

8028



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Act 1007/004
#2

Michael O. Leavitt
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801-538-5319 (TDD)

June 22, 1995

TO: FILE

TO: Daron Haddock, Permit Supervisor

FROM: Henry Sauer, Senior Reclamation Soils Specialist *HS*

RE: Proposed Coal Mine Waste and Substitute
Topsoil Material Sampling Program in Sowbelly
Canyon, AMAX Coal Co., Castle Gate Mine,
ACT/007/004, Folder #2, Carbon County, Utah

SYNOPSIS

EarthFax Engineering Inc. (EFE), representing the permittee has submitted (dated May June 19, 1995) a proposal to sample surficial coal mine waste and overburden (substitute topsoil material) in Sowbelly Canyon. The purpose of the sampling plan is to identify the acid-and/or-toxic forming potential of the surficial coal mine waste and characterize substitute topsoil materials within the regrade disturbed area.

ANALYSIS

Prior to the submission of the aforementioned sampling proposal a technical site visit was held on June 14, 1995 and numerous discussion were conducted with David McMillan (EFE) and this writer.

The proposed sample depth increments for the regraded substitute topsoil has been described as follows: 0-6 inches; 12-24 inches; 24-48 inches. The first depth increment should be 0-12 inches. Please make necessary text changes.

The proposed laboratory analyses performed on sample collected on site include the acid/base analysis. It is unnecessary to perform the acid/base analysis on material which does not contain coal waste.

Division staff will be on site during sample collection. Execution of the sampling plan is tentatively planned for the week of June 26 and 27, 1995.

The permittee and their representatives must recognize the fact that the Division has many outstanding issues in regards to the reclamation performed on site. Sampling of the regraded

substitute topsoil may or may not verify this writers suspicions in regards to the plant growth limiting factors functioning on site. These data will be utilized along with field profile observations and pertinent literature review to formulate (in concert with the permittee) a mitigation plan.

RECOMMENDATIONS

The proposed coal mine waste and overburden sampling plan is adequate, with *minor revisions* (see below), to assess the acid and/or toxic forming potential of the coal mine waste on site and to characterize the substitute topsoil material in the regraded disturbed area.

Minor Revisions

- 1) The first sample depth increment should be 0-12 inches.
- 2) It is unnecessary to perform the acid/base analysis on material which does not contain coal waste.

June 19, 1995



EarthFax

Mr. Henry Sauer
Soils Specialist
Division of Oil, Gas and Mining
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Suite 350
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EarthFax
Engineering Inc.
Engineers/Scientists
7324 So. Union Park Ave.
Suite 100
Midvale, Utah 84047
Telephone 801-561-1555
Fax 801-561-1861

Subject: Overburden Evaluation in Sowbelly Canyon
Castle Gate Mine, ACT/007/004
Carbon County, Utah

Dear Henry:

Herewith is a proposal for evaluating existing overburden (alternate topsoil) in Sowbelly Canyon. As you are well aware, previous sampling was conducted in Sowbelly under the direction of Mr. Mel Coonrod. A total of six samples were collected and submitted for analysis during 1993. Analytical results are included in Appendix A. Unfortunately, the exact locations, as well as depth of sample collection were inadequately documented. Therefore, Cyprus Plateau has committed to resampling the entire disturbed area, as discussed below. The major objectives are as follows:

- 1). To characterize the existing overburden within the disturbed area boundary, and identify its intrinsic physico-chemical properties.
- 2). To characterize the coal debris from the upper area of SBRD-4.
- 3). To evaluate the material where the proposed channel, draining the catchment area above SBRD-4, will be after final reclamation grading.

For the purpose of accomplishing the above goals, six trenches will be excavated (Figure 1). Trenches will be excavated using a four-wheel drive, rubber tired backhoe to minimize impact to the canyon (operated by Minchey Demolition). Logistics will be coordinated by Mr.'s Pappas, McMillan and Minchey. Figure 1 gives approximate locations of the proposed trenches (SB-1 through SB-6). The exact orientation of the trenches will be determined when EarthFax personnel arrive on site, and ascertain accessibility to the various areas. Trenches will be backfilled upon completion of sampling.

Samples will be collected to evaluate the inherent property of the overburden, and assess its potential for being acid-, or toxic-forming, and supportive of vegetation reestablishment in Sowbelly Canyon in accordance with general Division requirements for Phase 2 bond release. To this end, five designated soil pits will be excavated to a depth of four feet (Figure 1). The sixth soil pit will be incorporated into the trench, to be excavated to a depth of approximately fifteen feet, east of sediment pond 017 in the SBRD-4 drainage (Figure 1). A total of nine samples will be collected from three of the pits as follows:

Mr. Henry Sauer
D.O.G.M.
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Sowbelly Canyon
Overburden Evaluation
June 19, 1995

- 0 - 6 inches
- 12 - 24 inches
- 24 - 48 inches

Representative soil profiles will be sampled based on a visual inspection of the soil in the field, and analyzed for the following parameters: pH, electrical conductivity, saturation percentage, particle size, soluble Ca, Mg, and Na, sodium absorption ratio, hot water soluble selenium, boron, total N, nitrate-N, maximum acid potential, neutralization potential, organic carbon, exchangeable sodium, phosphorus, potassium, available water capacity, particle size analysis and rock fragments. Additionally, soil pits will be logged in accordance with generally accepted practices as described by the Soil Conservation Service ("SCS").

Areas containing excessive coal will be hand raked to remove large coal particles that are exposed at the surface. It is proposed that excess coal material will be buried under suitable cover in the depression in the SBRD-1C area. Parties attending the Sowbelly Canyon site visit (6/15/95) discussed the infilling of this area. Those in attendance from the Division (Steve Johnson and Wayne Western) agreed that this area should be filled such that precipitation runoff would flow into SBRD-1 and flow within SBRD-1 would be contained.

We hope to be in the field on Monday 26 June, 1995 and Tuesday 27 June, 1995. The soil study would benefit from your involvement in the field. Please plan on attending if your schedule permits.

Again, I greatly appreciate your attention to this matter. If you have any further questions, or comments, please do not hesitate to call me.

Sincerely yours,



David McMillan
Geochemist

cc: Johnny Pappas
Bill Hendrickson

(Cyprus Plateau Mining)
(Earthfax Engineering, Inc.)

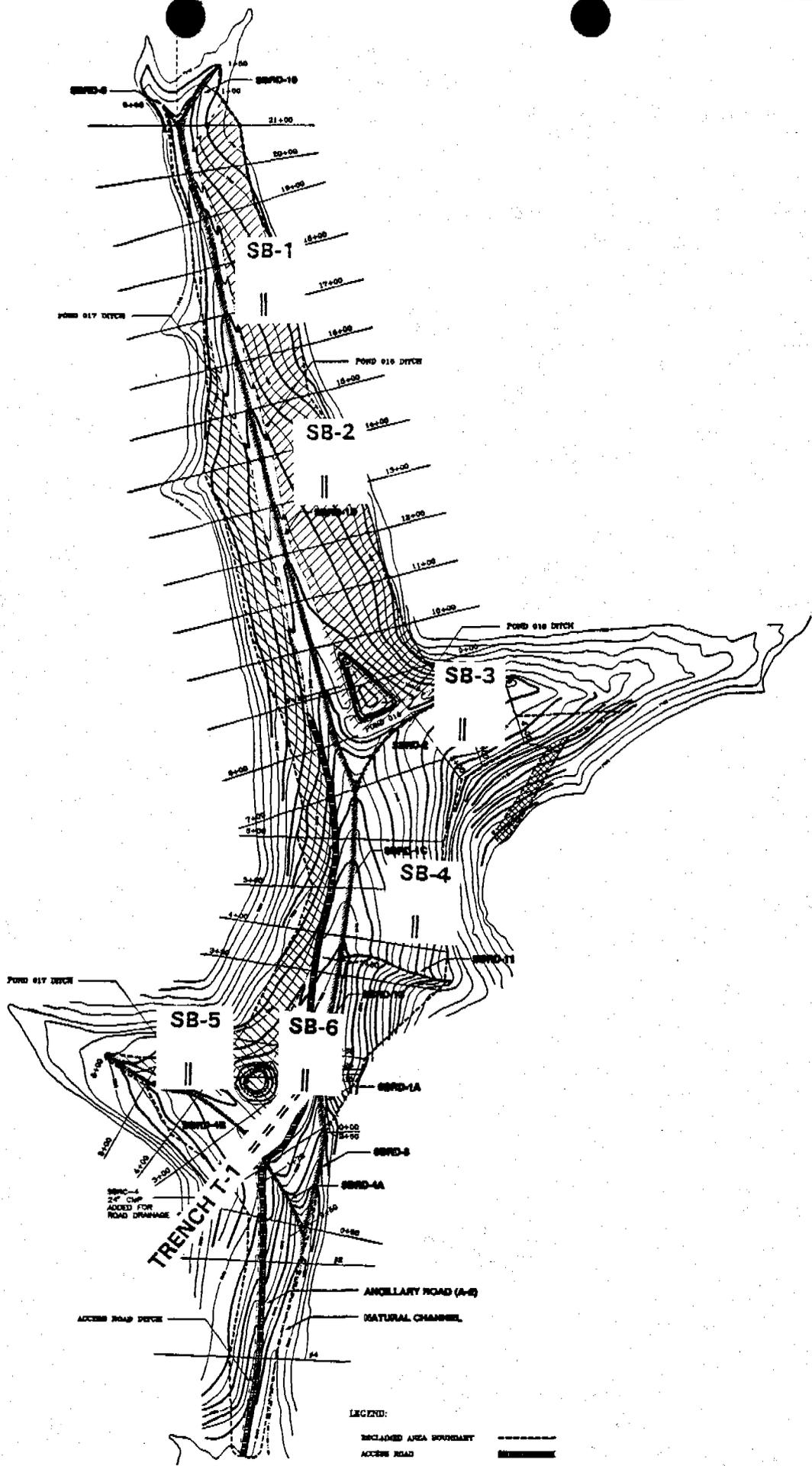


FIGURE 1. SOIL PIT AND TRENCH LOCATIONS

APPENDIX A

**ANALYTICAL DATA FROM 1993 SAMPLING
SOWBELLY CANYON**

4. 1995 8:23AM P.23



Inter-Mountain Laboratories, Inc.

Farmington, New Mexico 87401

Tel. (505) 328-4737

2506 West Main Street

E.I.S./ AMAX COAL
 Helper, Utah
 MINE: Castle Gate
 LOCATION: Sombelly Project

DATE SAMPLED: October 12, 1993
 DATE REPORTED: November 3, 1993

Page 1 of 2

Lab No.	Location	Depth	pH	EC µmhos/cm @ 25°C	Satur- ation %	Calcium mg/l	Magnesium mg/l	Sodium mg/l	SAR	Coarse Fragments %	Sand %	Silt %	Clay %	Texture
31972	SOW BELLY #1-#6	0-0	7.7	0.67	31.3	3.02	1.57	1.51	1.00	13.9	42.7	33.7	23.6	LOAM
31973		0-0	7.2	0.37	24.3	2.60	0.37	0.39	0.32	0.2	70.0	19.1	10.9	SANDY LOAM
31974		0-0	7.5	1.50	32.9	4.04	4.56	4.08	1.92	14.7	40.9	35.5	23.6	LOAM
31975		0-0	7.8	0.61	29.1	2.07	2.08	1.71	1.19	19.1	42.7	34.6	22.7	LOAM
31976		0-0	8.0	0.80	33.1	1.95	3.27	2.07	1.31	22.3	35.5	39.0	25.5	LOAM
31977		0-0	7.3	3.86	34.4	14.4	23.5	7.28	1.67	30.8	37.3	35.4	27.3	CLAY LOAM
31978	PREP PLANT #1	0-0	7.7	0.86	22.7	2.00	1.77	4.12	3.00	34.4	60.9	21.8	17.3	SANDY LOAM
31979	PREP PLANT #2	0-0	7.5	1.21	24.1	4.25	4.17	2.28	1.11	29.1	66.4	19.1	14.5	SANDY LOAM
31980	PREP PLANT #3	0-0	7.8	0.73	22.4	1.47	1.04	4.32	3.86	30.4	64.5	21.9	14.5	SANDY LOAM
31981	PREP PLANT #4	0-0	7.8	0.56	23.2	1.92	1.34	3.10	2.55	31.6	55.5	26.3	18.2	SANDY LOAM
31982	PREP PLANT #5	0-0	8.0	0.52	21.3	1.04	0.47	3.67	4.22	33.9	73.6	14.6	11.8	SANDY LOAM
31983	PREP PLANT #6	0-0	7.4	0.49	24.2	2.23	1.35	1.12	0.84	31.1	73.6	13.7	12.7	SANDY LOAM
31984	PREP PLANT #7	0-0	7.4	1.25	26.2	3.08	2.34	6.08	3.80	32.5	69.1	18.2	12.7	SANDY LOAM
31985	PREP PLANT #8	0-0	7.7	0.98	25.3	1.46	1.30	5.25	4.48	45.0	64.5	20.0	15.5	SANDY LOAM
31986	PREP PLANT #9	0-0	7.6	1.26	27.3	2.36	3.38	5.97	3.52	36.3	50.0	31.8	18.2	LOAM
31987	PREP PLANT #10	0-0	7.1	4.27	25.2	25.5	15.5	19.8	4.38	48.8	71.8	13.7	14.5	SANDY LOAM
31988	PREP PLANT #11	0-0	7.3	1.57	25.1	7.02	7.35	3.12	1.16	42.0	58.2	25.4	16.4	SANDY LOAM

FROM: IML-FARMINGTON, NM TO: 19016372247

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, Excn= Exchangeable, Avail= Available



Inter-Mountain Laboratories, Inc.

Farmington, New Mexico 87401

Tel. (505) 328-4737

2506 West Main Street

E.I.S. / ANAX COAL
 Helper, Utah
 MINE: Castle Gate
 LOCATION: Scwbelly Project

DATE SAMPLED: October 12, 1993
 DATE REPORTED: November 3, 1993

Lab No.	Location	Depth	Organic Matter %	Neut. Pct. t/100t	Nitrate-Nitrogen ppm	Boron ppm	CEC meq/100g	Total Selenium ppm
31972	SCW BELLY #1-#6	0-0	1.9	58.9	3.46	0.42	14.7	0.35
31973		0-0	0.2	27.1	3.42	0.10	4.54	<0.10
31974		0-0	1.9	76.2	2.95	0.54	15.5	0.35
31975		0-0	1.5	97.6	2.90	0.52	12.8	0.30
31975		0-0	1.3	97.5	2.89	0.54	12.2	0.35
31977		0-0	2.6	95.5	2.54	0.44	15.7	0.45
31979	PREP PLANT #1	0-0	1.7	103.	3.17	0.70	8.74	0.25
31979	PREP PLANT #2	0-0	3.4	102.	3.62	0.56	15.3	0.30
31980	PREP PLANT #3	0-0	3.4	100.	2.79	0.56	7.52	0.50
31981	PREP PLANT #4	0-0	2.0	99.9	2.79	0.52	9.26	0.15
31982	PREP PLANT #5	0-0	4.2	101.	2.85	0.24	6.38	0.25
31983	PREP PLANT #6	0-0	2.5	101.	3.43	0.32	7.10	0.35
31984	PREP PLANT #7	0-0	4.2	101.	4.03	0.36	8.38	0.50
31985	PREP PLANT #8	0-0	3.4	102.	2.43	0.54	10.4	0.10
31986	PREP PLANT #9	0-0	1.5	102.	3.15	0.40	9.36	0.15
31987	PREP PLANT #10	0-0	1.5	91.4	2.65	0.54	18.1	1.30
31988	PREP PLANT #11	0-0	3.0	102.	3.14	0.54	13.8	0.35

Needs to be hot H₂O system

Abbreviations used in acid base accounting: T.S. = Total Sulfur, AB = Acid Base, ABP = Acid Base Potential, PyrS = Pyritic Sulfur, Pyr+Org = Pyritic Sulfur + Organic Sulfur, Neut. Pct. = Neutralization Potential
 Miscellaneous Abbreviations: SAR = Sodium Adsorption Ratio, CEC = Cation Exchange Capacity, ESP = Exchangeable Sodium Percentage, Exch = Exchangeable, Avail = Available

4. 1995 8:29AM P.25



Inter-Mountain Laboratories, Inc.
Farmington, New Mexico 87401

Tel (505) 326-4737

2506 West Main Street

E.I.S./ ANRX COAL
Helper, Utah
MINE: Castle Gate
LOCATION: Sowbelly Project

Page 1 of 2

DATE SAMPLED: October 12, 1993
DATE REPORTED: November 3, 1993

Lab No.	Location	Depth	pH	EC microhos/cm @ 25°C	Satur- ation %	Calcium meq/l	Magnesium meq/l	Sodium meq/l	SAR	Coarse Fragments %	Sand %	Silt %	Clay %	Texture
31987	PREP PLANT #10	0-0	7.1	4.27	25.2	25.5	15.5	19.8	4.38	48.8	71.8	13.7	14.5	SANDY LOAM
31990	31987(DUP)	0-0	7.1	4.20	25.2	24.6	14.8	19.3	4.35		71.8	14.6	13.6	SANDY LOAM
31979	PREP PLANT #2	0-0	7.5	1.21	24.1	4.25	4.17	2.28	1.11	29.1	66.4	19.1	14.5	SANDY LOAM
31991	31979(DUP)	0-0	7.5	1.21	24.3	4.59	4.42	2.37	1.12		64.5	21.0	14.5	SANDY LOAM

TO: 18016372247

FROM: IML-FARMINGTON, NM

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, Exch= Exchangeable, Avail= Available

8:23AM =.36
4, 1995



InterMountain Laboratories, Inc.
Farmington, New Mexico 87401

2506 West Main Street

Tel. (505) 326-4737

E.I.S./ AMAX COAL
Helper, Utah
MINE: Castle Gate
LOCATION: Sawbelly Project

DATE SAMPLED: October 12, 1993
DATE REPORTED: November 3, 1993

Page 2 of 2

Lab No.	Location	Depths	Organic Matter %	Neut. Pot. t/100t	Nitrate-Nitrogen ppm	Boron ppm	CEC meq/100g	Total Selenium ppm
31937	PREP PLANT #10	0-6	1.5	81.4	2.66	0.54	18.1	1.30
31990	31937(DUP)	0-6	1.5	81.4	2.60	0.56	18.4	1.25
31979	PREP PLANT #2	0-6	3.4	132.	3.62	0.66	15.3	0.30
31991	31979(DUP)	0-6	3.4	132.	4.38	0.70	16.0	0.30

TO: 13016372247

FROM: IML-FARMINGTON, NM

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neut. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, Exch= Exchangeable, Avail= Available

4, 1995 8:32AM P.27

TO: 13016372247 FROM: IML-FARMINGTON, NM



901 - 472 - 3814
 E.I.S.
 4855 N SPRING BLVD
 HELLERS, UT 84526

CHAIN OF CUSTODY RECORD

Client/Project Name		Project Location		ANALYSES / PARAMETERS			
Sampler: (Signature)		Chain of Custody Tape No.		Remarks			
Sample No / Identification	Date	Time	Lab Number	Matrix	No. of Containers		
Castle Gate Coal					17 total bags	Need to know what type of mineral for fertilizer to add -	
Sawbelle #1	10/12						
Sawbelle #2	"						
Sawbelle #3	"						
Sawbelle #4	"						
Sawbelle #5	"						
Sawbelle #6	"						
Prep Plant #1	"						
Prep Plant #2	"						
Prep Plant #3	"						
Prep Plant #4	"						
Prep Plant #5	"						
Prep Plant #6	"						
Prep Plant #7	"						
Prep Plant #8	"						
Prep Plant #9	"						
Prep Plant #10	"						
Prep Plant #11	"						

Also please send more Chain of Custody forms and Address Labels.

Need to know what type of mineral for fertilizer to add -

Please - Rush answers will pay extra

Thanks Mel

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
<i>Todd Wiley</i>	10-13-93	4:30	<i>Paul Howell</i>	10-18-93	12:00 PM
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by laboratory: (Signature)	Date	Time

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