FINAL ENVIRONMENTAL IMPACT REPORT

Volume II

SCH #2004071095

West Haven Specific Plan

(PSP03-006)

APPENDIX E

Geology/Soils Supporting Documentation:

- **Due Diligence Review of Geotechnical Data**
- **Results of a Due-Diligence Geotechnical Study**
- **Engineering Geologic and Soils Foundation Investigation**

Area 4 – SMS Soils Feasibility

ASSOCIATED SOILS ENGINEERING, INC.
Consulting Foundation Engineers

CORPORATE: 3320 AIRPORT WAY - LONG BEACH, CALIF. 90806 - PHONE 562/426-7990 - FAX 562/426-1842
SAN DIEGO: 9235 CHESAPEAKE DR. - SAN DIEGO, CALIF. 92123 - PHONE 858/974-3691 - FAX 858/974-3752

April 21, 2004
Project No. 04-5643

Centex Homes
250 Commerce, Suite 100
Irvine, California 92602

Attention: Mr. Dave Hutchins

Subject: Due Diligence Review of Geotechnical Data Regarding Proposed Development of APN 218-151-19 & 23, a Portion of the Proposed West Haven Project, City of Ontario, County of San Bernardino, California

References: See Attached List

Gentlemen:

In accordance with your request and authorization, Associated Soils Engineering, Inc. (ASE) presents this letter of preliminary geotechnical findings based on a review of the subject site. This report is based on site reconnaissance and review of other available geotechnical data (See attached List of References).

SITE LOCATION & PROPOSED GRADING

The subject 40± acre site is located east of Turner Avenue and north of the future intersection with Shaefer Avenue in City of Ontario, California. The site was previously located in an unincorporated area of San Bernardino County but appears to have been annexed by the City of Ontario within the past few years. To the north of the property are existing single family residential homes and to the east is an active dairy. The relatively flat site was previously utilized for agricultural purposes, reportedly vineyards. Typical cut/fill grading operations are to be utilized to develop 143 individual building pads as well as associated streets, parkways, slopes and common areas, for future construction of single family residential structures. According to the Preliminary Site Plan, prepared by M.J. McKeever, Inc., and dated February 6, 2004, cuts and fills are planned up to approximately five feet. Permanent cut and fill slopes are presumed at slope ratios varying to as steep as 2:1 (horizontal:vertical) and as high as approximately five feet. The plans depict easements 175 feet wide along the southern and eastern sides of the property for Southern California Edison Power lines.

Geotechnical Studies and Reports

The subject property has been previously studied by at least one other geotechnical consultant, LOR Geotechnical Group, Inc. (LGG). LGG also has completed a Preliminary Environmental Site Assessment of the property. It is not known as to whether the geotechnical reports have been reviewed by the City of Ontario or the County of San Bernardino. Only the reports referenced were available for our review.

Seismic Hazards

The subject project is not located within an Alquist-Priolo Earthquake Fault Zone. The closest known active faults are the Chino and the Whittier Elsinore Fault Zones, which are approximately 7 and 9 miles southwest of the site, respectively. As such, the site may be expected to experience strong shaking over the life of the structures.

The site is in an unmapped area with respect to the State of California Seismic Hazard Zones Mapping program, which show areas that, during an earthquake, have an increased susceptibility to landslides or liquefaction. According to the previous investigation by LGG, static ground water levels at the site are on the order of 130 feet below the ground surface and thus the potential for liquefaction is negligible. Due to the relatively low relief across the site and presuming any proposed slopes are constructed according to the recommendations of the project geotechnical consultant, the potential for earthquake induced landslides is considered very low. Other seismic hazards such as tsunami, seiche, or lurching are considered remote.

According to the ERSI/FEMA Project Impact Hazard Information and Awareness Site, the western portion site is located within the 500-year Flood Zone while the remainder of the site to the east is in Flood Zone C.

Site Soils

The site soils expected to be encountered during grading consist of a variety of artificial fills, as well as younger and older alluvial sediments throughout the site. The site appears to have been recently cleared of weds. Although the previous investigation determined that the site had not been used as a dairy farm, a few of the test pits noted manure at the surface varying in thickness up to three inches. All manure is required to be removed from the site. There were several dumped piles on the site noted during our reconnaissance, particularly near the southerly end of Turner Avenue. The stockpiles appear to contain significant construction debris and other deleterious materials. A serious effort by the contractor may be required to remove deleterious materials from the existing artificial fills prior to their placement as compacted fill onsite.

General Grading Procedures

Remedial removals in general are to consist of complete removal and disposal of any manure trash. According to the Preliminary Geotechnical Investigation (LGG, 2000), removals within the native soils are generally anticipated to be on the order of four (4) feet below existing grades, with the loose sands in the northeastern portion of the site requiring removals of up to eight (8) feet. Many of the proposed lots are designed as cut/fill transition lots and will require overexcavation of the cut portions. Additional lots will need to be overexcavated due to skin fills, and transitions created during remedial removals. All proposed cut lots are recommended to be overexcavated at least three (3) feet below proposed pad grades.

Settlement Considerations

Subsequent to remedial grading, anticipated total and differential settlements should be well within tolerable limits under static conditions. Typical conventional and/or post-tensioned foundation systems would be suitable for the currently proposed single family residential construction over most of the project.

Expansive Soils, Sulfates & Corrosivity

Soil types encountered in the previous investigation, and typical for the area based on our experience, are "Very Low" in expansion potential according to Table 18-I-B of the 1997 Uniform Building Code (UBC). The soluble sulfate content of the site soils was found to be "Negligible". However, it should be noted that subsequent to the proposed grading, additional testing would be required and the assumed classifications within the referenced report may change. Whereas the site was used as a vineyard, it is unknown what type of chemicals may have been used during the farming and subsequently leached into the soils onsite. Due to that unknown, the client should have provisions within the budget to account for the potential extra costs of sulfate rich soils.

The Preliminary Investigation Report does not address corrosivity. In lieu of actual test results and for budgetary purposes, we recommend that you assume values corresponding to a Severely Corrosive potential of the site soils to buried metal pipe.

Slope Stability

The site is relatively flat so there will only be minor slopes. Proposed grading within the subject site will likely include cut and fill slopes at a slope ratio of 2:1 and up to approximately five (5) feet high. Planned cut slopes may expose loose younger alluvium which may not be surficially stable. Upon completion of a more accurate grading plan, many of the cut slopes may remain as cut slopes, however at this time, for budgetary purposes, it should be assumed that cut slopes may require replacement with stabilization fills.

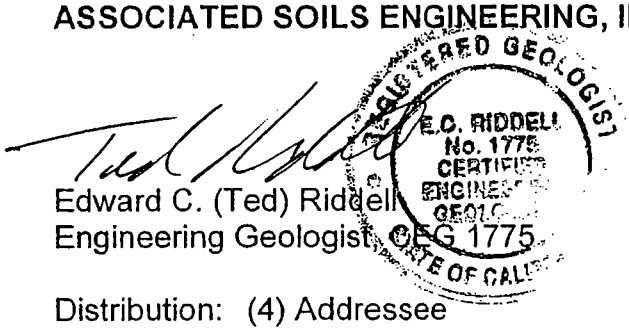
Closing

It is the opinion of ASE that the project is feasible, provided appropriate remedial measures are addressed during the grading operation. The information provided herein was based on review of the available geotechnical data presented in the referenced report and plans.

This opportunity to be of service is sincerely appreciated. If you have any questions or comments regarding the geotechnical information provided herein, please feel free to call us at (562) 426-7990.

Respectfully Submitted,

ASSOCIATED SOILS ENGINEERING, INC.



Edward C. (Ted) Riddell
Engineering Geologist, CEG 1775

Distribution: (4) Addressee

LIST OF REFERENCES

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LOR Geotechnical Group, Inc., 2000, Engineering Geologic and Soils Foundations Investigation, Minaberry Trust Property, APN 218-151-19, 23, San Bernardino County, California, Project No. 31396.1, dated September 15.

LOR Geotechnical Group, Inc., 2000, Phase I Environmental Site Assessment; 35± Acre Minaberry Trust Property, APN 218-151-19, 23, San Bernardino County, California, Project No. 31396.2, dated September 8.

W. J. McKeever, Inc., 2004, 100-Scale Topographic-Boundary Survey, Minaberry Trust, dated April 7.

W. J. McKeever, Inc., 2004, 80-Scale Preliminary Site Plan, JMS Properties, Ontario, California, dated February 6.

Sheets (Ann. 1,2) Soils Stud

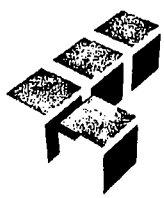
RESULTS OF A DUE-DILIGENCE GEOTECHNICAL STUDY FOR THE PROPOSED 26-ACRE RESIDENTIAL DEVELOPMENT, SOUTHWEST OF RIVERSIDE DRIVE AND HAVEN AVENUE, CITY OF ONTARIO, CALIFORNIA

Prepared for:

CENTEX HOMES
7555 Irvine Center Drive, Suite 100
Irvine, California 92618

Project No. 020796-001

November 15, 2002



Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

November 15, 2002

Project No. 020796-001

To: Centex Homes
7555 Irvine Center Drive, Suite 100
Irvine, California 92618

Attention: Ms. Susan Lindquist

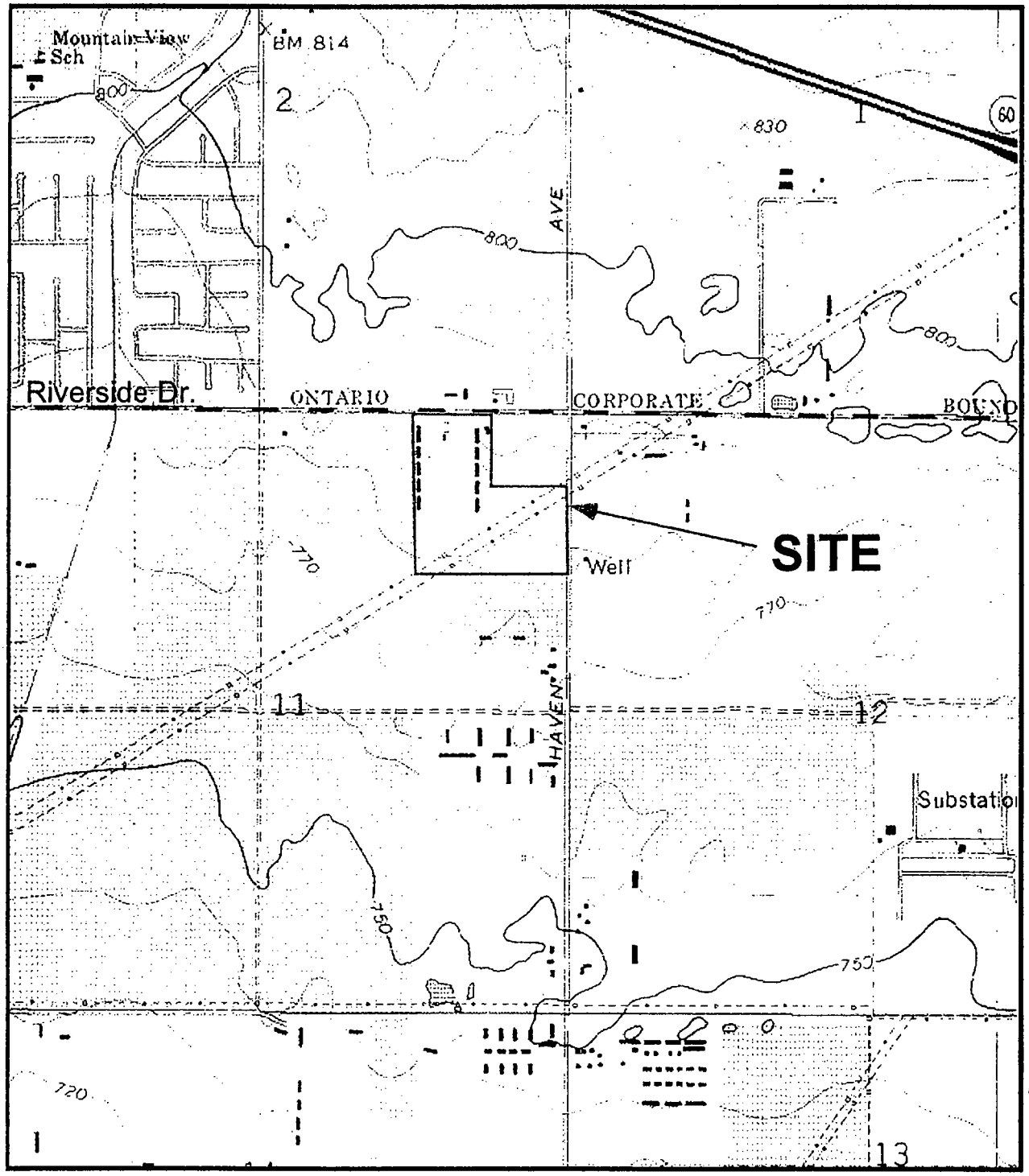
Subject: Results of a Due-Diligence Geotechnical Study for the Proposed 26-Acre Residential Development, Southwest of Riverside Drive and Haven Avenue. City of Ontario, California

Introduction

In response to your request, Leighton and Associates, Inc. (Leighton) has performed a due-diligence-level geotechnical investigation of a 26-acre site, currently a dairy, located southwest of Riverside Drive and Haven Avenue in the City of Ontario, California. The purpose of this study has been to evaluate the general geotechnical conditions at the site and to evaluate whether there are major geotechnical or geologic issues at the site that would have significant impact to site development. No project plans were available at the time of our investigation, however, we understand a residential development is planned. An undated site map of the existing improvements provided by you was used for reference during our field investigation. This map serves as a base for our Geotechnical Map (Figure 2).

In general, development of the site is feasible from a geotechnical standpoint. While there are geotechnical constraints to the development, these constraints are typical for the area and can be overcome with appropriate planning, design and grading.

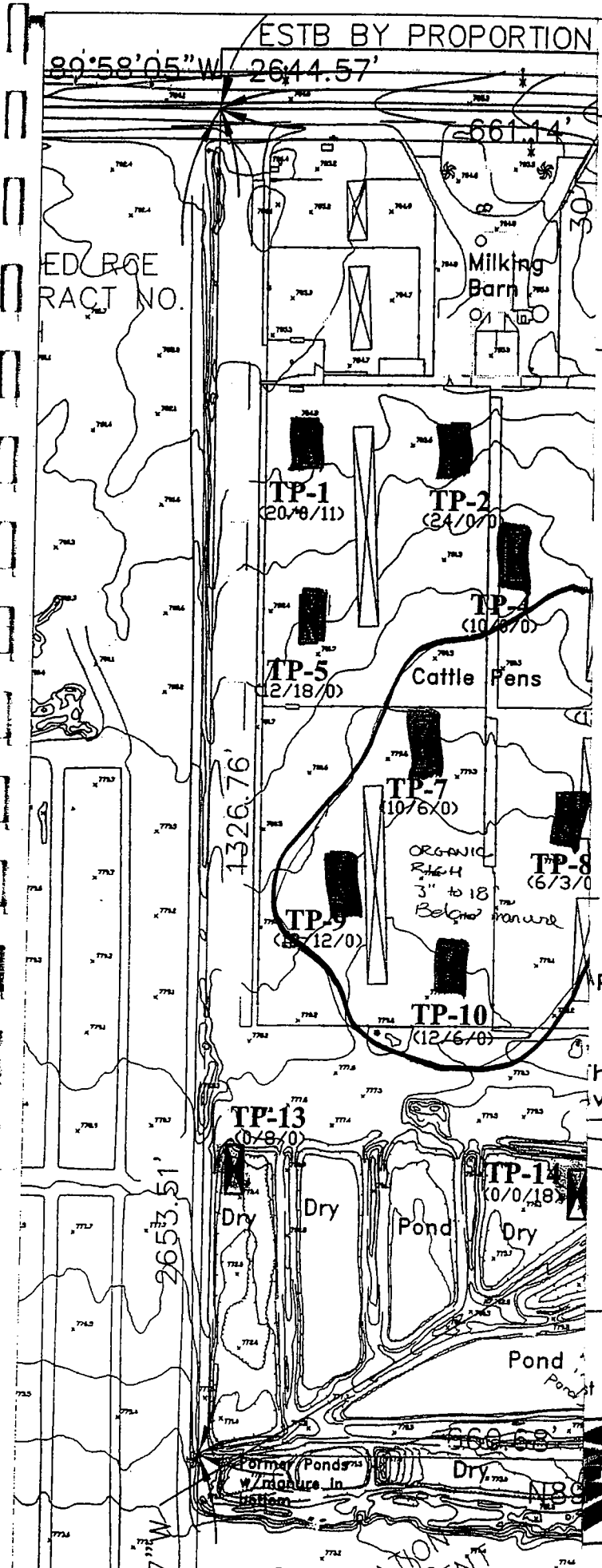
14125 Telephone Avenue, Suite 1 ▪ Chino, CA 91710-5770
909.590.4909 ▪ Fax 909.590.2989 ▪ www.leightongeo.com



BASE MAP: 2001, Topol Intereractive CD-ROM, Los Angeles, Santa Barbara, and Surrounding Rec. Areas.

NO SCALE

PROPOSED 26-ACRE RESIDENTIAL DEVELOPMENT Southwest of Riverside Drive and Haven Avenue, City of Ontario, California	**SITE LOCATION MAP**	PROJECT NO. 020796-001 DATE Nov. 2002 Figure 1



6 - 24" manure

4 - 10" Manure

0 "manure

organic rich soil
3-18" Below manure

manure - very high organic content > 10%
organic Rich Soil = 3-10%
without significant organic Content < 3%

Approximate test pit location

Thicknesses (inches) of surficial earth materials overlying alluvium within test pits:
Thickness of Manure, over
Organic-Rich Soil, over
Uncontrolled Artificial Fill without significant organic content (inches).

FIGURE 2

Geotechnical Map
Proposed 26-Acre Residential Development
t of Riverside Drive and Haven Avenue, City of Ontario, California

Proj.: 020796-001	Scale: 1" = 150'
Engineer/Geologist: JDH/PB	11-2002

Leighton and Associates

Project Location and Description

The site is located south of Riverside Drive and west of Haven Avenue in the City of Ontario, California. The subject site is approximately 26 acres, L-shaped, and extends to Riverside Drive on the north and Haven Avenue on the east (see Site Location Map, Figure 1). A roughly square, 10-acre commercial site (currently part of the same dairy) is planned at the southwest corner of Riverside Drive and Haven Avenue and is not a part of the proposed development. Electric power transmission lines are to the west of the site, and open land is to the south.

The site is relatively flat and generally drains to the south. An active dairy occupies the northern portion of the site. A barn and residence are present near Riverside Drive. Cattle pens, feed barns and haystacks are also present in the active dairy portion of the site. Stockpiles and berms of soil and manure and dairy settling ponds are present in the southwestern and southern portions of the site. Most of the southeastern portion of the site is vacant. A buried, 36-inch-diameter, high-pressure, natural gas transmission line extends across the southern and eastern portions of the site. The principal site features are depicted on the Geotechnical Map (Figure 2). Appendix D of this report presents selected photographs of current site conditions.

Based on our review of historic aerial photographs of the site vicinity, the site was undeveloped and possibly used for small crop cultivation during 1938. A house was present in the general area of the existing house on the south side of Riverside Drive. The surrounding area was largely undeveloped with sporadically spaced houses and was either vacant or used for citrus or small crop cultivation. It appears that the dairy onsite was constructed between 1966 and 1969. During 1969, the southern and eastern portions of the site appeared to have been cultivated. The site appeared to have changed very little between 1969 and 1981. The dairy ponds on the southern portion of the site were constructed sometime between 1980 and the present.

Scope of Investigation

The scope of our investigation has included the following tasks:

- Reviewed pertinent, readily available published and unpublished geologic reports covering the site. These included regional data prepared by others as well as reports prepared by us for similar sites. Our review also included analysis of in-house, historic, aerial photographs covering the site.

- Located and marked the test pit locations and coordinated with Underground Service Alert (USA) and the dairy owner to have underground utilities marked prior to our fieldwork.

- Excavated, logged, and sampled 20 backhoe test pits to a maximum depth of 10 feet to observe subsurface soil conditions. The test pits were excavated in the cattle pens and open areas across the site. The test pits were logged by a qualified member of our technical staff to observe the subsurface conditions. In situ moisture and density tests were performed in the upper 4 to 5 feet of the test pits during excavation with a nuclear test gauge, the results of which are shown on the test pit logs provided in Appendix B. Representative bulk soil samples were collected from the test pits and transported to our affiliate laboratory for testing. The approximate location of the test pits are shown on the Geotechnical Map, Figure 2.

- Laboratory testing of selected representative soil samples to determine organic content, sieve analysis, maximum dry density and optimum moisture content, sulfate content, resistivity, pH, and chloride content. Results of the organic content tests are indicated on the test pit logs in Appendix B. Results of the other laboratory tests are presented in Appendix C of this report.

- Evaluation and analysis of the collected data by Professional Engineers and a Certified Engineering Geologist.

- Preparation of this report presenting our geotechnical findings and conclusions regarding the suitability of the site for development.

Geologic Setting

The site is located within the Chino Basin in the northern portion of the Peninsular Range geomorphic province of California. Major structural features surrounding this region include the Cucamonga fault and the San Gabriel Mountains to the north, the Chino fault and Puente/Chino Hills to the west, and the San Jacinito fault to the east. In addition, this is an area of large-scale crustal disturbance as the relatively northwestward moving Peninsular Range Province, collides with the Transverse Range Province (including the San Gabriel Mountains) to the north. Several active or potentially active faults have been mapped in the region and are believed to accommodate compression associated with this collision. The site is located approximately 16 kilometers south of the Cucamonga Fault Zone. This is a major active fault zone forming the steep escarpment between the San Gabriel Mountains to the north and the basin floor on the south.

The site is underlain by younger alluvial soil deposits eroded from the San Gabriel Mountains and deposited in the site vicinity. The Holocene alluvium is underlain by Pleistocene alluvium to a depth of approximately 550 feet below the ground surface. As a result of Santa Ana Winds, a thin veneer of windblown sand may be present in the area.

We appreciate the opportunity to work with you on the development of this project. If you have any questions regarding this report, please call us at your convenience.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

Jason D. Hertzberg, RCE 61778
Project Engineer

Philip A. Buchiarelli, CEG 1715
Senior Project Geologist

David C. Smith, RCE 46222
Vice President/Principal Engineer

PP/JDH/PB/DCS/rsh

Attachments: Figure 1 - Site Location Map - Page 2
Figure 2 - Geotechnical Map - Rear of Text
Appendix A - References
Appendix B - Test Pit Logs
Appendix C - Laboratory Test Results
Appendix D - Selected Site Photographs
Appendix E - General Earthwork and Grading Specifications

Distribution: (4) Addressee

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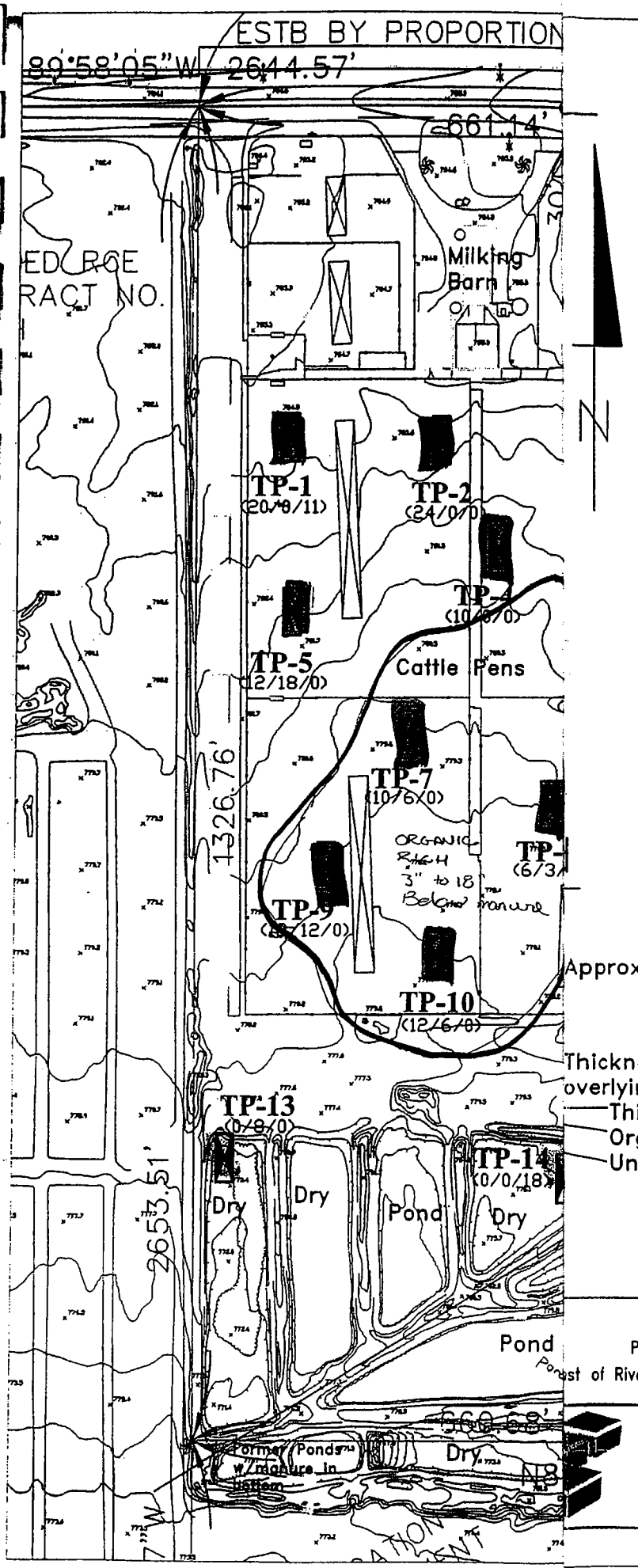

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Organic–Rich Soil, over
Uncontrolled Artificial Fill without significant organic content (inches).

FIGURE 2

Geotechnical Map
Proposed 26-Acre Residential Development
East of Riverside Drive and Haven Avenue, City of Ontario, California

Proj.: 020796-001	Scale: 1" = 150'
Engineer/Geologist: JDH/PB	11-2002

Leighton and Associates

APPENDIX A

References

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Ziony, J. I., and Jones, C. M., 1989, Map Showing Late Quaternary Faults and 1978-84 Seismicity of the Los Angeles Region, California, USGS Miscellaneous Field Studies Map MF-1964.

Aerial Photographs

Flight	Frames	Date	Source
RIV-38	A-6-6	1938	Unknown
C-293	16	1/30/69	San Bernardino County
C-295	89	2/27/69	San Bernardino County
RCFC 80	2 through 4	1/23/80	Riverside County Flood Control District

Appendix B

Geotechnical Test Pit Logs

Centex, Ontario
Project No. 020796-001

Test Pit TP-1

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	1.7		Manure, blackish brown, moist, loose to medium dense, pieces of grass, urine scent				
1.7	2.6	SM	Fill, Silty SAND, blackish tan, moist, medium dense, fine to medium sand, mild urine scent	2-2.5			0.9
2.6	4.6	SM	Alluvium, Silty SAND, tan, moist, loose, fine to coarse sand	3	97.2	5.7	
				3-4			1.3
4.6	6	SP-SM	Alluvium, SAND with silt, gravel and cobbles, tan, moist, loose, fine to coarse sand, fine gravel	5	92.3	9.9	
				4-5			0.7

Total Depth (ft): 6.0
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.

Test Pit TP-2

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	2		Manure, some mixed soil, gray/black, very dense				
2	5.5	SM	Alluvium, Silty Sand, tan, moist, loose to moderately dense	2.5			1.2
				3	96.5	6.3	
				5	93.4	6.9	

Total Depth (ft): 5.5
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.

Test Pit TP-3

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	2		Manure, dark brown-black, urine scent				
2	5	SM	Alluvium, Silty Sand, light brown, slightly moist to moist, loose to moderately dense	2.5			0.9
				3	98.8	5.4	
				5	97.1	6.1	

Total Depth (ft): 5.0
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.

Test Pit TP-4

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	0.8		Manure, dark brown-black, grass mix				
0.8	5	SM	Alluvium, Silty Sand, light brown-gray, moist, loose, becoming moderately dense at 5'	1.2			1.0
				3	89.8	8.7	
				4.5			2.1
				5	93.6	6.6	

Total Depth (ft): 5.0
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.

Test Pit TP-5

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	1		Manure, dark blackish brown, dry at the top to moist at the bottom, loose to medium dense, urine scent, pieces of grass or wood				
1	2.5	SM	Manure with soil, Silty SAND, dark tan, moist, fine to medium sand, loose				
2.5	5	SM	Alluvium, Silty SAND, fine to medium sand, tan, moist, loose to medium dense	2.5-4			1.4
				3	96.5	8.6	
				5	95.5	9.5	

Total Depth (ft): 5.0
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.

Test Pit TP-6

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	1		Manure, brown, dry, pieces of grass or wood				
1	2		Manure with soil, black with light gray areas, pieces of grass or wood				
2	4	SM	Alluvium, Silty SAND, light brown, moist, loose	2.5			1.1
				3	96.3	5.9	
4	5	SM	Alluvium, Silty SAND, light brown, moist, loose to moderately dense	5	96.4	15	

Total Depth (ft): 5.0
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.

Test Pit TP-7

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	0.8		Manure, dark blackish brown, dry, loose, urine scent, pieces of grass or wood				
0.8	1.3	SM	Manure with soil, Silty SAND, tan, dry to slightly moist, loose, fine to medium sand				
1.3	5	SM	Alluvium, Silty SAND, light tan, moist, loose, fine to medium sand	1.5			0.9
				2.0			0.7
				3	93.7	6.2	
				5	93.7	10.4	

Total Depth (ft): 5.0
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.

Test Pit TP-8

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	0.5		Manure				
0.5	0.7		Manure with soil				
0.7	2.5	SM	Alluvium, Silty SAND, tan, moist, loose, fine sand, urine scent	1.0			1.1
2.5	5	SM/ML	Alluvium, Silty Sand/Sandy SILT, tan, moist, loose to moderately dense, fine sand	3	92.9	10.9	
				5	90.5	17.5	

Total Depth (ft): 5.0
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.

Test Pit TP-9

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	1		Manure, blackish dark brown, medium dense, moist, pieces of grass or wood, urine scent				
1	2	SM	Manure with soil, Silty SAND, blackish tan, moist, fine to medium sand				
2	3.5	SM	Alluvium, Silty SAND, tan, moist, loose to mederately dense, fine to medium sand	3	95.8	7.1	
				3-4			1.0
3.5	5	ML	Alluvium, Sandy SILT, tan, moist, loose, fine sand	5	87.7	18.5	

Total Depth (ft): 5.0
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.

Test Pit TP-10

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	1		Manure, blackish dark brown, loose, dry at the top to moist at the bottom, pieces of grass or wood, urine scent				
1	1.5	SM	Fill with Manure, Silty SAND, blackish tan, moist, medium dense, fine to coarse sand, urine scent	1-1.5			4.4
1.5	3	SM	Alluvium, Silty SAND, tan, moist, loose, fine to medium sand	3	96.5	16.0	
3	5	ML	Alluvium, Sandy Silt, tan, moist, loose	5	91.2	17.8	

Total Depth (ft): 5.0
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.

Test Pit TP-11

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	0.7		Manure				
0.7	1.6	SM	Fill, Silty Sand, gray, moist, slightly cemented, hard, no visible organic content	1.0			1.5
1.6	5	ML	Alluvium, Silty SAND, tan, moist, loose	3 5	93.9 87.8	11.7 9.1	

Total Depth (ft): 5.0
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.

Test Pit TP-12

Location: See Geotechnical Map

Depth Top (ft)	Depth Bottom (ft)	Soil Symbol (USCS)	Description	Test Results Depth (ft)	Dry Dens. (pcf)	Moisture Cont. (%)	Organic Cont. (%)
0	0.7	SM	Tilled Soil, Silty SAND, light grayish brown, dry, cemented, rootlets	0.5			1.8
0.7	1.5	SM	Alluvium, Silty SAND, light grayish brown, dry, slightly cemented, rootlets	1.3			1.2
1.5	5	SM	Alluvium, Silty SAND, light gray, slightly moist, moderately dense	2.5	94.0	4.9	
5	10	SP	Alluvium, Sand with silt, some gravel, trace cobbles	5	99.5	2.7	
			* Test Pit walls caved.				

Total Depth (ft): 10.0
No ground water encountered.
Test pit backfilled, tamped with bucket, wheel rolled at surface.