

0051

Mine File  
J. Whitehead

**KAISER  
COAL**

**KAISER COAL CORPORATION**  
Sunnyside Coal Mines  
P.O. Box D  
Sunnyside, Utah 84539  
Telephone (801) 888-4421

**RECEIVED**  
MAY 15 1986

DIVISION OF  
OIL, GAS & MINING

May 12, 1986

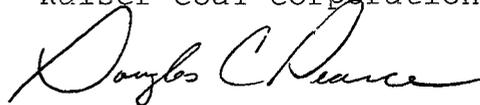
Mr. Lowell P. Braxton  
Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

RE: Geotechnical Analysis, Twinshafts  
Area, ACT/007/007, Sunnyside  
Mines, Carbon County

Dear Mr. Braxton

As required by a permit stipulation, Kaiser Coal is submitting a stability analysis for the future restored slope at the Twinshafts Fan site. The analysis was conducted by Rollins, Brown and Gunnell, Inc. of Provo, Utah. If you or your staff have questions or comments concerning this report please contact me at the above address or phone number.

Sincerely,  
Kaiser Coal Corporation



Douglas C Pearce  
Mine Engineer

ROLLINS, BROWN AND GUNNELL, INC.  
PROFESSIONAL ENGINEERS



May 9, 1986

Kaiser Steel Corporation  
P.O. Box D  
Sunnyside, UT 84539

Gentlemen:

As you have requested we have completed the stability analysis for the restored slope at the Twin Shaft Site at the Kaiser Steel Mining Facilities near Sunnyside, Utah. It is our understanding that the state and federal regulations require that each mine facility be restored as nearly as possible to its original configuration at the termination of the use of that facility. We also understand that the regulatory agencies require that each restored slope have a factor of safety of at least 1.5.

The purpose of this investigation was to determine the factor of safety of the restored slope. The drilling of a test hole at the slope location would have been expensive and would not have contributed greatly to a knowledge of the characteristics of the material at the site. A visual observation of the site indicates that the material within the slope is predominantly granular type soils. A photograph depicting the characteristics of the slope in the vicinity of the Twin Shaft Site is shown in Figure No. 1. The results of the particle size distribution analysis performed on the representative sample obtained from the cut slope are presented in Figure No. 2. It will be observed from Figure No. 2 that approximately 62 percent of the sample consists of sand and gravel size particles while the remainder of the sample is predominantly silty type soils. A profile showing the existing cut slope of the site is presented in Figure No. 3, along with the proposed reclaimed profile.

A stability analysis was performed for this site using the shear strength parameter shown in Figure No. 3. It will be observed that a factor of safety of 1.6 was obtained for the restored slope. The stability was performed using the computer

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program developed at the University of California, Berkeley. The program follows Spencer's Method which satisfies both force and equilibrium. It is our opinion that the shear strength parameters used for this analysis are reasonable and that the restored slope will have an adequate factor of safety.

If you have any questions pertaining to the information contained herein, please notify our office.

Sincerely,

ROLLINS, BROWN, AND GUNNELL, INC.

*Ralph L. Rollins* SLS

Ralph L. Rollins

SLS/arb

Enclosures

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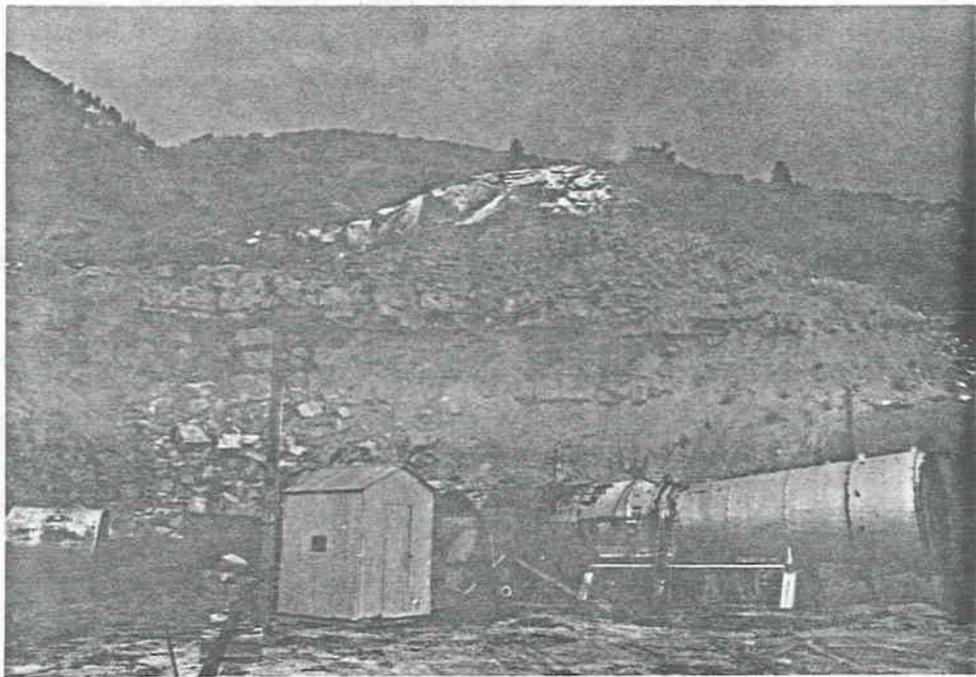
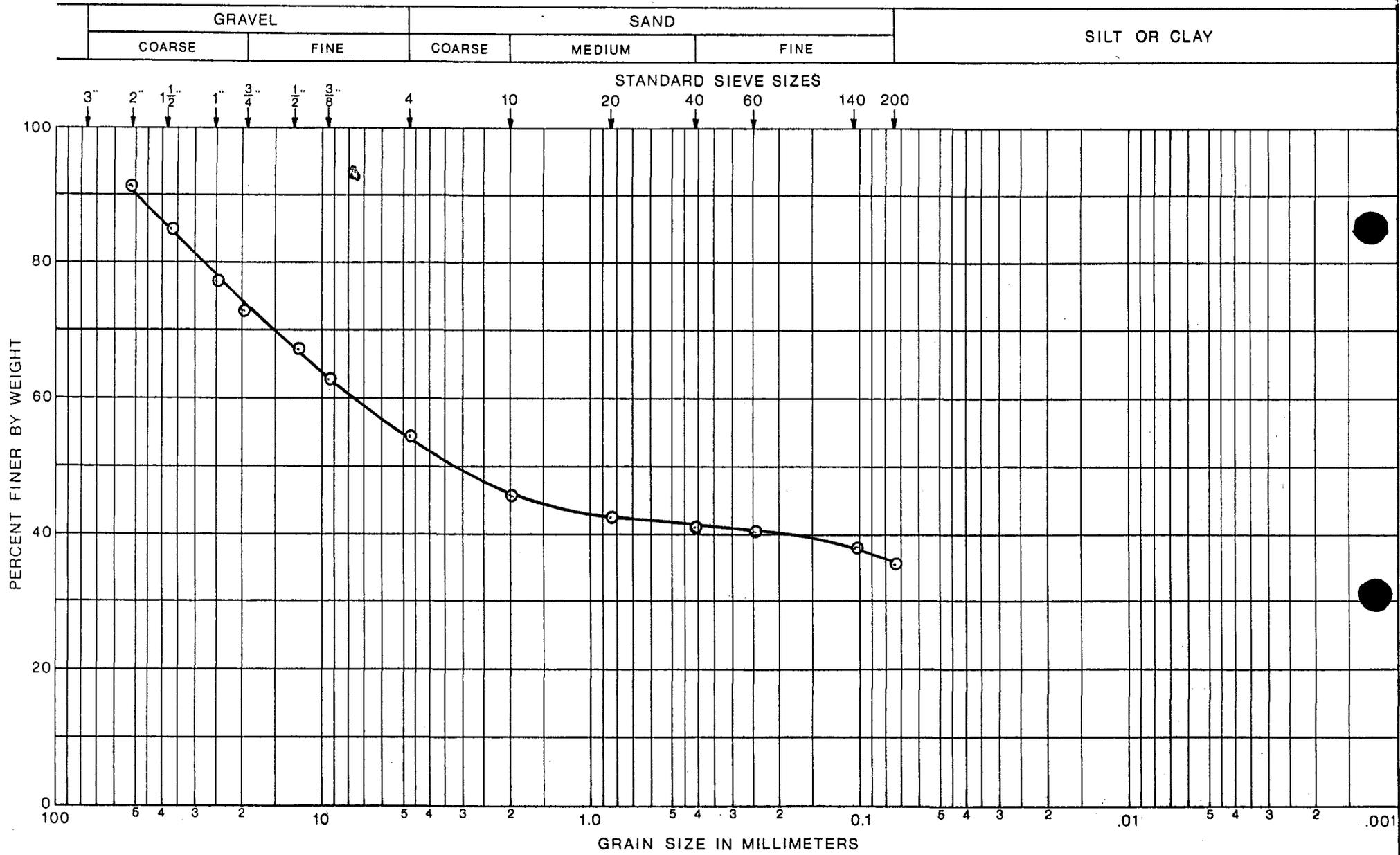


Figure No. 1



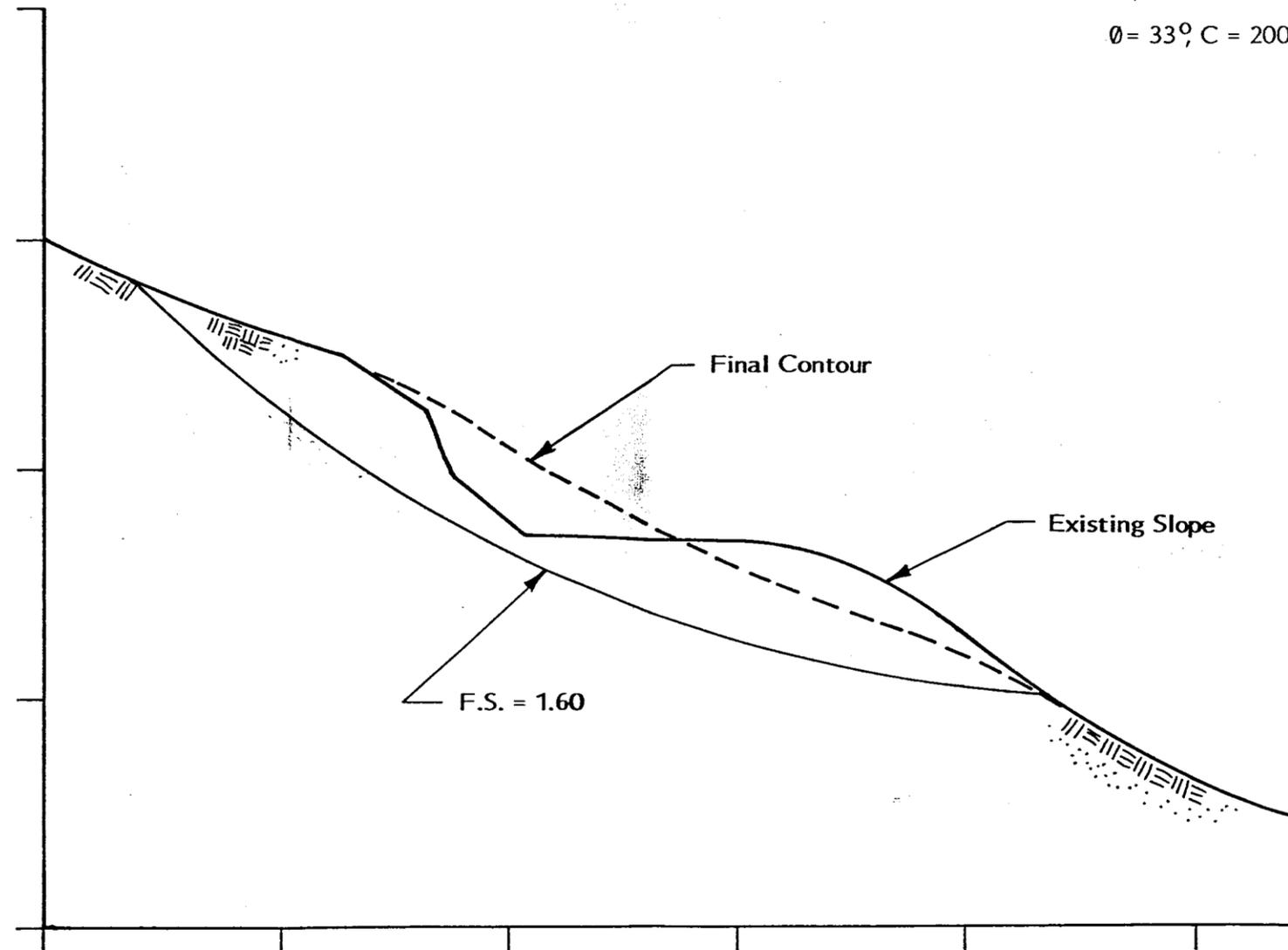
ROLLINS, BROWN AND GUNNELL, INC.  
 PROFESSIONAL ENGINEERS

GRAIN SIZE DISTRIBUTION CURVE  
 TWIN SHAFT SITE  
 KAISER STEEL CORPORATION  
 Sunnyside, Utah

FIGURE  
 NO. 2

SHEAR STRENGTH PARAMETERS

$\phi = 33^\circ$ ,  $C = 200$  psf,  $\gamma = 125$  psf



ROLLINS, BROWN AND GUNNELL, INC.  
PROFESSIONAL ENGINEERS

STABILITY ANALYSIS  
TWIN SHAFT SITE - KAISER STEEL MINING CORPORATION  
Sunnyside, Utah

FIGURE  
NO. 3

May 12, 1986

TO: Coal File

FROM: James R. Fricke, Reclamation Hydrologist *JRF*

RE: Kaiser Coal Corp., Sunnyside No. 5 Proposed Water Monitoring Program, ACT/007/007, Carbon County, Utah

The recent water monitoring submittal from the applicant's consultant has several deficiencies.

#### Surface Water Monitoring

The submittal text states in section 2.2.1 that "three intermittent to perennial streams are known in the Sunnyside No. 5 permit area", while their water monitoring map shows two of these streams as ephemeral monitor points.

It is recommended that the Bear Creek and Right Fork of C Canyon drainages be monitored as intermittent or perennial streams.

The field data from the Fall Spring and Seep Survey shows that flow estimates were attained by ocular measurement.

Ocular flow measurements are not acceptable to the Division. The applicant must attain quantity and quality measurements according to EPA water sampling protocol.

The applicant has located 1 monitor point in the Whitmore Canyon Drainage. This sample location will be adequate for the downstream sample point.

It is recommended that the applicant install another monitor point on the Whitmore Canyon drainage at Township 13 S, Range 13 E, section 34.

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ACT/007/007  
May 12, 1986

#### Ground Water Monitoring

In section 2.1.5 of the submittal the applicant assumes that operational monitoring of selected springs and seeps will only occur when mining comes close enough to have potential affect on the springs.

The applicant must quantify the distance at which mining will affect springs or seeps. The Division may select certain springs or seeps to be monitored upon permit approval.

crh  
cc: J. Whitehead  
R. Smith  
0474R-17

May 13, 1986

TO: Coal File  
FROM: Richard V. Smith, Geologist *RVS*  
RE: Response to Mine Plan Commitment, Subsidence Monitoring Plan, Sunnyside Mines, ACT/007/007, Folder No. 2, Carbon County, Utah

Commitment 817.121-126

The operator committed to providing a subsidence monitoring plan that included the number and installation schedule for monuments in Whitmore Canyon.

Response

The operator has submitted revised pages 33-34 of the MRP wherein a subsidence monitoring plan is described that includes installation of 22 additional monuments along Whitmore Canyon in Section 18, T14S, R15E. Twelve of the monuments, located at 500 foot intervals, are to be installed for the 1986 annual survey. Moreover, when mining encroaches within 1500 feet of Grassy Trail Reservoir the five monuments located along the top of the dam will be incorporated into the net of actively monitored monuments. The remaining 10 monuments proposed for Whitmore Canyon will be installed and monitored when mining encroaches within 1500 feet of their proposed locations.

Action

Approval upon receipt of a map (eg. update Plate III-4) showing the location of monuments to be installed during 1986 and in future years.

crh  
cc: J. Whitehead  
9206R-24

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