APPENDIX E

Geotechnical Report
LIMITED SOILS ENGINEERING INVESTIGATION

Proposed Steel Building

11320 Pendelton Street

Sun Valley, California

for

Community Recycling & Resource Recovery, Inc.

P.O. Box 1082

Sun Valley, CA  91352

Project  1255

October 19, 2004
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- GeoConcepts, Inc.
INTRODUCTION

This report presents the results of a Limited Soils Engineering Investigation on a portion of the subject property. The purpose of this investigation has been to ascertain the subsurface conditions pertaining to the proposed project. Review of the project included reconnaissance mapping, description of earth materials, obtaining representative earth samples, performing laboratory testing, engineering analyses and preparation of this report. Results of the project include findings, conclusions and appropriate recommendations covering the proposed project.

SCOPE

The scope of this investigation includes the following:

• Review of preliminary plans by Master Craft Steel Buildings.
• Review of three borings and previously excavated exploration at the subject site. Explorations were backfilled with the excavated materials.
• Preparation of the enclosed Plot Map (see Appendix I).
• Sampling of representative earth materials, laboratory testing and analyses (see Appendix II).
• Review of reference materials, previously prepared reports by this office and available public reports at the City of Los Angeles (see Appendix V).
• Presentation of findings, conclusions and recommendations for the proposed project.

Land & Surveying prepared the topographic base map utilized in this investigation. Preliminary building plans were prepared by Master Craft Steel Buildings. It consists of one sheet drawn to a scale of one-inch equals eighty feet.

The scope of this investigation is limited to the project area explored as depicted on the Plot Map. This report is not a comprehensive evaluation of the entire property. This report has not been prepared for use by other parties or for other purposes, and may not contain sufficient information for other than the intended use. Prior to use by others, GeoConcepts, Inc. should be consulted to determine if additional work is required. If construction is delayed more than one year, this office should be contacted to verify current site conditions and prepare an update report.

PROPOSED DEVELOPMENT

It is our understanding that the proposed development will consist of steel frame building about 630 feet long by 310 feet wide. The proposed steel frame will be supported by perimeter foundations. It is proposed to be constructed in two phases. The northern half will be constructed first and the southern half in the future. Final building plans have not been prepared and await the conclusions and recommendations of this investigation.

GeoConcepts, Inc.
SITE DESCRIPTION

Location and Description

Access to the property is via Pendleton Street from DeGarmo Avenue (see Location Map). The site consists of relatively level lot. The site is an operating recycling processing center.

Drainage

Surface water at the site consists of direct precipitation onto the property. Much of this water drains as sheet flow to the street.

Groundwater

No active surface groundwater seeps or springs were observed on the subject site. The current subsurface exploration or previous exploration did not encounter groundwater to a depth of (46) feet. Seasonal fluctuations of groundwater levels may occur by varying amounts of rainfall, irrigation and recharge.

SUMMARY OF FINDINGS

Previous Works

Previous geotechnical reports were found on file at the City of Los Angeles, Department of Building and Safety relating to prior developments at the recycling facility.

Foundation Engineering Co. prepared a Report on Controlled Compacted Fill, for backfilling an abandoned gravel pit to create a level building site, dated April 26, 1972. A (60) foot setback was indicated on the compaction map from the north limit of the compacted fill. The City of Los Angeles, Department of Building and Safety approved the report on July 21, 1972.

Geotechnical Consultants, Inc. prepared a report for a proposed warehouse dated October 19, 1978. The City of Los Angeles, Department of Building and Safety conditionally approved grading of the subject site on September 14, 1979. Their report references a previous investigation they performed for a shop building and welding shop. Both structures, shop building and welding shop, were reportedly constructed on post-tensioned floating slab or rigid mat type foundation. Both foundations were performing ideally at the time of the 1978 report. The report was conditionally approved on September 14, 1979. A review of the warehouse, which is currently in use, indicates that the structure is performing well. Reported landfill thickness varied from (46) to (47) feet. Settlements of the existing fill were estimated to be on the order of (6) to (8) inches.
Tierra Tech Testing Laboratory Inc., prepared a report during construction for the existing recycling building. The depth of the landfill encountered along the southwest side of the building was about (12) feet. The proposed foundation was recommended to be founded through the fill into the natural soils. The City of Los Angeles, Department of Building Safety conditionally approved the report on December 17, 1980. Tierra Tech prepared an additional report, dated February 2, 1982, for the building located at the southwest corner of the property. Fill was encountered to a depth of about (19) feet. Foundations were proposed to be founded into the natural soils. The report was conditionally approved by the City of Los Angeles, Department of Building and Safety on February 9, 1982.

G. C. Masterman & Associates, Inc., prepared a Soils Engineering Investigation Report, dated November 15, 1987, for Proposed Machinery Foundations. The report was conditionally approved by the Department of Building and Safety, on April 29, 1988, following a conditional approval upon appeal to the Board of Building and Safety Commissioner. Fill was encountered to a maximum depth of (59) feet. Settlement analysis performed indicated settlement up to (6) inches should be anticipated.

GeoConcepts, Inc. prepared a Limited Soils Engineering Investigation report dated December 18, 1995 for a proposed conveyor belt pit and new building. The report was approved on February 7, 1996 based upon Administrative Modification.

GeoConcepts, Inc. prepared a Limited Soils Engineering Investigation report dated July 30, 1999 for a two level recycling facility. The facility was subsequently constructed at the southwester portion of the site.

The earth materials encountered on the subject property are briefly described below. Approximate depths and more detailed descriptions are given in the enclosed Exploration Logs (see Appendix II).

**Fill (CAf)**

Previous grading has resulted in fill placement on the subject site. Fill materials were presumably placed during backfilling of a gravel pit under the observation of Foundation Engineering circa 1972. Fill was encountered in all of the borings ranging to more than (46) feet in thickness. Foundation Engineering Co. indicated a fill thickness from (30) to (50) feet. Fill consists of sandy clay, dark gray to dark brown, moist, stiff to hard, pieces of glass, pebbles and debris.

GeoConcepts, Inc.
Fill (Af)

Previous grading has resulted in fill placement on the subject site. Fill materials were presumably placed during landfill operations. The fill did not contain significant amount of vegetation or garbage. Debris within the fill consisted of metal, glass, brick and minor amount of wood. The thickness of the landfill material encountered in explorations is depicted on the Plot Map.

Quaternary Alluvium (Qal)

Alluvial deposits underlie the fill. Alluvium primarily consists of sand, sand with abundant gravels and cobbles.

Seismicity

No known active fault daylights beneath the proposed project on the property. Therefore, ground rupture due to fault movement is not anticipated. There are several active and/or potentially active faults within Los Angeles County. Therefore, any future movement on these faults could possibly affect the structure due to seismic shaking. However, all of Southern California is in a seismically active region. Neither the time, location, magnitude of fault movement, nor earthquakes can be accurately predicted.

Ground motion caused by an earthquake is likely to occur at the site during the lifetime of the development due to the proximity of several active and potentially active faults. A computer program for the deterministic prediction of peak horizontal acceleration from digitized California faults was utilized and is provided in the Appendix III. Generally, on a regional scale, quantitative predictions of ground motion values are linked to peak acceleration and repeatable acceleration, which is a response to earthquake magnitudes relative to the fault distance from the subject property.

This seismic evaluation is designed to provide the client with current, rational and believable seismic data that could affect the property during the lifetime of the proposed improvements. The minimum design acceleration for a project is listed in the Unified Building Code. It is recommended that the structural design of the proposed dwelling be based on current design acceleration practices of similar projects in the area.
Liquefaction

Liquefaction is a process by which sediments below the water table temporarily lose strength and behave as a viscous liquid rather than a solid. The types of sediments most susceptible are clay-free deposits of sand and silts; occasionally gravel liquefies. The actions in the soil which produce liquefaction are as follows: seismic waves, primarily shear waves, passing through saturated granular layers, distort the granular structure, and cause loosely packed groups of particles to collapse. These collapses increase the pore-water pressure between grains if drainage cannot occur. If the pore-water pressure rises to a level approaching the weight of the overlying soil, the granular layer temporarily behaves as a viscous liquid rather than a solid. Liquefaction has occurred. (EERI Brief No. 1)

In the liquefied condition, soil may deform with little shear resistance; deformations large enough to cause damage to buildings and other structures are called ground failures. The ease with which a soil can be liquefied depends primarily on the looseness of the material, the depth, thickness and areal extent of the liquefied layer, the ground slope and the distribution of loads applied by buildings and other structures.

The subject site is not located within liquefaction zone on the State of California Seismic Hazard Map. A detailed subsurface analysis can be performed to determine the liquefaction potential on the subject site. A proposal for a detailed analysis will be prepared if requested.

CONCLUSIONS

1. Based on the results of this investigation and a thorough review of the proposed development, as discussed, the project is suitable for the intended use providing the following recommendations are incorporated into the design and subsequent construction of the project. Also, the development must be performed in an acceptable manner conforming to building code requirements of the controlling governing agency.

2. Based on the State of California Seismic Hazard Maps, the subject site is not located within a liquefaction or landslide hazard zone.

3. The geotechnical input for the UBC seismic design parameters are: Fault Type B (Verdugo Fault), Fault Distance (<2.0) kilometers and Soil Type SD.

4. Due to the variability of the fill materials estimates of potential settlements are difficult. Previous investigations at the subject site indicate a potential settlement of (6) to (8) inches.

5. Based upon field observations, laboratory testing and analysis, the alluvium found in the explorations should possess sufficient strength to support the proposed structure.

6. Based upon field observations, laboratory testing and analysis, the compacted fill found in the explorations should possess sufficient strength to support the proposed structure.

7. The recommended compacted fill should possess sufficient strength to provide lateral resistance for the proposed grade beam.

GeoConcepts, Inc.
RECOMMENDATIONS

Specific

1. The proposed steel building should be supported on foundations embedded into the alluvium or on foundations embedded into the existing compacted fill.

2. The existing fill should be removed and replaced as compacted fill to a depth equal to the depth of the proposed grade beam.

3. The site shall be maintained by the homeowner as outlined in the Drainage and Maintenance section below.

Drainage and Maintenance

The site shall be maintained as outlined in the General Specifications in Appendix IV below.

Grading and Earthwork

Proposed grading will consist of removal and recompaction of the upper fill and foundation excavations. All grading shall be carried forth as outlined in the GRADING SPECIFICATIONS section in Appendix IV.

Foundations

It is recommended that the proposed structure should be supported on foundations embedded into the alluvium or existing compacted fill.

Existing Compacted Fill:

The minimum continuous footing size is (12) inches wide and (24) inches deep into the compacted fill, measured from the lowest adjacent grade of compacted fill. Continuous footings may be proportioned, using a bearing value of (1500) pounds per square foot. Column footings placed into the compacted fill may be proportioned, using a bearing value of (1500) pounds per square foot, and should be a minimum of (2) feet in width and (24) inches deep, below the lowest adjacent grade of compacted fill.

The bearing values given above are net bearing values; the weight of concrete below grade may be neglected. These bearing values may be increased by one-third (1/3) for temporary loads, such as, wind and seismic forces.

GeoConcepts, Inc.
Lateral loads may be resisted by friction at the base of the conventional foundations and by passive resistance within the existing compacted fill. A coefficient of friction of (0.4) may be used between the foundations and the compacted fill. The passive resistance may be assumed to act as a fluid with a density of (400) pounds per cubic foot. A maximum passive earth pressure of (5000) pounds per square foot may be assumed. For isolated poles, the allowable passive earth pressure may be doubled.

Alluvium:

The minimum pile diameter is (24) inches. Piles should extend into the alluvium a minimum of (5) feet. The piles may be proportioned using end bearing value of (4000) pounds per square foot.

All footing excavation depths will be measured from the lowest adjacent grade of recommended bearing material. Footing depths will not be measured from any proposed elevations or grades. Any foundation excavations that are not the recommended depth into the recommended bearing materials will not be acceptable to this office.

Lateral loads may be resisted by friction at the base of the conventional foundations and by passive resistance within the recommended compacted fill. A coefficient of friction of (0.4) may be used between the foundations and the compacted fill. The passive resistance may be assumed to act as a fluid with a density of (300) pounds per cubic foot. A maximum passive earth pressure of (4500) pounds per square foot may be assumed. For isolated poles, the allowable passive earth pressure may be doubled.

Settlement

Settlement of continuous footings is anticipated to be on the order of (1/4) inches. Isolated footings should have a settlement of (3/4) inches. Differential settlement between the two foundation unit types is not expected to exceed (1/2) inches.

Excavations

Excavations ranging in vertical height up to (4) feet are anticipated for the grading. Conventional excavation equipment may be used to make these excavations. Excavations should expose fill. These soils should be trimmed back at 1:1 (h:v) slope gradient. This should be verified by the project soils engineer during construction so that modifications can be made if variations in the soil occur.

All excavations should be stabilized within 30 days of initial excavation. If this time is exceeded, the project soils engineer must be notified, and modifications, such as shoring or slope trimming may be required. Water should not be allowed to pond on top of the excavation, nor to flow toward it. All excavations should be protected from inclement weather. Excavations should be kept moist, not saturated, to reduce the potential for raveling and sloughing during construction. No vehicular surcharge should be allowed within three feet (3') of the top of cut.

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REVIEWS

Plan Review and Plan Notes

The final grading, building, and/or structural plans shall be reviewed and approved by the consultants to ensure that all recommendations are incorporated into the design or shown as notes on the plan.

The final plans should reflect the following:

1. The Soils Engineering Investigation by GeoConcepts, Inc. is a part of the plans.
2. Plans must be reviewed and signed by the soils engineer.
3. All grading must be reviewed by the project soils engineer.
4. All foundations shall be reviewed by the project soils engineer.

Construction Review

Reviews will be required to verify all work. It is required that all footing excavations, seepage pits, and grading be reviewed by this office. This office should be notified at least two working days in advance of any field reviews so that staff personnel may be made available.

LIMITATIONS

General

Findings, conclusions and recommendations contained in this report are based upon the surface mapping, subsurface exploration, data analyses, and specific information as described and past experience. Earth materials and conditions immediately adjacent to, or beneath those observed may have different characteristics, such as, earth type, physical properties and strength. Therefore, no representations are made as to the nature, quality, or extent of latent earth materials. Site conditions can and do change from those that were first envisioned. During construction, if subsurface conditions differ from those encountered in the described exploration, this office should be advised immediately so that appropriate action can be taken.

Findings, conclusions and recommendations presented herein are based on experience and background. Therefore, findings, conclusions and recommendations are professional opinions and are not meant to indicate a control of nature.

This report may not be copied. If you wish additional copies, you may order them from this office.

GeoConcepts, Inc.
CONSTRUCTION NOTICE

Construction can be difficult. Recommendations contained herein are based upon surface reconnaissance and subsurface explorations deemed suitable by your consultants.

It is this Corporation's aim to advise you through this report of the general site conditions, suitability for construction, and overall stability. It must be understood that the opinions are based upon testing, analysis, and interpretation thereof.

Quantities for foundation concrete and steel may be estimated, based on the findings given in this report. However, you must be aware that depths and magnitudes will most likely vary between the explorations given in the report.

We appreciate the opportunity of serving you on this project. If you have any questions concerning this report, please contact the undersigned.

Respectfully submitted,
GEOCONCEPTS, INC.

Scott J. Walter
Project Engineer
GE 2476

SJW: 1255-6

Distribution: (5) Addressee
(1) Ming Yang Yeh & Associates
APPENDIX I

SITE INFORMATION

Location Map

Plot Maps

Field Exploration
Exploration Logs 1 through 3
Previous Explorations
LOCATION

Reference: USGS - Topographic Maps of the Van Nuys and Burbank Quadrangles
Project Address: 11300 Pendleton Street
                Sun Valley, California

GeoConcepts, Inc.
SEISMIC HAZARD MAP

Reference: State of California - Van Nuys and Burbank Quadrangles

Project Address: 11300 Pendleton Street  
Sun Valley, California

GeoConcepts, Inc.
**Field Exploration**

A field exploration of the site was conducted in March, 2004. The soils conditions were mapped by a representative of this office (refer to Exploration Logs). Subsurface exploration was performed by a drill rig trenching into the underlying earth materials. Explorations were excavated to a maximum depth of (43) feet. The Plot Map in Appendix I depicts locations of the subsurface explorations.

Representative, undisturbed and bulk samples of the earth materials were obtained. Undisturbed samples were obtained within the explorations through the use of a thin-walled steel hand-held sampler with successive blows of a 140 pound drop hammer dropped thirty inches (30”). The soil is retained in the brass rings of two and one-half inches (2½”) in diameter and one inch (1”) in height. The sample is transported in moisture tight containers.
BORING: B1

ADDRESS: 11300 Pendleton Street
DATE LOGGED: March 9, 2004
PROJECT NO.: 1255
LOGGED BY: SSW

<table>
<thead>
<tr>
<th>DEPTH</th>
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<tr>
<td>0.0 - 3.0&quot; Concrete.</td>
<td></td>
</tr>
<tr>
<td>3.0&quot; - 30.0' Alluvium; Qal, sand, medium brown, moist, medium to fine-grained.</td>
<td></td>
</tr>
<tr>
<td>@ 3.0' sand, medium brown, medium-grained, moist, few rounded gravels up to 1.5&quot; in length.</td>
<td></td>
</tr>
<tr>
<td>@ 5.0' sand, grayish-brown, slightly moist, medium to coarse-grained, rounded gravels up to 1.5&quot; in length.</td>
<td></td>
</tr>
<tr>
<td>@ 10.0' abundant gravels, difficult to drill.</td>
<td></td>
</tr>
<tr>
<td>@ 15.0' gravelly.</td>
<td></td>
</tr>
<tr>
<td>@ 25.0' sand, gray, coarse-grained, slightly moist, gravel up to 2&quot; in length.</td>
<td></td>
</tr>
<tr>
<td>@ 30.0' No recovery.</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth 30.0 Feet.
No Groundwater.
0.0 - 1.0' Concrete.

1.0 - 35.0' FILL; Af
   @ 3.0' sand with gravel, dark brown to black.
   @ 5.0' sand with gravels, dark brown to black, moist.

@ 10.0' No recovery.

@ 15.0' sand, gray, medium-grained, slightly moist; No Recovery, concrete rock on tip.

@ 20.0' sand, medium brown, moist, few gravels, dense.

@ 25.0' sand, medium to dark brown, moist, medium-grained, few gravels, asphalt and glass debris.

@ 30.0' sand, dark brown, moist, glass debris.

35.0 - 43.0' Alluvium; Qal, sand grayish-brown, slightly moist, medium-grained, glass debris in top 6" of sample.

Total Depth 43.0 Feet.
No Groundwater.
Refusal due to gravels.
BORING: B3

ADDRESS: 11300 Pendelton Street

DATE LOGGED: March 9, 2004

PROJECT NO.: 1255

LOGGED BY: SSW

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<th>ATITUDES</th>
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<th>UNIT DRY WEIGHT, PCF</th>
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<th>SAMPLES</th>
<th>GRAPHIC LOG</th>
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<td>s - shear</td>
<td>f - fault</td>
<td></td>
<td></td>
<td></td>
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</table>

0.0 - 35.0' FILL; Af,

@ 5.0' sand, brown to dark brown, moist, abundant glass and porcelain debris.

@ 10.0' sand, orangish-brown, moist, firm, glass debris.

@ 25.0' sand, brown to dark brown, moist, glass debris.

@ 35.0-41' Alluvium; Qal, pebbly sand, gray, moist, no debris.

@ 40.0' Refusal due to gravels, rock in tip.

Total Depth 41.0 Feet.
No Groundwater.

GeoConcepts, Inc.
### BORING: B 1

**ADDRESS:** 11300 Pendleton Street  
**DATE LOGGED:** July 23, 1999  
**PROJECT NO.:** 1255  
**LOGGED BY:** GJG

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<th>Samples</th>
<th>Depth, ft.</th>
<th>Graphic Log</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0 - 46.0' ARTIFICIAL FILL; Af, sandy clay, dark gray to dark brown, moist, stiff to hard, trash debris.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>@5.0' sandy clay, dark gray, moist, very stiff, few pebbles.</td>
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<td></td>
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<td></td>
<td></td>
<td>15.0 - 20.0' glass in boring spoils.</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>@15.0' sandy clay, dark gray to dark brown, moist, hard, few pebbles.</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>@25.0' sandy clay, dark gray to dark brown, moist, hard, pebbles, pieces of glass and trash.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>@30.0' hard drilling, due to cobble or trash debris.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>@35.0' sandy clay, dark gray to black, moist, hard, pieces of glass and trash, pebbles, no recovery.</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>@40.0' no recovery, cobble in sampling up.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>@45.0' sandy clay, dark gray, moist, hard, pieces of trash and glass, rock debris.</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td>@45.0' drill rig overheated.</td>
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Total Depth 46.0 Feet.  
No Groundwater.  
No Caving.  
Dug to Refusal Due to Rock and Trash Debris.  
8.0" Hollow Stem Auger.

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**GeoConcepts, Inc.**
## BORING: B 2

**ADDRESS:** 11300 Pendleton Street  
**DATE LOGGED:** December 4, 1995  
**PROJECT NO.:** 1255  
**LOGGED BY:** SW

### DESCRIPTION

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<td>0-41'</td>
<td></td>
<td><strong>Artificial Fill,</strong> Silty sand, dark brown to brown, slightly moist, minor gravel</td>
</tr>
<tr>
<td>@5'</td>
<td></td>
<td>Sand, dark brown, slightly moist, moderately dense, glass and ceramic</td>
</tr>
<tr>
<td>@10'</td>
<td></td>
<td>Sandy gravel, slightly moist, loose</td>
</tr>
<tr>
<td>@15'</td>
<td></td>
<td>Wire, glass, minor wood, sand, dark brown</td>
</tr>
<tr>
<td>@25'</td>
<td></td>
<td>Sand, fine to medium grain, moderately dense, glass fragments</td>
</tr>
<tr>
<td>@30'</td>
<td></td>
<td>Sand, dark brown, minor paper and wood, glass</td>
</tr>
<tr>
<td>@35'</td>
<td></td>
<td>Sand, moderately dense</td>
</tr>
</tbody>
</table>

Total depth 41', no water, no caving, refusal at 41 feet due to wire.

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*Geoconcepts, Inc.*
### BORING: B 1

**ADDRESS:** 11300 Pendleton Street  
**DATE LOGGED:** December 4, 1995  
**PROJECT NO.:** 1255  
**LOGGED BY:** SW

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<th>ATTITUDES</th>
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<th>BLOWS/FOOT</th>
<th>DEPTH, FT</th>
<th>GRAPHIC LOG</th>
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<td>f - fault</td>
<td>S</td>
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</table>

**DESCRIPTION**

0-30' **Artificial Fill**, Silty sand with minor gravel, light to dark brown, slightly moist to moist

@5' very moist

@10' abundant wood, dark brown to black, sand

@15' **Sand**, brown, minor gravel, dark brown to black, pieces of metal

@20' **Sand**, medium to coarse grained, dense to very dense, broken glass

@23' sandy gravel, dark brown

@25', **Sand**, clean, gray, slightly moist, minor paper and gravel

30-40' **Alluvium**, Clean sand, coarse grain with gravel, tan to brown

@40' cobbles and gravel

Total depth 41', no water, no caving, fill to 30 feet, refusal due to cobbles and gravel at 41'.
**BORING: B 2**

ADDRESS: 11300 Pendleton Street

DATE LOGGED: July 23, 1999

PROJECT NO.: 1255

LOGGED BY: GJG

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<td>fp - foliation</td>
<td>s - shear</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DESCRIPTION**

0.0 - 43.0' **ARTIFICIAL FILL; AF**, sandy clay, brown to gray to black, moist, hard, trash debris.

@10.0' sandy clay, brown to light gray, moist, hard, pebbles and rock fragments.

@20.0' sandy clay, light brown to gray, moist, hard, pebbles and rock fragments.

@28.0' hard drilling due to trash debris.

@30.0' no recovery, trash in boring spoils.

@34.0' sandy clay, black, moist, hard, organics.

@39.0' sandy clay, black, moist, hard, organics

@41.0' drill rig overheated.

@42.0' sandy clay, black, moist, hard, organics, glass, trash and rock debris.

Total Depth 43.0 Feet.
No Groundwater.
No Caving.
Dug to Refusal Due to Trash and Rock Debris.
8.0" Hollow Stem Auger.

*GeoConcepts, Inc.*
<table>
<thead>
<tr>
<th>ATITUDES</th>
<th>WATER CONTENT</th>
<th>UNIT WEIGHT</th>
<th>BLOW/FOOT</th>
<th>SAMPLES</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>b - bedding</td>
<td>j - joint</td>
<td>s - shear</td>
<td>f - fault</td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPTH</th>
<th>GRAPHIC LOG</th>
<th>0-10' Alluvium, Silty sand with gravel, brown, slightly moist, moderately dense</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>6</td>
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<table>
<thead>
<tr>
<th>DEPTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Sand, gray, minor gravel to 2&quot; long, dense</td>
</tr>
<tr>
<td></td>
<td>abundant gravels and cobbles</td>
</tr>
</tbody>
</table>

Total depth 11', no water, no caving, refusal at 11' due to cobbles.
### DRILLED EXPLORATION LOG

**PROJECT:** Reprocell/Pendleton  
**NUMBER:** M 1363

**Date of Exploration:** 10/14/87  
**Total Depth:** 46.5 ft.

**Elevation (ft.):** 100.0  
**Diameter:** 18"

**Drive Weight(s) (lbs)/  
To Depth (ft.):** 2925/25 1775/50

**Logged By:**

<table>
<thead>
<tr>
<th>Sample</th>
<th>Graphics</th>
<th>Blow Count Per Foot</th>
<th>Moisture Content (%)</th>
<th>Unit Dry Wt. (pcf)</th>
<th>Depth (ft.)</th>
<th>Lithologic Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.</td>
<td>27</td>
<td>84</td>
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<td>2.</td>
<td>Asphalt</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.</td>
<td>ARTIFICIAL FILL: Silty Sand, light brown, moist, medium dense, medium to coarse grained, some gravel and cobble grey to brown, debris, warm (temperature), septic tank odor</td>
</tr>
<tr>
<td>0</td>
<td>.</td>
<td>53</td>
<td>34</td>
<td></td>
<td>6.</td>
<td>Clayey Sand, dark grey to black, pebbly, much debris, (glass, wood, wire), warm (temperature) more wood, creosote odor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>91</td>
<td></td>
<td>8.</td>
<td>Silty Sand, grey, moist, loose, medium to coarse grained, debris and gravel, asphalt odor concrete debris</td>
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<tr>
<td>0</td>
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<td>74</td>
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<td>14.</td>
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**LITHOLOGIC DESCRIPTION**

G. C. MASTERMAN & ASSOCIATES, INC.  
*Figure A-1*
<table>
<thead>
<tr>
<th>Sample Graphics</th>
<th>Blow Count Per Foot</th>
<th>Moisture Content (%)</th>
<th>Unit Dry Wt. (pcf)</th>
<th>Depth (ft)</th>
<th>Lithologic Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>42</td>
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<td>60</td>
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</tr>
</tbody>
</table>

**LITHOLOGIC DESCRIPTION**

- Gravelly Sand with boulders and debris, coarse sand, debris and rock to 2 feet in diameter
- Alluvium: Gravelly Sand with Boulders, coarse grained sand, boulders to 4 feet or greater in diameter

G. C. MASTERMAN & ASSOCIATES, INC. Figure A-1.9
<table>
<thead>
<tr>
<th>Sample Graphics</th>
<th>Blow Count Per Foot</th>
<th>Moisture Content (%)</th>
<th>Unit Dry Wt. (pcf)</th>
<th>Depth (ft)</th>
<th>Lithologic Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

**LITHOLOGIC DESCRIPTION**

- dark grey to black, very moist
- Clayey Sand with debris, reddish brown, moist, loose, medium grained
DRILLED EXPLORATION LOG

PROJECT: Reprocell/Pendleton
NUMBER: M 1363

Surface Condition: Level paved area

Date of Exploration: 11/2/87  Total Depth: 90.0
Elevation (ft.): 100.0  Diameter: 8"
Drive Weight(s) (lbs)/
To Depth (ft.): 140/70

LITHOLOGIC DESCRIPTION

Asphalt

ARTIFICIAL FILL: Silty Sand, light brown, moist, medium dense, no debris
Silty Sand, light brown, moist, medium dense, with pebbles, gravel and boulders to 2" diameter, concrete and wood debris

wire and metal debris

mostly glass and rock to 16 feet

G. C. MASTERMAN & ASSOCIATES, INC.
Figure A-1
Clayey Sand, reddish brown, slightly moist, wood and debris

tan to reddish brown

End at 55 1/2 feet, no water, no caving, unable to penetrate boulder in bottom of hole
<table>
<thead>
<tr>
<th>Sample Graphics</th>
<th>Blow Count Per Foot</th>
<th>Moisture Content (%)</th>
<th>Unit Dry Wt. (pcf)</th>
<th>Depth (ft)</th>
<th>Lithologic Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>18</td>
<td>67</td>
<td></td>
<td>22</td>
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<td>7</td>
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</tr>
<tr>
<td>3</td>
<td>55</td>
<td>60</td>
<td></td>
<td>26</td>
<td></td>
</tr>
</tbody>
</table>

**LITHOLOGIC DESCRIPTION**

- Some rock and broken concrete
- All wood debris
- Silty Sand, dark grey, moist, loose, with ash and wood, very moist to wet
- Silty Sand, black, moist, fine to medium grained, mostly glass, ash, and wood, warm (temperature)

DRILLED EXPLORATION LOG

PROJECT: Reprocell/Pendleton
NUMBER: M 1363

Surface Condition: Level lot - paved with asphalt

Logged By: doi

Date of Exploration: 10/14/87  Total Depth: 55.5
Elevation (ft.): 100.0  Diameter: 24'
Drive Weight(s) (lbs)/
To Depth (ft.): 2925/25 1775/50 850/76

LITHOLOGIC DESCRIPTION

Asphalt

ARTIFICIAL FILL: Silty Sand, light brown, moist, medium dense, no debris
Sand, grey, moist, medium dense, fine to medium grained
Silty Sand, light brown, moist, medium dense, with pebbles, gravel and boulders to 2\"diameter, concrete debris to 10\" diameter

dark grey, loose, mostly debris (glass and wood)

more wood

dark grey to black, mostly wood and sheet metal (aluminum)

some light grey clasts of clay

mostly wood, with brick, glass, wire, and metal debris

G. C. MASTERMAN & ASSOCIATES, INC.

Figure A-1
Boring No. T-4

BORING LOG DATA

<table>
<thead>
<tr>
<th>Moisture Content (%)</th>
<th>Depth (Fr.)</th>
<th>Soil Log</th>
</tr>
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<tbody>
<tr>
<td>0</td>
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<td>SOIL DESCRIPTION</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>UNCERTIFIED FILL WITH SOME DEBRIS</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>MODERATELY LOOSE</td>
</tr>
<tr>
<td>4</td>
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</tr>
<tr>
<td>5</td>
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EXIST SURFACE

NATURAL GROUND (SAND, GRAVEL & BOULDERS)
FIRM

Enclosure B-4
Report No. 81
File No. 80-2
<table>
<thead>
<tr>
<th>Sample Graphics</th>
<th>Blow Count Per Foot</th>
<th>Moisture Content (%)</th>
<th>Unit Dry Wt. (pcf)</th>
<th>Depth (ft)</th>
<th>Lithologic Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>42</td>
<td>rock to 8&quot; in diameter</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>44</td>
<td>less moist, dark grey, pebbly and cobbly, caving</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>46</td>
<td>ALLUVIUM/FILL CONTACT(?): Sand, grey, slightly moist, medium dense, coarse, debris and boulders to 1' diameter</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>48</td>
<td>End at 46 1/2 feet, unable to penetrate rock or debris in bottom of hole, no water, caving at 42 feet</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50</td>
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</tr>
<tr>
<td>Moisture Content (%)</td>
<td>Soil Description</td>
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<td>----------------------</td>
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<tr>
<td>0</td>
<td>Exist Surface</td>
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</tr>
<tr>
<td>1</td>
<td>Imported Fill (Uncertified)</td>
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<tr>
<td>2</td>
<td>Natural Ground (Sand, Gravel &amp; Boulders)</td>
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<tr>
<td>3</td>
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Enclosure B-3
Report No. 8170
File No. 80-2745
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<th>GEOLOGICAL CLASSIFICATION DESCRIPTION</th>
<th>ELEVATION IN FEET</th>
<th>DEPTH IN FEET</th>
<th>SYMBOL</th>
<th>SAMPLES</th>
<th>ENGINEERING CLASSIFICATION AND DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILL</td>
<td>65</td>
<td>40</td>
<td></td>
<td></td>
<td>SILTY SAND (SM), dark gray, loose to medium dense, fine to coarse grained, cobbles, trash.</td>
</tr>
<tr>
<td>ALLUVIUM</td>
<td>60</td>
<td>45</td>
<td></td>
<td></td>
<td>GRAVELLY SAND (SP), light brown, damp, medium dense, fine to medium grained with coarse sand, silt and cobbles. Coarser grained.</td>
</tr>
</tbody>
</table>

Unable to continue due to caving. Bottom of drill hole at 46 feet. No water; light caving 23 to 26 feet, heavy caving 38 to 41 feet. Owner will backfill drill hole.
<table>
<thead>
<tr>
<th>GEOLOGICAL CLASSIFICATION DESCRIPTION</th>
<th>ELEVATION IN FEET</th>
<th>DEPTH IN FEET</th>
<th>SYMBOL</th>
<th>SAMPLES</th>
<th>ENGINEERING CLASSIFICATION AND DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILL</td>
<td>100</td>
<td>5</td>
<td></td>
<td></td>
<td>SILTY SAND (SM), gray, loose to medium dense, fine to coarse grained with cobbles. No trash to 2 feet. At 2 feet it becomes dark gray with trash including glass, steel, wire, tin, concrete.</td>
</tr>
<tr>
<td></td>
<td>95</td>
<td>10</td>
<td></td>
<td></td>
<td>Light gray, little trash, dry.</td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>15</td>
<td></td>
<td></td>
<td>Dark gray, increasing trash.</td>
</tr>
<tr>
<td>Material becomes warm.</td>
<td>85</td>
<td>20</td>
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<td></td>
</tr>
<tr>
<td>Water added to hole to try and prevent caving.</td>
<td>75</td>
<td>25</td>
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<tr>
<td></td>
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<td>ENGINEERING CLASSIFICATION AND DESCRIPTION</td>
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<td></td>
</tr>
<tr>
<td>FILL</td>
<td>65</td>
<td></td>
<td>SILTY SAND (SM), red-brown, very moist, loose, fine to medium grained, with cobbles and trash.</td>
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</tr>
<tr>
<td>Warm at 39 ft.</td>
<td>40</td>
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<td>Small amount of trash - steel and concrete.</td>
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<td></td>
<td>60</td>
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<td></td>
<td>50</td>
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<td></td>
</tr>
<tr>
<td>Difficult drilling</td>
<td>55</td>
<td></td>
<td>GRAVELLY SAND (SP), light gray to brown, moist, dense, fine to medium grained with cobbles and silt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALLUVIUM</td>
<td>45</td>
<td></td>
<td>Unable to continue due to caving and rocks. Bottom of drill hole at 58 feet. No water; light caving 24 to 27 feet, heavy caving 54 to 57 feet. Owner will backfill drill hole.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOLOGICAL CLASSIFICATION DESCRIPTION</td>
<td>ELEVATION IN FEET</td>
<td>DEPTH IN FEET</td>
<td>SYMBOL SAMPLES</td>
<td>ENGINEERING CLASSIFICATION AND DESCRIPTION</td>
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<td>---------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>FILL</td>
<td>100</td>
<td>5</td>
<td></td>
<td>SHLTY SAND (SM), gray-brown to dark gray at 2 feet, very moist, loose, fine to medium grained with some coarse grained sand and cobbles to 10 inches. Trash includes brick, wood, steel, tin, glass, and cloth.</td>
<td></td>
</tr>
<tr>
<td>Material is cool.</td>
<td>95</td>
<td>10</td>
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<td></td>
<td>90</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>85</td>
<td>20</td>
<td></td>
<td>Boulder to 14 inches. Becoming reddish brown with much less trash.</td>
<td></td>
</tr>
<tr>
<td>Difficult drilling</td>
<td>80</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>35</td>
<td></td>
<td>Increasing amount of steel and wire, gray.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LOG OF DRILL HOLE

LEGEND ON PLATE A-2

JOB G1002 GEOTECHNICAL CONSULTANTS, INC.  PLATE A-1-2
<table>
<thead>
<tr>
<th>GEOLOGICAL CLASSIFICATION DESCRIPTION</th>
<th>ELEVATION IN FEET</th>
<th>DEPTH IN FEET</th>
<th>SYMBOL SAMPLES</th>
<th>ENGINEERING CLASSIFICATION AND DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILL</td>
<td>60</td>
<td>40</td>
<td></td>
<td>SILTY SAND (SM), dark gray-black, very moist, loose, fine to medium grained with cobbles to 8 inches, and trash including glass, wood, wire, steel pieces, brick, shoes. Material is warm.</td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>45</td>
<td></td>
<td>Unable to continue due to large rock. Bottom of drill hole at 48 feet. No water; no caving. Owner will backfill drill hole.</td>
</tr>
</tbody>
</table>

LOG OF DRILL HOLE

LEGEND ON PLATE A-2
<table>
<thead>
<tr>
<th>GEOLOGICAL CLASSIFICATION DESCRIPTION</th>
<th>ELEVATION IN FEET</th>
<th>DEPTH IN FEET</th>
<th>SYMBOL</th>
<th>SAMPLES</th>
<th>ENGINEERING CLASSIFICATION AND DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SILTY SAND (SM), gray-brown, moist, loose, fine to medium grained with cobbles to 8 inches, and trash including glass, wood, wire, pieces of steel, few bricks, shoes, becoming dark gray to black and very moist at 2 feet. Material is warm coming out of hole.</td>
</tr>
<tr>
<td></td>
<td>95</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>85</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Some blocks of cement cobbles to 10 inches.
## LITHOLOGIC DESCRIPTION

End at 90 feet, no water, no caving, fill to 59 feet
<table>
<thead>
<tr>
<th>Sample Graphics</th>
<th>Blow Count Per Foot</th>
<th>Moisture Content (%)</th>
<th>Unit Dry Wt. (pcf)</th>
<th>Depth (ft)</th>
<th>Lithologic Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>26</td>
<td>Clayey Sand, dark grey to black, moist, loose, much debris</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28</td>
<td>light reddish brown, coarse grained, debris, not warm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>warm (temperature)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>32</td>
<td>dark brown, moist, loose, medium to coarse grained</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>34</td>
<td>more rock (cobble and/or boulder)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36</td>
<td>dark grey to black, more wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>38</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

G. C. MASTERMAN & ASSOCIATES, INC.

Figure A-12
APPENDIX II

LABORATORY TESTING

Laboratory Procedures

Laboratory Recapitulation

Figures S.1 through S.2
Figures C.1 through C.8
LABORATORY PROCEDURES

Laboratory testing was performed on samples obtained as outlined in Appendix I. All samples were sent to the laboratory for examination, testing, and classification, using the Unified Soil Classification System and group symbol.

Moisture and Density Tests

The dry unit weight and moisture content of the undisturbed samples were determined. The results are tabulated in the Laboratory Recapitulation - Table 1.

Shear Tests

Direct single-shear tests were performed with a direct shear machine. The desired normal load is applied to the specimen and allowed to come to equilibrium. The rate of deflection on the sample is approximately 0.005 inches per minute. The samples are tested at higher and/or lower normal loads in order to determine the angle of internal friction and the cohesion. The results are plotted on the Shear Test Diagrams and the results tabulated in the Laboratory Recapitulation - Table 1.

Consolidation

Consolidation tests were performed on samples, within the brass ring, to predict the soils behavior under a specific load. Porous stones are placed in contact with top and bottom of the samples to permit to allow the addition or release of water. Loads are applied in several increments and the results are recorded at selected time intervals. Samples are tested at field and increased moisture content. The results are plotted on the Consolidation Test Curve and the load at that the water is added is noted on the drawing.

GeoConcepts, Inc.
### LABORATORY RECAPITULATION

**PROJECT:** 11300 Pendelton St.  
**PROJECT NO.:**

<table>
<thead>
<tr>
<th>Exploration</th>
<th>Depth (ft)</th>
<th>Material</th>
<th>Dry Dens. In Situ (P.C.F.)</th>
<th>Moisture Content (%)</th>
<th>Cohesion (K.S.F)</th>
<th>Friction Angle (degree)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B 1</td>
<td>3.0</td>
<td>Qal</td>
<td>94.6</td>
<td>4.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 1</td>
<td>5.0</td>
<td>Qal</td>
<td>98.1</td>
<td>1.4</td>
<td>0.050</td>
<td>33</td>
</tr>
<tr>
<td>B 1</td>
<td>25.0</td>
<td>Qal</td>
<td>96.6</td>
<td>2.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 2</td>
<td>3.0</td>
<td>Af</td>
<td>88.8</td>
<td>9.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 2</td>
<td>5.0</td>
<td>Af</td>
<td>95.4</td>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 2</td>
<td>20.0</td>
<td>Af</td>
<td>119.0</td>
<td>5.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 2</td>
<td>25.0</td>
<td>Af</td>
<td>120.3</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 2</td>
<td>30.0</td>
<td>Af</td>
<td>112.6</td>
<td>9.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 2</td>
<td>35.0</td>
<td>Qal</td>
<td>103.9</td>
<td>6.7</td>
<td>0.100</td>
<td>35</td>
</tr>
<tr>
<td>B 3</td>
<td>5.0</td>
<td>Af</td>
<td>66.9</td>
<td>20.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 3</td>
<td>10.0</td>
<td>Af</td>
<td>101.9</td>
<td>12.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Test Results

<table>
<thead>
<tr>
<th>Moisture Content (%)</th>
<th>Density (pcf)</th>
<th>Ultimate Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insitu: 1.4</td>
<td>Dry Density: 98.1</td>
<td>Phi (deg): 33.0</td>
</tr>
<tr>
<td>Saturated: 12.1</td>
<td></td>
<td>Cohesion (ksf): 0.050</td>
</tr>
</tbody>
</table>

Shear Test Diagram
GeoConcepts, Inc.
Test Results

<table>
<thead>
<tr>
<th>Moisture Content (%)</th>
<th>Density (pcf)</th>
<th>Ultimate Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>In situ: 6.7</td>
<td>Dry Density: 103.9</td>
<td>Phi (deg): 35.0</td>
</tr>
<tr>
<td>Saturated: 15.0</td>
<td></td>
<td>Cohesion (ksf): 0.100</td>
</tr>
</tbody>
</table>

SHEAR TEST DIAGRAM
GeoConcepts, Inc.
PROJECT:
SAMPLE LOCATION: B 3 @ 5.0
PROJECT LOCATION: 11300 Pendelton St.
DESCRIPTION: Af

Test Results

<table>
<thead>
<tr>
<th>Moisture Content (%)</th>
<th>Density (pcf)</th>
<th>Water Added At</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insitu: 20.0</td>
<td>Dry Density: 66.9</td>
<td>1600 lbs.</td>
</tr>
</tbody>
</table>

CONSOLIDATION TEST DIAGRAM
GeoConcepts, Inc.

Figure C.7
Test Results

<table>
<thead>
<tr>
<th>Moisture Content (%)</th>
<th>Density (pcf)</th>
<th>Water Added At</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insitu: 3.3</td>
<td>Dry Density: 120.3</td>
<td>1600 lbs.</td>
</tr>
</tbody>
</table>

CONSOLIDATION TEST DIAGRAM
GeoConcepts, Inc.
Test Results

<table>
<thead>
<tr>
<th>Moisture Content (%)</th>
<th>Density (pcf)</th>
<th>Water Added At</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insitu: 5.8</td>
<td>Dry Density: 119.0</td>
<td>1600 lbs.</td>
</tr>
</tbody>
</table>

CONSOLIDATION TEST DIAGRAM
GeoConcepts, Inc.
PROJECT: 1255
PROJECT LOCATION: 11300 Pendelton St.

SAMPLE LOCATION: B 2 @ 5.0
DESCRIPTION: Af

Test Results

<table>
<thead>
<tr>
<th>Moisture Content (%)</th>
<th>Density (pcf)</th>
<th>Water Added At</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insitu: 3.7</td>
<td>Dry Density: 95.4</td>
<td>1600 lbs.</td>
</tr>
</tbody>
</table>

CONSOLIDATION TEST DIAGRAM
GeoConcepts, Inc.

Figure C.3
Test Results

<table>
<thead>
<tr>
<th>Moisture Content (%)</th>
<th>Density (pcf)</th>
<th>Water Added At</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insitu: 9.1</td>
<td>Dry Density: 88.8</td>
<td>1600 lbs.</td>
</tr>
</tbody>
</table>

CONsolidation Test Diagram

GeoConcepts, Inc.
Test Results

<table>
<thead>
<tr>
<th>Moisture Content (%)</th>
<th>Density (pcf)</th>
<th>Water Added At</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insitu: 4.7</td>
<td>Dry Density: 94.6</td>
<td>1600 lbs.</td>
</tr>
</tbody>
</table>

CONSOLIDATION TEST DIAGRAM
GeoConcepts, Inc.

Figure C.1
TEST RESULTS

<table>
<thead>
<tr>
<th>Moisture Content (%)</th>
<th>Density (pcf)</th>
<th>Water Added At</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insitu: 12.2</td>
<td>Dry Density: 101.9</td>
<td>1600 lbs.</td>
</tr>
</tbody>
</table>

CONSOLIDATION TEST DIAGRAM

GeoConcepts, Inc.
APPENDIX III

ENGINEERING ANALYSIS

Bearing Capacity

Lateral Design

Seismic Evaluation
ULTIMATE BEARING CAPACITY
Ref: Meyerhof Bearing Capacity Equation

Input:

\[
\begin{align*}
\Phi &= 31.0 \text{ degree} \\
\text{Cohesion} &= 0.0 \text{ psf} \\
\gamma &= 110.0 \text{ lbs/ft}^2 \\
\text{Footing Width (B)} &= 1.0 \text{ feet} \\
\text{Footing Depth (D)} &= 5.0 \text{ feet}
\end{align*}
\]

\[
\begin{align*}
N_q &= e^{[(\pi \cdot \tan(\Phi))] \cdot K_p} = 20.6 \\
N_c &= \frac{N_q - 1}{\tan(\Phi)} = 32.7 \\
N_g &= \frac{N_q - 1}{\tan(1.4 \cdot \Phi)} = 18.6 \\
K_p &= \tan^2(45 + \phi/2) = 3.1 \\
\end{align*}
\]

\[
\begin{align*}
S_c &= 1 + (0.2)(K_p)(B/L) = 1.6 \\
S_g &= 1 + (0.1)(K_p)(B/L) = 1.3 \\
D_c &= 1 + (0.2)(K_p^{0.5})(D/B) = 2.8 \\
D_q &= 1 + (0.1)(K_p^{0.5})(D/B) = 1.9
\end{align*}
\]

Continuous Footing
\[
q_{ult} = (c)(N_c)(D_c) + (g)(D)(N_q) + (g)(B)(D_g)/2 = 21478.4 \text{ psf}
\]

Square Pad Footing
\[
q_{ult} = (c)(N_c)(S_c)(D_c) + (g)(D)(N_q) + (g)(S_g)(D_g)/2 = 28188.3 \text{ psf}
\]

Allowable Bearing
\[
\text{FS} = 5.0
\]

Continuous 4295.7 psf
Square Pad 5637.7 psf

GeoConcepts, Inc.
Please note that fault distances between EQFAULT and UBCSEIS are different. The distances
use in the EQFAULT program is based on the closest distance to seismogenic rupture. The
distances use in the UBCSEIS program is based on the closest distance to the surface
projection of the rupture area.

***************
*              *
*    EQFAULT   *
*              *
*    Version 3.00  *
*              *
***************

DETERMINISTIC ESTIMATION OF
PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 1255
JOB NAME: 11300 Pendelton Street
CALCULATION NAME: Test Run Analysis
FAULT-DATA-FILE NAME: CDMGFLTE.DAT

SITE COORDINATES:
  SITE LATITUDE:  34.2351
  SITE LONGITUDE:  118.3768

SEARCH RADIUS:  50  mi

  UNCERTAINTY (M=Median, S=Sigma): M       Number of Sigmas:  0.0
  DISTANCE MEASURE:  cdist
  SCOND:  0
  Basement Depth:  5.00 km     Campbell SSR:  0     Campbell SHR:  0
  COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED:  CDMGFLTE.DAT

MINIMUM DEPTH VALUE (km):  3.0
\\n\begin{table}[h]
\centering
\begin{tabular}{|l|c|c|c|c|c|}
\hline
ABBREVIATED FAULT NAME & APPROXIMATE DISTANCE & MAXIMUM EARTHQUAKE EVENT & PEAK SITE INTENSITY & EST. SITE INTENSITY & MOD.MERC.  \\
& mi (km) & MAG.(Mw) & ACCEL. g & &  \\
\hline
VERDUGO & 2.5 (4.0) & 6.7 & 0.649 & X  &  \\
NORTHRIDGE (E. Oak Ridge) & 4.7 (7.5) & 6.9 & 0.534 & X  &  \\
SIERRA MADRE (San Fernando) & 5.7 (9.1) & 6.7 & 0.460 & X  &  \\
SIERRA MADRE & 6.8 (10.9) & 7.0 & 0.447 & X  &  \\
SAN GABRIEL & 8.1 (13.1) & 7.0 & 0.334 & IX  &  \\
HOLLYWOOD & 8.6 (13.9) & 6.4 & 0.286 & IX  &  \\
SANTA SUSANA & 10.3 (16.5) & 6.6 & 0.267 & IX  &  \\
SANTA MONICA & 10.6 (17.0) & 6.6 & 0.259 & IX  &  \\
RAYMOND & 11.6 (18.6) & 6.5 & 0.221 & IX  &  \\
NEWPORT-INGLEWOOD (L.A.Basin) & 14.0 (22.6) & 6.9 & 0.201 & VIII  &  \\
HOLSER & 15.6 (25.1) & 6.5 & 0.154 & VIII  &  \\
MALIBU COAST & 16.3 (26.2) & 6.7 & 0.167 & VIII  &  \\
ELYSIAN PARK THRUST & 17.6 (28.4) & 6.7 & 0.151 & VIII  &  \\
COMPTON THRUST & 18.5 (29.7) & 6.8 & 0.153 & VIII  &  \\
CLAMSHELL-SAWPIT & 19.0 (30.6) & 6.5 & 0.119 & VII  &  \\
PALOS VERDES & 20.9 (33.7) & 7.1 & 0.152 & VII  &  \\
OAK RIDGE (Onshore) & 22.5 (36.2) & 6.9 & 0.128 & VIII  &  \\
ANACAPA-DUME & 24.2 (38.9) & 7.3 & 0.154 & VIII  &  \\
SIMI-SANTA ROSA & 24.8 (39.9) & 6.7 & 0.097 & VII  &  \\
SAN ANDREAS - 1857 Rupture & 26.2 (42.2) & 7.8 & 0.201 & VIII  &  \\
SAN ANDREAS - Mojave & 26.2 (42.2) & 7.1 & 0.118 & VII  &  \\
WHITTIER & 26.8 (43.2) & 6.8 & 0.089 & VII  &  \\
SAN CAYETANO & 27.0 (43.5) & 6.8 & 0.093 & VII  &  \\
SAN JOSE & 30.8 (49.5) & 6.5 & 0.062 & VI  &  \\
SAN ANDREAS - Carrizo & 33.1 (53.2) & 7.2 & 0.097 & VII  &  \\
CUCAMONGA & 34.6 (55.7) & 7.0 & 0.078 & VII  &  \\
CHINO-CENTRAL AVE. (Elsinore) & 37.6 (60.5) & 6.7 & 0.055 & VI  &  \\
SANTA YNEZ (East) & 38.3 (61.7) & 7.0 & 0.068 & VI  &  \\
VENTURA - PITAS POINT & 44.6 (71.8) & 6.8 & 0.047 & VI  &  \\
M.RIDGE-ARROYO PARIDA-SANTA ANA & 48.7 (78.3) & 6.7 & 0.038 & V  &  \\
SAN ANDRES - San Bernardino & 48.8 (78.6) & 7.3 & 0.065 & VI  &  \\
SAN ANDRES - Southern & 48.8 (78.6) & 7.4 & 0.071 & VI  &  \\
SAN JACINTO-SAN BERNARDINO & 49.6 (79.9) & 6.7 & 0.037 & V  &  \\
ELSINORE-GLEN IVY & 49.8 (80.2) & 6.8 & 0.041 & V  &  \\
\hline
\end{tabular}
\end{table}

\textit{---END OF SEARCH--- 34 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.}

\textbf{THE VERDUGO FAULT IS CLOSEST TO THE SITE.}
\textbf{IT IS ABOUT 2.5 MILES (4.0 km) AWAY.}

\textbf{LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.6488 g}
APPENDIX IV

SPECIFICATIONS

Drainage and Maintenance

Maintenance of structures must be performed to avoid serious damage and/or instability to improvements. Most problems are associated with or triggered by water. Therefore, a comprehensive drainage system should be designed and incorporated into the final plans. In addition, pad areas should be maintained and planted in a way that will allow this drainage system to function as intended. The following are specific drainage, maintenance, and landscaping recommendations.

Pad Drainage

Positive pad drainage should be incorporated into the final plans. All drainage from the roof and pad should be directed so that water does not pond adjacent to the foundations or flow toward them. All drainage from the site should be collected and directed via non-erosive devices to a location approved by the building official. Planters placed adjacent to the structures should be designed to drain away from the structure. Area drains, subdrains, weep holes, roof gutters and downspouts should be inspected periodically to ensure that they are not clogged with debris or damaged. If blockage or damage is evident, have it corrected.

Landscaping (Planting)

All slopes should be maintained with a dense growth of plants, ground-covering vegetation, shrubs and trees that possess dense, deep root structures and require a minimum of irrigation. Plants surrounding the development should be of a variety that requires a minimum of watering. It is recommended that a landscape architect be consulted regarding planting adjacent to improvements. It will be the responsibility of the property owner to maintain the planting. Alterations of planting schemes should be reviewed by the landscape architect.

Irrigation

An adequate irrigation system is required to sustain landscaping. Over-watering resulting in runoff and/or ground saturation must be avoided. Irrigation systems must be adjusted to account for natural rainfall conditions. Any leaks or defective sprinklers must be repaired immediately. To mitigate erosion and saturation, automatic sprinkling systems must be adjusted for rainy seasons. A landscape architect should be consulted to determine the best times for landscape watering and the maximum amount of water usage.
Flatland Grading

1. Prior to commencement of work, a pre-grading meeting shall be held. Participants at this meeting will consist of the contractor, the owner or his representative, and the soils engineer. The purpose of the meeting is to avoid misunderstanding of the recommendations set forth in this report that might cause delays in the project.

2. Prior to placement of fill, all vegetation, rubbish, and other deleterious material should be disposed of off site. The proposed structures should be staked out in the field by a surveyor. This staking should, as a minimum, include areas for overexcavation, toes of slopes, tops of cuts, setbacks, and easements. All staking shall be offset from the proposed grading area at least five feet (5').

The proposed construction areas should be excavated down to the depth of the proposed grade beam.

3. The natural ground, that is determined to be satisfactory for the support of the filled ground, shall then be scarified to a depth of at least six inches (6") and moistened as required. The scarified ground should be compacted to at least 90 percent of the maximum laboratory density.

4. The fill soils shall consist of materials approved by the project Soils Engineer or his representative. These materials may be obtained from the excavation areas and any other approved sources, and by blending soils from one or more sources. The material used shall be free from organic vegetable matter and other deleterious substances, and shall not contain rocks greater than eight inches (8") in diameter nor of a quantity sufficient to make compaction difficult.

5. The approved fill material shall be placed in approximately level layers six inches (6") thick, and moistened as required. Each layer shall be thoroughly mixed to attain uniformity of moisture in each layer.

When the moisture content of the fill is (3) percent or more below the optimum moisture content, as specified by the Soils Engineer, water shall be added and thoroughly mixed in until the moisture content is within (3) percent of the optimum moisture content.

When the moisture content of the fill is (3) percent or more above the optimum moisture content as specified by the Soils Engineer, the fill material shall be aerated by scarifying or shall be blended with additional materials and thoroughly mixed until the moisture content is within (3) percent or less of the optimum moisture content.
Each layer of fill material shall be compacted to a minimum of (90) percent of the maximum dry density as determined by ASTM D 1557, using approved compaction equipment. Where cohesionless soil having less than (15) percent finer than (0.005) millimeters is used for fill, the fill material shall be compacted to a minimum of (95) percent of the maximum dry density.

6. Review of the fill placement should be provided by the Soils Engineer or his representative during the progress of grading. In general, density tests will be made at intervals not exceeding two feet (2') of fill height or every 500 cubic yards of fill placed.

7. During the inclement part of the year, or during periods when rain is threatening, all fill that has been spread and awaits compaction shall be compacted before stopping work for the day or before stopping because of inclement weather. These fills, once compacted, shall have the surfaces sloped to drain to one area where water may be removed.

Work may start again, after the rainy period, once the site has been reviewed by the Soils Engineer and he has given his authorization to resume. Loose materials not compacted prior to the rain shall be removed and aerated so that the moisture content of these fills will be within (3) percent of the optimum moisture content.

Surface materials previously compacted before the rain, shall be scarified, brought to the proper moisture content, and re-compacted prior to placing additional fill, if deemed necessary by the Soils Engineer.
APPENDIX V

REFERENCES


3. City of Los Angeles, 1969, topographic map of the northeast area sheet No. __.

4. Hoots, H. W., 1930, Geology of the eastern part of the Santa Monica Mountains, Los Angeles County, California: U. S. Geological Survey, Professional Paper 165-C.


