

## **APPENDIX 1**

### **Geotechnical Information and Analysis**



June 27, 2011

Mr. Ken Seumalo, City Engineer  
City of Lake Elsinore  
130 South Main Street  
Lake Elsinore, California 92530

**SUBJECT: RESPONSE TO COMMENT #8, LETTER OF INCOMPLETENESS FOR  
AMENDMENT TO RECLAMATION PLAN RP112 DATED JUNE 9, 2011  
Lake Elsinore, California**

References City of Lake Elsinore (2011), *Letter of Incompleteness Concerning the  
Application for Minor Amendment to Reclamation Plan RP 112*, June 9.

Sespe Consulting (2011), *RP112 Reclamation Plan Amendment, Pacific  
Aggregates Inc. and Pacific Clay Products*, May 9.

G.V. Henderson & Associates (1978), *Engineering Geology Report on Slope  
Stability: Mine Reclamation Plans For Sloan, Corona & Thomas Mines,  
Riverside County, California*, March 31.

Dear Mr. Seumalo:

Enclosed please find our response to Comment #8 of the City of Lake Elsinore's Letter of Incompleteness Concerning the Application for Minor Amendment to Reclamation Plan RP112 dated June 9, 2011.

City's Comment #8:

*A slope stability study was completed in 1978 for the Gladding McBean Company; former owner of the SMP108 area. No location information, other than being in Riverside County, is provided in the report. This study does not adequately address conditions at the subject property.*

Response

The subject report, "Engineering Geology Report On Slope Stability: Mine Reclamation Plans For Sloan, Corona & Thomas Mines Riverside County, California" was prepared by G.V. Henderson & Associates on March 31, 1978 for Gladding McBean & Company for their

**Pacific Aggregates, Inc.**

28251 Lake Street, Lake Elsinore, California 92530-1609  
Telephone: (951) 245-2460 \* Facsimile: (951) 245-7135

Reclamation Plan Applications submitted to Riverside County pursuant to Riverside County Ordinance 555. The subject report addressed three mining operations owned by Gladding McBean at the time, those being the Sloan, Corona, and Thomas Mines. The mine referred to as the Sloan Mine corresponds to SMP108. This was the name of the mine prior to the introduction of the California Mine ID system implemented in 1991. A topographic and geologic map that accompanied the Reclamation Plan Application originally submitted to Riverside County by Gladding McBean identified the SMP108 area as the Sloan Mine. That map is recreated as the attached Figure 2.

In reviewing the subject Engineering Geology report, the following information can be obtained:

Two bulk samples and two drive (ring) samples were taken at the Sloan Mine on March 11, 1978 in order to perform laboratory testing and slope stability analysis. The enclosed maps, Figures 1 and 2, present the approximate location that the samples were taken from.

Direct shear laboratory testing was performed on the samples. The samples were remolded and compacted to 85% of their maximum density to approximate field conditions observed during sample collection.

The resultant phi angle and cohesion values were plotted on standardized charts (which were the standard of practice at the time of the report) to ascertain a factor of safety value for a slope of a given inclination and height.

The subject report concludes that within the Sloan Mine (SMP108), slopes inclined at 1:1 (horizontal:vertical) ratios would be stable for heights up to 50 feet with a factor of safety of 1.57.

The material tested in the subject report is described as silty to clayey sand derived from the "overburden" materials overlying the commercial quality clays. As described in Sections 3.6 and 6.10 of the Reclamation Plan Amendment for RP112, the geologic units overlying the commercial quality clays, as well as the materials of no commercial value located within the clay units generally consist of silty to clayey sand. This general material type is present throughout a vast majority of the site and would be anticipated to comprise much of the material used in the reclamation of the site. Accordingly, from the prior engineering geology report it can be construed that slopes constructed of this material type can be considered grossly stable at 1:1 inclinations up to 50 feet high. *It should be noted, however that as presented in Section 6.2 of the Reclamation Plan Amendment for RP112, any final slopes proposed for the site reclamation are to be no steeper than 2:1.*

Further, as part of the annual inspection and reporting process with the County of Riverside, the lead agency for the subject mines from 1978 to 2008, an engineering geologic evaluation of slopes within the mine sites was required. From 2006 to 2008, the evaluation of the slopes within the subject mines was performed by the undersigned. The slopes were evaluated from a gross stability standpoint, and no specific engineering analyses were performed. In reviewing these prior slope stability evaluations, the slopes were concluded to be grossly stable with respect to large, deep-seated failures. Surficial failures typically associated with erosion and/or

**Pacific Aggregates, Inc.**

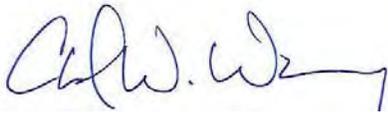
28251 Lake Street, Lake Elsinore, California 92530-1609  
Telephone: (951) 245-2460 \* Facsimile: (951) 245-7135

sloughing of the outer five feet of the slope faces were occasionally observed within the active mining and/or temporary stockpile areas; however these features are easily addressed by regrading the area or using simple buttressing techniques.

In conclusion, the subject prior engineering geology report for the site can be considered a valid assessment of the general slope stability across the site with respect to the mining and reclamation activities. The material type tested for the analysis corresponds to the types of material anticipated to be used in the future site reclamation. Further, the slope inclinations presented in the referenced reclamation plan amendment are to be no steeper than 2:1 in their final reclaimed configurations, whereas the referenced engineering geology report noted that slopes should be stable for heights up to 50 feet at 1:1 inclinations.

Please feel free to contact our office with any questions or comments.

PACIFIC AGGREGATES, INCORPORATED



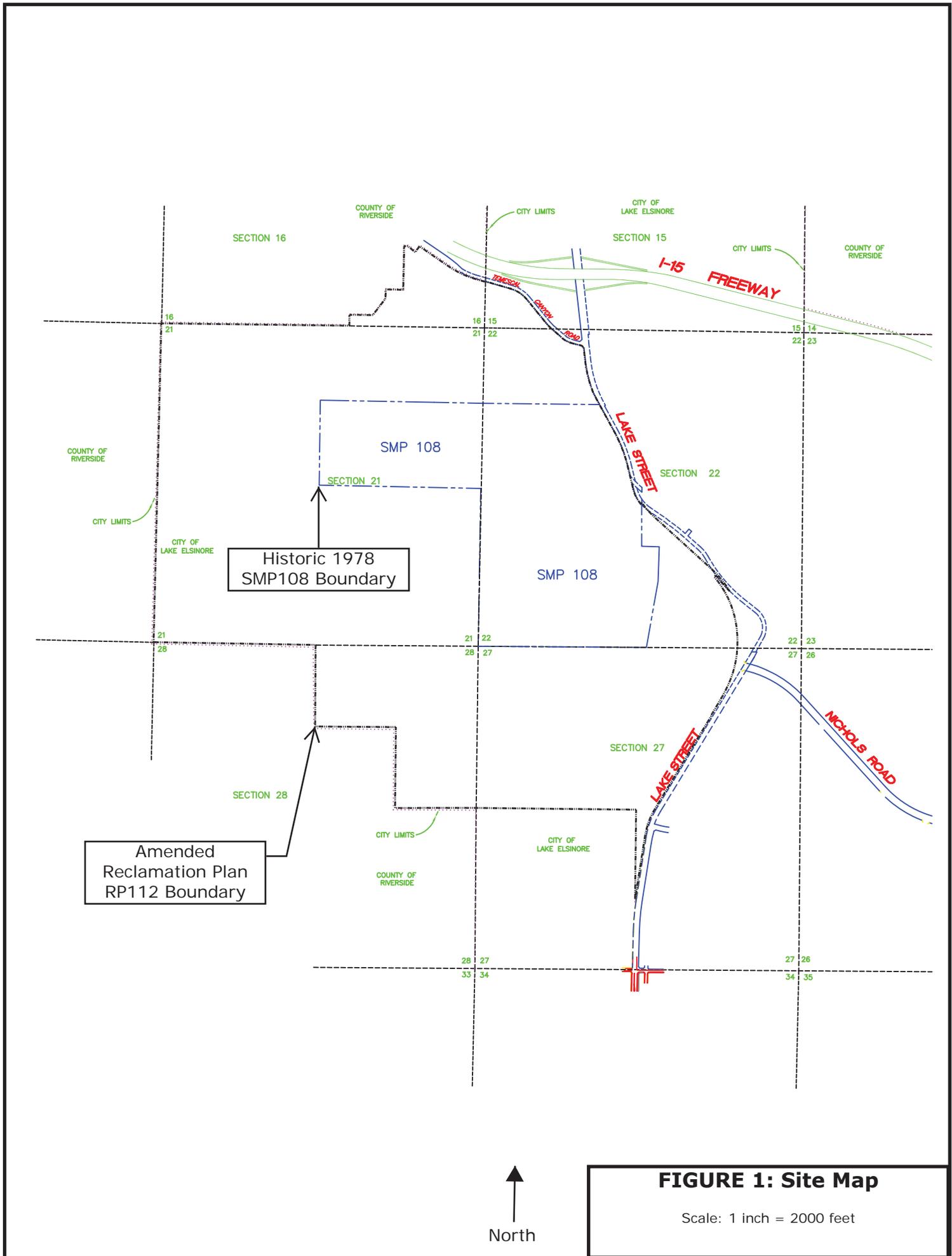
Chad W. Warren, C.E.G. 2331  
Mining Manager



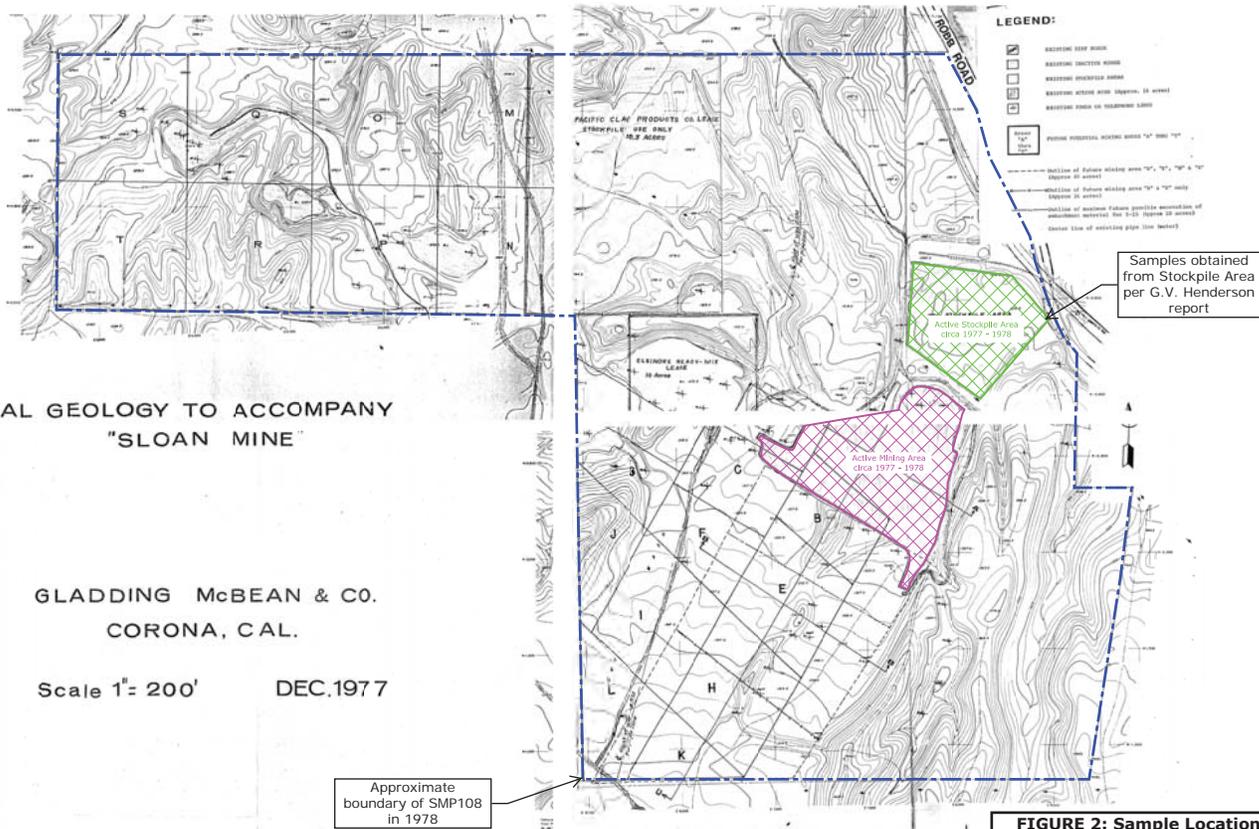
Attachments: Figure 1, Site Map  
Figure 2, Sample Location Map

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**FIGURE 1: Site Map**  
 Scale: 1 inch = 2000 feet



AERIAL GEOLOGY TO ACCOMPANY  
"SLOAN MINE"

GLADDING McBEAN & CO.  
CORONA, CAL.

Scale 1" = 200'      DEC. 1977

**FIGURE 2: Sample Location Map**

Recreated from 1978 Reclamation Plan Application for SMP108 by Gladding McBean, and Co.

True Scale: 1 inch = 500 feet

APR 10 1978

GERALD V. HENDERSON, Ph.D.

17875 BAINTREE AVENUE - ROWLAND HEIGHTS, CA. 91748

(714) 598-4472 (213) 964-1089

March 31, 1978

Mr. Dick Chamberlain  
Production Manager  
Gladding McBean & Co.  
Div. of Pacific Coast Bldg. Prod. Inc.  
P.O. Box 578  
Corona, CA 91720

Re: Slope Stability Analysis  
Mine Reclamation Plans  
Sloan, Corona & Thomas Pit Mines  
Riverside County, California

Dear Dick:

Enclosed you will find my report on slope stability analysis for the Sloan, Corona and Thomas pits.

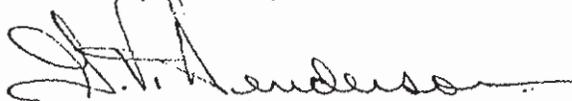
I apologize for the delay, but it seems that the heavy rains have created a bit of a problem for soils testing labs.

Samples were taken at the Sloan, Corona and Thomas mines on Saturday, March 11 by Bob Mielbeck, Chris Langden and myself. The laboratory test work was done by H.V. Lawmaster and Company, Testing Engineers of Stanton, California.

I believe that this report will satisfy Riverside County's requirements concerning final mine slope angles.

It has been a pleasure doing this study. If you have any questions regarding the contents of the report, please feel free to call me at any time.

Respectfully submitted,



G. V. Henderson, Ph.D.  
Geologist  
Calif. Reg. #1165



Stephen Ryland  
S.E.G. #988

**GERALD V. HENDERSON, Ph.D.**

17875 BAIN TREE AVENUE - ROWLAND HEIGHTS, CA. 91748

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ENGINEERING GEOLOGY REPORT  
ON  
SLOPE STABILITY:  
MINE RECLAMATION PLANS  
FOR  
SLOAN, CORONA & THOMAS MINES  
RIVERSIDE COUNTY, CALIFORNIA

For

Gladding, McBean & Company  
Division of Pacific Coast Bldg. Products, Inc.  
P.O. Box 578  
Corona, California

By

G. V. Henderson & Associates  
Mining Geologists & Geological Engineers  
March 31, 1978

## CONCLUSIONS

Samples for testing were collected from the Sloan, Corona plantsite and Thomas mines on March 11, 1978. Two bulk samples and two drive (ring) samples were taken at the Sloan and Corona plant sites. Only one bulk sample was taken at the Thomas mine. All samples were taken from backfill material either in place in the mine or stockpiled nearby for later use as backfill. The sample taken at the Thomas mine was from the mine working face.

The strength of the sampled material was determined in the laboratory by direct shear tests of remolded samples. Before shear strengths were run, the samples were compacted to 85 percent of their maximum density in order to approximate field conditions.

All laboratory test work was performed by H.V. Lawmaster & Company, Testing Engineers. Their data is included in the appendix of this report. On the basis of laboratory test data, it appears that fill slopes left in the mine, after mining has been completed, can be left at 1:1. In the case of the Corona plantsite mine final fill slopes in excess of 60 feet high should be left at 1.5:1. However, with adequate benching (25-30 feet wide) 1:1 slopes should be adequate under static conditions.

Laboratory test data is summarized in Table 1. It shows calculated slope ratios to slope heights and factors of safety. The slope heights and factors of safety were calculated on the basis of the standard Taylor charts shown in Figures 10 and 11 for 1:1 and 1.5:1 slopes.

Table 1

<u>Mine</u>	<u>Slope Ratio</u>	<u>Estimated Slope Heights(ft.)</u>	<u>Factor of Safety</u>
Sloan	1:1	40	1.63
	1:1	50	1.57
Corona Plantsite	1:1	60	1.09
	1:1	80	1.04
	1.5:1	60	1.55
	1.5:1	80	1.48
Thomas	(Not applicable because slopes will be cut slopes in vertically bedded material)		

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The factor of safety shown for the above estimated slope heights and slope angles represent static conditions only.

Final slopes are to be benched at adequate intervals to the total slope height.

Samples from the Thomas Mine were not tested for compaction or remolded shear tests because final pit slopes will be cut slopes in vertically dipping beds.

The present method of compaction of backfill at Corona and Sloan appear to be quite adequate. Test data shows that the present material varies from <sup>82 to 95</sup> 82095 percent relative compaction.

### LABORATORY TESTING

Laboratory testing consisted of the following:

- a. Maximum Density - Optimum Moisture Determination (ASTM D1557-70)
- b. Field Moisture/Density Determination (ASTM D2216-71;2937-71)
- c. Direct Shear Tests

Results of the above tests are shown in the appendix.

### GEOLOGIC CONDITIONS

#### Sloan Mine:

The material mined and stripped at Sloan consists of clay, sandy clay, and siltstone with gravel and cobble size gravels. They are Paleocene to Pliocene in age and are horizontally bedded stream and lacustrine type deposits.

The silty, sandy clay material lying above the more refractory, plastic clay units will be the material used as backfill, forming the final reclamation pit slopes. This silty, clayey sand was the unit tested for stability in fill slopes.

The percentage of clay in the silty, sandy overburden unit adds cohesiveness and contributes significantly to its excellent compaction characteristics.

#### CORONA PLANTSITE MINE

The geologic units mined at the plantsite mine are horizontally bedded, lenticular clay, sand, sandy clay and silt. The upper 20-40 feet of soil, silty sand and clayey sand are stripped from the underlying red, buff mottled clays.

The stripped material is stockpiled for later use or for backfill. The stockpiled sandy units were tested for stability in fill slopes.

The natural angle of repose in the stockpiled overburden was  $\pm 38^\circ$  to the horizontal. No apparent slope failures were visible in this material that has been in place for over three to four years.

Compaction tests on samples from the backfill pile indicates that it will form well compacted slopes.

#### THOMAS MINE

The material mined at the Thomas property is a shale, probably of the Silverado formation. The bedded units of shale are in a vertical or nearly vertical position with the floor of the mine.

Slope stability is not a problem with vertically dipping beds other than minor sloughing of the face as the clay-shales dry out. Remolded shear strength tests of this material may not be significant in representing slope stability at the Thomas Mine.

Final slopes left at the Thomas Mine upon completion of mining should stand well at the slope ratio of 1:1.

## APPENDIX

### 1. Laboratory Test Data On Fill Slope Design

Field Moisture/Density Data (ASTM D2216-71; 2937-71)

<u>Pit and Sample Nos.</u>	<u>Field Density, pcf</u>	<u>Field Moisture, %</u>	<u>Maximum Density, pcf</u>	<u>Relative Compaction, %</u>
Sloan #102 #1	108.4	14.5	121.5	89
#2	108.9	9.5	121.5	90
Sloan #104 #1	110.9	12.3	127.5	87
#2	114.1	7.4	127.5	88
Corona #102 #1	123.7	9.7	129.5	95
#2	105.9	9.7	129.5	82

Direct Shear Test Data

Remolded shear tests were performed with the representative sample materials to determine the strength of the soils. The tests were performed on materials compacted to 85% of the respective maximum density at moisture contents of 1-2% below optimum moisture in order to approximate the field conditions. The test data follow:

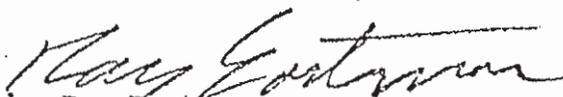
<u>Pit Sample</u>	<u><math>\phi</math>, °</u>	<u>c, psf</u>	<u>Dry Density, pcf</u>	<u>Moisture, %</u>
Sloan #102	42*	700	103.3	12.0 %
Sloan #104	34	450	108.4	8.0 %
Corona #102	34	250	110.1	8.0 %

\* High value based upon field moisture - saturated test value would approximate 1/2 of this.

We trust this report meets with your needs at this time, however please feel free to contact us if you have any questions.

Respectfully submitted,

H. V. LAWMASTER & CO., INC.

  
 by Ray Eastman  
 C.E.G. No. 423

by Chris Langdon  
 Geologist

SUMMARY

On the basis of the laboratory test data and in accordance with the enclosed stability graphs, Factors of Safety for the proposed fill slopes are found to be as follows:

ASSUMED

<u>Pit and Material Type</u>	<u>Slope Ratio</u>	<u>Slope Height, ft.</u>	<u>Factor of Safety</u>
Sloan - #104	1:1	40	1.63
Sloan - #104	1:1	50	1.57
Sloan - #104	1.5:1	40	2.1
Sloan - #104	1.5:1	50	1.9
Corona - #102	1:1	60	1.09
Corona - #102	1:1	80	1.04
Corona - #102	1.5:1	60	1.55
Corona - #102	1.5:1	80	1.48

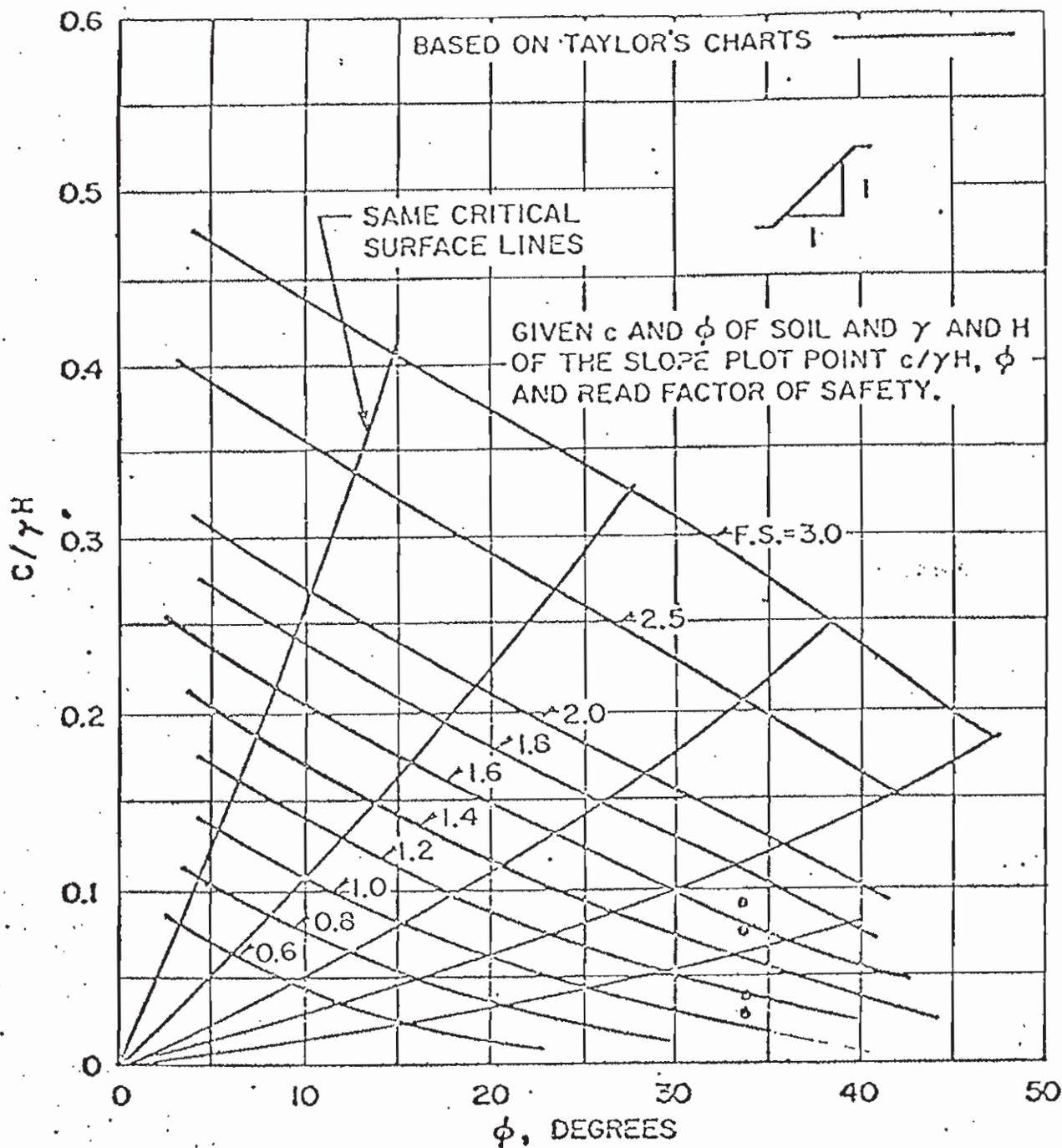
These factors of safety are intended to represent static conditions only. In addition, groundwater and water seepage may also influence the stability and should be considered where applicable.

LABORATORY TESTING

Laboratory testing included the following:

Maximum Density - Optimum Moisture (ASTM D1557-70)

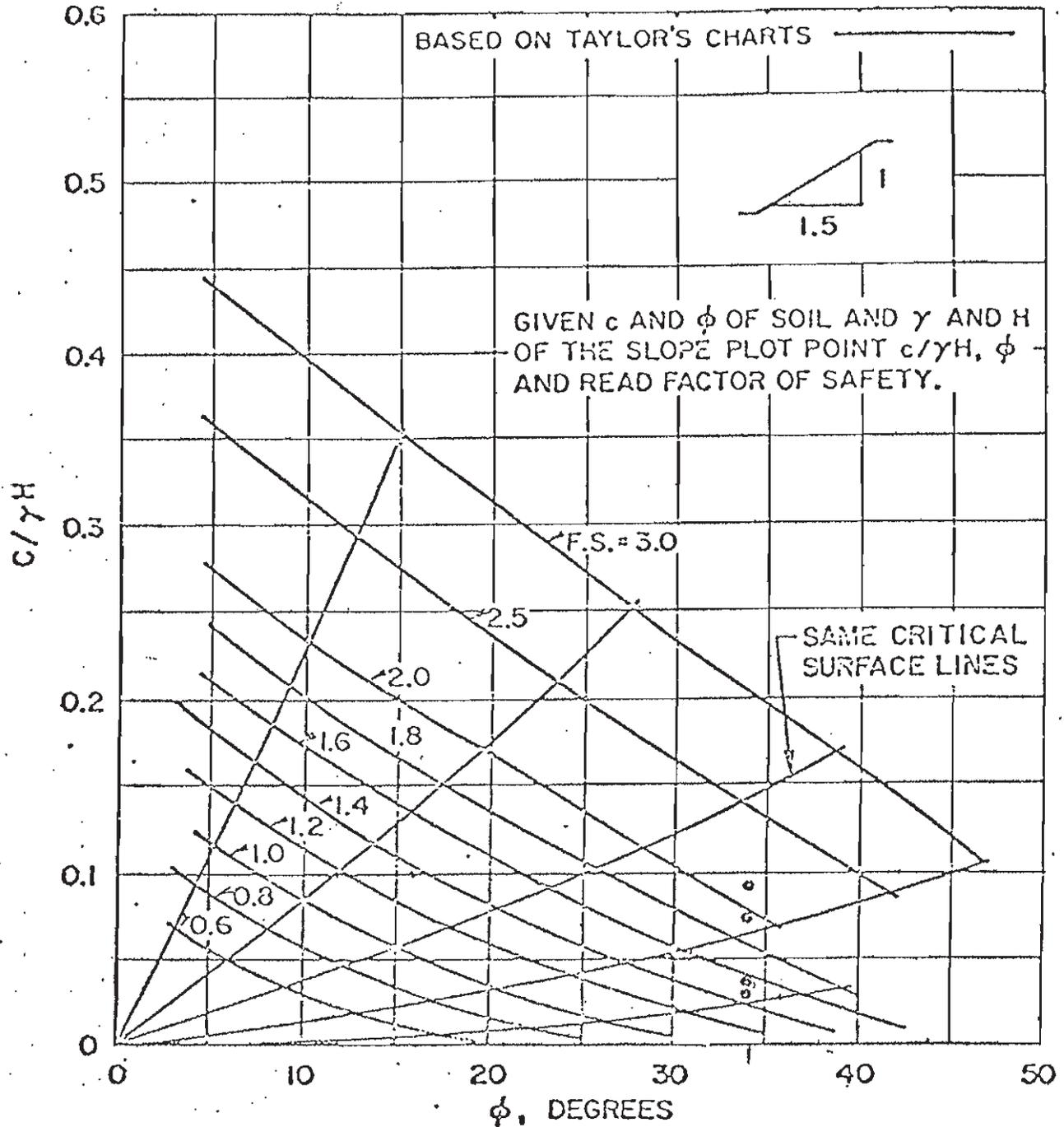
<u>Sample</u>	<u>Soil Type</u>	<u>Maximum Density, pcf</u>	<u>Optimum Moisture, %</u>
Sloan #102	Red-brown medium sandy clay	121.5	14.0
Sloan #104	Gray-brown clayey medium sand	127.5	10.5
Corona #102	Gray-brown clayey medium to coarse sand	129.5	8.5



$\gamma = 124.0 \text{ pcf}$ ,  $H = \text{Height}$

FIG. 10.—F-CONTOURS FOR SLOPE 1:1

From: Singh, Awtar "Shear Strength and Stability of Man-Made Slopes" Journal of the Soil Mechanics And Foundation Div., ASCE SM6, November 1970, pp. 1879-1892.



$\gamma = 124.1 \text{ pcf}$ ,  $H = \text{height}$

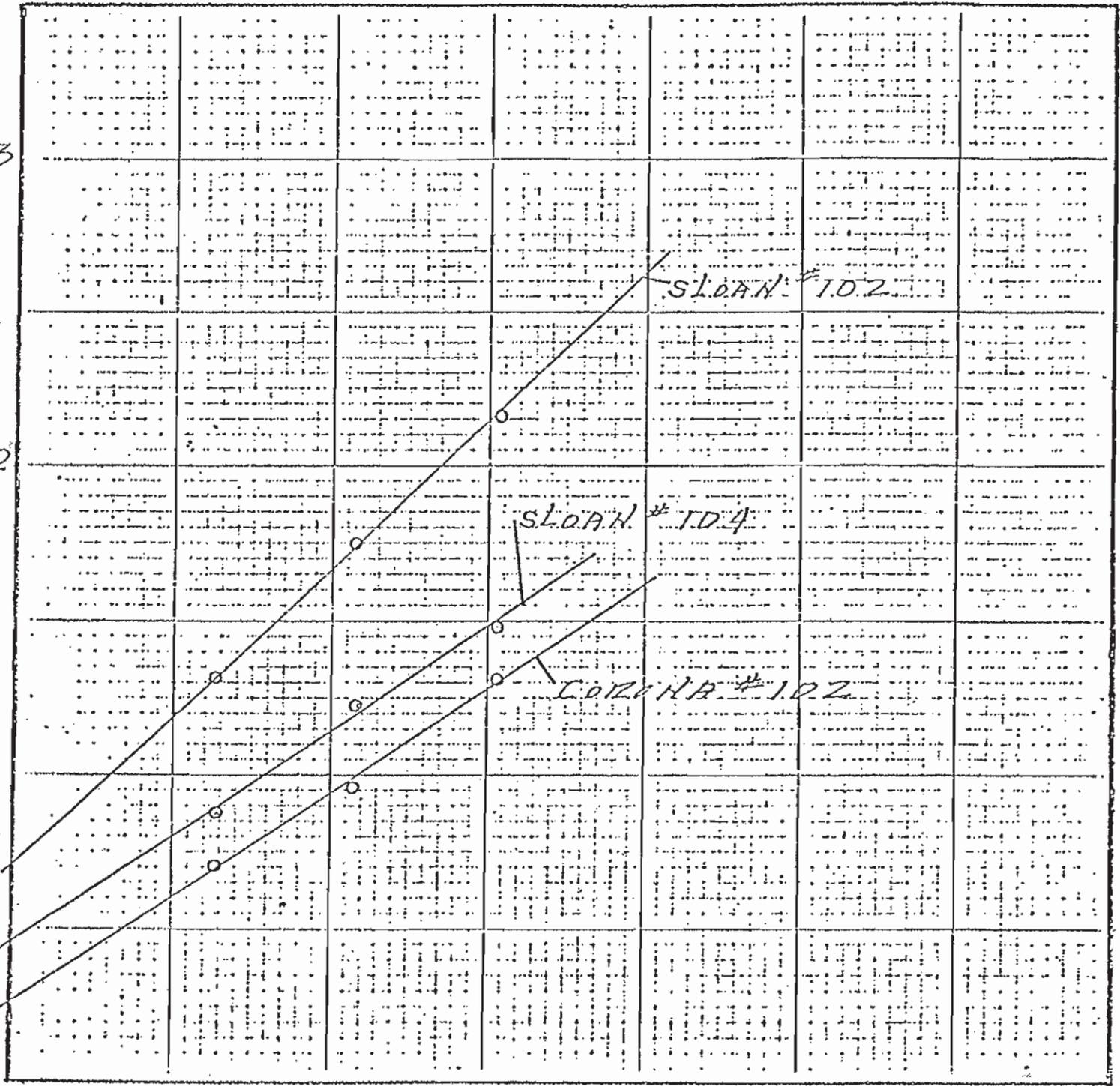
**FIG. 11.—F-CONTOURS FOR SLOPE 1-1/2:1**

$$\frac{250}{124 \times 80} = \frac{250}{9920} = .025$$

From: Singh, Awtar "Shear Strength and Stability of Man-Made Slopes" Journal of the Soil Mechanics And Foundation Div., ASCE SM6, November 1970, pp. 1879-1892.

DIRECT SHEAR TEST DATA

3  
2  
1



1 2 3  
NORMAL STRESS — KIPS / SQUARE FOOT



June 29, 2007

County of Riverside  
Department of Building and Safety  
Environmental Compliance Division  
4080 Lemon Street, 12<sup>th</sup> Floor  
Riverside, California 92502-1440

Attention: Mr. Dan Gregorio

**SUBJECT: SUPPLEMENTAL INFORMATION TO ACCOMPANY ANNUAL  
MINING REPORTS FOR 2006  
Pacific Clay Products  
Permit Area SMP 108, CA Mine ID# 91-33-0006  
Lake Elsinore, California**

Dear Mr. Gregorio:

We are providing herein information regarding the maximum depths of excavations, the quantity of materials mined, and the location and stability of slopes within permit area SMP 108. Permit area SMP 108 consists of approximately 381 acres situated in the east-central portion of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site. Three separate but contiguous permit areas make up the Pacific Clay Products / Pacific Aggregates, Incorporated mine site, those being SMP 108, RP 110, and RP 112. Recent mining activities during the reporting year within SMP 108 consist of clay mining in the west-central portion of the permit area and sand mining in the southwestern and south-central portions of the permit area. The site was observed on June 26, 2007.

Excavations within permit area SMP 108 occur within various areas. Maximum excavation depths are on the order of 50 feet deep, as measured from the adjacent natural grades. Mined quantities for the 2006 reporting period are approximately 132,669 tons (88,446 cubic yards) of sand and gravel, and approximately 59,990 tons (42,850 cubic yards) of clay.

*[Faint, illegible text at the bottom of the page, possibly a signature or stamp.]*

Cut slopes are present within permit area SMP 108. Cut slopes associated with the recent clay mining are inclined at approximately 1:1 (horizontal to vertical) and expose firm sedimentary clays interbedded with sand and silt. The sand mining in the southwestern and south-central portions of the permit area occurs primarily within an alluvial wash, and cut slopes expose sand with gravels and some cobbles and boulders that is non-cemented and considered loose in consistency. In these areas, the mined slopes are brought down at inclinations between 1½:1 and 2:1, or benched as necessary due to the loose nature of the alluvial sediments. Waste materials are also stockpiled against the slopes in some areas.

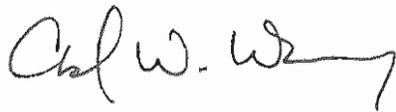
Fill slopes on site consist of sands, gravels, and clays stockpiled generally at the angle of repose. Minor surficial erosion and sloughing was observed on some of the older stockpiles within the permit area.

Upon reviewing the present conditions within permit area SMP 108, the following conclusions can be made. In general, slope failure would most likely occur as shallow, surficial sloughing of cut and fill slopes and not as deep seated failures. Failures of this nature can be repaired by regrading the area or with simple buttressing techniques. The firm nature of the sedimentary clay materials, and the practices employed within the active sand mining areas generally preclude the possibility of large, deep seated slope failures. The slopes within permit area SMP 108 can be considered stable from a gross standpoint. Additionally, no slopes were observed outside of the mine boundaries (although the slopes do traverse across the permit area boundaries within the overall Pacific Clay Products / Pacific Aggregates, Incorporated mine site).

In conclusion, it is our opinion that all cut and fill slopes within permit area SMP 108 are grossly stable, and that the slopes are within the boundaries of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site.

We trust this information meets your current needs. Please contact our office with any questions or comments.

PACIFIC CLAY PRODUCTS



Chad W. Warren, C.E.G. 2331  
Mining Manager

The word "Pacific" is written in a serif font, with a curved line underneath it that forms a partial circle.



June 27, 2008

County of Riverside  
Department of Building and Safety  
Environmental Compliance Division  
4080 Lemon Street, 12<sup>th</sup> Floor  
Riverside, California 92502-1440

Attention: Mr. Dan Gregorio

**SUBJECT: SUPPLEMENTAL INFORMATION TO ACCOMPANY ANNUAL  
MINING REPORTS FOR 2007  
Pacific Clay Products  
Permit Area SMP 108, CA Mine ID# 91-33-0006  
Lake Elsinore, California**

Dear Mr. Gregorio:

We are providing herein information regarding the maximum depths of excavations, the quantity of materials mined, and the location and stability of slopes within permit area SMP 108. Permit area SMP 108 consists of approximately 381 acres situated in the east-central portion of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site. Three separate but contiguous permit areas make up the Pacific Clay Products / Pacific Aggregates, Incorporated mine site, those being SMP 108, RP 110, and RP 112. Recent mining activities during the reporting year within SMP 108 consist of sand mining in the south-central portion of the permit area. The site was observed on June 26, 2008.

Excavations within permit area SMP 108 occur within various areas. Maximum excavation depths are on the order of 50 feet deep, as measured from the adjacent natural grades. Mined quantities for the 2007 reporting period are approximately 41,060 tons (27,300 cubic yards) of sand and gravel.

Cut slopes are present within permit area SMP 108. Cut slopes associated with prior clay mining are inclined at approximately 1:1 (horizontal to vertical) and expose firm sedimentary clays interbedded with sand and silt. The sand mining in the south-central portion of the permit area occurs primarily within an alluvial wash, and cut slopes expose sand with gravels and some cobbles and boulders that is non-cemented and considered loose in consistency. In these areas, the mined slopes are brought down at inclinations between 1½:1 and 2:1, or benched as necessary due to the loose nature of the alluvial sediments. Waste materials are also stockpiled against the slopes in some areas.

Fill slopes on site consist of sands, gravels, and clays stockpiled generally at the angle of repose. Minor surficial erosion and sloughing was observed on some of the older stockpiles within the permit area.

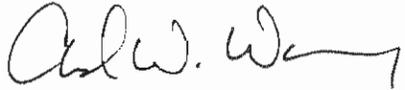
Upon reviewing the present conditions within permit area SMP 108, the following conclusions can be made. In general, slope failure would most likely occur as shallow, surficial sloughing of cut and fill slopes and not as deep seated failures. Failures of this nature can be repaired by regrading the area or with simple buttressing techniques. The firm nature of the sedimentary clay materials, and the practices employed within the active sand mining areas generally preclude the possibility of large, deep seated slope failures. The slopes within permit area SMP 108 can be considered stable from a gross standpoint. Additionally, no slopes were observed outside of the mine boundaries (although the slopes do traverse across the permit area boundaries within the overall Pacific Clay Products / Pacific Aggregates, Incorporated mine site).

In conclusion, it is our opinion that all cut and fill slopes within permit area SMP 108 are grossly stable, and that the slopes are within the boundaries of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site.

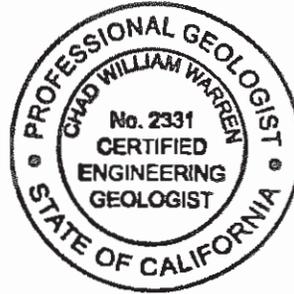


We trust this information meets your current needs. Please contact our office with any questions or comments.

PACIFIC CLAY PRODUCTS



Chad W. Warren, C.E.G. 2331  
Mining Manager





June 28, 2007

County of Riverside  
Department of Building and Safety  
Environmental Compliance Division  
4080 Lemon Street, 12<sup>th</sup> Floor  
Riverside, California 92502-1440

Attention: Mr. Dan Gregorio

**SUBJECT: SUPPLEMENTAL INFORMATION TO ACCOMPANY ANNUAL  
MINING REPORTS FOR 2006  
Pacific Aggregates, Incorporated  
Permit Area RP 110, CA Mine ID# 91-33-0020  
Lake Elsinore, California**

Dear Mr. Gregorio:

We are providing herein information regarding the maximum depths of excavations, the quantity of materials mined, and the location and stability of slopes within permit area RP 110. Permit area RP 110 consists of approximately 80 acres situated in the south central portion of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site. Three separate but contiguous permit areas make up the Pacific Clay Products / Pacific Aggregates, Incorporated mine site, those being SMP 108, RP 110, and RP 112. The site was observed on June 26, 2007.

No mining activities took place within permit area RP110 during the year 2006, as this area encompasses the majority of the sand and gravel processing equipment for Pacific Aggregates, Incorporated. Mining last occurred within this area in 2005. Excavation depths from this previous mining are on the order of 15 feet below adjacent natural grades.

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14741 Lake Street, Lake Elsinore, California 92530-1609  
Telephone: (951) 245-2460 \* Facsimile: (951) 245-7135

Cut slopes are present within permit area RP 110, and consist of both temporary cut slopes for mining activities as well as permanent cut slopes constructed in conjunction with site improvements. The temporary cut slopes for mining activities in this area expose loose alluvial materials consisting of sand with gravels, cobbles, and some boulders. These slopes were benched and/or brought down to the angle of repose as the mining progressed due to the loose nature of the alluvial sediments. Waste materials are also stockpiled against the mined slopes in some areas. Permanent cut slopes constructed for site improvements are inclined at approximately 2:1 (horizontal to vertical) and expose native interbedded sands and clays that are slightly indurated and firm in nature.

Various fill slopes are also present on site consisting of stockpiled sands and gravels, as well as compacted fill slopes constructed for settlement ponds. The stockpiled materials are generally inclined at the angle of repose. The compacted fill slopes for the settlement ponds are generally less than 10 feet high and inclined at approximately 2:1. Minor surficial erosion and sloughing was observed on some of the older stockpiles within the permit area.

Upon reviewing the present conditions within permit area RP 110, the following conclusions can be made. In general, slope failure would most likely occur as shallow, surficial sloughing of cut and fill slopes and not as deep seated failures. Surficial failures can be repaired by regrading or simple buttressing techniques. The firm nature of the permanent cut slopes, and the mining practices employed generally preclude the possibility of large, deep seated slope failures. The slopes within permit area RP 110 can be considered stable with respect to deep seated slope failure modes. Additionally, no slopes were observed outside of the mine boundaries (although the slopes do traverse across the permit area boundaries within the overall Pacific Clay Products / Pacific Aggregates, Incorporated mine site).

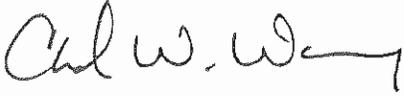
In conclusion, it is our opinion that all cut and fill slopes within permit area RP 110 are grossly stable, and that the slopes are within the boundaries of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site.

**Pacific Aggregates, Inc.**

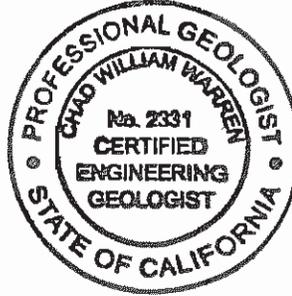
14741 Lake Street, Lake Elsinore, California 92530-1609  
Telephone: (951) 245-2460 \* Facsimile: (951) 245-7135

We trust this information meets your current needs. Please contact our office with any questions or comments.

PACIFIC AGGREGATES, INCORPORATED



Chad W. Warren, C.E.G. 2331  
Mining Manager



**Pacific Aggregates, Inc.**

14741 Lake Street, Lake Elsinore, California 92530-1609  
Telephone: (951) 245-2460 \* Facsimile: (951) 245-7135



June 27, 2008

County of Riverside  
Department of Building and Safety  
Environmental Compliance Division  
4080 Lemon Street, 12<sup>th</sup> Floor  
Riverside, California 92502-1440

Attention: Mr. Dan Gregorio

**SUBJECT: SUPPLEMENTAL INFORMATION TO ACCOMPANY ANNUAL  
MINING REPORTS FOR 2007  
Pacific Aggregates, Incorporated  
Permit Area RP 110, CA Mine ID# 91-33-0020  
Lake Elsinore, California**

Dear Mr. Gregorio:

We are providing herein information regarding the maximum depths of excavations, the quantity of materials mined, and the location and stability of slopes within permit area RP 110. Permit area RP 110 consists of approximately 80 acres situated in the south central portion of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site. Three separate but contiguous permit areas make up the Pacific Clay Products / Pacific Aggregates, Incorporated mine site, those being SMP 108, RP 110, and RP 112. The site was observed on June 26, 2008.

Mining activities occurred within the southeastern portion of permit area RP110 during the year 2007, where approximately 180,000 tons (118,500 cubic yards) of material was excavated. Excavation depths in this area are on the order of 40 feet below adjacent natural grades.

**Pacific Aggregates, Inc.**  
28251 Lake Street, Lake Elsinore, California 92530-1609  
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Cut slopes are present within permit area RP 110, and consist of both temporary cut slopes for mining activities as well as permanent cut slopes constructed in conjunction with site improvements. The temporary cut slopes for mining activities in this area expose medium dense to dense materials consisting of sand with gravels, cobbles, and some boulders. These slopes are benched and/or brought down at natural angles of repose as the mining progresses. Permanent cut slopes constructed for site improvements are inclined at approximately 2:1 (horizontal to vertical) and expose native interbedded sands and clays that are slightly indurated and firm in nature.

Various fill slopes are also present on site consisting of stockpiled sands and gravels, as well as fill slopes constructed for site improvements. The stockpiled materials are generally inclined at the natural angles of repose dependent upon material type. The fill slopes for the site improvement vary from 10 to 40 feet high and are generally inclined at approximately 2:1. Minor surficial erosion and sloughing was observed on some of the older stockpiles within the permit area.

Upon reviewing the present conditions within permit area RP 110, the following conclusions can be made. In general, slope failure would most likely occur as shallow, surficial sloughing of cut and fill slopes and not as deep seated failures. Surficial failures can be repaired by regrading or simple buttressing techniques. The firm nature of the permanent cut slopes, and the mining practices employed generally preclude the possibility of large, deep seated slope failures. The slopes within permit area RP 110 can be considered stable with respect to deep seated slope failure modes. Additionally, no slopes were observed outside of the mine boundaries (although the slopes do traverse across the permit area boundaries within the overall Pacific Clay Products / Pacific Aggregates, Incorporated mine site).

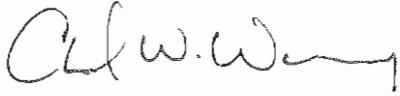
In conclusion, it is our opinion that all cut and fill slopes within permit area RP 110 are grossly stable, and that the slopes are within the boundaries of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site.

**Pacific Aggregates, Inc.**

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We trust this information meets your current needs. Please contact our office with any questions or comments.

PACIFIC AGGREGATES, INCORPORATED



Chad W. Warren, C.E.G. 2331  
Mining Manager



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June 29, 2007

County of Riverside  
Department of Building and Safety  
Environmental Compliance Division  
4080 Lemon Street, 12<sup>th</sup> Floor  
Riverside, California 92502-1440

Attention: Mr. Dan Gregorio

**SUBJECT: SUPPLEMENTAL INFORMATION TO ACCOMPANY ANNUAL  
MINING REPORTS FOR 2006  
Pacific Clay Products  
Permit Area RP 112, CA Mine ID# 91-33-0073  
Lake Elsinore, California**

Dear Mr. Gregorio:

We are providing herein information regarding the maximum depths of excavations, the quantity of materials mined, and the location and stability of slopes within permit area RP 112. Permit area RP 112 consists of approximately 913 acres and comprises the bulk of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site. Three separate but contiguous permit areas make up the Pacific Clay Products / Pacific Aggregates, Incorporated mine site, those being SMP 108, RP 110, and RP 112. Recent mining activities within RP 112 consist of clay mining in the central portion of the permit area, sand mining in the northwestern, south-central and east-central portions of the permit area, and rock mining in the north-central portion of the permit area. The permit area was observed on June 26, 2007.

Excavations within permit area RP 112 occur within various areas. Maximum excavation depths are on the order of 90 feet deep, as measured from the adjacent natural grades. Mined quantities for the 2006 reporting period are approximately 690,000 tons (460,000 cubic yards) of sand and gravel and approximately 15,910 (10,607 cubic yards) of clay.

*[Faint, illegible signature or stamp]*

Cut slopes are present within permit area RP 112. Temporary cut slopes for mining activities vary in inclinations depending upon the materials being mined. Cut slopes for the clay mining are inclined generally between ½:1 (horizontal to vertical) and 2:1 and expose highly indurated residual and sedimentary claystones. Cut slopes for the sand mining in the various portions of the permit area are generally inclined at slope ratios between ½:1 and 2:1. The ongoing rock mining in the north-central portion of the permit area consists of a drill and blast operation excavating into metamorphic rock. Cut slopes excavated in this area are inclined from ½:1 to near vertical for heights up to approximately 30 feet, with benches between successive slopes.

Fill slopes within the permit area consist of clays, sands, and gravels stockpiled generally at the angle of repose. Minor surficial erosion and sloughing was observed on some of the older stockpiles within the permit area. Compacted fill slopes are also present associated with site improvements. These slopes are inclined at approximately 2:1.

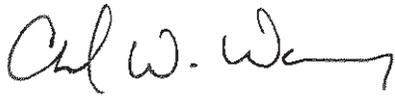
Upon reviewing the present conditions within permit area RP 112, the following conclusions can be made. In general, slope failure would most likely occur as shallow, surficial sloughing of cut and fill slopes and not as deep seated failures. Failures of this nature can be repaired by regrading the area or with simple buttressing techniques. The firm nature of the claystones and indurated sands, the hard nature of the metamorphic rock, and the practices employed within the active mining areas generally preclude the possibility of large, deep seated slope failures. The slopes within permit area RP 112 can be considered to be grossly stable. Additionally, no slopes were observed outside of the mine boundaries (although the slopes do traverse across the permit area boundaries within the overall Pacific Clay Products / Pacific Aggregates mine site).



In conclusion, it is our opinion that all cut and fill slopes within permit area RP 112 are grossly stable, and that the slopes are within the boundaries of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site.

We trust this information meets your current needs. Please contact our office with any questions or comments.

PACIFIC CLAY PRODUCTS



Chad W. Warren, C.E.G. 2331  
Mining Manager





June 27, 2008

County of Riverside  
Department of Building and Safety  
Environmental Compliance Division  
4080 Lemon Street, 12<sup>th</sup> Floor  
Riverside, California 92502-1440

Attention: Mr. Dan Gregorio

**SUBJECT: SUPPLEMENTAL INFORMATION TO ACCOMPANY ANNUAL  
MINING REPORTS FOR 2007  
Pacific Clay Products  
Permit Area RP 112, CA Mine ID# 91-33-0073  
Lake Elsinore, California**

Dear Mr. Gregorio:

We are providing herein information regarding the maximum depths of excavations, the quantity of materials mined, and the location and stability of slopes within permit area RP 112. Permit area RP 112 consists of approximately 913 acres and comprises the bulk of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site. Three separate but contiguous permit areas make up the Pacific Clay Products / Pacific Aggregates, Incorporated mine site, those being SMP 108, RP 110, and RP 112. Recent mining activities within RP 112 consist of clay mining in the central portion of the permit area, sand mining in the northwestern, south-central and east-central portions of the permit area, and rock mining in the north-central portion of the permit area. The permit area was observed on June 26, 2008.

Excavations within permit area RP 112 occur within various areas. Maximum excavation depths are on the order of 100 feet deep, as measured from the adjacent natural grades. Mined quantities for the 2007 reporting period are approximately 221,771 tons (147,000 cubic yards) of sand and gravel and approximately 26,404 (17,600 cubic yards) of clay.

Cut slopes are present within permit area RP 112. Temporary cut slopes for mining activities vary in inclinations depending upon the materials being mined. Cut slopes for the clay mining are inclined generally between ½:1 (horizontal to vertical) and 2:1 and expose highly indurated residual and sedimentary claystones. Cut slopes for the sand mining in the various portions of the permit area are generally inclined at slope ratios between ½:1 and 2:1. The ongoing rock mining in the north-central portion of the permit area consists of a drill and blast operation excavating into metamorphic rock. Cut slopes excavated in this area are inclined from ½:1 to near vertical for heights up to approximately 30 feet, with benches between successive slopes.

Fill slopes within the permit area consist of clays, sands, and gravels stockpiled generally at the angle of repose. Minor surficial erosion and sloughing was observed on some of the older stockpiles within the permit area. Compacted fill slopes are also present associated with site improvements. These slopes are inclined at approximately 2:1.

Upon reviewing the present conditions within permit area RP 112, the following conclusions can be made. In general, slope failure would most likely occur as shallow, surficial sloughing of cut and fill slopes and not as deep seated failures. Failures of this nature can be repaired by regrading the area or with simple buttressing techniques. The firm nature of the claystones and indurated sands, the hard nature of the metamorphic rock, and the practices employed within the active mining areas generally preclude the possibility of large, deep seated slope failures. The slopes within permit area RP 112 can be considered to be grossly stable. Additionally, no slopes were observed outside of the mine boundaries (although the slopes do traverse across the permit area boundaries within the overall Pacific Clay Products / Pacific Aggregates mine site).



In conclusion, it is our opinion that all cut and fill slopes within permit area RP 112 are grossly stable, and that the slopes are within the boundaries of the Pacific Clay Products / Pacific Aggregates, Incorporated mine site.

We trust this information meets your current needs. Please contact our office with any questions or comments.

PACIFIC CLAY PRODUCTS



Chad W. Warren, C.E.G. 2331  
Mining Manager

