610	mg/l
Solids, Total Suspended		mg/l
Sulfate	9330	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese (Diss)	0.09	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l
Iron, dissolved	0.41	mg/l

Respectfully submitted

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. W-3169

Date Rec. 9-21-82

Date Sampled 9-21-82

FOR Consolidation Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID RDA-6

pH	7.9	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate		mg/l $CaCo_3$
Calcium		mg/l
Chloride		mg/l
Conductivity	15800	umhos/cm
Dissolved Oxygen		mg/l
Hardness		mg/l $CaCo_3$
Magnesium		mg/l
Nitrogen, Nitrate		mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium		mg/l
Sodium	1290	mg/l
Solids, Total Dissolved	12200	mg/l
Solids, Total Suspended	~~3000~~	mg/l
Sulfate	9000	mg/l

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	0.50	mg/l
Lead		mg/l
Manganese (Dissoved)	0.07	mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

RDA-6

10/13/82

pH	7.8
Conductivity (µmhos/cm)	14,100
Na	1,200
TDS	10,380
SO4	8,000
Fe-dis	0.53
Mn-dis	0.09

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

O. Box 1140, Huntington, Utah 84528 801-653-2314

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: ~~ROA~~-6

Lab. No. 3396
Date Rec'd 11-29-82
Date Sampled 11-29-82
Time Sampled

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	10000	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.6	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	7823	mg/l
Solids, Total Suspended		mg/l
Sulfate	[illegible]	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron Dissolve	0.66	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolve	0.10	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	950	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted [signature]

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: RDA-6

Lab. No. 3406
Date Rec'd 12-09-82
Date Sampled 12-09-82
Time Sampled

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	15100	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.6	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	12064	mg/l
Solids, Total Suspended		mg/l
Sulfate	5200	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron Dissolved	0.6	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese Dissolved	0.10	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	900	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3531
Date Rec'd 1-19-83
Date Sampled 1-19-83
Time Sampled 1056

Client: Consolidation Coal Co.
Emery Mine
P. O. Box 527
Emery, Utah 84522

Sample ID: RDA # 6

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	14200	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.7	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	7900	mg/l
Solids, Total Suspended		mg/l
Sulfate	8500	mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron, Dissolved	0.55	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese, Dissolved	0.09	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory

LOG OF BOREHOLE

BOREHOLE NO. ~~SA-1,4~~ SMI-1

PAGE 1 of 1

LOC. or COORDS.

GROUND ELEV. ~~6071'~~ 6070.3

ORIG. GROUND SURFACE ~~6071'~~ 6070.3

TOTAL DEPTH DRILLED 21'

SAMPLING METHOD Grab

DRILLING CONTRACTOR Zimmerman

RIG Bucyrus-Erie 22-W (Cable Tool)

BIT 5 5/8" x 21'7"

CASING 2" Dia. PVC

FLUID Water

	START	FINISH
DATE	4/27/82	4/28/8
TIME	1710	1030

GEOPHYS. LOG None

HOW LEFT

DEPTH	RET	LOSS	PENE RATE	ROCK TYPE	SYM-BOL	DESCRIPTION
						0-1'
						SOIL
						1-8'
						SANDY SILT WITH CLAY
						Brown silt and fine grained sand with less than 20% clay.
						8-16'
						SILTY CLAY
						Brown colored silt and clay with less than 25% fine grained sand.
						16-19'
						SAND WITH GRAVEL AND CLAY
						Fine to coarse grained sand with less than 30% clay and less than 20% subrounded to subangular gravel.
						19-21'
						CLAY WITH SAND AND GRAVEL
						Brown colored clay with less than 25% fine to coarse grained sand and gravel.
						21'
						BLUEGATE SHALE
						TOTAL DEPTH DRILLED 21'

LOCATION

LOGGED BY

CLIENT

JOB NO.

BOREHOLE NO. ~~SA-2~~ SM1-2

LOG OF BOREHOLE

PAGE 1 of 1

LOC. or COORDS.	DRILLING CONTRACTOR Zimmerman	START FINISH
GROUND ELEV. ~~6050'~~ 6048.2	RIG Bucyrus-Erie 22-W (Cable Tool)	DATE 4/25/82 4/25/8
ORIG. GROUND SURFACE ~~6050'~~ 6048.2	BIT 5 5/8" x 21'7"	TIME 173[illegible] 1930
TOTAL DEPTH DRILLED 14'	CASING 2" Dia. PVC	GEOPHYS. LOG None
SAMPLING METHOD Grab	FLUID Water	HOW LEFT

DEPTH	RET	LOSS	PENE RATE	ROCK TYPE	SYM-BOL	DESCRIPTION
						0-4'
						SOIL
						4-9'
						SAND AND GRAVEL WITH CLAY
						Brown colored fine to coarse grained sand and fine grained subrounded to subangular gravel with less than 15% clay. (Hole is making some water)
						9'
						EMERY SANDSTONE
						TOTAL DEPTH DRILLED 14'

LOCATION

LOGGED BY

CLIENT

JOB NO.

BOREHOLE NO. ~~SA-3~~ SM 1-3

LOG OF BOREHOLE

PAGE 1 of 1

LOC. or COORDS. _____

GROUND ELEV. ~~6055±~~ 6056.0
ORIG. GROUND SURFACE ~~6055±~~ 6056.0
TOTAL DEPTH DRILLED 26'
SAMPLING METHOD Grab

DRILLING CONTRACTOR Zimmerman

RIG Bucyrus-Erie 22-W (Cable Tool)
BIT 5 5/8" x 21'7"
CASING 2" Dia. PVC
FLUID Water

	START	FINISH
DATE	4/26/82	4/26/8
TIME	1015	1315

GEOPHYS. LOG None
HOW LEFT _____

DEPTH	RET	LOSS	PENE RATE	ROCK TYPE	SYM-BOL	DESCRIPTION
						0-10' SILT AND SAND WITH CLAY Brown colored fine grained sand and silt with clay.
						10-17' CLAY WITH SAND Brown colored clay with less than 40% fine grained sand silt and less than 10% fine gravel. (Hole is making water at about 12') 17-18' SANDY CLAY WITH GRAVEL Brown colored clay and very fine grained sand with less than 10% fine gravel occasionally up to ½". 18-25' CLAY WITH SAND Brown colored clay with less than 25% silt and fine to coarse grained sand. 25' BLUEGATE SHALE
						TOTAL DEPTH DRILLED 26'

LOCATION _____ LOGGED BY _____

CLIENT _____ JOB NO. _____

BOREHOLE NO. ~~SA-4~~ SMI-4

LOG OF BOREHOLE

PAGE 1 of 1

LOC. or COORDS. _____

GROUND ELEV. 5939.2
ORIG. GROUND SURFACE 5939.2
TOTAL DEPTH DRILLED 30'
SAMPLING METHOD Grab

DRILLING CONTRACTOR Zimmerman

RIG Bucyrus-Erie 22-W (Cable Tool)
BIT 5 5/8" x 21'7"
CASING 2" Dia. PVC
FLUID Water

	START	FINISH
DATE	4/20/82	4/20/8
TIME	082[illegible]	1530

GEOPHYS. LOG none
HOW LEFT _____

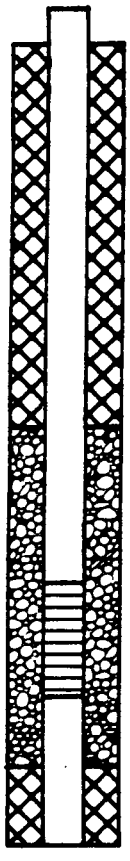
DEPTH	RET	LOSS	PENE RATE	ROCK TYPE	SYM-BOL	DESCRIPTION
0'						0-5' SILTY SAND Brown colored silty sand. 5-10' BOULDERS WITH SILTY SAND
10'						10-20' SILTY SAND Brown colored silty sand with less than 10% gravel.
20'						20-25' SILTY SAND WITH CLAY Brown colored silty sand with less than 20% brown colored clay, and less than 15% rock fragments (clinker) and a trace of coal. 25-30' COAL Black coal. 30' CLAY Grey colored clay.
30'						TOTAL DEPTH DRILLED 30'

LOGGED BY _____

JOB NO. _____

WELL CONSTRUCTION SUMMARY

SKETCH of WELL



LOCATION or COORDINATES ~~SA 1,4~~ SM1-1

ELEVATION: GROUND LEVEL ~~6071'~~ 6070.3

TOP OF CASING ~~6072.4'~~ 6071.6

DRILLING SUMMARY:

TOTAL DEPTH DRILLED 21'

DRILLING CONTRACTOR Zimmerman

RIG (S) USED Bucyrus-Erie 22-W (Cable Tool)

SIZES (S) and TYPE (S) of BITS 5 5/8"

DRILLING FLUID Water

SAMPLING METHOD

SURFACE CASING 0-10' 6" casing

COMMENTS (problems, shutdowns, etc.)

TIME LOG:

	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING				
LOGGING				
CASING				
GRAVEL PACKING				
CEMENTING				
DEVELOPMENT				
OTHER:				

DEVELOPMENT:

METHOD Airlift

ADDITIVES

RESULTS

WELL DESIGN:

BASIS: Geologic Log X Geophysical Log

CASING STRING: C = casing ; S = screen

0	14	C			
14	17	S			
17	21	C			

CASING:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SCREEN:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SLOT SIZE #10 slot

PACKERS

CENTRALIZERS

GRAVEL PACK 30-50 sand 10'-19'

CEMENT 0-10' and 19'-21'

MISCELLANEOUS:

Bluegate shale at 21'

4-29-82

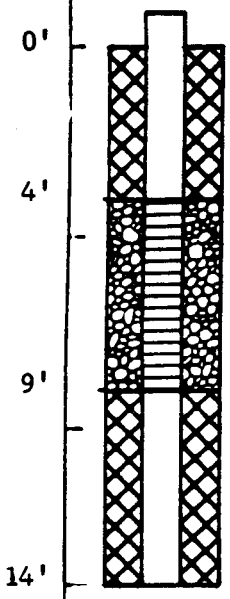
Static water level 16.8' below ground surface.

Ph= 8.4

Conductivity= 1488 umhos/cm

WELL CONSTRUCTION SUMMARY

SKETCH of WELL



LOCATION or COORDINATES ~~SA-2~~ SMI-2

ELEVATION: GROUND LEVEL ~~6050±~~ 6048.2

TOP OF CASING 6051.8

DRILLING SUMMARY:

TOTAL DEPTH DRILLED 14'

DRILLING CONTRACTOR Zimmerman

RIG (S) USED Bucyrus-Erie 22-W

SIZES (S) and TYPE (S) of BITS 5 5/8"

DRILLING FLUID Water

SAMPLING METHOD

SURFACE CASING 0-4' 6" casing

COMMENTS (problems, shutdowns, etc.)

TIME LOG:

	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING				
LOGGING				
CASING				
GRAVEL PACKING				
CEMENTING				
DEVELOPMENT				
OTHER:				

DEVELOPMENT:

METHOD Airlift

ADDITIVES

RESULTS

WELL DESIGN:

BASIS: Geologic Log X Geophysical Log

CASING STRING: C = casing ; S = screen

0	-	4	C		-		
4	-	9	S		-		
9	-	14	C		-		
	-				-		
	-				-		
	-				-		
	-				-		

CASING:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SCREEN:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SLOT SIZE #10 slot

PACKERS

CENTRALIZERS

GRAVEL PACK 30-50 sand 4'-9'

CEMENT 0-4' and 9-14'

MISCELLANEOUS:

Emery sandstone at 9'

4-28-82

Static water level is 5.3' below groun surface.

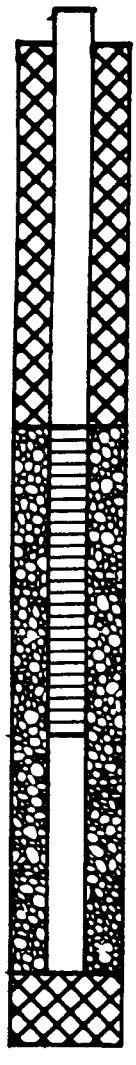
4-29-82

Ph= 10.5

Conductivity= 9250 umhos/cm

WELL CONSTRUCTION SUMMARY

SKETCH of WELL



LOCATION or COORDINATES ~~SA-3~~ SM1-3

ELEVATION: GROUND LEVEL ~~6055+~~ 6056.0

TOP OF CASING ~~6055.5'~~ 6056.5

DRILLING SUMMARY:

TOTAL DEPTH DRILLED 26'

DRILLING CONTRACTOR Zimmerman

RIG (S) USED Bucyrus-Erie 22-W

SIZES (S) and TYPE (S) of BITS 5 5/8"

DRILLING FLUID Water

SAMPLING METHOD

SURFACE CASING 0-10' 6" casing

COMMENTS (problems, shutdowns, etc.)

TIME LOG:

	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING				
LOGGING				
CASING				
GRAVEL PACKING				
CEMENTING				
DEVELOPMENT				
OTHER:				

DEVELOPMENT:

METHOD Airlift

ADDITIVES

RESULTS

WELL DESIGN:

BASIS: Geologic Log X Geophysical Log

CASING STRING: C = casing ; S = screen

0	–	10	C				
10	–	18	S				
18	–	24	C				

CASING:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SCREEN:

MATERIAL Schedule 40 PVC

DIMENSIONS 2" Dia.

SLOT SIZE #10 slot

PACKERS

CENTRALIZERS

GRAVEL PACK 30-50 sand 10'-24'

CEMENT 0-10' and 24-26'

MISCELLANEOUS:

Bluegate at 25'

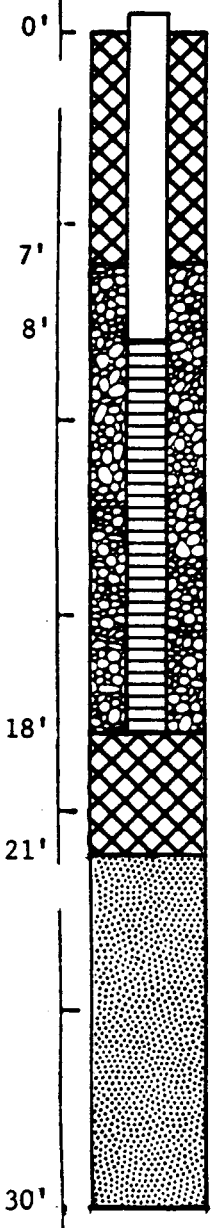
4-30-82

Static water level 19.1' below ground surface.

Ph= 9.2

WELL CONSTRUCTION SUMMARY

SKETCH of WELL



LOCATION or COORDINATES ~~SA-4~~ SM1-4

ELEVATION: GROUND LEVEL 5939.2

TOP OF CASING ~~2.4' AGS~~ 5941.6

DRILLING SUMMARY:

TOTAL DEPTH DRILLED 30 ft.

DRILLING CONTRACTOR Zimmerman

RIG (S) USED Bucyrus-Erie 22-W (Cable Tool)

SIZES (S) and TYPE (S) of BITS 5 5/8 in.

DRILLING FLUID Water

SAMPLING METHOD

SURFACE CASING 7 ft of 6" casing

COMMENTS (problems, shutdowns, etc.) penetrated coal seam. Backfilled hole and placed a cement seal from 18 to 21 feet. Water appears to be contaminated by the coal seam below.

TIME LOG:

	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING				
LOGGING				
CASING				
GRAVEL PACKING				
CEMENTING				
DEVELOPMENT				
OTHER:				

DEVELOPMENT:

METHOD Airlift

ADDITIVES

RESULTS

WELL DESIGN:

BASIS: Geologic Log X Geophysical Log

CASING STRING: C = casing ; S = screen

0	8	C
8	18	S

CASING:

MATERIAL 2" PVC Sch 40

DIMENSIONS

SCREEN:

MATERIAL 2" PVC Sch 40

DIMENSIONS

SLOT SIZE #50 slot

PACKERS

CENTRALIZERS

GRAVEL PACK 7' to 18' ½" gravel

CEMENT 0-7 ft. 18-21 ft.

MISCELLANEOUS:

Borehole was backfilled to 21 ft with cuttings.

4-28-82

Static water level 10.1' below ground surface.

4-29-82

Ph= 8.5

Conductivity= 5300 umhos/cm

WELL SM1-1

WATER LEVEL DATA

WELL LOCATION N- 199,675
E- 2,077,237

ELEVATION:
MEASURING POINT 6071.62

MEASURING POINT TOC 1.3' AGL

GROUND LEVEL 6070.33

MINE Emery Shop #1

WELL COMPLETION Christensen Gal

DATE	TIME	MEASURING DEVICE	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL DEPTH	WATER LEVEL ELEVATION	BY	COMMENTS
4-29-82					16.8	6053.5		
				-1.3				
9-14-82			5.75		4.45	6065.9		
11-17-82			8.27		6.97	6063.4		

CONSOLIDATION COAL CO. CONSOL WESTERN REGION

WELL SM1-2

WATER LEVEL DATA

WELL LOCATION N-197,589
E-2,076,031

ELEVATION:
MEASURING POINT 6051.81

MEASURING POINT TOC 3.2' AGL

GROUND LEVEL 6048.61

MINE Energy Strip #1

WELL COMPLETION Chain Fremion Qal

DATE	TIME	MEASURING DEVICE	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL DEPTH	WATER LEVEL ELEVATION	BY	COMMENTS
4-28-82					5.3	6043.3		
8-30-82			6.00	-3.2	2.8	6045.8		
9-14-82			7.58		4.38	6044.2		
11-17-82			4.42		1.22	6047.4		

CONSOLIDATION COAL CO. CONSOL WESTERN REGION

WELL SM1-3

WATER LEVEL DATA

WELL LOCATION N-197,903
E-2,073,514

ELEVATION:
MEASURING POINT 6056.47

MEASURING POINT TOC 0.5' AGL

GROUND LEVEL 6055.95

MINE

WELL COMPLETION

DATE	TIME	MEASURING DEVICE	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL DEPTH	WATER LEVEL ELEVATION	BY	COMMENTS
4-30-82			—	—	19.1	6036.9		
8-30-82			11.92	-0.5	9.42	6046.5		
9-14-82			11.92		9.42	6046.5		
11-17-82			9.67		9.17	6046.8		

CONSOLIDATION COAL CO. CONSOL WESTERN REGION

WELL SMI-4

WATER LEVEL DATA

WELL LOCATION N - 192,536
E - 2,070,876

ELEVATION:
MEASURING POINT 5941.56

MEASURING POINT TOC 2.3' AGL

GROUND LEVEL 5939.22

MINE Emery Strip #1

WELL COMPLETION Chn from a Qal

DATE	TIME	MEASURING DEVICE	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL DEPTH	WATER LEVEL ELEVATION	BY	COMMENTS
4-28-82			—	—	10.1	5929.1		
8-30-82			15.42	-2.3	13.12	5926.1		
9-15-82			13.10		10.8	5928.4		
11-29-82			12.58		10.28	5928.9		

CONSOLIDATION COAL CO. CONSOL WESTERN REGION

STANDARD LABORATORIES, INC.
P.O. Box 149 Huntington, UT 84528 801-653-2311

CONSOLIDATION COAL CO.
P. O. BOX 527
EMERY UTAH 84522

SAMPLE ID: ~~SA 1 4~~ SMH-1 SL. DIRTY
DATE SAMPLED: 4. 29. 82
REPORT DATE: 5. 21. 82

LAB NUMBER W-2659
DATE REC'D: 4. 30. 82
SAMPLED BY: CONSOL

CHEMICAL ANALYSIS

NH3-N	1. 010	MG/L
BORON	0. 292	MG/L
CALCIUM	46. 0	MG/L
MAGNESIUM	95. 00	MG/L
POTASSIUM	45. 00	MG/L
SODIUM	2013. 00	MG/L
SP. COND	18100	UHMOS/CM
TDS	14400. 0	MG/L
BICARB. ALK	683. 0	MG/L CACO3
CARBONATE ALK.	<1	MG/L CACO3
CHLORIDE	281. 0	MG/L
NO3-N	5. 250	MG/L
NO2-N	<0. 002	MG/L
SULFATE	9604. 0	MG/L
T. HARDNS	508. 0	MG/L CACO3

Dissolved Phosphorus	0.076mg/l
Sulfide	2.0 mg/lS.

METALLIC ANALYSIS

ALUMINUM	0. 18	MG/L
BARIUM	<0. 1	MG/L
CADMIUM	<0. 005	MG/L
CHROMIUM	<0. 05	MG/L
COPPER	<0. 02	MG/L
IRON	0. 44	MG/L
LEAD	<0. 001	MG/L
MANGANESE	0. 75	MG/L
MERCURY	<0. 0002	MG/L
MOLYBDENUM	<0. 1	MG/L
NICKEL	<0. 04	MG/L
SELENIUM	0. 0007	MG/L
ZINC	0. 031	MG/L

T. CATION 98. 8 MEQ/L
TDS/COND 0. 796

T. ANION 221. 4 MEQ/L
TDS BAL 14400:12039

RAY A. SIM, MANAGER

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3382

Date Rec'd 11-19-82

Date Sampled 11-19-82

Time Sampled 1234

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: SM-1-1

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	472	mg/l $CaCO_3$ 576
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	475	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	13200	umhos/cm
Fluoride	0.47	mg/l
Hardness, Total	3607	mg/l $CaCO_3$
Nitrogen, Ammonia	0.393	mg/l
Nitrogen, Nitrate	0.093	mg/l
Nitrogen, Nitrite	< 0.010	mg/l
Oil & Grease		mg/l
pH	7.5	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	7394	mg/l
Solids, Total Suspended		mg/l
Sulfate	4000	mg/l
Sulfide	1.9	mg/l
Turbidity		NTU
Phosphate, Dissolved	0.079	mg/l
Total Cation:	111.5	meq/l
Total Anion:	106.2	meq/l

	Aluminum	0.05	mg/l
	Arsenic	< 0.001	mg/l
H003	Barium	< 0.1	mg/l
	Beryllium		mg/l
	Boron	0.100	mg/l
	Cadmium	< 0.005	mg/l
	Calcium	950	mg/l
	Chromium	< 0.05	mg/l
	Copper	< 0.02	mg/l
	Iron	0.29	mg/l
	Lead	< 0.05	mg/l
	Magnesium	30.0	mg/l
	Manganese	1.03	mg/l
	Mercury	< 0.0002	ug/l
	Nickel	< 0.04	mg/l
	Potassium	25.0	mg/l
	Selenium	0.0006	mg/l
	Silica		mg/l
	Sodium	899	mg/l
	Vanadium		mg/l
	Zinc	0.027	mg/l
	Molybdenum	< 0.1	mg/l

Respectfully submitted

Certified Environmental Laboratory

STANDARD LABORATORIES, INC.
P.O. Box 149, Huntington, UT 84528 801-650-2311

CONSOLIDATION COAL CO.
P. O. BOX 527
EMERY UTAH 84522

SM1-2

SAMPLE ID: ~~SA-2~~ DIRTY BROWN
DATE SAMPLED: 4. 29. 82
REPORT DATE: 5. 21. 82

LAB NUMBER W-2660
DATE REC'D: 4. 30. 82
SAMPLED BY: CONSOL

CHEMICAL ANALYSIS

NH3-N	0. 480	MG/L
BORON	0. 088	MG/L
CALCIUM	52. 8	MG/L
MAGNESIUM	149. 00	MG/L
POTASSIUM	27. 00	MG/L
SODIUM	1033. 00	MG/L
SP. COND	10000	UHMOS/CM
TDS	8746. 0	MG/L
BICARB. ALK	408. 0	MG/L CACO3 497
CARB. ALK	101. 0	MG/L CACO3 61
CHLORIDE	210. 0	MG/L
NO3-N	3. 280	MG/L
NO2-N	<0. 002	MG/L
SULFATE	5934. 0	MG/L
T. HARDNS	746. 0	MG/L CACO3

Dissolved Phos.	<0.01 mg/l
Sulfide	1.9 mg/l S.
Phenolphthalein Alk.	50.4mg/l $CaCo_3$

METALLIC ANALYSIS

ALUMINUM	0. 14	MG/L
BARIUM	<0. 1	MG/L
CADMIUM	<0. 005	MG/L
CHROMIUM	<0. 05	MG/L
COPPER	<0. 02	MG/L
IRON	0. 20	MG/L
LEAD	<0. 001	MG/L
MANGANESE	0. 09	MG/L
MERCURY	<0. 0002	MG/L
MOLYBDENUM	<0. 1	MG/L
NICKEL	<0. 04	MG/L
SELENIUM	0. 0006	MG/L
ZINC	0. 011	MG/L

T. CATION 60. 5 MEQ/L
TDS/COND 0. 875

T. ANION 141. 1 MEQ/L
TDS BAL 8746: 7379

RAY A. SIM, MANAGER

pH	[illegible] units	[illegible]	<0.001 mg/l
[illegible]	mg/l $CaCo_3$	Beryllium	mg/l
Alkalinity, Bicarbonate	549 mg/l $CaCo_3$ HCO_3 [illegible] mg/l	Boron	0.[illegible] mg/l
Calcium	210 mg/l	Cadmium	<0.005 mg/l
Chloride	55.5 mg/l	Chromium	<0.05 mg/l
Conductivity	2610 umhos/cm	Copper	<0.02 mg/l
Dissolved Oxygen	mg/l	Iron	0.51 mg/l
Hardness	1088 mg/l $CaCo_3$	Lead	<0.05 mg/l
Magnesium	137 mg/l	Manganese	0.15 mg/l
Nitrogen, Nitrate	0.080 mg/l	Mercury	<0.0002 µg/l
Phosphorus, Total	mg/l	Nickel	<0.04 mg/l
Phosphorus, Ortho	mg/l	Selenium	0.0005 mg/l
Potassium	15.0 mg/l	Zinc	0.037 mg/l
Sodium	233 mg/l	Aluminum	<0.05 mg/l
Solids, Total Dissolved	1928 mg/l	Barium	<0.1 mg/l
Solids, Total Suspended	mg/l	Molybdenum	<0.1 mg/l
Sulfate	940 mg/l		

Ammonia as N	2.10 mg/l
Carbonate	<1.0 mg/l
Fluoride	0.51 mg/l
Nitrite as N	<0.01 mg/l
Phos. Diss.	0.083 mg/l
Sulfide	1.8 mg/l

Respectfully submitted [illegible]

[redacted]

Client: [redacted]
P.O. Box 527
Emery, Utah 84522

Sample ID: Sit 1-2

Lab. No. [redacted]
Date Rec'd [redacted]
Date Sampled 11-1[redacted]
Time Sampled 1250

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	547	mg/l $CaCO_3$ 667
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	76.5	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	5890	umhos/cm
Fluoride	0.45	mg/l
Hardness, Total	1659	mg/l $CaCO_3$
Nitrogen, Ammonia	1.99	mg/l
Nitrogen, Nitrate	0.688	mg/l
Nitrogen, Nitrite	< 0.010	mg/l
Oil & Grease		mg/l
pH	7.1	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	3688	mg/l
Solids, Total Suspended		mg/l
Sulfate	1.9	mg/l
Sulfide		mg/l
Turbidity		NTU
Phosphate Dissolved	0.086	mg/l
Total Cation:	51.0	meq/l
Total Anion:	52.8	meq/l

	Aluminum	< 0.05	mg/l
	Arsenic	< 0.001	mg/l
H003	Barium	< 0.1	mg/l
	Beryllium		mg/l
	Boron	0.320	mg/l
	Cadmium	< 0.005	mg/l
	Calcium	450	mg/l
	Chromium	< 0.05	mg/l
	Copper	< 0.02	mg/l
	Iron	0.63	mg/l
	Lead	< 0.05	mg/l
	Magnesium	130	mg/l
	Manganese	0.19	mg/l
	Mercury	< 0.0002	ug/l
	Nickel	< 0.04	mg/l
	Potassium	17.0	mg/l
	Selenium	0.0004	mg/l
	Silica		mg/l
	Sodium	400	mg/l
	Vanadium		mg/l
	Zinc	0.043	mg/l
	Molybdenum	< 0.1	mg/l

Respectfully submitted [redacted]

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, UT 84528 801-653-2311

CONSOLIDATION COAL CO.
P. O. BOX 527
EMERY UTAH 84522

SAMPLE ID: ~~SA-3~~ SMI-3 DIRTY BROWN
DATE SAMPLED: 4. 29. 82
REPORT DATE: 5. 21. 82

LAB NUMBER W-2661
DATE REC'D: 4. 30. 82
SAMPLED BY: CONSOL

CHEMICAL ANALYSIS

NH3-N	1. 590	MG/L
BORON	0. 254	MG/L
CALCIUM	42. 7	MG/L
MAGNESIUM	95. 00	MG/L
POTASSIUM	58. 00	MG/L
SODIUM	%2139. 00	MG/L
SP. COND	30500	UHMOS/CM
TDS	%23695. 0	MG/L
BICARB. ALK	840. 0	MG/L CACO3 1024
CARB. ALK	300. 0	MG/L CACO3 180
CHLORIDE	840. 0	MG/L
NO3-N	2. 200	MG/L
NO2-N	<0. 002	MG/L
SULFATE	%17579. 0	MG/L
T. HARDNS	499. 0	MG/L CACO3

Dissolved	0.029mg/l
Sulfide	2.0 mg/l S.
Phenolphthalein Alk.	150mg/l $CaCo_3$

7 11k 140

METALLIC ANALYSIS

ALUMINUM	0. 15	MG/L
BARIUM	<0. 1	MG/L
CADMIUM	<0. 005	MG/L
CHROMIUM	<0. 05	MG/L
COPPER	<0. 02	MG/L
IRON	0. 35	MG/L
LEAD	<0. 001	MG/L
MANGANESE	0. 29	MG/L
MERCURY	<0. 0002	MG/L
MOLYBDENUM	<0. 1	MG/L
NICKEL	<0. 04	MG/L
SELENIUM	0. 0007	MG/L
ZINC	0. 021	MG/L

T. CATION 104. 5 MEQ/L
TDS/COND 0. 777

T. ANION 416. 7 MEQ/L
TDS BAL 23695:20696

RAY A. SIM, MANAGER

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. [illegible]-3078

Date Rec. 8-30-82

Date Sampled 8-30-82

FOR Consolidaiton Coal Co.
P.O. Box 527
Emery, Utah 84522

Sample ID SM 1-3

pH	8.3	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate	240	mg/l $CaCo_3$ HCO_3 293 mg/l
Calcium	562	mg/l
Chloride	12.9	mg/l
Conductivity	31500	umhos/cm
Dissolved Oxygen		mg/l
Hardness	2368	mg/l $CaCo_3$
Magnesium	233	mg/l
Nitrogen, Nitrate	5.44	mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium	60.0	mg/l
Sodium	3580	mg/l
Solids, Total Dissolved	24099	mg/l
Solids, Total Suspended		mg/l
Sulfate	19340	mg/l
Ammonia AsN	0.93 mg/l	
Carbonate	<1.0 mg/l	
Fluoride	1.17 mg/l	
Nitrite as N	<0.01 mg/l	
Phos. Diss.	0.01 mg/l	
Sulfide	1.9 mg/l	

Arsenic	<0.001	mg/l
Beryllium		mg/l
Boron	0.321	mg/l
Cadmium	<0.005	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	2.99	mg/l
Lead	<0.05	mg/l
Manganese	0.26	mg/l
Mercury	<0.0002	µg/l
Nickel	<0.04	mg/l
Selenium	0.0006	mg/l
Zinc	0.027	mg/l
Aluminum	0.09 mg/l	
Barium	<0.1 mg/l	
Molybdenum	<0.1 mg/l	

Respectfully submitted [signature]

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: SM 1-3

Lab. No. 3384
Date Rec'd 11-19-82
Date Sampled 11-19-82
Time Sampled 1208

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	402	mg/l $CaCO_3$ 490
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	1370	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	41000	umhos/cm
Fluoride	0.83	mg/l
Hardness, Total	2491	mg/l $CaCO_3$
Nitrogen, Ammonia	8.70	mg/l
Nitrogen, Nitrate	4.56	mg/l
Nitrogen, Nitrite	< 0.1	mg/l
Oil & Grease		mg/l
pH	7.2	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	32030	mg/l
Solids, Total Suspended		mg/l
Sulfate	1[illegible]00	mg/l
Sulfide	1.0	mg/l
Turbidity		NTU
Phosphate Dissolved	< [illegible]	mg/l
Total Cation	410.4	meq/l
Total Anion	421.7	meq/l

	Aluminum	0.07	mg/l
	Arsenic	< 0.001	mg/l
H003	Barium	< 0.1	mg/l
	Beryllium		mg/l
	Boron	0.300	mg/l
	Cadmium	< 0.005	mg/l
	Calcium	600	mg/l
	Chromium	< 0.05	mg/l
	Copper	< 0.[illegible]	mg/l
	Iron	3.00	mg/l
	Lead	< 0.05	mg/l
	Magnesium	240	mg/l
	Manganese	0.27	mg/l
	Mercury	< 0.0002	ug/l
	Nickel	< 0.04	mg/l
	Potassium	69.0	mg/l
	Selenium	0.0005	mg/l
	Silica		mg/l
	Sodium	3650	mg/l
	Vanadium		mg/l
	Zinc	0.029	mg/l
	Molybdenum	< 1	mg/l

Respectfully submitted [signature]

Certified Environmental Laboratory

STANDARD LABORATORIES, INC.
P. O. Box 1149, Huntington, UT 84528 801-653-2311

CONSOLIDATION COAL CO.
P. O. BOX 527
EMERY UTAH 84522

SAMPLE ID: ~~SA-4~~ SMI-4 VERY DIRTY
DATE SAMPLED: 4. 29. 82
REPORT DATE: 5. 21. 82

LAB NUMBER W-2662
DATE REC'D: 4. 30. 82
SAMPLED BY: CONSOL

CHEMICAL ANALYSIS

NH3-N	4. 290	MG/L
BORON	0. 158	MG/L
CALCIUM	57. 6	MG/L
MAGNESIUM	84. 00	MG/L
POTASSIUM	17. 00	MG/L
SODIUM	847. 00	MG/L
SP. COND	6000	UHMOS/CM
TDS	4232. 0	MG/L
BICARB. ALK	1680. 0	MG/L CACO3 2048
CARBONATE ALK.	<1	MG/L CACO3
CHLORIDE	90. 8	MG/L
NO3-N	4. 920	MG/L
NO2-N	<0. 002	MG/L
SULFATE	3103. 0	MG/L
T. HARDNS	492. 0	MG/L CACO3

Dissolved Phos.	0.051mg/l
Sulfide	2.0 mg/l S.

METALLIC ANALYSIS

ALUMINUM	0. 27	MG/L
BARIUM	<0. 1	MG/L
CADMIUM	<0. 005	MG/L
CHROMIUM	<0. 05	MG/L
COPPER	<0. 02	MG/L
IRON	0. 70	MG/L
LEAD	<0. 001	MG/L
MANGANESE	0. 14	MG/L
MERCURY	<0. 0002	MG/L
MOLYBDENUM	<0. 1	MG/L
NICKEL	<0. 04	MG/L
SELENIUM	0. 0006	MG/L
ZINC	0. 023	MG/L

T. CATION 47. 1 MEQ/L
TDS/COND 0. 705

T. ANION 100. 6 MEQ/L
TDS BAL 4232: 4182

RAY A. SIM, MANAGER

Sample ID: [illegible]

pH	7.3	Units
Alkalinity, Total		mg/l $CaCo_3$
Alkalinity, Bicarbonate	437	mg/l $CaCo_3$ HCO_3 53[illegible] mg/l
Calcium	383	mg/l
Chloride	67.7	mg/l
Conductivity	[illegible]	umhos/cm
Dissolved Oxygen		mg/l
Hardness	1673	mg/l $CaCo_3$
Magnesium	174	mg/l
Nitrogen, Nitrate	2.96	mg/l
Phosphorus, Total		mg/l
Phosphorus, Ortho		mg/l
Potassium	15.0	mg/l
Sodium	348	mg/l
Solids, Total Dissolved	3195	mg/l
Solids, Total Suspended		mg/l
Sulfate	1700	mg/l

Ammonia as N 3.92 mg/l
Carbonate <1.0 mg/l
Fluoride 0.76 mg/l
Nitrite as N <0.01 mg/l
Phos. Diss. 0.071 mg/l
Sulfide 1.8 mg/l

Arsenic	<0.[illegible]	mg/l
Beryllium		mg/l
Boron	0.[illegible]	mg/l
Cadmium	<0.005	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.62	mg/l
Lead	<0.05	mg/l
Manganese	0.30	mg/l
Mercury	<0.0002	mg/l
Nickel	<0.04	mg/l
Selenium	0.0006	mg/l
Zinc	0.030	mg/l

Aluminum 0.19 mg/l
Barium <0.1 mg/l
Molybdenum <0.1 mg/l

Respectfully submitted [signature]

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3397

Date Rec'd 11-29-82

Date Sampled 11-29-82

Time Sampled

Client: Consolidation Coal Co.
P.O. BOX 527
Emery, Utah 84522

Sample ID: SM 1-4

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	510	mg/l $CaCO_3$ 611 H003
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	52.5	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	3600	umhos/cm
Fluoride	0.95	mg/l
Hardness, Total	1432	mg/l $CaCO_3$
Nitrogen, Ammonia	3.32	mg/l
Nitrogen, Nitrate	1.99	mg/l
Nitrogen, Nitrite	< 0.01	mg/l
Oil & Grease		mg/l
pH	7.3	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	2580	mg/l
Solids, Total Suspended		mg/l
Sulfate	1500	mg/l
Sulfide	1.3	mg/l
Turbidity		NTU
Phosphate, Dissolved	0.076	mg/l
Total Cation	40.0	meq/l
Total Anion	44.8	meq/l

Aluminum	0.011	mg/l
Arsenic	< 0.001	mg/l
Barium	< 0.1	mg/l
Beryllium		mg/l
Boron	0.193	mg/l
Cadmium	< 0.005	mg/l
Calcium	300	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.60	mg/l
Lead	< 0.05	mg/l
Magnesium	166	mg/l
Manganese	0.27	mg/l
Mercury	< 0.0002	ug/l
Nickel	< 0.04	mg/l
Potassium	14.0	mg/l
Selenium	0.0007	mg/l
Silica		mg/l
Sodium	250	mg/l
Vanadium		mg/l
Zinc	0.035	mg/l
Molybdenum	< 0.1	mg/l

Respectfully submitted

Certified Environmental Laboratory

Alluvial Valley Floor Assessment

Emery Mine Area

by

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ALLUVIAL VALLEY FLOOR ASSESSMENT
EMERY MINE AREA
CONSOLIDATION COAL COMPANY

Introduction

The purpose of this report is to respond to questions related to potential alluvial valley floors (AVFs) in the area of the Emery Mine of Consolidation Coal Company. More specifically, this report describes regional irrigation practices in Emery and Carbon Counties in central Utah and also evaluates three drainages in the area of the Emery Mine (Quitchupah Creek, Ivie Creek, and Christiansen Wash) in terms of these regional irrigation practices. This report also presents additional information with respect to AVF characteristics of these drainages and utilizes this information along with the identified regional irrigation practices to make AVF determinations.

Regional Flood Irrigation Practices

In order to assess regional irrigation practices in the area of the Emery Mine, Consolidation Coal Company conducted interivews with staff of the U.S. Soil Conservation Service (SCS) in Price, Utah and also with a representative of a local irrigation company in Emery, Utah. The objective of these interviews was to define regional irrigation practices in Carbon and Emery Counties and to ascertain whether these practices would be applicable to drainages and valleys in the area of the Emery Mine. Interivews were conducted on September 29, 1983, with Mr. Gary Moreau (Mine Reclamation

Coordinator) and Mr. Bob Fish (Soil Scientist) of the SCS in Price and with Mr. Clyde Mortenson (Muddy Creek Irrigation Company) in Emery. These individuals are considered to be recognized experts with respect to regional irrigation practices in the area of the Emery Mine.

Based on these interviews, it is evident that the standard flood irrigation practice in Emery and Carbon Counties is to build storage reservoirs on the major perennial streams in the area and to develop widespread ditch systems to distribute stored irrigation waters. This practice is clearly shown on the Canals and Irrigated Cropland Map for the Price and San Rafael River Basins (U.S. Department of Agriculture, June 1981). Development of storage reservoirs on the larger perennial streams is undertaken to provide a more dependable supply of water and also to provide additional irrigation water to enhance agricultural productivity. Messrs. Moreau and Fish pointed out that irrigated lands in the region provide crops almost exclusively for winterfeed for livestock and that the additional irrigation water provided by storage reservoirs generally results in an extra cutting of hay. However, they also noted that limited areas exist, primarily in the headwater areas, where spring flood flows are diverted directly from the smaller perennial streams (without storage facilities) to irrigate valley areas adjacent to these streams. Such irrigated areas may be as small as 10 acres. However, they emphasized that these areas are the exception rather than the rule (see Canals and Irrigated Cropland Map)

and that they are generally dependent on diversion and ditch systems which were constructed many years ago. Messrs. Moreau and Fish also noted that under today's economic conditions, farmers in the region would generally not construct an irrigation system for a farm unless dependable irrigation water could be obtained from a storage reservoir on one of the larger perennial streams in the area. However, depending on site-specific physical and economic circumstances, direct stream diversions and irrigation of adjacent valley areas are feasible on a limited basis. They pointed out that such physical features as topography, soils, and water quality and quantity would be important site-specific factors for flood irrigability. (Messrs. Moreau's and Fish's specific comments with respect to the potential for flood irrigation in the valleys of Quitchupah Creek, Ivie Creek, and Christiansen Wash from the standpoint of regional flood irrigation practices are presented below in the discussion of each valley.)

Clyde Mortenson's comments with regard to regional flood irrigation practices were very similar to those of Messrs. Moreau and Fish. According to Mr. Mortenson, agriculture in the region is very dependent on irrigation from storage reservoirs. He did note that Muddy Creek does not yet have such a reservoir; however, one is planned in the near future (when funding is available). Mr. Mortenson noted that there is limited irrigation based on direct diversions from smaller perennial streams. However, given

the uncertainties involved in receiving adequate irrigation water from such diversions, the standard practice in the region is to take advantage of irrigation water available directly from the larger perennial streams (e.g., Muddy Creek) or from storage reservoirs (e.g., Millsite Reservoir, Joe's Valley Reservoir, Huntington Lake, and Scofield Reservoir). (Mr. Mortenson's specific comments relative to flood irrigation potential in the valleys of Quitchupah Creek, Ivie Creek, and Christiansen Wash are presented below.)

Quitchupah Creek

The evaluation of the valley of Quitchupah Creek in the area of the Emery Mine with respect to AVFs has been divided into two areas, above the confluence with Christiansen Wash to the Joe's Valley - Paradise Fault Zone and below the confluence with Christiansen Wash to the confluence of Quitchupah and Ivie Creeks. The AVF characteristics of these two areas are discussed separately below.

Quitchupah Creek above confluence with Christiansen Wash. As indicated on Plate 8, this portion of the valley of Quitchupah Creek has relatively broad areas of alluvium (i.e., unconsolidated streamlaid deposits) and also areas of active flood irrigated agriculture. These areas are irrigated by water supplied from Muddy Creek and delivered by the Emery Ditch and also by water diverted directly from Quitchupah Creek. As indicated on Plate 8, the Emery Ditch irrigates fields to the north of Quitchupah Creek and upper

fields to the south of the creek. Quitchupah Creek irrigates fields approximately 1.5 miles upstream of the permit boundary and also a field owned by Mr. Jack Lewis in the southwest corner of Section 29 and the southeast corner of Section 30 (T22S,R6E) immediately to the west of the Emery Mine.

According to Mr. Mortenson, the Emery and Quitchupah Creek ditch systems operate independently; however, if sufficient irrigation water is not available from Quitchupah Creek, Mr. Lewis' field could be irrigated by the Emery Ditch. Mr. Mortenson noted that Muddy Creek water was brought into the Quitchupah Creek valley to provide a more dependable supply of irrigation water and to obtain an extra cutting of hay and/or grain.

In terms of AVF designation, the valley of Quitchupah Creek (upstream of the confluence with Christiansen Wash) meets the AVF geomorphic criteria as indicated by the extent of unconsolidated streamlaid deposits (Qal) shown on Plate 8. With regard to the AVF water availability criteria, the valley of Quitchupah Creek in this area has sufficient water for flood irrigation agricultural activities as evidenced by on-going irrigation activities which utilize Quitchupah Creek water. As pointed out in previous submittals by Consolidation Coal Company, areas which are presently flood irrigated with waters from Muddy Creek do not qualify as actively flood irrigated AVFs since this water is from another drainage basin. However, as shown on Plate 8, areas in the Quitchupah Creek valley which are underlain by

unconsolidated streamlaid deposits (and which may presently be flood irrigated with Muddy Creek water) have the potential to be flood irrigated by water from Quitchupah Creek since sufficient water is available to flood irrigate 300 to 400 acres in the Quitchupah Creek valley (based on an assessment of annual runoff). It should be noted that the area of the Quitchupah Creek valley which is potentially flood irrigable from a geomorphic standpoint contains soils which are not typically irrigated in the area (e.g., soils of the Ravola-Bunderson Complex and the Saltair Series).

Therefore, it is concluded that the valley of Quitchupah Creek, upstream of the confluence with Christiansen Wash, is an AVF since it meets the geomorphic and water availability criteria for AVF designation. However, as indicated on Plate 8, this AVF has only one area which is actively flood irrigated with Quitchupah Creek water (i.e., Jack Lewis' field) and the balance of the valley is an AVF due to the potential for flood irrigation. Based on preliminary information, it should also be pointed out that the actively flood irrigated field of Jack Lewis appears to be significant to his farming operation.

Quitchupah Creek below confluence with Christiansen Wash. As shown on Plate 8, the geomorphic character of the Quitchupah Creek valley changes below the confluence with Christiansen Wash from a relatively broad valley to a very narrow, deeply incised valley which increases in width near the confluence with Ivie Creek. There is no evidence of

historical flood irrigation along this reach of Quitchupah Creek. With regard to the potential for flood irrigation in this area, Messrs. Moreau and Fish of the SCS indicated that the terrain is "too rough" and the valley "too narrow" for a viable flood irrigation activity and that there is no precedence in the region to flood irrigate similar valleys. Mr. Mortenson stated that this reach of Quitchupah Creek is not conducive to flood irrigation due to the rugged nature of the terrain (e.g., 150 foot ledges) and the fact that little room exists for a ditch. In addition, Mr. Mortenson stated that this part of the Quitchupah Creek valley is too thin and eroded to support a flood irrigation system.

Based on the absence of historical and existing flood irrigation along this reach of Quitchupah Creek and the statements given above with respect to the potential for flood irrigation, it is concluded the Quitchupah Creek valley from the confluence with Christiansen Wash down to the confluence with Ivie Creek does not qualify as an AVF.

Ivie Creek

As indicated on Plate 8, limited areas of unconsolidated streamlaid deposits occur along the valley of Ivie Creek from its headwater area to its confluence with Muddy Creek. No evidence exists of successful flood irrigation along any part of the Ivie Creek valley. According to Mr. Mortenson, a limited flood irrigation activity was practiced immediately upstream of Ivie Creek's confluence with Quitchupah Creek. However, for unknown

reasons (perhaps a lack of water according to Mr. Mortenson), this activity was discontinued. Mr. Mortenson went on to state that the upstream area of Ivie Creek is "too high and rough with clay hills" to support flood irrigation. Mr. Mortenson said that he was not aware of any other examples in the region of flood irrigation agricultural activities occurring in valleys similar to the upstream area of Ivie Creek.

As shown on Plate 8, the valley of Ivie Creek broadens to a limited extent in the area of the confluence with Quitchupah Creek. The valley in this area is generally eroded and gullied. In addition, as discussed in previous submittals by Consolidation Coal Company, the water quality of Ivie Creek in this area is very limiting from an irrigation standpoint and is of substantially poorer quality than irrigation water from Muddy or Quitchupah Creeks. More specifically, at a station approximately 0.5 mile above Ivie Creek's confluence with Quitchupah Creek, water quality samples indicate that Ivie Creek exhibits a very high salinity hazard and a medium sodium hazard for irrigation purposes. (Furthermore, similar to other drainages in the area, it is expected that specific conductance and SAR will increase downstream.) In addition, the soils in the valley of Ivie Creek are strongly affected by alkali and have moderate salinity hazard. Therefore, given extant soil and water conditions, considerable water would have to be applied to achieve proper leaching; according to Messrs. Moreau and Fish, valleys similar to Ivie Creek in the region

seldom have sufficient water to meet these leaching requirements in order to assure successful flood irrigation. Therefore, it is not regional practice to flood irrigate with waters similar in quality to those of Ivie Creek.

Based on lack of successful historical flood irrigation agricultural activities in the Ivie Creek valley; the rough terrain and marginal soils of upstream areas; the eroded and gullied landform, the poor water quality and soils, and limited water availability in the area downstream of the confluence with Quitchupah Creek; and the absence in the region of any precedence to irrigate valleys of similar characteristics and condition, it is concluded that there is no potential for flood irrigation agricultural activities in the valley of Ivie Creek. Therefore, it is determined that the valley of Ivie Creek is not an AVF.

Christiansen Wash

All flood irrigation which is currently taking place in the valley of Christiansen Wash is based on water from Muddy Creek which is supplied by the Emery Ditch. There is no historic precedence for the use of water from Christiansen Wash for irrigation purposes in the Christiansen Wash valley. According to Mr. Mortensen, the valley of Christiansen Wash is "much too incised and deep" to utilize water directly from the wash. The amount of ditching required to bring water to potentially irrigable fields would not be justified given the amount of water available from Christiansen Wash's 11 square mile drainage. Messrs.

Moreau, Fish, and Mortenson said they were not aware of any regional precedence to develop local flood irrigation systems for valleys with characteristics similar to those of Christiansen Wash. In addition, as indicated in previous water quality sampling, the water quality of Christiansen Wash indicates that its water has a very high salinity hazard and a medium sodium hazard for irrigation and is even of poorer quality than water from Ivie Creek. As a result, from the standpoint of potential flood irrigation agricultural activities, Christiansen Wash has very severe water quality limitations.

Therefore, it is concluded that since (1) no historical evidence exists for irrigation activities in the valley of Christiansen Wash with water from Christiansen Wash; (2) all irrigation to date has been dependent on waters from Muddy Creek; (3) the terrain of the Christiansen Wash valley is not conducive to flood irrigation with local waters; (4) severe water quality limitations exist with respect to flood irrigation with water from Christiansen Wash; and (5) no regional precedence exists for irrigating valleys of similar condition to Christiansen Wash, It is concluded that the valley of Christiansen Wash is not an AVF.