PALOS VERDES LANDFILL
REMEDIAL INVESTIGATION REPORT

APPENDIX E.9

SLOPE STABILITY STUDY REPORT

1.0 INTRODUCTION

The purpose of this evaluation is to identify stability factors for PVLF using standard civil engineering techniques to evaluate slope stability at landfill sites. This analysis concentrated on the northeast boundary of the landfill (Parcel 6) which contains the highest cut and refuse fill slopes that were constructed (Figure B6-1). Current state mandated regulations concerning the stability of cut and fill slopes were not entirely in place during construction of Parcel 6 slopes, however, State Board of Industrial Safety regulations relevant for that time period were followed.

2.0 SLOPE CONDITIONS ANALYZED

Cut and refuse fill slopes in the Parcel 6 area are approximately linear features that parallel the property boundary. Consequently, stability factors were determined for slope failure models directed normal to the cut and refuse fill slopes along the northeast boundary of the landfill (along the cross section line shown in Figure B6-1).

2.1 CUT SLOPES

The Parcel 6 excavation geometry is of an elongate depression oriented parallel to the northeast boundary of the landfill, that widens from northwest to southeast. Side slopes for the excavation were cut at an angle of approximately 34 degrees (equivalent to a horizontal distance of 1.5 feet for a vertical distance of 1 foot) and reach a maximum height of 110 feet. The floor of the excavation is gently graded (1%) towards the northwest.

2.2 REFUSE FILL SLOPES

A southwest facing refuse fill slope bounds the northeast margin of Parcel 6. This refuse fill slope was constructed at an angle of approximately 18 degrees (3H:1V). However, 15 foot wide terraces constructed on the refuse fill slope at approximately 30 feet elevation intervals reduce the average slope to approximately 16 degrees. Slope heights along this refuse fill slope are up to 140 feet. At the crest of this slope there is a break in grade to a more gentle slope angle of approximately 3 degrees, corresponding to the top deck of the

Figure B6-1

CONTOUR MAP OF Parcel 6 CUT & FILL SLOPES

CURRENTLY BEING ~~PREPARED~~ FINALIZED BY ERNESTO R.

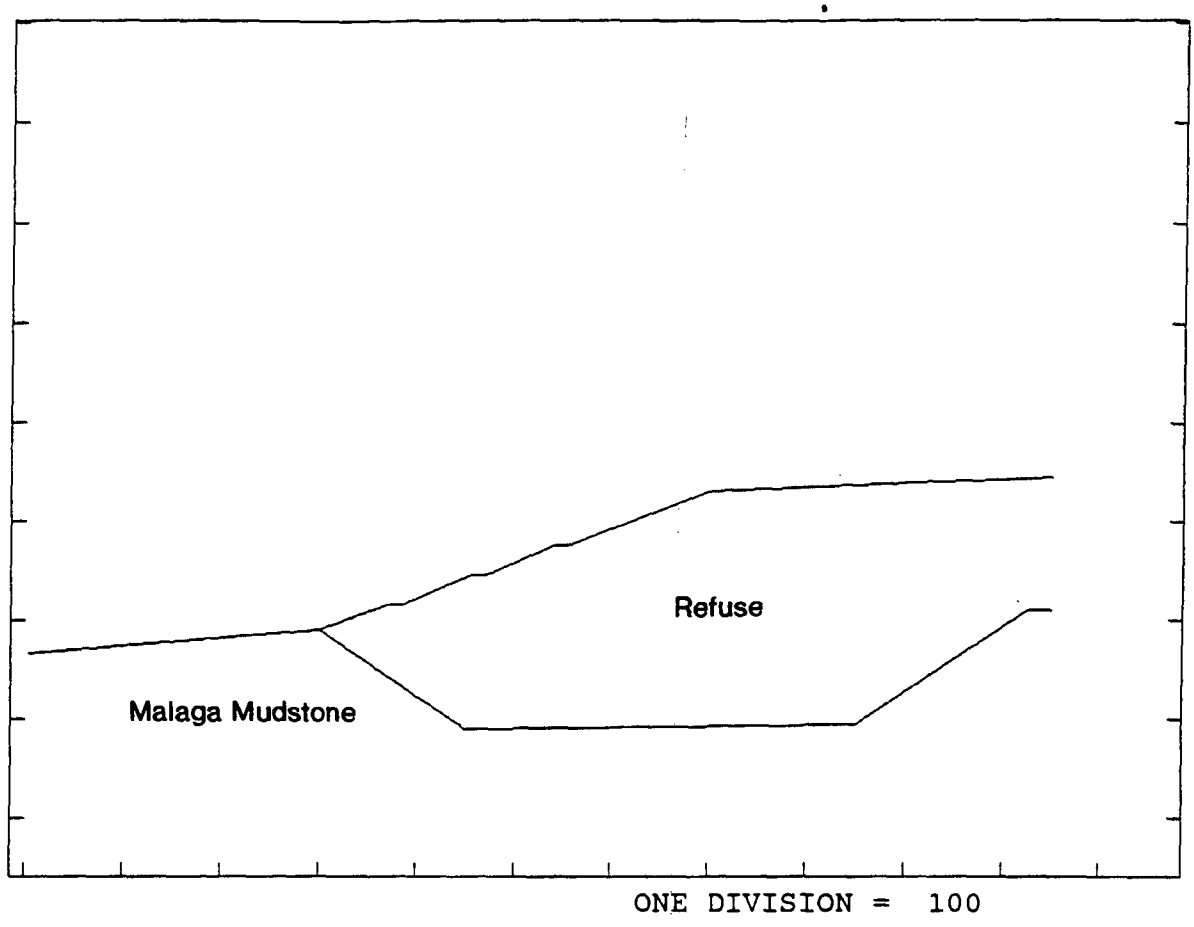
landfill. The general geometry of the landfill in the Parcel 6 area is illustrated in the northwest-southeast directed cross section shown in Figure B6-2.

3.0 METHODS OF ANALYSIS

The slope stability methods used in this analysis were selected because of their wide acceptance and use in civil practice at landfill sites, and because of their their applicability for modeling refuse fill slope stability. The stability methods used are based on the concept of limit equilibrium, which is the basis for most conventional slope stability analyses. Limit equilibrium methods refer to those stability analyses, for a specified potential failure surface, where the forces tending to induce sliding are exactly balanced by those resisting sliding. Static analysis is applied to evaluate the balance between driving forces and resisting forces.

A very powerful technique that is commonly used to analyze various slope geometries, is the method of slices. For a two dimensional analysis, the slide mass above a potential failure surface is divided into a number of vertical slices. The stability of each slice is then calculated by resolving the static forces. Hence, the summation of driving forces relative to resisting forces for all the slices above the potential failure surface is used to evaluate slope stability. The method of slices allows for many variations of both slope geometries and material properties. The method of vertical slices in two dimensions, can similarly be extended into three dimensions by dividing the area of the potential failure into columns, and summing the driving and resisting forces on the columns. The advent of computer applications in slope stability have greatly expanded the use of the method of slices because for even a relatively simple geometry a very large number of calculations need to be solved. The efficiency of computer modeling makes it possible to easily solve for the stability of various potential failure surfaces so that the most critical failure surface can be determined for the slope being evaluated. An important limitation to the method slices is that most slope stability problems are typically statically indeterminate. Consequently, some simplifying assumptions must be made in order to determine a unique solution. The differences between the various methods of analysis involve differences in the assumptions that are made regarding interslice forces and corresponding differences in the number of conditions of static equilibrium that are satisfied. Consequently, careful consideration is given to the methods applied for individual slopes because the geometries and material properties modeled are sensitive to the

Figure 2



assumptions made.

3.1 CONCEPT OF FACTOR OF SAFETY

In order to conduct an engineering evaluation of the stability of slopes under various conditions a conventional index parameter is required. The most commonly used index parameter in slope stability is the "Factor of Safety" which is directly related to the concept of Limit Equilibrium forces. Factor of Safety is defined as the ratio of total force available to resist sliding to the total force tending to induce sliding, so that for Limit Equilibrium conditions where the driving and resisting forces are equal, the Factor of Safety is 1. Slopes are statically stable when the resisting forces exceed driving forces, thus, when the Factor of Safety exceeds 1. It is important to emphasize that the value of the Factor of Safety concept is as an index that can be used to compare the relative stability of different slopes. Consequently, for this analysis the industry accepted standard of a static Factor of Safety of 1.5 is the criterion by which the stability of PVLF slopes will be proposed as acceptable.

3.2 PSUEDO-STATIC SLOPE STABILITY

3.2.1 DESIGN EARTHQUAKE

3.2.2 ACTIVE FAULTS WITHIN A 100 km RADIUS

3.2.3 SEISMIC HAZARD ANALYSIS

3.3 MATERIAL DESIGN PARAMETERS

As discussed previously, the stability of a slope is dependant on the forces inducing it to slide relative to the forces resisting it to move. Since the weight of a slide mass is the most important component of the driving force, a critical design parameter is the density (gamma) of the materials being modeled. Similarly, the forces resisting movement are dependant on the shear strength of the materials being modeled. The

Coulomb method of describing material shear strength is commonly used. By this method the material's shear strength is described as a function of its cohesion (C) and it internal angle of friction (phi).

The material density and shear strength parameters used are the most important parameters in modeling slope stability. For the Parcel 6 materials, bedrock density and strength values have been experimentally determined in previous geotechnical investigations of the area. Representative values for refuse are more difficult to assess because of its heterogenous and coarse nature. Refuse densities can be evaluated based on the weight of refuse during placement, coupled with an understanding of landfill settling rates. Landfill refuse strength values are not precisely defined, consequently, the methodology employed in this study consisted of a sensitivity analysis using conservative refuse strength values reported from studies that have attempted to characterize landfill refuse strengths.

3.3.1 BEDROCK STRENGTH AND DENSITY PARAMETERS

The Parcel 6 area of PVLF is underlain primarily by north-dipping beds of the Malaga Mudstone. Valmonte Diatomite occurs in the western edge of the area and locally along the southeast edge of the property. Because both units consist predominantly of stratified diatomaceous mudstones and siltstones, bedrock in the area was modeled as one unit for slope stability purposes. Ground water was not encountered during excavation of the Parcel 6 area. Typical material parameters determined from previous geotechnical investigations for Malaga Mudstones in the area include a density of 100 pounds per cubic foot (pcf), a cohesion of 640 pounds per square foot (psf), and an internal angle of friction of 20 degrees.

3.3.2 REFUSE STRENGTH AND DENSITY PARAMETERS

Refuse density values have not been derived from site specific sampling for PVLF, however, they can be evaluated based on an understanding of the refuse density during placement and by taking into consideration compaction due to settling. For this analysis, it is assumed that refuse densities in the Parcel 6 area are best characterized as being similar to those from other District's operated landfills (for which refuse densities have previously been evaluated). Figure B6-3 shows a model of refuse densities with depth from a District's operated landfill which is based, in part, on direct measurements of refuse density from borehole

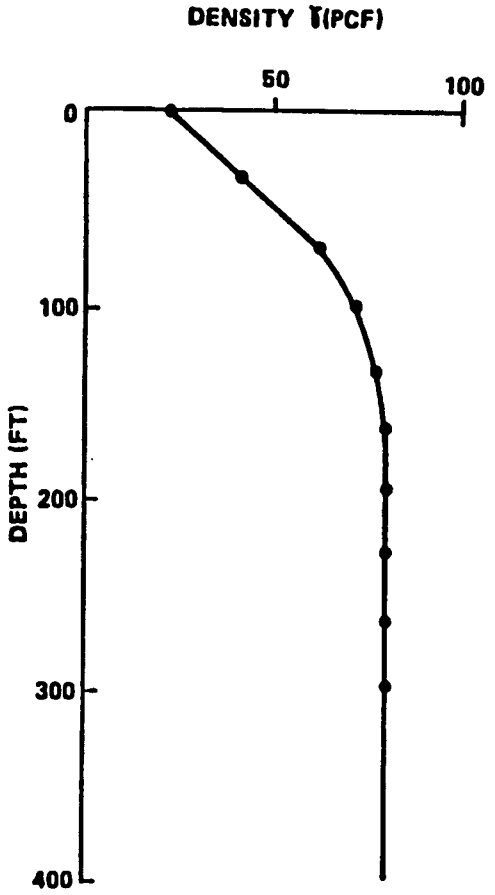


Figure 3

samples. Refuse densities are approximately 20 pounds per cubic foot (pcf) at the surface and increase to approximately 70 pcf within the first 100 feet of burial due to compaction during settling. Compaction decreases after approximately 100 feet of burial, resulting in a smaller increase of refuse densities from approximately 70 pcf to 80 pcf within the next 100 feet of burial. After approximately 200 feet of burial, compaction due to settling is essentially complete. Based on this data, a value of 70 pcf was used to model Parcel 6 refuse density.

Refuse strength values have been reported in the literature based on direct sampling and indirect geophysical testing of various landfills. Figure B6-4, reported by Mitchell and Mitchell (1992), shows the range (shaded area) interpreted to represent typical landfill refuse strength values. For the analysis of PVLF slope stability, conservative values of refuse strength derived from the base of the shaded area in Figure B6-4 were used (summarized in Table B6-1). It is important to understand that the values used in this analysis are a range of the most conservative values that might be expected for landfill refuse strengths. Consequently, this analysis also reports the slope stability results based on refuse strength values that are believed to be more characteristic of Parcel 6 refuse. Similar to the evaluation of PVLF refuse densities, site specific refuse strength values have been evaluated for other District's operated landfills that are believed to be more representative of Parcel 6 refuse strengths. The refuse strengths determined, partly based on direct shear testing of borehole samples, indicates that more representative values for Parcel 6 refuse are 0 cohesion and in excess of 35 degrees of internal friction.

3.4 STABILITY MODEL USED

The Bishop's Method of Slices was used to analyze the stability of Parcel 6 slopes. The Bishops Method assumes that vertical intercolumn forces are zero in order that slope stability problems can be statically determined. By this method, overall moment equilibrium and vertical force equilibrium are satisfied. Consequently, this method is applicable for modeling rotational failure along a circular failure plane. This method is typically used to model rotational circular plane failures in refuse because refuse prisms are considered to be relatively homogeneous, containing no internal planes of weakness.

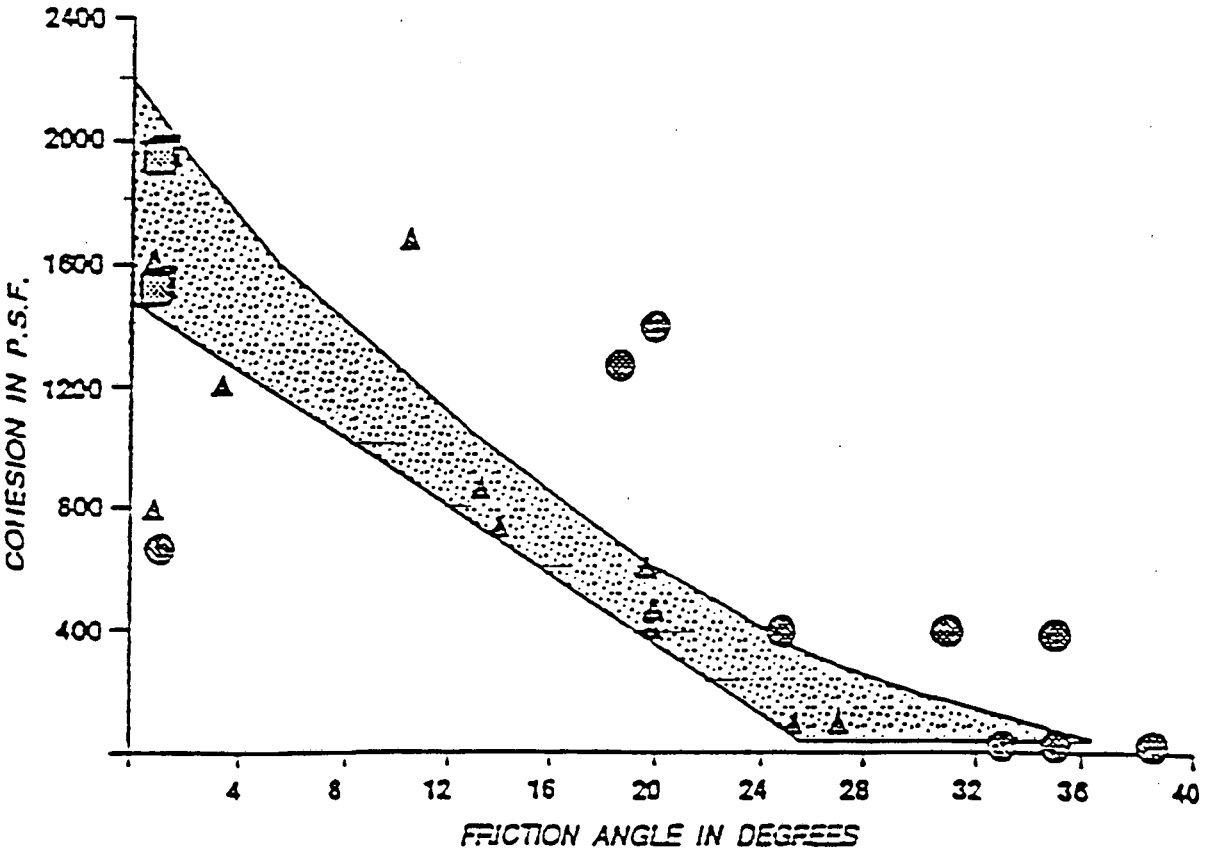

2400
2000
1600
1220
800
400
COHESION IN P.S.F.
4
8
12
16
20
24
28
32
36
40
FRICTION ANGLE IN DEGREES

Figure 4

Table B6-1

PVLF Parcel 6
Sensitivity Analysis Refuse Strengths
(from Mitchell and Mitchell, 1992)

C (psi)	ϕ (degrees)
0	25
200	22
400	19
600	16
800	12
1000	9
1200	5

3.4.1 CLARA SLOPE STABILITY SOFTWARE

The microcomputer program CLARA is a slope stability analysis program suitable for geometries in both 2 and 3 dimensions. CLARA is based on Bishop's Simplified Method of Slices. In its 2 dimensional configuration the solution formulas take on the standard forms of the Bishop's Method (Bishop, 1955). In its 3 dimensional configuration CLARA is based on an extension of Bishop's Method of Slices to three dimensional columns (Hungr, 1987). CLARA version 3.1 also includes modifications due to Fredlund and Kraun (1977) that makes CLARA applicable to certain non-rotational geometries. Janbu Simplified Method, analogous to Bishop's Method, extended to 3 dimensions is an optional evaluation method of the program.

4.0 RESULTS OF ANALYSIS

In order to identify the critical failure plane geometry for Parcel 6 slopes, potential failure planes at three depths were evaluated; 1) shallow failure planes that exit from the refuse fill slope at the base of the second terrace; 2) medium depth failure planes that exit at the toe of the refuse fill slope; and 3) deep-seated failure planes that pass through both refuse and the Malaga Mudstone and exit 200 feet north of the toe of slope (Figure B6-5). The results of the stability analyses for the three failure plane mechanisms using conservative refuse strengths reported by Mitchell and Mitchell (1992) are summarized in Table B6-2. Also shown in Table B6-2 are the results of stability analyses for the three failure plane mechanisms based on the strength values believed to be more representative of Parcel 6 refuse.

4.1 DISCUSSION OF RESULTS

The shallow failure planes modeled through refuse have Factors of Safety that ranges from 1.50 to 1.80. Based on the conservative refuse strengths assumed, these results indicate that localized shallow "pop-out" failure of PVLF refuse slopes should not occur. The deep-seated failure planes modeled through refuse and the Malaga Mudstone have Factors of Safety that range from 1.63 to 2.05. Based on these results, it is believed that the Malaga Mudstone would be effective in statically buttressing any deep-seated failures that originate in the refuse area. The "toe-of-slope" failure planes modeled have Factors of Safety that range from 1.26 to 1.59. Only some of the results based on highly conservative refuse strengths achieve a Factor of Safety

Figure 5

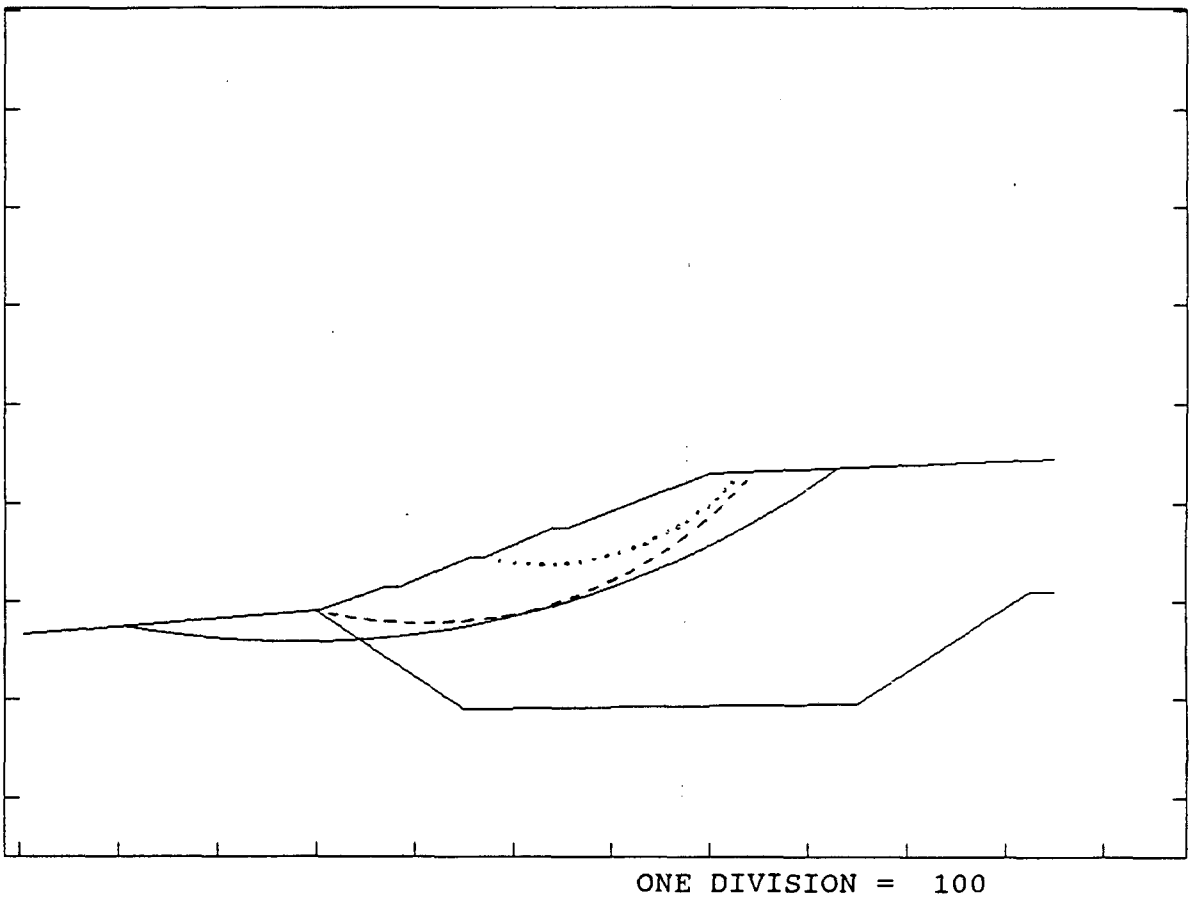


Table B6-2

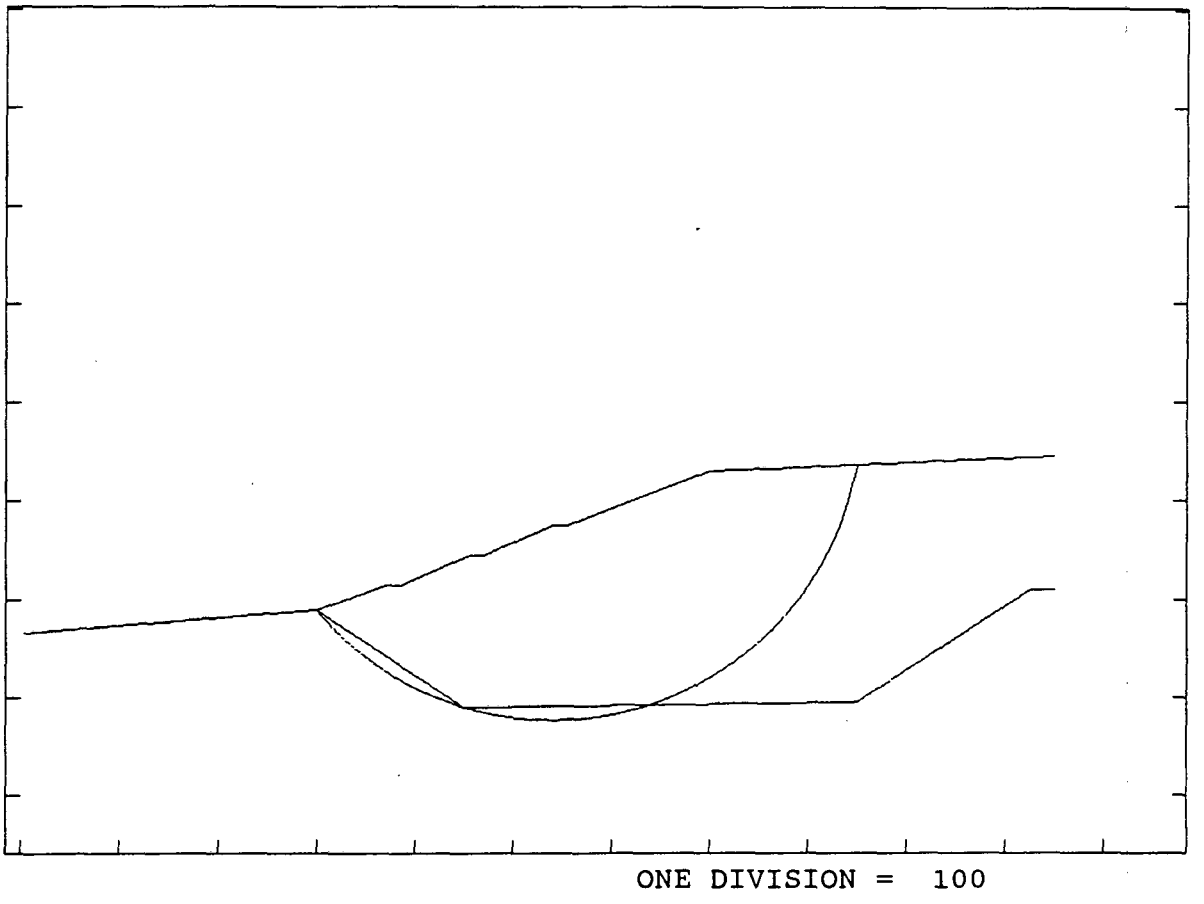
PVLF Parcel 6
Slope Stability Sensitivity Analysis Results

C (psi)	ϕ (degrees)	Factor of Safety		
		Shallow	Toe of Slope	Deep-seated
0	25	1.50	1.45	2.05
200	22	1.67	1.55	2.02
400	19	1.81	1.59	2.00
600	16	1.90	1.59	1.96
800	12	1.87	1.48	1.85
1000	9	1.90	1.43	1.78
1200	5	1.80	1.26	1.63
0	35	2.68	3.47	3.41

of 1.5. These results indicate that if the refuse is characterized by no cohesion with low values of internal friction (C=0, phi=25) or if the refuse has high cohesion (800 psf or greater) but very low values of internal friction (12 degrees or less) Parcel 6 slopes would be susceptible to toe-of-slope failure. However, these are not considered to be the characteristics of Parcel 6 refuse. The Factor of Safety for the toe-of-slope failure model based on refuse strengths that are believed to be more characteristic of Parcel 6 refuse is 3.47. The critical failure surface for this model is shown in Figure B6-6. This analysis indicates that for the more characteric refuse strengths modeled, the critical toe-of-slope failure plane is directed steeply into the refuse pile where at depth it would be buttressed by the underlying Malaga Mudstone.

4.2 OUTPUT FROM CLARA

Figure 6



Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-199
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	203	Axis of Rotation Y-coordinate	440.00
Max. No. Columns in Y-dir.	203	Axis of Rotation Z-coordinate	830.00
Slide Volume	1.24E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	8.71E+05	Unbalanced Transverse Force .	1.22E+01
Sliding Surface Area ...	4.42E+02	Z-coord. of unbalanced force	342.35
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.450

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/	MATERIALS:							
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	0.0	0.0	25.0	25.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	213	Axis of Rotation Y-coordinate	469.00
Max. No. Columns in Y-dir.	213	Axis of Rotation Z-coordinate	800.00
Slide Volume	1.69E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	1.18E+06	Unbalanced Transverse Force .	1.62E+01
Sliding Surface Area ...	4.64E+02	Z-coord. of unbalanced force	341.50
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.549

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	200.0	200.0	22.0	22.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-199
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	222	Axis of Rotation Y-coordinate	509.00
Max. No. Columns in Y-dir.	222	Axis of Rotation Z-coordinate	719.00
Slide Volume	2.34E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	1.64E+06	Unbalanced Transverse Force .	2.17E+01
Sliding Surface Area ...	4.91E+02	Z-coord. of unbalanced force	335.27
Earthquake Acceleration	0.00	Negative Norm. Forces	0.02 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.588

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	400.0	400.0	19.0	19.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-199
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	230	Axis of Rotation Y-coordinate	527.00
Max. No. Columns in Y-dir.	230	Axis of Rotation Z-coordinate	698.00
Slide Volume	2.78E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	1.94E+06	Unbalanced Transverse Force .	2.49E+01
Sliding Surface Area ...	5.11E+02	Z-coord. of unbalanced force	331.42
Earthquake Acceleration	0.00	Negative Norm. Forces 0.06 %	OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.585

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/	MATERIALS:							
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	600.0	600.0	16.0	16.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	241	Axis of Rotation Y-coordinate	555.00
Max. No. Columns in Y-dir.	241	Axis of Rotation Z-coordinate	655.00
Slide Volume	3.58E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	2.51E+06	Unbalanced Transverse Force .	3.02E+01
Sliding Surface Area ...	5.44E+02	Z-coord. of unbalanced force	323.36
Earthquake Acceleration	0.00	Negative Norm. Forces	0.13 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.484

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/	MATERIALS:							
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	800.0	800.0	12.0	12.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	250	Axis of Rotation Y-coordinate	573.00
Max. No. Columns in Y-dir.	250	Axis of Rotation Z-coordinate	633.00
Slide Volume	4.23E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	2.96E+06	Unbalanced Transverse Force .	3.38E+01
Sliding Surface Area ...	5.71E+02	Z-coord. of unbalanced force	316.65
Earthquake Acceleration	0.00	Negative Norm. Forces 0.25 % OF WEIGHT	

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.427

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/	MATERIALS:							
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	1000.0	1000.0	9.0	9.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	269	Axis of Rotation Y-coordinate	611.00
Max. No. Columns in Y-dir.	269	Axis of Rotation Z-coordinate	581.00
Slide Volume	6.00E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	4.20E+06	Unbalanced Transverse Force .	4.14E+01
Sliding Surface Area ...	6.37E+02	Z-coord. of unbalanced force	298.32
Earthquake Acceleration	0.00	Negative Norm. Forces	0.54 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.259

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	1200.0	1200.0	5.0	5.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	331	Axis of Rotation Y-coordinate	343.00
Max. No. Columns in Y-dir.	331	Axis of Rotation Z-coordinate	1180.00
Slide Volume	2.39E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	1.77E+06	Unbalanced Transverse Force .	2.10E+01
Sliding Surface Area ...	6.97E+02	Z-coord. of unbalanced force	337.00
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 2.023

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	0.0	0.0	25.0	25.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	347	Axis of Rotation Y-coordinate	361.00
Max. No. Columns in Y-dir.	347	Axis of Rotation Z-coordinate	1203.00
Slide Volume	2.95E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	2.17E+06	Unbalanced Transverse Force .	2.50E+01
Sliding Surface Area ...	7.30E+02	Z-coord. of unbalanced force	334.61
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 2.021

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	200.0	200.0	22.0	22.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	361	Axis of Rotation Y-coordinate	380.00
Max. No. Columns in Y-dir.	361	Axis of Rotation Z-coordinate	1200.00
Slide Volume	3.50E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	2.58E+06	Unbalanced Transverse Force .	2.87E+01
Sliding Surface Area ...	7.60E+02	Z-coord. of unbalanced force	331.40
Earthquake Acceleration	0.00	Negative Norm. Forces 0.01 % OF WEIGHT	

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 2.003

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/	MATERIALS:							
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	400.0	400.0	19.0	19.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-199
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	377	Axis of Rotation Y-coordinate	409.00
Max. No. Columns in Y-dir.	377	Axis of Rotation Z-coordinate	1171.00
Slide Volume	4.38E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	3.23E+06	Unbalanced Transverse Force .	3.42E+01
Sliding Surface Area ...	7.96E+02	Z-coord. of unbalanced force	325.99
Earthquake Acceleration	0.00	Negative Norm. Forces	0.01 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.963

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/	MATERIALS:							
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	600.0	600.0	16.0	16.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	393	Axis of Rotation Y-coordinate	429.00
Max. No. Columns in Y-dir.	393	Axis of Rotation Z-coordinate	1179.00
Slide Volume	5.10E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	3.76E+06	Unbalanced Transverse Force .	3.83E+01
Sliding Surface Area ...	8.30E+02	Z-coord. of unbalanced force	322.26
Earthquake Acceleration	0.00	Negative Norm. Forces	0.02 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.847

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/	MATERIALS:							
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	800.0	800.0	12.0	12.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	404	Axis of Rotation Y-coordinate	450.00
Max. No. Columns in Y-dir.	404	Axis of Rotation Z-coordinate	1141.00
Slide Volume	5.85E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	4.31E+06	Unbalanced Transverse Force .	4.24E+01
Sliding Surface Area ...	8.56E+02	Z-coord. of unbalanced force	317.48
Earthquake Acceleration	0.00	Negative Norm. Forces	0.04 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.780

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	1000.0	1000.0	9.0	9.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-199
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	430	Axis of Rotation Y-coordinate	480.00
Max. No. Columns in Y-dir.	430	Axis of Rotation Z-coordinate	1160.00
Slide Volume	7.14E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	5.25E+06	Unbalanced Transverse Force .	4.84E+01
Sliding Surface Area ...	9.12E+02	Z-coord. of unbalanced force	311.85
Earthquake Acceleration	0.00	Negative Norm. Forces	0.06 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.631

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/	MATERIALS:							
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	1200.0	1200.0	5.0	5.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	120	Axis of Rotation Y-coordinate	570.00
Max. No. Columns in Y-dir.	120	Axis of Rotation Z-coordinate	730.00
Slide Volume	4.30E+03	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	3.01E+05	Unbalanced Transverse Force .	4.32E+00
Sliding Surface Area ...	2.59E+02	Z-coord. of unbalanced force	379.97
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.386

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/	MATERIALS:							
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	0.0	0.0	25.0	25.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	124	Axis of Rotation Y-coordinate	619.00
Max. No. Columns in Y-dir.	124	Axis of Rotation Z-coordinate	609.00
Slide Volume	7.02E+03	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	4.91E+05	Unbalanced Transverse Force .	6.78E+00
Sliding Surface Area ...	2.74E+02	Z-coord. of unbalanced force	374.81
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.668

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	200.0	200.0	22.0	22.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	131	Axis of Rotation Y-coordinate	630.00
Max. No. Columns in Y-dir.	131	Axis of Rotation Z-coordinate	608.00
Slide Volume	8.58E+03	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	6.00E+05	Unbalanced Transverse Force .	8.00E+00
Sliding Surface Area ...	2.89E+02	Z-coord. of unbalanced force	373.29
Earthquake Acceleration	0.00	Negative Norm. Forces 0.04 % OF WEIGHT	

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.812

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	400.0	400.0	19.0	19.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-199
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	138	Axis of Rotation Y-coordinate	649.00
Max. No. Columns in Y-dir.	138	Axis of Rotation Z-coordinate	580.00
Slide Volume	1.12E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	7.86E+05	Unbalanced Transverse Force .	9.88E+00
Sliding Surface Area ...	3.09E+02	Z-coord. of unbalanced force	368.96
Earthquake Acceleration	0.00	Negative Norm. Forces 0.10 % OF WEIGHT	

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.897

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	600.0	600.0	16.0	16.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	143	Axis of Rotation Y-coordinate	666.00
Max. No. Columns in Y-dir.	143	Axis of Rotation Z-coordinate	546.00
Slide Volume	1.43E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	9.99E+05	Unbalanced Transverse Force .	1.17E+01
Sliding Surface Area ...	3.28E+02	Z-coord. of unbalanced force	362.90
Earthquake Acceleration	0.00	Negative Norm. Forces 0.26 % OF WEIGHT	

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.874

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	800.0	800.0	12.0	12.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	152	Axis of Rotation Y-coordinate	677.00
Max. No. Columns in Y-dir.	152	Axis of Rotation Z-coordinate	548.00
Slide Volume	1.69E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	1.19E+06	Unbalanced Transverse Force .	1.29E+01
Sliding Surface Area ...	3.49E+02	Z-coord. of unbalanced force	359.44
Earthquake Acceleration	0.00	Negative Norm. Forces	0.37 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.897

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/	MATERIALS:							
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	1000.0	1000.0	9.0	9.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-199
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	156	Axis of Rotation Y-coordinate	690.00
Max. No. Columns in Y-dir.	156	Axis of Rotation Z-coordinate	520.00
Slide Volume	2.05E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	1.44E+06	Unbalanced Transverse Force .	1.42E+01
Sliding Surface Area ...	3.69E+02	Z-coord. of unbalanced force	351.40
Earthquake Acceleration	0.00	Negative Norm. Forces	0.73 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.802

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/	MATERIALS:							
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	1200.0	1200.0	5.0	5.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	119	Axis of Rotation Y-coordinate	650.00
Max. No. Columns in Y-dir.	119	Axis of Rotation Z-coordinate	500.00
Slide Volume	1.02E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	7.11E+05	Unbalanced Transverse Force .	9.46E+00
Sliding Surface Area ...	2.82E+02	Z-coord. of unbalanced force	366.39
Earthquake Acceleration	0.00	Negative Norm. Forces 0.00 % OF WEIGHT	

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 2.680

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	0.0	0.0	35.0	35.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-199
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	382	Axis of Rotation Y-coordinate	509.00
Max. No. Columns in Y-dir.	382	Axis of Rotation Z-coordinate	709.00
Slide Volume	9.17E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	7.05E+06	Unbalanced Transverse Force .	5.84E+01
Sliding Surface Area ...	8.78E+02	Z-coord. of unbalanced force	291.68
Earthquake Acceleration	0.00	Negative Norm. Forces 0.00 % OF WEIGHT	

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 3.413

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	0.0	0.0	35.0	35.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number

Los Angeles County Sanitation District

CLARA - SLOPE STABILITY ANALYSIS

Project: PVLF PARCEL 6 SLOPE STABILITY
Data File: pvlf_p6.cla Analysis by: ENRIQUE CASAS Date: 02-25-1993
Data Set: CUT AND REFUSE SLOPES

RUN IDENTIFICATION LABEL:

Number of Active Columns	274	Axis of Rotation Y-coordinate	641.00
Max. No. Columns in Y-dir.	274	Axis of Rotation Z-coordinate	490.00
Slide Volume	8.29E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	5.90E+06	Unbalanced Transverse Force .	5.29E+01
Sliding Surface Area ...	7.08E+02	Z-coord. of unbalanced force	286.25
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 3.472

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	COHESION VERT.	FRICTION HOR.	FRICTION VERT.	PORE-PRESS. RATIO*	PORE-PRESS. B-BAR
A/ MATERIALS:								
1	MALAGA MUDST	100.00	640.0	640.0	20.0	20.0	0.00	0.00
2	REFUSE	70.00	0.0	0.0	35.0	35.0	0.00	0.00

NOTES:
Material layers are numbered from bottom up
* Negative integer signifies the applicable piezometric surface number