Initial Study

West Hills Crest

Residential Project



County of Los Angeles
Department of Regional Planning
320 West Temple Street, Los Angeles, CA 90012

(213) 974-6433

May 2020

WEST HILLS CREST RESIDENTIAL PROJECT

INITIAL STUDY

Lead Agency:

COUNTY OF LOS ANGELES
DEPARTMENT OF REGIONAL PLANNING
320 West Temple Street
Los Angeles, CA 90012
Attention: Marie Pavlovic, Regional Planner

May 2020

TABLE OF CONTENTS

ENVIRONMENTAL CHECKLIST FORM (INITIAL STUDY) 4
ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED 13
EVALUATION OF ENVIRONMENTAL IMPACTS 14

1. AESTHETICS 15
2. AGRICULTURE/FOREST 20
3. AIR QUALITY 22
4. BIOLOGICAL RESOURCES 27
5. CULTURAL RESOURCES 31
6. ENERGY 35
7. GEOLOGY AND SOILS 37
8. GREENHOUSE GAS EMISSIONS 41
9. HAZARDS AND HAZARDOUS MATERIALS 43
10. HYDROLOGY AND WATER QUALITY 49
11. LAND USE AND PLANNING 54
12. MINERAL RESOURCES 56
13. NOISE 57
14. POPULATION AND HOUSING 59
15. PUBLIC SERVICES 61
16. RECREATION 65
17. TRANSPORTATION 67
18. TRIBAL CULTURAL RESOURCES 70
19. UTILITIES AND SERVICE SYSTEMS 73
20. WILDFIRE 76
21. MANDATORY FINDINGS OF SIGNIFICANCE 79

REFERENCES 81

LIST OF FIGURES

Figure 1 Project Location Map 5
Figure 2 Site Vicinity Map 6
Figure 3 Site Plan 8
Figure 4 Aerial Photograph of Site and Surrounding Area 16
Figure 5 Project Study Area 32

LIST OF TABLES

Table 1 Proposed Land Uses 9
Table 2 Maximum Daily Construction Emissions (pounds/day) 23
Table 3 Maximum Daily Operations Emissions (pounds/day) 23
Table 4 Local Significant Thresholds (LST) and Peak Onsite Daily Emissions (pounds/day) 25
Table 5 2016-2040 SCAG RTP/SCS Growth Forecasts for the Unincorporated Areas of Los Angeles County 59
Table 6 Existing Transit Routes 68

APPENDICES

Appendix A	Viewshed Analysis
Appendix B	Air Quality Impact Analysis
Appendix C	Phase I Cultural Resource Assessment
Appendix D	Preliminary Geotechnical Report
Appendix E	Geologic/ Geotechnical Review of Existing Reports and VTTM
Appendix F	Response to Los Angeles County Department of Public Works Geotechnical Materials Division Geologic and Soils Engineering Review
Appendix G	Phase I Environmental Site Assessment
Appendix H	County of Los Angeles Fire Department Letter
Appendix I	Conceptual Fire Protection Plan
Appendix J	Trip Generation Technical Memorandum

Environmental Checklist Form (Initial Study)
County of Los Angeles, Department of Regional Planning

Project title: West Hills Crest Project / Project No. 98123 / Vesting Tentative Tract Map No. 52652, Conditional Use Permit No. 98123, Oak Tree Permit No. 98123, Environmental Plan No. RPPL2019002981

Lead agency name and address: Los Angeles County, 320 West Temple Street, Los Angeles, CA 90012

Contact Person and phone number: Marie Pavlovic (213)-974-6433

Project sponsor's name and address: Michael Naim
Naim Associates, LLC
144 Wetherly Drive
West Hollywood, CA 90048
(310) 247-1866

Project location: Vesting Tentative Tract Number 52652, West Hills, CA, 91307
APN: 2031-015-002, 2031-015-003, 2031-015-011, and 2031-015-012. *USGS Quad*: Calabasas, CA

Gross Acreage: 58.03 gross acres

General plan designation: 1 (Low Density Residential: 1-6 du/gross ac)

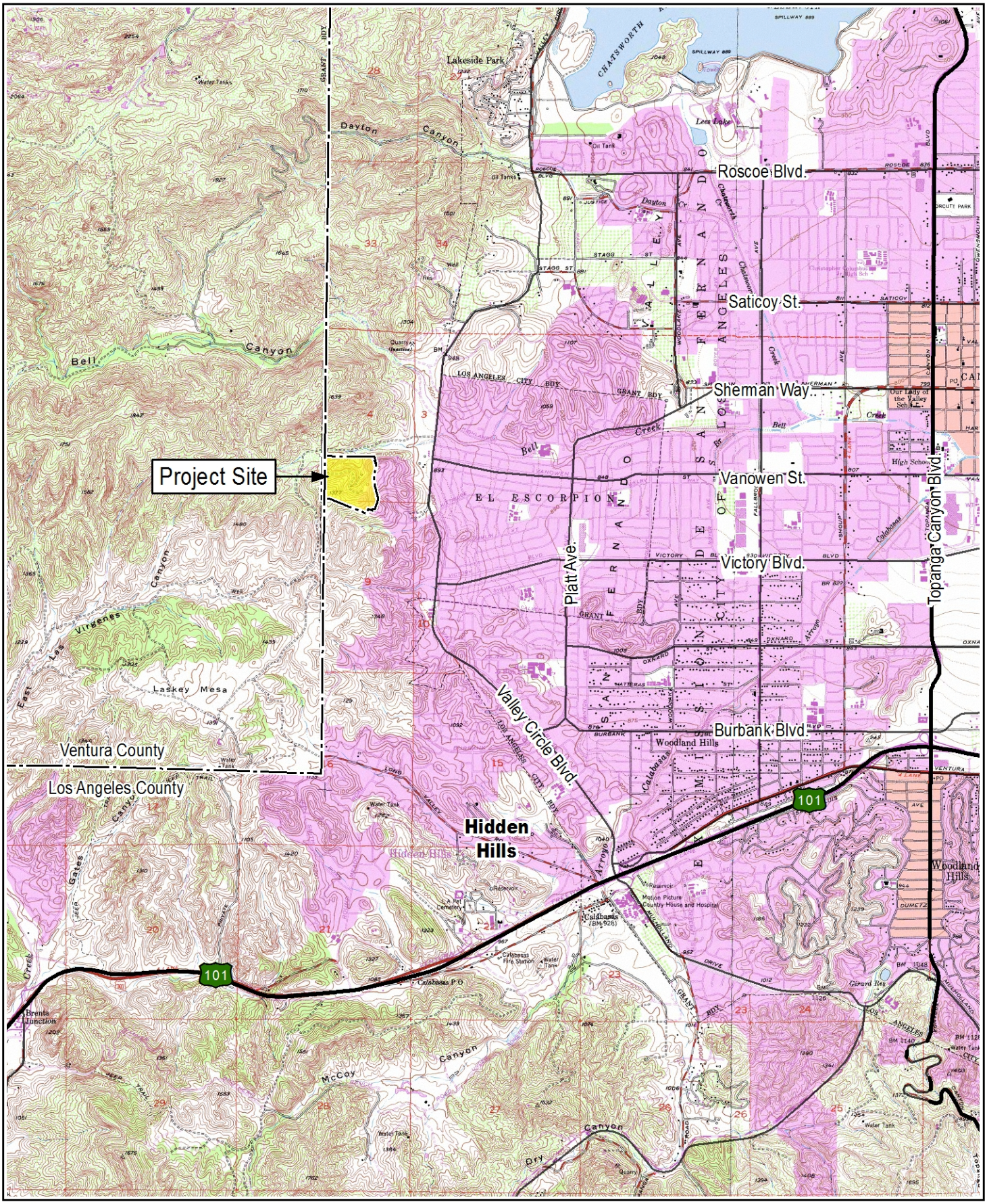
Community/Area wide Plan designation: N/A

Zoning: RPD-30,000-1.5U & R-1-10,000

Description of project:

The West Hills Crest Residential Project site (hereinafter the "Project Site" or "Project"), is an approximately 58-acre property located on the eastern flank of the Simi Hills at the western end of the San Fernando Valley, north of Hidden Hills, in an unincorporated area of Los Angeles County (see **Figure 1, Project Location Map**). The site is located in an undeveloped area west of Randiwood Lane at the western edge of the San Fernando Valley adjacent to the Ventura County line. It is bordered on the east entirely by a 175-unit single-family residential development across Randiwood Lane, on the north by El Escorpion Park, on the south by Knapp Ranch Park West and a Los Angeles City Department of Water and Power facility including two large water tanks, and on the west by the 5,477-acre Upper Las Virgenes Canyon Open Space Preserve formerly a part of Ahmanson Ranch. The first two parks are in Los Angeles City, and Las Virgenes Canyon is in Ventura County. The northwestern portion of the site is within the Los Angeles County Santa Susana Mountains / Simi Hills Significant Ecological Area (see **Figure 2, Site Vicinity Map**). This portion will remain undeveloped.

The southeast corner of the Project Site is northwest of the intersection of Kittridge Street and Randiwood Lane. Major roads in the surrounding area include Victory Boulevard, Vanowen Street, Valley Circle



Sources: U.S.G.S. Topographic Quadrangle Map Mosaic.

envicom

Project Location Map

0 2,000 4,000 Feet

FIGURE 1



Aerial Source: GoogleEarth Pro, Nov. 19, 2018.

envicom

Site Vicinity Map

FEET 0 300 600

FIGURE 2

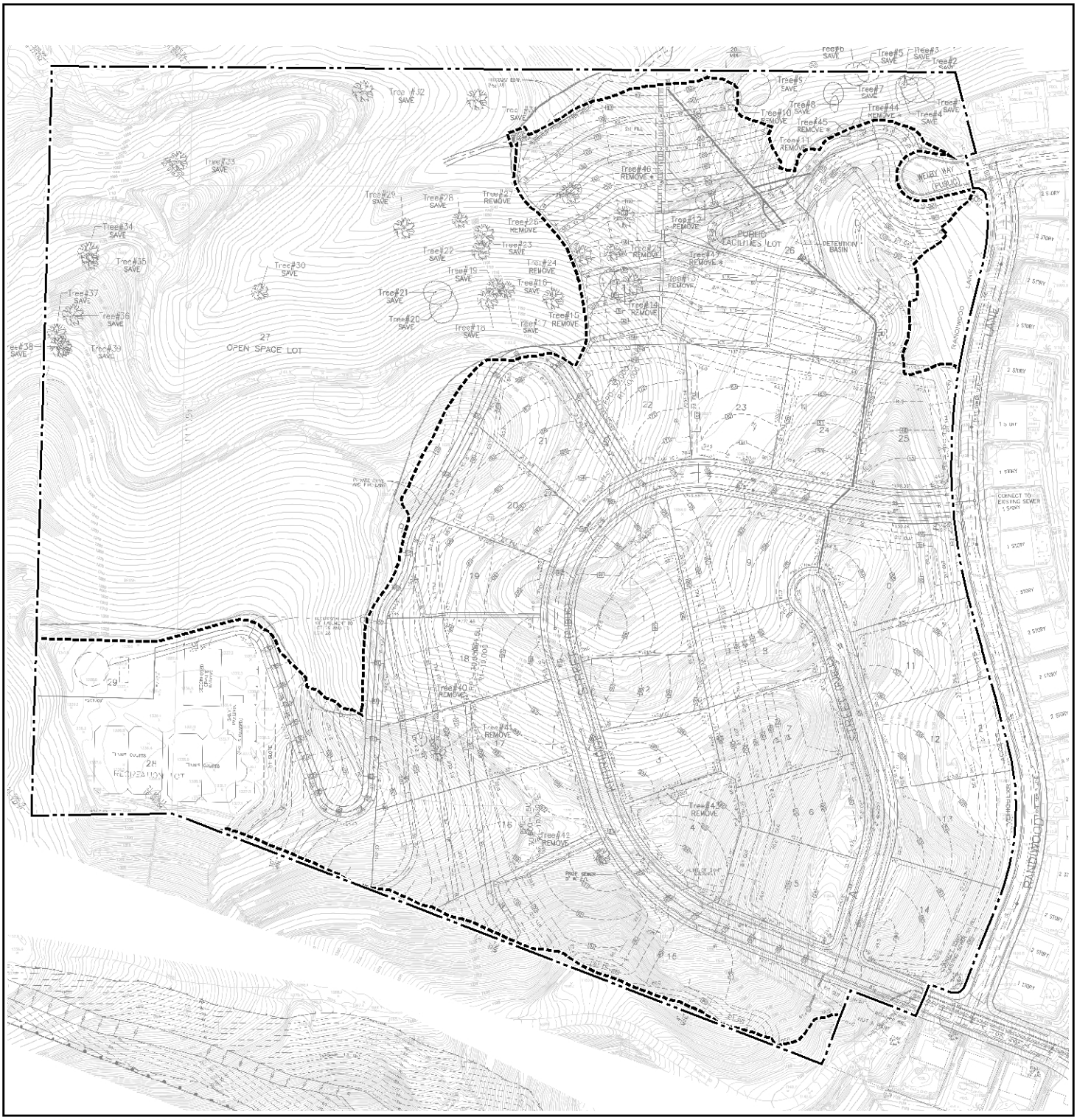
Boulevard, and Bell Canyon Road. The site is located within Section 4 and Section 9, Township 1N, Range 17W of the USGS 7.5' Calabasas topographic quadrangle map

The site consists predominantly of moderate to steep hillsides. Elevations on the site range from approximately 1,250 to 1,380 feet above mean sea level (msl). The site is undeveloped, though a portion was previously graded, with a mix of native and non-native vegetation, and contiguous to the north and west with large tracts of native habitat and open space areas. Disturbed areas at the site include old roadbeds and trails, and significantly modified slopes with terrace drains, as well as several acres that are dominated by non-native herbaceous grasses and forbs. The site presumably was grazed historically. There is a disked fuel modification zone along the site's eastern boundary, which protects the existing residential development east of Randiwood Lane. There are some level areas in the northeastern and southwestern portions of the site, which may have been previously graded, although not recently and portions of the site have significant fill from prior activity. There are no prominent drainages at the site; however, there are some erosional features on north-facing slopes along the northern boundary of the site. A total of fifteen oil wells are located on site, the remains of five of which were observed in site reconnaissance and ten were reported in the Department of Oil, Gas, and Geothermal Resources (DOGGR) files.[1] DOGGR identifies the Project Site as located within the Canoga Park oil/gas field #108, a small field in the West San Fernando Valley where drilling began in the 1940s, according to available records. The DOGGR files identify seven as plugged, two as buried/idle, and one as a dry hole, and DOGGR preliminarily indicated two wells may be leaking oil and/or gas.

The applicant is proposing a land division and low density single-family residential development for the site, which would include 25 residential lots, public streets, a recreation lot, a public facilities lot, one water tank lot, and an approximately 26-acre open space lot. The northwestern portion of the site would be preserved as open space. The proposed Project has an approved Conditional Use Permit (CUP) , oak tree permit to remove 14 oak trees and encroach upon 1 oak tree, and a tract map to allow the development of twenty-five single family lots, one recreation lot, one water tank lot, one public facilities lot, and one open space lot. A storm drainage easement and a detention basin are proposed for the northeast portion of the property. The total property consists of 58.03 acres and the Project would include 975,000 cubic yards of cut grading and an equal volume of fill grading to be balanced on site.

The Project consists of four parcels, Assessor's Identification Numbers 2031-015-002, 2031-015-003, 2031-015-011, and 2031-015-012. The land use designation for the Project Site is Rural Land 2 (RL-2) and allows for single family residences, equestrian and limited animal uses, and limited agricultural and related activities. The density allowed is a maximum of 1 dwelling unit per 2 gross acres or a maximum floor area ratio of 0.5 for non-residential buildings. The Project site is zoned as RPD-30,000-1.5U (Residential Planned Development – 30,000 square feet minimum lot size – 1.5 dwelling units per acre) and R-1-10,000 (single-family residence, 10,000 square feet minimum). To the east of the Project Site is an existing neighborhood zoned as R-1-11,000 (Single Family Residential – 11,000 square foot minimum). Properties to the north and south of the Project Site are parks within the City of Los Angeles and are zoned for Open Space. The Project includes various components typical of a new housing tract. The site plan is shown in **Figure 3, Site Plan**.

[1] DOGGR, Well Finder, Accessed on December 6, 2019 at: https://maps.conservation.ca.gov/doggr/wellfinder/#openModal/-118.66347/34.19308/16.



Source: Site Plan, Spindler Engineering CP, January 2017.

Legend

- Property Boundary
- Limits of Grading

Site Plan

0 125 250 Feet

FIGURE 3

Table 1
Proposed Land Uses

Land Use	Net Area (acres)[1]
Residential Development	
Lot 1	1.01
Lot 2	0.52
Lot 3	0.54
Lot 4	0.68
Lot 5	0.74
Lot 6	0.64
Lot 7	0.77
Lot 8	0.67
Lot 9	1.06
Lot 10	0.90
Lot 11	0.72
Lot 12	0.76
Lot 13	0.80
Lot 14	0.88
Lot 15	2.49
Lot 16	1.52
Lot 17	1.09
Lot 18	0.99
Lot 19	0.80
Lot 20	0.73
Lot 21	0.82
Lot 22	0.80
Lot 23	0.76
Lot 24	0.73
Lot 25	0.80
Residential Development Subtotal	**22.22**
Lot 26 (Public Facilities)	0.80
Lot 27 (Open Space)	26.47
Lot 28 (Recreation Lot)	3.85
Lot 29 (Water Tank Lot)	0.89
Streets	3.80
Total Project Area	**58.03**

[1] This accounts for the area within each lot to the property line of all adjacent streets.

Residential

The Project would provide 25 single family residences on lots ranging from 0.61 to 2.86 gross acres, (.52 to 2.49 net acres) refer to **Table 1, Proposed Land Uses**. Access to the residences would be through an extension of Kittridge Street that would be extended to connect in a loop to the approximate midpoint of Randiwood Lane. Building pads on proposed Lots 1 through 15 and 23 through 25 are proposed to be within

the R-1-10,000 zoned area. Building pads on Lots 16 through 22 are proposed to be in both the R-1-10,000 and RPD-30,000-1.5U zones.

Public Facilities
Lot 26, a flag lot with a 33-foot-wide access strip on the northeast corner of the property, would be the public facilities lot and include the detention basin.

Open Space
Lot 27, consisting of 26.47 acres, would be open space. This meets the requirement of a minimum 30 percent permanent open space under common ownership in the RPD-zoned portion of the property. The open space portion within the RPD zone would consist of 71 percent of the RPD zoned portion of the property.

Recreation
Lot 28, a flag lot located at the southwest corner of the property, would provide recreational amenities consisting of four tennis courts, a parking lot, and a shade structure. There would also be a variable width easement for the Rim of the Valley Trail in the northwest corner of the property.

Water Tank
Lot 29, immediately north of the tennis courts, would contain two large water storage tanks that would be dedicated to the Las Virgenes Municipal Water District and would supplement fire flows to the surrounding area.

Circulation System
Regional access to the Project Site is via U.S. Route 101 from the south and California State Route 118 from the north. California State Route 27, Topanga Canyon Road to the east, is the closest major thoroughfare that can be accessed from both U.S. Route 101 and California State Route 118. Directly adjacent to the proposed Project site is Kittridge Street to the southeast, Randiwood Lane to the east, and Welby Way to the northeast. Access to the Project would be through an extension of Kittridge Street that would loop to connect to Randiwood Lane. A cul-de-sac would connect from the Kittridge Street extension to would provide access to 10 of the single-family lots.

Grading
The Project proposes 975,000 cubic yards of cut and 975,000 cubic yards of fill balanced on site.

Objectives
The underlying purpose of the Project is to provide 25 single family residences in the western Los Angeles County community of West Hills. The following is a list of the objectives and goals of the Project:

- Develop 25 single family residences on a range of lot sizes in an area designated for residential development;
- Provide recreational amenities for the residences, reducing use of existing parks and vehicle trips to access existing facilities;
- Provide a lot to the Las Virgenes Water District to place additional water storage tanks to provide adequate water pressure for the Project Site and to improve pressure for the existing residential subdivision adjacent to the Project Site on the east and storage capacity for fire suppression; and,
- Dedicate 26.47 acres, which represents approximately 46 percent of the Project Site as open space extending the park lands north and west of the Project Site.

Surrounding land uses and setting:

The Project property is in an unincorporated portion of LA County and is currently undeveloped, with non-native and native vegetation including coastal sage scrub, chaparral, coast live oak woodland, and southern California walnut woodland. There are several unofficial trails located on the Project Site and the slope varies from 24 percent to over 50 percent. Suburban development, including an existing 175-unit single-family residential subdivision along the entire eastern boundary across Randiwood Lane, abuts the Project Site on three sides. To the north is the El Escorpion Park and to the south is Knapp Ranch Park, both of which are City of Los Angeles public parks. To the west is the Las Virgenes Canyon Open Space Preserve. Five fires have burned the site or portions of the site since 1967. The Devonshire – Parker Fire burned nearly the entire site except for a small portion of its eastern end in October 1967. The Clampitt Fire burned the entire site in September 1970, and the Dayton Canyon Fire burned the approximate western two-thirds of the site in October 1982. The Topanga Fire of September 2005, which burned nearly the entire site leaving only the eastern margin of the property intact. The last fire to affect the site was the Woolsey fire, which burned nearly the entire site in November 2018.

Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code § 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

Tribal consultation is the responsibility of the Lead Agency, in this case, Los Angeles County Department of Regional Planning (LACDRP). The LACDRP is an agency experienced in the consultation process and strives to be inclusive as it seeks input from Native American tribes traditionally and culturally affiliated with the Project area. Additional information will be provided as it becomes available.

Other public agencies whose approval may be required (e.g., permits, financing approval, or participation agreement):

Public Agency	*Approval Required*
Las Virgenes Municipal Water District	Will Serve Letter

Major projects in the area:

Project/Case No.	*Description and Status*
TR073776	A pending request to create 46 single-family lots, one water tank lot, one private driveway lot, and 3 open space lots within a SEA, HMA and grading exceeding 100,000 c.y.

Reviewing Agencies: [*See* **CEQA Appendix B** *to help determine which agencies should review your project***]**

Responsible Agencies

- ☐ None
- Regional Water Quality Control Board:
  - ☒ Los Angeles Region
  - ☐ Lahontan Region
- ☐ Coastal Commission
- ☐ Army Corps of Engineers
- ☐ LAFCO

Special Reviewing Agencies

- ☒ None
- ☐ Santa Monica Mountains Conservancy
- ☐ National Parks
- ☐ National Forest
- ☐ Edwards Air Force Base
- ☒ Mountains Recreation and Conservation Authority
- ☐

Regional Significance

- ☐ None
- ☐ SCAG Criteria
- ☒ SCAQMD
- ☐ Water Resources
- ☐ Santa Monica Mtns. Area
- ☐

Trustee Agencies

- ☐ None
- ☒ State Dept. of Fish and Wildlife
- ☐ State Dept. of Parks and Recreation
- ☐ State Lands Commission
- ☐ University of California (Natural Land and Water Reserves System)

County Reviewing Agencies

- ☒ DPW
- ☒ Fire Department
  - Forestry, Environmental Division
  - Planning Division
  - Land Development Unit
  - Health Hazmat
- ☒ Sanitation District
- ☒ Public Health/Environmental Health Division: Land Use Program (OWTS), Drinking Water Program (Private Wells), Toxics Epidemiology Program (Noise)
- ☒ Sheriff Department
- ☒ Parks and Recreation
- ☐ Subdivision Committee
- ☐

- ☒ City of Calabasas
- ☒ City of Los Angeles
- ☒ City of Los Angeles Neighborhood Council – West Hills
- ☒ Los Angeles County Natural History Museum
- ☒ School- Las Virgenes Unified School District

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project.

☒ Aesthetics	☐ Greenhouse Gas Emissions	☒ Public Services
☐ Agriculture/Forestry	☒ Hazards/Hazardous Materials	☐ Recreation
☐ Air Quality	☒ Hydrology/Water Quality	☒ Transportation
☒ Biological Resources	☐ Land Use/Planning	☒ Tribal Cultural Resources
☒ Cultural Resources	☐ Mineral Resources	☐ Utilities/Services
☐ Energy	☒ Noise	☒ Wildfire
☐ Geology/Soils	☐ Population/Housing	☒ Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Department.)

On the basis of this initial evaluation:

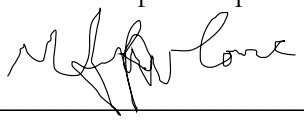
☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

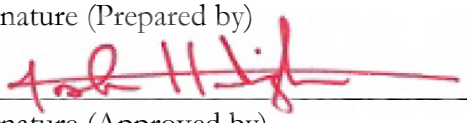
☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Signature (Prepared by) — Date: May 8, 2020



Signature (Approved by) — Date: May 18, 2020

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources the Lead Department cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3) Once the Lead Department has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level. (Mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced.)
5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA processes, an effect has been adequately analyzed in an earlier EIR or negative declaration. (State CEQA Guidelines § 15063(c)(3)(D).) In this case, a brief discussion should identify the following:
    a) Earlier Analysis Used. Identify and state where they are available for review.
    b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of, and adequately analyzed in, an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
7) The explanation of each issue should identify: the significance threshold, if any, used to evaluate each question, and; mitigation measures identified, if any, to reduce the impact to less than significance. Sources of thresholds include the County General Plan, other County planning documents, and County ordinances. Some thresholds are unique to geographical locations.

1. AESTHETICS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐

The following aesthetics analysis is primarily based on the West Hills Crest Viewshed Analysis (Viewshed Analysis), prepared by Envicom Corporation, (Envicom) dated October 2019, and included as **Appendix A**.

Potentially Significant Impact. According to Chapter 9, Conservation and Natural Resources Element, of the County General Plan, a scenic vista is a panoramic public view from a specific location, such as a highway, a park, a hiking trail, river/waterway, or even from a particular neighborhood. A scenic viewshed provides a scenic vista from a specific location and the boundaries of a viewshed are defined by the field of view to the nearest ridgeline. Scenic viewsheds vary by location and community and can include ridgelines, unique rock outcroppings, waterfalls, ocean views or various other unusual or scenic landforms.[2]

The Project is located in unincorporated Los Angeles County in the West Hills community, east of the Ventura County boundary, north of Victory Boulevard, and west of Valley Circle Boulevard, as seen in **Figure 4, Aerial Photograph of Site and Surrounding Area**. The Project would develop a currently vacant site with 25 single-family residences. The Project site is not located within the vicinity of a designated or eligible scenic highway, significant ridgeline, or other County-designated natural and scenic resource.[3] Based upon the General Plan's definition of a scenic vista, views from public roadways, parks, and trails in the vicinity that provide substantial views of the Project Site have been evaluated. The Viewshed Analysis analyzed the Project's visibility from various view locations within the vicinity of the Project site including El Escorpion Park, Las Virgenes Canyon Open Space Preserve, Knapp Ranch Park, and Randiwood Lane.

The Project considers impacts to views from public roadways, such as Randiwood Lane, Kittridge Street and Welby Way. As shown in the Viewshed Analysis, the Project site is partially visible from Randiwood Lane. However, the proposed Project Site's visibility from the public roadways would be decreased due to the range in elevation on the site, as the proposed residential structures are setback from the roadway and would be largely blocked due to the gradual, westerly sloping terrain. The Project would also provide screening by clusters of native trees and vegetation along the perimeter of the Project boundary, and therefore would reduce views of the Project site from the public roadway. Additionally, the Project considers impacts to views from public parkland including El Escorpion Park and Knapp Ranch Park, administered by the City of Los Angeles, Bell Canyon State Park and the Las Virgenes Open Space Preserve. As shown in the Viewshed Analysis, the Project site is partially visible from El Escorpion Park and Las Virgenes Canyon Open Space Preserve and is not visible from Knapp Ranch Park. While it is expected that the installation of landscaping vegetation as screening would cause impacts on scenic vistas to be less than significant, additional detailed analysis and further discussion will be provided in the EIR.

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[2] Los Angeles County, General Plan Chapter 9: Conservation and Natural Resources Element, Adopted October 6, 2015.

[3] County of Los Angeles Department of Regional Planning, GIS-NET Public, Accessed on September 25, 2019 at: http://planning.lacounty.gov/gis/interactive.



Aerial Source: GoogleEarth Pro, Nov. 19, 2018.

envicom

Aerial Photograph of Site and Surrounding Area

FEET 0 300 600

FIGURE 4

b) Be visible from or obstruct views from a regional riding, hiking, or multi-use trail? ☒ ☐ ☐ ☐

Potentially Significant Impact. The Project will be visible from trails within both El Escorpion Park to the north and the Las Virgenes Canyon Open Space Preserve to the west. In general, visibility of a proposed Project does not necessarily constitute a significant impact. As stated previously, a scenic viewshed provides a scenic vista from a given location, such as a highway, a park, a hiking trail, river/waterway, or even from a particular neighborhood. The boundaries of a viewshed are defined by the field of view to the nearest ridgeline.[4] Modifications to viewsheds are considered less than significant if they would largely be unnoticeable or visually subordinate to existing predominant features within the viewshed containing the Project Site. A modification that would substantially obstruct available views of existing scenic features would result in a significant impact.

As shown in the Viewshed Analysis, the Project site is partially visible from El Escorpion Park and Las Virgenes Canyon Open Space Preserve and is not visible from Knapp Ranch Park. However, present views from El Escorpion Park and the Las Virgenes Canyon Open Space Preserve are dominated by existing and expansive residential and commercial development within the greater San Fernando Valley. As such, the addition of 25 single-family residences within view of the trails would not cause a substantial impact in addition to the expansive views overlooking the San Fernando Valley. Knapp Ranch Park contains clusters of trees along the perimeter of the park include along Kittridge Street and extending northwest towards the Project site. These trees provide heavy screening from existing residential development in the area and as shown in the Viewshed Analysis, the Project site is not visible from Knapp Ranch Park As such, the Project is expected to have a less than significant impact to viewpoints within Knapp Ranch Park. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

c) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? ☒ ☐ ☐ ☐

Potentially Significant Impact. According to the Scenic Highway Element of the 1980 General Plan, a scenic highway is defined as a road which, in addition to its transportation function, provides opportunities for enjoyment of natural and manmade scenic resources where aesthetics values are protected and enhanced. Chapter 9, Conservation and Natural Resources Element, of the County General Plan, a highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. To be designated as an official state scenic highway, the County must create a corridor protection program and contain the following five elements related to preserving the nominated scenic highway:

- Regulation of land use and density of development;
- Detailed land and site planning;
- Control of outdoor advertising;
- Careful attention to and control of earthmoving and landscaping; and
- Attention to design and appearance of structures and equipment.

[4] Los Angeles County, General Plan Chapter 9: Conservation and Natural Resources Element, Adopted October 6, 2015

Regional access to the Project Site is provided by the U.S. Route 101 (or Ventura Freeway) from the south and California State Route 118 from the north. As shown on the Department of Transportation's Scenic Highway Mapping System[5], these particular portions of the highway are not officially designated as state scenic highways. Trees and rock outcroppings are located sporadically within the Project Site development footprint, but are not located within view of a state scenic highway. Therefore, in is not expected that the Project would substantially damage scenic resources within view of a state scenic highway corridor.

Additionally, views from the Project site of both U.S. Route 101 and California State Route 118 are constrained by variations in land topography and the Project location is not visible from these highways. The U.S. Route 101 is approximately three miles south of the Project site and California Route 118 is approximately 6 miles north of the Project site. Both highways are visually separated by existing topography and are not visible from the Project area.

The County of Los Angeles General Plan designates Old Topanga Canyon Road as a "route with scenic qualities." The Project site is not visible from Old Topanga Canyon Road. Other County-designated scenic routes in the Project region include the Ventura Freeway, Mulholland Highway, Las Virgenes Road, and Kanan-Dume Road.[6] The Project site is not visible from these roadways. Therefore, potential visual impacts regarding scenic resources such as trees, rock outcroppings, or historic buildings are expected to be less than significant. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

d) Substantially degrade the existing visual character or quality of public views of the site and its surroundings because of height, bulk, pattern, scale, character, or other features or conflict with applicable zoning and other regulations governing scenic quality? (Public views are those that are experienced from publicly accessible vantage point)	☒	☐	☐	☐

Potentially Significant Impact. The visual character of the existing Project site is characterized by undeveloped, partially graded open land with native and invasive vegetation. The surrounding area is primarily characterized by single-family residential development to the east and open space to the north, west, and south. The Project site is surrounded by moderate slopes that transition to steeper slopes as elevations rise to the local ridges of the surrounding hillsides.

The proposed Project would involve permanent changes to the site due to the replacement of existing undeveloped land with 25-single family homes, a public facilities lot (which includes a detention basin), recreational amenities, water tank lot and a large open space lot. While the proposed Project would result in physical changes to the previously undeveloped site, it would not substantially alter the visual character of the area, as the Project is consistent with the existing visual setting of suburban residential development interspersed with open space. The site's modification would have a marginal impact, as the Project would add low density residential development and additional open space to this setting. Therefore, the Project would not significantly degrade the existing visual character or quality of the site and its surroundings.

[5] Caltrans, California Scenic Highway Mapping System, Los Angeles County, Accessed on June 19, 2019 at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/.

The County will review the proposed Project plans for consistency and compliance with the applicable guidelines along with development standards in County Code to determine if the Projects meets and complies with the Guidelines. Additionally, the Project will incorporate the installation of vegetation as screening, which provides natural clusters of trees along the Project boundary to screen existing residential views from the Project site. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

e) Create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area?	☒	☐	☐	☐

Potentially Significant Impact. The Project would introduce outdoor light sources, including street lighting and parking lot lighting for residential uses. The Project would also introduce tennis courts that could include nighttime lighting. The Project would comply with all regulations, for streetlights, street signage and outdoor recreational facility signage. Compliance with County regulations would ensure the proposed exterior lighting would constitute a reasonable use of outdoor lighting and would ensure Project-related light sources remain directed on-site or on roadways, as appropriate. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

2. AGRICULTURE / FOREST

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒

No Impact. According to the California Natural Resources Agency, Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program (FMMP), the Project site is not located within an area containing Prime Farmland, Unique Farmland, or other Farmland of Statewide Importance.[7] The Project site falls within the category "other land," which is land not included in other mapping categories and is vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres. No agricultural uses or related operations are present on the Project site or surrounding urban area and the Project will not convert to non-agricultural use any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, the Project would have no impact on FMMP-designated Important Farmlands and no mitigation measures are required.

b) Conflict with existing zoning for agricultural use, with a designated Agricultural Resource Area, or with a Williamson Act contract?	☐	☐	☐	☒

No Impact. The land use designation for the parcel is Low Density Residential (1) and allows for single family residences, equestrian and limited animal uses, and limited agricultural and related activities by the General Plan. The Project is divided between two zoning classifications. They are RPD-30,000-1.5U (Residential Planned Development – 30,000 square feet minimum lot size – 1.5 dwelling units per acre) and R-1-10,000 (single- family residence, 10,000 square feet minimum). The Project site and surrounding vicinity are not zoned for agricultural use and there is no farmland located at the Project site. The Project site is not located within Williamson Act Contract Land.[8] Therefore, the Project would not conflict with zoning for agricultural use, with a designated Agricultural Resource Area or with a Williamson Act contract and the Project would have no impact.

[7] California Natural Resources Agency. Department of Conservation. Division of Land Resource Protection. Farmland Mapping and Monitoring Program. 2016. Los Angeles County Important Farmland.

[8] California Department of Conservation. 2017. State of California Williamson Act Contract Land.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code § 12220 (g)), timberland (as defined in Public Resources Code § 4526), or timberland zoned Timberland Production (as defined in Government Code § 51104(g))? ☐ ☐ ☐ ☒

No Impact. As described above, the Project site is divided between two zoning classifications: RPD-30,000-1.5U and R-1-10,000 and does not include parcels zoned for forest land, timberland, or timberland production by the County Zoning Code. Moreover, adjacent zoning reflects residential and open space/recreational uses. Therefore, the Project would have no impact related to forest land, timberland, or timberland production zoning and no mitigation measures are required.

d) Result in the loss of forest land or conversion of forest land to non-forest use? ☐ ☐ ☐ ☒

No Impact. The Project will not result in the loss or conversion of forest land to non-forest use. The site is a currently undeveloped upland parcel in unincorporated LA County adjacent to the City of Los Angeles community of West Hills and is not located within and does not contain designated forest land. Since the Project site would not result in the loss of forest land or convert designated forest land to non-forest use, it would have no impact related to these issues.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? ☐ ☐ ☐ ☒

No Impact. As described above, the Project Site does not contain forest or agricultural land, nor is it designated for either type. The Project also does not abut agricultural or forest land, it includes a substantial amount of open space to buffer surrounding open space areas from the proposed residential development. The Project does not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non- agricultural use or conversion of forest land to non-forest use. The Project will have no impact with respect to the conversion of farmland.

3. AIR QUALITY

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Conflict with or obstruct implementation of applicable air quality plans of either the South Coast AQMD (SCAQMD) or the Antelope Valley AQMD (AVAQMD)?	☐	☐	☒	☐

The following air quality analysis is primarily based on the Air Quality Impact Analysis, prepared by Envicom Corporation, dated March 14, 2017, and included as **Appendix B**.

Less Than Significant Impact. The South Coast Air Quality Management District (SCAQMD) outlines the air pollution measures needed to meet the federal health-based standards for ozone and particulates. The governing board of the SCAQMD adopted the most recent version of the 2016 Air Quality Management Plan (AQMP) on March 3, 2017, which has been submitted to the California Air Resources Board for forwarding to the Environmental Protection Agency.[9] The Project is an allowable use under the County General Plan land use designation and is consistent with regional growth projections. However, the SCAQMD does not favor designating regional impacts as less than significant solely because the proposed development is consistent with regional growth projections. Therefore, the impact of the proposed Project on air quality was analyzed on a project-specific basis. The results are presented below where both construction and operational daily maximum emissions would not exceed SCAQMD standards and therefore would comply with the provisions within the AQMP.

During construction, dust is typically the primary concern of residential tracts where land clearing and grading are proposed. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions." The Project would comply with SCAQMD Rule 403 during construction regarding fugitive dust. This rule aims to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic fugitive dust sources and would comply with Rule 403 by applying the best available control measure, which is watering the soil during construction to minimize air pollutants released during the movement of soil. Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). Certain parameters are not known with any reasonable certainty prior to Project development and may change from day to day. Any assignment of specific parameters to an unknown future date is speculative and conjectural. Because of the inherent uncertainty in the predictive factors for estimating fugitive dust generation, regulatory agencies typically use one universal "default" factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into midrange average values. This analysis for the Project incorporates those reasonable assumptions.

[9] South Coast Air Quality Management District, Air Quality Management Plan, Accessed on June 17, 2019 at: https://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan.

Estimated construction emissions were modeled using CalEEMod2016.3.1 to identify maximum daily emissions for each pollutant during Project construction. CalEEMod was developed by the SCAQMD to provide a model by which to calculate both construction emissions and operational emissions from a variety of land use projects. It calculates both the daily maximum and annual average emissions for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions. The output reports from CalEEMod are included with Appendix B to this report.

Utilizing this indicated equipment fleet, for the proposed Project, the Project's maximum daily construction emissions as calculated by CalEEMod are listed in **Table 2, Maximum Daily Construction Emissions**.

Table 2
Maximum Daily Construction Emissions (pounds/day)

	ROG	NO_X	CO	SO_2	PM-10	PM-2.5
Maximum Daily Construction Emissions*	8.8	68.0	40.0	0.06	7.6	4.9
SCAQMD Thresholds	75	1005	550	150	150	55
Significant Impact? Y/N	No	No	No	No	No	No

Source: CalEEMod output, March 2, 2017.
* CalEEMod project emissions estimates based on required compliance with SCAQMD Rule 403 minimizing fugitive dust by watering exposed surfaces during construction.

As seen in Table 2, peak daily construction activity emissions of criteria air pollutants are estimated to be far below SCAQMD thresholds. Additionally, all construction grading projects in the County of Los Angeles must comply with the requirements of SCAQMD Rule 403, Fugitive Dust, which requires the implementation of Reasonably Available Control Measures (RACM) for all fugitive dust sources. SCAQMD Rule 403, Control Measure 08-2 states that during earth moving activities, projects are required to "Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction." Therefore, pursuant to SCAQMD Rule 403, the Project would be required implement adequate watering of exposed surfaces during the site preparation and grading phases. Therefore, the Project would have less than significant construction impacts.

During operations, the proposed residences would result in air quality emissions of criteria pollutants from area sources, energy sources, and mobile sources. The SCAQMD thresholds for air quality impacts from operations are shown below in **Table 3, Maximum Daily Operations Emissions**.

Table 3
Maximum Daily Operations Emissions (pounds/day)

Daily Emissions	ROG	NO_X	CO	SO_2	PM-10	PM-2.5
Area	8.23	0.54	14.79	0.03	1.92	1.92
Energy	0.03	0.23	0.10	0.00	0.02	0.02
Mobile	0.57	2.64	7.83	0.02	1.83	0.51
Total	8.82	3.41	22.72	0.06	3.77	2.45
SCAQMD Thresholds	55	55	550	150	150	55
Significant Impact? Y/N	No	No	No	No	No	No

Source: CalEEMod output, March 2, 2017.

As seen in Table 3, the Project's operational emissions would be far below SCAQMD thresholds; therefore, operational impacts would be less than significant. The proposed Project's estimated emissions from construction and operations would not exceed any SCAQMD significance thresholds for criteria pollutant emissions. Consequently, the Project would not result in a cumulatively considerable air quality impact, and the Project's cumulative air quality impact would be less than significant.

Given that the Project is an allowable use under the General Plan designation and zoning, the small scale of the Project, the results of the emissions analysis, and the best available control measure to prevent significant fugitive dust levels, the Project would have a less than significant impact regarding implementation of the applicable air quality plan.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? ☐ ☐ ☒ ☐

Less Than Significant Impact. The non-attainment regional pollutants of concern are ozone, PM_{10}, and $PM_{2.5}$. If an area is in nonattainment for a criteria pollutant, then the background concentration of that pollutant has historically exceeded the ambient air quality standard and if a Project exceeds the regional threshold for that nonattainment pollutant, then it would result in a cumulatively considerable net increase of that pollutant and result in a significant cumulative impact. As the Basin is currently in non-attainment for ozone and PM-10, cumulative development, such as that represented by the proposed Project and related projects, has the potential to violate an air quality standard or contribute to an existing or projected air quality violation, which is typically considered to be a potentially significant cumulative impact under CEQA.

According to the SCAQMD, individual construction projects that exceed the SCAQMD recommended daily thresholds for project-specific impacts would cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in non-attainment. The proposed Project's estimated emissions from construction or operations would not exceed any SCAQMD significance thresholds for criteria pollutant emissions. In terms of localized air quality, construction of the Project, without mitigation, would not exceed SCAQMD LST screening thresholds. Consequently, the Project would not result in a cumulatively considerable air quality impact, and the Project's cumulative air quality impact would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations? ☐ ☐ ☒ ☐

Less Than Significant Impact. Sensitive receptors are persons with the greatest sensitivity to air pollution exposure and include young children, the elderly and the acutely and chronically ill (e.g., those with cardio-respiratory disease, including asthma). For this Project, nearby residences are considered to be sensitive uses because they may be occupied for extended periods, and residents may be outdoors when exposure is highest.

The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs). LSTs are only applicable to the following criteria pollutants: NO_X, CO, PM-10, and PM-2.5. LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard and are developed based on the ambient concentrations of that pollutant for each source receptor area and

distance to the nearest sensitive receptor. Use of an LST analysis for a Project is optional. LSTs were developed in response to Governing Board's Environmental Justice Enhancement Initiative 1-4 and the LST methodology was provisionally adopted in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005. For the proposed Project, the primary source of possible LST impact would be during construction.

LST screening tables provide thresholds for 25, 50, 100, 200 and 500-meter source-receptor distances. Due to existing residences located within 25 meters of the eastern Project boundary, the 25-meter thresholds were considered for this Project. LST pollutant screening level concentration data is currently published for 1, 2 and 5-acre sites. For this Project, thresholds for a 5-acre site was used, although the approximately 35- acre Project development area is considerably larger and would generally have equipment operating at much greater distances from existing residences and in a less concentrated area. This evaluation is based on estimated daily construction emissions for the phase and year representing the highest daily emissions. Daily averages would be lower than the reported maximum amounts.

Table 4, Local Significance Thresholds (LST) and Peak Daily Onsite Emissions, shows the relevant thresholds and the estimated peak daily onsite emissions during the construction phases that would generate the highest level of onsite emissions for each pollutant evaluated for LST impacts. All construction projects in the County of Los Angeles must comply with the requirements of SCAQMD Rule 403, Fugitive Dust, which requires the implementation of Reasonably Available Control Measures (RACM) for all fugitive dust sources, and the AQMP, which identifies Best Available Control Measures (BACM) and Best Available Control Technologies (BACT) for area sources and point sources, respectively. Pursuant to SCAQMD Rule 403, the Project would be required implement adequate watering of exposed surfaces during the site preparation and grading phases.

Table 4
Local Significance Thresholds (LST)
and Peak Daily Onsite Emissions (pounds/day)

LST 5.0 acre/25 meters **West San Fernando Valley**	**NO_X**	**CO**	**PM-10**	**PM-2.5**
LST Threshold	221	1,158	11	6
Peak Onsite Daily Emissions [a]	**68**	**40**	**7.6**	**4.9**
Significant Impact? Y/N	No	No	No	No
Source: CalEEMod output, March 2, 2017. [a] PM-10 and PM-2.5 emissions estimates include compliance with SCAQMD Rule 403 requirements of water application for fugitive dust suppression.				

As seen in Table 4, the peak onsite emissions during construction would not exceed the applicable SCAQMD LSTs, and as such, potential LST impacts would be less than significant.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? ☐ ☐ ☒ ☐

Less Than Significant Impact. The SCAQMD's role is to protect the public's health from air pollution by overseeing and enforcing regulations. The SCAQMD's resolution activity for odor compliance is mandated under California Health & Safety Code Section 41700 and falls under SCAQMD Rule 402. The impact of an odor results from interacting factors such as frequency, intensity, duration, offensiveness, location, and

sensory perception. Odor-related symptoms reported in a number of studies include nervousness, headache, sleeplessness, fatigue, dizziness, nausea, loss of appetite, stomach ache, sinus congestion, eye irritation, nose irritation, runny nose, sore throat, cough, and asthma exacerbation. The SCAQMD recommends that odor impacts be addressed in a qualitative manner. Such an analysis shall determine whether the Project would result in excessive nuisance odors, as defined under the California Code of Regulations and Section 41700 of the California Health and Safety Code, and thus would constitute a public nuisance related to air quality.

According to the SCAQMD CEQA Air Quality Handbook, land uses typically producing objectionable odors include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The Project includes residential uses, which are not listed by the SCAQMD as a land use that produces objectionable odors. Other odors, including the smells of oil or diesel fuels, would be limited to Project construction and are highly localized and therefore would not disturb sensitive receptors, which are existing residences located within 25 meters of the eastern Project boundary. All off-road construction equipment would be covered by the ARB anti-idling rule (§2449(d)(2)), which limits idling to five minutes. Project construction would be temporary and would not produce odors long term. Therefore, the Project would not generate objectionable odors affecting a substantial number of people and impacts would be less than significant.

4. BIOLOGICAL RESOURCES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS)?	☒	☐	☐	☐

The following biological resources analysis is primarily based on the Biological Resources Inventory and Impact Analysis, prepared by Envicom Corporation, dated October 31, 2017, revised December 2018. A revised Biological Report is currently being prepared and the findings will be incorporated in the EIR.

Potentially Significant Impact. There is a small population of narrowleaf queen's-root (*Stillingia linearifolia*) within the grading footprint, which would be removed by the Project. Narrowleaf queen's-root is rare in the region and is considered locally sensitive by the County of Los Angeles. In addition, Catalina mariposa lilies (*Calochortus catalinae*), were located on the western portion of the site, in areas that would be preserved by the Project as open space. The Catalina mariposa lily is relatively secure locally and does not meet any CNPS criteria, which is why it is not considered locally significant. Many of the special-status species known to occur in the region are presumed to be absent from the Site due to lack of suitable habitat or because the Site is outside of the species known range or distribution.

Many of the special-status wildlife species that may potentially occur at the Site are capable of escaping harm during Project development (e.g., non-nesting birds and foraging bats), including grading or fuel modification, while others are vulnerable to direct impacts, including injury and mortality. In this case, the special-status species that could be directly impacted include potentially occurring land dwelling animals. Ground and vegetation disturbing activities including but not limited to grading and fuel modification, if conducted during the nesting bird season (February 1 to August 31), would have the potential to result in removal or disturbance to trees and shrubs that could contain active bird nests, including ground-nesting species. The loss of protected bird nests, eggs, or young due to Project activities would be a significant, but mitigable impact.

In addition, invasive plant species introduced to the Site in Project landscaping or in fuel modification zones could be dispersed by stormwater, wind, or wildlife, or by various other means to native habitats in the surrounding area, including the open space preserves located adjacent to the site. Additional detailed analysis and further discussion will be provided in the Environmental Impact Report (EIR).

b) Have a substantial adverse effect on any sensitive natural communities (e.g., riparian habitat, coastal sage scrub, oak woodlands, non-jurisdictional wetlands) identified in local or regional plans, policies,	☒	☐	☐	☐

regulations or by CDFW or USFWS?

Potentially Significant Impact. Grading for the proposed Project would result in the removal of California walnut woodland at the site, including within the California Walnut / Annual Grass-Herb Woodland Association and the California Walnut / California Sagebrush Woodland Association, which are considered to be sensitive plant communities by the California Department of Fish and Wildlife (CDFW). Grading for the proposed Project would result in the removal of California encelia scrub, including within the California Encelia Shrubland Alliance, which is considered to be a sensitive natural community by the CDFW. Additionally, grading for the proposed Project would result in the removal of Sawtooth goldenbush scrub, including within the Sawtooth Goldenbush/Annual Grass-Herb Shrubland Phase, which is considered to be a sensitive plant community by the California Department of Fish and Wildlife (CDFW). Grading for the Project would also result in the removal of 0.25 acres of oak woodland canopy area and understory habitat. Impacts to these sensitive plant communities would be less than significant with mitigation. Additional detailed analysis and further discussion will be provided in the EIR.

c) Have a substantial adverse effect on federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, and drainages) or waters of the United States or California, as defined by § 404 of the federal Clean Water Act or California Fish & Game code § 1600, et seq. through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐

Potentially Significant Impact. No wetlands or prominent streams were observed during biological surveys of the Project Site; however, erosional drainages with possible connections to an off-site blue-line stream were observed on the north-facing slopes along the northern boundary of the Project Site. The southeast portion of the site will be subjected to significant grading to accommodate the residential building pads. The proposed detention basin located on the northern portion of the site will be designed to capture and slow the flow of stormwater runoff to ensure that no on-site or offsite flooding is caused by the Project. A jurisdictional delineation will be provided in the EIR to determine if there were federally (or state) protected wetlands or streams at the Project Site. Project impacts to federally (or state) protected wetlands and streams, if present, would be potentially significant, but mitigable. Additional detailed analysis and further discussion will be provided in the EIR.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐

Less Than Significant Impact. The Project would remove approximately 16 acres of undeveloped natural habitats within the Santa Monica – Sierra Madre Connection habitat linkage. Project fuel modification would also impact up to an additional 0.86 acres of undeveloped natural habitats within the linkage, depending on site-specific fuel modification requirements, which are subject to approval by the Los Angeles County Fire Department (LACoFD). Project grading and fuel modification would remove or disturb only a very small portion of the linkage when compared to the overall size of the linkage as well as the width of the linkage at the location of the Project Site. The width of the linkage at the location of the Project Site ranges from

approximately 1.9 miles to over 5 miles, which significantly exceeds the minimum width of 1.2 miles imposed for all portions of the final linkage design, which was intended to ensure constriction points would not prevent movement of organisms through the linkage. Also, as the Project site is situated at the edge of existing contiguous urban development of the San Fernando Valley, where growth is planned, the Project would not significantly fragment natural habitats within the linkage, and the Project would not affect movement into or out of the focal points of the linkage, including the Santa Monica Mountains or Sierra Madre Mountains. For these reasons, development of the Project would not have a significant adverse effect on the value of the Santa Monica – Sierra Madre Connection habitat linkage for wildlife movement over the short or long-term, and grading and fuel clearance of undeveloped natural habitats within the linkage would be a less than significant impact. Additional discussion will be provided in the EIR.

e) Convert oak woodlands (as defined by the state, oak woodlands are oak stands with greater than 10% canopy cover with oaks at least 5 inch in diameter measured at 4.5 feet above mean natural grade) or other unique native woodlands (juniper, Joshua, southern California black walnut, etc.)? ☒ ☐ ☐ ☐

Potentially Significant Impact. The total canopy area and associated Spheres of Influence (SIs) around the tree canopy of the woodlands is approximately 0.74 acres and 4.59 acres, respectively. Project development will significantly impact four oak woodlands and remain outside the oak woodland canopies associated with the remaining three. A total of 0.25 acre of significant impacts to oak woodland canopy would occur in which would require mitigation. Project impacts to oak woodlands could be mitigated to a less than significant level. Additional detailed analysis and further discussion will be provided in the EIR.

f) Conflict with any local policies or ordinances protecting biological resources, including Wildflower Reserve Areas (L.A. County Code, Title 12, Ch. 12.36), the Los Angeles County Oak Tree Ordinance (L.A. County Code, Title 22, Ch. 22.174), the Significant Ecological Areas (SEAs) (L.A. County Code, Title 22, Ch. 102), and Sensitive Environmental Resource Areas (SERAs) (L.A. County Code, Title 22, Ch. 22.44)? ☒ ☐ ☐ ☐

Potentially Significant Impact. The Project is subject to the county's oak tree ordinance. As the Project implementation could impact oak trees, an oak woodland conservation management plan was prepared. The Project would comply with the county's oak tree ordinance and the mitigation based on that ordinance identified in the plan and as such the impacts would be substantially mitigated. The Project Site falls within the Rural Outdoor Lighting District and would comply with all regulations set forth by the Rural Outdoor Lighting District, including limitations on allowable light trespass, fully shielding outdoor lighting, and imposing maximum heights on fixtures. Project grading and fuel modification would not extend into the SEA. Therefore, the Project would not conflict with the Los Angeles County Significant Ecological Areas Ordinance. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

g) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved state, regional, or local habitat conservation plan? ☐ ☐ ☐ ☒

No Impact. There are no Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans that are applicable to the Project Site. The Project would have no impact with respect to conflicts with habitat conservation plans.

5. CULTURAL RESOURCES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines § 15064.5?	☐	☐	☒	☐

The following cultural resources analysis is primarily based on the Phase I(b) Cultural Resource Assessment, prepared by Envicom Corporation, dated November 12, 2018 and included as **Appendix C.** The Phase I(b) expanded on the previous Phase I(a) Cultural Resource Assessment conducted in April 2017 by Envicom Corporation.

Less Than Significant Impact. The United States Geographical Survey (USGS) historic map database was reviewed as part of the Phase I(b) Cultural Resource Assessment (Phase I(b)). Sixteen historic USGS and other government maps were reviewed for a historic history of the Project property dating back to 1903. The database was negative for historic built environment resources with any development shown on the maps outside of the Project development area. There is no other development on the historic maps until the 1960s when roads and flood control start to show up on the Project Site. Based off of Google Earth images that go back to 1989, there are clear roads and flood control features on the property.

Due to the Project's historic cultural resource records search being negative for early 20th Century cultural resources within the Project development area, and due to the limited early historic development of the Project property region, the Phase I(b) considers the Project to not be sensitive for historic cultural resources. Therefore, the Project has a less than significant impact to historical resources.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines § 15064.5?	☒	☐	☐	☐

Potentially Significant Impact. On February 27, 2017, Envicom requested a record search of the South Central Coastal Information Center (SCCIC) database for known cultural resources within the Project area and nearby region. The record search included the Project location, not including the open space set aside on the property, and a 0.5-mile study area, as shown in **Figure 5, Project Study Area** placed around the development area to provide a regional context. The findings resulted in one cultural resource within the development area and one cultural resource report. The one report from the record search had a negative finding for cultural resources. The cultural resource within the proposed Project development is CA-LAN-1223. CA-LAN-1223, first recorded in 1985, is located within the Project property and was identified through surface artifacts. The Phase I(b) surface survey and shovel test pit placement was performed after the Phase I(a) concluded that due to thick vegetation on the Project Site a more thorough study would need to occur. The Phase I(b) consisted of shovel test pits and surface surveys. During the surface survey, three prehistoric artifacts were located that matched with the site form artifacts, which described similar material.

Figure 5, Project Study Area

There was a total of 22 shovel test pits along four transects around the originally mapped location of CA-LAN-1223. Another area along the ridgeline saddle was tested with ten shovel test pits in a single transect as well. None of the shovel test pits were positive for prehistoric cultural resources. In addition, the Native American Heritage Commission (NAHC) was contacted on February 27, 2017, with a request to search their database for cultural resources within the Project Area of Direct Impact (ADI) and within the larger 0.5-mile study area. A response from the NAHC was received on March 3, 2017, which was negative for cultural resources within the Project Site.

The conclusion from the Phase I(b) was that the original site form was describing a scant scatter of prehistoric artifacts that included lithic material from stone tool manufacturing and from limited plant material processing. The 22 shovel test pits from the originally mapped location demonstrated that this material was not numerous, nor deep, and that associated prehistoric features were not present. The ten shovel test pits along the ridgeline did not find any prehistoric artifacts and it was concluded that there was no evidence of prehistoric occupation or use of the ridgeline saddle area.

Due to the number of shovel test pits, the lack of extensive surface artifacts, and the lack of prehistoric artifacts recovered from the shovel test pits, the Phase I(b) concluded that the potential was low for recovering additional prehistoric artifacts from the CA-LAN-1223 cultural resource. Overall, there was only a limited number of prehistoric artifacts found. Of the artifacts found, they were unexceptional with no artifacts indicating greater site complexity. For these reasons, the Phase I(b) recommends that CA-LAN- 1223 is not a significant resource under the California Register eligibility criteria. Although CA-LAN-1223 was not determined to be significant, the record search was positive for cultural resources and indicated the development area was sensitive for prehistoric cultural resources. Additional detailed analysis and further discussion will be provided in the EIR.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐

Potentially Significant Impact. The site is above sandstone bedrock including part of the Monterrey Formation, which is known to be fossil-bearing. Through the surface observations of the exposed sandstone rock units, the Phase I(b) survey concluded that the area is sensitive for paleontological resources. These resources could be impacted during construction grading activities and would require monitoring during ground-moving activities. Additional detailed analysis and further discussion will be provided in the EIR.

d) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☒	☐

Less Than Significant Impact. The proposed Project Site was surveyed in the Phase I(b) and was determined sensitive for cultural resources. There was no indication or evidence found of formal or informal burial of human remains. The cultural resource found on site was determined within the Phase I(b) to not be significant and did not include human remains. While this Project Site did not have any evidence indicating human remains, there was evidence of cultural resources on the Project Site and within the study area. Also, due to the Project activities which would involve grading, there is always potential for discovery of human remains during earthwork. State of California Health and Safety Code Section 7050.5 addresses findings of human remains. This code section states that in the event human remains are uncovered, no further

disturbance shall occur until the County Coroner has made a determination as to the origin and disposition of the remains pursuant to Public Resource Code (PRC) Section 5097.98. The Coroner must be notified of the find immediately, together with the City and the property owner. Therefore, the impact related to the disturbance of human remains would be less than significant.

6. ENERGY

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐

Less Than Significant Impact. As a matter of regulatory compliance, the Project would be required to comply with California Green building codes and Los Angeles County Green Building Standards in effect at the time of permit issuance. Energy efficient design features shown on the Project Architectural Plans would include sealing building openings, Energy Star rated appliances, and all walls, attics, and pipes insulated with proper insulation densities. In addition, the Project would incorporate design features including an electric vehicle (EV) charging station for each dwelling unit to promote sustainable modes of travel and rooftop solar panels on each unit to supplement electric generation. These energy efficient project design features would ensure the Project would not result in a wasteful, inefficient, or unnecessary consumption of energy resources.

The Project will comply with all applicable and relevant policies and codes and applicable energy efficiency measures. These include adherence to policies encouraging development in urban and suburban areas, encouraging development in proximity to major transportation stops to reduce automobile dependence and vehicle miles traveled and encouraging maximum amounts of energy conservation in new development and municipal operations. Energy efficiency and conservation will be implemented in the construction phase through the use of energy efficient equipment and sustainably sourced materials and recycling; and in the operations phases by incorporating the use of reclaimed water and renewable energy where feasible and would not result in wasteful, inefficient or unnecessary energy consumption. Therefore, the Project would have a less than significant impact due to wasteful, inefficient, or unnecessary consumption.

b) Conflict with or obstruct a state or local plan for renewal energy or energy efficiency?	☐	☐	☒	☐

Less Than Significant Impact. The proposed Project design, 25 single-family homes, represents a minimal amount of the County's energy demand and does not conflict with a state or local plan for renewable energy or energy efficiency. As a matter of regulatory compliance, the Project would be required to comply with the County Green Building Standards Code, Green Building Standards Code (CALGreen Code or CGBSC) of Title 24 of the California Code of Regulations, and the State of California Green Code, in effect at the time of Project approval. These standards require applicable projects to comply with energy saving building standards. CALGreen's mandatory measures establish a minimum for green construction practices. Project specific CGBSC compliance measures will be noted in the Project architectural plans. As stated above, the project design features include an EV charging station for each dwelling unit and rooftop solar panels on each unit which would ensure the Project would not result in a wasteful, inefficient, or unnecessary consumption of energy resources. As the Project would also comply with regulatory requirements and consist of energy efficient project design features, the Project would not conflict with or obstruct a state or local plan for

renewable energy or energy efficiency, and impacts would be less than significant. Given the Project incorporates the efficient energy consumption measures required by the County Green Building Standards Code and CALGreen and consists of energy efficient project design features, the Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and impacts would be less than significant.

7. GEOLOGY AND SOILS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known active fault trace? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐

The following geology and soils analysis is primarily based on the Preliminary Geotechnical Report, prepared by Pacific Soils Engineering Inc., dated July 10, 2006, and included as **Appendix D**. A subsequent review of this document was conducted by G3Soilworks, Inc. on September 14, 2017 to assess the applicability of the previously approved reports and whether any changes have occurred to the Project Site since 2006. The 2017 review found the original report remained accurate and adequate and is included as **Appendix E**. Other geotechnical documentation includes the Response to Los Angeles County Department of Public Works Geotechnical Materials Division Geologic and Soils Engineering Review Sheets prepared by Pacific Soils Engineering Inc., dated February 14, 2007 and included as **Appendix F.** The Project will comply with the findings and recommendations of the Preliminary Geotechnical Report, which will inform the appropriate procedures for site prep, earthwork, grading, and structural elements of the Project.

Less Than Significant Impact. The Project Site is not located within any Earthquake Fault Zone or Alquist-Priolo Earthquake Fault Zone mapped by the Earthquake Zones of Required Investigation.[10] The study site is located within seismically active southern California, meaning moderate to strong ground motions resulting from future regional earthquakes could occur during the life of the Project. However, the Project would be required to incorporate seismic design elements of the Office of Statewide Health Planning and Development, California Building Code, and Uniform Building Code (UBC), and comply with the geotechnical engineer's recommendations for the Project. As such, impacts pertaining to earthquake fault zones would be less than significant.

ii) Strong seismic ground shaking?	☐	☐	☒	☐

Less Than Significant Impact. As described above, the Project Site is not located within an Alquist-Priolo Earthquake Fault Zone and no active faults have been mapped on the Site. As the Site is located

[10] California Geologic Survey, Earthquake Zones of Required Investigation, Accessed on June 17, 2019 at: https://maps.conservation.ca.gov/cgs/EQZApp/app/.

within southern California, a seismically active region, there is potential for moderate to strong ground shaking. However, compliance with the geotechnical engineer's recommendations for the Project, existing policies, regulations and statutes would minimize risks to structures and residents on the Project Site. Therefore, impacts to seismic ground shaking would be less than significant.

iii) Seismic-related ground failure, including liquefaction and lateral spreading? ☐ ☐ ☒ ☐

Less Than Significant Impact. Liquefaction occurs when seismic agitation of loose saturated and silty sands result in a build-up of pore water pressures and these pressures are sufficient to overcome overburden stresses. Fine sands and silts are potentially subject to liquefaction under seismic condition and such soils may behave like a liquid when shaken by an earthquake. In the case of lateral spreading, the ground may slide down very gentle slopes or toward stream banks riding on a buried, liquefied layer.[11] The Project Site is located within a Seismic Hazard Zone as mapped by the California Geological Survey and lies within a liquefaction zone.[12] However, liquefaction potential within the developed portions of the subject property is considered minimal due to the planned removal of loose, soft alluvial, colluvial and artificial fill material within the grading limits and the in-place density of the proposed compacted fill and bedrock materials. Additionally, compliance with the geotechnical engineer's recommendations for the Project, existing policies, regulations and statutes would minimize risks to structures and residents on the Project Site. Therefore, impacts to seismic-related ground failure would be less than significant.

iv) Landslides? ☐ ☐ ☒ ☐

Less Than Significant Impact. The Project Site is located within a Seismic Hazard Zone as mapped by the California Geological Survey and lies within a landslide zone.[13] Additionally, the Project Site is located within a hillside region. However, based on the stability analyses performed in the Preliminary Geotechnical Report of selected proposed cut, fill and natural slopes within the Project grading limits, the Site meet or exceeds the County of Los Angeles minimum requirements for both static and pseudostatic conditions. Additionally, compliance with the geotechnical engineer's recommendations for the Project, existing policies, regulations and statutes would minimize risks to structures and residents on the Project Site. Therefore, impacts related to landslides would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil? ☐ ☐ ☒ ☐

Less Than Significant Impact. Development of the Project has the potential to result in the erosion of soils during earthwork and construction activities. Erosion and/or the loss of topsoil during construction is addressed through implementation of erosion controls and best management practices (BMPs) to meet standard National Pollutant Discharge Elimination System (NPDES) requirements for storm water quality. The NPDES Construction General Permit is required for projects that disturb an area of at least one acre, and compliance with its requirements is typically achieved through preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which would minimize erosion and alleviate the potential for debris and pollutants to flow off-site. Required compliance with the NPDES through SWPPP BMPs would

[11] USGS, Earthquake Glossary, Lateral Spread or Flow, Accessed on June 18, 2019 at: https://earthquake.usgs.gov/learn/glossary/?term=lateral%20spread%20or%20flow.
[12] California Geologic Survey, Earthquake Zones of Required Investigation, Accessed on June 17, 2019 at: https://maps.conservation.ca.gov/cgs/EQZApp/app/.
[13] Ibid.

assure that the degradation of water quality during construction would be avoided. In addition, the Project would be required to obtain a grading permit, for which the Department of Public Works would require compliance with the grading best practices manual. Therefore, Project impacts associated with soil erosion or the loss of topsoil during construction would be less than significant.

During operation, the Project would also comply with the County's Low Impact Development (LID) Standards,[14] which manage stormwater runoff to reduce erosion, as well as with the Regional Water Quality Control Board's (RWQCB's) Municipal Separate Storm Sewer System (MS4) Permit CAS004001.[15] Therefore, the Project would have a less than significant impact in regard to substantial erosion or the loss of topsoil during operations.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐

Less Than Significant Impact. According to the Preliminary Geotechnical Report, naturally occurring weathering products of the surficial units and bedrock overlie nearly the entire site except where disturbed and removed by previous grading activity. Typically consisting of porous, loose, silty to sandy clay which fragments derived from the underlying parent rock, these soils range in thickness from approximately ½ to 3 feet. Based on the stability analyses, the Site meet or exceeds the County of Los Angeles minimum requirements for both static and pseudostatic soil conditions. The Project will comply with the findings and recommendations of the Preliminary Geotechnical Report, which will inform the appropriate procedures for site prep, earthwork, grading, and structural elements of the Project. Additionally, compliance with existing policies, regulations and statutes would minimize risks to structures and residents on the Project Site. Therefore, impacts related to unstable soils would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐

Less Than Significant Impact. Expansive soils are soils that shrink and swell in response to changes in moisture content and potentially causing damage to structures. The local geology at the Site is characterized by Miocene sedimentary rocks including the Modelo and Topanga Formations. Based upon test results conducted on selected samples, the rock from the Modelo Formation and alluvial materials derived from it are anticipated to possess expansive potential ranging from very low to high when tested in accordance with UBC Standard 18-2. Topanga Formation siltstone and claystone, if encountered, could have expansion potential ranging from medium to high. Due to the variability in expansion potential of the onsite bedrock, the soils engineer/engineering geologist should be consulted with regard to exposed conditions. Overall, the Project would comply with the County building code and would be required to follow recommendations from a geotechnical engineer or equivalent. Design recommendations to address expansive soil include, but are not limited to, the utilization of post-tensioned slabs, mat-slabs or other foundation systems to account for site

[14] Los Angeles County, Chapter 12.84 – Low Impact Development Standards, Accessed on June 18, 2019 at: https://library.municode.com/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT12ENPR_CH12.84LOIMDEST.

[15] California RWQCB, Los Angeles Region, Order No R4-201200175, NPDES Permit No. CAS004001, Waste Discharge Requirements For MS4 Discharges Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating From the City of Long Beach MS4.

specific geotechnical conditions, deepened footing and setbacks, and backfill utility trenches with lean concrete to minimize moisture penetration. Therefore, the Project would have a less than significant impact in regard to risks associated with expansive soils.

e) Have soils incapable of adequately supporting the use of onsite wastewater treatment systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

No Impact. The Project will be served by the Las Virgenes Municipal Water District for Potable water. Los Angeles County Public Works infrastructure[16] will convey the wastewater from the 25 residential homes to the point of interconnection with the City of Los Angeles sewer line at Randiwood Lane to the east. No septic tanks or alternative wastewater disposal methods are proposed. As such, there are no impacts related to onsite wastewater treatment systems.

f) Conflict with the Hillside Management Area Ordinance (L.A. County Code, Title 22, Ch. 22.104)?	☐	☐	☒	☐

Less Than Significant Impact. Hillside Management Areas (HMAs) are defined as areas with 25% or greater natural slopes. As the application for a vesting tentative tract map was deemed complete prior to January 8, 2008, the Project is analyzed according to the local regulations in place at the time, including the General Plan 1980 and the 1982 Hillside Management and Significant Ecological Areas Ordinance, regulated through Section 22.56.215 of Title 22, Los Angeles County Zoning Code. The Project is zoning compliant and therefore would not conflict with the goals and policies related to Hillside Management Area Ordinance, as further analyzed in Section 11, Land Use and Planning. The Project impacts are less than significant.

[16] County of Los Angeles, Department of Public Works, Inter-departmental Correspondence regarding Draft Initial Study, Tract No. 52652-West Hills Crest Residential Project, County Unincorporated Community of West Hills, February 24, 2020.

8. GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Generate greenhouse gas (GHGs) emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

The project-specific analysis pertaining to greenhouse gas emissions is predominately based on the Project's Air Quality Impact Analysis, prepared by Envicom Corporation, dated March 14, 2017, and included as **Appendix B.**

Less Than Significant Impact. Greenhouse gases (GHGs) can contribute to an increase in the temperature of the earth's atmosphere by absorbing infrared radiation transmitted by the sun, thereby trapping and retaining heat within the atmosphere. The principal GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. The CEQA Guidelines define the following as GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs).[17] Each GHG differs in its mass and ability to trap heat within the atmosphere based on factors such as capacity to directly absorb radiation, length of time in the atmosphere, and chemical transformations that create new GHGs. Because the warming potential of each GHG differs, GHG emissions are typically expressed in terms of carbon dioxide equivalents (CO_2e), providing a common expression for the combined volume and warming potential of the GHGs generated by an emitter. Total GHG emissions from individual sources are generally reported in metric tons (MT) and expressed as metric tons of carbon dioxide equivalents ($MTCO_2e$).

During Project construction, the CalEEMod model estimates that the construction activities would generate a total of 780 MT CO_2e emissions. SCAQMD GHG emissions evaluation guidance is to amortize construction emissions over a 30-year lifetime, which results in a Project amortized annual emissions of approximately 26 MT CO_2e emissions.

There are currently no locally adopted significance thresholds for GHG emissions. The SCAQMD CEQA Greenhouse Gas Significance Threshold working group recommended a threshold of 3,000 MT $MTCO_2e$ per year for non-industrial land use projects for use where SCAQMD is the lead agency[18] As there were no other locally adopted thresholds for other lead agencies, recommended tiered thresholds from the SCAQMD CEQA Greenhouse Gas Significance Threshold working group are used as a point of comparison. The purpose of quantifying the Project's GHG emissions is to satisfy State CEQA Guidelines Section 15064.4(a), which calls for a good faith effort to describe and calculate emissions.

[17] California Code of Regulations, Section 15364.5 Greenhouse Gas, Article 20, Definitions.

[18] South Coast Air Quality Management District, Greenhouse Gases (GHG), CEQA Significance Thresholds, Accessed on June 17, 2019 at: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/ghg-significance-thresholds/page/2.

During Project operations, the CalEEMod model estimates that the Project's annual operational GHG emissions from a combination of area sources, energy use, water use, and waste disposal would be 585.7 MT CO_2e. With the addition of the amortized construction GHG emissions discussed above, the Project would result in annual emissions of approximately 611.7 MT CO_2e, which would not exceed the draft 3,000 $MTCO_2e$ per year screening criteria for non-industrial projects, and therefore the Project's operational GHG emissions impact would be less than significant.

b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Less Than Significant Impact. The Unincorporated Los Angeles County Community Climate Action Plan (CCAP) 2020's complies with CEQA by quantifying all primary sectors of GHG emissions within the unincorporated areas for years 2010 and 2020; including a reduction target of at least 11 percent below 2010 levels, which is consistent with the recommendations in the AB 32 Scoping Plan for municipalities to support the overall AB 32 reduction targets; analyzing community emissions for the unincorporated areas as a whole and including predicted growth expected by 2020; including specific measures to achieve the overall reduction target; including periodic monitoring of plan progress; and submitting the CCAP to be adopted in a public process following compliance with CEQA. There are 26 local actions included in the CCAP. The local actions are grouped into five strategy areas: green building and energy; land use and transportation; water conservation and wastewater; waste reduction, reuse, and recycling; and land conservation and tree planting.[19]

The majority of emission reductions will be achieved by statewide initiatives to improve vehicle engine efficiency and reduce the carbon intensity of transportation fuels. The State's Renewable Portfolio Standard will increase the amount of electricity generated by renewable resources, reducing GHG emissions from electricity consumption. Other statewide actions include Pavley and Low Carbon Fuel Standards for On-Road Transportation and the California Cap and Trade Program. The Project would not conflict with these applicable statewide initiatives. Additionally, the Project would comply with Title 24 standards for Building Energy Efficiency and appliances purchased for the Project would be consistent with energy efficient standards. The Project would incorporate project-specific design features including an electric vehicle (EV) charging station for each dwelling unit to promote sustainable modes of travel and rooftop solar panels on each unit to supplement electric generation. These energy efficient project design features would ensure the project would not result in unnecessary GHG emissions. As such, the Project would not conflict with the CCAP, regarding GHG reduction strategies. Therefore, the Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs per SCAQMD's recommended thresholds, and impacts would be less than significant.

[19] County of Los Angeles, Department of Regional Planning, Final Unincorporated Los Angeles County Community Climate Action Plan 2020, August 2015, Accessed on June 17, 2019 at: http://planning.lacounty.gov/assets/upl/project/ccap_final-august2015.pdf.

9. HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, storage, production, use, or disposal of hazardous materials?	☒	☐	☐	☐

The following hazards analysis is primarily based on the Phase I Environmental Site Assessment Report (Phase I ESA), prepared by G3SoilWorks on November 3, 2015 and included as **Appendix G.** Due to the age of this report, a new Phase I ESA will be prepared for the Project and any applicable new data will be incorporated in the EIR discussion.

Potentially Significant Impact. Implementation of the Proposed Project may involve an increase in the transport, use, and disposal of hazardous materials associated with construction and construction equipment such as fuels, lubricants, solvents and paints. However, any future development and use of land, as designated under the proposed Project, would be required to comply with applicable federal, state and local regulations related to hazardous materials. Required compliance with these regulations guiding the storage, use and containment are expected to ensure impacts related to transport, use and disposal of hazardous materials would be less than significant. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials or waste into the environment?	☒	☐	☐	☐

Potentially Significant Impact. Implementation of the Project may pose a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment such as those identified previously. A recognized environmental condition (REC) is "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions." [20] Based on the Phase I ESA, RECs on the property include:

- A total of fifteen oil wells, five observed in Site Reconnaissance and ten reported in the Department of Oil, Gas, and Geothermal Resources (DOGGR) files.[21] Of those reported in the DOGGR files, seven are identified as plugged, two as idle and one as a dry hole.[22] The status of the wells identified in the field is unknown.

[20] ASTM, E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.
[21] None of the wells identified by DOGGR were located during the Site Reconnaissance.
[22] DOGGR, Well Finder, Accessed on September 25, 2019 at: https://maps.conservation.ca.gov/doggr/wellfinder/#openModal/-118.66471/34.19312/17.

- The two abandoned storage tanks located on site—one corrugated metal tank observed on a slope near the center of the Site and a steel storage tank was observed near the exposed oil wells in the north potion of the site.

DOGGR identifies the Project Site as located within the Canoga Park oil/gas field.[23] The Phase I ESA recommends that the DOGGR be notified with a request to conduct a file review and provide their requirements for the disposition of each well based on the proposed land use and implementing the above DOGGR requirements/recommendations and that the immediate vicinity of the wells be assessed and residual impacts from the drilling and use of the wells, if any, be remediated. Based on preliminary discussions with DOGGR, two of the wells located within the Project boundary may be leaking oil and/or gas and clean up orders have been issued to the prior well operator, not the Project. If the prior operator cannot be identified then DOGGR will assume the responsibility for proper well closure. That activity will be coordinated with the County and the Project development team. Going forward the Project would be required to comply with all statutory and regulatory provisions pertaining to working around idle wells. The statutory provisions for idle wells are found in Public Resources Code Sections 3206, 3206.1, 3206.3, 3206.5, including requirements to either file an annual idle well fee or file an Idle Well Management Plan (IWMP) for the management and elimination of the operator's long-term idle wells.[24] The regulatory provisions are found in the California Code of Regulations, Title 14, Division 2, Chapter 4, Subchapters 1 and 2, Section 1723 and ensure abandoned wells are properly decommissioned.[25] There is ongoing consultation with DOGGR to develop an appropriate approach to address the historic on-site wells. In addition, the EIR will further address on-site wells and potential methane gas emissions.

Impacts may include drilling mud pits and oil or fuel impacted soil. In addition, the Phase I ESA recommends the two storage tanks and on-site concrete debris should be removed from the site for general environmental and geotechnical improvements. Preparation of a comprehensive Stormwater Pollution and Prevention Plan (SWPPP) is a regulatory requirement that will be implemented to prevent further on-site erosion of soil and slope failure. Compliance with the current Phase I recommendations and all applicable federal, state and local regulations would ensure impacts related to significant hazards to the public would be less than significant. However, due to the age of the current Phase I, a new Phase I Environmental Site Assessment will be completed for the Project and any applicable information found as a result will be incorporated in the additional detailed analysis and further discussion to be provided in the EIR.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of sensitive land uses? ☒ ☐ ☐ ☐

Potentially Significant Impact. Sensitive land uses include residential zones, schools, hospitals or other similar residential, educational, or health care facility.[26] There are no schools located within one-quarter mile

[23] DOGGR, Well Finder, Accessed on December 6, 2019 at: https://maps.conservation.ca.gov/doggr/wellfinder/#openModal/-118.66347/34.19308/16.

[24] Department of Conservation, Division of Oil, Gas and Geothermal Resources, For Operators-Idle Well Program, Accessed on October 3, 2019 at: https://www.conservation.ca.gov/dog/idle_well/Pages/idle-well-operators.aspx#iwmp.

[25] California Department of Conservation, Division of Oil, Gas and Geothermal Resources, California Statues and Regulations for the Division of Oil, Gas and Geothermal Resources, January 2018, Accessed on June 25, 2019 at: https://www.conservation.ca.gov/index/Documents/DOGGR%20Statutes%202018%20%20updated%204-4.pdf.

[26] Los Angeles County Department of Regional Planning, Title 22 (Planning and Zoning), Title 22.140.00, Accessed on June 18, 2019 at: http://file.lacounty.gov/SDSInter/bos/supdocs/97129.pdf.

of the proposed Project. The closest sensitive land uses that could potentially be subject to hazardous emissions or acutely hazardous materials, substances, or waste within one-quarter mile of the Project would be existing residences adjacent to the Project Site's eastern boundary. Based on preliminary discussions with DOGGR the Project Site is located within the Canoga Park oil/gas field and two of the wells located within the Project boundary may be leaking oil and/or gas and clean up orders have been issued to the prior well operator, not the Project. The 2015 Phase I ESA did not identify these existing hazards. As such, additional detailed research and analysis will be conducted and further discussion will be provided in the EIR.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment? ☐ ☐ ☐ ☒

No Impact. A search of the California Environmental Protection Agency's (CalEPA's) Cortese List Data Resources databases[27] showed that the Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. The search involved the following records:

- Department of Toxic Substances Control's (DTSC's) Envirostor Hazardous Waste and Substances Site List;
- State Water Resources Control Board's (SWRCB's) GeoTracker database (for Leaking Underground Storage Tank (LUST) sites, Department of Defense sites, and Cleanup Program sites, as well as GeoTracker irrigated lands, oil and gas production, operating permitted USTs, and Land Disposal sites); and,
- CalEPA's list of solid waste disposal sites; and the SWRCB's list of Cease and Desist Orders and Cleanup and Abatement Orders.
- Information required from the DTSC under Government Code Section 65962.5(a).

The Project is not located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would not create a significant hazard to the public or the environment. Therefore, the Project would have no impact associated with being located on a site that is included on a list of hazardous materials sites.

e) For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? ☐ ☐ ☐ ☒

No Impact. The Project is not located within 2 miles of a public airport. The closest airport to the Project site is the Van Nuys Airport, located approximately 11 driving miles east of the Project site. The airport is owned and operated by the County of Los Angeles. The County of Los Angeles Airport Land Use Commission (ALUC) oversees implementation of the Los Angeles County Airport Land Use Plan (LUP) for each of its airports, including the Van Nuys Airport. The Project site is not located within the runway

[27] California Environmental Protection Agency, Cortese List Data Resources, Accessed on June 17, 2019 at: https://calepa.ca.gov/sitecleanup/corteselist/.

protection zone or airport influence area of the Van Nuys Airport designated by the LUP.[28] Therefore, the Project would result in no impact associated with airport safety hazards.

f) Substantially impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan? ☒ ☐ ☐ ☐

Potentially Significant Impact. The Project site is not located directly along an emergency response plan route. However, Valley Circle Blvd, a designated disaster route, is located approximately 0.5 miles east of the Project site.[29] The Los Angeles County Fire Department **(**LACoFD) provides fire, safety and emergency medical services to the Project area and the Los Angeles Sheriff Department (LASD) provides law enforcement services. Although response times are not an effect under CEQA, coordination among the various County departments is necessary to ensure adequate emergency response. LACoFD has already reviewed the Project and has determined that the Project would not create a life safety concern, as mentioned in a letter that can be found in **Appendix H**, from LACoFD dated March 13, 2008. It is expected that compliance with applicable regulations and implementation of the required policies would ensure the risk of impaired implementation or physical interference with an adopted emergency response plan or emergency evacuation plan is less than significant. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving fires, because the project is located:

i) within a high fire hazard area with inadequate access? ☒ ☐ ☐ ☐

Potentially Significant Impact. According to the County of Los Angeles General Plan (Figure 12.5, Fire Hazard Severity Zones Policy Map), the Project is located within a Very High Fire Hazard Severity Zone.[30] The State Board of Forestry and the California Department of Forestry and Fire Protection (CalFire) have provided comprehensive guidance for wildland fire protection in California. The Fire Plan Unit of LACoFD is in charge of implementing the California Fire Plan in Los Angeles County. The Strategic Fire Plan prepared by LACoFD identifies and prioritizes pre- and post-fire management strategies and tactics to reduce loss of life, property, and natural resources.[31] A letter from the LACoFD dated March 13, 2008, approved the Project with minor conditions and determined that "the proposed improvements will not create a life safety concern and will in turn provide an improved buffer for the existing residential community."

The Project would also comply with the Conceptual Fire Protection Plan for West Hills Community, submitted June 24, 2016 and revised January 21, 2019, and included as **Appendix I.** The Conceptual Project Fire Protection Plan would be reviewed and approved by the LACoFD and ensure the Project's

[28] Los Angeles County Department of Regional Planning for the Los Angeles County Airport Land Use Commission. 2004. Los Angeles County Airport Land Use Plan. Revised December 1.
[29] Los Angeles County Department of Regional Planning, General Plan Plate 8: Critical Facilities and Lifeline Systems, January 1990.
[30] Los Angeles County Department of Regional Planning, General Plan Figure 12.5: Fire Hazard Severity Zones Policy Map, May 2014.
[31] Los Angeles County Fire Department, 2017-2021 Strategic Plan, Accessed on June 18, 2019 at: https://www.fire.lacounty.gov/wp-content/uploads/2018/10/LACoFD-Strategic-Plan-2017-2021.pdf.

compliance with all applicable rules and regulations of the LACoFD including roads, fire flow, ignition resistant building construction and vegetative fuel modification. In addition, the Project would include concrete block walled closets within the first floor of every residence to provide fire shelter in case of an emergency. With these Project design features, and as the Project would comply with all applicable fire and safety codes and standards of the LACFD, including the Fuel Modification Plan, the Project is expected to result in a less than significant impact related to fires. Nevertheless, additional detailed analysis and further discussion of this topic will be provided in the EIR.

ii) within an area with inadequate water and pressure to meet fire flow standards? ☐ ☐ ☒ ☐

Less Than Significant Impact. In October 2006, the Las Virgenes Municipal Water District (LVMWD) completed a Preliminary Water System Design Report for the Project Site (Tract 52652). The findings from this report identified that the Project Site was originally to be Phase II of the currently existing development adjacent to the east (Tract 23762) that was Phase I, constructed in 1965. Phase I consists of 175 single-family residences. The second phase (Project Site), which consisted of 30 single-family residences, was not constructed largely because a pump station and water storage tank was required to serve the proposed higher elevation residences as well as 25 of the higher parcels in Phase I to the east across Randiwood Lane. The cost for this new infrastructure would have been borne by the developer. Occasionally there are low pressure complaints from residents in the existing development to the east, and in response LVMWD prepared Report No. 2228.00 which concluded that conditions of service met district rules, but that service pressures dipped as low as 37 psi at some residences and that is less than the District standard minimum service pressure of 43 psi. A new pressure zone is required to serve the Proposed Project Site and the higher elevation residences in the existing development. This system has been planned since the 1960s as part of the original two-phase development. To serve the Project and bring pressures to District standard for existing higher elevation residences to the east, a water storage tank and pump station will be required in accordance with the District policy that fire flow should not be dependent on pumping. Construction of the Project will bring daily residential pressures to the District standard minimum pressure of 43 psi for existing residences, as well as provide critical water storage capacity to combat fires for the larger area. This would be an improvement over the current condition and therefore the proposed Project impacts would be less than significant. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

iii) within proximity to land uses that have the potential for dangerous fire hazard? ☒ ☐ ☐ ☐

Potentially Significant Impact. The Project site is located in an undeveloped area characterized by moderate to steep hillsides west of Randiwood Lane at the western edge of the San Fernando Valley adjacent to the Ventura County line. It is bordered on the east entirely by single-family residential development across Randiwood Lane, on the north by El Escorpion Park, on the south by Knapp Ranch Park West and a Los Angeles City Department of Water and Power facility including two large water tanks. All of these land uses are located in a VHFHSZ. The land uses surrounding the Project site are subject to wildfire hazards given their proximity to open space. Five fires have burned the site or portions of the site since 1967. The Devonshire – Parker Fire burned nearly the entire site except for a small portion of its eastern end in October 1967. The Clampitt Fire burned the entire site in September 1970, and the Dayton Canyon Fire burned the approximate western two-thirds of the site in October 1982. The Topanga Fire of September 2005, which burned nearly the entire site leaving only the eastern margin of

the property intact. The last fire to affect the site was the Woolsey fire, which burned nearly the entire site in November 2018. Since the Project would be subject to the review and approval of the LACFD and would be required to implement an approved Fuel Modification Plan, it is expected the Project would have a less than significant impact related to its proximity to land uses that have the potential for dangerous fire hazards. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

h) Does the proposed use constitute a potentially dangerous fire hazard? ☒ ☐ ☐ ☐

Potentially Significant Impact. The Project site is currently undeveloped. and located in a VHFHSZ. The Project would be required to comply with all applicable fire and safety codes and standards of the LACFD, including implementation of the approved Fuel Modification Plan. Therefore, impacts are expected to be less than significant. Nevertheless, additional detailed analysis and further discussion of fire flow will be provided in the EIR.

10. HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☒	☐	☐	☐

The following hydrology analysis is based on the approved Drainage Concept/Standard Urban Storm Water Mitigation Plan (SUSMP) prepared by S.E.C. Civil Engineers, Inc. dated June 21, 2007.

Potentially Significant Impact. The Project will require significant grading on the southeast portion of the Project Site during construction and would implement best management practices (BMPs) to meet standard NPDES requirements for storm water quality. The NPDES Construction General Permit is required for projects that disturb an area of at least one acre, and compliance with its requirements is typically achieved through preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which would minimize erosion and alleviate the potential for degrading surface or ground water quality. Required compliance with the NPDES through SWPPP BMPs would assure that the degradation of water quality during construction would be avoided. In addition, the Project would be required to obtain a grading permit, for which the Department of Public Works would require compliance with the grading best practices manual.

During operations, the Project would comply with the approved Drainage Concept/SUSMP, and the post-project flows would not exceed or be substantially greater than pre-project flows. No other uses associated with the Project would violate water quality standards or waste discharge requirements, and the Project would comply with applicable Federal, State and local standards and requirements. As such, the Project would have a less than significant impact in regard to water quality standards or waste discharge requirements. Nevertheless, additional detailed analysis and discussion will be provided in the EIR.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☒	☐	☐	☐

Potentially Significant Impact. According to the Preliminary Geotechnical Report included as **Appendix D,** groundwater was not encountered in the main canyon area or east canyon during boring tests. No surface water seeps were noted during the field investigation. As such, excavations are not expected to encounter groundwater.

The Project will be served by the Las Virgenes Municipal Water District (LVMWD) for potable water supply and the Project does not proposed groundwater extraction. No wells will be developed and the Project is a low-density residential subdivision with mostly pervious surfaces to be landscaped and with approximately 35% of the total site acreage to remain as open space. The Project would be required to comply with all applicable

Federal, State and local standards and requirements. Therefore, the Project would have a less than significant impact to the groundwater supplies. Nevertheless, additional detailed analysis and discussion will be provided in the EIR.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

(i) Result in substantial erosion or siltation on- or off-site? ☒ ☐ ☐ ☐

Potentially Significant Impact. No prominent streams or rivers were observed during surveys of the Project Site, however, erosional drainages with possible connections to an off-site blue-line stream were observed on the north-facing slopes along the northern boundary of the Project Site. Existing drainage conditions at the Project site consist of two distinct drainage areas, including the southern area, where stormwater sheet flows towards Kittridge Street and continues to flow east along the gutter towards existing catch basins. The northern site area flows through two major canyons and a small canyon that eventually merge, and continues to flow north into Bell Creek, an existing natural water course and a tributary to the Los Angeles River, which runs through Bell Canyon Park.

As stated in the approved Drainage Concept/SUSMP Report, the proposed Project would not significantly alter the drainage pattern of the Project site. For the proposed Project, surface water from the southern portion of the site would be picked up by two proposed side opening catch basins and discharge would be conveyed through a proposed storm drain pipe, which would join the existing storm drain system at the intersection of Kittridge Street and Vicki View Drive. Additional surface waters that are not captured by catch basins would sheet flow along Kittridge Street, as in existing conditions. Surface waters would be conveyed to the proposed detention basin located on the northern portion of the site to reduce the velocity and volume of the flows, which outlets into Bell Creek in Bell Canyon Park. A large portion of the site will remain as open space and surface flows would be unaffected on this portion of the property.

As the site will be subjected to significant grading to accommodate the residential building pads, compliance with federal, state and local regulations and the implementation and maintenance of appropriate BMPs will reduce the risks of substantial erosion or siltation on or off-site to a less than significant level and compliance with the approved Drainage Concept/SUSMP would ensure the post-project flows would not exceed the pre-project flows. Therefore, impacts to erosion or siltation would be less than significant. Nevertheless, additional detailed analysis and discussion will be provided in the EIR.

(ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite? ☒ ☐ ☐ ☐

Potentially Significant Impact. The Project is not located in a designated flood zone.[32] Elevations on the site range from approximately 1,250 to 1,380 feet above mean sea level (msl). The southeast portion of the site will be subjected to significant grading to accommodate the residential building pads. As stated previously,

[32] Los Angeles County, Department of Public Works, Flood Zone Determination Website, Accessed on June 18, 2019 at: https://pw.lacounty.gov/floodzone/.

the proposed detention basin located on the northern portion of the site will be designed to capture and slow the flow of stormwater runoff to ensure that no on-site or offsite flooding is caused by the Project. As such, the post-project flows would not exceed the pre-project flows. Compliance with federal, state and local design standards and regulations and the implementation and maintenance of appropriate BMPs will mitigate the risks of flooding both onsite and offsite to a less than significant level. Nevertheless, additional detailed analysis and discussion will be provided in the EIR.

(iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? ☒ ☐ ☐ ☐

Potentially Significant Impact. As discussed above, the proposed Project would not result in a significant increase in site runoff as it would not alter existing drainage patterns or substantially increase the volume or velocity of runoff. As stated in above, the proposed Project would not significantly alter the drainage pattern of the Project site. The stormwater infrastructure would primarily discharge into the proposed detention basin on the northern site and discharge into a proposed storm drain pipe to connect with existing infrastructure on the southern portion of the site. Some additional minor surface runoff may also flow into the existing municipal stormwater system provided by the LACFCD and implementing BMPs would control runoff. The proposed residential developments would comply with the approved Drainage Concept/SUSMP Report and the proposed Project would not significantly alter the drainage pattern of the Project site. In addition, the Project would adhere to the applicable federal, state and local design standards and regulations, and compliance will be reflected in the site design which will be subject to approval by the County of Los Angeles prior to site development. The integration of applicable design features mandated by existing regulations would ensure that site runoff would not exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Therefore, the post-project flows would not exceed or be substantially greater than pre-project flows and impacts would be less than significant. Nevertheless, additional detailed analysis and discussion will be provided in the EIR.

(iv) Impede or redirect flood flows? ☒ ☐ ☐ ☐

Potentially Significant Impact. The Project is located near the top of a ridgeline in the west San Fernando Valley. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the Project site falls within Zone D, an area which flood hazards are undetermined, but possible[33] and according to the 1980 General Plan Safety Element, the Project site is not located within a 100- or 500- year flood plain.[34] The site development footprint will be subjected to considerable grading and impervious surfaces will be installed. Construction will not alter the course of a stream or river. Approximately 46% of the site will remain undeveloped open space and the large low-density residential lots will be landscaped maintaining a high percentage of pervious surface. The Project will be designed in accordance with all applicable regulations and engineering standard practices to ensure that floods flows are captured, controlled, treated and conveyed to the existing stormwater system. As such, the Project would not impede or substantially redirect flood flows. The development of this low-density residential

[33] FEMA, National Flood Hazard Layer (NFHL) Viewer, Accessed on September 25, 2019 at: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd&extent=-118.67013422020113,34.187274660763634,-118.65477052696343,34.19614914488295.

[34] Los Angeles County Department of Regional Planning, General Plan Plate 6: Flood and Inundation Hazards, January 1990.

Project will have a less than significant impact on the site and adjacent properties. Nevertheless, additional detailed analysis and discussion will be provided in the EIR.

d) Conflict with the Los Angeles County Low Impact Development_Ordinance (L.A. County Code, Title 12, Ch. 12.84)? ☒ ☐ ☐ ☐

Potentially Significant Impact. As the application for a vesting tentative tract map was deemed complete prior to January 8, 2008, the Project is analyzed according to the local regulations in place at the time, including the General Plan 1980, 2002 SUSMP Manual and 2004 Design Manual, which outlined BMPs to be incorporated into future project design plans. The Project will comply with all applicable regulations including the applicable portions of the County of Los Angeles Grading Code, NPDES compliance, and Municipal Separate Storm Sewer System (MS4) Permit in compliance with NPDES requirements for stormwater and non-stormwater discharges. The proposed residential developments would also comply with the previously approved Drainage Concept/SUSMP Report. As such, impacts are less than significant. Nevertheless, additional detailed analysis and discussion will be provided in the EIR.

e) Use onsite wastewater treatment systems in areas with known geological limitations (e.g. high groundwater) or in close proximity to surface water (including, but not limited to, streams, lakes, and drainage course)? ☐ ☐ ☐ ☒

No Impact. The Project will not use onsite wastewater treatment systems. The domestic wastewater generated on site will be directed into the existing sanitary sewer system that will be extended from Randiwood Lane into the development to serve the new residences. As such, there will be no impact related to use of onsite wastewater treatment systems.

f) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? ☐ ☐ ☐ ☒

No Impact. The Project Site elevation is approximately 1,250 to 1,380 feet above mean sea level (msl) and is near the top of a ridgeline in the far western end of the San Fernando Valley approximately 11 miles north of the Pacific Ocean. As stated above, according to the FEMA FIRM, the Project site falls within Zone D, an area which flood hazards are undetermined, but possible. According to the 1980 General Plan Safety Element, the Project site is not located within a 100- or 500- year flood plain and the Project would not impede or substantially redirect flood flows. As such, the Project would have no impacts to flood hazards. A tsunami is a great sea wave, or tidal wave, typically produced by an undersea earthquake. According to the Department of Conservation, the Project site is not located within a Tsunami Inundation Area.[35] The Project would have no impact related to tsunamis. Additionally, there are no large landlocked bodies of water near the Project site and thus the Project site is not susceptible to inundation by a seiche, which is an oscillation of a body of water in an enclosed or semi-enclosed basin, such as a reservoir, harbor, lake, or storage tank. The Project would have no impact related to seiche.

[35] Department of Conservation, Los Angeles County Tsunami Inundation Maps, Accessed on September 25, 2019 at: https://www.conservation.ca.gov/cgs/tsunami/maps/Los-Angeles#findoutmore.

g) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☒	☐	☐	☐

Potentially Significant Impact. As discussed previously, the Project is a low density residential development on large lots with mostly pervious surfaces to be landscaped and with Lot 27, at approximately 46% of the total site acreage, to remain as open space contiguous with the 5,600 acre Upper Las Virgenes Canyon Open Space Preserve, the 82-acre Knapp Ranch Park adjacent to the south and Bell Canyon Park to the north. The minimal increase in impervious structures for this residential development, including approximately 3.41 acres for building pads and driveways and approximately 2.14 acres for roads, will not conflict or obstruct the implementation of a water quality control plan or sustainable groundwater management plan and therefore the impacts of the proposed development will be less than significant. Nevertheless, additional detailed analysis will be provided in the EIR.

11. LAND USE AND PLANNING

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒

No Impact. The Project is an approximately 58-acre property located in an unincorporated area of Los Angeles County. The Project Site is located in an undeveloped area west of Randiwood Lane at the western edge of the San Fernando Valley adjacent to the Ventura County line. It is bordered on the east entirely by single-family residential development across Randiwood Lane, on the north by El Escorpion Park, on the south by Knapp Ranch Park West and a Los Angeles City Department of Water and Power facility including two large water tanks, and on the west by the 5,477-acre Upper Las Virgenes Canyon Open Space Preserve, formerly a part of Ahmanson Ranch. The proposed Project would extend the existing single-family uses approximately 0.5 miles westward. The northern and western areas of the Project site that adjoin El Scorpion Park and the Upper Las Virgenes Canyon Open Space Preserve would largely be retained as open space. Therefore, the Project would not divide an established community.

b) Cause a significant environmental impact due to a conflict with any County land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

Less Than Significant Impact. The Project Site is located within an unincorporated area of the County of Los Angeles and as such, the proposed Project is subject to the policies of the Los Angeles County General Plan. The subdivision application was filed in 2004, prior to adoption of 2035 Los Angeles County General Plan in 2015. Therefore, under the applicability rule of the 2035 General Plan, the applicant may choose whether the application will be reviewed for consistency with the 1980 General Plan or the 2035 General Plan. The Regional Planning Commission (RPC) approved the Project on January 8, 2008 and the decision was later appealed to the Board of Supervisors (BOS). In 2015, the BOS remanded the Project to the RPC with instructions to update CEQA review and mitigation measures and address the issues raised by local constituents. The Project would be anticipated to comply with all regulations as stated under the General Plan 1980, however additional analysis will be provided in the EIR.

The Project is proposing a land division and low density single-family residential development for the site, which would include 25 residential lots, public streets, a recreation lot, a public facilities lot, one water tank lot, and an open space lot. The northwestern portion of the site would be preserved as open space. The Project Site is zoned as RPD-30,000-1.5U (Residential Planned Development – 30,000 square feet minimum lot size – 1.5 dwelling units per acre) and R-1-10,000 (single-family residence, 10,000 square feet minimum). Building pads on proposed lots 1 through 14 and 23 through 25 are proposed to be within the R-1-10,000 zoned area. Building pads on lots 15 through 22 are proposed to be in both the R-1-10,000 and RPD-30,000-1.5U zones. All the proposed residential lots are greater than 26,000 gross sq. ft, with the lots that cross into the RPD-30,000-1.5U zone all being greater than 37,000 gross sq. ft. Lot 20 is the smallest of these with 31,829 net sq. ft. where 29,048 net sq. ft. minimum is required. The Project is consistent with the R-1-10,000

and RPD-30,000-1.5U zoning classification. Single family residences are permitted in the R-1-10,000 zone pursuant to Section 22.20.070 of the Los Angeles County Code (County Code) and in the RPD zone by Section 22.20.460 of the County Code. The Project proponents will seek a Conditional Use Permit (CUP) as required. Specific density will be established via CUP in compliance with Title 22, chapter 22.20.460 and will comply with the conditions in the CUP. As the Project would comply with all General Plan 1980 and General Plan 2035 goals and policies and would comply with the conditions of the CUP. The proposed land uses are consistent with existing zoning classifications for the site. As the Project would comply with the existing zoning and conditions of the CUP, it is substantially consistent with the goals of the General Plan 1980 and General Plan 2035 identified above. Therefore, the Project would have a less than significant impact related to inconsistency with applicable County and local plans. Additional detailed analysis and further discussion will be provided in the EIR.

c) Conflict with the goals and policies of the General Plan related to Hillside Management Areas or Significant Ecological Areas?	☐	☐	☒	☐

Less Than Significant Impact. Hillside Management Areas (HMAs) are defined as areas with 25% or greater natural slopes. As the application for a vesting tentative tract map was deemed complete prior to January 8, 2008, the Project is analyzed according to the local regulations in place at the time, including the General Plan 1980 and the 1982 Hillside Management and Significant Ecological Areas Ordinance, regulated through Section 22.56.215 of Title 22, Los Angeles County Zoning Code. The Project is zoning compliant and therefore would not conflict with the goals and policies related to Hillside Management Area Ordinance. Additional detailed analysis and further discussion will be provided in the EIR.

12. MINERAL RESOURCES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

No Impact. According to the County of Los Angeles General Plan, Chapter 9, Conservation and Natural Resources Element, mineral resources include commercially-viable aggregate or mineral deposits, such as sand, gravel, and other construction aggregate. The California Geological Survey identifies and maps deposits of these regionally-significant aggregate resources, and these areas are designated as Mineral Resource Zones (MRZs). In addition, mineral resources include areas appropriate for the drilling and production of oil and natural gas. The California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) has jurisdiction over on-shore subsurface oil and gas activities in California. Based on information provided by the California Geological Survey and DOGGR, the Project site is located within a MRZ-1, meaning no significant mineral deposits are present and little likelihood exists for their presence and is not located in an oil and gas resource area.[36] Therefore, the proposed Project would not result in the loss of availability of a known mineral resource. The Project would have no impact on mineral resource availability and no mitigation measures are required.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

No Impact. As the application for a vesting tentative tract map was deemed complete prior to January 8, 2008, the Project is analyzed according to the local regulations in place at the time, including the 1980 General Plan. The Project site is not located in a MRZ or in an oil and gas resource area, nor is it designated for such uses by the County General Plan or Zoning Code.[37] Therefore, the proposed Project would not result in the loss of availability of a locally-important mineral resource recovery site. The Project would have no impact on local mineral resource recovery sites and no mitigation measures are required.

[36] California Department of Conservation, Mineral Land Classification, Accessed on October 3, 2019 at: https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc.
[37] Ibid.

13. NOISE

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the County General Plan or noise ordinance (Los Angeles County Code, Title 12, Chapter 12.08), or applicable standards of other agencies?	☒	☐	☐	☐

The following noise analysis is primarily based on the Noise Impact Analysis – Woodland Hills Project, written by Giroux & Associates, dated November 9, 2017.

Potentially Significant Impact. The County of Los Angeles limits construction activities to daytime hours. Additionally, use of any powered equipment or powered hand tool that produces a maximum noise level exceeding 75 dBA at a distance of 50 feet from construction and industrial machinery is prohibited unless mitigation is technically infeasible. For a typical residential receiver across Randiwood Lane, temporary noise from heavy equipment operating at the center of the closest parcel would not likely exceed the County of Los Angeles suggested construction noise level of 75 dB. However, this threshold could be marginally exceeded if heavy equipment were operated at the closest property line. The only construction equipment that would be used immediately adjacent to the existing homes would be graders as the hillside is formed and compacted. A grader operating at the property line could be 2 dB over the recommended 75 dB Leq noise level. However, equipment used in grading would be required to have a muffler in good operating condition, as a muffler can reduce noise by about 10 dB.[38] Using graders with mufflers or other noise reducing features would allow the recommended noise thresholds to be met at the closest existing sensitive use. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

An increase in operational noise would be a result of increased residential traffic which would be consistent with the large existing 176-home residential development to the east across Randiwood Lane and adjacent to the Project. As stated in the Los Angeles County Public Works Department Traffic Study for Kittridge Road in 2014, the addition of 25 residences would add another 189 daily trips using standard trip rates for single family use. This is less than the +3 dB traffic noise impact threshold of significance. Therefore, traffic noise increases associated with the proposed Project would be less-than-significant. An increase of +1.3 dB could be slightly above the threshold of perception but would not exceed the +3 dB CNEL threshold of significance. On a high traffic count day, impacts will be more diluted and therefore lower impact with an increase of only +1.0 dB CNEL. Therefore, operational impacts from increased traffic are less than significant. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

[38] Bolt, Beranek and Newplan, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, December 1971.

b) Generation of excessive groundborne vibration or groundborne noise levels? ☐ ☐ ☒ ☐

Less Than Significant Impact. The primary source of groundborne vibration from the Project would be during construction from construction equipment. In Section 12.08.560 of the Los Angeles County Code, operation of any device that creates vibration above the vibration threshold beyond a private property boundary is prohibited. According to Caltrans, the threshold for structural vibration damage for modern structures is 0.5 in/sec for intermittent sources, which include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. The damage threshold criterion of 0.2 in/sec is appropriate for older fragile buildings (typically historic). Below this level there is virtually no risk of building damage.

The primary source of groundborne vibration from the Project would be during construction from construction equipment. The closest Project property line is 75 feet from the nearest off site existing residential structure. At this distance there is little likelihood for vibration to be detectable and most equipment would be used at a distance greater than 75 feet. Vibration from construction equipment would be well below the structural damage threshold of 0.2 in/sec. Therefore, the vibration level is considered acceptable and construction activity vibration impacts would be less than significant.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? ☐ ☐ ☐ ☒

No Impact. The Project Site is not located within an airport land use plan area and is not within two miles of a public or private airport or airstrip. The nearest airport is the Van Nuys Airport which is over 10 miles east of the Project Site. Therefore, noise impacts related to air travel would have no impact.

14. POPULATION AND HOUSING

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐

Less Than Significant Impact. The Project proposes to add 25 residential homes in an area zoned for residential development. The Project Site is served by existing infrastructure, including existing roads, utilities (water, sewer, solid waste, electricity, natural gas, telecommunications), and services (fire, police, schools, parks). According to the U.S. Census Bureau, the average household size in Los Angeles County is 3.01 persons per dwelling unit (2013-2017).[39] Based on this rate, the proposed Project is expected to generate approximately 75 additional residents.

The Southern California Association of Governments' (SCAG's) 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) forecasts for population and housing growth from 2012 through 2040 for the unincorporated areas of the County of Los Angeles are shown in **Table 5, 2016-2040 SCAG RTP/SCS Growth Forecasts for the Unincorporated Areas of Los Angeles County** below.

Table 5
2016-2040 SCAG RTP/SCS Growth Forecasts for the Unincorporated Areas of Los Angeles County

Year	Population	Housing
2012	1,040,700	292,700
2040	1,273,700	392,400
Change in Growth 2012-2040		
Net Change	233,000	99,700
Rate of Growth	22.4%	34.1%
Source: SCAG. 2016. RTP/SCS Appendix, Table 11, Jurisdictional Forecast 2040. April (Adopted).		

The unincorporated County projects a population of 1,273,700 people and 392,400 housing units by 2040. The proposed Project would generate approximately 75 additional residents, which represents approximately 0.005 percent of the forecasted population in 2040 and approximately 0.03 percent of the projected change in growth between 2012 and 2040. As such, the proposed Project is within the SCAG's 2016-2040 RTP/SCS population and housing forecasts and growth rates listed above. The proposed Project would not generate a substantial residential population and would not extend existing infrastructure, or develop new infrastructure, that would induce population growth. In addition, the Project would provide residential housing, which would

[39] U.S. Census Bureau, Quick Facts, Los Angeles County. Accessed on June 19, 2019 at: https://www.census.gov/quickfacts/fact/table/losangelescountycalifornia/PST045218#viewtop.

help accommodate the projected growth within the County. Therefore, impacts associated with population growth would be less than significant.

b) Displace substantial numbers of existing people or housing, especially affordable housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

No Impact. The Project is located on a previously undeveloped parcel in the urban community of West Hills in the western portion of the San Fernando Valley. As the Project Site is currently vacant, it would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. Therefore, the Project would have no impact.

15. PUBLIC SERVICES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Would the project create capacity or service level problems, or result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☒	☐	☐	☐

Potentially Significant Impact. The Project Site is located within the jurisdiction of the Los Angeles County Fire Department (LACoFD).[40] The nearest fire station to the Project site is LACoFD Station 68, located at 24130 Calabasas Road which is approximately 4.3 driving miles from the Project Site or 11 minutes in typical traffic conditions. This distance is close enough for the LACoFD to be within the current standard response time for fire service in a rural area, which is 12 minutes or less for rural areas, as stated in the Los Angeles County General Plan Update Draft EIR.[41]

The Project could potentially result in an increase in demand for LACoFD services, as it would develop 25 residential lots, public streets, a recreation lot, a public facilities lot, one water tank lot, and an open space lot. The northwestern portion of the site would be preserved as open space. In addition, the Project is located within a Very High Fire Hazard Severity Zone (VHFHSZ), [42] as previously described. However, the Project would be required to comply with applicable regulations, codes and LACoFD site plan review requirements that address building construction, site access, road widths, fire truck turnaround areas, water conveyance, fire flow and pressure, and fire hydrant number and placement.

In October 2006, the Las Virgenes Municipal Water District (LVMWD) completed a Preliminary Water System Design Report for the Project Site (Tract 52652). The findings from this report identified that the Project Site was originally to be Phase II of the currently existing development adjacent to the east (Tract 23762) that was constructed in 1965. The second phase (Project Site) was not constructed largely because a pump station and water storage tank was required to serve the proposed higher elevation residences as well as 25 of the higher parcels in Phase I to the east across Randiwood Lane. The cost for this new infrastructure would have been borne by the developer. Occasionally there are low pressure complaints from residents in the existing development to the east, and in response LVMWD prepared Report No. 2228.00 which concluded that conditions of service met district rules, but that service pressures dipped as low as 37 psi at some residences and that is less than the District standard minimum service pressure of 43 psi. A new pressure zone is required to serve the Proposed Project Site and the higher elevation residences in the existing development. This system has been planned since the 1960s as part of the original two-phase development.

[40] Los Angeles Department of Public Works, Service Locator, Accessed on June 19, 2019 at: https://dpw.lacounty.gov/general/servicelocator/.
[41] Los Angeles County. 2014. General Plan Update Draft Environmental Impact Report. State Clearinghouse No. 2011081042. June.
[42] Los Angeles County Department of Regional Planning, General Plan Figure 12.5: Fire Hazard Severity Zones Policy Map, May 2014.

To serve the Project and bring pressures to District standard of 43 psi for existing higher elevation residences from Phase I to the east, a water storage tank and pump station will be required in accordance with the District policy that fire flow should not be dependent on pumping. Construction of the Project will improve daily residential pressures for existing residences by increasing them to the District standard of 43 psi as well as provide critical water storage capacity to combat fires for the larger area.

Additionally, LACoFD has already reviewed the Project and has determined that the Project would not create a life safety concern, as mentioned in a letter that can be found in **Appendix H**, from LACoFD dated March 13, 2008. The Project would also comply with the Conceptual Fire Protection Plan for West Hills Community, submitted June 24, 2016 and revised January 21, 2019, and included as **Appendix I.** The Project Conceptual Fire Protection Plan would be reviewed and approved by the LACoFD and ensure the Project's compliance with all applicable rules and regulations of the LACoFD including roads, fire flow, ignition resistant building construction and vegetative fuel modification. In addition, the Project would include concrete block walled closets within the first floor of every residence to provide fire shelter in case of an emergency. With the above Project design features required by LACFD, which will be reviewed and approved during plan check, prior to issuance of building permits, and as the Project would comply with all applicable fire and safety codes and standards of the LACFD, including the Fuel Modification Plan, the Project is expected to result in a less than significant impact related to fire protection facilities and service. Nevertheless, additional detailed analysis and discussion will be provided in the EIR.

Sheriff protection? ☒ ☐ ☐ ☐

Potentially Significant Impact. The Project site is located within the jurisdiction of the Los Angeles County Sheriff's Department (LASD). The Malibu/Lost Hills Sheriff's Station serves the Project area and is located at 27050 Agoura Road,[43] which is 8.4 driving miles from the Project Site, at a driving time of approximately 16 minutes in typical traffic conditions. As of November 2019, the Malibu/Lost Hills Sheriff's Station was staffed by 145 sworn personnel and 36 civilian employees and approximately 91,100 people are currently being served by the Station. The Station is currently understaffed, and as additional Project information becomes available, the Station will provide additional comments.[44]

The LASD maintains mutual aid agreements with other County and State law enforcement agencies such that additional support may be requested and received as needed to respond to emergencies or natural disasters.[45] According to the General Plan EIR, LASD staff has indicated that an officer-to- population ratio of one officer to every 1,000 residents provides the desired level of service for its service area. The Project would resulting in an increase of approximately 75 additional residents. In addition, the Project Site currently includes night lighting for security and wayfinding purposes. Impacts relative to new or physically altered police facilities would likely be less than significant, however the potential for significant impacts exists. This information will be incorporated in the EIR once obtained.

Schools? ☐ ☐ ☒ ☐

Less Than Significant Impact. The Project site is located within the service area of the Las Virgenes Unified School District (LVUSD or District) and is within the service boundaries of Round Meadow

[43] Los Angeles Department of Public Works, Service Locator, Accessed on June 19, 2019 at: https://dpw.lacounty.gov/general/servicelocator/.
[44] Vander Horck, Matthew, Malibu/Lost Hills Station Captain, Office of the Sheriff, County of Los Angeles, Letter Correspondence with Envicom Corporation, November 20, 2019.
[45] County of Los Angeles, Los Angeles County Operational Area Emergency Response Plan, Approved February 17, 1998.

Elementary School, Alice C. Stelle Middle School, and Calabasas High School.[46] The Project's proposed development of 25 single-family residences and associated facilities would result in an additional 75 additional residents. According to the Los Angeles County General Plan Update Draft EIR, the student generation rate per residential unit for grades K-12 is 0.7 students per dwelling unit.[47] Using this rate, the Project would generate approximately 18 additional students within the school district, some of which would attend the local elementary, middle, or high school. The LVUSD has 11,300 students enrolled grades pre-K through 12.[48] As the Project would add approximately 18 students to the district, this would likely not constitute a significant impact on schools within the LVUSD. Based on correspondence with the LVUSD, the District does not anticipate the need for a new or expanded school as a result of proposed Project buildout.[49]

In addition, per California Government Code (CGC), the Project would be subject to the payment of school impact fees (Section 53080, CGC). As authorized under Section 17620(a) of the California Education Code (CEC) and Section 65995(b) of the CGC, local school districts are authorized to impose and collect school impact fees in accordance with SB 50[50] at the time of building permit issuance for development activities that occur within their jurisdiction. The funding program established by SB 50 has been found by the Legislature to constitute "full and complete mitigation of the impacts of any legislative or adjudicative act…on the provision of adequate school facilities" (Government Code Section 65995[h]). The fees authorized for collection under SB 50 are conclusively deemed full and adequate mitigation of impacts on school district facilities and impacts would be less than significant.

Parks? ☐ ☐ ☒ ☐

Less Than Significant Impact. The low density residential Project is located in unincorporated Los Angeles County, on a previously undeveloped parcel in the community of West Hills in the western portion of the San Fernando Valley on the Ventura County border. El Escorpion Park is adjacent to the north and the Knapp Ranch Park is adjacent to the south. El Escorpion Park is a large open space with hiking and biking trails. Knapp Ranch is also a large park and it has baseball, basketball, tennis, picnic and playground facilities. These are both City of Los Angeles parks and are available to the residents of the Project Site and vicinity. The Project would provide recreational amenities consisting of four tennis courts, a parking lot, and a shade structure that would reduce the impact on parks within the area. In addition, the Project has an obligation to pay Quimby in-lieu fees per Los Angeles County Code Section 21.28.140. This obligation will be met by the payment of in-lieu fees by the applicant to the Los Angeles County Parks and Recreation Department. Based on Project design features and compliance with Quimby Fees, impact of the Project would be less than significant.

Libraries? ☐ ☐ ☒ ☐

Less Than Significant Impact. The Project Site is served by the County of Los Angeles Public Library. The nearest public library to the site is the Topanga Library, which is located 10.8 miles from the Site. Additional public libraries located in the Project area are the Malibu Library and Agoura Hills Library.[51] The proposed Project is expected to generate approximately 75 additional residents, and therefore may have a

[46] Las Virgenes Unified School District, My School Locator, Accessed on June 19, 2019 at: http://locator.decisioninsite.com/?StudyID=85023.
[47] Los Angeles County, General Plan Update Draft Environmental Impact Report, June 2014.
[48] Las Virgenes Unified School District, Get to Know LVUSD, Demographics, Accessed on June 25, 2019 at: https://www.lvusd.org/Page/86.
[49] Kimmel, Karen, Assistant Superintendent, Business Services, LVUSD, Letter Correspondence with Envicom Corporation, November 20, 2019.
[50] Senate Bill 50 ("SB 50," also known as Proposition 1A, codified in California Government Code Section 65995 et seq.)
[51] Los Angeles County Library, LA County Library Locations, Accessed on June 19, 2019 at: https://lacountylibrary.org/library-locator/.

marginal increase in library facilities within the area. A Library Facilities Mitigation Fee[52] would be assessed to equitably distribute the cost of service provision resulting from an increase in users. Consequently, minimal increased library usage resulting from the proposed Project would be off-set by the payment of the Library Facilities Mitigation Fee.

Other public facilities? ☒ ☐ ☐ ☐

Potentially Significant Impact. The Project would generate an additional 75 residents within unincorporated Los Angele County, a 0.0007 percent increase over the County's current unincorporated population.

The California Integrated Waste Management Act (AB 939, Sher, Chapter 1095, Statutes of 1989 as amended [IWMA]) made all California cities, counties, and approved regional solid waste management agencies responsible for enacting plans and implementing programs to divert 25 percent of their solid waste by 1995 and 50 percent by year 2000. Later legislation mandates the 50 percent diversion requirement be achieved every year. The California Department of Resources Recycling and Recovery (CalRecycle) oversees and provides assistance to local governments as they develop and implement plans to meet the mandates of the IWMA and subsequent legislation.

CalRecycle has statutory requirements under Public Resources Code (PRC) sections 41813 and 41850(a) to enforce the provisions of AB 939 if a local jurisdiction fails to submit an adequate element or plan or if a local jurisdiction fails to implement its Source Reduction and Recycling Element (SRRE) or Household Hazardous Waste Element (HHWE).

Additional regulations (14 CCR sections 18750 – 18751.8, 18760 – 18775) clarify and provide guidance to local jurisdictions who prepare their HHWE. The HHWE specifies how household hazardous wastes generated by households within the jurisdiction must be collected, treated, and disposed. The HHWE is addressed in two Articles of Title 14, Chapter 9, of the CCR: Article 6.3, the Household Hazardous Waste Element; and Article 7.0, the Procedures for Preparing and Revising City and County Source Reduction and Recycling Elements, and Household Hazardous Waste Elements.

The HHWE of each jurisdiction discusses alternatives that can include periodic community-wide or neighborhood collection, permanent drop-off sites, mobile waste collection, curbside collection, load-checking at solid waste facilities, and waste exchange, reuse and recycling programs. Specificity of the alternatives discussed is up to the discretion of the local jurisdiction.[53] The local jurisdiction is responsible for educating residents in the available programs that may include, but are not limited to, providing new homeowners with educational materials on collection schedules, collection centers, and proper management and disposal of household hazardous waste. The proposed Project may generate household hazardous waste and the EIR will evaluate the effect of this Project on existing infrastructure.

[52] § 22.72.030. Establishment of library facilities mitigation fee.

[53] Cal Recycle, History of California Solid Waste Law, 1985-1989, Accessed on March 4, 2020 at: https://www.calrecycle.ca.gov/laws/legislation/calhist/1985to1989.

16. RECREATION

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐

Less Than Significant Impact. The Project may marginally increase the use of existing neighborhood/regional parks or other recreation facilities. The El Escorpion Park is adjacent to the north and the Knapp Ranch Park is Adjacent to the south. El Escorpion Park is a large open space with hiking and biking trails. Knapp Ranch is also a large park and it has baseball, basketball, tennis, picnic and playground facilities. These are both City of Los Angeles parks and are available to the residents of the Project Site and vicinity. The Project would provide recreational amenities consisting of four tennis courts, a parking lot, and a shade structure that would reduce the impact on parks within the area.

In addition, the Project has an obligation to pay Quimby in-lieu fees per Los Angeles County Code Section 21.28.140. This obligation will be met by the payment of in-lieu fees by the applicant to the Los Angeles County Parks and Recreation Department. Based on Project design features and compliance with Quimby Fees, the Project would result in a less than significant impact related to the use and physical deterioration of existing neighborhood and regional parks or other recreational facilities.

b) Does the project include neighborhood and regional parks or other recreational facilities or require the construction or expansion of such facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

Less Than Significant Impact. The proposed Project does include recreational facilities on site in the form of four tennis courts and a shade structure. The Project requires the construction of these facilities on Lot 28. These recreational facilities would be constructed along with the demolition and construction of other facilities on the Project site, as described in the Project Description. El Escorpion Park is adjacent to the north and the Knapp Ranch Park is adjacent to the south. These are both City of Los Angeles parks and are available to the residents within walking distance and no impact to local street parking is anticipated. The impact of the Project on would be less than significant.

c) Would the project interfere with regional open space connectivity?	☐	☐	☒	☐

Less Than Significant Impact. The Site lies along the eastern margin of a regional-scale habitat linkage referred to as the "Santa Monica - Sierra Madre Connection."[54] As the Project Site is situated at the edge of

[54] South Coast Wildlands, South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion, Accessed on September 25, 2019 at: http://planning.lacounty.gov/assets/upl/project/sea_SCML-regional-report.pdf.

existing contiguous urban development of the San Fernando Valley, where growth is planned, the Project would not significantly fragment natural habitats within the linkage, and the Project would not affect movement into or out of the focal points of the linkage, including the Santa Monica Mountains or Sierra Madre Mountains. For these reasons, development of the Project would not have a significant adverse effect on the value of the Santa Monica – Sierra Madre Connection habitat linkage for wildlife movement over the short or long-term, and grading and fuel clearance of undeveloped natural habitats within the linkage would be a less than significant impact. Also, it is noteworthy that other potential routes exist for three of the focal species (deer, badger, and mountain lion) analyzed in the linkage design study, and therefore connectivity would remain between the Santa Monica and Sierra Madre Mountains.

17. TRANSPORTATION

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Conflict with an applicable program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☒	☐	☐	☐

Potentially Significant Impact. The Project-specific Trip Generation Technical Memorandum, provided by Transpo Group on September 19, 2017, which is attached in **Appendix J,** estimates that the proposed Project would generate approximately 238 daily trips, 19 AM peak hour trips, and 25 PM peak hour trips.

In accordance with Senate Bill 743 (SB 743), the County is updating its traffic impact analysis report guidelines to evaluate transportation impacts based on metrics related to Vehicle Miles Traveled (VMT). As such, the County anticipates a traffic impact analysis based on VMT metrics will be required for the Project. The findings of the VMT-based analysis will be incorporated in the subsequent Environmental Impact Report (EIR). Thus, the transportation and traffic impacts may conflict with the performance of the circulation system and may be potentially significant.

Additionally, the County of Los Angeles Bicycle Master Plan was completed in March 2012 as a sub-element of the Mobility Element of the Los Angeles County General Plan. Within the Bicycle Master Plan, the proposed improvements to and existing bicycle infrastructure are shown, none of which are proposed or located on or near the Project Site. The nearest bike route is a Class II bike lane along Valley Circle Boulevard. Building of the proposed Project would not conflict with goals or existing or proposed infrastructure of the Bicycle Master Plan. As for public transit facilities, the nearest public transit stop is at Valley Circle Boulevard and Kittridge Street. There are three bus lines provided by Metro that can be accessed at this location as shown below in **Table 6, Existing Transit Routes.**

Buildout of the proposed Project would not conflict with or interfere with public transit performance or safety. Therefore, the Project would not conflict with an applicable program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities and impacts would be less than significant.

Table 6
Existing Transit Routes

Route	Destinations	Roadway Near Site	Number of Buses During Weekday Commuting Hours		
			Direction	AM (7:00AM-8:00AM)	PM (5:00PM-6:00PM)
Metro 164	Fallbrook Center to Burbank Downtown Station via Victory Boulevard	Valley Circle Boulevard	EB	2	4
			WB	-	-
Metro 165	Fallbrook Center to Burbank Downtown Station via Vanowen Street	Valley Circle Boulevard	EB	-	-
			WB	4	4
Metro 169	Canoga Station to Burbank Airport via Vanowen Street and Saticoy Street	Valley Circle Boulevard	EB	3	1
			WB	2	1
			Total	**11**	**10**

Source: Los Angeles County Metropolitan Transportation Authority (Metro), Maps & Timetables, Accessed on June 27, 2018 at: https://www.metro.net/riding/maps/.

b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)? ☒ ☐ ☐ ☐

Potentially Significant Impact. SB 743 was enacted in September 2013 changing the way transportation impact analysis is conducted under CEQA. Within the State's CEQA Guidelines, these changes include the elimination of auto delay, LOS, and similar measurements of vehicular roadway capacity and traffic congestion as the basis for determining significant traffic impacts. In accordance with the Governor's Office of Planning and Research (OPR) revisions to the CEQA Guidelines, a lead agency must evaluate transportation impacts with a VMT-based metric by July 1, 2020. As such, the County anticipates a traffic impact analysis based on VMT metrics will be required for the Project. These findings will be incorporated in the Environmental Impact Report (EIR).

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? ☐ ☐ ☒ ☐

Less Than Significant Impact. The Project would involve buildout of one main public road that would loop from Kittridge Street to Randiwood Lane. From the extension of Kittridge Street there will be a cul-de-sac built to access ten of the lots. There will also be a road that extends from the northwest portion of the main loop to provide access to the recreation and water tank lot. All of the new roads would be required to comply with standards within the Los Angeles County Code of Ordinances and are subject to approval. Given that the proposed Project is a residential Project next to an existing residential area, its design will be consistent with the existing uses and would not create incompatible uses. Therefore, the Project would result in a less than significant impact in this regard.

d) Result in inadequate emergency access? ☒ ☐ ☐ ☐

Potentially Significant Impact. Access to the Project would be provided primarily via Kittridge Street but would also be able to be accessed via Randiwood Lane. Prior to construction, the Project plans would be subject to approval by the Los Angeles County Fire Department. As the main access to the Project Site is a loop, there would be emergency access from two directions. The Project is adding 25 additional residential homes at the end of an existing residential development and thus would not affect or alter existing emergency access. The LACoFD has already reviewed the Project and has determined that the Project would not create a life safety concern, as mentioned in a letter that can be found in **Appendix H**, from LACoFD dated March 13, 2008. Therefore, the Project would have a less than significant impact to emergency access. Nevertheless, additional detailed analysis and further discussion will be provided in the Environmental Impact Report (EIR).

18. TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code §21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code § 5020.1(k), or	☒	☐	☐	☐

The following tribal cultural resources analysis is primarily based on the Phase I(b) Cultural Resource Assessment, prepared by Envicom Corporation, dated November 12, 2018

Potentially Significant Impact. The Native American Heritage Commission (NAHC) was contacted on February 27, 2017, with a request to search their database for cultural resources within the Project ADI and within the larger 0.5-mile study area. A response from the NAHC was received on March 3, 2017, which was negative for cultural resources within the project site. The United States Geographical Survey (USGS) historic map database was reviewed as part of the Phase I(b) Cultural Resource Assessment (Phase I(b)). Sixteen historic USGS and other government maps were reviewed for a historic history of the Project property dating back to 1903. The database was negative for historic built environment resources with any development shown on the maps outside of the project development area. There is no other development on the historic maps until the 1960s when roads and flood control start to show up on the Project Site. Based off of Google Earth images that go back to 1989, there are clear roads and flood control features on the property.

Due to the Project's property historic cultural resource records being negative for early 20th Century cultural resources within the Project development area, and due to the limited early historic development of the Project property region, the Phase I(b) considers the Project to not be sensitive for historic cultural resources. Therefore, the Project has a less than significant impact on historical resources.

Pursuant to AB 52, lead agencies must provide notice to California Native American tribes that are traditionally and culturally affiliated with the geographic area wherein a Project is proposed, inviting consultation, if the Tribe has submitted a request in writing to be notified of proposed Projects. The Tribe must respond in writing within 30 days of the County's AB 52 notice. Additional information will be provided by County staff once obtained.

Based on records search results and tribal consultation, the Project would have a less than significant impact regarding potential substantial adverse changes in the significance of a tribal cultural resource, as defined in Public Resources Code section 21074, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources. However, the records search did identify reports and resources within the study area, although not adjacent nor near the Project Site, so the potential exists. Additional detailed analysis and further discussion will be provided in the EIR.

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☒	☐	☐	☐

Potentially Significant Impact. The Project was analyzed based on the South Central Coastal Information Center (SCCIC) record search, NAHC record search, the examination of several historic map and image databases, and a pedestrian survey of the development portion of the Project property (development area). The SCCIC record search was positive for a single cultural resource (CA-LAN-1223), which was described as a low-density prehistoric artifact scatter with potential midden deposits. Additionally, 13 cultural resources and 17 cultural resource reports were listed as being within the 0.5-mile study area, which included the remaining property open space. Eight (8) overview reports included the development area, however, such reports do not specifically focus on cultural resources, and instead provide general cultural resource or historical background on the area. As such, the development area is considered sensitive for prehistoric cultural resources. No historic era cultural resources were identified, resulting in the development area being described as not sensitive for historic cultural resources.

The results of the 2017 Phase I(a) pedestrian survey identified that most of the Project development area was negative for cultural resources due to modern impacts associated with an aborted 1980s development Project, which included unpaved road paths, earthen platforms and berms, and flood control facilities. All non-impacted sloped areas within the development area were also found to be negative for cultural resources as there was no evidence of caves, rock shelters, or quarry locations (as are found elsewhere in the region). Additionally, no historic-era resources were found on the property that dated prior to the observed 1980s landscape modifications.

Two remaining development area locations were considered to be potential locations of prehistoric cultural resources masked by the dense grasses found covering the site. These included the flat area of the CA-LAN-1223 prehistoric cultural resource, and an undisturbed ridgeline saddle area in the north-center of the Project development area. Both areas were further investigated with shovel test pits as part of an extended Phase I(b) subsurface cultural survey. Three prehistoric artifacts were found on the surface of CA-LAN-1223 prior to Phase I(b) subsurface testing including a quartzite core, a granite mano

fragment and a complete quartzite mano. The cultural resource was then tested with twenty-two (22) shovel test pits, with negative findings. The saddle area was tested with a further ten (10) shovel test pits, again with negative findings. No further cultural resource assessment tasks were recommended for either development area location.

Due to the number of shovel test pits excavated within the original identified boundary of CA-LAN-1223, the lack of extensive surface artifacts, and the lack of prehistoric artifacts recovered from the shovel test pits, Envicom concluded that the potential was low for recovering additional prehistoric artifacts from the CA-LAN-1223 cultural resource. This fact was supported by the original site form, which listed few artifacts identified on the surface of the site. For these reasons, Envicom recommended that the archaeological cultural resource, CA-LAN-1223, is not eligible for inclusion in the CRHR under Criteria 4 (scientific data potential), and therefore is not a significant cultural resource to be further evaluated or managed. Although CA-LAN-1223 was not determined to be significant, the record search was positive for cultural resources and indicated the development area was sensitive for prehistoric cultural resources.

Pursuant to AB 52, lead agencies must provide notice to California Native American tribes that are traditionally and culturally affiliated with the geographic area wherein a Project is proposed, inviting consultation, if the Tribe has submitted a request in writing to be notified of proposed projects. The Tribe must respond in writing within 30 days of the County's AB 52 notice. The Project Site is located within a geographic area that is affiliated with the Gabrieleno Band of Mission Indians – Kizh Nation ("Kizh Nation), Gabrieleno Tongva, and Fernandeno Tatavium Band of Mission Indians. Consultation letters were issued to the tribes on April 26, 2018 via first class mail. On August 21, 2018, the lead agency consulted with Fernandeno Tatavium Band of Mission Indians over the phone and provided the tribe with the Project's Biological Resources Inventory and Impact Analysis dated October 31, 2017 and Phase I Cultural Resource Assessment dated October 2018. The other tribes did not respond the Project notification. Additional detailed analysis and further discussion will be provided in the EIR.

19. UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, storm water draining, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐

Less Than Significant Impact. Potable water service will be provided to the Project by the Las Virgenes Municipal Water District (LVMWD), which has capacity to provide the water services to the Project with existing infrastructure. LVMWD's potable water is provided almost entirely through wholesale purchases from the Metropolitan Water District of Southern California (MWDSC), which has invested significantly in the development of a diverse resources mix to ensure continued reliability of supplies. The MWDSC anticipates having supplies sufficient to meet water demands through 2040 during average, single dry- and multiple dry-years. It is therefore assumed that the MWDSC can meet the full water demands of the LVMWD.[55]

Wastewater services would be provided by Los Angeles County Public Works[56] Consolidated Sewer Maintenance District (SMD). The Los Angeles County Sanitary Sewer Network covers approximately 824 square miles and the Project site would connect to existing eight inch clay sewer lines located in Randiwood Lane, Welby Way, and Kittridge Street and maintained by the SMD.[57] The County SMD would maintain the Project sewer infrastructure on site, however it ultimately connects to the City of Los Angeles sewer lines further east on Valley Circle Boulevard. As such the wastewater would be treated at the Donald C. Tillman Water Reclamation Plant, which provides tertiary treatment and is one of the leading producers of reclaimed water in the San Fernando Valley. The current treatment capacity is approximately 80 million gallons per day (MGD).[58] As such, the Donald C. Tillman Water Reclamation Plant has the existing capacity to provide wastewater services to the Project and would not require the relocation or construction of new facilities.

The electric, natural gas and telecommunications to be installed for the 25 residential dwellings are consistent with the infrastructure installed in the large residential development to the east and would be served by existing infrastructure. There will be no need for the relocation or construction of new or expansion of existing water or wastewater treatment facilities and therefore impacts will be less than significant.

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[55] Las Virgenes Municipal Water District, 2015 Urban Water Management Plan Final, August 17, 2016, Accessed on June 20, 2019 at: https://www.lvmwd.com/home/showdocument?id=6877.

[56] County of Los Angeles, Department of Public Works, Inter-departmental Correspondence regarding Draft Initial Study, Tract No. 52652-West Hills Crest Residential Project, County Unincorporated Community of West Hills, February 24, 2020.

[57] Los Angeles County, Consolidated Sewer Maintenance Districts, Map N-1189, Revised February 19, 2008.

[58] City of Los Angeles, LA Sanitation, Donald C. Tillman Water Reclamation Plant, Accessed on February 26, 2020 at: https://www.lacitysan.org/san/faces/home/portal/s-lsh-wwd/s-lsh-wwd-cw/s-lsh-wwd-cw-p/s-lsh-wwd-cw-p-dctwrp?_afrLoop=3249531547461163&_afrWindowMode=0&_afrWindowId=null&_adf.ctrl-state=19v22toqeq_731#!%40%40%3F_afrWindowId%3Dnull%26_afrLoop%3D3249531547461163%26_afrWindowMode%3D0%26_adf.ctrl-state%3D19v22toqeq_735.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? ☐ ☐ ☒ ☐

Less Than Significant Impact. As stated above, the Project will be served by the LVWMD, which has the water supplies available to serve the Project**.** The LVMWD's supplies are provided primarily by the MWDSC, which anticipates having supplies sufficient to meet water demands through 2040 during average, single dry- and multiple dry-years. It is therefore assumed that the MWDSC can meet the full water demands of the LVMWD.[59] Therefore, there is sufficient water supply available to serve the Project from existing entitlements and resources and impacts related to water supplies would be less than significant.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? ☐ ☐ ☒ ☐

Less Than Significant Impact. As stated above, the Los Angeles County Public Works SMD would maintain the sewer infrastructure and wastewater would be treated at the City of Los Angeles' Donald C. Tillman Water Reclamation Plant, which provides tertiary treatment the current treatment capacity is approximately 80 MGD. As such, the Donald C. Tillman Water Reclamation Plant would have the capacity to serve the Project's projected demand in addition to the provider's existing commitments and impacts would be less than significant.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? ☐ ☐ ☒ ☐

Less Than Significant Impact. The Project includes the construction of new facilities at the Project Site. During construction, the Project would be subject to the Green Building Standards Code that requires a minimum of 65 percent of the debris generated to be recycled.[60] To reduce the amount of demolition and construction debris disposed at landfill facilities, pursuant to County Municipal Code Chapter 20.87, Construction and Demolition Debris Recycling and Reuse, the Project would be required to prepare a recycling and reuse plan for review and approval by the Department of Public Works, Environmental Programs Division. The plan would demonstrate compliance with the recycling or reuse rate for construction and demolition materials applicable at the time that of building permit application submittal. In addition, the Project would provide adequate recyclable storage areas for collection and storage of recyclable and green waste materials pursuant to the California Solid Waste Reuse and Recycling Access Act of 1991 and provide separate collection and recycling of organic waste beginning January 1, 2022 pursuant to Senate Bill 1383.

[59] Las Virgenes Municipal Water District, 2015 Urban Water Management Plan Final, August 17, 2016, Accessed on June 20, 2019 at: https://www.lvmwd.com/home/showdocument?id=6877.

[60] County of Los Angeles Department of Building and Safety, 2017 Los Angeles Green Building Code, Green Building Code Plan Check Notes, Rev. January 17, 2017.

For the disposal of solid waste that would be generated and unable to be recycled, the nearest active landfill to the Project site is the Calabasas Landfill. According to the 2016 Annual Report of the County of Los Angeles Countywide Integrated Waste Management Plan, the Calabasas landfill has a maximum permitted daily capacity of 3,500 tons and a remaining permitted capacity of 5,951,595 tons. In 2016, it had an average daily disposal of 951 tons. This leaves a remaining daily disposal capacity of 2,549 tons.[61] As the Project would not increase the maximum permitted enrollment of the existing school and camp that occupy the Project site, it would not increase the population forecasted to generate waste at the Project site. Therefore, the Project would result in a less than significant impact on landfill capacity.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Less Than Significant Impact. The Project would be subject to the Green Building Standards Code, which requires that non-residential construction projects recycle a minimum of 65 percent of the demolition and construction debris generated by weight. The Project would also be required to comply with other State and local regulations related to waste reduction, trash removal and disposal, and recycling during the operations of the Project. Therefore, the Project would result in less than significant impacts related to compliance with solid waste regulations.

[61] County of Los Angeles, Countywide Integrated Waste Management Plan, 2016 Annual Report, September 2017.

20. WILDFIRE

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, Would the project:				
a) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☒	☐	☐	☐

Potentially Significant Impact. The Project is located within a Very High Fire Hazard Severity Zone (VHFHSZ),[62] as previously described. The State Board of Forestry and the California Department of Forestry and Fire Protection (CalFire) have provided comprehensive guidance for wildland fire protection in California. The Fire Plan Unit of LACoFD is in charge of implementing the California Fire Plan in Los Angeles County. The Strategic Fire Plan prepared by LACoFD identifies and prioritizes pre- and post-fire management strategies and tactics to reduce loss of life, property, and natural resources.[63] A letter from the LACoFD dated March 13, 2008, determined "the proposed improvements will not create a life safety concern and will in turn provide an improved buffer for the existing residential community."

The Project would also comply with the Conceptual Fire Protection Plan for West Hills Community, submitted June 24, 2016 and revised January 21, 2019, and included as **Appendix I.** The Project Conceptual Fire Protection Plan would be reviewed and approved by the LACoFD and ensure the Project's compliance with all applicable rules and regulations of the LACoFD including roads, fire flow, ignition resistant building construction and vegetative fuel modification. In addition, the Project would include a concrete block walled closet/room within the first floor of every residence to provide fire shelter in case of an emergency. As such, the Project is expected to have a less than significant impact regarding exposing people or structures to a significant risk of loss, injury or death involving wildland fires. Nevertheless, additional detailed analysis and further discussion regarding available facilities and response times will be provided in the Environmental Impact Report (EIR).

[62] Los Angeles County Department of Regional Planning, General Plan Figure 12.5: Fire Hazard Severity Zones Policy Map, May 2014.
[63] Los Angeles County Fire Department, 2017-2021 Strategic Plan, Accessed on June 18, 2019 at: https://www.fire.lacounty.gov/wp-content/uploads/2018/10/LACoFD-Strategic-Plan-2017-2021.pdf.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire? ☒ ☐ ☐ ☐

Potentially Significant Impact. The residential Project is located on the top of a hill along an urban wildland interface. It is identified as being in a VHFHSZ, as is all of the existing surrounding residential development.

The Project site will be graded according to the approved grading plan providing large level building lots. The design will not introduce elements that would capture and funnel prevailing winds in a manner that would exacerbate wildfire risks and/or expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. The roads, building lots and graded and maintained areas of the site will act as a local fire break and the hydrant service will provide water for fire suppression.

The residential dwellings will be constructed in accordance with the most recent fire codes including internal sprinkler systems and fire-resistant materials. The Project will also be subject to compliance with the Fuel Modification Requirements of the Fire Code to protect against wildland fire. In addition to the structures themselves, the properties will be landscaped using fire-resistant native vegetation and will adhere to the guidelines in the Project-specific Fire Management Plan that specifies the distance and the heights of the vegetation to be planted in order to create the maximum defensible space on each parcel. Compliance with Fuel Modification Requirements reduce the potential impact of wildfire spread with the Project vicinity.

As stated above, the Project was reviewed and previously approved by the LACoFD. Existing LACoFD fire stations in the vicinity would serve the proposed project, such as Station 68, located at 24130 Calabasas Road which is 4.3 approximately driving miles from the Project Site or 11 minutes in typical traffic conditions. This distance is close enough for the LACoFD to be within the current standard response time for fire service in a rural area, which is 12 minutes or less for rural area. By complying with all applicable regulations and guidelines, the Project is not expected to exacerbate wildfire risks due to slope, prevailing winds, and other factors, and thereby would not expose any Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? ☒ ☐ ☐ ☐

Potentially Significant Impact. The Project will require the installation of roads, power lines water storage tanks and other utilities typical of any residential development and its impacts are considered. The new roads will act as additional fire breaks and facilitate access for emergency responders. The utilities will be placed underground and thereby minimize their potential to exacerbate fire risk. Lot 29 will be improved with large water storage tanks that will be dedicated to the Las Virgenes Municipal Water District upon completion. These tanks will provide adequate water pressure for the Project Site and improve pressure for the existing residential subdivision adjacent to the Project Site on the east. This existing subdivision has had long-standing issues with insufficient system pressure since its construction. These tanks will resolve this long-standing pressure problem and provide critical storage capacity for fire suppression for the entire area. The construction of the Project will not exacerbate fire risk or result in temporary or ongoing impacts to the

environment. Construction will comply with all applicable fire codes and regulations and in actuality provide much needed water capacity not reliant on supplemental pumping to offer much improved needed fire protection for the entire area. As such, Project impacts are expected to be less than significant. Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☒	☐	☐	☐

Potentially Significant Impact. The construction of the Project will comply with all applicable conditions of the grading permit including the development of an erosion control plan and the implementation of Project-specific best management practices (BMPs) to mitigate off-site runoff during construction. The Project Site will be developed in accordance with all accepted compaction and site development standards. It will comply with all the guidance provided by the existing site-specific geotechnical report and all surface runoff will be in compliance with industry standard volume, flow and velocity guidelines. As such the Project impacts are expected to be less than significant and will not expose people or structures to significant risks, including downslope or downstream flooding or landslides**.** Nevertheless, additional detailed analysis and further discussion will be provided in the EIR.

21. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐

Potentially Significant Impact. Although the Project would not directly have an effect that would "substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory," as cited in the checklist questions, this document conservatively considers the impact potentially significant because of Section 1, Aesthetics, Section 4, Biological Resources, Section 5, Cultural Resources, Section 9, Hazards and Hazardous Materials, Section 11, Land Use and Planning, Section 13, Noise, Section 15, Public Services, Section 17, Transportation, Section 18, Tribal Cultural Resources, and Section 20, Wildfire impacts that require mitigation. This will be discussed in greater detail in the subsequent EIR.

b) Does the project have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals?	☒	☐	☐	☐

Potentially Significant Impact. The preceding analyses identify short-term and long-term effects of the Project, where applicable, in the form of temporary construction period and permanent operational period impacts. The identified potential significant impacts of the Project will be analyzed further in the subsequent EIR to determine whether impacts can be reduced to less than significant levels with the implementation of mitigation measures. In addition, the Project would be consistent with applicable County plans and policies, and it would be consistent with SCAG growth forecasts for the area. Therefore, the Project would not have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals, and impacts would be less than significant.

c) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? ☒ ☐ ☐ ☐

Potentially Significant Impact. As noted in the analysis of each of the environmental issues in this IS, the impacts associated with development of the Project have been evaluated to be "Potentially Significant," "Less Than Significant with Mitigation Incorporated", "Less Than Significant", or "No Impact." For issues that were determined to be "Less Than Significant" or "No Impact," no further analysis or discussion is required. As the net Project impacts would be less than significant, the Project would not add a considerable incremental increase towards a cumulative impact.

For issues that were determined to be "Potentially Significant' or "Less Than Significant with Mitigation Incorporated," further analysis and discussion of individual and cumulative impacts, inclusive of fire access, will be provided in the subsequent EIR. Where practicable, the EIR will identify mitigation measures with the goal of reducing impacts to below the level of significance.

The City of Los Angeles Planning Department staff stated that the area of the project is essentially "built out" with predominantly residential dwellings and there are few development projects in the west valley with the exception of the Warner Center area which is a commercial/retail destination approximately 3.5 miles east of the Project. The City of Los Angeles Department of Transportation provided a list of projects in the area and the nearest project was an infill residential development approximately 2 miles east of the project on Sherman Way. The distance of these projects is significant and as such they are not eligible to be cumulatively considerable.

d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? ☒ ☐ ☐ ☐

Potentially Significant Impact. Potentially Significant Project impacts identified in this IS will be analyzed in greater detail in the subsequent EIR and where practicable, the EIR will identify mitigation measures with the goal of reducing impacts to below the level of significance.

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APPENDIX A
Viewshed Analysis

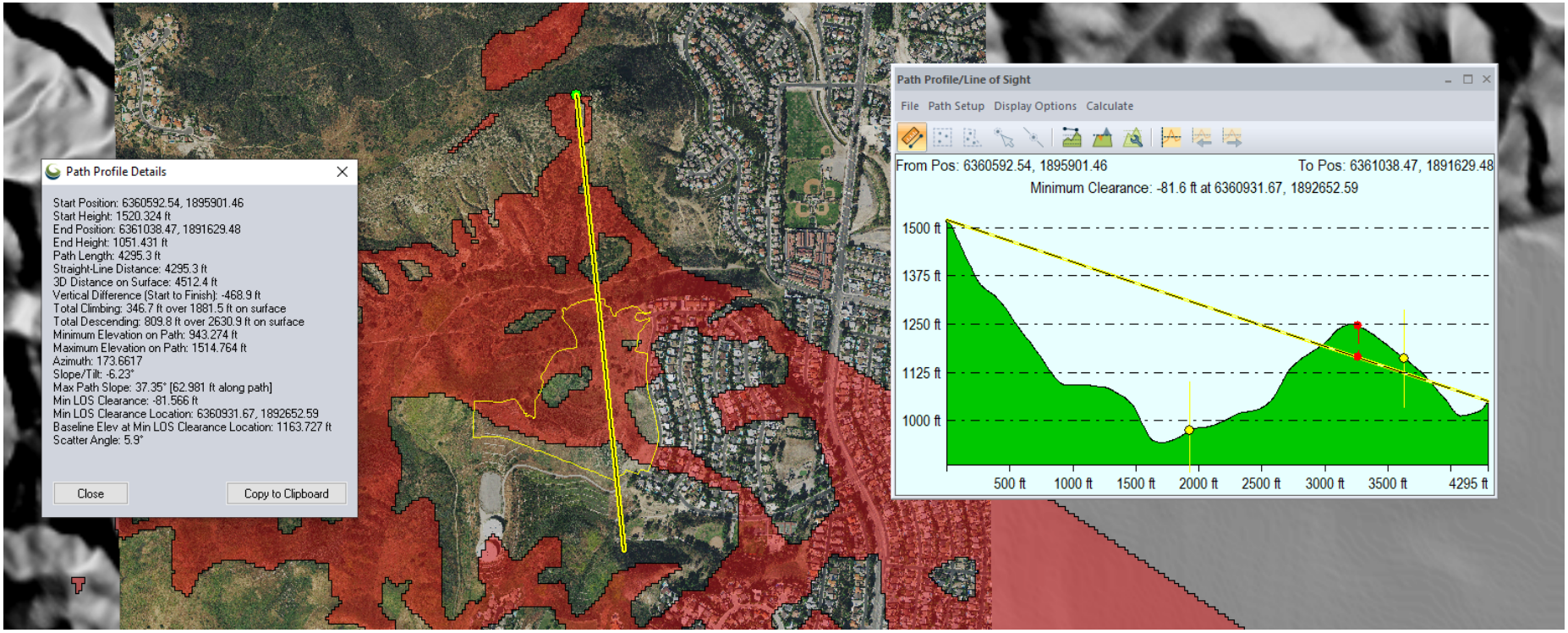
West Hills Crest Viewshed Analysis

October 2019

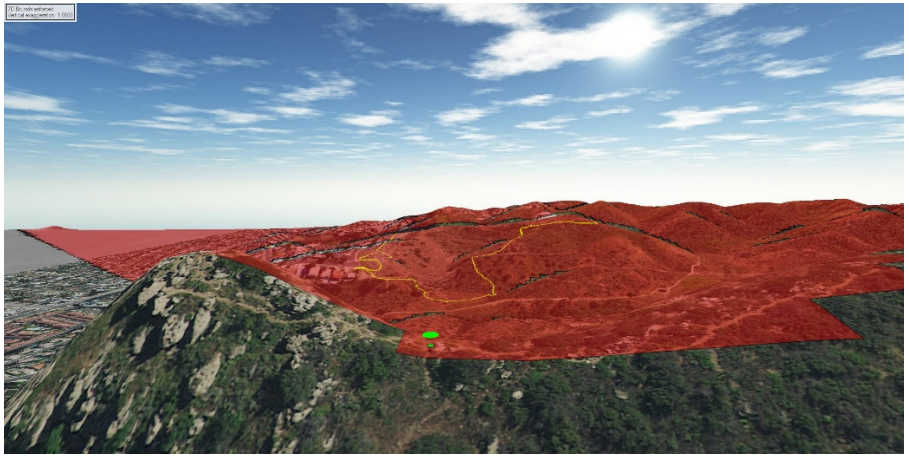
envicom
CORPORATION

El Escorpion Park

View Data

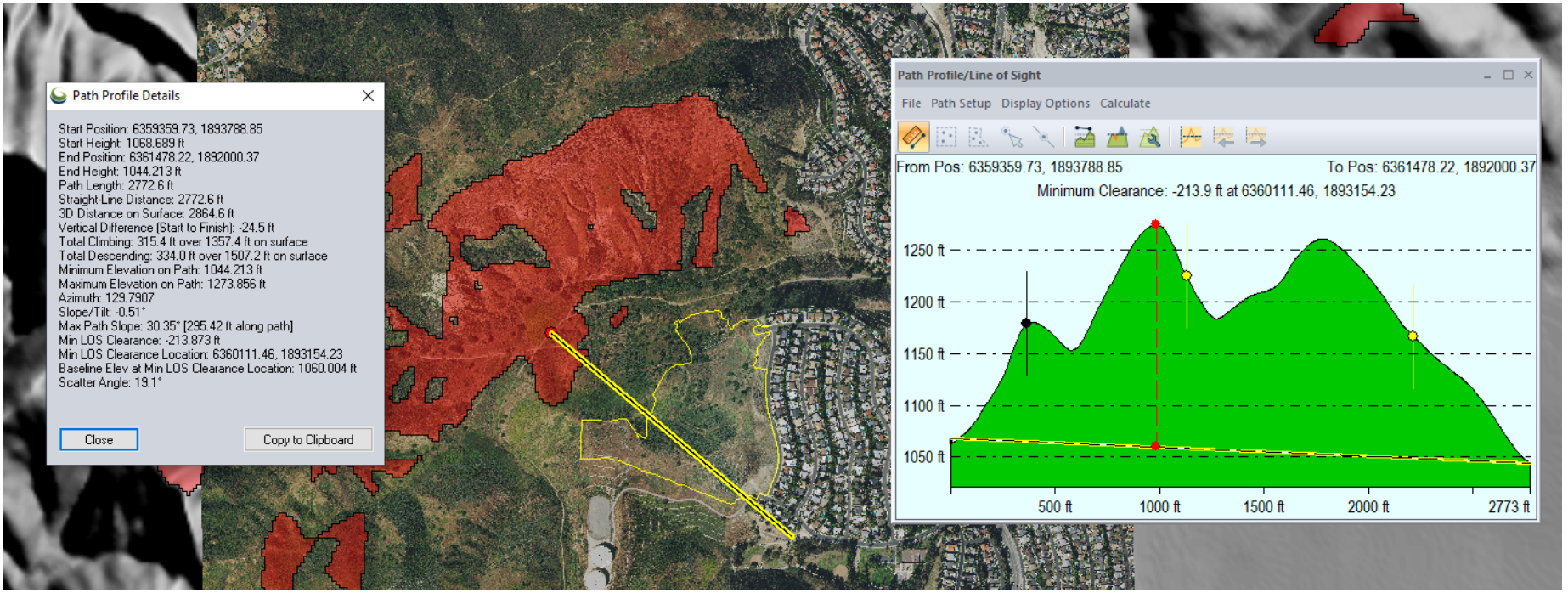


Simulated View



Las Virgenes Canyon Open Space Preserve

View Data



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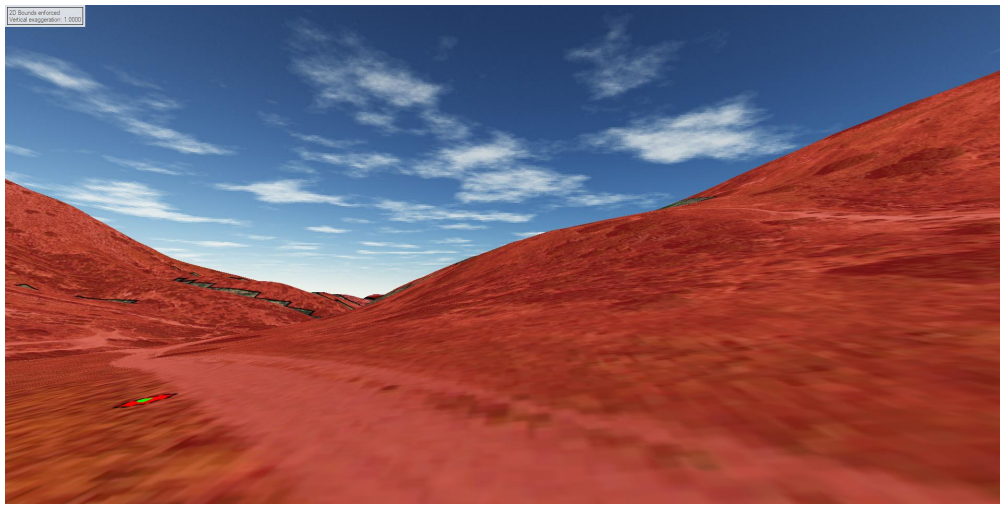
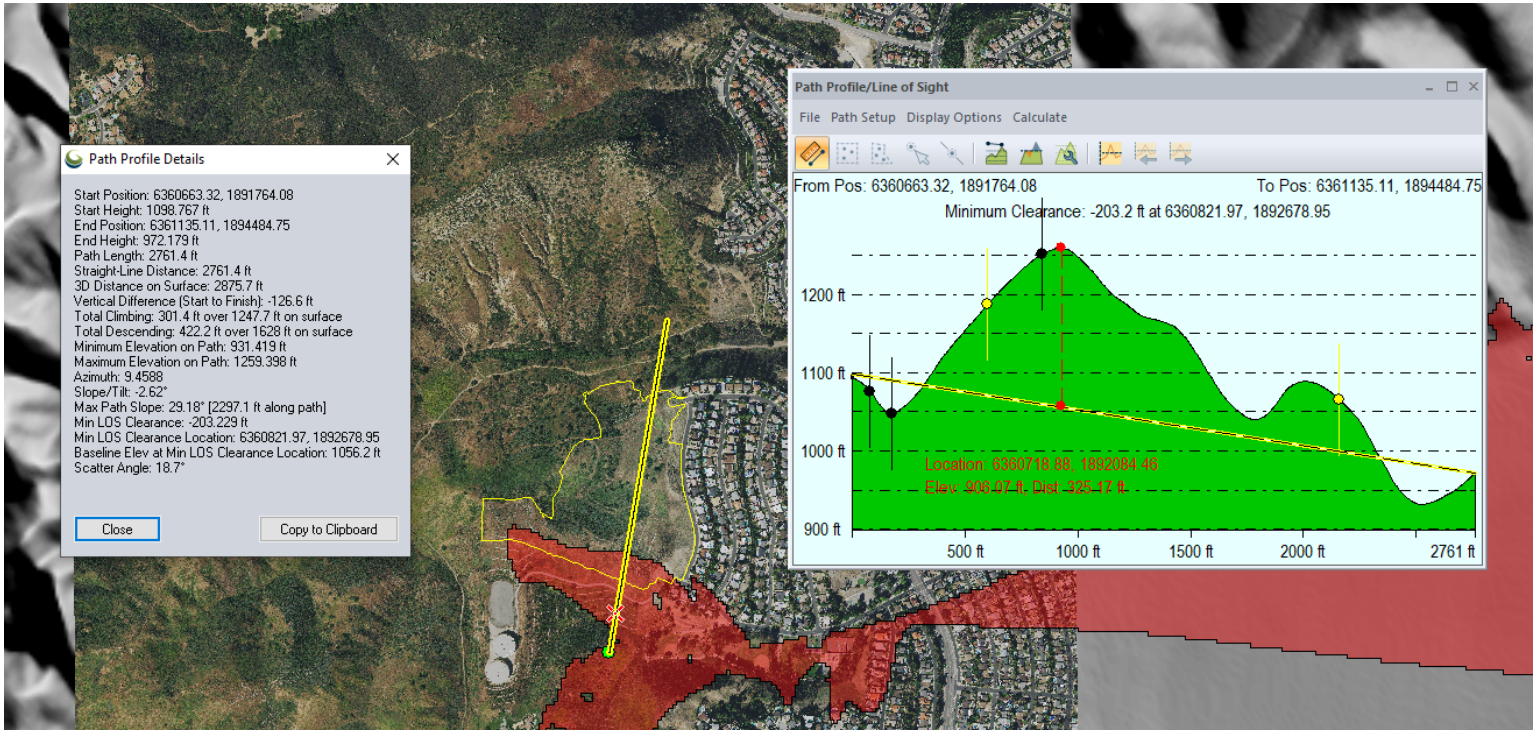


Knapp Ranch Park

View Data



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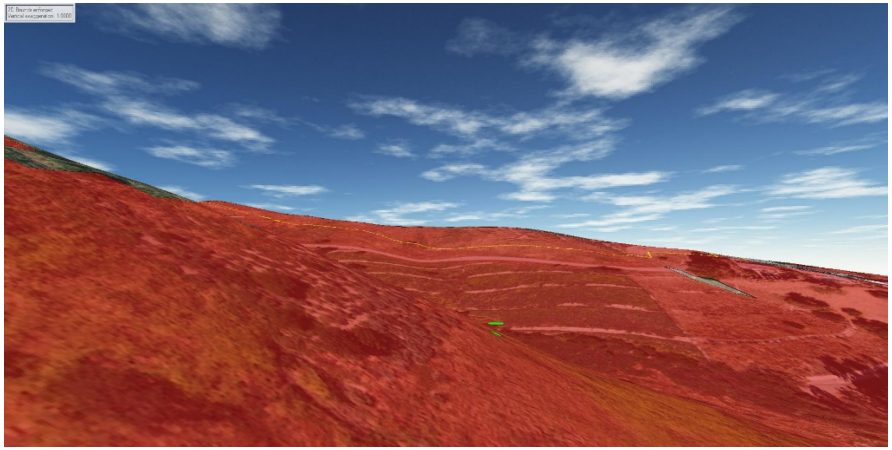
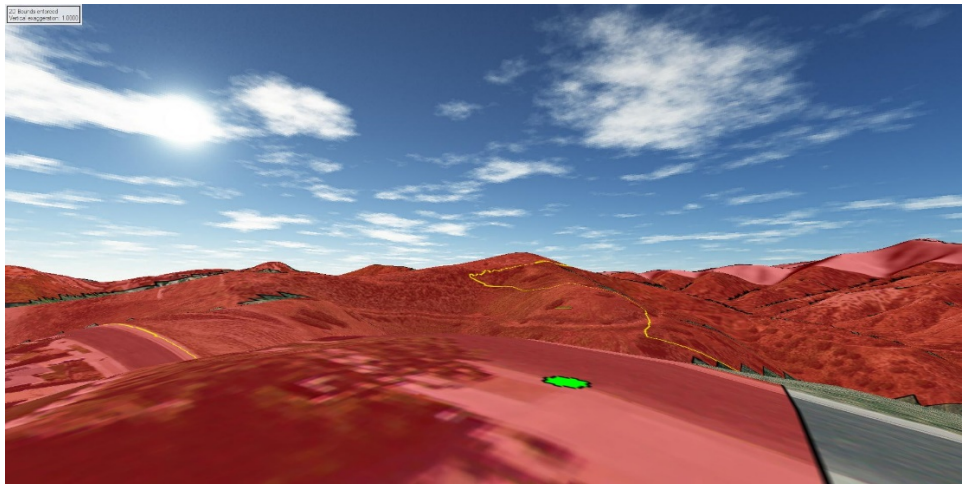


Randiwood Lane

View Data



Simulated View



APPENDIX B
Air Quality Impact Analysis

AIR QUALITY IMPACT ANALYSIS

West Hills Crest Residential Project
Tract # 52652
County of Los Angeles

Project # 14-460-101

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March 14, 2017

SECTION

1.0	**INTRODUCTION**	1
2.0	**ATMOSPHERIC SETTING**	1
3.0	**PROPOSED DEVELOPMENT**	1
4.0	**AIR QUALITY SETTING**	1
5.0	**AIR QUALITY IMPACT**	6
6.0	**GREENHOUSE GAS EMISSIONS (GHG) IMPACT**	10

Tables

Table 1	Ambient Air Quality Standards	2
Table 2	Health Effects of Major Criteria Pollutants	4
Table 3	Project Area Air Quality Monitoring Summary 2011-2015 (Days Standards Were Exceeded and Maximum Observed Levels)	5
Table 4	Daily Emissions Thresholds	6
Table 5	Conceptual Construction Equipment Fleet	8
Table 6	Maximum Daily Construction Emissions (pounds/day)	9
Table 7	Local Significance Thresholds (LST) and Peak Daily Onsite Emissions (pounds/day)	10
Table 8	Maximum Daily Operational Emissions (pounds/day)	10

Appendix

Appendix A CalEEMod2016.3.1 Computer Model Output

1.0 INTRODUCTION

The purpose of this Air Quality Impact Analysis is to identify, describe, and evaluate the significance of potential air quality impacts resulting from the construction and operation of a proposed 25-lot single-family residential tract in the County of Los Angeles. This analysis also includes a discussion and evaluation of potential greenhouse gas (GHG) emissions.

2.0 ATMOSPHERIC SETTING

The project site is located in the western portion of the San Fernando Valley in an unincorporated area of Los Angeles County, within the South Coast Air Basin (air basin). The air basin is bounded by the Pacific Ocean to the west, the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east, and San Diego County to the south.

In addition to being a metropolitan area with a high level of human activity, the topography and climate of Southern California combine to produce unhealthful air quality in the air basin. Low temperature inversions, light winds, shallow vertical mixing, and extensive sunlight, in combination with topographical features such as adjacent mountain ranges that hinder dispersion of air pollutants, can result in degraded air quality within the basin.

3.0 PROPOSED DEVELOPMENT

The proposed project would develop a housing tract with 25 single-family homes, associated access roadways and utilities, a recreation lot with tennis courts, a water tank reservoir, and a stormwater detention basin within a 58-acre property. The proposed development would be clustered within approximately 37.46 acres of the site, while the remainder of the site would remain open space. The site is bordered by existing residential development to the east, and open space to the north, south, and west.

Construction of the project would require grading to provide level building pads for the proposed lots and roads, and to create a stormwater detention basin. Cut and fill grading quantities are estimated to be 975,000 cubic yards each. All grading quantities of cut and fill would be balanced onsite.

4.0 AIR QUALITY SETTING

Ambient Air Quality Standards

National and State ambient air quality standards (AAQS) are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise, called "sensitive receptors." Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. Recent research has shown, however, that chronic exposure to ozone (the primary ingredient in photochemical smog) may lead to adverse respiratory health even at concentrations close to the ambient standard. National and State AAQS currently in effect in California are shown in **Table 1**. Sources and health effects of various pollutants are shown in **Table 2**.

Table 1
Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.070 ppm (137 µg/m³)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12.0 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m³)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m³)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)		0.053 ppm (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m³)	
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m³	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m³ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m³		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

See footnotes on next page ...

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Table 1
Table 1 (Continued)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

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Table 2
Health Effects of Major Criteria Pollutants

Pollutants	Examples of Sources	Health Effects
Particulate Matter (PM-2.5, PM-10)	• Cars and trucks (especially diesels) • Fireplaces, woodstoves • Windblown dust from roadways, agriculture and construction	• Hospitalizations for worsened heart diseases • Emergency room visits for asthma • Premature death
Ozone (O_3)	• Precursor sources*: motor vehicles, industrial emissions, and consumer products	• Cough, chest tightness • Difficulty taking a deep breath • Worsened asthma symptoms • Lung inflammation
Carbon Monoxide (CO)	• Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves	• Chest pain in heart patients ** • Headaches, nausea ** • Reduced mental alertness ** • Death at very high levels **
Nitrogen Dioxide (NO_2)	• See carbon monoxide sources	• Increased response to allergens

Source: California Air Resources Board, ARB Fact Sheet: Air Pollution and Health, webpage (reviewed December 2, 2009), accessed at https://www.arb.ca.gov/research/health/fs/fs1/fs1.htm March 1, 2017.
* Ozone is not generated directly by these sources. Rather chemicals emitted by these precursor sources react with sunlight to form ozone in the atmosphere.
** Health effects from CO exposures occur at levels considerably higher than ambient.

Baseline Air Quality

In the air basin, the agencies designated to develop the regional Air Quality Management Plan (AQMP) are the SCAQMD and the Southern California Association of Governments (SCAG). The 2012 Air Quality Management Plan (AQMP) was adopted in 2013, and an updated AQMP for 2016 is in the planning stages as AQMPs are required to be updated every three years.

Primary pollutants are those pollutants that are emitted in their already unhealthful form, the effects of which can generally be more closely linked to the specific location where they are emitted. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the air basin for PM-10, an aggressive dust control program is required for construction projects to control fugitive dust. Secondary pollutants require time to transform from a more benign form to a more unhealthful contaminant, and their impact is more regional and may be far from the source.

Existing levels of ambient air quality and historical trends and projections in the project area are best documented from measurements made by the SCAQMD. The geographically closest SCAQMD air quality monitoring station to the project is in Reseda, providing monitoring data for regional air pollutants such as ozone, carbon monoxide (CO), nitrogen oxides (NOx), and fine particulate matter (PM-2.5). **Table 3** provides the last five years of data from this monitoring station. Table 3 provides available data from the last five years for particulate matter of 10-microns or less (PM-10) recorded in the eastern San Fernando Valley as no data for PM-10 was recorded for the West San Fernando Valley monitoring station.

Ozone, the primary ingredient in photochemical smog, is an important pollution problem in the Los Angeles basin. As shown in Table 3, air samples at the West San Fernando Valley SCAQMD station have exceeded the federal 8-hour standard on four days in 2015. Similarly, eleven days in 2015 have exceeded the California one-hour standard. The state 8-hour standard was exceeded a total of 34 times in 2015.

The West San Fernando Valley SCAQMD station does not report PM-10 data, however, the East San Fernando Valley station reports that approximately two percent of all days monitored in that location experienced a violation of the State PM-10 standard in 2014[1]. The East San Fernando Valley station reported that the federal PM-10 standard was not exceeded in the past five years for which data is provided, while West San Fernando Valley station reported the current federal 24-hour AAQS for PM-2.5 was exceeded less than one percent of all monitored days in 2015.

Primary pollutants such as CO and NO_X are low near the project site because there is substantial excess dispersive capacity to accommodate localized emissions of those pollutants. As shown in Table 3, allowable levels of these criteria pollutants have not been exceeded in the past five years.

Table 3
Project Area Air Quality Monitoring Summary 2011-2015
(Days Standards Were Exceeded and Maximum Observed Levels)

Pollutant/Standard	2011	2012	2013	2014	2015
Ozone					
1-Hour > 0.09 ppm (S)	17	18	7	6	11
8-Hour > 0.07 ppm (S)	35	38	21	31	34
8- Hour > 0.075 ppm (F)	26	23	11	2	4
Max. 1-Hour Conc. (ppm)	0.130	0.129	0.124	0.116	0.119
Max. 8-Hour Conc. (ppm)	0.103	0.098	0.092	0.092	0.094
Carbon Monoxide					
8-Hour > 9. ppm (S, F)	0	0	0	0	0
Max 8-Hour Conc. (ppm)	2.8	2.8	2.3	3.0	3.0
Nitrogen Dioxide					
1-Hour > 0.18 ppm (S)	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.056	0.071	0.058	0.059	0.073
Inhalable Particulates (PM-10)					
24-Hour > 50 $\mu g/m^3$ (S)	2/55	1/60	1/58	2/164	No data
24-Hour > 150 $\mu g/m^3$ (F)	0/55	0/60	0/58	0/164	No data
Max. 24-Hr. Conc. ($\mu g/m^3$)	61	55	52	68	No data
Ultra-Fine Particulates (PM-2.5)					
24-Hour > 35 $\mu g/m^3$ (F)	1/117	2/110	1/118	0/109	1/113
Max. 24-Hr. Conc. ($\mu g/m^3$)	39.8	41.6	41.8	27.2	36.8
Source: SCAQMD Monitoring Reports from the West San Fernando Station (East San Fernando Valley Station for PM-10) S=State Standard F=Federal Standard					

[1] The East San Fernando Valley SCAQMD monitoring station did not report PM-10 data for 2015.

5.0 AIR QUALITY IMPACT

Significance Criteria

Air quality impacts are considered significant if they cause clean air standards to be violated where they are currently met, or if they substantially contribute to an existing violation of standards. Any substantial emissions of air contaminants for which there is no safe exposure, or nuisance emissions such as dust or odors, would also be considered a significant impact.

Based on Appendix G of the California CEQA Guidelines, a project would have a potentially significant impact if it:

a. Conflicts with or obstructs implementation of the applicable air quality plan.
b. Violates any air quality standard or contributes substantially to an existing or projected air quality violation.
c. Results in a cumulatively considerable net increase of any criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
d. Exposes sensitive receptors to substantial pollutant concentrations.
e. Creates objectionable odors affecting a substantial number of people.

Air Quality Planning

While conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use designations could indicate conformance with the current AQMP, the air quality impact significance for this proposed project has been analyzed on a project-specific basis to determine consistency with SCAQMD project impact evaluation thresholds. For determining project significance under CEQA, the SCAQMD has designated emissions level thresholds for evaluating regional air quality impact significance. Projects in the SCAQMD with daily emissions that exceed emission thresholds shown in Table 4 could result in significant impacts.

Table 4
Daily Emissions Thresholds

Pollutant	Construction	Operations
ROG	75	55
NO_X	100	55
CO	550	550
PM-10	150	150
PM-2.5	55	55
SO_X	150	150
Source: SCAQMD CEQA Air Quality Handbook, November 1993 Rev.		

Additional Indicators

In its CEQA Handbook, the SCAQMD also states that additional indicators should be used as screening criteria to determine the need for further analysis with respect to air quality. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation.
- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP and in other than planned locations for the project's build-out year.
- Project could generate vehicle trips that cause a CO hot spot.

For the proposed project, diesel exhaust toxic air contaminants (TAC's) emitted from construction equipment would occur over a relatively brief period while construction is occurring. Health effects of TAC's are evaluated based on an accumulation over an assumed 70-year lifespan. Any measurable diesel TAC exposure from the project would occur for only the brief portion of this project's lifetime during construction, estimated to be less than two years.

The SCAQMD's resolution activity for odor compliance is mandated under California Health & Safety Code Section 41700, and falls under SCAQMD Rule 402. This rule on Public Nuisance Regulation states: "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals."

Sensitive Receptors

Air quality impacts are analyzed relative to those persons with the greatest sensitivity to air pollution exposure. Such persons are called "sensitive receptors." Sensitive population groups include young children, the elderly and the acutely and chronically ill (e.g., those with cardio-respiratory disease, including asthma). For this project, nearby residences are considered to be sensitive uses because they may be occupied for extended periods, and residents may be outdoors when exposure is highest.

Construction Activity Impacts

Dust is typically the primary concern during construction of residential tracts where land clearing and grading are proposed. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions." Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). These parameters are not known with any reasonable certainty prior to project development and may change from day to day. Any assignment of specific parameters to an unknown future date is speculative and conjectural.

Because of the inherent uncertainty in the predictive factors for estimating fugitive dust generation, regulatory agencies typically use one universal "default" factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into midrange average values. This assumption may or may not be totally applicable to site-specific conditions on the proposed project site. As noted previously, emissions estimation for project-specific fugitive dust sources is therefore characterized by a considerable degree of imprecision.

CalEEMod was developed by the SCAQMD to provide a model by which to calculate both construction emissions and operational emissions from a variety of land use projects. It calculates both the daily maximum and annual average emissions for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions.

Estimated construction emissions were modeled using CalEEMod2016.3.1 to identify maximum daily emissions for each pollutant during project construction. The output reports from CalEEMod are included as **Appendix A** to this report. Construction emissions were modeled based on the construction equipment fleet list and approximate duration of each construction phase shown in **Table 5**. Utilizing this indicated equipment fleet, for the proposed project, the project's maximum daily construction emissions as calculated by CalEEMod are listed in **Table 6**.

All construction grading projects in the County of Los Angeles must comply with the requirements of SCAQMD Rule 403, Fugitive Dust, which requires the implementation of Reasonably Available Control Measures (RACM) for all fugitive dust sources. SCAQMD Rule 403, Control Measure 08-2 states that during earth moving activities, project's are required to "Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction". Therefore, pursuant to SCAQMD Rule 403, the project would be required implement adequate watering of exposed surfaces during the site preparation and grading phases. As seen in Table 6, peak daily construction activity emissions of criteria air pollutants are estimated to be far below SCAQMD thresholds.

Table 5
Conceptual Construction Equipment Fleet

Phase Name and Duration	Equipment [a]
Site Preparation (30 days)	2 Rubber-tired Dozers
	3 Loader/Backhoes
Grading (90 days)	2 Excavators
	1 Grader
	2 Scrapers
	1 Rubber-tired Dozer
	2Loader/Backhoes
Construction (355 days)	1 Crane
	3 Forklifts
	1 Generator set
	3 Loader/Backhoes
	1 Welder
Paving (10 days)	2 Pavers
	2 Paving equipment
	2 Roller
Architectural Coating (55 days)	1 Air Compressor

[a] CalEEMod output, March 2, 2017

Table 6
Maximum Daily Construction Emissions (pounds/day)

	ROG	NO_X	CO	SO_2	PM-10	PM-2.5
Maximum Daily Construction Emissions*	8.8	68.0	40.0	0.06	7.6	4.9
SCAQMD Thresholds	75	100	550	150	150	55
Significant Impact? Y/N	No	No	No	No	No	No

Source: CalEEMod output, March 2, 2017.
* CalEEMod project emissions estimates based on required compliance with SCAQMD Rule 403 minimizing fugitive dust by watering exposed surfaces during construction.

Localized Significance Thresholds Analysis

The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs). LSTs were developed in response to Governing Board's Environmental Justice Enhancement Initiative 1-4 and the LST methodology was provisionally adopted in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005.

Use of an LST analysis for a project is optional. For the proposed project, the primary source of possible LST impact would be during construction. LSTs are applicable for a sensitive receptor where it is possible that an individual could remain for 24 hours such as a residence, hospital or convalescent facility.

LSTs are only applicable to the following criteria pollutants: NO_X, CO, PM-10, and PM-2.5. LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor.

LST screening tables provide thresholds for 25, 50, 100, 200 and 500-meter source-receptor distances. Due to existing residences located within 25 meters of the eastern project boundary, the 25-meter thresholds were considered for this project. LST pollutant screening level concentration data is currently published for 1, 2 and 5-acre sites. For this project, thresholds for a 5-acre site was used, although the approximately 35-acre project development area is considerably larger and would generally have equipment operating at much greater distances from existing residences and in a less concentrated area. This evaluation is based on estimated daily construction emissions for the phase and year representing the highest daily emissions. Daily averages would be lower than the reported maximum amounts.

Table 7 shows the relevant thresholds and the estimated peak daily onsite emissions during the construction phases that would generate the highest level of onsite emissions for each pollutant evaluated for LST impacts. All construction projects in the County of Los Angeles must comply with the requirements of SCAQMD Rule 403, Fugitive Dust, which requires the implementation of Reasonably Available Control Measures (RACM) for all fugitive dust sources, and the AQMP, which identifies Best Available Control Measures (BACM) and Best Available Control Technologies (BACT) for area sources and point sources, respectively. SCAQMD Rule 403, Control Measure 08-2 states that during earth moving activities, projects are required to "Re-apply water as necessary to maintain soils in a damp

condition and to ensure that visible emissions do not exceed 100 feet in any direction". Therefore, pursuant to SCAQMD Rule 403, the project would be required implement adequate watering of exposed surfaces during the site preparation and grading phases. As seen in Table 7, the peak onsite emissions during construction would not exceed the applicable SCAQMD LSTs, and as such, potential LST impacts would be less than significant.

Table 7
Local Significance Thresholds (LST)
and Peak Daily Onsite Emissions (pounds/day)

LST 5.0 acre/25 meters West San Fernando Valley	**NO_X**	**CO**	**PM-10**	**PM-2.5**
LST Threshold	221	1,158	11	6
Peak Onsite Daily Emissions [a]	**68**	**40**	**7.6**	**4.9**
Significant Impact? Y/N	No	No	No	No

Source: CalEEMod output, March 2, 2017.
[a] PM-10 and PM-2.5 emissions estimates include compliance with SCAQMD Rule 403 requirements of water application for fugitive dust suppression.

Operational Impacts

During operations, the proposed residences would result in air quality emissions of criteria pollutants from area sources, energy sources, and mobile sources. The SCAQMD thresholds for air quality impacts from operations are shown above in Table 4. Operations of the proposed residential development would not be anticipated to exceed SCAQMD significance thresholds for criteria pollutants, as shown in **Table 8**. As seen in Table 8, the project's operational emissions would be far below SCAQMD thresholds; therefore, operational impacts would be less than significant.

Table 8
Maximum Daily Operations Emissions (pounds/day)

Daily Emissions	**ROG**	**NO_X**	**CO**	**SO_2**	**PM-10**	**PM-2.5**
Area	8.23	0.54	14.79	0.03	1.92	1.92
Energy	0.03	0.23	0.10	0.00	0.02	0.02
Mobile	0.57	2.64	7.83	0.02	1.83	0.51
Total	8.82	3.41	22.72	0.06	3.77	2.45
SCAQMD Thresholds	55	55	550	150	150	55
Significant Impact? Y/N	No	No	No	No	No	No

Source: CalEEMod output, March 2, 2017.

6.0 GREENHOUSE GAS EMISSIONS (GHG) IMPACT

Greenhouse gas emissions (GHG) emitted by human activity are implicated in global climate change. These GHGs contribute to an increase in the temperature of the earth's atmosphere by preventing long wavelength heat radiation in some parts of the infrared spectrum from leaving the atmosphere. For purposes of planning and regulation, Section 15364.5 of the California Code of Regulations defines

GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. Fossil fuel combustion in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions. Residential uses in California contribute 7 percent to the GHG statewide burden plus a proportionate share of in-and out-of-state electrical generation emissions (ARM, 2014).

AB 32 is one of the most significant pieces of environmental legislation regarding greenhouse gas emissions that California has adopted. Major components of the AB 32 include:

- Require the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate "early action" control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California's GHG emissions be reduced to 1990 levels.
- Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

GHG sources are categorized into direct sources (i.e. company owned) and indirect sources (i.e. not company owned). Direct sources include combustion emissions from on-and off-road mobile sources, and fugitive emissions. Indirect sources include off-site electricity generation and non-company owned mobile sources.

Thresholds of Significance

Based on the CEQA Appendix G guidelines, a project would have a potentially significant GHG impact if it:

- Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or,
- Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

Section 15064.4 of the Code specifies how significance of GHG emissions is to be evaluated. The process is broken down into quantification of project-related GHG emissions, making a determination of significance, and specification of any appropriate mitigation if impacts are found to be potentially significant. At each of these steps, the new GHG guidelines afford the lead agency with substantial flexibility. Emissions identification may be quantitative, qualitative or based on performance standards. This analysis relies on the quantified GHG emissions estimated for this project using CalEEMod.

To determine a significance threshold for GHG emissions, in September 2010 the SCAQMD CEQA Significance Thresholds GHG Working Group recommended a threshold of 3,500 Metric Tons (MT) Carbon Dioxide equivalent (CO_2e) for residential use projects. This 3,500 MT/year recommendation has been used as a guideline for this analysis.

Construction Activity GHG Emissions

During project construction, the CalEEMod computer model estimates that the construction activities would generate a total of 780 MT CO_2e emissions. SCAQMD GHG emissions evaluation guidance is to amortize construction emissions over a 30-year lifetime, which results in a project amortized annual emissions of approximately 26 MT CO_2e emissions.

Project Operational GHG Emissions

Based on the CalEEMod output files found in the appendix of this report, the project's annual operational GHG emissions from a combination of area sources, energy use, water use, and waste disposal would be 585.7 MT CO_2e. With the addition of the amortized construction GHG emissions discussed above, the project would result in annual emissions of approximately 611.7 MT CO_2e, which is well below the threshold guideline, and therefore the project's operational GHG emissions impact would not be significant.

Appendix A

CalEEMod2016.3.1
Computer Model Output

West Hills Crest

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	25.00	Dwelling Unit	37.46	75,000.00	72

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2019
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Grading area 37.46 ac
Construction approx. 75,000 sq ft

Construction Phase - No demo. Grading 90 days, construction 355 days, paving 10 days.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - No demolition

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - 2 dozers, 3 loaders

Construction Off-road Equipment Mitigation -

West Hills Crest - Los Angeles-South Coast County, Summer

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	740.00	355.00
tblConstructionPhase	NumDays	50.00	0.00
tblConstructionPhase	NumDays	75.00	90.00
tblConstructionPhase	NumDays	55.00	10.00
tblGrading	AcresOfGrading	225.00	187.50
tblLandUse	BuildingSpaceSquareFeet	45,000.00	75,000.00
tblLandUse	LandUseSquareFeet	45,000.00	75,000.00
tblLandUse	LotAcreage	8.12	37.46
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	3.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	OperationalYear	2018	2019
tblTripsAndVMT	WorkerTripNumber	13.00	18.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	5.8734	68.0355	40.0138	0.0646	12.2454	3.0748	14.2426	6.6738	2.8288	8.5113	0.0000	6,602.6698	6,602.6698	1.9548	0.0000	6,651.5389
2018	5.2006	59.6052	36.1695	0.0646	8.4550	2.6357	11.0908	3.6081	2.4249	6.0330	0.0000	6,495.1664	6,495.1664	1.9534	0.0000	6,544.0009
2019	8.8090	21.4590	17.6899	0.0288	0.1677	1.2930	1.4128	0.0445	1.2156	1.2479	0.0000	2,784.3903	2,784.3903	0.7203	0.0000	2,800.4014
Maximum	**8.8090**	**68.0355**	**40.0138**	**0.0646**	**12.2454**	**3.0748**	**14.2426**	**6.6738**	**2.8288**	**8.5113**	**0.0000**	**6,602.6698**	**6,602.6698**	**1.9548**	**0.0000**	**6,651.5389**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	5.8734	68.0355	40.0138	0.0646	5.6211	3.0748	7.6183	3.0326	2.8288	4.8700	0.0000	6,602.6698	6,602.6698	1.9548	0.0000	6,651.5389
2018	5.2006	59.6052	36.1695	0.0646	3.9277	2.6357	6.5635	1.6562	2.4249	4.0811	0.0000	6,495.1664	6,495.1664	1.9534	0.0000	6,544.0009
2019	8.8090	21.4590	17.6899	0.0288	0.1677	1.2930	1.4128	0.0445	1.2156	1.2479	0.0000	2,784.3903	2,784.3903	0.7203	0.0000	2,800.4014
Maximum	**8.8090**	**68.0355**	**40.0138**	**0.0646**	**5.6211**	**3.0748**	**7.6183**	**3.0326**	**2.8288**	**4.8700**	**0.0000**	**6,602.6698**	**6,602.6698**	**1.9548**	**0.0000**	**6,651.5389**

West Hills Crest - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	53.44	0.00	41.69	54.16	0.00	35.42	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.2279	0.5427	14.7865	0.0325		1.9211	1.9211		1.9211	1.9211	234.1730	453.7138	687.8868	0.7020	0.0159	710.1730
Energy	0.0267	0.2278	0.0969	1.4500e-003		0.0184	0.0184		0.0184	0.0184		290.7859	290.7859	5.5700e-003	5.3300e-003	292.5139
Mobile	0.5687	2.6429	7.8320	0.0239	1.8004	0.0269	1.8273	0.4819	0.0253	0.5072		2,426.0557	2,426.0557	0.1386		2,429.5198
Total	**8.8233**	**3.4134**	**22.7155**	**0.0579**	**1.8004**	**1.9664**	**3.7668**	**0.4819**	**1.9648**	**2.4467**	**234.1730**	**3,170.5554**	**3,404.7283**	**0.8461**	**0.0212**	**3,432.2068**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.2279	0.5427	14.7865	0.0325		1.9211	1.9211		1.9211	1.9211	234.1730	453.7138	687.8868	0.7020	0.0159	710.1730
Energy	0.0267	0.2278	0.0969	1.4500e-003		0.0184	0.0184		0.0184	0.0184		290.7859	290.7859	5.5700e-003	5.3300e-003	292.5139
Mobile	0.5687	2.6429	7.8320	0.0239	1.8004	0.0269	1.8273	0.4819	0.0253	0.5072		2,426.0557	2,426.0557	0.1386		2,429.5198
Total	**8.8233**	**3.4134**	**22.7155**	**0.0579**	**1.8004**	**1.9664**	**3.7668**	**0.4819**	**1.9648**	**2.4467**	**234.1730**	**3,170.5554**	**3,404.7283**	**0.8461**	**0.0212**	**3,432.2068**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2017	8/31/2017	5	0	
2	Site Preparation	Site Preparation	9/1/2017	10/12/2017	5	30	
3	Grading	Grading	10/13/2017	2/15/2018	5	90	
4	Building Construction	Building Construction	2/16/2018	6/27/2019	5	355	
5	Paving	Paving	6/28/2019	7/11/2019	5	10	
6	Architectural Coating	Architectural Coating	7/12/2019	9/26/2019	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 0

Residential Indoor: 151,875; Residential Outdoor: 50,625; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

West Hills Crest - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	0	0.00	81	0.73
Demolition	Excavators	0	0.00	158	0.38
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	3	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.0442	0.0000	12.0442	6.6205	0.0000	6.6205			0.0000			0.0000
Off-Road	3.4128	35.8649	16.4349	0.0264		1.9954	1.9954		1.8357	1.8357		2,702.7217	2,702.7217	0.8281		2,723.4244
Total	**3.4128**	**35.8649**	**16.4349**	**0.0264**	**12.0442**	**1.9954**	**14.0395**	**6.6205**	**1.8357**	**8.4562**		**2,702.7217**	**2,702.7217**	**0.8281**		**2,723.4244**

3.3 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1126	0.0863	1.1081	2.3300e-003	0.2012	1.8700e-003	0.2031	0.0534	1.7300e-003	0.0551		232.0052	232.0052	9.6300e-003		232.2460
Total	**0.1126**	**0.0863**	**1.1081**	**2.3300e-003**	**0.2012**	**1.8700e-003**	**0.2031**	**0.0534**	**1.7300e-003**	**0.0551**		**232.0052**	**232.0052**	**9.6300e-003**		**232.2460**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.4199	0.0000	5.4199	2.9792	0.0000	2.9792			0.0000			0.0000
Off-Road	3.4128	35.8649	16.4349	0.0264		1.9954	1.9954		1.8357	1.8357	0.0000	2,702.7217	2,702.7217	0.8281		2,723.4244
Total	**3.4128**	**35.8649**	**16.4349**	**0.0264**	**5.4199**	**1.9954**	**7.4152**	**2.9792**	**1.8357**	**4.8149**	**0.0000**	**2,702.7217**	**2,702.7217**	**0.8281**		**2,723.4244**

3.3 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1126	0.0863	1.1081	2.3300e-003	0.2012	1.8700e-003	0.2031	0.0534	1.7300e-003	0.0551		232.0052	232.0052	9.6300e-003		232.2460
Total	**0.1126**	**0.0863**	**1.1081**	**2.3300e-003**	**0.2012**	**1.8700e-003**	**0.2031**	**0.0534**	**1.7300e-003**	**0.0551**		**232.0052**	**232.0052**	**9.6300e-003**		**232.2460**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.2315	0.0000	8.2315	3.5488	0.0000	3.5488			0.0000			0.0000
Off-Road	5.7483	67.9396	38.7826	0.0620		3.0727	3.0727		2.8269	2.8269		6,344.8863	6,344.8863	1.9441		6,393.4879
Total	**5.7483**	**67.9396**	**38.7826**	**0.0620**	**8.2315**	**3.0727**	**11.3042**	**3.5488**	**2.8269**	**6.3757**		**6,344.8863**	**6,344.8863**	**1.9441**		**6,393.4879**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1251	0.0959	1.2312	2.5900e-003	0.2236	2.0800e-003	0.2256	0.0593	1.9200e-003	0.0612		257.7835	257.7835	0.0107		258.0511
Total	**0.1251**	**0.0959**	**1.2312**	**2.5900e-003**	**0.2236**	**2.0800e-003**	**0.2256**	**0.0593**	**1.9200e-003**	**0.0612**		**257.7835**	**257.7835**	**0.0107**		**258.0511**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7042	0.0000	3.7042	1.5970	0.0000	1.5970			0.0000			0.0000
Off-Road	5.7483	67.9396	38.7826	0.0620		3.0727	3.0727		2.8269	2.8269	0.0000	6,344.8863	6,344.8863	1.9441		6,393.4878
Total	**5.7483**	**67.9396**	**38.7826**	**0.0620**	**3.7042**	**3.0727**	**6.7769**	**1.5970**	**2.8269**	**4.4238**	**0.0000**	**6,344.8863**	**6,344.8863**	**1.9441**		**6,393.4878**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1251	0.0959	1.2312	2.5900e-003	0.2236	2.0800e-003	0.2256	0.0593	1.9200e-003	0.0612		257.7835	257.7835	0.0107		258.0511
Total	**0.1251**	**0.0959**	**1.2312**	**2.5900e-003**	**0.2236**	**2.0800e-003**	**0.2256**	**0.0593**	**1.9200e-003**	**0.0612**		**257.7835**	**257.7835**	**0.0107**		**258.0511**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.2315	0.0000	8.2315	3.5488	0.0000	3.5488			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230		6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**8.2315**	**2.6337**	**10.8652**	**3.5488**	**2.4230**	**5.9718**		**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1105	0.0834	1.0802	2.5200e-003	0.2236	1.9900e-003	0.2256	0.0593	1.8400e-003	0.0611		250.7380	250.7380	9.4000e-003		250.9731
Total	**0.1105**	**0.0834**	**1.0802**	**2.5200e-003**	**0.2236**	**1.9900e-003**	**0.2256**	**0.0593**	**1.8400e-003**	**0.0611**		**250.7380**	**250.7380**	**9.4000e-003**		**250.9731**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7042	0.0000	3.7042	1.5970	0.0000	1.5970			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230	0.0000	6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**3.7042**	**2.6337**	**6.3379**	**1.5970**	**2.4230**	**4.0200**	**0.0000**	**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1105	0.0834	1.0802	2.5200e-003	0.2236	1.9900e-003	0.2256	0.0593	1.8400e-003	0.0611		250.7380	250.7380	9.4000e-003		250.9731
Total	**0.1105**	**0.0834**	**1.0802**	**2.5200e-003**	**0.2236**	**1.9900e-003**	**0.2256**	**0.0593**	**1.8400e-003**	**0.0611**		**250.7380**	**250.7380**	**9.4000e-003**		**250.9731**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6795	23.3900	17.5804	0.0269		1.4999	1.4999		1.4099	1.4099		2,620.9351	2,620.9351	0.6421		2,636.9883
Total	**2.6795**	**23.3900**	**17.5804**	**0.0269**		**1.4999**	**1.4999**		**1.4099**	**1.4099**		**2,620.9351**	**2,620.9351**	**0.6421**		**2,636.9883**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0138	0.3677	0.1005	7.9000e-004	0.0192	2.5900e-003	0.0218	5.5300e-003	2.4800e-003	8.0100e-003		84.5038	84.5038	5.5600e-003		84.6429
Worker	0.0497	0.0375	0.4861	1.1300e-003	0.1006	9.0000e-004	0.1015	0.0267	8.3000e-004	0.0275		112.8321	112.8321	4.2300e-003		112.9379
Total	**0.0635**	**0.4052**	**0.5866**	**1.9200e-003**	**0.1198**	**3.4900e-003**	**0.1233**	**0.0322**	**3.3100e-003**	**0.0355**		**197.3359**	**197.3359**	**9.7900e-003**		**197.5808**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6795	23.3900	17.5804	0.0269		1.4999	1.4999		1.4099	1.4099	0.0000	2,620.9351	2,620.9351	0.6421		2,636.9883
Total	**2.6795**	**23.3900**	**17.5804**	**0.0269**		**1.4999**	**1.4999**		**1.4099**	**1.4099**	**0.0000**	**2,620.9351**	**2,620.9351**	**0.6421**		**2,636.9883**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0138	0.3677	0.1005	7.9000e-004	0.0192	2.5900e-003	0.0218	5.5300e-003	2.4800e-003	8.0100e-003		84.5038	84.5038	5.5600e-003		84.6429
Worker	0.0497	0.0375	0.4861	1.1300e-003	0.1006	9.0000e-004	0.1015	0.0267	8.3000e-004	0.0275		112.8321	112.8321	4.2300e-003		112.9379
Total	**0.0635**	**0.4052**	**0.5866**	**1.9200e-003**	**0.1198**	**3.4900e-003**	**0.1233**	**0.0322**	**3.3100e-003**	**0.0355**		**197.3359**	**197.3359**	**9.7900e-003**		**197.5808**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0125	0.3472	0.0921	7.8000e-004	0.0192	2.2100e-003	0.0214	5.5300e-003	2.1200e-003	7.6500e-003		83.6444	83.6444	5.3600e-003		83.7784
Worker	0.0450	0.0330	0.4340	1.1000e-003	0.1006	8.7000e-004	0.1015	0.0267	8.0000e-004	0.0275		109.1658	109.1658	3.7500e-003		109.2595
Total	**0.0574**	**0.3802**	**0.5261**	**1.8800e-003**	**0.1198**	**3.0800e-003**	**0.1229**	**0.0322**	**2.9200e-003**	**0.0351**		**192.8102**	**192.8102**	**9.1100e-003**		**193.0379**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0125	0.3472	0.0921	7.8000e-004	0.0192	2.2100e-003	0.0214	5.5300e-003	2.1200e-003	7.6500e-003		83.6444	83.6444	5.3600e-003		83.7784
Worker	0.0450	0.0330	0.4340	1.1000e-003	0.1006	8.7000e-004	0.1015	0.0267	8.0000e-004	0.0275		109.1658	109.1658	3.7500e-003		109.2595
Total	**0.0574**	**0.3802**	**0.5261**	**1.8800e-003**	**0.1198**	**3.0800e-003**	**0.1229**	**0.0322**	**2.9200e-003**	**0.0351**		**192.8102**	**192.8102**	**9.1100e-003**		**193.0379**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0749	0.0551	0.7233	1.8300e-003	0.1677	1.4500e-003	0.1691	0.0445	1.3300e-003	0.0458		181.9429	181.9429	6.2500e-003		182.0992
Total	**0.0749**	**0.0551**	**0.7233**	**1.8300e-003**	**0.1677**	**1.4500e-003**	**0.1691**	**0.0445**	**1.3300e-003**	**0.0458**		**181.9429**	**181.9429**	**6.2500e-003**		**182.0992**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0749	0.0551	0.7233	1.8300e-003	0.1677	1.4500e-003	0.1691	0.0445	1.3300e-003	0.0458		181.9429	181.9429	6.2500e-003		182.0992
Total	**0.0749**	**0.0551**	**0.7233**	**1.8300e-003**	**0.1677**	**1.4500e-003**	**0.1691**	**0.0445**	**1.3300e-003**	**0.0458**		**181.9429**	**181.9429**	**6.2500e-003**		**182.0992**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.5326					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**8.7991**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.7 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	9.9900e-003	7.3400e-003	0.0964	2.4000e-004	0.0224	1.9000e-004	0.0226	5.9300e-003	1.8000e-004	6.1100e-003		24.2591	24.2591	8.3000e-004		24.2799
Total	**9.9900e-003**	**7.3400e-003**	**0.0964**	**2.4000e-004**	**0.0224**	**1.9000e-004**	**0.0226**	**5.9300e-003**	**1.8000e-004**	**6.1100e-003**		**24.2591**	**24.2591**	**8.3000e-004**		**24.2799**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.5326					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**8.7991**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.7 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	9.9900e-003	7.3400e-003	0.0964	2.4000e-004	0.0224	1.9000e-004	0.0226	5.9300e-003	1.8000e-004	6.1100e-003		24.2591	24.2591	8.3000e-004		24.2799
Total	**9.9900e-003**	**7.3400e-003**	**0.0964**	**2.4000e-004**	**0.0224**	**1.9000e-004**	**0.0226**	**5.9300e-003**	**1.8000e-004**	**6.1100e-003**		**24.2591**	**24.2591**	**8.3000e-004**		**24.2799**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5687	2.6429	7.8320	0.0239	1.8004	0.0269	1.8273	0.4819	0.0253	0.5072		2,426.0557	2,426.0557	0.1386		2,429.5198
Unmitigated	0.5687	2.6429	7.8320	0.0239	1.8004	0.0269	1.8273	0.4819	0.0253	0.5072		2,426.0557	2,426.0557	0.1386		2,429.5198

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	238.00	247.75	215.50	807,058	807,058
Total	238.00	247.75	215.50	807,058	807,058

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0267	0.2278	0.0969	1.4500e-003		0.0184	0.0184		0.0184	0.0184		290.7859	290.7859	5.5700e-003	5.3300e-003	292.5139
NaturalGas Unmitigated	0.0267	0.2278	0.0969	1.4500e-003		0.0184	0.0184		0.0184	0.0184		290.7859	290.7859	5.5700e-003	5.3300e-003	292.5139

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2471.68	0.0267	0.2278	0.0969	1.4500e-003		0.0184	0.0184		0.0184	0.0184		290.7859	290.7859	5.5700e-003	5.3300e-003	292.5139
Total		**0.0267**	**0.2278**	**0.0969**	**1.4500e-003**		**0.0184**	**0.0184**		**0.0184**	**0.0184**		**290.7859**	**290.7859**	**5.5700e-003**	**5.3300e-003**	**292.5139**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2.47168	0.0267	0.2278	0.0969	1.4500e-003		0.0184	0.0184		0.0184	0.0184		290.7859	290.7859	5.5700e-003	5.3300e-003	292.5139
Total		**0.0267**	**0.2278**	**0.0969**	**1.4500e-003**		**0.0184**	**0.0184**		**0.0184**	**0.0184**		**290.7859**	**290.7859**	**5.5700e-003**	**5.3300e-003**	**292.5139**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.2279	0.5427	14.7865	0.0325		1.9211	1.9211		1.9211	1.9211	234.1730	453.7138	687.8868	0.7020	0.0159	710.1730
Unmitigated	8.2279	0.5427	14.7865	0.0325		1.9211	1.9211		1.9211	1.9211	234.1730	453.7138	687.8868	0.7020	0.0159	710.1730

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4850					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.5509	0.5187	12.7138	0.0324		1.9097	1.9097		1.9097	1.9097	234.1730	450.0000	684.1730	0.6984	0.0159	706.3681
Landscaping	0.0635	0.0240	2.0728	1.1000e-004		0.0114	0.0114		0.0114	0.0114		3.7138	3.7138	3.6500e-003		3.8049
Total	**8.2279**	**0.5427**	**14.7866**	**0.0325**		**1.9211**	**1.9211**		**1.9211**	**1.9211**	**234.1730**	**453.7138**	**687.8868**	**0.7020**	**0.0159**	**710.1730**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4850					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.5509	0.5187	12.7138	0.0324		1.9097	1.9097		1.9097	1.9097	234.1730	450.0000	684.1730	0.6984	0.0159	706.3681
Landscaping	0.0635	0.0240	2.0728	1.1000e-004		0.0114	0.0114		0.0114	0.0114		3.7138	3.7138	3.6500e-003		3.8049
Total	**8.2279**	**0.5427**	**14.7866**	**0.0325**		**1.9211**	**1.9211**		**1.9211**	**1.9211**	**234.1730**	**453.7138**	**687.8868**	**0.7020**	**0.0159**	**710.1730**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

West Hills Crest

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	25.00	Dwelling Unit	37.46	75,000.00	72

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2019
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Grading area 37.46 ac
Construction approx. 75,000 sq ft

Construction Phase - No demo. Grading 90 days, construction 355 days, paving 10 days.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - No demolition

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - 2 dozers, 3 loaders

Construction Off-road Equipment Mitigation -

West Hills Crest - Los Angeles-South Coast County, Annual

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	740.00	355.00
tblConstructionPhase	NumDays	50.00	0.00
tblConstructionPhase	NumDays	75.00	90.00
tblConstructionPhase	NumDays	55.00	10.00
tblGrading	AcresOfGrading	225.00	187.50
tblLandUse	BuildingSpaceSquareFeet	45,000.00	75,000.00
tblLandUse	LandUseSquareFeet	45,000.00	75,000.00
tblLandUse	LotAcreage	8.12	37.46
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	3.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	OperationalYear	2018	2019
tblTripsAndVMT	WorkerTripNumber	13.00	18.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.2174	2.4448	1.3809	2.2400e-003	0.5602	0.1161	0.6762	0.2614	0.1068	0.3682	0.0000	207.2374	207.2374	0.0610	0.0000	208.7634
2018	0.3998	3.7157	2.6733	4.3600e-003	0.3875	0.2154	0.6029	0.1643	0.2016	0.3659	0.0000	389.5955	389.5955	0.0972	0.0000	392.0266
2019	0.4047	1.5014	1.2607	2.0500e-003	8.9500e-003	0.0904	0.0994	2.4000e-003	0.0852	0.0876	0.0000	179.9637	179.9637	0.0411	0.0000	180.9903
Maximum	**0.4047**	**3.7157**	**2.6733**	**4.3600e-003**	**0.5602**	**0.2154**	**0.6762**	**0.2614**	**0.2016**	**0.3682**	**0.0000**	**389.5955**	**389.5955**	**0.0972**	**0.0000**	**392.0266**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.2174	2.4448	1.3809	2.2400e-003	0.2571	0.1161	0.3731	0.1190	0.1068	0.2257	0.0000	207.2372	207.2372	0.0610	0.0000	208.7631
2018	0.3998	3.7157	2.6733	4.3600e-003	0.1838	0.2154	0.3992	0.0764	0.2016	0.2781	0.0000	389.5951	389.5951	0.0972	0.0000	392.0262
2019	0.4047	1.5014	1.2607	2.0500e-003	8.9500e-003	0.0904	0.0994	2.4000e-003	0.0852	0.0876	0.0000	179.9635	179.9635	0.0411	0.0000	180.9901
Maximum	**0.4047**	**3.7157**	**2.6733**	**4.3600e-003**	**0.2571**	**0.2154**	**0.3992**	**0.1190**	**0.2016**	**0.2781**	**0.0000**	**389.5951**	**389.5951**	**0.0972**	**0.0000**	**392.0262**

West Hills Crest - Los Angeles-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.98**	**0.00**	**36.77**	**53.79**	**0.00**	**28.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**9-1-2017**	**11-30-2017**	1.8861	1.8861
2	**12-1-2017**	**2-28-2018**	2.0068	2.0068
3	**3-1-2018**	**5-31-2018**	0.8721	0.8721
4	**6-1-2018**	**8-31-2018**	0.8720	0.8720
5	**9-1-2018**	**11-30-2018**	0.8627	0.8627
6	**12-1-2018**	**2-28-2019**	0.7973	0.7973
7	**3-1-2019**	**5-31-2019**	0.7847	0.7847
8	**6-1-2019**	**8-31-2019**	0.5084	0.5084
9	**9-1-2019**	**9-30-2019**	0.0989	0.0989
		Highest	2.0068	2.0068

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3843	9.4800e-003	0.4180	4.2000e-004		0.0253	0.0253		0.0253	0.0253	2.6555	5.5241	8.1795	8.3300e-003	1.8000e-004	8.4416
Energy	4.8600e-003	0.0416	0.0177	2.7000e-004		3.3600e-003	3.3600e-003		3.3600e-003	3.3600e-003	0.0000	172.5830	172.5830	3.8600e-003	1.4900e-003	173.1237
Mobile	0.0940	0.4814	1.3108	4.0000e-003	0.3063	4.6700e-003	0.3110	0.0821	4.3900e-003	0.0865	0.0000	368.2816	368.2816	0.0216	0.0000	368.8220
Waste						0.0000	0.0000		0.0000	0.0000	5.9923	0.0000	5.9923	0.3541	0.0000	14.8457
Water						0.0000	0.0000		0.0000	0.0000	0.5168	18.1669	18.6837	0.0535	1.3400e-003	20.4213
Total	**0.4831**	**0.5325**	**1.7465**	**4.6900e-003**	**0.3063**	**0.0333**	**0.3397**	**0.0821**	**0.0330**	**0.1152**	**9.1645**	**564.5555**	**573.7200**	**0.4415**	**3.0100e-003**	**585.6542**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3843	9.4800e-003	0.4180	4.2000e-004		0.0253	0.0253		0.0253	0.0253	2.6555	5.5241	8.1795	8.3300e-003	1.8000e-004	8.4416
Energy	4.8600e-003	0.0416	0.0177	2.7000e-004		3.3600e-003	3.3600e-003		3.3600e-003	3.3600e-003	0.0000	172.5830	172.5830	3.8600e-003	1.4900e-003	173.1237
Mobile	0.0940	0.4814	1.3108	4.0000e-003	0.3063	4.6700e-003	0.3110	0.0821	4.3900e-003	0.0865	0.0000	368.2816	368.2816	0.0216	0.0000	368.8220
Waste						0.0000	0.0000		0.0000	0.0000	5.9923	0.0000	5.9923	0.3541	0.0000	14.8457
Water						0.0000	0.0000		0.0000	0.0000	0.5168	18.1669	18.6837	0.0535	1.3400e-003	20.4213
Total	**0.4831**	**0.5325**	**1.7465**	**4.6900e-003**	**0.3063**	**0.0333**	**0.3397**	**0.0821**	**0.0330**	**0.1152**	**9.1645**	**564.5555**	**573.7200**	**0.4415**	**3.0100e-003**	**585.6542**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

West Hills Crest - Los Angeles-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2017	8/31/2017	5	0	
2	Site Preparation	Site Preparation	9/1/2017	10/12/2017	5	30	
3	Grading	Grading	10/13/2017	2/15/2018	5	90	
4	Building Construction	Building Construction	2/16/2018	6/27/2019	5	355	
5	Paving	Paving	6/28/2019	7/11/2019	5	10	
6	Architectural Coating	Architectural Coating	7/12/2019	9/26/2019	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 0

Residential Indoor: 151,875; Residential Outdoor: 50,625; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

West Hills Crest - Los Angeles-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	0	0.00	81	0.73
Demolition	Excavators	0	0.00	158	0.38
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	3	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0512	0.5380	0.2465	4.0000e-004		0.0299	0.0299		0.0275	0.0275	0.0000	36.7780	36.7780	0.0113	0.0000	37.0597
Total	**0.0512**	**0.5380**	**0.2465**	**4.0000e-004**	**0.1807**	**0.0299**	**0.2106**	**0.0993**	**0.0275**	**0.1269**	**0.0000**	**36.7780**	**36.7780**	**0.0113**	**0.0000**	**37.0597**

3.3 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-003	1.4700e-003	0.0158	3.0000e-005	2.9600e-003	3.0000e-005	2.9900e-003	7.9000e-004	3.0000e-005	8.1000e-004	0.0000	3.0226	3.0226	1.3000e-004	0.0000	3.0258
Total	**1.7000e-003**	**1.4700e-003**	**0.0158**	**3.0000e-005**	**2.9600e-003**	**3.0000e-005**	**2.9900e-003**	**7.9000e-004**	**3.0000e-005**	**8.1000e-004**	**0.0000**	**3.0226**	**3.0226**	**1.3000e-004**	**0.0000**	**3.0258**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0813	0.0000	0.0813	0.0447	0.0000	0.0447	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0512	0.5380	0.2465	4.0000e-004		0.0299	0.0299		0.0275	0.0275	0.0000	36.7780	36.7780	0.0113	0.0000	37.0597
Total	**0.0512**	**0.5380**	**0.2465**	**4.0000e-004**	**0.0813**	**0.0299**	**0.1112**	**0.0447**	**0.0275**	**0.0722**	**0.0000**	**36.7780**	**36.7780**	**0.0113**	**0.0000**	**37.0597**

3.3 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-003	1.4700e-003	0.0158	3.0000e-005	2.9600e-003	3.0000e-005	2.9900e-003	7.9000e-004	3.0000e-005	8.1000e-004	0.0000	3.0226	3.0226	1.3000e-004	0.0000	3.0258
Total	**1.7000e-003**	**1.4700e-003**	**0.0158**	**3.0000e-005**	**2.9600e-003**	**3.0000e-005**	**2.9900e-003**	**7.9000e-004**	**3.0000e-005**	**8.1000e-004**	**0.0000**	**3.0226**	**3.0226**	**1.3000e-004**	**0.0000**	**3.0258**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3704	0.0000	0.3704	0.1597	0.0000	0.1597	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1610	1.9023	1.0859	1.7400e-003		0.0860	0.0860		0.0792	0.0792	0.0000	161.1676	161.1676	0.0494	0.0000	162.4021
Total	**0.1610**	**1.9023**	**1.0859**	**1.7400e-003**	**0.3704**	**0.0860**	**0.4565**	**0.1597**	**0.0792**	**0.2389**	**0.0000**	**161.1676**	**161.1676**	**0.0494**	**0.0000**	**162.4021**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5200e-003	3.0500e-003	0.0327	7.0000e-005	6.1400e-003	6.0000e-005	6.1900e-003	1.6300e-003	5.0000e-005	1.6800e-003	0.0000	6.2692	6.2692	2.6000e-004	0.0000	6.2757
Total	**3.5200e-003**	**3.0500e-003**	**0.0327**	**7.0000e-005**	**6.1400e-003**	**6.0000e-005**	**6.1900e-003**	**1.6300e-003**	**5.0000e-005**	**1.6800e-003**	**0.0000**	**6.2692**	**6.2692**	**2.6000e-004**	**0.0000**	**6.2757**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1667	0.0000	0.1667	0.0719	0.0000	0.0719	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1610	1.9023	1.0859	1.7400e-003		0.0860	0.0860		0.0792	0.0792	0.0000	161.1674	161.1674	0.0494	0.0000	162.4019
Total	**0.1610**	**1.9023**	**1.0859**	**1.7400e-003**	**0.1667**	**0.0860**	**0.2527**	**0.0719**	**0.0792**	**0.1510**	**0.0000**	**161.1674**	**161.1674**	**0.0494**	**0.0000**	**162.4019**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5200e-003	3.0500e-003	0.0327	7.0000e-005	6.1400e-003	6.0000e-005	6.1900e-003	1.6300e-003	5.0000e-005	1.6800e-003	0.0000	6.2692	6.2692	2.6000e-004	0.0000	6.2757
Total	**3.5200e-003**	**3.0500e-003**	**0.0327**	**7.0000e-005**	**6.1400e-003**	**6.0000e-005**	**6.1900e-003**	**1.6300e-003**	**5.0000e-005**	**1.6800e-003**	**0.0000**	**6.2692**	**6.2692**	**2.6000e-004**	**0.0000**	**6.2757**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3704	0.0000	0.3704	0.1597	0.0000	0.1597	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0865	1.0119	0.5965	1.0500e-003		0.0448	0.0448		0.0412	0.0412	0.0000	96.3025	96.3025	0.0300	0.0000	97.0520
Total	**0.0865**	**1.0119**	**0.5965**	**1.0500e-003**	**0.3704**	**0.0448**	**0.4152**	**0.1597**	**0.0412**	**0.2009**	**0.0000**	**96.3025**	**96.3025**	**0.0300**	**0.0000**	**97.0520**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8800e-003	1.6100e-003	0.0173	4.0000e-005	3.7300e-003	3.0000e-005	3.7600e-003	9.9000e-004	3.0000e-005	1.0200e-003	0.0000	3.7019	3.7019	1.4000e-004	0.0000	3.7054
Total	**1.8800e-003**	**1.6100e-003**	**0.0173**	**4.0000e-005**	**3.7300e-003**	**3.0000e-005**	**3.7600e-003**	**9.9000e-004**	**3.0000e-005**	**1.0200e-003**	**0.0000**	**3.7019**	**3.7019**	**1.4000e-004**	**0.0000**	**3.7054**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1667	0.0000	0.1667	0.0719	0.0000	0.0719	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0865	1.0119	0.5965	1.0500e-003		0.0448	0.0448		0.0412	0.0412	0.0000	96.3023	96.3023	0.0300	0.0000	97.0518
Total	**0.0865**	**1.0119**	**0.5965**	**1.0500e-003**	**0.1667**	**0.0448**	**0.2115**	**0.0719**	**0.0412**	**0.1131**	**0.0000**	**96.3023**	**96.3023**	**0.0300**	**0.0000**	**97.0518**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8800e-003	1.6100e-003	0.0173	4.0000e-005	3.7300e-003	3.0000e-005	3.7600e-003	9.9000e-004	3.0000e-005	1.0200e-003	0.0000	3.7019	3.7019	1.4000e-004	0.0000	3.7054
Total	**1.8800e-003**	**1.6100e-003**	**0.0173**	**4.0000e-005**	**3.7300e-003**	**3.0000e-005**	**3.7600e-003**	**9.9000e-004**	**3.0000e-005**	**1.0200e-003**	**0.0000**	**3.7019**	**3.7019**	**1.4000e-004**	**0.0000**	**3.7054**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3041	2.6548	1.9954	3.0500e-003		0.1702	0.1702		0.1600	0.1600	0.0000	269.8658	269.8658	0.0661	0.0000	271.5187
Total	**0.3041**	**2.6548**	**1.9954**	**3.0500e-003**		**0.1702**	**0.1702**		**0.1600**	**0.1600**	**0.0000**	**269.8658**	**269.8658**	**0.0661**	**0.0000**	**271.5187**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5900e-003	0.0426	0.0120	9.0000e-005	2.1400e-003	3.0000e-004	2.4400e-003	6.2000e-004	2.8000e-004	9.0000e-004	0.0000	8.6033	8.6033	5.9000e-004	0.0000	8.6180
Worker	5.6600e-003	4.8400e-003	0.0521	1.2000e-004	0.0112	1.0000e-004	0.0113	2.9700e-003	9.0000e-005	3.0700e-003	0.0000	11.1220	11.1220	4.2000e-004	0.0000	11.1325
Total	**7.2500e-003**	**0.0475**	**0.0641**	**2.1000e-004**	**0.0133**	**4.0000e-004**	**0.0137**	**3.5900e-003**	**3.7000e-004**	**3.9700e-003**	**0.0000**	**19.7253**	**19.7253**	**1.0100e-003**	**0.0000**	**19.7505**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3041	2.6548	1.9954	3.0500e-003		0.1702	0.1702		0.1600	0.1600	0.0000	269.8655	269.8655	0.0661	0.0000	271.5184
Total	**0.3041**	**2.6548**	**1.9954**	**3.0500e-003**		**0.1702**	**0.1702**		**0.1600**	**0.1600**	**0.0000**	**269.8655**	**269.8655**	**0.0661**	**0.0000**	**271.5184**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5900e-003	0.0426	0.0120	9.0000e-005	2.1400e-003	3.0000e-004	2.4400e-003	6.2000e-004	2.8000e-004	9.0000e-004	0.0000	8.6033	8.6033	5.9000e-004	0.0000	8.6180
Worker	5.6600e-003	4.8400e-003	0.0521	1.2000e-004	0.0112	1.0000e-004	0.0113	2.9700e-003	9.0000e-005	3.0700e-003	0.0000	11.1220	11.1220	4.2000e-004	0.0000	11.1325
Total	**7.2500e-003**	**0.0475**	**0.0641**	**2.1000e-004**	**0.0133**	**4.0000e-004**	**0.0137**	**3.5900e-003**	**3.7000e-004**	**3.9700e-003**	**0.0000**	**19.7253**	**19.7253**	**1.0100e-003**	**0.0000**	**19.7505**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1511	1.3490	1.0985	1.7200e-003		0.0826	0.0826		0.0776	0.0776	0.0000	150.4667	150.4667	0.0367	0.0000	151.3831
Total	**0.1511**	**1.3490**	**1.0985**	**1.7200e-003**		**0.0826**	**0.0826**		**0.0776**	**0.0776**	**0.0000**	**150.4667**	**150.4667**	**0.0367**	**0.0000**	**151.3831**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.1000e-004	0.0227	6.2000e-003	5.0000e-005	1.2100e-003	1.4000e-004	1.3500e-003	3.5000e-004	1.4000e-004	4.9000e-004	0.0000	4.8012	4.8012	3.2000e-004	0.0000	4.8093
Worker	2.8900e-003	2.4000e-003	0.0262	7.0000e-005	6.3100e-003	6.0000e-005	6.3700e-003	1.6800e-003	5.0000e-005	1.7300e-003	0.0000	6.0673	6.0673	2.1000e-004	0.0000	6.0726
Total	**3.7000e-003**	**0.0251**	**0.0324**	**1.2000e-004**	**7.5200e-003**	**2.0000e-004**	**7.7200e-003**	**2.0300e-003**	**1.9000e-004**	**2.2200e-003**	**0.0000**	**10.8686**	**10.8686**	**5.3000e-004**	**0.0000**	**10.8818**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1511	1.3490	1.0985	1.7200e-003		0.0826	0.0826		0.0776	0.0776	0.0000	150.4665	150.4665	0.0367	0.0000	151.3829
Total	**0.1511**	**1.3490**	**1.0985**	**1.7200e-003**		**0.0826**	**0.0826**		**0.0776**	**0.0776**	**0.0000**	**150.4665**	**150.4665**	**0.0367**	**0.0000**	**151.3829**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.1000e-004	0.0227	6.2000e-003	5.0000e-005	1.2100e-003	1.4000e-004	1.3500e-003	3.5000e-004	1.4000e-004	4.9000e-004	0.0000	4.8012	4.8012	3.2000e-004	0.0000	4.8093
Worker	2.8900e-003	2.4000e-003	0.0262	7.0000e-005	6.3100e-003	6.0000e-005	6.3700e-003	1.6800e-003	5.0000e-005	1.7300e-003	0.0000	6.0673	6.0673	2.1000e-004	0.0000	6.0726
Total	**3.7000e-003**	**0.0251**	**0.0324**	**1.2000e-004**	**7.5200e-003**	**2.0000e-004**	**7.7200e-003**	**2.0300e-003**	**1.9000e-004**	**2.2200e-003**	**0.0000**	**10.8686**	**10.8686**	**5.3000e-004**	**0.0000**	**10.8818**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2700e-003	0.0762	0.0733	1.1000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	10.2376	10.2376	3.2400e-003	0.0000	10.3186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.2700e-003**	**0.0762**	**0.0733**	**1.1000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**10.2376**	**10.2376**	**3.2400e-003**	**0.0000**	**10.3186**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	3.1000e-004	3.4000e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7900	0.7900	3.0000e-005	0.0000	0.7907
Total	**3.8000e-004**	**3.1000e-004**	**3.4000e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.3000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7900**	**0.7900**	**3.0000e-005**	**0.0000**	**0.7907**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2700e-003	0.0762	0.0733	1.1000e-004		4.1200e-003	4.1200e-003		3.7900e-003	3.7900e-003	0.0000	10.2376	10.2376	3.2400e-003	0.0000	10.3186
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.2700e-003**	**0.0762**	**0.0733**	**1.1000e-004**		**4.1200e-003**	**4.1200e-003**		**3.7900e-003**	**3.7900e-003**	**0.0000**	**10.2376**	**10.2376**	**3.2400e-003**	**0.0000**	**10.3186**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	3.1000e-004	3.4000e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7900	0.7900	3.0000e-005	0.0000	0.7907
Total	**3.8000e-004**	**3.1000e-004**	**3.4000e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.3000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7900**	**0.7900**	**3.0000e-005**	**0.0000**	**0.7907**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2347					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.3300e-003	0.0505	0.0506	8.0000e-005		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	7.0215	7.0215	5.9000e-004	0.0000	7.0363
Total	**0.2420**	**0.0505**	**0.0506**	**8.0000e-005**		**3.5400e-003**	**3.5400e-003**		**3.5400e-003**	**3.5400e-003**	**0.0000**	**7.0215**	**7.0215**	**5.9000e-004**	**0.0000**	**7.0363**

3.7 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.3000e-004	2.5000e-003	1.0000e-005	6.0000e-004	1.0000e-005	6.1000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5794	0.5794	2.0000e-005	0.0000	0.5798
Total	**2.8000e-004**	**2.3000e-004**	**2.5000e-003**	**1.0000e-005**	**6.0000e-004**	**1.0000e-005**	**6.1000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5794**	**0.5794**	**2.0000e-005**	**0.0000**	**0.5798**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2347					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.3300e-003	0.0505	0.0506	8.0000e-005		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	7.0214	7.0214	5.9000e-004	0.0000	7.0363
Total	**0.2420**	**0.0505**	**0.0506**	**8.0000e-005**		**3.5400e-003**	**3.5400e-003**		**3.5400e-003**	**3.5400e-003**	**0.0000**	**7.0214**	**7.0214**	**5.9000e-004**	**0.0000**	**7.0363**

3.7 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.3000e-004	2.5000e-003	1.0000e-005	6.0000e-004	1.0000e-005	6.1000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5794	0.5794	2.0000e-005	0.0000	0.5798
Total	**2.8000e-004**	**2.3000e-004**	**2.5000e-003**	**1.0000e-005**	**6.0000e-004**	**1.0000e-005**	**6.1000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5794**	**0.5794**	**2.0000e-005**	**0.0000**	**0.5798**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0940	0.4814	1.3108	4.0000e-003	0.3063	4.6700e-003	0.3110	0.0821	4.3900e-003	0.0865	0.0000	368.2816	368.2816	0.0216	0.0000	368.8220
Unmitigated	0.0940	0.4814	1.3108	4.0000e-003	0.3063	4.6700e-003	0.3110	0.0821	4.3900e-003	0.0865	0.0000	368.2816	368.2816	0.0216	0.0000	368.8220

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	238.00	247.75	215.50	807,058	807,058
Total	238.00	247.75	215.50	807,058	807,058

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	124.4401	124.4401	2.9400e-003	6.1000e-004	124.6948
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	124.4401	124.4401	2.9400e-003	6.1000e-004	124.6948
NaturalGas Mitigated	4.8600e-003	0.0416	0.0177	2.7000e-004		3.3600e-003	3.3600e-003		3.3600e-003	3.3600e-003	0.0000	48.1429	48.1429	9.2000e-004	8.8000e-004	48.4290
NaturalGas Unmitigated	4.8600e-003	0.0416	0.0177	2.7000e-004		3.3600e-003	3.3600e-003		3.3600e-003	3.3600e-003	0.0000	48.1429	48.1429	9.2000e-004	8.8000e-004	48.4290

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	902163	4.8600e-003	0.0416	0.0177	2.7000e-004		3.3600e-003	3.3600e-003		3.3600e-003	3.3600e-003	0.0000	48.1429	48.1429	9.2000e-004	8.8000e-004	48.4290
Total		**4.8600e-003**	**0.0416**	**0.0177**	**2.7000e-004**		**3.3600e-003**	**3.3600e-003**		**3.3600e-003**	**3.3600e-003**	**0.0000**	**48.1429**	**48.1429**	**9.2000e-004**	**8.8000e-004**	**48.4290**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	902163	4.8600e-003	0.0416	0.0177	2.7000e-004		3.3600e-003	3.3600e-003		3.3600e-003	3.3600e-003	0.0000	48.1429	48.1429	9.2000e-004	8.8000e-004	48.4290
Total		**4.8600e-003**	**0.0416**	**0.0177**	**2.7000e-004**		**3.3600e-003**	**3.3600e-003**		**3.3600e-003**	**3.3600e-003**	**0.0000**	**48.1429**	**48.1429**	**9.2000e-004**	**8.8000e-004**	**48.4290**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	223427	124.4401	2.9400e-003	6.1000e-004	124.6948
Total		**124.4401**	**2.9400e-003**	**6.1000e-004**	**124.6948**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	223427	124.4401	2.9400e-003	6.1000e-004	124.6948
Total		**124.4401**	**2.9400e-003**	**6.1000e-004**	**124.6948**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3843	9.4800e-003	0.4180	4.2000e-004		0.0253	0.0253		0.0253	0.0253	2.6555	5.5241	8.1795	8.3300e-003	1.8000e-004	8.4416
Unmitigated	0.3843	9.4800e-003	0.4180	4.2000e-004		0.0253	0.0253		0.0253	0.0253	2.6555	5.5241	8.1795	8.3300e-003	1.8000e-004	8.4416

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0235					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2710					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0819	6.4800e-003	0.1589	4.1000e-004		0.0239	0.0239		0.0239	0.0239	2.6555	5.1029	7.7584	7.9200e-003	1.8000e-004	8.0101
Landscaping	7.9300e-003	3.0000e-003	0.2591	1.0000e-005		1.4200e-003	1.4200e-003		1.4200e-003	1.4200e-003	0.0000	0.4211	0.4211	4.1000e-004	0.0000	0.4315
Total	**0.3843**	**9.4800e-003**	**0.4180**	**4.2000e-004**		**0.0253**	**0.0253**		**0.0253**	**0.0253**	**2.6555**	**5.5241**	**8.1795**	**8.3300e-003**	**1.8000e-004**	**8.4416**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0235					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2710					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0819	6.4800e-003	0.1589	4.1000e-004		0.0239	0.0239		0.0239	0.0239	2.6555	5.1029	7.7584	7.9200e-003	1.8000e-004	8.0101
Landscaping	7.9300e-003	3.0000e-003	0.2591	1.0000e-005		1.4200e-003	1.4200e-003		1.4200e-003	1.4200e-003	0.0000	0.4211	0.4211	4.1000e-004	0.0000	0.4315
Total	**0.3843**	**9.4800e-003**	**0.4180**	**4.2000e-004**		**0.0253**	**0.0253**		**0.0253**	**0.0253**	**2.6555**	**5.5241**	**8.1795**	**8.3300e-003**	**1.8000e-004**	**8.4416**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	18.6837	0.0535	1.3400e-003	20.4213
Unmitigated	18.6837	0.0535	1.3400e-003	20.4213

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.62885 / 1.02688	18.6837	0.0535	1.3400e-003	20.4213
Total		**18.6837**	**0.0535**	**1.3400e-003**	**20.4213**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.62885 / 1.02688	18.6837	0.0535	1.3400e-003	20.4213
Total		**18.6837**	**0.0535**	**1.3400e-003**	**20.4213**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	5.9923	0.3541	0.0000	14.8457
Unmitigated	5.9923	0.3541	0.0000	14.8457

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	29.52	5.9923	0.3541	0.0000	14.8457
Total		**5.9923**	**0.3541**	**0.0000**	**14.8457**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	29.52	5.9923	0.3541	0.0000	14.8457
Total		**5.9923**	**0.3541**	**0.0000**	**14.8457**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C
Phase I Cultural Resource Assessment

PHASE I CULTURAL RESOURCE ASSESSMENT OF THE WEST HILLS CREST RESIDENTIAL SUBDIVISION PROPERTY, THE WEST HILLS AREA OF LOS ANGELES COUNTY, CALIFORNIA

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SECTION		PAGE
MANAGEMENT SUMMARY		iii
1.0	INTRODUCTION	1
2.0	ENVIRONMENTAL SETTING	5
3.0	GEOLOGICAL SETTING	7
4.0	CULTURAL SETTING	8
5.0	LEGAL CONTEXT	15
6.0	PHASE I CULTURAL RESOURCE RECORD SEARCH	19
7.0	PHASE I FIELD SURVEY METHODOLOGY	29
8.0	PHASE I FIELD SURVEY SUMMARY OF FINDINGS	31
9.0	RECOMMENDATIONS OF SIGNIFICANCE	40
10.0	MANAGEMENT RECOMMENDATIONS	41
11.0	CONCLUSIONS	44
12.0	REFERENCES	45

FIGURES

Figure 1	West Hills Crest Project Development Area, showing 0.5-mile Record Search Study	2
Figures 2 & 3	Figure 2: Project property, showing major landscape features. Figure 3: The Location of CA-LAN-1223 From the SCCIC, Showing Property Development Area Boundary (Red) and Cultural Resource Boundary (Blue) (Exhibit 'A', as per the Lead Agency). The other lines note the location of report context boundaries.	3
Figures 4 & 5	Figure 4: 1985 CA-LAN-1223 archaeological site sketch map, showing the site between the southern hills and El Escorpion Creek. Figure 5: 1903 USGS Calabasas Map, showing the project property area and El Scorpion Canyon road (top).	20
Figures 6 & 7	Figure 6: 1967 USGS Calabasas Quadrangle, showing the project property and 20th Century dirt roads. Figure 7: 1976 USGS aerial image, showing project property and modern impacts.	27
Figures 8 & 9	Figure 8: 1989 Google Earth image, showing modern impacts. Figure 9: 1994Google Earth image, showing modern impacts.	28

Figures 10 &11	Figure 10: Photo of CA-LAN-1223 location, facing west, showing thick grass. Figure 11: Photo of CA-LAN-1223 location, facing west.	32
Figures 12 &13	Figure 12: Photo of CA-LAN-1223 location, facing north. Figure 13: Historic Oil well equipment can be found at the edge of CA-LAN-1223 to the east.	33
Figures 14 & 15	Figure 14: Saddle area, facing east. Figure 15: Prehistoric cultural artifacts from the surface of CA-LAN-1223 (intact quartzite mano, quartzite core, fragment of a granite mano).	35
Figure 16	Shovel Test Pit Excavation in CA-LAN-1223	37
Figures 17 & 18	Figure 17: Map of saddle area, shovel test pits. Figure 18: Exposed sandstone formation in southwest corner of development area.	38
Figure 19	Exposed marine fossil in sandstone, damaged from blading, possible plant species.	39

APPENDICES

Appendix A	Record Search Request Letters to the South Central Coastal Information Center (SCCIC), and the Native American Heritage Commission (NAHC)
Appendix B	NAHC Response Letter
Appendix C	Prehistoric Artifact Table

MANAGEMENT SUMMARY

In October of 2017, Envicom Corporation (Envicom) completed a Phase I cultural resource assessment of the West Hills Crest Residential Subdivision project within the West Hills area of the San Fernando Valley where it meets the Simi Hills mountains. This assessment involved a record search as the South Central Coastal Information Center (SCCIC), a record search at the Native American Heritage Council (NAHC), the examination of several historic map and image databases, and a pedestrian survey of the development portion of the project property (development area). The SCCIC record search was positive for a single cultural resource (CA-LAN-1223), which was described as a low-density prehistoric artifact scatter with potential midden deposits. A number of other prehistoric archaeological sites were found within 0.5-miles outside the project property, resulting in the development area also being considered as sensitive for prehistoric cultural resources. No historic era cultural resources were identified, resulting in the development area being described as not sensitive for historic cultural resources.

The results of the 2017 Phase I(a) pedestrian survey identified that most of the project development area was negative for cultural resources due to modern impacts associated with an aborted 1980s development project, which included unpaved road paths, earthen platforms and berms, and flood control facilities. All non-impacted sloped areas within the development area were also found to be negative for cultural resources as there was no evidence of caves, rock shelters, or quarry locations (as are found elsewhere in the region). Additionally, no historic-era resources were found on the property that dated prior to the observed 1980s landscape modifications.

Two remaining development area locations were considered to be potential locations of prehistoric cultural resources masked by the dense grasses found covering the site. These included the flat area of the CA-LAN-1223 prehistoric cultural resource (Site Area A), and an undisturbed ridgeline saddle area in the north-center of the project development area (Site Area B). Both areas were further investigated with shovel test pits as part of an extended Phase I(b) subsurface cultural survey. The remainder of the property was visibly impacted by past development activities, including grading, retaining feature construction, road construction, and water tank placement.

Three prehistoric artifacts were found on the surface of CA-LAN-1223 prior to Phase I(b) subsurface testing. The cultural resource (Site Area A) was then tested with twenty-two (22) shovel test pits, with negative findings. The undisturbed soils were determined to be heavily bioturbated loam to the bottom of testing at roughly 0.6-meters in depth. The saddle area (Site Area B) was tested with a further ten (10) shovel test pits, again with negative findings. The undisturbed soils were also determined to be heavily bioturbated loam to the bottom of testing at roughly 0.6-meters in depth. No further cultural resource assessment tasks were recommended for either development area location.

Due to the number of shovel test pits excavated within the original identified boundary of CA-LAN-1223, the lack of extensive surface artifacts, and the lack of prehistoric artifacts recovered from the shovel test pits, Envicom concluded that the potential was low for recovering additional prehistoric artifacts from the CA-LAN-1223 cultural resource. This fact was supported by the original site form, which listed few artifacts identified on the surface of the site. For these reasons, Envicom recommended that the archaeological cultural resource, CA-LAN-1223, is not eligible for inclusion in the CRHR under Criteria 4 (scientific data potential), and therefore is not a significant cultural resource to be further evaluated or managed. Envicom did, however, recommend that the overall project was sensitive for prehistoric cultural

resources, as well as for prehistoric paleontological resources, and therefore, recommended that the project be monitored by an archaeological, a Native American monitor, and by a qualified paleontological monitor.

1.0 INTRODUCTION

In April of 2017, Envicom Corporation (Envicom) completed a Phase I(a) surface assessment for cultural resources within the development portion (development area) of the proposed West Hills Crest residential development project located in the West Hills area of the San Fernando Valley, Los Angeles County, California. The Project is fully contained on the Calabasas United States Geological Survey (USGS) quadrangle map (**Figure 1**). The subject property is currently bordered by previously constructed single-family residential structures to the east, by Bell Canyon Park to the north, and by open space to the west and south (**Figure 2**).

The Phase I cultural resource assessment included a cultural resource record search conducted by the South Central Coastal Information Center (SCCIC), and a Native American cultural resource record search conducted by the California Native American Heritage Commission (NAHC). Additional databases examined during the Phase I assessment included historic regional maps, historic USGS maps, and historic Google Earth images. The purpose of the record searches is to identify any known cultural resources that have been previously recorded within the proposed project area, to provide cultural resource context for the project, and to assess the overall cultural resource sensitivity of the project region. A cultural resource is often defined as any building, structure, object, or archaeological site older than 50-years in age, and can include historic or prehistoric locations of human habitation.

A Phase I cultural resource survey also often includes a physical inspection of the project area to determine if previously unrecorded cultural resources can be identified from surface observation of the project property. During the pedestrian field survey, any previously identified cultural resources from the SCCIC, or from other database searches, are also relocated and assessed.

The 2017 SCCIC records search identified a single cultural resource (CA-LAN-1223), which partially was located within the development area along the northern part of the project property (**Figure 3**). This figure has been requested to be labeled as Exhibit 'A,' as per the Lead Agency. The cultural resource was listed as a diffuse artifact scatter with potential midden, but not artifacts were visible in the exposed areas or in rodent excavation piles. Dense grass prevented further examination of the research potential or integrity of CA-LAN-1223 during the Phase I(a) surface survey. The potential for paleontological resources was also assessed at this time.

The cultural resource (CA-LAN-1233) is shown on Figure 2 as Site Area A as it was one of only two locations with undisturbed intact native soils (later proven to be highly bioturbated loam, but lacking fill or modern disturbances). The second undisturbed area was a ridgeline saddle area marked as Site Area B on Figure 2.

The lack of surface visibility led to the completion of an extended Phase I(b) subsurface survey of CA-LAN-1223 (Site Area A), and an undisturbed ridgeline saddle area in the north-center of the project development area (Site Area B). The saddle area was chosen due to it being visibly undisturbed by the 1980s development impacts, and from the experience of the Author, who has encountered prehistoric Native American sites on saddles and wide ridges above stream sources throughout the Santa Monica and Simi Hills region. Both areas were further investigated with shovel test pits as part of an extended Phase I(b) subsurface cultural survey. The remainder of the property was visibly impacted by past development activities, including grading, retaining feature construction, road construction, and water tank placement.

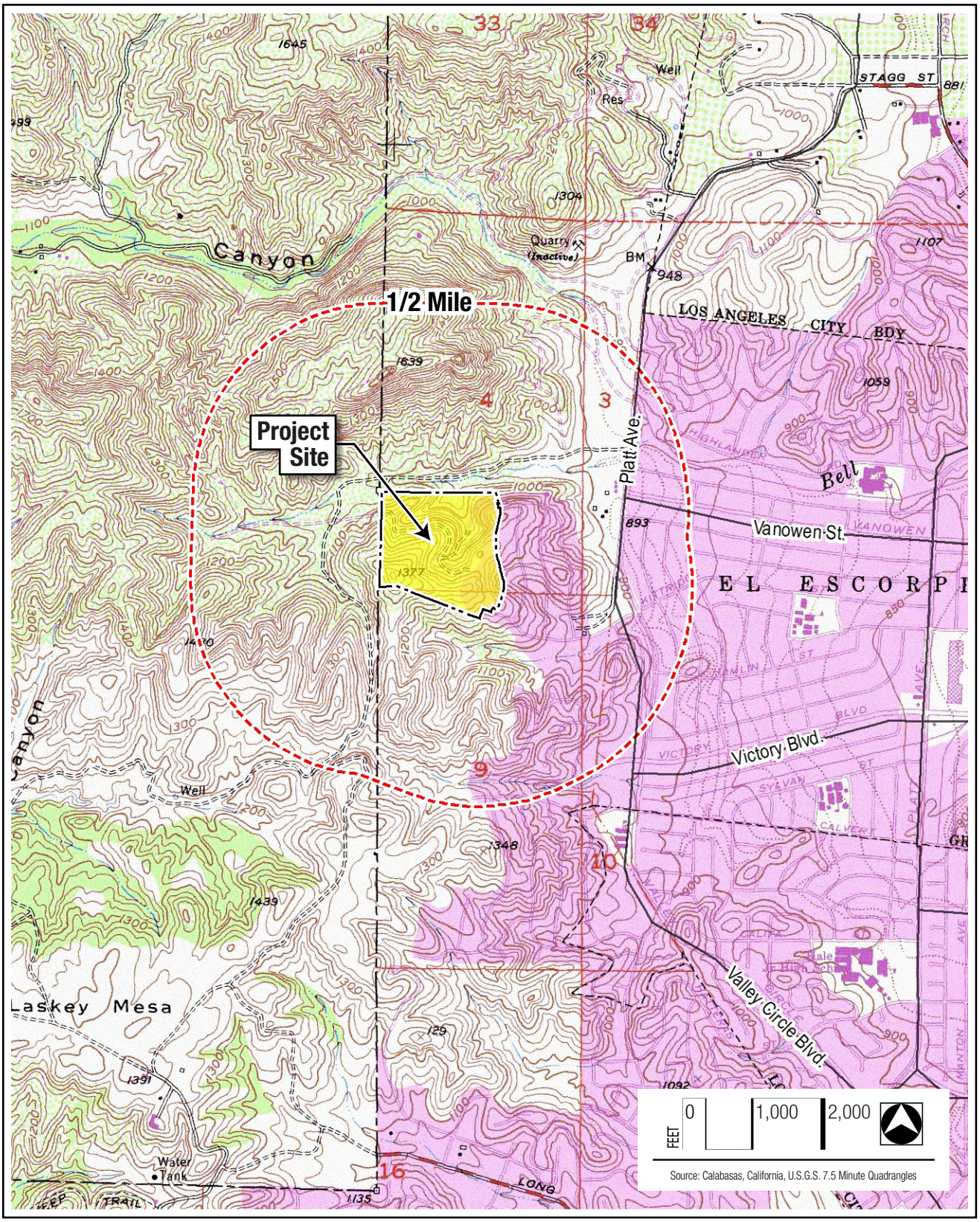

Figure 1: West Hills Crest Project Development Area, showing 0.5-mile record search study.

Figure 1

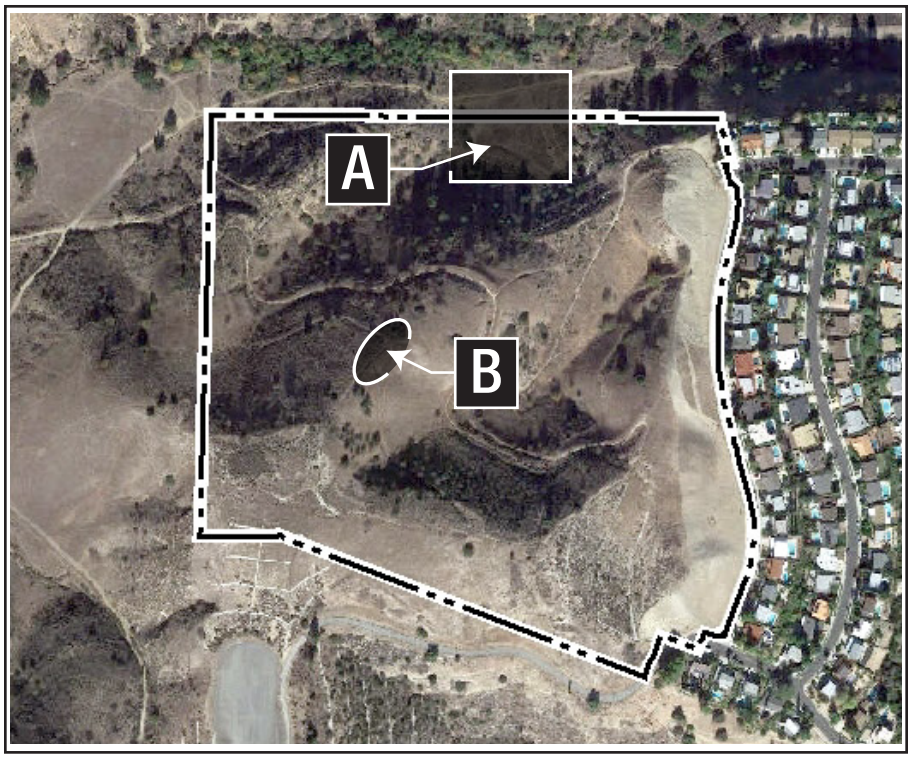

Figure 2: Project property, showing major landscape features.

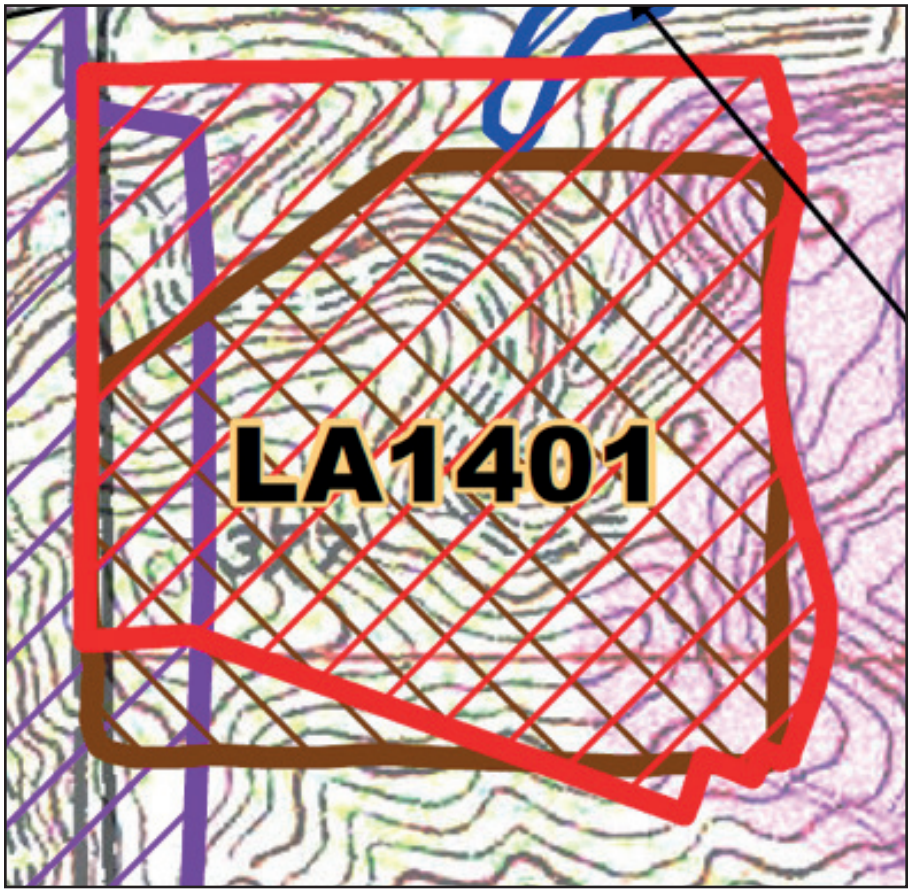

Figure 3: The location of CA-LAN-1223 from the SCCIC, showing property development area boundary (red) and cultural resource boundary (blue) (Exhibit 'A,' as per the Lead Agency). The other lines note the location of report context boundaries.

Figures 2 & 3

This report will provide an environmental, geological, cultural and ethnographic, historical, and legal context for the project, followed by a summary of findings from the record searches, the Phase I(a) pedestrian field survey, and the limited extended Phase I(b) survey efforts. Finally, management and mitigation recommendations will be presented, as will recommendations on whether additional cultural resource tasks should be completed.

2.0 ENVIRONMENTAL SETTING

The West Hills Crest property is located in the West Hills area of Southern California, within Los Angeles County, California. The location is bordered to the east by existing residential houses, to the north by local parklands and open space, to the west by open space, and to the south by water tanks and more open space. The project property is located in the foothills of the western San Fernando Valley, and is bordered to the west by the eastern edge of the Simi Hills mountain range. The project area is located on the most recent Calabasas 7.5' United States Geological Survey (USGS) Quadrangle (1950, revised 1981).

The project property is situated within the inland foothills of the Simi Hills Mountains, and originally would have been an oak savannah landscape. The project area is generally dry and exposed, however, Lindero Creek bisects the middle of the project property, creating a permanent watersource to support a number of creek-edge trees. Lindero Creek originally would have terminated in the middle of the Conejo Valley, forming seasonal wetlands, or flowed into the Arroyo Conejo under extreme weather events. Lindero creek during prehistoric times would have supported a variety of different plant and animal species than the dryer surrounding oak savannah, and probably was a natural feature that attracted Native Americans to occupy the area. The project area is currently undeveloped and vegetated with mostly invasive oat grass and other annual species. Along the creek, older oak trees exist, as well as a mix of native and non-native tree and perineal shrub species

King (1994:19-53) gives an excellent overview of the plant and animal species that would have been utilized by Native American peoples of the inland mountain areas in prehistoric times. The plants include Winter greens and shoots (December-March), yucca and other bulb plants, Mariposa lilies, cattails, chia and other seed crops (April-July), grass seeds (Late Summer), chenopodia and amaranth (June-September), acorns (October-November), walnuts and pine nuts, cactus fruit (tunas), and juniper berries. Animal species include deer, antelope, rabbit, California ground squirrel, birds and waterfowl, snakes, and other reptiles. Animal species commonly traded by local Native Americans include saltwater fish, sharks, abalone, clams, oysters, and other marine invertebrates. Resources differed depending on the location of prehistoric settlements within the Simi Hills foothills. For the project area, access to antelope, fish, and waterfowl – staple food sources for some Chumash villages – were less common than deer, rabbits, and upland plants and trees, such as yucca, wild hyacinth, and acorn-bearing oaks.

The average high/low summer temperatures in the lower elevation inland foothills of the San Fernando Valley are 93/57°F, average high/low winter temperatures are 65/43°F. The largest challenge to prehistoric Native Americans would have been seasonal lack of rain and cyclical drought. The San Fernando Valley specifically averages 16-inches of rainfall a year, but most of this falls in the winter and spring, leaving at least six months out of the year with little rain. Drought years would have made the summer and fall seasons especially difficult.

Non-native species of grasses have caused a profound effect on local landscape conditions, especially in the last few centuries. Prior to European settlement, the foothills of the Simi Hills Mountains were dominated by perennial grasses, which had limited, patchy coverage and produced much less yearly organic material for fueling brush fires or for creating loam topsoil. Since European contact, non-native grasses, especially oatgrass, have blanketed Southern California foothill open space. These grasses create much greater levels of fuel on the landscape surface, resulting in accelerated topsoil creation. Across much of Southern California, the original perennial native grasses have given way to these annual invaders (University of California, Division of Agriculture and Natural Resources 2009:2-3).

The accelerated development of loam, coupled with the decline in natural predators related to European settlement of Southern California, has also resulted in a modern expansion of California ground squirrel (*Otospermophilus beecheyi*) territory and numbers in grassland habitats (Schiffman 2007: 180). Studies have shown that modern ground squirrel activity in grassland habitat is so impactful, the habitat soil is turned over every 3 to 15-years (*Ibid.:*181). Extensive rodent activity also creates a feedback loop that favors annual grass production by changing the temperature and other ecological conditions in the soil. The result is that native perennial grasses and leafy vegetation are suppressed by gopher activity, whereas invasive European grass growth and expansion is supported (*Ibid*.:185-186).

The impact on prehistoric archaeological sites in Southern California grassland and foothill areas has been profound. Severe bioturbation moves small artifacts upwards and makes larger stones "settle" downward, often resting on bedrock. Because rodents transport material laterally as well as vertically, artifacts are also displaced over time a random distance and direction away from their original *in situ* location (Balek 2002:41). Several parts of the project property have clear evidence of gopher bioturbation, especially on the gentle slope areas. Natural impacts such as bioturbation of rodents will be added to modern human impacts to create an overall understanding of potential impacts to any existing cultural resources located within the property.

3.0 GEOLOGICAL SETTING

The project is located within the Transverse Ranges of Southern California, which consist of generally east-west trending mountains and valleys created by north-south compressive deformation linked to the movement of the San Andreas Fault and the motion of the Pacific Plates. More specifically, the project is located in the foothills of the eastern edge of the Simi Hills Mountains, near the western edge of the San Fernando Valley. South, west, and north of the site are the Simi Hills and foothills, and to the east were originally were the grasslands of the San Fernando Valley floor, which today is an urban environment.

Examination of the Dibblee geological maps indicated that the project area bedrock will most likely be a mix of Middle and Late Miocene (16 to 5.3-million years ago) marine bedrock formations, including the Monterrey Formation and a number of unnamed shale and sandstone formations. Visible rock units include gray-brown shale, light gray to tan sandstones, light gray siltstones and claystones, and conglomerate sandstones. All of these formations are considered sensitive for important marine-origin fossils.

Also on the project property are recent alluvial material from the Holocene (12,000 years ago to present), usually being found in the lower elevation areas. Such recent alluvial material is not considered sensitive for fossil resources.

The University Of California Museum Of Paleontology, Berkeley, states that:

> "The Monterey Formation is a vast area of marine deposits rich in fossils. It covers both a large area of California and an extended period of time. Particularly exciting are the fossil whales and dolphins, as well as the large numbers of finely preserved crabs. The single most important find, however, is the collection of kelps and other large soft-bodied seaweeds, which are seldom found as fossils elsewhere."

The importance of the Monterey formation for paleontological research, and the high potential for the discovery of significant fossils within the sandstone formations located within the project property, result in the project development area being ***sensitive for paleontological resources***. This sensitivity will be addressed in the recommended mitigation measures section of this report.

4.0 CULTURAL SETTING

The Cultural Setting provides the historic, ethnographic, and archaeological context for the project property Evaluation. Prehistoric context comes from past archaeological and ethnographic research. Historic cultural context comes from a number of written documents, including both primary (original) documents and secondary (books, manuscripts, and articles) documents. Photographs and artwork can also provide cultural setting information. Both can be original images of subjects or landscapes within their original context, or representational images that have been recreated or constructed at a later time.

The subject property is located within the foothills of the Simi Hills Mountains, near the western end of the San Fernando Valley, which is further located within Los Angeles County, a subset of the Southern California geographic region. The archaeological literature for Southern California contains many temporal chronologies that attempt to differentiate prehistoric time periods using defining characteristics related to artifact types, subsistence, trade, habitation, or culture. Examples of different chronologies can be found in Chartkoff and Chartkoff (1984), Mason and Peterson (1994), Glassow (1996), Moratto (2004), and Arnold and Graech (2004:4). Erlandson et al. (2008:18) provides an excellent summary of seven past attempts to create time period chronologies for the Santa Barbara Channel Region, which often includes the Conejo Valley area (2008:18). For this report, the project property area will be examined as part of the Southern Coastal Region and will follow the Glassow et al. (2007) time period chronology as this approach is more refined as to temporal divisions and incorporates more recent research and interpretation into period development.

4.1 PALEO-INDIAN PERIOD (11,000 B.C. – 9000 B.C.)

Paleo-Indian Period sites are the least common archaeological sites related to Native American occupation in California. Low numbers of Paleo-Indian sites come from smaller prehistoric population numbers during this time period, highly mobile populations that did not produce stable settlement sites, and drastic changes in the California shoreline from a rise in ocean levels, which has resulted in most coastal paleo sites being under water today. Often, the Paleo-Indian history of a region, such as the Southern Coastal Region, is built on inferences from the few known Paleo-Indian sites in the larger Southern California region.

Early coastal people probably concentrated on the exploitation of hunting both terrestrial and marine resources (Gamble 2008). They most likely followed a hunter-gatherer way of life that utilized a wide spectrum of accessible food sources. Moratto (2004) suggests that there is some incidental evidence that humans may have been in the coastal region of California much earlier than 11,000 B.C., however clear evidence for this conclusion remains elusive (Ciolek-Torrello et al. 2006).

The potentially oldest known human remains found in North America are the *Arlington Springs Man,* uncovered by Phil C. Orr in 1959-1960 on Santa Rosa Island. Recent Radiocarbon Dating analysis undertaken by Dr. John Johnson of the Santa Barbara Natural History Museum revealed that the remains are from roughly A.D. 11,000 years B.P. (before present) (2015). The discovery of such ancient Native American remains on Santa Rosa Island demonstrates that the earliest Paleo-Indians had watercraft capable of crossing the Santa Barbara Channel, and lends credence as well to a “coastal migration/ kelp highway” theory for the peopling of the Americas, using boats to travel south from Siberia and Alaska (Erlandson 2007).

Native Americans of this time would have been highly mobile, with limited trade between groups. Small, family-centered groups may have come together as bands during certain annual meetings, linked with seasonality, however, such sedentary living was an exception in their wide-ranging yearly movement cycle. A warming trend toward the end of the Paleo-Indian period led to distinct changes in available food sources. Herds of large mammals were replaced by small to medium-sized mammals, which in turn led to changes in lifestyle for the earliest of California's Native American groups.

4.2 ARCHAIC PERIOD (9000 B.C. TO 7000 B.C.)

The Archaic Period for Southern California has been re-interpreted and refined often over the last fifty years. Some original chronology models extended this period to include almost the entire time between the migration of the Paleo-Indians and the formation of larger Native American settlements that occurred in late prehistoric times. The original Archaic Period has recently been refined and is now believed to include a number of distinct periods. This report uses the more recent interpretation of the *Archaic Period*, as the two thousand years after the transition away from a predominant hunting lifestyle to a less mobile hunting and gathering lifestyle by Coastal Native Americans (Glassow et al. 2007).

Changes during the Archaic Period are considered to be a response to changes in the climate and environment at the end of the Paleo-Indian period. The hunting and gathering lifestyle of Archaic Period people is characterized by a wide array of bifaces, choppers, scrapers, and other tools associated with a high-mobility strategy to exploit a wider range or regional resources. This period is poorly represented in the project area with few sites identified within this time period located in the region (Ciolek-Torrello et al. 2006). Many authors, therefore, begin the prehistoric chronology of the Southern Coastal Region at the end of this period, even though Native Americans most likely occupied the area from the earliest times.

4.3 MILLING STONE PERIOD (7000 B.C. TO 5000 B.C.)

The prehistoric chronology after 7000 B.C. has been divided into several distinct periods, as outlined by Glassow et al. (2007), and based on archaeological sites with known Carbon-14 dates. Earlier authors used different period indicators, or have different starting or ending dates than those presented below; however, for the purpose of this study, Glassow et al. represents the most recent, widely referenced chronology.

The *Milling Stone Period* is characterized by small, mobile Native American groups with a general shift in diet to the primary collecting of plant materials, accompanied by a dependence on groundstone implements associated with the grinding of seeds (Glassow 2007). Later periods saw a decrease in mobility and an increase in core group size, as dependence on seed-bearing plant materials intensified. These groups appear to have relied on a seasonal shifting of settlement, which included travels to and between inland and coastal residential bases.

Archaeological sites of this time period are characterized by abundant groundstone tools, especially manos (handstones, mullers) and metates (milling stones, slabs) (Glassgow et al. 2007:192-203). Cultural sites often have thick midden deposits (soil build up over time from the activities of a habitation), cooking features, and long-term habitation of re-used locations within the yearly settlement cycle. Flaked tools are made of cherts, quartzite, basalt, and other lithic materials. Most archaeological sites from this time period have been identified on the coast, but near-coastal inland sites have also been recorded. Residue and wear on groundstone tools indicate the milling of plant seeds and possibly hard nuts. Middens (refuse dumps) contain shellfish, some fish bones, and fragmented larger mammal bones, such as deer. *Olivella* shell beads appear at this time, indicating the beginnings of regional trade.

4.4 MIDDLE PERIOD (5000 B.C. TO 2000 B.C.)

Cultural sites identified as being within the *Middle Period* are characterized by changes in the size and shape of metates and manos, and the introduction of mortars and pestles. Mortars and pestles are primarily used to reduce harder or larger seed materials, such as acorns, into a processed food source. These changes signify a greater reliance on large seed food sources in the diet. The use of the acorn as a diet staple provided a high-calorie and storable food source, which in turn is believed to have allowed for greater population sedentism, and higher levels of social organization. Protein quantity in the diet did not change, however, the number and types of projectile points increased during this time. Projectile points included large side-notched, stemmed, and leaf-shaped forms; used for spears and atlatl darts.

Specialized sites during the Middle Period included temporary camps, single primary-focus activity areas, such as quarries, and long-term settlement locations. Regional trade, primarily between the mainland and the Channel Islands, took place with large numbers of diverse ornaments and shell beads found in mortuary settings dating to the period. Characteristic burial practices include fully flexed burials placed face-down or face-up and oriented toward the north or west (Warren 1968:2–3). Red ochre (a red-colored pigment) was commonly used, and internments sometimes were placed beneath cairns or broken artifacts. These later changes are thought to indicate an increase in social status differential and access to trade goods.

4.5 TRANSITION PERIOD (2000 B.C. TO A.D. 1)

The *Transition Period* indicated an intensification of prehistoric fishing and sea mammal hunting, with a reduction in shellfish utilization and an increase in regional trade networks (Glassow et al. 2007:200-203). Several new artifacts appear in cultural sites of this period, including net weights, circular fishhooks, asphaltum-use, and the shift from the use of atlatl darts to arrow points. Subsistence is characterized by an increased emphasis on acorns, as well as local intensification of plant and small mammal food sources.

At this time, sedentism and long-term occupation of sites increased, accompanied by more elaborate social practices and formal cemeteries. Ritual burial objects become common and mortuary practices suggest an increase in social wealth and status.

4.6 LATE PERIOD (A.D. 1 – A.D. 1000)

Coastal sites appear to have had relatively dense populations by the end of the Middle Period, as well as an exchange relationship between the occupied coastal islands, the mainland coast, and interior regions that expanded during the *Late Period* (Glassow et al. 2007:203-205). Glassow et al. (*Ibid*.:203-205) note that certain trends continued during the Late Period, including substantial midden deposits, defined cemetery use, and the first evidence of true bow and arrow use. Overall, the variety and complexity of material culture increased during this period, demonstrated by more diverse classes of artifacts. Glassow et al. (2007:204) summarize this period as:

> "The period between cal A.D. 1 to 1000 was one of significant changes in technology, society, and economy. It is a period in which regional populations apparently grew to much higher levels and several important steps were taken along the road to increasing social and economic complexity."

Small, finely knapped projectile points, usually stemless with convex or concave bases, point to an increased utilization of the bow and arrow rather than the atlatl and dart for hunting. Mortuary practices, including cremation and interment, were more elaborate than in preceding periods, and some burials contain abundant grave goods. Seagoing vessels were introduced and plank canoes allowed Native Americans the ability to hunt deep-sea fish, such as tuna and swordfish (Chartkoff and Chartkoff 1984:169-203). As Glassow et al. (2007:211) state "…by the time of European contact, the Chumash and their coastal Tongva

neighbors had hereditary political offices and a social elite, different sorts of regional organizations, and a well-developed shell bead currency that facilitated inter-village and cross-channel commerce."

The prehistoric Late Period also saw the production of many beautiful and complex objects of utility, art, and decoration. These artifacts include steatite cooking vessels and containers, steatite arrow shaft straighteners, perforated stones, a variety of bone tools, and personal ornaments made from bone, stone, and shell, including drilled whole *Chione* (Venus clam) and drilled abalone. During this period an increase in population size was accompanied by the establishment of larger, more permanent villages with greater numbers of inhabitants (Wallace 1955:223). King (2000:75) identifies the presence of permanent inland villages at this time, noting evidence from the archaeological site of *Talepop* (*Ta'lopop*) site near Calabasas, which is also near the project property site.

4.7 CONTACT PERIOD/ETHNOGRAPHIC PERIOD (A.D. 1000 – MISSIONIZATION)

The period after A.D. 1000 marks the *Ethnographic Period* of Native American history in Southern California, when the material culture and social organizations later observed by the Spanish explorers were being developed. The dominant ethnographic group in the project region was the Chumash people; historically one of the larger and more complex groups of California Native Americans.

> "The area inhabited by the Chumash measured approximately 200 by 70 miles. In size, this compares to the smallest states of the eastern United States. The total Chumash population included between 15,000 - 20,000 people. The Chumash of the Santa Monica Mountains occupied approximately 3% of the area and included around 1,300 people or 6.5% of the Chumash population" (King 2011:1).

The Tongva people of the Los Angeles basin area historically occupied land that bordered on the Chumash territory around Topanga Canyon to the east, which also placed that group within the local project property region. Due to limitations of the historic and ethnographic literature, exact borders between the two groups is less a solid boundary line and more a general transition zone between the two different peoples.

The period from A.D. 1000 for roughly the next 300-years represented a time of cultural change for Southern California Native Americans, with several researchers pointing to changes in water temperature, climate change, and drought as prominent factors in social and material cultural changes from the Late Prehistoric Period to the Ethnographic Period. However, whether these changes were gradual or punctuated is still debated (Glassow et al. 2007:205).

Craft specialization did expand during this period, with specialized regional workshops, specialized tools, shell money introduction, and an expanded trade network. Craft specialization centered on the production of shell beads, both for adornment and for currency, lithic micro blades, deer bone tools, basket production and basket asphalting. Current research points to a time of change for the Chumash people, with social reorganization, and fluctuations in subsistence models. The role of climate and weather is not fully understood in this variability (Glassow et al. 2007:206-208).

The wealth of resources of the Santa Barbara and Santa Monica Coasts allowed the Chumash people to occupy a number of large village areas, as well as retain a population density greater than other Native American groups in California. Abundance of resources often allows societies that concentrate on hunting and gathering the ability to create complex social, political, and economic structures. As King (2011:1)

notes, "pre-invasion Chumash society was also one of the most complex non-agricultural societies historically documented."

Craft specialization has recently been put forth as a leading example for the development of Chumash social and political complexity, however, changes in ritual specialization has also been proposed (Coupland 2004:176). Corbett (2004:70-71) notes that there appears to have been a transformation in Chumash ritual practice around A.D. 1000, which may have involved the increase in number of participants at ceremonial gatherings. He notes that this coincides with the incipient craft specialization of the Chumash, both in microblade and bead production (*Ibid.:*71).

Holliman (2004:53) further notes evidence suggests that religious shamans transitioned at this time from part-time, non-hereditary ritual specialists to highly formal, institutionalized, and exclusive religious-political leaders. Though Coupland (2004:176) and Holliman (2004:53-55) point out that the increase in complexity between technology (boat building, shell bead manufacture) and social organization complexity (religious ceremonies, religious and trade societies, and the power of chiefs) did not take place exactly at the same time, they appear to have influenced each other into enhancing overall complexity throughout Chumash culture.

The archaeological and ethnographic literature concludes that populations in the interior of the Chumash territory were not as dense as along the coast or on the islands. The relationship between the less chronicled interior areas and the coastal region is a current research question in Chumash archaeology; with different models of seasonal migration between the coast and the inland areas being proposed. Another research question is whether the interior archaeological sites were inhabited season-round, centering on larger residential settlements. It is known that exchange with coastal villages and inter-village social and political ties based on marriage occurred, however the question remains whether actual movement of people occurred between the inland areas and the coast, or whether the extensive trade network of the Chumash was providing subsistence goods during seasonal scarcity (Glassow et al. 2007:208-210).

It is documented that fish and shellfish resources were transported to inland Chumash settlements, and that deer meat was transported from the inland areas to the coast, as well as deer bone tools and basketry. However, Glassow et al. (2007:2009) summarize that the lack of data from inland sites does not provide answers as to the actual level of social complexity at inland villages, nor what patterns of sedentism and regional trade were followed.

To summarize, the project property project area was historically settled by the Chumash Tribal Group. However, the site is close enough to the Tongva Tribal Group border that the local region may have been occupied by both groups through prehistoric times, or by mixed-group communities.

4.8 EUROPEAN HISTORIC PERIOD (A.D. 1542 – PRESENT)

The earliest Spanish explorers of the California coast included Juan Rodriguez Cabrillo in 1542, Pedro de Unamuno in 1587, Sebastian Rodriguez Cermeño in 1595, Sebastián Vizcaíno in 1602, and Gaspar de Portolá in 1769 (Chartkoff and Chartkoff 1984: 251-258). These early expeditions were transient in nature, and rarely impacted the areas traveled through except as a novelty. However, a more profound effect of these early voyages may have taken place. Erlandson et. al. (2008:103-104) speculates that many Chumash villages were abandoned after initial European contact due to disease; an event that does not easily provide evidence in the archaeological record. Several archaeologists have attempted to track the abandonment of long-established villages to such events, but no clear link has been made to date.

Starting in 1769, the Spanish government began establishing religious missions along the coast of California, as well as presidios (fortified settlements), and pueblos (ranch houses), in order to advance the colonization of the California region. Missions were established by the Spanish Government to act as outposts on the California frontier, with a goal of educating and converting Native Americans to Christianity. Missions also periodically housed Spanish soldiers, and also acted as the political representatives of the Spanish colonization program. Under the leadership of the Franciscan Father Junipero Serra, a total of 21 coastal missions were built, between 1769 and 1823 (Chartkoff and Chartkoff 1984:251-270).

Many of the Native Americans then living in California were "Missionized;" forcibly settled to local mission lands. In the project area, Chumash people were forced to move to either the San Buenaventura Mission (founded in 1782 at Ventura), the San Fernando Mission (established in 1798 in the San Fernando Valley), or to the Santa Barbara mission (founded in 1786 near Santa Barbara) (McCall and Perry 1990:13-17). Often, villages located equally between missions would have individuals resettle at different villages, suggesting resettlement may have had a lineage or family basis.

Missionization also destroyed the traditional social subsistence system, disrupted regional trade networks, and transformed the Native American material culture into a mixture of surviving ethnographic artifacts and European goods. Disease, the loss of a lifestyle that had been adapted to the California environment for generations, and the predation of the Spanish all led to a rapid decline in Native American population numbers (Chartkoff and Chartkoff 1984:258-270, and Erlandson et. al. 2008:25).

When Mexico won independence from Spain in 1822 the political system in California changed dramatically. Mexican land grants were awarded to soldiers, friends, and relatives of Spanish governors who ruled California between 1823 and 1846. During that time, the land holdings and influence of the religious missions were greatly diminished.

The Mexican Revolution and the later dismantling of the mission system led to great disruptions in the lives of the remaining Native Americans, as mission lands were incorporated into the rancho system. Tensions between Native Americans and Mexican settlers and soldiers led to the Chumash Revolt of 1824, when the Chumash successfully occupied Mission La Purisma, Mission Santa Ines, and Mission Santa Barbara. The occupation was short-lived, but guerrilla warfare and raiding continued throughout the Mexican period, and into the later United States territorial period (Chartkoff and Chartkoff 1984:270-278).

The missions and the mission lands were secularized in 1834, with the lands dispersed to individuals loyal to the new Mexican government. These land grants, both the original Spanish crown grants and the Mexican national grants, were primarily used as cattle and sheep ranches, which dominated most of Southern California (including the project area) up through the early 1900s (McCall and Perry 1990, Maulhardt 2010, Chartkoff and Chartkoff 1984:270-278, and Erlandson 2008:105).

During the Mexican-American War, the territory known in Mexico as Alta California officially became a United States territory with the signing the Treaty of Guadalupe Hidalgo between Mexico and the United States in 1848. American ownership of California did not reduce the decline in Native American population numbers. From 1848 to 1900, California Native Americans were reduced in number from 150,000 to 20,000; most of this decline came from the continued marginalization of Native Americans into the worst land and lowest economic positions in the new state. Other factors were the abuse of the European settlers, disease, and the impacts of government laws and policies that did not favor native populations (Chartkoff and Chartkoff 1984:296-297).

At the same time, the United States government began a decades-long process of determining the fate of the original Mexican land grants in California, several of which were located within in the Conejo Valley. This process left ownership of many parcels and ranches in question for long periods of time. The project property was once part of the 17,000-acre lands granted to Miguel Ortega as El Rancho de Nuestra Senora La Reina de Las Virgenes. Much of the surrounding Conejo Valley was included in another large land grant of 48-thousand acres to Jose Polanco and Ignacio Rodriquez in 1803 by the Spanish Government. These land grants changed hands several times, especially after Mexican independence, until land ownership legal issues were finally settled in the 1870s. After this time, the original Spanish-heritage families began selling off smaller parcels to American investors, which expanded the ranching of cattle and sheep in the area (Maulhardt 2010:7-8).

Limited subdivision took place through the 1920s, but most of the San Fernando Valley remained focused on ranching, orchards, and hay-production until after World War II. The construction of the modern highway system and the increase of the Southern California Euro-American population finally led to the urban development in the San Fernando Valley region, with infilling accelerating during the 1960s and 70s.

4.9 HISTORIC PERIOD DEVELOPMENT OF THE PROJECT AREA

USGS topographic maps and other regional historic maps for the project property area date back to 1903, and were updated regularly through the end of the 20th Century. The detailed chronology of the project property and surrounding area will be provided under the record search findings section.

5.0 LEGAL CONTEXT

This section provides a complete outline of all relevant laws and guidelines for this project, as well as those related to the current CEQA status of the cultural resource.

California Environmental Quality Act (CEQA; PRC §21002(b), 21083.2, and 21084.1)

Cultural resources are recognized as part of the environment under the California Environmental Quality Act (CEQA). The California Register of Historical Resources (CRHR) is an inventory of the State's historical resources. Criteria have been developed for determining whether a property is significant enough to be placed on the CRHR, and therefore, evaluating whether a cultural resource is or can be considered significant for the purposes of CEQA.

CEQA requires that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to historical resources. It defines historical resources as "any object, building, structure, site, area, or place which is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California," as cited in Division I, Public Resources Code (PRC), Section 5021.1[b].

The California Register includes resources listed in or formally determined eligible for listing in the National Register of Historic Places (NRHP), as well as some California State Landmarks and Points of Historical Interest that are not Federally-recognized. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts), or that have been identified in a local historical resources inventory may also be eligible for listing in the CRHR, and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC § 5024.1, 14 California Code of Regulations (CCR) § 4850).

Lead agencies have a responsibility to evaluate historical resources against the CRHR criteria prior to making a finding as to a proposed project's impacts to historical resources. CEQA rules of determining significance closely follow the criteria outlined by the NRHP, but which have been modified for state use in order to include a range of historical resources which better reflect the history of California (CCR §4852). The similarity between the two criteria allows for a known cultural resource to easily be evaluated for both registers at the same time. Often, therefore, a cultural resource narrative provides enough information to justify a suggested evaluation for the resource under both laws and a recommendation of significance under both criteria.

Under CEQA, a cultural resource must meet one of the four following criteria as per PRC §5024.1(c) to be included or eligible for the California Register of Historical Resources (CRHR):

(1) is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) is associated with the lives of persons important in our past.
(3) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) has yielded, or may be likely to yield, information important in prehistory or history. Archaeological sites are often determined to be significant under Criteria (4), with the argument being that impacts to the site would reduce the potential scientific research value of the resource.

Built environment resources (standing structures, bridges, canals, etc.) are often evaluated under Criteria (3), with architectural style or artistic features being the primary evaluation focus. Less frequently, cultural resources are evaluated as to Criteria (1), events or historic patterns, or Criteria (2), significant important persons. Some cultural resources are determined to be significant under multiple Criteria, such as a building constructed in a unique and important artistic style Criteria (3) that was designed by a regionally-important master architect Criteria (2).

The criteria for inclusion on the CRHR closely follow the federal criteria for inclusion on the NRHP, as outlined under the National Historic Preservation Act. Projects with a joint National Environmental Policy Act (NEPA)/CEQA component often evaluate a cultural resource for both listings simultaneously. It is important to note that a cultural resource is significant under CEQA if it is determined to be *eligible* for listing on the CRHR, not that it *has to be* listed on the CRHR. The formal listing process is a potentially time-consuming and lengthy procedure that often is never completed, and the determination of *eligibility* for the CRHR provides a cultural resource equal status and protection under CEQA to that of formally listed cultural resources.

It should also be noted that, even though cultural resource consultants often are the first professionals to evaluate newly-discovered or re-examined cultural resources for significance and eligibility for listing on the CRHR, the Lead Agency for a project has the final determination of significance within the context of the project that is triggering the evaluation of eligibility. The Lead Agency can either concur with the recommendation of a cultural resource consultant, object to the recommendation, or determine that more work must be done by the project proponent.

California Penal Code (Section 622.5)

California Penal Code Section 622.5 provides misdemeanor penalties for injuring or destroying objects of historical or archaeological interest located on public or private lands, but specifically excludes the landowner.

California Public Resources Code (Section 5097.5)

The unauthorized disturbance or removal of archaeological, historical, or paleontological resources located on public lands is defined as a misdemeanor by Public Resources Code Section 5097.5.

California Health and Safety Code (Section 7050.5)

This code section requires that further excavation or disturbance of land, upon discovery of human remains outside of a dedicated cemetery, cease until a county coroner makes a report. It requires a county coroner to contact the Native American Heritage Commission (NAHC) within 48 hours if the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the remains to be those of a Native American.

California Health and Safety Code (Section 7052)

Section 7052 of the Health and Safety Code establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

California Public Resources Code (Section 5097.98)

If a county coroner notifies the NAHC that human remains are Native American and outside the coroner's jurisdiction per Health and Safety Code Section 7050.5, the NAHC must determine and notify a Most

Likely Descendent (MLD). The MLD shall complete the inspection of the site within 24 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

California Native American Graves Protection and Repatriation Act

The California Native American Graves Protection and Repatriation Act (Health and Safety Code §§ 88010-8011) establishes a state repatriation policy intent that is consistent with and facilitates implementation of the federal Native American Graves Protection and Repatriation Act. The law ensures that all California Indian human remains and cultural items are treated with dignity and respect, encourages voluntary disclosure and return of remains and cultural items by publicly funded agencies and museums in California, and states an intent for the state to provide mechanisms for aiding California Indian tribes, including non-federally recognized tribes, in filing repatriation claims and getting responses to those claims.

California Senate Bill-18 (SB-18)

SB-18 is a state-mandated program intended to establish between local city and county governments and Native American Tribal Groups, meaningful and ongoing government-to-government consultation as part of the planning process. The purpose of SB-18 is to protect and preserve the cultural places of California Native Americans, both on private and on public lands. Local city and county governments are required to consult with California Tribal Groups about proposed local land use planning decisions, and on the adoption or substantial amendment of general plans, specific plans, or the dedication of open spaces with the purpose of protecting cultural places. Negotiation can result in the development or modification of treatment and management plans for cultural resources.

For the purposes of California Government Code Section 65351, 64352.3, and 65562.5, "consultation" means the meaningful and timely process of seeking, discussing, and considering carefully the views of others, in a manner that is cognizant of all parties' cultural values and, where feasible, seeking agreement. SB-18 processes take place outside of the CEQA process. CEQA mitigation measures may not be applicable to SB-18 negotiation outcomes, as a culturally-defined "sacred site" cannot be mitigated or compensated.

California Assembly Bill-52 (AB-52)

AB-52 merges many elements of SB-18 with the standard State of California CEQA process, as well as giving voice to non-Federally-recognized tribal groups in the state.

AB-52 specifies that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource (TCR), as defined, is a project that may have a significant effect on the environment under CEQA. AB-52 outlines lead agency consultation with all California Native American tribes traditionally and culturally affiliated with the geographic area of the proposed project, defines what constitutes a TCR, provides examples of mitigation measures if the TCR will be impacted by the project, and explains how AB-52 consultation fits into the larger CEQA process.

AB-52 designates significant Native American cultural resources as Tribal Cultural Resources. The criteria of TCRs was clarified in June, 2017, by the publication of a new AB-52 technical advisory, which links the definition of a TCR to the updated Public Resource Code 21074 (2017:4-5).

State Guidelines for Cultural Resource Inventory, Evaluation, and Data Recovery

Guidelines from the State of California on cultural resources are clear as to the roles and responsibilities of land owners versus the lead agency toward cultural resource identification, evaluation, and treatment. Individual land owners, as per *California Office of Historic Preservation Technical Assistance Series #1 California Environmental Quality Act (CEQA) and Historical Resources*, are responsible for the identification (inventory) of cultural resources and their evaluation for proposed development projects. The lead agency is responsible for determining whether the inventory and evaluation process was correctly followed, and determines the correct and appropriate level of investigation for data recovery situations, which normally is a negotiated process that involves the land-owner, the lead agency, and possibly interested third parties, such as Native American tribal groups.

The State of California also provides Lead Agencies and Consultants with a number of "best practice" professional guidelines for conducting inventory, evaluation, and data recovery project, as well as how to support recommendations of cultural resource significance and how to write treatment and data recovery plans. Lead Agencies appraise cultural resource technical documents and resource recommendations based on whether the consultant followed professional methodology as outlined in the state guidelines.

6.0 PHASE I CULTURAL RESOURCE RECORD SEARCH

Envicom requested on February 27, 2017, that the SCCIC conduct a record search of their database for known cultural resources within the project area and the nearby region. This record search included the project location, also known as the proposed project development area (development area), but not the open space set aside on the project property. A 0.5-mile study area was then placed around the development area that was also examined by the SCCIC for cultural resources and cultural resource reports to provide a regional context for the report.

Envicom received the results of a project record search from the SCCIC on March 21, 2017. The record search findings obtained from the SCCIC were positive for cultural resources within the development area. One (1) cultural resource and one (1) cultural resource reports were listed as being within the project development area. The cultural resource, CA-LAN-1223, overlaps the proposed development area slightly on the northern border, but is well within the project property, especially if a standard 50 or 100-foot buffer were placed around the site. Additionally, 13 cultural resources and 17 cultural resource reports were listed as being within the 0.5-mile study area, which included the remaining property open space. Eight (8) overview reports included the development area, however, such reports do not specifically focus on cultural resources, and instead provide general cultural resource or historical background on the area.

The summary of findings are as follows:

Cultural Resources Located within the Proposed Project Development (1):

CA-LAN-1223 (19-001223). This prehistoric cultural resource is located partially on the project property, and partially off the property to the north. It is located between a number of steep hills and nearby El Escorpion Creek that is located north of the El Scorpion Trail which borders the proposed development area. Both the creek and the trail are part of the nearby Bell Canyon regional park.

The site was first recorded in 1985 by Robert Benholtz, and was located on the official site form as being "About ¼ mile west from the mouth of El Scorpion Cyn (West end of Vanowen) in a small, shallow canyon on the south side. The site in small canyon below drainage area at the end of Welby Way." A sketch map was included that showed the location of the site within the local landscape and recognizable landmarks (**Figure 4**).

The cultural resource was identified through surface artifacts, including "mano fragments and scrapers," with "several quartzite cores and scrapers (small and large), chert scraper, several mano fragments." The interpretation was that the site was an "occupation or plant processing site." They also add that the site was a "plant processing or habitation site, probably associated with *Huwan* (LAN-413) and Castlepeak sites. Dark midden extends further under covered areas." *Huwan* was a historic-era Native American village located in the area.

As to significance, the site form author noted that it is "possibly a significant site considering its relative location adjacent site LAN-793, LAN-886, Castle Peak, Bell Cyn sites." Impacts included off-road vehicle and motorcycle trails that crossed the site, as well as "small part of site covered and? Or destroyed by previous activities," the latter being vague at best.

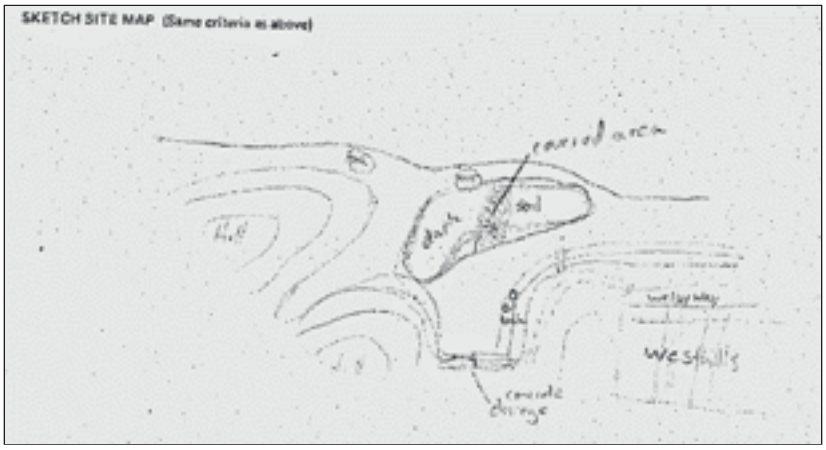

Figure 4: 1985 CA-LAN-1223 archaeological site sketch map, showing the site between the southern hills and El Escorpion Creek.

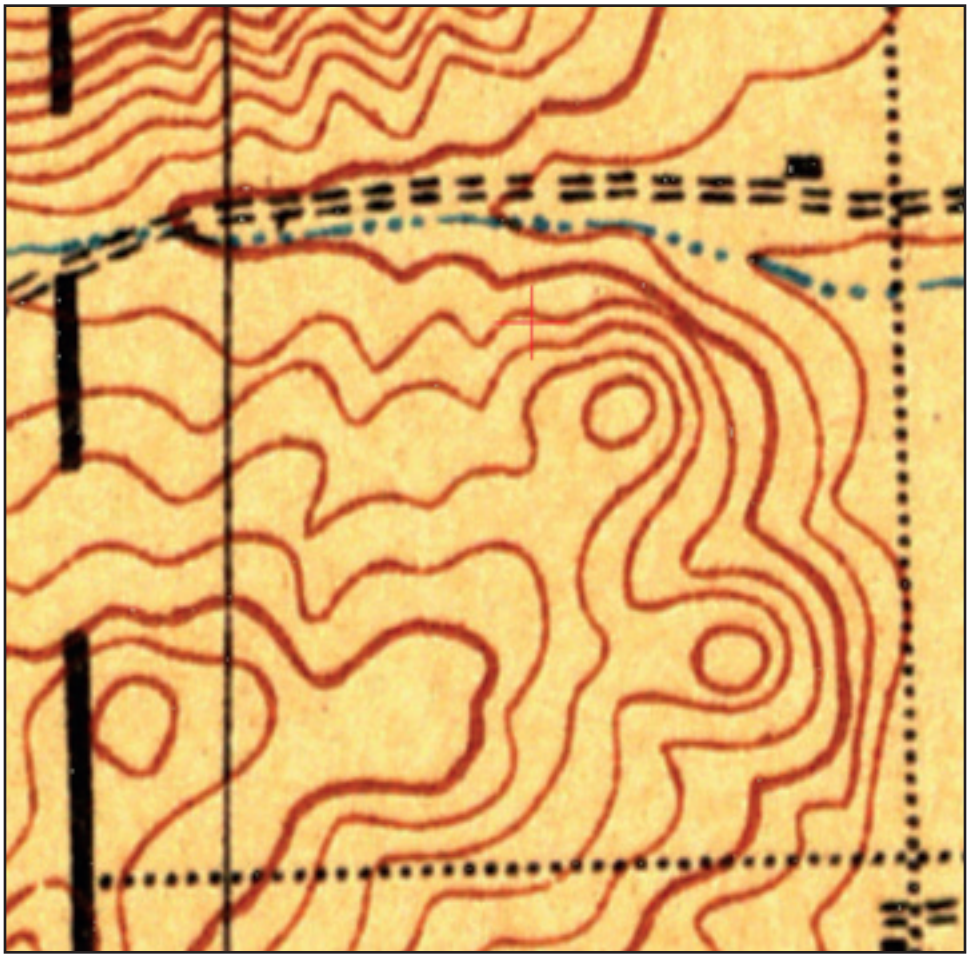

Figure 5: 1903 USGS Calabasas Map, showing the project property area and El Scorpion Canyon road (top).

Figures 4 & 5

Reports Located within the Proposed Project Development Area (1):

LA-01401
Stickle, Gary E.
1982 A Site Survey of the Westhill Adjacent Property, Chatsworth. Environmental Research Archaeologists.

This archaeological survey included the current project property and development area, and was negative for cultural resources. The survey area included the entire property (at the time being 57-acres), but called out 35-acres of this area as being previously "developed."

In this case, "developed" probably was referring to the grubbing, clearing, the numerous instances of road grading, water and flood control features, landscape grading, and excavation impacts noted during the 2017 pedestrian survey. The smaller survey area also appears to line up with the current 37-acre project current development area. The original project property "developed" status does not appear to have led to actual house construction, though the basic structure of a planned residential area is quite visible on the surface.

Resources Located within the Study Area (13):

P-56-000403 This site is an important prehistoric lithic, rock shelter, and habitation debris site that was first recorded in 1989, and updated in 2006. This cultural resource is not adjacent to nor near the project location, and is within the outer limits of the study area.

P-19-000416 This site is a prehistoric lithic and habitation debris scatter that was first recorded in 1970, and updated in 1978. This cultural resource is not adjacent to nor near the project location, and is within the outer limits of the study area.

P-19-000489 This site is a prehistoric lithic scatter that was first recorded in 1972, and was updated in 1978. This cultural resource is not adjacent to nor near the project location.

P-19-000511 This cultural resource (Burrow Flats) is an important site with shell beads, rock art, and habitation debris, first recorded in 1972 and updated in 1978. This cultural resource is not adjacent to nor near the project location, and is within the outer limits of the study area.

P-56-000551 This site is a prehistoric rock shelter/cave that was first recorded in 1978, and was updated in 2006. This cultural resource is not adjacent to nor near the project location.

P-19-000792 This is a historic homestead site that was first recorded in 1978, and was updated in 1981. This cultural resource is not adjacent to nor near the project location.

P-19-000793 This site is a prehistoric lithic scatter, quarry, and possible habitation location that was first recorded in 1977, and has not been updated. This cultural resource is not adjacent to nor near the project location.

P-19-000833 This site is a prehistoric lithic scatter that was first recorded in 1972, and was updated in 1978. This cultural resource is not adjacent to nor near the project location, and is within the outer limits of the study area.

P-19-000834 This site is a prehistoric lithic scatter that was first recorded in 1972, and was updated in 1978. This cultural resource is not adjacent to nor near the project location.

P-19-000835 This site is a prehistoric lithic scatter that was first recorded in 1972, and was updated in 1978. This cultural resource is not adjacent to nor near the project location.

P-56-001378 This site is a prehistoric lithic scatter and rock shelter/cave that was first recorded in 2006, and has not been updated. This cultural resource is not adjacent to nor near the project location.

P-56-001379 This site is a prehistoric lithic scatter and rock shelter/cave that was first recorded in 2006, and has not been updated. This cultural resource is not adjacent to nor near the project location.

P-19-190250 This site is a historic utility pole recorded in 2012.

Reports Located within the Study Area (17):

LA-00080
Rosen, Martin D.
1975 Evaluation of the Archaeological Resources and Potential Impact of Property Acquired by the State which may be Sold Back into Private Ownership, Route 64 Deletion, Los Angeles County. University of California, Los Angeles Archaeological Survey.

LA-00081
Rosen, Martin D.
1975 Evaluation of the Archaeological Resources for the Area Wide Facilities plan for the Las Virgenes Municipal District, (Malibu Coast, Western Santa Monica Mountains, Southern Simi Hills), Los Angeles and Ventura Counties. University of California, Los Angeles Archaeological Survey.

LA-00256
Chase, Paul G.
1988 Archaeological Survey and Monitoring for Valley Circle Estates, City of Los Angeles.

LA-00351
Romani, John F.
1978 Assessment of the Cultural Resources Located on 280 Acres of Land in Bell Canyon, California (the Bell Canyon Site Complex).

LA-00693
Singer, Clay A.
1976 Assessment of Cultural Resources and Discussion of Potential Impacts for Tentative Tract No. 31548, County of Los Angeles, California.

LA-02559
King, Chester.
1992 Native American Placenames in the Santa Monica Mountains; Fist Draft.

LA-03633
Anonymous
Unknown Lower Bell Canyon: A Microcosm of the Heritage of the San Fernando Valley. Northridge Archaeological Research Center, CSUN.

LA-06601
King, Chester, and Parsons, Jeff
2000 Archaeological Record of Settlement and Activity in the Simi Hills Malu'liwini.

LA-07142
Kyle, Carolyn E.
2004 Cultural Resource Assessment for AT&T Wireless Facility 950-014-222d, Located at Twisted Oak Drive and Wooded Vista Road, City of Woodland Hills, Los Angeles County, California.

LA-11149
Romani, John F.
1981 California State University, Northridge, Astronomy and Social Integration: An Examination of Astronomy in a Hunter and Gatherer Society. A thesis submitted in partial satisfaction of the requirement for the degree of Masters of Arts in Anthropology.

LA-11823
Craig, Steven and Home, Stephen
2001 Excerpts from: Nomination Information California Sacred Lands Inventory El Escorpion Traditional Cultural Area, Los Angeles and Ventura Counties, California. Ventana Conservation and Land Trust.

LA-11931
Bonner, Wayne
2012 Cultural Resources Record Search and Site Visit Results for T-Mobile West, LLC Candidate SV11264A (Valley Circle JPA), 6601 Valley Circle Boulevard, Cel 1, West Hills, Los Angeles County, California.

LA-12502
King, Chester
2006 Archaeological Assessment of Areas Burned by the Topanga Fire, Ventura and Los Angeles Counties, California. Topanga Anthropological Consultants.

VN-00714
Van Horn, David M.
1980 Archaeological Survey Report: The Ventura County Portion of the Las Virgenes Ranch. Archaeological Associates, Ltd.

VN-01174
Wallace, James, Dietler, Sara, and Kry, Linda
2012 Draft Phase I Cultural Resources Assessment, San Fernando Valley Water Recycling Project City of Los Angeles, California. AECOM.

VN-01176
King, Chester
1992 Review of Cultural Resource Elements of Ahmanson Ranch EIR. Topanga Anthropological Consultants.

VN-02730
Bonner, Wayne
2009 Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate SV01856A(XR) (Mission Oaks Park), 5901 Mission Oaks Boulevard, Camarillo, Ventura county, California. Michael Brandman Associates.

VN-03067
Steven, Craig and Home, Stephen
2001 Excerpts from: Nomination Information California Sacred Lands Inventory El Escorpion Traditional Cultural Area, Los Angeles and Ventura Counties, California. Ventana Conservation and Land Trust.

VN-03152
King, Chester
2006 Archaeological Assessment of Areas Burned by the Topanga Fire, Ventura and Los Angeles Counties, California. Topanga Anthropological Consultants.

Overview Reports that Include the Project Area (8):

LA-03511
Romani, John F.
1977 Assessment of the Archaeological Impact by the Development of the Waste Water Facilities Plant W.O. 31389. Northridge Archaeological Research Center, CSUN.

LA-04323
Hill, James N.
1985 Cultural Evolution in the Archaic/Mesolithic: A Research Design for the Los Angeles Basin. Archaeological Resource Management Corp.

LA-11484
Walker, E.F. and Robinson, Eugene
Unknown Partial List of Indian Village Sites in Los {sic} Angeles County, with a few in Orange County. (Information from Eugene Robinson, Handwritten, in "Reconnaissance Sites 15F" loose-leaf notebook of Mr. E.F. Walker, Southwest Museum, Los Angeles, California. Southwest Museum.

LA-11747
Sakai, Rodney
2006 Programmatic Agreement Compliance report, Twenty-First Reporting Period, July 1, 2005 – March 31, 2006. Historic Resource Group.

LA-11748
Sakai, Rodney
2003 Programmatic Agreement Compliance report, Twenty-First Reporting Period, July 1 – December 31, 2002. SHPO and Advisory Council on Historic Preservation.

The SCCIC study area, with numerous prehistoric archaeological sites, underscore that such sites are common in the Chatsworth/West Hills foothills. Also common are rock shelters and caves, which prehistoric Native Americans used for habitation locations, however, none of these are found within the development area. Historic resources were uncommon except for a single built environment resource in the project study area. Though none of the resources within the study area were adjacent to the project property, they provided information on the types of archaeological sites that could be encountered during the later pedestrian survey. They also supported that the discovery in 1982 of cultural resource of CA-LAN-1223 as a lithic scatter, with potential additional artifacts or features, was not an uncommon archaeological site type for the area. Due to numerous prehistoric cultural resources existing within the 0.5-mile study area, the project development area should be considered as ***sensitive for prehistoric cultural resources***.

The Native American Heritage Commission was contacted on February 27, 2017, with a request to search their database for cultural resources within the project ADI and within the larger 0.5-mile study area. A response from the NAHC was received on March 3, 2017, which was negative for cultural resources within the project site.

Copies of the request letter to the SCCIC and to the NAHC are included in **Appendix A** and **Appendix B** of this report. The response letter from the NAHC is also included in Appendix A. The findings from the SCCIC as per cultural resource physical location and details are considered confidential by state law and are, therefore, not included in this report.

The USGS historic map database was also examined as part of the Phase I cultural resource survey. Sixteen (16) historic USGS and other government maps of the region provided a historic-era history of the project property, dating back to 1903. This database was negative for early historic built environment resources, however, an early trail followed El Escorpion Creek that borders the project property to the north on the early 1903 Calabasas USGS Map (**Figure 5**). This early 20th Century cultural resource probably pre-dated 1903, and should be considered as part of the early historic development of the project area, however, it's location on the northern side of El Escorpion Creek places it clearly outside the development area. A single structure is shown east along this road, but well outside the project development area (see Figure 5).

No other development took place until the 1960s, when some local unimproved roads start to be shown on the USGS Calabasas Quadrangle map (**Figure 6**), followed by flood control improvements on the 1976 USGS aerial photo of the development area (**Figure 7**).

Historic Google Earth images date back to 1989, which clearly show improvements to the project property, including additional roads and added flood control features (**Figure 8**). These improvements are especially noticeable on the 1994 Google Earth image (**Figure 9**).

Due to the project property historic cultural resource records being negative for early 20th Century cultural resources within the project development area, and due to the limited early historic development of the project property region, the project should be considered ***not sensitive for historic cultural resources.***

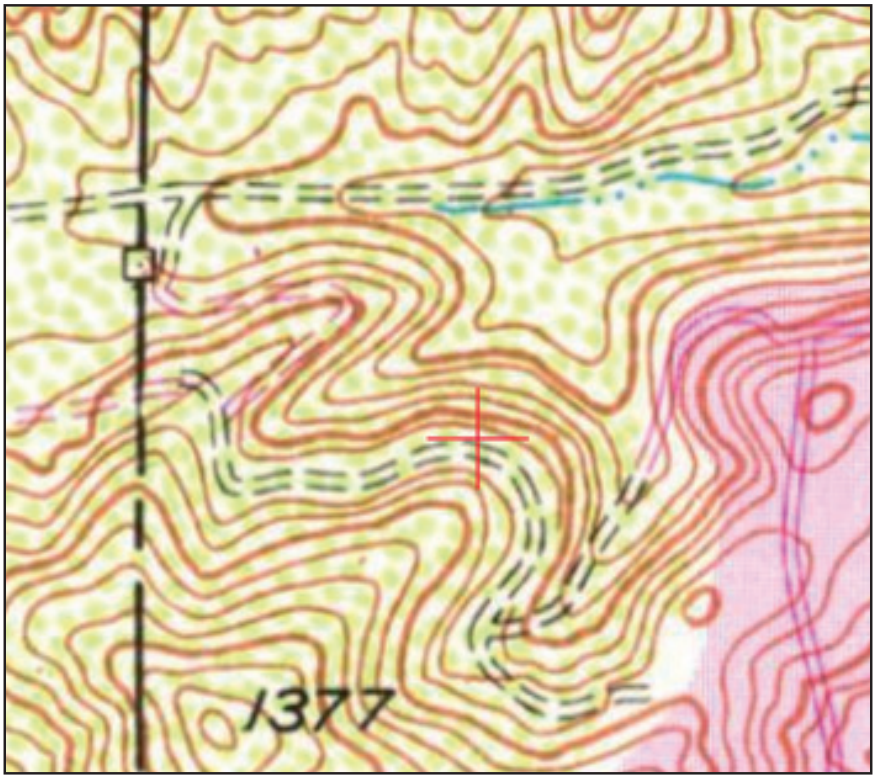

Figure 6: 1967 USGS Calabasas Quadrangle, showing the project property and 20th Century dirt roads.



Figure 7: 1976 USGS aerial image, showing project property and modern impacts.

Figures 6 & 7

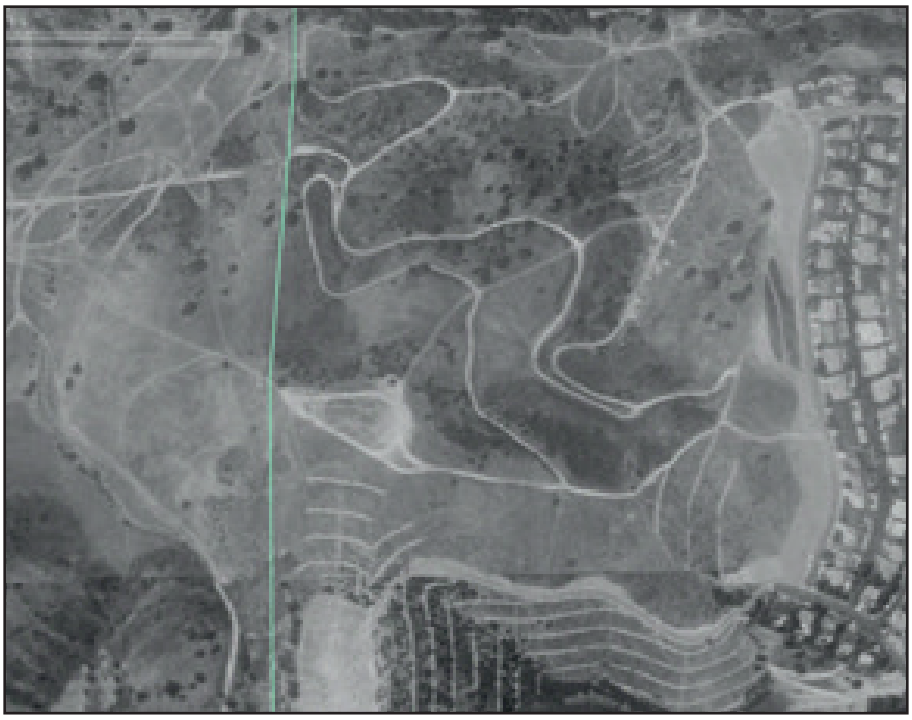

Figure 8: 1989 Google Earth image, showing modern impacts.



Figure 9: 1994 Google Earth image, showing modern impacts.

Figures 8 & 9

7.0 PHASE I FIELD SURVEY METHODOLOGY

Prehistoric Cultural Resource Field Methodology

Envicom completed a physical survey of the entire development area of the project property. The Phase I pedestrian identifies sites that have previously not been identified through past survey efforts, and which would not therefore be found in the record search of the project. During the pedestrian survey, all cultural resources identified during the record search were reassessed. The survey was conducted in accordance with Secretary of the Interior's Standards and Guidelines for Archaeological and Historic Preservation (48 FR 44716, Sept. 29, 1983). Any new cultural resources encountered during the survey were mapped using a GPS unit with sub-meter accuracy and recorded on Department of Parks and Recreation (DPR) 523 forms. To address potential paleontological resources, the pedestrian survey also examines any observable exposed rock formations.

Physical survey efforts were both systematic and opportunistic. Transects of at least 10-meters (30-feet) in width were used to cover the more open areas of the project property. Opportunistic survey routes were used when large areas of open visibility were encountered so that such areas were examined in more detail, or where areas of clear modern impact (such as within the previously graded road cuts that bisects the site) broke up systematic coverage transects. Special effort was used around CA-LAN-1223, the cultural resource identified in the record search as being partially on the property. The result was a thorough coverage of that part of the property with intact native soils without fill material or visible modern impacts.

The Phase I pedestrian survey (also referred to as a Phase I(a) survey, which designates surface examination only), was considered to be inadequate in two locations due to the dense invasive grasses in the area. A Phase I(b), subsurface survey, was therefore requested for the area of CA-LAN-1223 (Site Area A) and for an additional location (Site Area B) in the project development area that appeared to consist of mostly intact native soils. The remainder of the property was visibly impacted by past development activities, including grading, retaining feature construction, road construction, and water tank placement. The methodology for these two areas differed in that shovel test pits were placed in transects across the areas to be more intensively examined, with a minimal of 10-meters being placed between individual shovel test pit. In the Case of CA-LAN-1223, which was within a wide, flat area, a grid of shovel test pits was created from individual transects to provide more area coverage.

Shovel test pits were excavated to an average depth of 40 to 50-centimeters (roughly 1.5 to 2.0-feet), with the soils being screened through 1/8-inch mesh. Artifacts were to be collected and recorded by shovel test pit to maintain provenience and for creating an updated cultural resource site map. Any features encountered would be photographed and described in more detail for the report and site form. In the case of the second development area location, which was a flat ridgeline saddle area, a single line of shovel test pits was used down the middle of the ridge spine. These shovel test pits followed the same excavation methodology as described above.

The planned shovel test transects were considered to be an adequate methodology to test the subsurface component of both areas for the Phase I cultural resource assessment. The findings from both areas would then be used to build either further assessment or management recommendations, or as proof that such further tasks area not warranted.

Prehistoric Cultural Resource Laboratory Methodology

All artifacts from a specific shovel test pit, test unit, surface collection, level, feature, or other field separation designation are handled and processed separately. This metholodogy ensures that the provenience of all recovered artifacts can be maintained. The provenience of artifacts and/or prehistoric features are located are then used to build site maps and to guide final management recommendations. All artifacts will be cleaned, analyzed, and presented in **Appendix C** of this report. Artifact type will also be provided, separating ground stone implements (metates, manos, or other abrading stones) from lithic (stone) debitage (waste material from stone tool manufacturing). Any additional categories will be clearly labeled, and may include faunal (bone) artifacts, marine shell fragments, or non-modified rocks or other material.

Laboratory analytical documentation will consist of noting and measuring artifact characteristics of the type of artifact being studied. Notations and measurements will include characteristics that can aid future analytical, statistical, or interpretive analysis. Storage of artifacts will temporarily take place at Envicom or in remote storage locations until a final depository is selected.

All artifacts recovered from the Phase I survey and from any future site monitoring will be permanently curated at a recognized California curatorial repository. A curation agreement will be completed as part of a construction phase management plan for the project, which will identify the selected curation facility. Final curation will follow the guidelines of the curation facility. All artifact characteristics and measurements will be entered into master Excel tables for later inclusion with the artifacts for curation, and for later statistical analysis and outside research projects. All reports, photographs, and field notes will be included with the collection to aid future research projects.

8.0 PHASE I FIELD SURVEY SUMMARY OF FINDINGS

PHASE I(a) PEDESTRIAN SURVEY RESULTS

Envicom surveyed the entirety of the project development area on April 4th, 2017. The open space set aside portion of the project property was surveyed. Special consideration was taken examining the recorded location of archaeological site CA-LAN-1223, and its surrounding area. The ground visibility of the survey was less than 5% due to the exceptionally thick and high natural and invasive grass species that covered most of the survey area (**Figure 10**). A number of modern trails and past graded areas allowed for rare observation of the surface, and ground squirrel activity allowed for some idea of the subsurface conditions, however, these glimpses of the true surface and subsurface conditions were rare.

The survey began with a systematic examination of the recorded CA-LAN-1223 area (**Figure 11** and **Figure 12**). This location was at the base of a number of ravines, which would have provided semi-seasonal water flow out of the surrounding canyons. This water flow would have emptied into the larger El Escorpion Creek that is just off the project property to the north. This stream follows the bottom of El Scorpion Canyon and had flowing water at the time of the survey. Visible disturbances in the CA-LAN-1223 site area included off-road vehicle trails, modern trash including a car hulk and a large metal cylindrical tank, and evidence of past oil wells, including a metal pipe stub, culverts, and an iron control valve (**Figure 13**). These water control features have an aged appearance, and probably pre-date the early 1980s development of the property. They do not, however, appear to be older than the 1950s.

As previously mentioned, ground visibility was less than 5% due to the thick and tall grasses that covered the location of the CA-LAN-1223 cultural resource. The exception to this was along the unpaved El Scorpion Canyon Trail (see Figure 1, upper edge of image), which provided a roughly ten-foot wide view of the surface with no vegetation. Other areas with better visibility included paths between the El Escorpion Canyon Trail and El Escorpion Creek to the north, ground squirrel burrows, and a few erosion channels located north or south of the Trail.

The artifacts mentioned in the CA-LAN-1223 site survey form were not identified, however, little of the actual site surface could be seen. Numerous quartzite cobbles were embedded into the various trails, however, these appeared to be naturally water-smoothed. Quartzite shatter from cobbles was also visible, but much of this appeared to have been caused by modern vehicular traffic. No actual undisputable prehistoric artifacts were observed on the surface during the initial site walk over. The darker “midden” soil was observed in some areas, however, this could have been from past flooding events or wetlands creation during periodic wet cycles and was not evidence in itself of prehistoric habitation. Due to the thick and tall grasses covering 95% of the CA-LAN-1223 site area, Envicom recommended that this area have Phase I(b) subsurface testing with transects of shovel test pits to determine actual site dimensions and artifacts present.

Away from CA-LAN-1223, much of the rest of the project development area consisted of slopes of greater than 30-degrees. Such sloped areas are often determined to be poor locations of prehistoric cultural resources due to the lack of useable flat terrain. Prehistoric rock shelters, caves, or quarries can be found under such slope conditions, where rock outcrops are located. However, surface survey efforts found none of these types of resources on the property.

Of the non-sloped portions of the development area, most of the landscape has been impacted from modern disturbances, including grading, grubbing, and the creation of flood-control features. Cut and fill



Figure 10: Photo of CA-LAN-1223 location, facing west, showing thick grass.



Figure 11: Photo of CA-LAN-1223 location, facing west.

Figures 10 & 11



Figure 12: Photo of CA-LAN-1223 location, facing north.



Figure 13: Historic oil well equipment can be found at the edge of CA-LAN-1223 to the east.

Figures 12 & 13

activities have also taken place across the development area, especially in association with the road cuts. Through examination of the historic documents, it appears that most of this landscape modification took place in the early 1980s. As mentioned above, the 1982 Stickle survey referred to the non-open space area as being "developed." These developments are most striking when examining the large concrete and earth retaining features that have been constructed throughout the project area. Not only have these retaining features heavily modified the landscape, but they have also acted to raise the grade of the area behind them, creating artificial flat fill areas.

No fewer than seven distinct road paths have been cut into the steep hillsides, most of which can be seen on the earlier Google Earth images (see Figure 8 and Figure 9). Much of the southwest section of the property has also been extensively graded down to bedrock, with additional bermed pads being excavated from that area to the east above the paved road just south of the property. These cut pads may have originally been for water tanks as a number of larger such features are located just south of the site. Finally, a large cleared and flattened fuel mod zone has been graded immediately to the west of Randiwood Lane that lines the eastern edge of the project boundary.

The only actual portion of the development area with visibly undisturbed native landscape was the CA-LAN-1223 area (Site Area A) and a flat ridgeline saddle area to the southwest of CA-LAN-1223 location (Site Area B) (**Figure 14**). Such saddle areas were often used by prehistoric Native Americans for temporary camps or for plant material processing areas. It is the Author's experience that such areas often are the location of prehistoric Native American sites, especially above stream sources, throughout the Santa Monica and Simi Hills region. Due to the thick and tall grasses covering 100% of this saddle area, Envicom also recommended that this area have subsurface testing with transects of shovel test pits, as well as the CA-LAN-1223 area.

In summary, most of the project development area was visibly impacted by modern (post-1980) ground disturbance. However, due to over 95% of the CA-LAN-1223 site area being completely covered with thick vegetation, the Phase I(a) surface survey was not adequate to determine whether that cultural resource still existed, what quality of information was present if at all, nor what the site boundary was spatially. For this reason, Envicom recommended that a further subsurface Phase I(b) survey be conducted, with shovel test pit transects excavated across the cultural resource site area. The completion of shovel test pits would be able to identify whether elements of the CA-LAN-1223 cultural resource existed beneath the grass covering the surface of the original site location. Along with the CA-LAN-1223 site area, Envicom further recommended that the ridgetop saddle area be tested with subsurface shovel test pits to determine if cultural resources were located in that area as well. The Client agreed to these recommendations, and the excavation of shovel test pits at both locations began on October 6, 2017.

PHASE I(b) PEDESTRIAN SURVEY RESULTS

Phase I(b) work at CA-LAN-1223 began with a surface survey in preparation of shovel test pit placement. During the walk over, three prehistoric artifacts were located on the surface along the El Escorpion trail; a quartzite core (the product of stone tool manufacturing), a granite mano fragment showing one distinct wear facet (from prehistoric grinding) and use as a hammerstone, and a complete quartzite mano showing five distinct wear facets (**Figure 15**). This material matched well with the original CA-LAN-1223 site form artifacts, which described similar material.



Figure 14: Saddle area, facing east.



Figure 15: Prehistoric cultural artifacts from the surface of CA-LAN-1223 (intact quartzite mano, quartzite core, fragment of a granite mano).

Figures 14 & 15

A total of twenty-two (22) shovel test pits at 10-meter intervals in four transects were placed across the original mapped location of CA-LAN-1223 in a grid pattern (**Figure 16**). None of these shovel test pits were positive for prehistoric cultural resources (**Figure 17**). The conclusion of Envicom archaeologists was that the original site form was describing a scant scatter of prehistoric artifacts that included lithic material from stone tool manufacturing and from limited plant material processing. However, the shovel test pits demonstrated that this material was not numerous, nor deep, and that associated prehistoric features were not present. The "midden" material original described was probably the result of natural conditions, such as flood pool sediment production, and not associated with prehistoric occupation. No further tasks are recommended.

The ridgeline saddle area was tested with ten shovel test pits in a single transect across the flat ridgetop area (**Figure 18**). Sandstone bedrock was encountered beneath loam soil, however, no prehistoric artifacts were encountered. Envicom archaeologists concluded that no evidence of prehistoric occupation or use of the saddle area was present. No further tasks are recommended.

PALEONTOLOGICAL ASSESSMENT

As mentioned above, modern grading to bedrock has taken place in a number of locations across the site, most notably in the southwest corner of the project development area (**Figure 19**). Beneath the surface loam are layers of naturally-occurring sandstone of various hardness and thickness, as described in the geology section of this report. Some of the modern road cuts have also exposed this sandstone bedrock. Examination of the sandstone bedrock in the southwest property area identified at least one potential embedded fossil (**Figure 20**). These sandstone bedrock elements include part of the Monterrey Formation of fossil-bearing sandstone; an important geological formation that has produced numerous significant fossils in the past. Overall, surface observations of exposed sandstone rock units supported the finding that the project development area is ***sensitive for paleontological resources***.

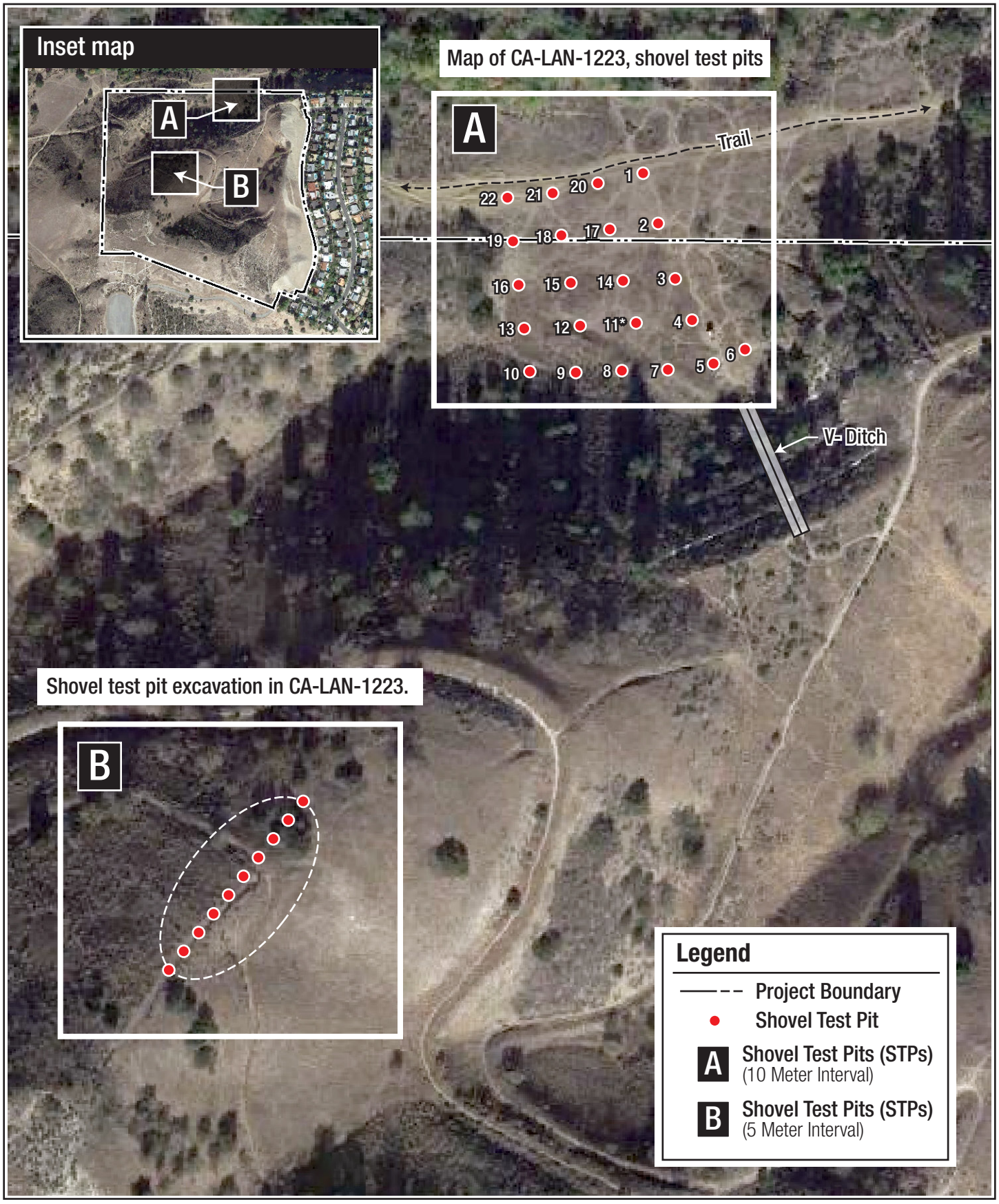
Inset map
A
B
Map of CA-LAN-1223, shovel test pits
A
Trail
1
20
21
22
2
17
18
19
3
14
15
16
4
11*
12
13
6
5
7
8
9
10
V- Ditch
Shovel test pit excavation in CA-LAN-1223.
B
Legend
Project Boundary
Shovel Test Pit
A Shovel Test Pits (STPs) (10 Meter Interval)
B Shovel Test Pits (STPs) (5 Meter Interval)



Figure 17: Map of saddle area, shovel test pits.



Figure 18: Exposed sandstone formation in southwest corner of development area.

Figures 17 & 18



Figure 19: Exposed marine fossil in sandstone, damaged from blading, possible plant species.

9.0 RECOMMENDATIONS OF SIGNIFICANCE

Normally, recommendations of significance are not included in Phase I assessment technical reports for identified cultural resources. However, due to the number of shovel test pits excavated within the original identified boundary of CA-LAN-1223, the lack of extensive surface artifacts, and the lack of prehistoric artifacts recovered from the shovel test pits, Envicom concluded that the potential was low for recovering additional prehistoric artifacts from the CA-LAN-1223 cultural resource. This fact was supported by the original site form, which listed few artifacts identified on the surface of the site.

Overall, only a limited amount of prehistoric artifacts are to be found across much of the CA-LAN-1223 site, with an overall artifact density of less than 1 artifact per square meter on average. Recovered artifacts were also unexceptional, with no faunal, marine shell, or exotic lithic material being collected that would indicate greater site complexity. It is the conclusion of the author that the data collected adequately samples the cultural resource, and that further systematic shovel test pit excavation, or the excavation of test units, would not elevate the understanding of the prehistoric resource any further.

For these reasons, Envicom recommends that CA-LAN-1223 is not a significant resource under CRHR Criteria 4 (scientific data potential). Envicom further recommends that CA-LAN-1223 does not qualify as a cultural resource under CRHR Criteria 1 (important people), Criteria 2 (important historic events), or Criteria 3 (important or unique built environment architecture). Envicom, therefore, recommends that CA-LAN-1223 is not eligible for inclusion on the CRHR under any criteria.

10.0 MANAGEMENT RECOMMENDATIONS

The results of the SCCIC record search was positive for cultural resources, with a single resource (CA-LAN-1223) being found within the project development area. The record search also indicated that the development area was ***sensitive for prehistoric cultural resources*** due to the large number of prehistoric archaeological sites in the study area around the development area. The results of the NAHC record search was negative for cultural resources. The findings of the historic map and aerial image database search were negative for historic cultural resources within the project development area. The project area was, therefore, determined to ***not be sensitive for historic cultural resources***.

The Phase I(a) surface survey was negative for cultural resources, however, the lack of surface visibility due to thick invasive grass species made it necessary to test two areas with shovel test pits to determine if cultural resources were present. The first area, the location of prehistoric cultural resource CA-LAN-1223, was tested with twenty-two (22) shovel test pits, with negative findings. Three prehistoric artifacts were found on the surface prior to surface testing. The second area, a flat ridgeline saddle, was tested with ten (10) shovel test pits with negative findings. No further cultural resource assessment tasks were recommended for either development area location. Based on these findings, CA-LAN-1223 was also recommended to not be eligible for the CRHR under Criteria 4 (scientific data potential), and was, therefore, not recommended to be a significant cultural resource.

However, due to the possibility that project site preparation and grading activity could uncover unknown and potentially significant cultural resource elements missed during the Phase I survey process, Envicom recommends the following mitigation measures:

Archaeological, Native American, and Paleontological Monitoring

A Construction Phase Monitoring Plan (CPMP) will be developed that shall outline the requirements for archaeological, Native American, and paleontological monitoring for the project, a communication plan for daily work and for discovery situations, and a clear discovery protocol. The CPMP will include a curation agreement, and will be reviewed by the Lead Agency and be in place prior to construction.

An archaeological monitor that meets the Secretary of Interior qualifications and a Native American monitor will be on site during project grading of the top five (5)-feet of soil. The archaeological monitor will collect any prehistoric material that is uncovered through grading, and can halt construction within 50-feet of a potentially significant cultural resource if necessary. If potentially significant intact deposits are encountered, then a cultural resource "discovery" protocol and communication plan will be followed, which will be formalized in the Construction Phase Monitoring Plan. The Archaeological Discovery Compliance Measure (below) discusses discovery in more detail.

Due to the area being partly within the Monterrey Formation, a geological unit known for marine fossils, and within other fossil-bearing sandstone formations, a qualified paleontological monitor will be present during all earth moving associated with the project that is within bedrock material. Maps showing these locations will be included in the CPMP, as well as a discovery protocol in the case of the discovery of significant fossil resources. The paleontological monitor will also be able to halt construction within 50-feet of any fossil discovery until the fossil can either be removed off-site or the project Lead Agency notified to further assess the discovery. If the find is large enough to warrant further evaluation and/or extraction, then a fossil "discovery" protocol will be followed. This protocol will also be outlined in the Construction Phase Monitoring Plan. The Paleontological Discovery measure (below) discusses discovery in more detail.

Updates to CA-LAN-1223

Upon the completion of site monitoring, an updated site record will be produced and submitted to the SCCIC information center as an update to CA-LAN-1223. Any information obtained from the site archaeological monitoring will be added to the site record update.

Tribal Notification of Artifact Curation.

The subdivider is required to communicate the final curation location of prehistoric archaeological materials and provide a tabulated account of all materials collected during the Phase I(b) and construction phase monitoring. This information will be provided to any Tribal Group representative requesting the information.

Archaeological Discovery

If buried materials of potential-archaeological significance are accidentally discovered within an undisturbed context during any earth-moving operation associated with the proposed project, then all work in that area shall be halted or diverted away from the discovery to a distance of 50-feet until a qualified senior archaeologist can evaluate the nature and/or significance of the find(s). The project communication plan (included in the Construction Phase Monitoring Plan) will be followed and the Lead Agency will be immediately notified of the discovery.

Construction will not resume in the locality of the discovery until consultation between the senior archaeologist, the project manager, the Lead Agency, applicant's representative, and all other concerned parties, takes place and reaches a conclusion approved by the Lead Agency. If a significant cultural resource is discovered during earth-moving, complete avoidance of the find is preferred. However, further survey work, evaluation tasks, or data recovery of the significant resource may be required by the Lead Agency if the resource cannot be avoided. In response to the discovery of significant cultural resources, the Lead Agency may also add mitigation measures during continued site development, which may include additional cultural and/or Native American monitoring.

Any required additional monitoring will be conducted at the applicant's expense and outlined in an addendum to the Construction Phase Monitoring Plan, which will also be submitted to the Lead Agency for review prior to the recommencement of ground-disturbance activities. Any Evaluation, Data Recovery, Site Management, or Monitoring Plans or Reports generated as a response to the discovery of a significant cultural resource will be submitted to the Lead Agency for review and final curation as part of the project record. All such documents associated with the discovery of cultural resources will be transmitted to the appropriate State of California archaeological site record and information centers.

Paleontological Discovery

The project will be monitored by a professional paleontological monitor within bedrock context as outlined above. If buried materials of potentially-paleontological significance are accidentally discovered within an undisturbed context during any earth-moving operation associated with the proposed project, then all work in that area shall be halted or diverted away from the discovery to a distance of 50-feet until a qualified senior paleontologist can evaluate the nature and/or significance of the find(s). The project communication plan (again, included in the Construction Phase Monitoring Plan) will be followed and the Lead Agency will be immediately notified of the discovery.

Construction will not resume in the locality of the discovery until consultation between the senior paleontologist, the project manager, the Lead Agency, the applicant's representative, and all other concerned parties, takes place and reaches a conclusion approved by the Lead Agency. If a significant paleontological resource is discovered during earth-moving, complete avoidance of the find is preferred. However, further survey work, evaluation tasks, or fossil recovery of the significant resource may be required by the Lead Agency if the resource cannot be avoided. In response to the discovery of significant paleontological resources, the Lead Agency may also add mitigation measures during continued site development, which may include additional paleontological monitoring.

Any required additional monitoring will be outlined in an addendum to the Paleontological Resource Management Plan (PRMP), which will also be submitted to the Lead Agency for review prior to the recommencement of ground-disturbance activities. Any evaluation, fossil recovery, PRMPs, or Reports that are generated as a response to the discovery of a significant paleontological resource will be submitted to the Lead Agency for review and final curation as part of the project record. All such documents associated with the discovery of paleontological resources will be transmitted to the Natural History Museum of Los Angeles County.

Inadvertent Discovery of Human Remains

The inadvertent discovery of human remains is always a possibility during ground disturbances; State of California Health and Safety Code Section 7050.5 addresses these findings. This code section states that in the event human remains are uncovered, no further disturbance shall occur until the County Coroner has made a determination as to the origin and disposition of the remains pursuant to PRC Section 5097.98. The Coroner must be notified of the find immediately, together with the City and the property owner.

If the human remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials and an appropriate re-internment site. The Lead/Permitting Agency and a qualified archaeologist shall also establish additional appropriate mitigation measures for further site development, which may include additional archaeological and Native American monitoring or subsurface testing. All responses to the discovery of human remains will be outlined in a Recovery and/or Management Plan submitted to the Lead Agency for review. Any required additional monitoring will be outlined in an addendum to the Construction Phase Monitoring Plan, which will also be submitted to the Lead Agency for review prior to the recommencement of ground-disturbance activities.

11.0 CONCLUSIONS

In October of 2017, Envicom Corporation (Envicom) completed a Phase I cultural resource assessment of the West Hills Crest residential subdivision project within the West Hills area of the San Fernando Valley where it meets the Simi Hills mountains. This assessment involved a record search as the South Central Coastal Information Center (SCCIC), a record search at the Native American Heritage Council (NAHC), the examination of several historic map and image databases, and a pedestrian survey of the development portion of the project property (development area). The SCCIC record search was positive for a single cultural resource (CA-LAN-1223), which was described as a low-density prehistoric artifact scatter with potential midden deposits. A number of other prehistoric archaeological sites were found within 0.5-miles outside the project property, resulting in the development area also being considered as sensitive for prehistoric cultural resources. No historic era cultural resources were identified, resulting in the development area being described as not sensitive for historic cultural resources.

The results of the 2017 Phase I(a) pedestrian survey identified that most of the project development area was negative for cultural resources due to modern impacts associated with an aborted 1980s development project, which included unpaved road paths, earthen platforms and berms, and flood control facilities. All non-impacted sloped areas within the development area were also found to be negative for cultural resources as there was no evidence of caves, rock shelters, or quarry locations (as are found elsewhere in the region). Additionally, no historic-era resources were found on the property that dated prior to the observed 1980s landscape modifications.

Two remaining development area locations were considered to be potential locations of prehistoric cultural resources masked by the dense grasses found covering the site. These included the flat area of the CA-LAN-1223 prehistoric cultural resource, and an undisturbed ridgeline saddle area in the north-center of the project development area. Both areas were further investigated with shovel test pits as part of an extended Phase I(b) subsurface cultural survey. Three prehistoric artifacts were found on the surface of CA-LAN-1223 prior to Phase I(b) subsurface testing. The cultural resource was then tested with twenty-two (22) shovel test pits, with negative findings. The saddle area was tested with a further ten (10) shovel test pits, again with negative findings. No further cultural resource assessment tasks were recommended for either development area location.

Due to the number of shovel test pits excavated within the original identified boundary of CA-LAN-1223, the lack of extensive surface artifacts, and the lack of prehistoric artifacts recovered from the shovel test pits, Envicom concluded that the potential was low for recovering additional prehistoric artifacts from the CA-LAN-1223 cultural resource. This fact was supported by the original site form, which listed few artifacts identified on the surface of the site. For these reasons, Envicom recommended that the archaeological cultural resource, CA-LAN-1223, is not eligible for inclusion in the CRHR under Criteria 4 (scientific data potential), and therefore is not a significant cultural resource to be further evaluated or managed. Envicom did, however, recommend that the overall project was sensitive for prehistoric cultural resources, as well as for prehistoric paleontological resources, and therefore, recommended that the project be monitored by an archaeological, a Native American monitor, and by a qualified paleontological monitor.

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Appendix A
Record Search Request Letters to the South Central Coastal Information Center (SCCIC), and the Native American Heritage Commission (NAHC)

Appendix B
NAHC Response Letter

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
Fax (916) 373-5471

March 3, 2017

Dr. Wayne Bischoff
Envicom Corporation

Sent by Email: wbischoff@envicomcorporation.com

RE: Proposed West Hills Crest Cultural Resource Survey Project, near the City of Calabasas; Calabasas USGS Quadrangle, Los Angeles County, California

Dear Mr. Bischoff:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.

Attached is a list of tribes culturally affiliated to the project area. I suggest you contact all of the listed Tribes. If they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: gayle.totton@nahc.ca.gov.

Sincerely,

for Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

Native American Heritage Commission
Tribal Contact List
Los Angeles County
3/3/2017

Barbareno/ Ventureno Band of Mission Indians
Eleanor Arrellanes,
P. O. Box 5687 — Chumash
Ventura, CA, 93012 — Chumash
Phone: (805) 701 - 3246

Barbareno/Ventureno Band of Mission Indians
Julie Tumamait-Stennslie, Chairperson
365 North Poli Ave — Chumash
Ojai, CA, 93023 — Chumash
Phone: (805) 646 - 6214
jtumamait@hotmail.com

Barbareno/ Ventureno Band of Mission Indians
Raudel Banuelos,
331 Mira Flores — Chumash
Camarillo, CA, 93012 — Chumash
Phone: (805) 427 - 0015

Barbareno/ Ventureno Band of Mission Indians
Patrick Tumamait,
992 El Camino Corto — Chumash
Ojai, CA, 93023 — Chumash
Phone: (805) 640 - 0481

Coastal Band of the Chumash Nation
Mia Lopez, Chairperson
Phone: (805) 324 - 0135 — Chumash
cbcntribalchair@gmail.com

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chariperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
gabrielenoindians@yahoo.com

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626)483-3564
Fax: (626)286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951)807-0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe
Linda Candelaria, Co-Chairperson
1999 Avenue of the Stars, Suite 1100 — Gabrielino
Los Angeles, CA, 90067
Phone: (626)676-1184

Northern Chumash Tribal Council
Fred Collins, Spokesperson
67 South Street — Chumash
San Luis Obispo, CA, 93401
fcollins@northernchumash.org

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
P.O. Box 221838 — Kitanemuk
Newhall, CA, 91322 — Serrano
Phone: (760)885-0955 — Tataviam
tsen2u@hotmail.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed West Hills Crest Cultural Resource Survey Project, Los Angeles County.

Santa Ynez Band of Mission Indians
Kenneth Kahn, Chairperson
P.O. Box 517 Chumash
Santa Ynez, CA, 93460
Phone: (805) 688 - 7997
Fax: (805) 686-9578
kkahn@santaynezchumash.org

yak tityu tityu - Northern Chumash Tribe
Mona Olivas Tucker, Chairperson
660 Camino Del Rey Chumash
Arroyo Grande, CA, 93420
Phone: (805)489-1052
olivas.mona@gmail.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed West Hills Crest Cultural Resource Survey Project, Los Angeles County.

Appendix C
Prehistoric Artifact Table

Date	STP#/TU#	Level	Depth	Count	Size (cm)	Primary Classification	Functional Classification	Material	Color	Grain Size
10/6/17	**Surface Collection**	**Surface**	0	**1**	**6.5**	Mano	Intact	Quartzite	Beige	Fine
10/6/17	**Surface Collection**	**Surface**	0	**1**	**9.0**	Debitage	Core	Quartzite	Pink	Fine
10/6/17	**Surface Collection**	**Surface**	0	**1**	**6.0**	Mano	Fragment	Granite	Gray-Red	Coarse

APPENDIX D
Preliminary Geotechnical Report

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY, P.O. BOX 2249, CYPRESS, CALIFORNIA 90630
TELEPHONE: (714) 220-0770, FAX: (714) 220-9589
(Corporate Headquarters)

RECEIVED
AUG 2 2006
PROCESSING CENTER
LAND DEVELOPMENT DIVISION

FAYE ESTATES, LLC
23679 Calabasas Road, Suite 343
Calabasas, CA 91302

July 10, 2006
Work Order 102637

RECEIVED
JUL 17 2006
PROCESSING CENTER
LAND DEVELOPMENT DIVISION

Attention: Ms. Veronica Lau

Subject: **PRELIMINARY GEOTECHNICAL REPORT**
Vesting Tentative Tract Map, Tract No. 52652
West Hills Area
COUNTY OF LOS ANGELES, CALIFORNIA

References: (See Appendix I)

Dear Ms. Lau:

Pursuant to your request, presented herein is this firm's Preliminary Geotechnical Report for the above subject project. The major soils engineering/geologic issues considered within this document include:

- Unsuitable soil removals;
- Plan cut, fill and natural slope stability;
- Engineering and excavation characteristics of onsite earth materials;
- Preliminary foundation design parameters;
- Slope and lot maintenance recommendations.

This report is subject to review by the controlling authorities for the above subject project. Pacific Soils Engineering, Inc. (PSE) appreciates the opportunity to provide you with geotechnical consulting services. If you have any questions or should you require additional information, please contact the undersigned at (714) 220-0770.

Respectfully submitted,
PACIFIC SOILS ENGINEERING, INC.

By: _____
WILLIAM D. JONES
Civil Engineering Associate

By: _____
CRAIG R. NISBETT
Engineering Geology Associate

Reviewed by: _____
PAUL J. ERNST/RGE 2317
RCE 46394/Reg. Exp.: 3-31-07
Manager of Geotechnical Services

REGISTERED PROFESSIONAL ENGINEER
PAUL J. ERNST
No GE2317
Exp. 3/31/07
GEOTECHNICAL
STATE OF CALIFORNIA

_____
RICHARD H. SPINDLER
CEG 1802/Reg. Exp.: 4-30-08
Certified Engineering Geologist

Distr.: (3) Addressee
(3) SEC Engineers – Attn: Mr. Larry Gray
WDJ/CRN/PJE/TMW:cp-ml-26370001

61

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Purpose and Scope 1
1.2 Report Limitations 1
2.0 PROJECT DESCRIPTION 2
2.1 Site Location and Description 2
2.2 Proposed Development 2
3.0 GEOTECHNICAL INVESTIGATIONS AND LABORATORY TESTING 3
3.1 Previous Geotechnical Studies 3
3.2 Field Investigations 3
3.3 Laboratory Testing 3
4.0 GEOLOGIC CONDITIONS 4
4.1 Geologic and Geomorphic Setting 4
4.2 Stratigraphy 4
4.2.1 Artificial Fill (map symbol: af) 4
4.2.2 Soil (no map symbol) 4
4.2.3 Surficial Creep (indicated by a squiggled arrow) 5
4.2.4 Colluvium (map symbol: Qcol) 5
4.2.5 Alluvium (map symbol: Qal) 5
4.2.6 Modelo Formation (map symbols: Tmsh and Tmss) 5
4.2.7 Topanga Formation (map symbol: Tt) 6
4.3 Geologic Structure 6
4.4 Groundwater 6
4.5 Seismic Hazards 7
4.5.1 Primary Hazards 7
4.5.1.1 Surface Rupture 7
4.5.1.2 Ground Motion (Shaking) 7
4.5.2 Secondary Hazards 9
4.5.2.1 Liquefaction 9
4.5.2.2 Seismically Induced Flooding 9
4.5.2.3 Seismically Induced Landsliding 9
5.0 ENGINEERING MATERIALS CHARACTERISTICS 10
5.1 Material Properties 10
5.1.1 Excavation Characteristics 10
5.1.2 Earthwork Adjustments 10
5.1.3 Expansion Potential 11
5.1.4 Shear Strength Characteristics 11
5.1.5 Chemical and Resistivity (Corrosivity) Testing 11
5.2 Groundwater 11
6.0 CONCLUSIONS AND RECOMMENDATIONS 12
6.1 Site Preparation and Removals 12

6.1.1 Stripping and Deleterious Material Removal 12
6.1.2 Artificial Fill/Alluvium/Colluvium....13
6.1.3 Modelo and Topanga Formations 13
6.1.4 Pipelines, Oil and/or Water Wells, Cesspools and Septic Tanks....13
6.2 Slope Stability and Remediation....14
6.2.1 Shear Strength Parameters 14
6.2.2 Cut Slopes 14
6.2.3 Fill Slopes 15
6.2.4 Skin Fill Slopes....16
6.2.5 Fill-Over-Cut Slopes....16
6.2.6 Natural Slopes....16
6.2.6.1 North Tract Boundary....17
6.2.6.2 South Tract Boundary....19
6.2.7 Surficial Slope Stability....19
6.3 Overexcavation of Building Pads and Cut Fill Transitions 19
6.4 Building Pads Above Buttress Fills/Stabilization Fills/Shear Key Fills....20
6.5 Overexcavation of Cut Pads in Deeper Excavations 20
6.6 Subsurface Drainage 20
6.6.1 Canyon Subdrains 20
6.6.2 Backdrains....21
6.7 Temporary Construction Backcuts 21
6.8 Top-of-Cut Paved Interceptor Swales....21
6.9 Retaining Walls....21
6.10 Construction Staking and Survey....22
6.11 Settlement Monitoring 23
6.12 Earthwork Considerations....23
6.12.1 Compaction Standards 23
6.12.2 Observation of Excavations 24
6.12.3 Treatment of Removal Bottoms....24
6.12.4 Fill Placement 24
6.12.5 Mixing....24
6.12.6 Oversized Materials 24
6.12.7 Import Soils....25
6.12.8 Haul Roads....25
6.12.9 Testing of Compacted Fill 26
6.12.10 Final Reports....26

7.0 DESIGN RECOMMENDATIONS 26

7.1 Structural Design 26
7.1.1 Foundation Design....26
7.1.2 Differential Settlement Design Value....29
7.1.3 Probabilistic Ground Acceleration....29
7.1.4 1997 UBC Seismic Design Parameters....30
7.1.5 Deepened Footings and Setbacks....31
7.1.6 Chemical Design Considerations....31
7.1.7 Miscellaneous Foundation Recommendations 32
7.2 Other Design and Construction Recommendations....32

7.2.1 Site Drainage....32
7.2.2 Concrete Flatwork and Lot Improvements....33
7.2.3 Storm Drain Pipeline....33
7.2.4 Utility Trench Excavation....33
7.2.5 Utility Trench Backfill....34

8.0 SLOPE AND LOT MAINTENANCE....34

8.1 Slope Planting....34
8.2 Slope Irrigation....34
8.3 Lot Drainage....35
8.4 Burrowing Animals....35

9.0 FUTURE PLAN REVIEWS....35

10.0 CLOSURE....35

APPENDICES

Appendix I

- References and Aerial Photo Review
- Discussion of Field Investigation and Laboratory Testing
- Summary of Laboratory Test Data Results
- Geotechnical Boring Logs
- Direct Shear Test Plots
- Slope Stability Analyses
- Geotechnical Cross-Sections (in pocket)
- Geotechnical Map (in pocket)

Appendix II – Seismic Ground Motion Assessment

Appendix III – Earthwork Specifications and Typical Grading/Construction Details

Appendix VI – Homeowner Maintenance and Improvement Considerations

1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this report was to evaluate the proposed development concept indicated on the latest Vesting Tentative Tract Map for Tract No. 52652, and in light of the indicated geologic and soils engineering conditions, present geotechnical recommendations for the design and construction of the project.

Specific items evaluated as part of the scope of this report include fill and cut slope stability, natural slope stability, unsuitable soil removals, as well as engineering and excavation characteristics of the earth materials. Preliminary foundation recommendations and slope and lot maintenance considerations are also presented herein.

The following is a summary of the scope of this report:

1) *Review of existing geotechnical and geologic data relative to the subject site.*
2) *Limited review of aerial photographs of the site and surrounding areas.*
3) *Geologic field mapping/reconnaissance.*
4) *Excavation of two (2) exploratory borings.*
5) *Laboratory testing of selected material samples collected from the exploratory excavations.*
6) *Plotting of geotechnical information on the accompanying Vesting Tentative Tract Map, dated May 2006, prepared by SEC Engineers, Inc., at a scale of 1 inch equals 60 feet (Plate E, in pocket).*
7) *Analysis of the data collected.*
8) *Formulation of conclusions and preliminary recommendations based on results of field, office and laboratory studies.*
9) *Preparation of this report.*

1.2 Report Limitations

The conclusions and recommendations in this report are based on the data developed during the field investigation(s), on a review of the referenced reports, and on the Vesting Tentative Tract Map provided by SEC Engineers, Inc. The materials immediately adjacent to or beneath those observed may have different characteristics than those observed and no representations are made as to the quality or extent of materials not observed.

2.0 PROJECT DESCRIPTION

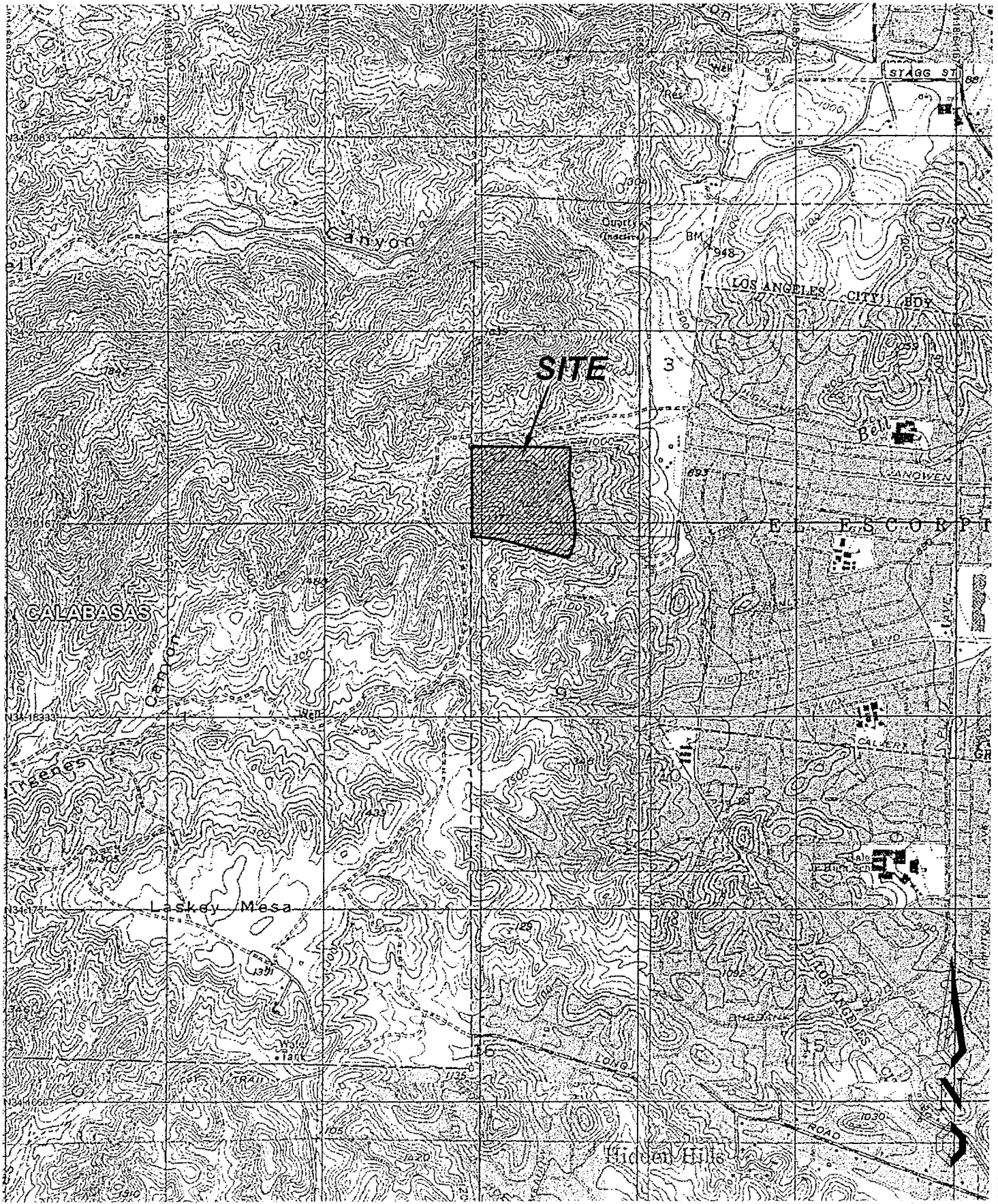
2.1 Site Location and Description

The irregularly shaped 58-acre site is located approximately 3 miles northerly of the 101 Freeway and ½ mile west of Valley Circle Boulevard in the West Hills Area of the San Fernando Valley (see Figure 1). The site is bounded on the east by Randiwood Lane between the termini of Kittridge Street and Welby Way, on the north by open land within El Escorpion Park, to the south by Knapp Ranch Park, and on the west by undeveloped land of Ventura County. A paved access road subparallels the southern portion of the job and leads to a water tank facility operated by the City of Los Angeles Department of Water and Power.

Relief across the property is approximately 370 feet with a low elevation of about 970 feet at the northern boundary, and a high elevation of about 1340 feet at the southwest corner. Existing natural slopes are inclined at gradients of 3:1 to about 1½:1 (horizontal to vertical) and reach heights as great as about 250± feet. The site includes two significant canyons that drain to the north and east. The canyons are flanked by relatively narrow ridges, which descend from an isolated peak located at the southwest corner of the property. The crest of this peak has been removed by past grading operations leaving a flat pad at an elevation of about 1340 feet. In the southeast section of the site, an east facing 3:1 slope has also been manufactured. Additional, previous grading includes a canyon fill that has been placed in the larger of the two canyons creating a level pad at an elevation of about 1085 feet. Two abandoned oil wells are mapped at the mouth of the large canyon near the northern property line.

2.2 Proposed Development

The Vesting Tentative Tract Map provided this firm indicates twenty-five (25) proposed single-family residential lots and one open space lot. Cut and fill grading techniques will be used to accommodate the proposed development. Cut and fill slopes are designed to slope ratios of 2-horizontal to 1-vertical (2:1) or flatter. The highest 2:1 cut slope is a 150± foot east facing slope above Lots 17 and 18. The highest 2:1 fill slope is a 180± foot north facing slope below Lots 22



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 1000 ft Scale: 1 : 25,000

FIGURE 1

SITE LOCATION MAP

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY, CYPRESS, CA. 90630
TELEPHONE: (714) 220-0770, FAX: (714) 220-9589

W.O. 102637 DATE: 7-10-06

and 23. The maximum plan excavation is roughly 80± feet, while the maximum depth of plan fill is on the order of 85± feet.

It is anticipated that the proposed residential structures will consist of one- and two-story wood frame and stucco covered structures supported by slab-on-grade foundation systems.

3.0 GEOTECHNICAL INVESTIGATIONS AND LABORATORY TESTING

3.1 Previous Geotechnical Studies

A geotechnical study by this firm was conducted in 1964 on a larger site which included the current Tentative Tract (Reference 1). A subsequent study by others in 1998 concentrated within the current tract limit and evaluated a different development plan (Reference 11). Both studies included geologic mapping, subsurface investigations and subsequent geologic and engineering analyses. Locations of pertinent boring and backhoe excavations conducted as part of these studies, as well as geologic mapping data are shown on the accompanying Geotechnical Map. Logs of this firm's previous exploratory excavations are presented on Plates A-6 through A-11. Exploratory logs by others are contained in the Reference 11 report.

3.2 Field Investigations

The recent field investigation on the subject site was performed by this firm in April 2006. A limited geologic reconnaissance of the project site was conducted to obtain structural information and to map surficial contacts of exposed geologic units. The subsurface exploration program included the excavation of two bucket auger borings (B-101 and B-102). The exploratory borings were observed, logged and selectively sampled by a representative of this firm's staff. Logs of the exploratory borings are presented on Plates A-1 through A-5. The approximate locations of the exploratory borings are shown on the accompanying Geotechnical Map (Plate E, in pocket).

3.3 Laboratory Testing

To assist in a preliminary evaluation of the geotechnical properties of the site, laboratory testing was performed on selected, representative "bulk" and relatively "undisturbed" ring samples obtained during this firm's field investigations. Labor-

atory tests on samples collected during this firm's subsurface field investigations consisted of in-situ moisture-density determinations, maximum dry density/optimum moisture content, grain size, shear strength, expansion index and chemical testing. A further description of the tests performed is presented in Appendix I. Laboratory data obtained for this report are contained in Table I in Appendix I.

4.0 GEOLOGIC CONDITIONS

4.1 Geologic and Geomorphic Setting

The project is located on the north flank of the Santa Monica Mountains, a major east-west trending structural block within southern California. These mountains, in a very general sense, are an uplifted, westerly trending anticline composed mainly of Tertiary sedimentary and volcanic rocks on a core of Mesozoic crystalline basement rock. The local geology roughly mirrors the regional geology in that the site is underlain by the north limb of the San Fernando syncline within a sequence of Miocene sedimentary rocks (Modelo and Topanga Formations). The bedrock is mantled with Quaternary/Holocene soil, alluvium, colluvium, and artificial fill.

4.2 Stratigraphy

4.2.1 Artificial Fill (map symbol: af)

Artificial fill has been identified along the dirt access roads on the site and within two canyons. The material in the canyons was probably placed as offsite fill during the construction of grading of adjacent Tract No. 23762. This material consists of locally generated soil and rock material. The canyon fill has been reported (Reference 11) as having highly variable moisture and density characteristics, marginal removal of underlying soils/alluvium/colluvium, and an absence of subdrain outlet pipes.

4.2.2 Soil (no map symbol)

Naturally occurring weathering products of the surficial units and bedrock overlie nearly the entire site except where disturbed and removed by previous grading activity. Typically consisting of porous, loose, silty to

sandy clay which contains fragments derived from the underlying parent rock, these soils range in thickness from approximately ½ to 3 feet.

4.2.3 Surficial Creep (indicated by a squiggled arrow)

Surficial creep within the upper two to three feet has been identified on portions of mainly north facing slopes.

4.2.4 Colluvium (map symbol: Qcol)

Colluvial materials (see slopewash, Reference 11) are varied accumulations of loose soil and weathered rock debris along slope flanks and the upper reaches of the tributary draws. Generally consisting of silty to sandy clay with varying amounts of rock fragments, these materials are interpreted to have moved short distances downslope by sheetwash or creep. Colluvial thickness generally ranges from a few feet to greater than six (6±) feet.

4.2.5 Alluvium (map symbol: Qal)

Alluvial deposits are located in the northern most canyon area. This material consists of sandy silt and clay, with cobbles. Explored alluvium has a thickness of 15± feet.

4.2.6 Modelo Formation (map symbols: Tmsh and Tmss)

Bedrock underlying most of the project site has been assigned to the marine Modelo Formation of mid to upper Miocene age. A finer-grained facies (Tmsh) is exposed in the central portion of the site. This material consists primarily of clayey siltstone to silty claystone (mudstone) with occasional silty sandstone and diatomaceous interbeds. The mudstone is commonly laminated to thinly bedded. Near surface exposures were noted as light brown to light olive gray, while less weathered material ranged from olive gray to medium dark gray. Significant weathering occurs within the upper four to seven feet. Gypsum crystals were noted along shears, bedding and within joints. A predominantly silty to fine grained sandstone (Tmss) unit traverses the southern portion of the site. Ranging in color from dusky yellow, to grayish orange and light olive gray, the sandstone contains

diatomaceous and mudstone interbeds. The more resistant sandstone can have significant weathering in the upper two to three feet.

4.2.7 Topanga Formation (map symbol: Tt)

Bedrock exposed in the northern portion of the property is assigned to the middle Miocene Topanga Formation. Primarily consisting of a moderate yellowish brown, medium- to coarse-grained sandstone and conglomerate, some siltstone/claystone interbeds were noted. Significant weathering appeared to occur in the upper two to three feet of the sandstone.

4.3 Geologic Structure

The site is located on the north limb of the westerly trending San Fernando Syncline. Prevailing bedding dips are to the southwest through southeast and are at gentle to moderate inclinations. Variations to this pattern in proximal attitudes are attributed to drag along mapped or inferred faults. Moderate to high angle jointing is common within the finer- and coarser-grained material of both formations.

An easterly trending, north dipping normal fault was mapped by this firm (Reference 1) across the northern portion of the site. Subsequent subsurface exploration by others (Borings B-1 and B-2, Reference 11) and by this firm (Boring B-101) encountered sheared rock probably associated with this fault or a related fault splay. Localized northerly and easterly inclined shears and bedding are attributed to drag along the fault(s). Exploration by others (Reference 11) encountered a few northwest-trending faults on the graded pad in the southwest corner of the project. All of the noted faults on site are considered inactive.

4.4 Groundwater

Water seeps were noted in Boring B-101 (PSE) and in Boring B-1 (Reference 11) and are attributed to perched water adjacent to faults/shears or along more permeable interbeds. Groundwater was not encountered in the main canyon area in Borings B-4 and B-13 (PSE), nor in BH-1 or BH-2 (Reference 11); nor was it encountered in the east canyon (BH-3). No surface water seeps were noted during the recent site field investigation.

4.5 Seismic Hazards

Earthquakes have occurred in the Los Angeles region and will, undoubtedly, occur in the future. Figures A and B (Appendix II) illustrate recorded epicenters of earthquakes within the Southern California region. The project site is, as is all of Los Angeles County, in a seismically active region. Figures C and D illustrate approximate locations of major fault traces within the Southern California region. Forty-four (44) faults have been identified within a 100-kilometer radius from the project site (Table A, Appendix II). Design and construction of the structures should be in accordance with the applicable state and local codes pertaining to both primary and secondary seismic hazards.

Primary earthquake hazards include both surface rupture and ground motion (shaking). Secondary hazards resulting from major earthquakes include liquefaction, seismically induced flooding, and seismically induced landsliding.

4.5.1 Primary Hazards

4.5.1.1 Surface Rupture

Surface rupture is offset of the ground surface by the causative fault during seismic activity. As previously indicated, no known active faults traverse the subject site. As such, the potential for surface rupture on this site is considered low.

4.5.1.2 Ground Motion (Shaking)

The site is not within an Alquist-Priolo Earthquake Fault Zone, and no active faults have been mapped onsite. The study site is, however, in seismically active southern California (Figures A and B, Appendix II). Thus, moderate to strong ground motions resulting from future regional earthquakes could occur during the life of the project. Current engineering standards, as well as the prevailing building codes and regulations, require that seismic considerations be incorporated into site designs and analyses. Accordingly, this firm has performed a FRISKSP (by T. Blake,

revised September, 2004) probabilistic free-field peak ground acceleration (PGA) assessment of the site that is useful for some engineering designs (such as UBC 1997, Section 1631 Dynamic Lateral Force Procedure). PSE, Inc. computed probabilistic analyses to provide levels of hypothetical free-field ground acceleration for a finite exposure period. For example, a commonly accepted level of risk (Design Basis Ground Motion) is the statistical chance that a certain acceleration will have a 10 percent probability of being exceeded within a 50-year span (475-year return period). Consistent with current practices in the study region, three (3) attenuation curves from Boore et al. (1997), Campbell et al. (1999 Rev.) and Sadigh et al. (1997) were analyzed (Figures E, F and G, see Appendix II). The average is a PGA of 0.52 with 10 percent probability of being exceeded in 50 years. Figures E, F and G are also useful for selecting different exceedance levels and exposure periods.

The calculated free-field PGA (Section 7.1.3, this report) should not necessarily be used in empirical engineering formulas currently in use to determine earthquake-resistant engineering design. Page and others (1972) noted that a single peak of intense motion (maximum or peak acceleration) might contribute less to cumulative damage potential than multiple cycles of less intense shaking. The California Division of Mines and Geology (1997) cautions that the seismic coefficient "k" is not equivalent to peak ground acceleration, and that peak ground acceleration should not be used in pseudostatic slope stability analyses. *In particular, the free-field PGA given above is not equivalent to the seismic coefficients contained in the 1997 UBC seismic design criteria, and is not intended to be substituted therein.*

Design of future improvements should be based on current design practices for similar works in the area. It is the purview of the engineer, based upon information presented herein, to select suitable seismic parameters. As an aid to parameter selection, the 1997 UBC seismic coefficients are given in Section 7.1.4.

4.5.2 Secondary Hazards

4.5.2.1 Liquefaction

Seismic agitation of loose, saturated sands and silty sands can result in a build-up of pore water pressures. If these pore water pressures are sufficient to overcome overburden stresses, a temporary quick condition known as liquefaction can result. Liquefaction potential within the developed portions of the subject property is considered nil due to the planned removal of loose/soft alluvial/colluvial/artificial fill material within the grading limits, and the in-place density of the proposed compacted fill and bedrock materials.

4.5.2.2 Seismically Induced Flooding

Seismically induced flooding normally includes flooding due to a tsunami (seismic sea wave), a seiche (wave generated in an enclosed body of water), or failure of a dam/reservoir retention structure upstream of the site. The site is located approximately twelve (12±) miles from the Pacific Ocean and separated by the Santa Monica Mountains. In addition, there are no known up canyon dams or reservoirs. As such, the potential for seismically induced flooding is considered nil.

4.5.2.3 Seismically Induced Landsliding

The site is located within a hillside region. As part of the preparation of this report, this firm performed stability analyses of selected proposed cut, proposed fill and natural slopes within and adjacent

to the proposed grading limits depicted on the Tentative Tract Map. Static and pseudostatic slope stability analyses were performed on selected slopes for the proposed development. The results of these calculations (included herein) meet or exceed County of Los Angeles minimum requirements for both static and pseudostatic conditions.

5.0 ENGINEERING MATERIALS CHARACTERISTICS

5.1 Material Properties

5.1.1 Excavation Characteristics

Based upon the observations made as part of the field investigation, it is anticipated that the materials which will be encountered during construction of the proposed development will primarily include previously placed artificial fill, alluvium, colluvium and Modelo and Topanga bedrock. It is this firm's opinion that the majority of onsite materials can be excavated with conventional earth-moving equipment. However, heavy ripping may be required in some bedrock cut areas. Generation of oversized materials (greater than eight inches in diameter) should be anticipated from fill materials generated from bedrock cuts. Oversized materials should be addressed as recommended herein (Section 6.14.6).

5.1.2 Earthwork Adjustments

Based upon limited in-situ moisture/density testing of selected samples collected during the field investigation, the following average earthwork adjustment factors are estimated:

Geologic Unit	Map Symbol	Adjustment Factor
Artificial Fill	af	10 to 20% shrink
Alluvium/Colluvium	Qal/Qcol	5 to 15% shrink
Modelo	Tmsh and Tmss	0 to 15% bulk
Topanga	Tt	5 to 15% bulk

As is the case with every project, contingencies should be made to adjust the earthwork balance when grading is in progress and actual conditions are better defined.

5.1.3 Expansion Potential

Based upon test results conducted on selected samples, the rock from the Modelo Formation and alluvial materials derived from it are anticipated to possess expansion potential ranging from "very low" to "high" when tested in accordance with UBC Standard 18-2 and classified in accordance with Table 18-I-B. Topanga Formation siltstone and claystone, if encountered, could have expansion potential ranging from "medium" to "high".

5.1.4 Shear Strength Characteristics

Based on the results of laboratory testing and engineering analyses, the residual shear strength parameters that were utilized for this study are summarized in Section 6.2.1 and presented graphically on the indicated plates in Appendix I.

5.1.5 Chemical and Resistivity (Corrosivity) Testing

Sulfate and resistivity testing of selected soil samples have been conducted and the results are presented in Table I of Appendix I. Selected samples obtained during the fieldwork for this report were tested for soluble sulfates and chloride content by KYH Company. Resistivity (corrosivity) and pH testing of samples obtained as part of this investigation were performed by this firm.

5.2 Groundwater

In the northeast portion of the site, water seeps were encountered in the exploratory Boring (B-101) at depths ranging from 35 to 93± feet below the existing ground surface. These seeps are attributed to perched water adjacent to shears or along more permeable interbeds. Groundwater was not encountered in the main or east canyon areas in Borings B-4 and B-13 (Reference 1), nor in Borings BH-1, BH-2 and BH-3 (Reference 11). As such, localized wet areas may be encountered in the

north portion of the large canyon, but groundwater is not anticipated to significantly affect mass excavation or unsuitable material removal operations.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The subject property is considered feasible from a geotechnical standpoint for the proposed development, provided that the conclusions and recommendations presented herein and applicable Code requirements are incorporated into the design and construction of the project. Presented below are specific issues identified by this study as possibly impacting site development. Recommendations to mitigate these issues are presented in the text of this report, with graphic presentation of the recommendations on the enclosed plans and cross-sections, where appropriate.

6.1 Site Preparation and Removals

All grading shall be accomplished under the observation and testing of the project soils engineer and engineering geologist or his/her authorized representative in accordance with the **recommendations** contained herein, the current **Building Code** of Los Angeles County and this firm's **"Earthwork Specifications"** (Appendix III). All existing uncompacted artificial fill, natural soils, unsuitable alluvium, colluvium, and weathered bedrock shall be removed from areas planned to receive fill or where exposed at final grade. The final limits and depth of removals of these materials will be determined in the field as conditions are exposed. The resulting voids should be replaced to design grade with engineered fill. The exact extent of removals can best be determined in the field during grading when observation and evaluation can be performed by the soils engineer and/or engineering geologist. Removals should expose competent bedrock, and be observed and mapped by the engineering geologist prior to fill placement. Approximate depths of unsuitable materials are indicated on the accompanying Geotechnical Map, and are depicted on the geologic/geotechnical cross-sections.

6.1.1 Stripping and Deleterious Material Removal

Existing vegetation, trash, debris and any other deleterious materials should be removed and wasted from the site prior to commencing removal of unsuitable soils and placement of compacted fill materials.

6.1.2 Artificial Fill/Alluvium/Colluvium

Uncompacted artificial fill, alluvium and colluvium in proposed fill areas and/or where exposed in cuts should be removed to competent bedrock. Depths of removal are anticipated to vary from a few feet to as much as 85± feet. Approximate, anticipated depths of unsuitable materials are indicated on the accompanying Geotechnical Map sheet.

Performance of removals may be inhibited adjacent to tract lines and/or existing offsite improvements. Special temporary excavation techniques may be needed to achieve the recommended removals. Alternatively, special foundation zones may be established, the geometry of which would be a function of the removal configuration achieved and the proposed grading. Further evaluation of this issue should be performed at the Grading Plan Review stage.

6.1.3 Modelo and Topanga Formations

The Modelo Formation is mantled by soil (absent on steep natural slopes) and exhibits a weathered profile. The soil ranges up to 3± feet in depth and a typical weathered profile, affected principally by physical decomposition, ranges from approximately 4 to 7± feet in the finer-grained shales and mudstone, while the weathered section within the sandstone is commonly 2 to 3± feet. Topanga rock has a 1 to 2± foot thick overlying soil, with a weathered section of 2 to 3± feet. Soils and weathered rock should be removed to competent bedrock in proposed fill areas or where exposed in shallow cuts.

6.1.4 Pipelines, Oil and/or Water Wells, Cesspools and Septic Tanks

Oil and/or water wells encountered within the areas proposed for development should be abandoned in accordance with local and State of California Code requirements. Cesspools and septic tanks, if encountered, should be removed to a minimum of five (5) feet below existing grade or finish grade, whichever is lower. The portion of cesspools not removed should be pumped of their contents and filled with washed concrete sand, thoroughly

jetted into place or, if in the influence zone of structures, with a lean 3-sack slurry mix. The remaining cavities should be filled with compacted fill as specified herein.

6.2 Slope Stability and Remediation

6.2.1 Shear Strength Parameters

The proposed slopes are planned at a 2:1 (horizontal to vertical) slope ratios or flatter with appropriate intervening terraces and drainage devices. The slope stability analyses performed for this study utilized residual shear strength parameters which are summarized below:

Material	Cohesion (C, psf)	Angle of Internal Friction (Ø, degrees)	Appendix I Plate No.
Compacted Fill	400	28	B-1
Across Bedrock	500	34	B-2
Colluvium	220	24	**

** From Reference 11.

6.2.2 Cut Slopes

Proposed 2:1 cut slopes that expose favorable geologic structure are considered to be grossly stable. The highest proposed 2:1 cut slope that is anticipated to expose favorable geologic conditions is above Lots 17 and 18 (Cross-Section 2-2'). The gross slope stability calculations, Appendix I, indicate factors-of-safety in excess of County of Los Angeles minimums.

Cut slopes that are oriented in the same direction and undercut (daylight) planar bedding structure are typically remediated by overexcavation and replacement with engineered buttress fills. Given that bedding generally dips toward the southeast to southwest at gentle to moderate angles, daylighted bedding on cut slopes is not anticipated. Therefore, buttress fills are not anticipated at this preliminary stage of development. If bedding conditions exposed during grading indicate adverse orientation and inclination, remedial grading in the form of compacted fill buttresses may be required. Where adverse conditions are encountered, factors such as

slope height, geometry of the superjacent topography and orientation of bedding are used as guidelines in defining the anticipated remediation.

Where adverse bedding plane considerations are not the critical factor, cut slopes which expose fractured or faulted bedrock, alluvium or colluvium should be rehabilitated with a stabilization fill founded on a keyway a minimum of 15 feet wide, or equivalent in width to one-half the ascending slope height, whichever is greater. A typical stabilization detail is presented on Plate G-3 (Appendix III).

Geologic observation during grading operations will be necessary to evaluate if actual/exposed conditions are similar to anticipated conditions. Should unanticipated, adverse geologic conditions be exposed, a re-evaluation of slope stability should be conducted.

6.2.3 Fill Slopes

Fill slopes, when properly constructed at a slope ratio of 2:1 and flatter, are considered to be grossly stable. The highest designed 2:1 fill slope is on the order of 180± feet in height (Cross-Section 1-1'). Gross stability calculations are presented on Plates C-1 through C-6 in Appendix I and indicate factors-of-safety in excess of County of Los Angeles minimums. Typical fill slope construction details are presented on Plates G-5 and G-6 (Appendix III).

In light of the reported downward displacement of the north side of the east-west trending fault (Reference 5) consideration should be given to establishing a special maintenance area for those portions of the fill slope placed over the mapped fault. The special maintenance area should be delineated in recognition of the potential performance issues associated with this portion of the slope. The limits should be established by projecting a 1:1 (horizontal to vertical) line from the fault trace southward up to the slope face, and encompass an area from the projection line north to the tract line (see Cross-Section 1-1').

This area should be subject to an increased level of observation and a potential need for an increased level of maintenance due to minor cracking of the fill slope face. Those in charge of maintaining this slope need to be made aware of this potential increased level of slope maintenance including the need to seal/repair cracks in the slope face.

This special maintenance area is only anticipated to be necessary in a small portion of the northern reaches of this fill slope and is considered sufficiently removed from the building pads so as to have a negligible potential effect on the pads.

6.2.4 Skin Fill Slopes

Skin fill conditions, if encountered during grading, will require construction of backcuts and fill keys to establish a minimum horizontal fill thickness equal to at least one-half the superjacent slope height. A typical skin fill detail is provided on Plate G-8 (Appendix III). Backdrains will be required as directed in the field during grading.

6.2.5 Fill-Over-Cut Slopes

Fill-over-cuts programmed on slopes steeper than 5:1 are acceptable provided the fill portions are constructed on a keyway founded in firm bedrock. The keyway width should be equivalent to one-half the ascending slope height or a minimum of 15 feet, whichever is greater. The keyway should slope from front to back with a minimum differential of one foot. A typical detail is shown on Plate G-11 (Appendix III).

6.2.6 Natural Slopes

Steep, natural slopes to heights approaching 180± feet exist onsite as depicted on Cross-Sections 3-3' and 4-4'. Global stability analyses of these slopes which are presented on Plates C-13 through C-24 in Appendix I indicate factors-of-safety in excess of County of Los Angeles minimums.

6.2.6.1 North Tract Boundary

Concern about natural north-facing slope stability along the north tract boundary prompted both Geologic (Reference 15, Items 4, 5 and 10) and Soils Engineering (Reference 14, Item 6) comments during review of the Reference 11 report. The base map for this 1998 report indicated proposed cut lots above northerly descending natural slopes on both the east and west sides of the project.

To obtain additional project information and to address the general concerns expressed by the County in this area, PSE excavated and downhole logged one additional bucket auger boring (B-101), obtained and evaluated additional offsite topographic maps from SEC, and evaluated several aerial photographs.

Comparison of the logs for Boring B-101 and B-1 (see Reference 11, located roughly 30± feet to the west) indicates multiple shears/ faults at various orientations and inclinations, and associated bedding with varied strike and dip. Northerly, out of slope bedding in Boring B-1 at 22 and 28 feet were not duplicated in Boring B-101, but replaced in that interval by southeast dipping beds and shears at gentle to steep inclinations. Similarity, log descriptions for Borings B-2 (Reference 1) and B-2 (Reference 11) indicate a fault and shears with bedding inclined at moderate inclinations from the northeast to the southeast. Exposures encountered in Boring B-101 and denoted on the logs for Borings B-1, B-2 (Reference 11) and B-2 (Reference 1) are consistent with fault affected rock (drag folds with associated shears) and given the proximity of the mapped fault, appear to support that interpretation. Cross-Section 3-3' depicts interpreted conditions near Boring B-101. No conclusive support for a landslide interpretation was inferred from Boring B-101, nor from the logs of Borings B-1 and B-2 (Reference 11), and B-2 (Reference 1).

Evaluation of the additional topographic coverage to the north of the project site revealed no suspect landslide geomorphology within the tract boundaries. Within the northerly adjacent park site, a northward "deflection" of the watercourse and broadened topographic contours in the lower portion of the slope below Boring B-101, could indicate a localized gravitational failure. Or, these features could be an upstream response to an apparent landslide from a park site slope in the north (down dip failure) which caused a southward deflection of the watercourse centered at the base of the slope, along a bearing of N10W from the west terminus of Welby Way.

Review of paired aerial photographs (see references) gave support to mapped bedrock designations and to locating portions of the fault, but did not provide indications of a large landslide as indicated by others (Reference 5). The possible landslides to the north of Boring B-101 were noted, as were localized lobate features along the toe of the slope east of the Faye project below Welby Way. Photographs from 1990 and 1995 showed lighter tones on the upper north facing slope below Houses 3 through 7, as noted from the west end of Welby Way. This discoloration could indicate localized slope failure, slope repair, or periodic slope brushing for fire safety purposes.

In summary, the northerly descending natural slope along the north tract line appears to show effects of the mapped fault. These associated sheared and contorted (drag folds) bedrock conditions may result in localized instabilities, but gross stability calculations by this firm exceed County minimum standards (see Cross-Section 3-3' and attendant calculations). Review of additional topographic maps and aerial photographs indicated no apparent onsite surficial instabilities. And, unlike the earlier reviewed Tentative Tract Map,

no residential lots are planned on/directly above the subject northerly descending natural slopes.

Given the considerations outlined above and in Section 6.2.3, including an establishment of a special maintenance area, it is our opinion that the proposed building pads should not be adversely affected by this fault. The area should be placed on a frequent observation program, any observed maintenance needs should be addressed in a timely manner.

6.2.6.2 South Tract Boundary

Stability analyses of south facing natural slopes below the southern tract line will be provided in a forthcoming report or response to County review sheets.

6.2.7 Surficial Slope Stability

Surficial stability analyses of the proposed 2:1 fill and cut slopes and natural slopes are presented on Plates C-25 through C-27 in Appendix I. The analyses indicate factors-of-safety in excess of County of Los Angeles minimums. However, it is imperative that proper planting, irrigation and maintenance be continually performed on completed graded slopes in an effort to maintain surficial slope stability.

6.3 Overexcavation of Building Pads and Cut Fill Transitions

Due to the variability in expansion potential of the onsite bedrock, overexcavation of all cut lots will be required within building pad areas. Design cut should be overexcavated a minimum five (5) feet and replaced with a compacted fill section.

Cut pads which expose dark, unoxidized bedrock materials should be overexcavated a minimum depth of 5 feet below finished grade and capped with a blanket of compacted fill.

In order to reduce the differential settlement potential on lots with cut/fill transitions, the cut portion of transition lots shall be overexcavated to a depth equal to

1/3 of the deepest fill section within the building pad area, to a maximum depth of 15 feet (minimum depth of 5 feet). A typical cut/fill transition detail is presented on Plate G-4 (Appendix III). The soils engineer/engineering geologist should be consulted with regard to exposed conditions after undercutting in order to evaluate the need for and disposition of subsurface drainage requirements, which could include sloping of the overexcavation bottoms and/or installation of subdrains.

6.4 Building Pads Above Buttress Fills/Stabilization Fills/Shear Key Fills

Building pads above all buttress, stabilization or shear key fills should be over-excavated a minimum of five (5) feet and capped with a compacted blanket fill.

6.5 Overexcavation of Cut Pads in Deeper Excavations

Dark gray unweathered bedrock materials exposed in deeper cuts may be subject to chemical processes involving sulfide to sulfate mineral transformation. Some of these rocks may also exhibit slaking – a process of surficial crumbling and sloughing off of the outer layers when exposed to air. Cut pad and cut slopes exposing unoxidized bedrock materials will require removal and replacement with compacted fill. The materials excavated as part of these removal and replacement operations may be reused as engineered fill, as along as the sulfate-rich nature of these soils is recognized and accounted for in the future construction process.

6.6 Subsurface Drainage

6.6.1 Canyon Subdrains

Canyon subdrains will be required on this project. The preliminary, proposed subdrain locations are shown on the accompanying Geotechnical Map. Final determination of drain locations will be made in the field based on exposed conditions. In order to daylight canyon subdrains, it may be necessary to "run" the lower portion of the subdrain through compacted fill. Non-perforated pipe should be used in compacted fill and a concrete head wall constructed at the perforated/non-perforated transition as per Plates G-14 and G-15 (Appendix III). All drains should be constructed in accordance with Plates G-1 and G-2 (Appendix III).

Compacted fill materials placed below available subdrain outlet elevations should be placed at a minimum 93 percent relative compaction to aid in minimizing the long-term settlement potential of the fill materials.

6.6.2 Backdrains

Backdrains will be required in all buttresses, stabilization fills, shear key fills and skin fill slopes in excess of 10 feet in height. Backdrains should be constructed in accordance with Plate G-3 (Appendix III).

6.7 Temporary Construction Backcuts

In consideration of inherent instability created by temporary construction back-cuts for stabilization fills, buttress fills and unsuitable removals, it is imperative that grading schedules are coordinated to minimize unsupported exposure time of these excavations. Once started, these excavations and subsequent fill operations should be maintained to completion without intervening delays imposed by avoidable circumstances. In cases where five-day workweeks comprise a normal schedule, grading should be planned to avoid exposing a grade or near-grade excavations through a non-work weekend. Where improvements may be affected by temporary instability, either on or offsite, further restrictions such as slot cutting, extending work day-weekend schedules, and/or other requirements considered critical to serving specific circumstances may be imposed. Removal of unsuitable materials also may be affected by the above requirements.

6.8 Top-of-Cut Paved Interceptor Swales

Where cut slopes face in the same direction as the prevailing natural slope, top-of-cut paved interceptor swales should be installed per Code requirements or as deemed necessary by the project soils engineer and/or engineering geologist.

6.9 Retaining Walls

Retaining walls and other structures or facilities constructed to retain level, drained, non-expansive, structural quality backfill may be designed to resist lateral pressures developed by an equivalent fluid weight for soil of 36 lbs./cu.ft. (55 lbs./cu.ft. for 2:1 slopes) plus allowances for surcharges. Such backfill material

must have an Expansion Index value of less than 20 and a Sand Equivalent value of 30 or greater and be placed within a zone extending to a distance behind the wall of one-half the wall height. Wall design should include waterproofing (where appropriate), weep holes and subdrains or backdrains for relieving possible hydrostatic pressures. Retaining wall backfill should be compacted to a minimum of 90 percent of the applicable laboratory maximum dry density. A typical retaining wall backfill detail is shown on Plate G-12 (Appendix III).

Foundations for retaining walls founded on approved, compacted fill or bedrock may be designed based upon the following:

Allowable Bearing*	1500 lbs./sq.ft.
Lateral Bearing (level conditions at toe)**	250 lbs./sq.ft. per foot of embedment
Sliding Coefficient	0.30

The minimum width for continuous footings should be 12 inches. The minimum embedment depth should be 18 inches as measured from the lowest adjacent grade within 5-horizontal feet to the retaining wall.

Friction and lateral bearing may be combined. The above values may be increased one-third to resist seismic or wind loads.

Continuous footings should be reinforced with a minimum of two No. 4 bars, 1 each top and bottom.

* The bearing values may be increased 300 lbs./sq.ft. and 200 lbs./sq.ft. for each additional foot exceeding the minimum embedment depth and width, respectively, to a maximum of 2,000 lbs./sq.ft. for continuous footings.

** Walls with descending slope from toe should be specifically evaluated by the project soils engineer.

6.10 Construction Staking and Survey

All fill keys including those excavated as part of buttress fill and stabilization fill construction shall be surveyed by the Civil Engineer prior to observation and

approval by the soils engineer/engineering geologist. Backdrain systems and subdrains should be survey located to verify location and gradients.

6.11 Settlement Monitoring

Deep fill areas (in excess of 40 vertical feet) are anticipated for this project. In light of the potential magnitude of post-grading settlements in these areas, consideration should be given to placing these lots on a settlement-monitoring program after rough grades have been achieved and prior to construction. In order to minimize the amount of settlement experienced in deeper fill areas, fill materials placed at a depth greater than 40 feet below finished grade should be compacted to 93 percent of the applicable laboratory maximum dry density. The preliminary location of settlement monuments are shown on the accompanying Geotechnical Map.

6.12 Earthwork Considerations

6.12.1 Compaction Standards

All fill and processed natural ground should be compacted to a minimum relative compaction of 90 percent, as determined by ASTM Test Method:D-1557. Each lift should be treated in a like manner until the desired finish grades are attained. In order to enhance the performance of the deep fill areas onsite and to aid in reducing the settlement monitoring period, fills placed below forty (40) feet from finish grade shall be compacted to a minimum relative compaction of 93 percent as determined by ASTM Test Method:D-1557. In addition, fill placed below the available subdrain outlet elevations should be compacted to a minimum relative compaction of 93 percent of the applicable laboratory maximum dry density. Compaction shall be achieved at slightly above optimum moisture content, and as generally discussed in the attached **"Earthwork Specifications"**. Compaction shall be achieved with the use of sheepsfoot rollers or similar kneading type equipment. Mixing and moisture conditioning will be required in order to achieve the required moisture conditions.

6.12.2 Observation of Excavations

All removal bottoms, buttress keyways, stabilization fill keyways and shear key excavations (if required) shall be observed and approved by the engineering geologist and/or soils engineer prior to fill placement. Toe stakes should be provided by the Civil Engineer in order to verify required key dimensions and locations.

6.12.3 Treatment of Removal Bottoms

At completion of unsuitable soil removals and excavation of any required keyways, the exposed bottom shall be scarified to a minimum depth of eight (8) inches, moisture-conditioned to above optimum conditions, and compacted to the standards set forth in this report.

6.12.4 Fill Placement

After removals, scarification, and compaction of exposed materials are completed, additional fill may be placed. Fills shall be placed in thin lifts (maximum 8-inch in bulk thickness), properly moisture conditioned, and compacted as grading progresses until final grades are attained.

6.12.5 Mixing

In order to prevent layering of different soil types and/or different moisture contents, mixing of materials may be necessary. The mixing should be accomplished prior to and as part of compaction of each fill lift. Discing may be required when either excessively dry or wet materials are encountered. Where rocks are included in the fill, they should be mixed with suitable excavated materials to eliminate voids.

6.12.6 Oversized Materials

Past experience with grading of the projects in this area indicate the generation of oversized rock materials could occur. Rocks greater than eight (8) inches in diameter may be utilized in compacted fills provided the rocks are not placed in the uppermost ten (10) feet of the compacted fill section, nor in concentrated pockets and there is a sufficient percentage of

fine material surrounding the rock. Oversized rock up to three feet in height and six feet in width can be placed in windrows with a minimum equipment width (15 feet) separating each windrow. Granular fill should be thoroughly flooded into the rock voids and covered with a minimum, two-foot compacted fill blanket. Successive windrows should be staggered and none should be placed within ten (10) feet of finish grade or closer than fifteen (15) feet to compacted fill slope surfaces. Details of placement of oversized rock are shown on Plate G-10 (Appendix III). Per Los Angeles County Department of Public Works, Materials Engineering Division, windrows shall be survey located and the approximate location and elevation shall be presented on a Final Geologic Map. Deeper "clear" zones may be required where deep utilities are proposed.

The above requirements also apply to inert construction debris (concrete, brick, etc.) as encountered on the site provided that the materials proposed for incorporation into the compacted fill section have been observed and approved by the project soils engineer.

6.12.7 Import Soils

Import soils, as required, should consist of clean, compactible materials having soils engineering properties similar to those on-site and should be free of trash, debris or other objectionable materials.

PLANS AND SPECIFICATIONS SHOULD INDICATE THAT THE GRADING CONTRACTOR SHALL NOTIFY THE PROJECT SOILS ENGINEER NOT LESS THAN 72 HOURS (3 BUSINESS DAYS) IN ADVANCE OF THE LOCATION OF ANY SOILS PROPOSED FOR IMPORT. EACH PROPOSED IMPORT SOURCE SHALL BE SAMPLED BY THE GEOTECHNICAL ENGINEER/GEOLOGIST, TESTED AND APPROVED PRIOR TO DELIVERY OF SOILS FOR USE ON THE SITE.

6.12.8 Haul Roads

Haul roads traversing compacted fill areas should be coordinated and planned to avoid or minimize generation of loose spill fill thereon. When this condition is unavoidable, close coordination with the project soils

engineer and his representative will be required to eliminate intermingling of engineered and non-engineered fill.

6.12.9 Testing of Compacted Fill

Fill should be tested at the time of placement to ascertain that the required project compaction and moisture content specifications are achieved. A laboratory testing program for representative "bulk" samples of fill materials should run concurrently with grading operations.

6.12.10 Final Reports

The results of the observations and testing of all earthwork should be presented in a final rough grade geotechnical report following the completion of earthwork and grading. The report should include a Geologic Map.

7.0 DESIGN RECOMMENDATIONS

7.1 Structural Design

It is anticipated that one- and two-story, wood frame and stucco residential structures with shallow foundations may be constructed on the lots. Maximum anticipated wall loads are expected to be less than 2 kips per foot.

Upon the completion of rough grading, finish grade samples should be collected and tested so as to provide specific recommendations as they relate to individual lots. These test results and corresponding design recommendations will be presented in a Final Rough Grade Geotechnical Report. Final foundation design recommendations should be made based upon specific structure-sitings, loading conditions, and as-graded soil conditions. For preliminary purposes, the following foundation design requirements relative to the residential portions of the site are presented.

7.1.1 Foundation Design

Based upon the hillside nature of the project and the expansion potential of the onsite soils, this firm recommends the utilization of post-tensioned slabs, mat-slabs or other foundation system(s) for the residential structures

designed to account for site specific geotechnical conditions. Minimum foundation recommendations which should be incorporated into the design and construction of the proposed structures utilizing a post-tensioned slab-on-grade foundation system are as follows:

- Design and construction of the proposed foundations systems should be undertaken by firms that are experienced in this field. It is the responsibility of the foundation design engineer to select the design methodology and properly design the foundation systems for the soils conditions indicated herein. The slab designer should provide deflection potential to the project architect/structural engineer for incorporation into the design of the structure.

- For design purposes, a bearing capacity of 1,000 psf may be used at the surface (below the slab) for compacted fill. A bearing capacity of 1,500 psf may be used at embedment depth of 18 inches. A bearing capacity of 2,000 psf may be used at embedment depths of 24 and/or 30 inches.

- In designing to resist horizontal loads, a lateral bearing of 250 lbs./sq.ft. per foot of embedment, to a minimum of 2,000 lbs./sq.ft. and a friction coefficient of 0.30 may be used where slabs or footings are cast against firm compacted fill. Friction and lateral bearing may be combined as allowed by Code. The above values may be increased one-third for resisting seismic or wind forces.

- Post-tensioned slabs, where used, should incorporate a perimeter-thickened edge to reduce the potential for moisture infiltration, seasonal moisture fluctuation, and associated differential heave/settlement around the slab perimeter. The minimum depth of the thickened edge should be 12 inches for construction on lots grouped into the "very low" to "low" expansion potential category, 18 inches for construction on lots grouped into the "medium" expansion potential category, and 24 inches for construction on lots grouped into the "high" expansion potential category. The minimum embedment depth should be measured from lowest adjacent grade within 5 feet of the structure for both single and two-story structures.

- Thickened perimeter edges of the post-tensioned slab foundation systems, where utilized, should be reinforced with a minimum of one No. 4 bar, placed near the bottom of the thickened edge.

- If the project foundation design engineer elects to use the PTI foundation design procedures presented in the UBC, additional design parameters can be presented.

- Isolated exterior post/column footings should be tied back to the main foundation system in at least two (2) orthogonal directions.

- A moisture and vapor retarding system should be placed below all slabs-on-grade in living areas and other portions of the structures considered to be moisture sensitive. The retarder should be of suitable composition, thickness, strength and low permeance to effectively prevent the migration of water and reduce the transmission of water vapor to acceptable levels. Historically, a 10-mil plastic membrane, such as Visqueen placed between 2 to 4 inches of clean sand, has been used for this purpose. The use of this system or other systems, materials, or techniques can be considered, at the discretion of the designer, provided the system reduces the vapor transmission rates to acceptable levels.

  It is essential to prevent damage to the "Visqueen" membrane. Care should be utilized when placing the membrane on subgrade to prevent damage. Sharp fragments should be removed from the subgrade surface and penetration of the membrane with screed guides should be avoided. The membrane should be properly lapped and sealed as well as sealed around all plumbing lines and other openings.

- To reduce moisture penetration beneath the slab-on-grade areas, utility trenches should be backfilled with lean concrete or concrete slurry where they intercept the foundation perimeter. As an alternative, the utility trenches can be backfilled with on-site materials compacted to a minimum 90 percent of the applicable laboratory maximum dry density.

- Slab subgrade (including exterior concrete flatwork) should be moisture-conditioned to 125 percent of optimum moisture on lots classified as having "very low" to "low" expansion potential and 140 percent of optimum on lots classified as having "medium" to "high" expansion potential. Moisture conditioning should extend to a depth of 12 inches prior to placing concrete. Excavations should not be allowed to significantly dry out from the time of excavation to the placement of concrete.

Verification of expansive soils should be made as final grades are achieved. The above recommendations should be considered preliminary and subject to review, pending verification of expansive soil characteristics and graded conditions at the conclusion of grading operations.

7.1.2 Differential Settlement Design Value

In addition to the potential effects of expansive soils, the proposed residential structures should be designed in anticipation of differential settlements on the order of 1 inch in 30 feet.

7.1.3 Probabilistic Ground Acceleration

No evidence of active faulting was observed during recent field investigation and no active faults are known to exist along or across the site. Therefore, the probability of primary surface rupture and/or deformation at the site is considered very low. Ground shaking hazards caused by earthquakes along active regional faults, however, do exist. Consistent with current practices in the study region, PSE, Inc. computed probabilistic analyses to provide levels of hypothetical free-field peak ground acceleration for a finite period. A commonly accepted level of risk (Design Basis Ground Motion) is the statistical chance that a certain acceleration will have a 10 percent probability of being exceeded within a 50-year span (475-year return period). As such, a probabilistic free-field peak ground acceleration (PGA) of 0.52g has been estimated.

DESIGN BASIS GROUND MOTION

Vesting Tentative Track Map 52652
West Hills Area
COUNTY OF LOS ANGELES, CALIFORNIA

Figures E, F and G
Appendix II

Source	PGA
Boore et al. (1997)	0.64g
Campbell et al. (1997, rev.)	0.43g
Sadigh et al. (1997)	0.48g
Average:	0.52g

The calculated free-field PGA should not necessarily be used in empirical engineering formulas currently in use to determine earthquake-resistant engineering design. It has been noted that a single peak of intense motion

(maximum peak acceleration) might contribute less to cumulative damage potential then multiple cycles of less intense shaking. The California Geological Survey (CGS), formerly California Division of Mines and Geology (CDMG), cautions that the seismic coefficient "k" is not equivalent to peak ground acceleration, and that peak ground acceleration should not be used in pseudostatic slope stability analyses. *In particular, the free-field PGA given above is not equivalent to the seismic coefficients contained in the 1997 UBC seismic design criteria, and is not intended to be substituted therein.*

Design of future improvements should be based on current design practices for similar works in the area. It is the purview of the design engineer, based upon information presented herein, to select suitable seismic parameters. As an aid to parameter selection, the 1997 UBC seismic coefficients are presented herein in Section 7.1.4.

7.1.4 1997 UBC Seismic Design Parameters

Presented below is a summary of seismic data obtained from the 1997 Edition of the Uniform Building Code, as it would pertain to the subject project. The site is located approximately 13 kilometers from a seismic source B-Fault (Simi-Santa Rosa Fault) with an assumed Soil Profile type – S_D.

Table 7.1.4 - SEISMIC DESIGN PARAMETERS
Vesting Tentative Track Map 52652
West Hills Area
COUNTY OF LOS ANGELES, CALIFORNIA

Seismic Parameter	Design Value	1997 UBC – Chapter 16 Table No.
Seismic Source Type	B	**16-U**
Assumed Soil Profile Type	S_D	**16-J**
Seismic Zone Factor (Z)	0.4	**16-Q**
Seismic Coefficient (C_a)	$0.44(N_a)$	**16-Q**
Seismic Coefficient (C_v)	$0.64(N_v)$	**16-R**
Near-Source Factors (N_a)	1.00	**16-S**
Near-Source Factors (N_v)	1.00	**16-T**

7.1.5 Deepened Footings and Setbacks

In order to reduce the effects of creep, foundations that are adjacent to descending natural and/or design slopes should be deepened in accordance with specifications of the County of Los Angeles Building Code which indicates that structures should be set back from the top of slope a minimum horizontal distance of one-third the descending slope height (H/3) with a minimum of 5 feet and a maximum of 40 feet. This setback should be measured horizontally from the bottom outside edge of footing to the slope face. Deepened footings, therefore, may be required for structures that are located near descending slopes. If deepened footings are required, consideration should be given to increasing the minimum required lot overexcavation as recommended in Section 6.3. This recommendation should be evaluated based on conditions exposed during grading.

Backyard improvements, such as patio slabs, pools, perimeter walls, etc., should also be designed in consideration of potential creep on descending slopes. Footings for perimeter walls at the top of natural slopes should be founded in competent/unweathered bedrock. These wall-footing excavations should be observed by the project soils engineer/engineering geologist.

7.1.6 Chemical Design Considerations

Preliminary test results (by others) indicate the onsite soils tested contain "negligible" to "moderate" sulfate concentrations. Structural concrete should be designed by qualified professionals in accordance with the requirements of Table 19-A-4 of the UBC, considering both the minimum compressive strength and water/cement ratio requirements for the anticipated sulfate exposure levels.

In addition, preliminary test results indicate onsite soils are "moderately corrosive" to "severely corrosive" toward ferrous materials.

Material samples from the soil types being utilized as compacted fill during mass grade operations should be tested for chemicals and properties (i.e. sulfates, pH, chloride, and resistivity) that are deleterious to construction materials.

Consideration should be given to consulting a corrosion engineer for a more detailed evaluation, and attendant recommendations.

7.1.7 Miscellaneous Foundation Recommendations

Soils from the footing excavations should not be placed in slab-on-grade areas unless properly compacted and tested. The excavations should be cleaned of all loose/sloughed materials and be neatly trimmed at the time of concrete placement.

To minimize moisture penetration beneath the slab-on-grade areas, utility trenches should be backfilled with lean concrete or concrete slurry where they intercept the perimeter footing (immediately below perimeter thickened edges). As an alternative, such excavations may be backfilled with on-site soils, moisture conditioned to over optimum moisture, and compacted to a minimum of 90 percent relative compaction.

Provisions for the control of shrinkage cracks should be incorporated into design/construction of the proposed foundations.

7.2 Other Design and Construction Recommendations

7.2.1 Site Drainage

Positive drainage, away from structures, should be provided and maintained. Homeowners and/or residents should be made aware that they are responsible for maintenance and cleaning of all drainage terraces, downdrains and other devices that have been installed to reduce ground saturation, and to promote structure and slope stability.

7.2.2 Concrete Flatwork and Lot Improvements

In an effort to minimize shrinkage cracking, concrete flatwork should be constructed of uniformly cured, low slump concrete and should contain sufficient control/contraction joints (typically spaced at 8± feet, maximum).

Additional provisions need to be incorporated into the design and construction of all improvements exterior to the proposed structures (pools spas, walls, patios, walkways, planters, etc.) to account for the hillside nature of the project as well as being designed to account for potential expansive soil conditions. Design considerations on any given lot may need to include provisions for differential bearing materials (bedrock vs. compacted fill), ascending/descending slope conditions, bedrock structure, perched (irrigation) water, special surcharge loading conditions, potential expansion soil pressure and differential settlement/heave, among others.

All exterior improvements should be designed and constructed by qualified professionals utilizing appropriate design methodologies, which account for the on-site soils and geologic conditions. The above considerations should be used when designing, constructing and evaluating long-term performance of the exterior improvements on the lots.

7.2.3 Storm Drain Pipeline

Flexible pipe joints should be utilized at cut/fill transition areas which expose bedrock and compacted fill materials. Given the hillside nature of the project, it is anticipated this condition will occur.

7.2.4 Utility Trench Excavation

All utility trenches should be shored or laid back in accordance with applicable OSHA standards. Excavations in bedrock areas should be made in consideration of underlying geologic structure. The project soils engineer/ geologist should be consulted on these issues during construction.

7.2.5 Utility Trench Backfill

Mainline and lateral utility trench backfill should be compacted to at least 90 percent of the applicable maximum dry density as determined ASTM Test Method:D-1557. Onsite soils will typically not be considered suitable for use as bedding material but will be suitable for use in backfill, provided oversized materials are removed. Compaction should be accomplished by mechanical means. Jetting of native soils will not be acceptable.

Under-slab trenches should also be compacted to project specifications. If native soils are used, mechanical compaction is recommended. If select granular backfill (SE>30) is utilized, compaction by flooding will be acceptable. The soil engineer should be notified for inspection prior to placement of the membrane and slab reinforcement. The use of a double layer of mesh across under-slab plumbing trenches is considered an acceptable alternative to compaction or sand backfill.

8.0 SLOPE AND LOT MAINTENANCE

8.1 Slope Planting

Slope planting should consist of ground cover, shrubs, and trees, which possess deep, dense root structures that require a minimum of irrigation. It is the responsibility of the homeowners and/or residents to maintain such planting.

8.2 Slope Irrigation

The homeowners and/or residents are responsible for installation of proper irrigation systems, as well as maintenance and repair of such systems. Leaks should be repaired immediately. Sprinklers should be adjusted to provide maximum uniform coverage with a minimum of water usage and overlap. Overwatering with consequent wasteful runoff and serious ground saturation should be avoided. If automatic sprinkler systems are installed, their use must be adjusted to account for natural rainfall conditions.

8.3 Lot Drainage

Design fine grade elevations should be maintained through the life of the structures. If design fine grade elevations are altered, adequate area drains should be installed in order to provide rapid discharge of water, away from the structures and slope areas.

8.4 Burrowing Animals

Homeowners and/or residents should undertake a program for the elimination of burrowing animals. This should be an ongoing program in order to maintain slope stability.

9.0 FUTURE PLAN REVIEWS

This report represents a geotechnical review of the 60-scale Vesting Tentative Tract Map, dated May 2006, for the proposed residential development. Pertinent recommendations contained in this report should be considered for incorporation into the project grading plans and construction specifications. To prevent the possible separation of such information, this report should be included as a referenced portion of all phases of the project development. As the project design progresses, site specific geologic and geotechnical issues need to be incorporated into design and construction of the project. Consequently, future plan reviews may be necessary and may include:

- Revisions to the Tentative Tract Map
- Rough Grading plans
- Precise Grading plans
- Foundation plans
- Retaining wall plans

These plans should be forwarded to the project soils engineer/geologist for evaluation and comment, as necessary.

10.0 CLOSURE

The proposed grading indicated on Vesting Tentative Tract Map No. 52652 will be from the hazards associated with landsliding, settlement and slippage provided that the grading

construction is performed in an acceptable manner in accordance with applicable Code requirements and recommendations contained herein. Further, the completed grading will not have a detrimental effect on the geologic stability of neighboring offsite properties.

The conclusions and recommendations in this report are based on the data developed during this investigation, on a review of the referenced reports, and on the Vesting Tentative Tract Map dated May 2006, provided by SEC Engineers, Inc. The materials immediately adjacent to or beneath those observed may have different characteristics than those observed and no representations are made as to the quality or extent of materials not observed.

APPENDIX I

TABLE OF CONTENTS

Pages I-2 and I-3 .....References and Aerial Photo Review

Pages I-4 through I-6 .....Discussion of Field Investigation and Laboratory Testing

Table I .....Summary of Laboratory Test Data Results

Table II.....Summary of Slope Stability Analyses

Plates A-1 through A-8 .....Geotechnical Boring Logs

Plates B-1 and B-2 .....Direct Shear Plots

Plates C-1 through C-27.....Gross and Surficial Slope Stability Analyses

Plate D (in pocket) .....Geotechnical Cross-Sections

Plate E (in pocket).....Geotechnical Map

APPENDIX I

REFERENCES

1. Preliminary Investigation of Tentative Tract 30057; by Pacific Soils Engineering, Inc., dated October 30, 1964 (W.O. 5228).

2. Geologic Report, Kittridge Tanks Nos. 3 and 4; by Department of Water and Power, dated September 29, 1971.

3. Soils Report, Kittridge Tanks Nos. 3 and 4; by Department of Water and Power, dated October 1, 1971.

4. Geology of the Calabasas – Agoura – Eastern Thousand Oaks Area, Los Angeles, and Ventura Counties, California; California Division of Mines and Geology, OFR 84-1LA, 1984.

5. Distress Observed in the Vicinity of Vickiview Drive and Welby Way, West Hills, California; Letter by Slosson and Associates, dated December 4, 1991.

6. Geologic Map of the Calabasas Quadrangle, Los Angeles and Ventura Counties, California; by Thomas W. Dibblee, Jr., Dibblee Geological foundation Map # DF-37, 1992.

7. Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions, Scale 1:750,000; compiled by Charles W. Jennings, 1994, Department of Conservation, Division of Mines and Geology, Geologic Data Map No. 6.

8. Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards in California; by Department of Conservation, Division of Mines and Geology, adopted March 13, 1997.

9. State of California Seismic Hazard Zones Map, Calabasas 7½ Minute Quadrangle; by California Department of Conservation, Division of Mines and Geology, dated February 1, 1998.

10. Maps of Known Active Fault Near Source Zones in California and Adjacent Portions of Nevada, February 1998, International Conference of Building Officials.

11. Report of Geotechnical Engineering and Geological Investigation and Review of 100 Scale Grading Plan, Tentative Tract 52652, 58 Acres Kittridge & Randiwood Residential Development Project, West Hills, County of Los Angeles, California; by Environmental Geotechnology Laboratory, Inc., dated November 9, 1998 (Project No.: 98-139-002EG).

12. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated December 17, 1998.

13. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated December 17, 1998.

14. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated January 14, 1999.

15. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated January 20, 1999.

16. Regional Wildcat Map No. W 1-2, Los Angeles, Los Angeles County, California; by State of California, Department of Conservation, Division of Oil, Gas and Geothermal Resources, dated October 16, 1999.

17. Manual for Preparation of Geotechnical Reports; by County of Los Angeles, Department of Public Works, Land Development Division, dated February 2000 (Revised May 8, 2001).

18. Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California; by ASCE Los Angeles Section Geotechnical Group, published by Southern California Earthquake Center, February 2002.

AERIAL PHOTO REVIEW

(Continental Aerial Photo, Inc.)

Date of Flight	Flight/Frame Numbers
11-3-52	2K 12-13
4-20-72	107-11 14-15
3-2-77	IVEN-6 14-16
5-25-90	C81-7 46-47
5-10-93	C88-24 184-185
6-19-95	C113-23 171-172
12-7-98	C130-23 32-33

APPENDIX I

FIELD INVESTIGATION AND LABORATORY TESTING

The investigation performed as part of this report included review of existing published geologic reports and maps of the area, review of available aerial photographs, cursory geologic mapping/ reconnaissance of the site, and a subsurface field investigation program. Geologic reconnaissance and field mapping, which focussed on obtaining structural information and surface contacts of exposed geologic units, was conducted in April 2006. The subsurface field investigation program, that was performed within the same time frame, emphasized obtaining geologic and geotechnical data in order to assess the physical and chemical properties of the on-site materials. The subsurface program included the excavation of two bucket auger borings (B-101 and B-102). The borings were excavated utilizing a truck-mounted 30-inch diameter bucket auger drill rig. A representative of this firm's geologic staff observed, logged and selectively sampled the exploratory borings at the time of the excavations. The logs of these excavations appear on Plates A-1 through A-5 and previous boring logs by this firm are presented on Plates A-6 through A-8 (Appendix I). The approximate locations of these and previous exploratory excavations are shown on the accompanying Geotechnical Map (Plate E; in pocket).

In order to assess the physical and chemical properties of onsite earth materials, representative "bulk" and relatively "undisturbed" ring samples were obtained from the subsurface excavations and transported to our laboratory for testing. The relatively "undisturbed" ring samples collected were obtained by advancing a modified "California" type sampling spoon through the earth materials by repeated blows from a Kelly Bar (drill rig drilling bar) for the bucket auger borings. The sampling spoon is lined with brass rings, each one, 1 inch in height by 2.50 inches inside diameter. Relatively "undisturbed" ring samples and "bulk" samples were taken to our laboratory in airtight containers. The results of the in-place moisture-density determinations from the sampling program are presented on the boring logs (Plates A-1 through A-5). All other information obtained from selected "undisturbed" ring samples and selected "bulk" samples collected and tested pertaining to this part of the investigation is contained in Table I, and on Plates B-1 and B-2 (Appendix I).

Laboratory tests on samples collected during the recent subsurface field investigation consisted of in-situ moisture-density determinations, maximum dry density/optimum moisture content, grain size, shear strength, expansion index and chemical testing. A brief description of the laboratory tests is presented below.

Moisture Density Determination

The unit dry weight and natural moisture content were determined for selected "undisturbed" ring samples. The results of these tests are included on the Geotechnical Boring Logs (Plates A-1 through A-5).

Grain Size Determination

Grain size analyses were performed on the minus No. 10 sieve portion of selected representative bulk samples. The tests were performed utilizing hydrometer test methods. The results of these tests were used as an aid in soil classification and are presented in Table I of Appendix I.

Shear Strength Determination

Shear tests were performed on selected remolded and "undisturbed" ring samples of the predominant soil types with a direct shear machine of the strain control type in which the rate of strain in 0.05 inches per minute. Specimens were inundated for approximately 24 hours in a confined condition and then subjected to shear under various normal loads. Results of these tests are summarized on Plates B-1 and B-2 in Appendix I.

Expansive Soils Characteristics

Expansion characteristics were evaluated on selected representative near surface bulk samples in accordance with Uniform Building Code Expansion Index Test (UBC Standard 18-2). The results of these tests are presented in Table I in Appendix I.

Corrosivity Analyses

Selected soil samples were analyzed for determination of pH and resistivity. The electrical resistivity of a soil is a measure of its resistance to the flow of electrical current. Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportioned to the flow of electrical current (DC) from the metal into the soil. The soil's

resistivity decreases and, therefore, its corrosivity increase primarily as its moisture and chemical contents increase.

A commonly accepted correlation between electrical resistivity and corrosivity toward ferrous metals is:

Soil Resistivity in ohm-centimeters	Corrosivity Category
0 to 1,000	severely corrosive
1,000 to 2,000	corrosive
2,000 to 10,000	moderately corrosive
over 10,000	mildly corrosive

The results of the corrosivity analyses are presented in Table I in Appendix I.

Chemical Testing

Testing for soluble sulfates, chlorides, and alkalinity was performed (by others) on selected bulk samples. The results of these tests are included in Table I in Appendix I.

July 10, 2006
Work Order 102637

TABLE I

SUMMARY OF LABORATORY TEST DATA RESULTS

Boring	Depth (ft.)	Description	Group Symbol, Unified Soil Classification System	ASTM D-1557		Direct Shear				Grain Size Analysis				Chemical Analyses				
				Maximum Dry Density (pcf)	Optimum Moisture Content (%)	Cohesion, C, (psf)	Friction Angle, Ø, (degrees)	Test Conditions	Expansion Index (UBC 18-2)	% + No. 4 Screen	% Sand	% Silt	% Clay	Sulfate* (% by wt.)	Chloride* (% by wt.)	Alkalinity* (% by wt.)	pH	Resistivity (ohm-cms.)
B-101	10	Yellow Silt w/Sand	ML	113.4	13.3	450	26	R, S	53	0	18	57	25	0.134	0.004	0.002	7.8	670
B-101	30	Gray Sandy Silt	ML	--	--	550	36	U, S	--	0	40	40	20	--	--	--	--	--
B-101	60	Red Silt w/Sand	ML	--	--	500	34	U, S	--	0	16	57	27	--	--	--	--	--
B-102	10	Light Brown Silty Sand	SM	98.9	14.2	400	28	R, S	0	10	65	20	5	<0.001	0.002	0.003	8.1	5,990
B-102	20	Gray Orange Silty Sand	SM	--	--	600	35	U, S	--	0	54	43	3	--	--	--	--	--
B-102	40	Yellow Orange Sandy Silt	ML	--	--	750	25	U, S	--	0	35	50	15	--	--	--	--	--

* Sulfate, Chloride, and Alkalinity tests performed by others in accordance with Caltrans Test Methods 417, 422 and EPA 310.1, respectively.
(--) = No Tests Performed.

Direct Shear Test Conditions: R = Remolded; U = Undisturbed
S = Saturated;

TABLE II

SUMMARY OF SLOPE STABILITY ANALYSIS

Cross-Section	Location	Condition	Keyway Dimensions*	Factor-of-Safety		Calculations (Plates C-1 to C-24)
				Static	Pseudostatic	
1-1'	Lot 22	2:1 Fill Slope	See Cross-Section	1.62	1.15	C-1 through C-6
2-2'	Lot 18	2:1 Cut Slope	N/A	2.70	1.80	C-7 through C-12
3-3'	North of Lot 25	Natural Slope	N/A	1.94	1.44	C-13 through C-18
4-4'	North of Lot 21	Natural Slope	N/A	1.63	1.22	C-19 through C-24

* N/A = Not Applicable.

GEOTECHNICAL BORING LOG

PROJECT NO.	102637	PROJECT NAME	Faye Estates		
DATE STARTED	4/11/06	GROUND ELEV.	1070	BORING DESIG.	B-101
DATE FINISHED	4/11/06	GW DEPTH (FT)		LOGGED BY	CRN
DRILLER	J & N Drilling	DRIVE WT.	See Note	NOTE	0-24' 3548#; 24-47' 2577#; 47-73' 1648#; 73-92' 810#
TYPE OF DRILL RIG	30" Bucket Auger	DROP	12-inches		

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	1070					**ARTIFICIAL FILL (af):** Silty Clay to Clayey Silt with Sand and Pebbles; dark yellowish brown, moist to wet, soft, abundant roots and rootlets.				
						MONTEREY FORMATION (Tm): Clayey Siltstone; mottled light brown and light olive gray, slightly moist to moist, soft, some interbedded moderately hard to hard layers, some soft interbedded clay lenses, some polished surfaces.				
5	1065				B: N30W, 35SW					
					F: N-S, 76W	**FAULT:** 1-1/2 to 2± inches thick gypsum lined, Clayey Siltstone over Silty Claystone.				Rem. Shear Max, Exp. Index Hydro Chem.
10	1060	R/B	2 for 2" Bounce PR* Rings 1-4		F: N10E, 68NW	**FAULT:** 1± inches thick gypsum lined, Silty Claystone over Clayey Siltstone.	13.4	121.1	97	
15	1055				B: N80W, 55SW	Some concretionary layers, 1 to 2± inches thick, some sulfur deposits.				
					B: N35E, 17SE					
20	1050	R/B	2			Clayey to Sandy Siltstone; very fine-grained Sand, medium light gray, slightly moist, moderately hard, some iron staining, some gypsum stringers.	23.0	101.7	97	
25	1045				F: N65E, 75SE	**FAULT:** 1/4 to 1/2± inch thick gypsum lined into flower structure, terminating into overlying massive Clayey to Sandy Siltstone.				
					B: N65E, 62SE	Some Gypsum along bedding planes, generally massive.				
30	1040	R	3				18.3	110.0	96	Und. Shear Hydro
					B: N70E, 46SE					
35	1035	Bag			F: N80E, 38SE	**FAULT GOUGE:** Clay; mottled pale red to pale red purple, olive and dark yellowish orange, slightly moist to moist, soft to firm, polished, vague to moderate slickensides, gypsum along plane. 1 to 1-1/2± feet thick, cross-cutting gypsum stringers, minor seepage west side of hole. Highly jumbled with abundant gypsum within massive Clayey Siltstone.				
	1030									

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

- ▼ GROUNDWATER LEVEL
- ► WATER SEEP
- B BEDDING
- J JOINTING
- C CONTACT
- F FAULT
- S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-1

GEOTECHNICAL BORING LOG

PROJECT NO.	102637	PROJECT NAME	Faye Estates		
DATE STARTED	4/11/06	GROUND ELEV.	1070	BORING DESIG.	B-101
DATE FINISHED	4/11/06	GW DEPTH (FT)		LOGGED BY	CRN
DRILLER	J & N Drilling	DRIVE WT.	See Note	NOTE	0-24' 3548#; 24-47' 2577#; 47-73' 1648#; 73-92' 810#
TYPE OF DRILL RIG	30" Bucket Auger	DROP	12-inches		

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	1030	R/B	4		B: N30W, 56NE	Interbedded Clayey Siltstone; dark yellowish orange, slightly moist, moderately hard; with Silty Claystone; light olive gray, slightly moist, moderately hard, some polished surfaces, abundant gypsum throughout.	19.1	109.1	98	
45	1025				B: N80W, 60SW					
50	1020	R	9		F: N30W, 80NE B: N-S, 58E	Clayey Siltstone; Light olive gray with some light brownish gray staining, slightly moist, moderately hard, vague to moderate laminations, some iron staining. **FAULT:** Clay 1/4± inch thick, olive, moist, stiff, polished, minor seepage - north side of hole.	19.8	108.0	99	
55	1015									
60	1010	R	10		F: N80E, 58NW B: N20E, 52SE	**FAULT:** Clay gouge; 2 to 3± inches thick, pale red, slightly moist to moist, moderately firm to stiff, slightly flaky, healed, some polished surfaces, some iron straining and sulfur, moderate to heavy seepage along fault gouge.	18.0	111.4	98	Und. Shear, Hydro
65	1005				B: N20W, 62NE	Silty Claystone; olive gray, slightly moist, moderately hard, some polished surfaces, vague slickensides, color change to dark gray to brownish black.				
					B: N30W, 46NE	Clayey Siltstone; medium dark gray, slightly moist, hard, vague/weak laminations.				
70	1000	R/B	30 for 7" Bounce		B: N70E, 25SE	Interbedded Claystone layer; 1 to 1-1/2± inches thick, dark gray, moist, stiff, flaky, polished.	13.7	119.1	93	
75	995				B: N35W, 38NE	Interbedded Silty Sandstone; 2± foot thick, very fine- to fine-grained, dark yellowish orange, slightly moist, hard, abundant small joints/fractures, moderate seepage below 74± feet - north side of hole.				
	990									

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

▼ GROUNDWATER LEVEL
► WATER SEEP
B BEDDING
J JOINTING
C CONTACT
F FAULT
S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-2

GEOTECHNICAL BORING LOG

PROJECT NO.	102637	PROJECT NAME	Faye Estates		
DATE STARTED	4/11/06	GROUND ELEV.	1070	BORING DESIG.	B-101
DATE FINISHED	4/11/06	GW DEPTH (FT)		LOGGED BY	CRN
DRILLER	J & N Drilling	DRIVE WT.	See Note	NOTE	0-24' 3548#; 24-47' 2577#; 47-73' 1648#; 73-92' 810#
TYPE OF DRILL RIG	30" Bucket Auger	DROP	12-inches		

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	990	R	40 for 6" PR* Rings 1-5		B: N70E, 27SE	Clayey Siltstone; medium dark gray, slightly moist, hard, vague/weak, laminations.	17.0	108.0	85	
85	985				B: N20W, 29NE					
90	980	R	50 for 6"			Clayey Siltstone; medium dark gray, slightly moist, hard, vague/weak, laminations.	5.8	114.7	35	

Total Depth 91± feet.
Minor seepage at 35, 53 to 58 feet.
Moderate seepage 74 to 93 feet.
Heavy seepage at 59 feet.
No caving.
Hole backfilled with cuttings and tamped.

*PR = Partial ring sample recovery and ring numbers recovered.

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

- ▼ GROUNDWATER LEVEL
- ► WATER SEEP
- B BEDDING
- J JOINTING
- C CONTACT
- F FAULT
- S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-3

GEOTECHNICAL BORING LOG

PROJECT NO.	102637	PROJECT NAME	Faye Estates	BORING DESIG.	B-102
DATE STARTED	4/12/06	GROUND ELEV.	1224	LOGGED BY	CRN
DATE FINISHED	4/12/06	GW DEPTH (FT)		NOTE	0-24' 3548#; 24-47' 2577#; 47-73' 1648#; 73-92' 810#
DRILLER	J & N Drilling	DRIVE WT.	See Note		
TYPE OF DRILL RIG	30" Bucket Auger	DROP	12-inches		

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
0						**SOIL:** Silt; dark yellowish brown, slightly moist, loose, porous, abundant roots and rootlets. Basal cobble layer; concretionary Siltstone, medium light gray, dry, very hard, fractured/jointed into 1+ foot pieces, joints filled with soil. **MONTEREY FORMATION: (Tm):** Silty Sandstone; very fine- to fine-grained, dusky yellow, slightly moist, moderately hard, massive.				
	1220									
5					B: N35E, 18SE	Concretionary Siltstone; 6± inches thick, yellowish gray with iron staining, dry, hard to very hard, core.				
						Silty Sandstone; very fine- to fine-grained, dusky yellow, slightly moist, moderately hard, massive.				
	1215					Concretionary Sandstone; 1± foot thick, mottled yellowish gray and dark yellowish orange, dry, very hard, core with water.				
10						Silty Sandstone; very fine- to fine-grained, dusky yellow, slightly moist, moderately hard, massive.				
		R/B	6 for 6" P/D*		B: N70W, 16SW	Concretionary Sandstone; 6+ inches thick.	5.8	114.7	35	Rem. Shear, Max, Exp. Index, Hydro, Chem.
						Silty Sandstone; very fine- to fine-grained, dusky yellow, slightly moist, moderately hard, massive.				
	1210				B: N60W, 16SW	Diatomaceous Shale; yellowish gray to pale yellowish brown, slightly moist, moderately hard, laminated.				
15										
						Silty to Clayey Sandstone; very fine- to fine-grained, grayish orange, slightly moist, moderately hard to hard, massive; some interbedded clay seams, 1/8 to 1/4± inch thick, light olive, soft.				
	1205				B: N80W, 13SW					
20		R/B	5				29.3	89.8	92	Und. Shear Hydro
					B: N70E, 18SE					
	1200									
25						Color change to light olive gray.				
					B: N50E, 16SE	Silty Sandstone; fine- to medium-grained, slightly moist, moderately hard to hard.				
	1195					Sandy Claystone to Clayey Sandstone; very fine-grained Sand, mottled light olive gray to moderate yellowish brown, slightly moist, moderately hard to hard, some jointing/fracturing, iron staining along joints, diatomaceous.				
30		R/B	4				35.1	85.2	99	
					B: N45E, 17SE					
	1190									
35										
					B: N65W, 21SW					
	1185					Clayey Siltstone to Silty Claystone; light olive gray, slightly moist, moderately hard; diatomaceous, contact in ring sample.				

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

▼ GROUNDWATER LEVEL
► WATER SEEP
B BEDDING
J JOINTING
C CONTACT
F FAULT
S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-4

GEOTECHNICAL BORING LOG

PROJECT NO.	102637	PROJECT NAME	Faye Estates	BORING DESIG.	B-102
DATE STARTED	4/12/06	GROUND ELEV.	1224	LOGGED BY	CRN
DATE FINISHED	4/12/06	GW DEPTH (FT)		NOTE	0-24' 3548#; 24-47' 2577#; 47-73' 1648#; 73-92' 810#
DRILLER	J & N Drilling	DRIVE WT.	See Note		
TYPE OF DRILL RIG	30" Bucket Auger	DROP	12-inches		

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
		R/B	5		B: N75E, 12SE	Silty Sandstone; very fine- to fine-grained, dark yellowish orange, slightly moist, moderately hard to hard.	34.7	85.9	99	Und. Shear Hydro
					B: N75E, 14SE					
	1180				B: N70E, 16SE					
45						Clayey Siltstone to Silty Claystone; light olive gray, slightly moist, moderately hard, diatomaceous; some interbedded Silty Sandstone; very fine- to fine-grained, dark yellowish orange, slightly moist, moderately hard to hard.				
					B: N70E, 18SE					
	1175					Sandy Claystone to Clayey Sandstone; very fine-grained Sand, light olive gray, slightly moist, moderately hard to hard, some gypsum stringers, diatomaceous.				
50		R	12				30.0	89.0	93	
	1170					Interbedded Silty Sandstone layer; 1± foot thick, fine- with some medium-grained, light olive gray, slightly moist, moderately hard to hard.				
55					B: N50E, 13SE					
						Carbonaceous Shale; light olive gray, slightly moist, very hard, laminated, core with water. Core refusal.				
						Total Depth 57-1/2 feet. No water. No caving. Hole backfilled with cuttings and tamped.				

*P/D = Partially disturbed ring sample.

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

- ▼ GROUNDWATER LEVEL
- ► WATER SEEP
- B BEDDING
- J JOINTING
- C CONTACT
- F FAULT
- S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-5

FROM:
October 30, 1964
Work Order 5228

LOG OF BORINGS

Boring No.	Depth (in ft.)*	Classification
1	0.0- 3.0	SOIL: Adobe; dark brown, slightly moist, tight. B-1
	3.0- 6.0	MODELO FORMATION: Siliceous shale, buff to brown, very hard in beds 6 inches to 2 feet thick, with interbeds of punky, diatomaceous shale.
	at 6.0 ft., N50E; 35SE	
2	0.0-16.0	MODELO FORMATION:
		0.0-2.0: Sandy Siltstone: Yellow-brown, dry, very tight, fractured, massive, hard. B-2
		2.0-10.0: Clayey to Sandy Siltstone: Dark gray-brown, moist, tight, fractured.
		10.0-16.0: Silty Claystone: Slightly sandy, dark gray-brown, moist, tight, fractured.
	16.0-22.0	TOPANGA FORMATION:
		16.0-17.0: Silty Fine-grained Sandstone: Yellow-brown, hard, fractured.
		17.0-22.0: Fault Gouge (?), Clayey Siltstone with fragments of sandstone, moist, with slickensides.
	at 5.0 ft., N65W; 44NE at 11.0 ft., N35W; 60NE at 22.0 ft., N65W; 35NE	

PLATE A-6

FROM:
October 30, 1964
Work Order 5228

3

0.0- 1.0 FILL: Uncompacted, composed of shale fragments.

1.0- 4.0 SOIL: Adobe; with shale fragments.

4.0-15.0 MODELO FORMATION: Sandy shale, buff to yellow-brown, dry to slightly moist, tight, occasional hard beds, fractured.

B-3

at 13.0 ft., N60W; 15SW

4

0.0- 7.5 -- ALLUVIUM: Clay and sandy silt.

7.5- 9.0 TOPANGA FORMATION: Conglomerate, gray, moist, tight, hard pebbles, well rounded, occasional cobbles.

5

0.0- 2.0 SOIL: Adobe; dark brown to black, moist, tight with organic material.

B-4

2.0- 9.0 ALLUVIUM: Clay with fragments of sandstone and shale, moist, firm.

B-5

9.0-13.0 MODELO FORMATION: Sandstone, gray to yellow-brown, moist, tight, hard, silty to fine-grained with interbedded shale.

6

0.0-17.0 SLIDE MATERIAL:

0.0- 4.0: Soil: Adobe; black with shale fragments near base, moist, firm.

4.0-11.0: Silt and Shale: Mixed, crushed, moist, soft.

B-6

11.0-14.5: Soil: Adobe; black, moist, tight.

14.5-17.0: Fractured, contorted and crushed Modelo Formation; moist, tight. Base of slide at 17.0 ft.

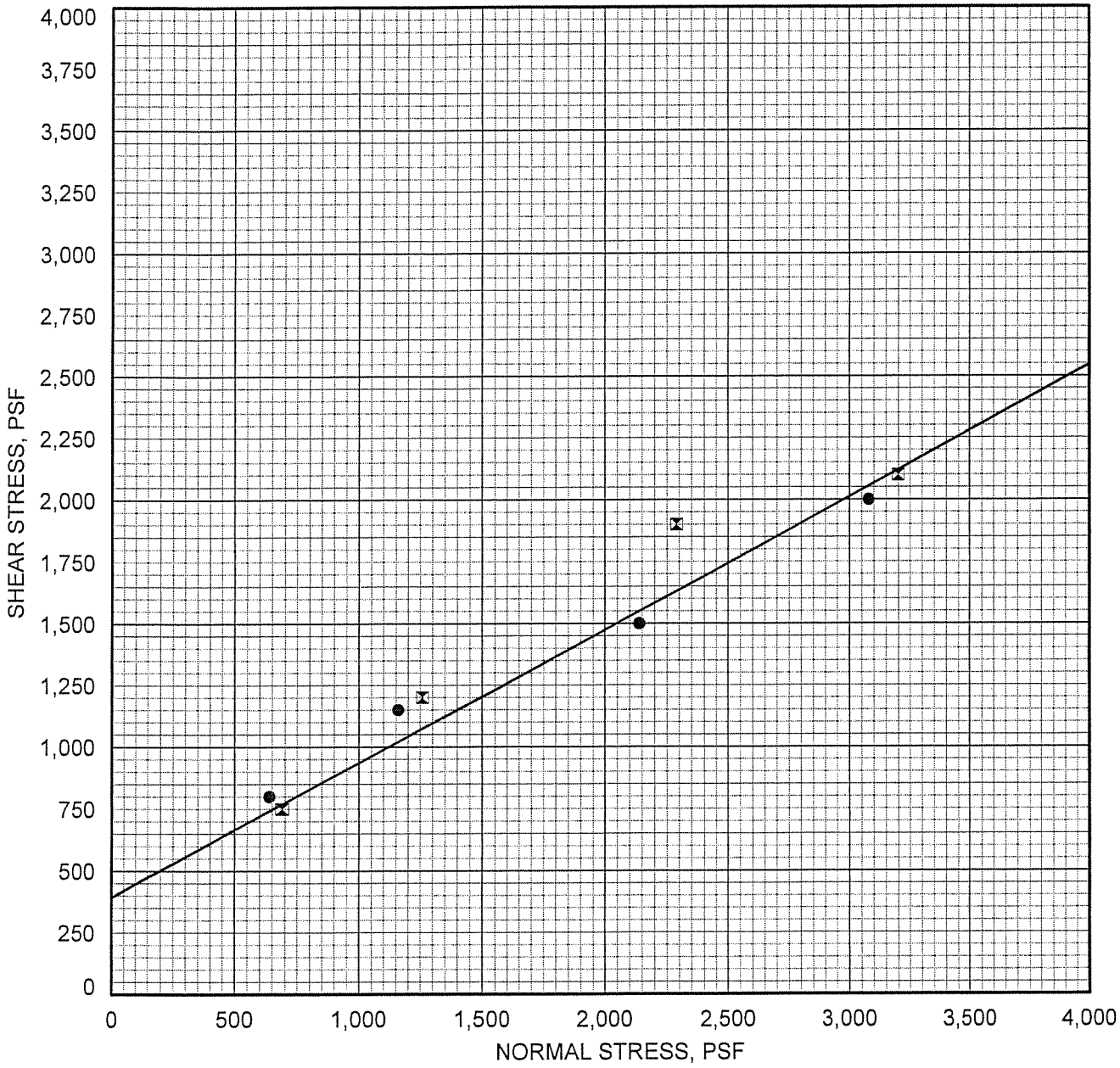
FROM:
October 30, 1964
Work Order 5228

11 cont'd.	2.0-25.0	MODELO FORMATION: Clayey silt and shale; buff to brown, dry to moist, tight, upper few feet platy.
	8.0-10.0:	Silty, Fine-grained Sandstone: Yellow-brown, moist, fairly hard.
	10.0-25.0:	Silty to Sandy Shale: Buff, moist, tight. Occasionally platy, very hard and fractured.
	at 10.0 ft., E-W; 32S at 20.0 ft., E-W; 32S	
12	0.0- 3.0	SOIL: Adobe; clayey silt, brown to dark brown, dry, tight.
	3.0-11.0	MODELO FORMATION: Clayey siltstone and shale, white to buff to brown, moist, fairly tight, shale becomes sandy in lower 2.0 feet of section.
	at 8.0 ft., N45E; 26SE	
13	0.0- 3.0	SOIL: Clay, sandy to silty, dry, dark brown to black.
	3.0-15.0	ALLUVIUM: Clay, sandy, compact, with cobbles.
	15.0-28.0	SHALE: Black to gray, hard, dense.
14	0.0- 3.0	SOIL: Clay, sandy to silty, dry, black.
	3.0-21.0	ALLUVIUM: Clay, sandy, compact with granules and cobbles.
	21.0-26.0	SHALE: Diatomaceous, dry.
	26.0-45.0	Interbedded shale and sandstone.

B-11 B-12 B-13 B-14

PLATE A-8

DIRECT SHEAR TEST
*Remolded/Saturated



	Residual Values	
Compacted Fill (caf)	COHESION	400 psf.
	FRICTION ANGLE	28 degrees

*Remolded to 90% of Laboratory Maximum Dry Density

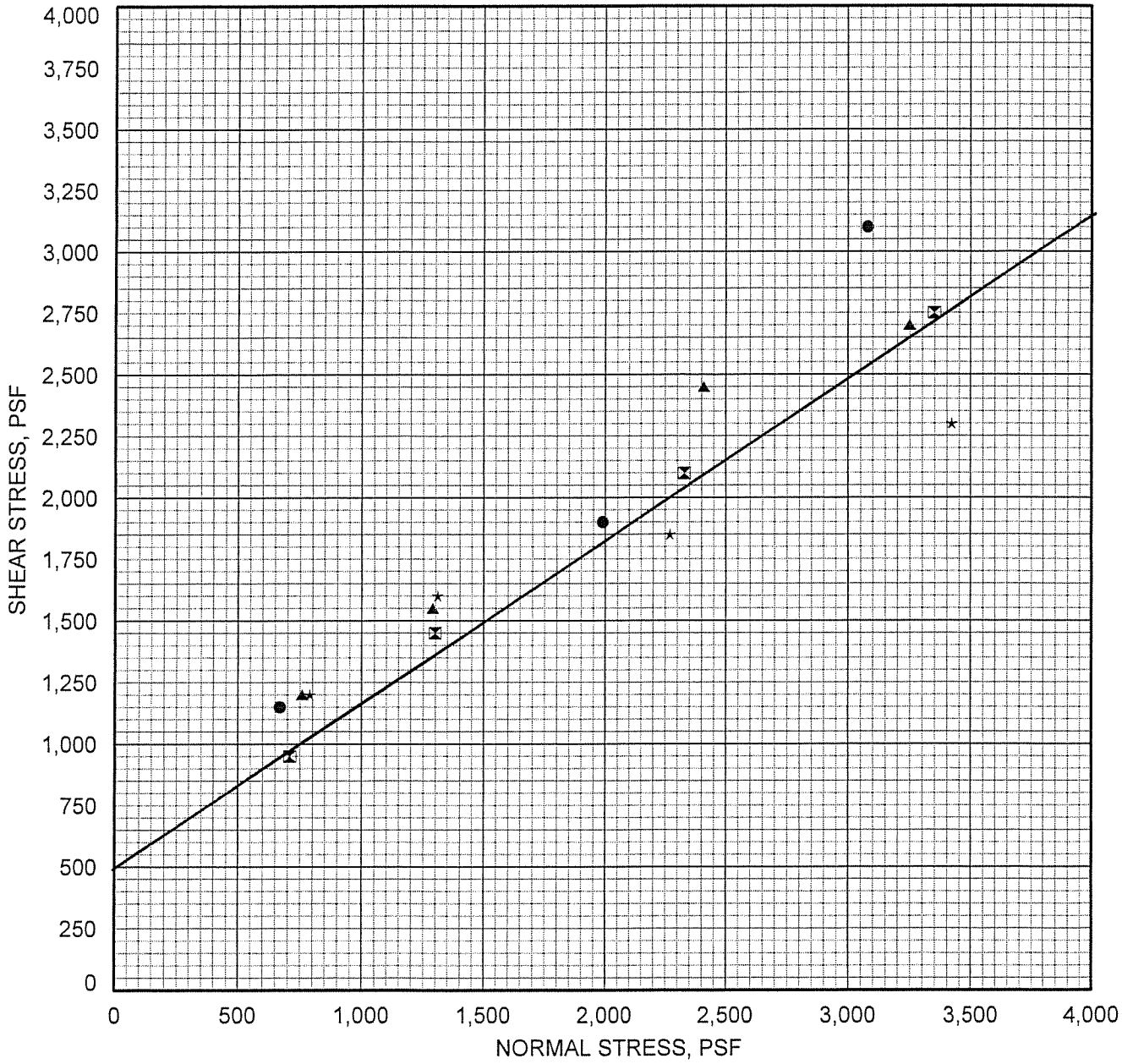
symbol	boring	depth (ft.)	symbol	boring	depth (ft.)
●	B-101	10.0			
⧓	B-102	10.0			

DIRECT SHEAR TEST

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WY. CYPRESS, CA 90630 714-220-0770

W.O. 102637 **PLATE B-1**

DIRECT SHEAR TEST
"Undisturbed"/Saturated



	Residual Values	
Bedrock, Monterey Formation (Tm)	COHESION	500 psf.
	FRICTION ANGLE	34 degrees

symbol	boring	depth (ft.)	symbol	boring	depth (ft.)
●	B-101	30.0			
⊠	B-101	60.0			
▲	B-102	20.0			
★	B-102	40.0			

DIRECT SHEAR TEST

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WY. CYPRESS, CA 90630 714-220-0770

W.O. 102637 PLATE B-2

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(All Rights Reserved-Unauthorized Use Prohibited)
****
SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
****

Analysis Run Date: 6/6/2006
Time of Run:
Run By:
Input Data Filename: C:\stabledata\1026371-1's.in
Output Filename: C:\stabledata\1026371-1's.OUT
Unit System: English
Plotted Output Filename: C:\stabledata\1026371-1's.PLT
PROBLEM DESCRIPTION: Cross section 1-1'
W.O. 102637

BOUNDARY COORDINATES
5 Top Boundaries
6 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	20.00	150.00	30.00	1
2	150.00	30.00	375.00	130.00	2
3	375.00	130.00	405.00	130.00	2
4	405.00	130.00	630.00	240.00	2
5	630.00	240.00	890.00	245.00	2
6	135.00	10.00	150.00	30.00	2

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	0.0	350.0	25.0	0.00	0.0	0
2	110.0	0.0	400.0	28.0	0.00	0.0	0

Searching Routine Will Be Limited To An Area Defined By 6 Boundaries
Of Which The First 3 Boundaries Will Deflect Surfaces Upward

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)
1	135.00	10.00	180.00	10.00
2	180.00	10.00	340.00	50.00
3	340.00	50.00	520.00	130.00
4	520.00	130.00	650.00	200.00
5	650.00	200.00	730.00	200.00
6	730.00	200.00	890.00	170.00

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
200 Trial Surfaces Have Been Generated.
20 Surface(s) Initiate(s) From Each Of 10 Points Equally Spaced
Along The Ground Surface Between X = 140.00(ft)
and X = 160.00(ft)
Each Surface Terminates Between X = 500.00(ft)
and X = 760.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
34.00(ft) Line Segments Define Each Trial Failure Surface.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 200
Number of Trial Surfaces With Valid FS = 200
Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	155.556	32.469
2	189.513	34.170
3	223.360	37.396
4	257.027	42.139
5	290.447	48.391
6	323.553	56.139
7	356.277	65.367
8	388.553	76.056
9	420.315	88.186
10	451.501	101.730
11	482.046	116.663
12	511.890	132.953
13	540.971	150.568
14	569.231	169.473
15	596.612	189.628
16	623.060	210.994
17	648.521	233.527
18	655.715	240.495

Circle Center At X = 134.952 ; Y = 787.291 ; and Radius = 755.103

Factor of Safety

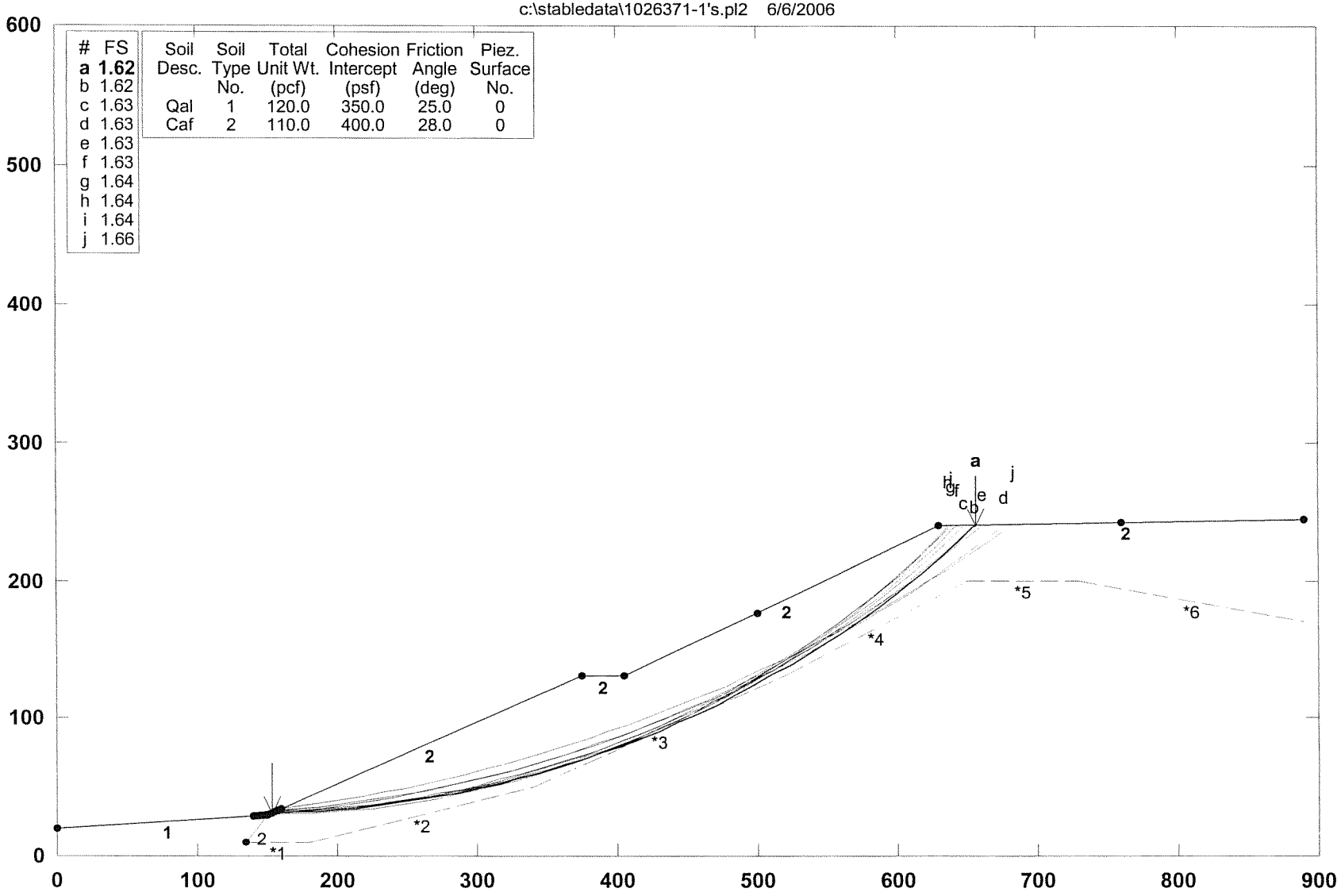
*** 1.621 ***

Individual data on the 20 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	34.0	25010.0	0.0	0.0	0.	0.	0.0	0.0	0.0
2	33.8	71855.6	0.0	0.0	0.	0.	0.0	0.0	0.0
3	33.7	112281.5	0.0	0.0	0.	0.	0.0	0.0	0.0
4	33.4	146052.3	0.0	0.0	0.	0.	0.0	0.0	0.0
5	33.1	173021.5	0.0	0.0	0.	0.	0.0	0.0	0.0
6	32.7	193131.5	0.0	0.0	0.	0.	0.0	0.0	0.0
7	18.7	118161.1	0.0	0.0	0.	0.	0.0	0.0	0.0
8	13.6	83763.8	0.0	0.0	0.	0.	0.0	0.0	0.0
9	16.4	91913.9	0.0	0.0	0.	0.	0.0	0.0	0.0
10	15.3	81678.4	0.0	0.0	0.	0.	0.0	0.0	0.0
11	31.2	172044.9	0.0	0.0	0.	0.	0.0	0.0	0.0
12	30.5	171372.8	0.0	0.0	0.	0.	0.0	0.0	0.0
13	29.8	164644.7	0.0	0.0	0.	0.	0.0	0.0	0.0
14	29.1	152284.7	0.0	0.0	0.	0.	0.0	0.0	0.0
15	28.3	134794.7	0.0	0.0	0.	0.	0.0	0.0	0.0
16	27.4	112748.4	0.0	0.0	0.	0.	0.0	0.0	0.0
17	26.4	86786.9	0.0	0.0	0.	0.	0.0	0.0	0.0
18	6.9	18502.7	0.0	0.0	0.	0.	0.0	0.0	0.0
19	18.5	30248.1	0.0	0.0	0.	0.	0.0	0.0	0.0
20	7.2	2701.9	0.0	0.0	0.	0.	0.0	0.0	0.0

Cross section 1-1' W.O. 102637

c:\stabledata\1026371-1's.pl2 6/6/2006



#	FS
a	**1.62**
b	1.62
c	1.63
d	1.63
e	1.63
f	1.63
g	1.64
h	1.64
i	1.64
j	1.66

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qal	1	120.0	350.0	25.0	0
Caf	2	110.0	400.0	28.0	0

GSTABL7 v.2 FSmin=1.62

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Plate C-3

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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****
SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
****

Analysis Run Date: 6/7/2006
Time of Run:
Run By:
Input Data Filename: C:\stabledata\1026371-1'p.in
Output Filename: C:\stabledata\1026371-1'p.OUT
Unit System: English
Plotted Output Filename: C:\stabledata\1026371-1'p.PLT
PROBLEM DESCRIPTION: Cross section 1-1'
W.O. 102637

BOUNDARY COORDINATES
5 Top Boundaries
6 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	20.00	150.00	30.00	1
2	150.00	30.00	375.00	130.00	2
3	375.00	130.00	405.00	130.00	2
4	405.00	130.00	630.00	240.00	2
5	630.00	240.00	890.00	245.00	2
6	135.00	10.00	150.00	30.00	2

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	0.0	350.0	25.0	0.00	0.0	0
2	110.0	0.0	400.0	28.0	0.00	0.0	0

Searching Routine Will Be Limited To An Area Defined By 6 Boundaries
Of Which The First 3 Boundaries Will Deflect Surfaces Upward

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)
1	135.00	10.00	180.00	10.00
2	180.00	10.00	340.00	50.00
3	340.00	50.00	520.00	130.00
4	520.00	130.00	650.00	200.00
5	650.00	200.00	730.00	200.00
6	730.00	200.00	890.00	170.00

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	155.556	32.469
2	189.513	34.170
3	223.360	37.396
4	257.027	42.139
5	290.447	48.391
6	323.553	56.139
7	356.277	65.367
8	388.553	76.056
9	420.315	88.186
10	451.501	101.730

11	482.046	116.663
12	511.890	132.953
13	540.971	150.568
14	569.231	169.473
15	596.612	189.628
16	623.060	210.994
17	648.521	233.527
18	655.715	240.495

Janbu's Empirical Coefficient (fo) = 1.040

* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *

Factor Of Safety For The Preceding Specified Surface = 1.145

Table 1 - Individual Data on the 20 Slices

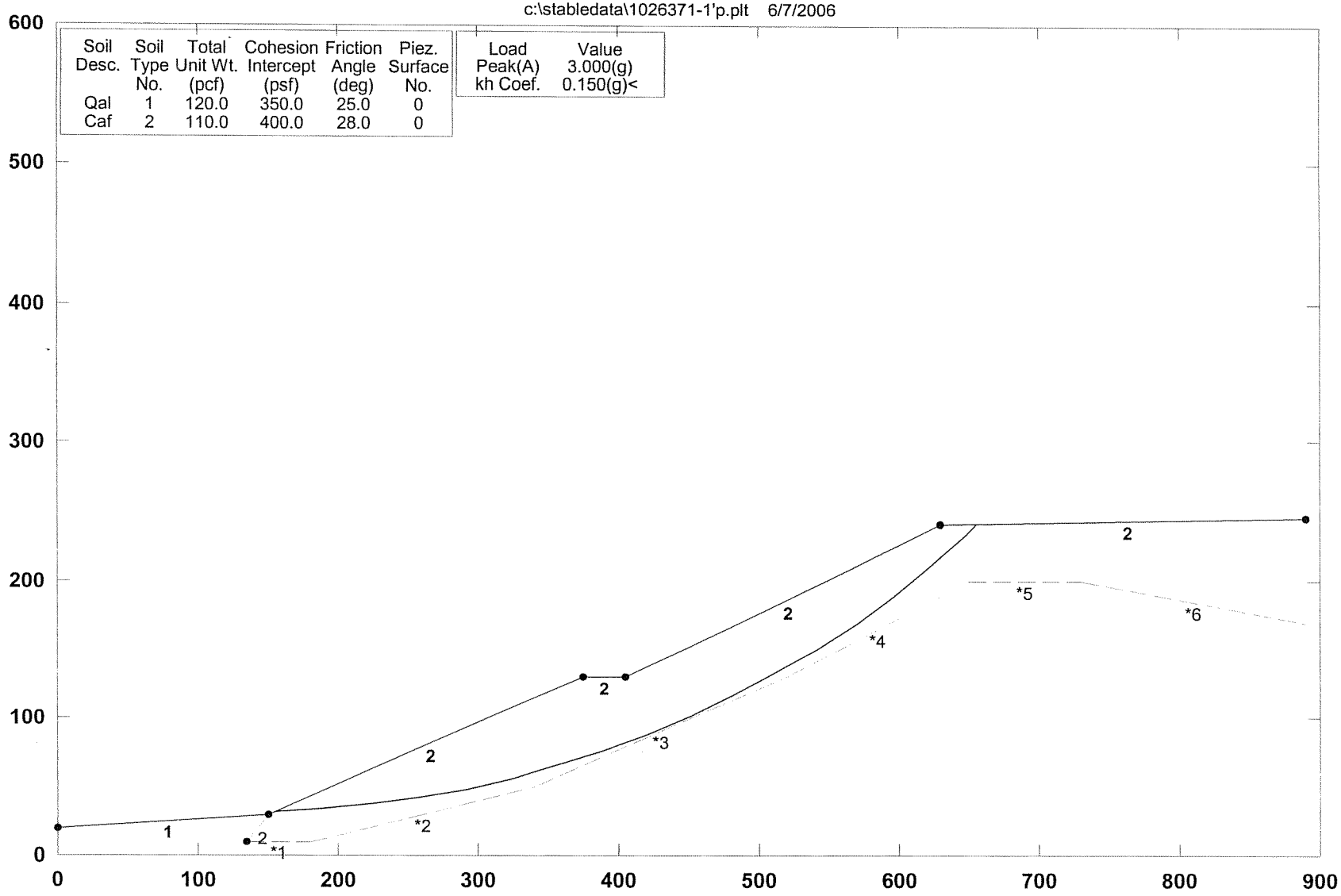
Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	34.0	25010.1	0.0	0.0	0.0	0.0	3751.5	0.0	0.0
2	33.8	71856.8	0.0	0.0	0.0	0.0	10778.5	0.0	0.0
3	33.7	112280.5	0.0	0.0	0.0	0.0	16842.1	0.0	0.0
4	33.4	146052.6	0.0	0.0	0.0	0.0	21907.9	0.0	0.0
5	33.1	173025.3	0.0	0.0	0.0	0.0	25953.8	0.0	0.0
6	32.7	193134.0	0.0	0.0	0.0	0.0	28970.1	0.0	0.0
7	18.7	118159.4	0.0	0.0	0.0	0.0	17723.9	0.0	0.0
8	13.6	83766.9	0.0	0.0	0.0	0.0	12565.0	0.0	0.0
9	16.4	91912.1	0.0	0.0	0.0	0.0	13786.8	0.0	0.0
10	15.3	81675.4	0.0	0.0	0.0	0.0	12251.3	0.0	0.0
11	31.2	172046.5	0.0	0.0	0.0	0.0	25807.0	0.0	0.0
12	30.5	171370.6	0.0	0.0	0.0	0.0	25705.6	0.0	0.0
13	29.8	164647.8	0.0	0.0	0.0	0.0	24697.2	0.0	0.0
14	29.1	152285.9	0.0	0.0	0.0	0.0	22842.9	0.0	0.0
15	28.3	134795.8	0.0	0.0	0.0	0.0	20219.4	0.0	0.0
16	27.4	112745.8	0.0	0.0	0.0	0.0	16911.9	0.0	0.0
17	26.4	86786.8	0.0	0.0	0.0	0.0	13018.0	0.0	0.0
18	6.9	18503.8	0.0	0.0	0.0	0.0	2775.6	0.0	0.0
19	18.5	30247.2	0.0	0.0	0.0	0.0	4537.1	0.0	0.0
20	7.2	2702.1	0.0	0.0	0.0	0.0	405.3	0.0	0.0

Cross section 1-1' W.O. 102637

c:\stabledata\1026371-1'p.plt 6/7/2006

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qal	1	120.0	350.0	25.0	0
Caf	2	110.0	400.0	28.0	0

Load	Value
Peak(A)	3.000(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.15

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

Plate C-6

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
****

Analysis Run Date: 6/6/2006
Time of Run:
Run By:
Input Data Filename: C:\stabledata\10263712-2's.in
Output Filename: C:\stabledata\10263712-2's.OUT
Unit System: English
Plotted Output Filename: C:\stabledata\10263712-2's.PLT
PROBLEM DESCRIPTION: Cross section 2-2'
W.O. 102637

BOUNDARY COORDINATES
9 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	33.00	155.00	33.00	1
2	155.00	33.00	170.00	40.00	1
3	170.00	40.00	320.00	40.00	1
4	320.00	40.00	510.00	120.00	1
5	510.00	120.00	535.00	120.00	1
6	535.00	120.00	630.00	150.00	1
7	630.00	150.00	660.00	150.00	1
8	660.00	150.00	710.00	175.00	1
9	710.00	175.00	870.00	175.00	1

ISOTROPIC SOIL PARAMETERS
1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	0.0	500.0	34.0	0.00	0.0	0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
200 Trial Surfaces Have Been Generated.
20 Surface(s) Initiate(s) From Each Of 10 Points Equally Spaced
Along The Ground Surface Between X = 285.00(ft)
and X = 340.00(ft)
Each Surface Terminates Between X = 670.00(ft)
and X = 820.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
22.00(ft) Line Segments Define Each Trial Failure Surface.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 200
Number of Trial Surfaces With Valid FS = 200
Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	291.111	40.000
2	312.984	37.636
3	334.934	36.160
4	356.926	35.574
5	378.924	35.878
6	400.892	37.073
7	422.793	39.157
8	444.592	42.125

9	466.252	45.974
10	487.740	50.696
11	509.018	56.285
12	530.052	62.731
13	550.809	70.023
14	571.253	78.149
15	591.351	87.096
16	611.071	96.850
17	630.379	107.395
18	649.245	118.712
19	667.637	130.784
20	685.525	143.591
21	702.880	157.111
22	719.674	171.323
23	723.677	175.000

Circle Center At X = 360.406 ; Y = 578.814 ; and Radius = 543.251

Factor of Safety

*** 2.704 ***

Individual data on the 28 slices

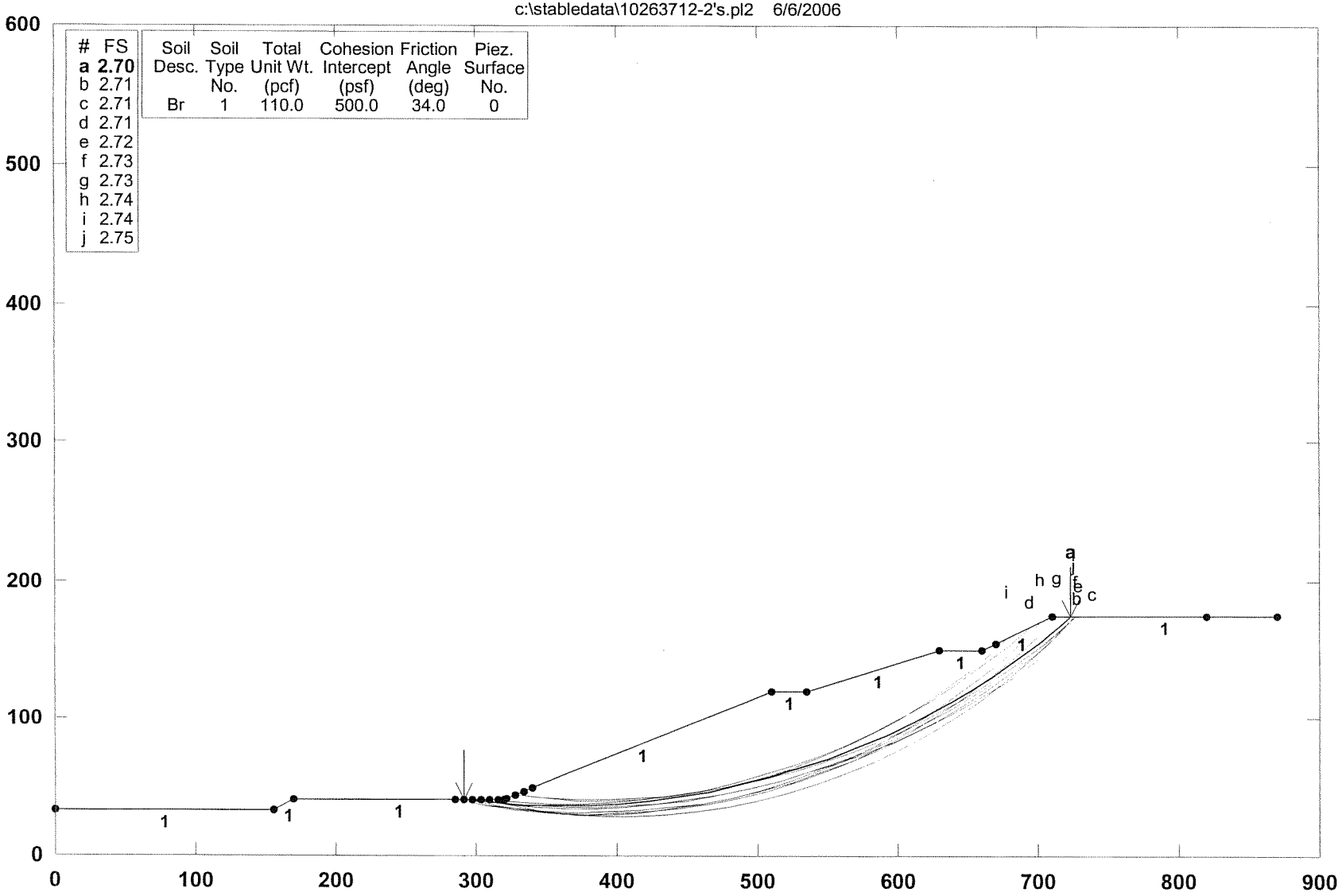
Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	21.9	2843.7	0.0	0.0	0.	0.	0.0	0.0	0.0
2	7.0	2006.4	0.0	0.0	0.	0.	0.0	0.0	0.0
3	14.9	10648.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	22.0	36411.1	0.0	0.0	0.	0.	0.0	0.0	0.0
5	22.0	59171.0	0.0	0.0	0.	0.	0.0	0.0	0.0
6	22.0	79643.7	0.0	0.0	0.	0.	0.0	0.0	0.0
7	21.9	97703.3	0.0	0.0	0.	0.	0.0	0.0	0.0
8	21.8	113250.2	0.0	0.0	0.	0.	0.0	0.0	0.0
9	21.7	126211.4	0.0	0.0	0.	0.	0.0	0.0	0.0
10	21.5	136540.9	0.0	0.0	0.	0.	0.0	0.0	0.0
11	21.3	144219.8	0.0	0.0	0.	0.	0.0	0.0	0.0
12	1.0	6844.5	0.0	0.0	0.	0.	0.0	0.0	0.0
13	20.1	133100.3	0.0	0.0	0.	0.	0.0	0.0	0.0
14	4.9	30694.6	0.0	0.0	0.	0.	0.0	0.0	0.0
15	15.8	96079.5	0.0	0.0	0.	0.	0.0	0.0	0.0
16	20.4	121740.5	0.0	0.0	0.	0.	0.0	0.0	0.0
17	20.1	114960.4	0.0	0.0	0.	0.	0.0	0.0	0.0
18	19.7	106148.6	0.0	0.0	0.	0.	0.0	0.0	0.0
19	18.9	93683.0	0.0	0.0	0.	0.	0.0	0.0	0.0
20	0.4	1782.4	0.0	0.0	0.	0.	0.0	0.0	0.0
21	18.9	76672.9	0.0	0.0	0.	0.	0.0	0.0	0.0
22	10.8	32839.2	0.0	0.0	0.	0.	0.0	0.0	0.0
23	7.6	19852.6	0.0	0.0	0.	0.	0.0	0.0	0.0
24	17.9	41524.8	0.0	0.0	0.	0.	0.0	0.0	0.0
25	17.4	31977.2	0.0	0.0	0.	0.	0.0	0.0	0.0
26	7.1	10256.4	0.0	0.0	0.	0.	0.0	0.0	0.0
27	9.7	8268.0	0.0	0.0	0.	0.	0.0	0.0	0.0
28	4.0	809.6	0.0	0.0	0.	0.	0.0	0.0	0.0

Cross section 2-2' W.O. 102637

c:\stabledata\10263712-2's.pl2 6/6/2006

#	FS
a	**2.70**
b	2.71
c	2.71
d	2.71
e	2.72
f	2.73
g	2.73
h	2.74
i	2.74
j	2.75

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Br	1	110.0	500.0	34.0	0



GSTABL7 v.2 FSmin=2.70

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Plate C-9

*** GSTABL7 ***

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 6/7/2006
Time of Run:
Run By:
Input Data Filename: C:\stabledata\10263712-2'p.in
Output Filename: C:\stabledata\10263712-2'p.OUT
Unit System: English
Plotted Output Filename: C:\stabledata\10263712-2'p.PLT
PROBLEM DESCRIPTION: Cross section 2-2'
W.O. 102637

BOUNDARY COORDINATES
9 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	33.00	155.00	33.00	1
2	155.00	33.00	170.00	40.00	1
3	170.00	40.00	320.00	40.00	1
4	320.00	40.00	510.00	120.00	1
5	510.00	120.00	535.00	120.00	1
6	535.00	120.00	630.00	150.00	1
7	630.00	150.00	660.00	150.00	1
8	660.00	150.00	710.00	175.00	1
9	710.00	175.00	870.00	175.00	1

ISOTROPIC SOIL PARAMETERS
1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	0.0	500.0	34.0	0.00	0.0	0

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	291.111	40.000
2	312.984	37.636
3	334.934	36.160
4	356.926	35.574
5	378.924	35.878
6	400.892	37.073
7	422.793	39.157
8	444.592	42.125
9	466.252	45.974
10	487.740	50.696
11	509.018	56.285
12	530.052	62.731
13	550.809	70.023
14	571.253	78.149
15	591.351	87.096
16	611.071	96.850
17	630.379	107.395
18	649.245	118.712

19	667.637	130.784
20	685.525	143.591
21	702.880	157.111
22	719.674	171.323
23	723.677	175.000

Janbu's Empirical Coefficient (fo) = 1.046

* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *

Factor Of Safety For The Preceding Specified Surface = 1.797

Table 1 - Individual Data on the 28 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	21.9	2843.9	0.0	0.0	0.0	0.0	426.6	0.0	0.0
2	7.0	2006.5	0.0	0.0	0.0	0.0	301.0	0.0	0.0
3	14.9	10648.0	0.0	0.0	0.0	0.0	1597.2	0.0	0.0
4	22.0	36409.9	0.0	0.0	0.0	0.0	5461.5	0.0	0.0
5	22.0	59170.7	0.0	0.0	0.0	0.0	8875.6	0.0	0.0
6	22.0	79645.9	0.0	0.0	0.0	0.0	11946.9	0.0	0.0
7	21.9	97702.7	0.0	0.0	0.0	0.0	14655.4	0.0	0.0
8	21.8	113251.3	0.0	0.0	0.0	0.0	16987.7	0.0	0.0
9	21.7	126207.0	0.0	0.0	0.0	0.0	18931.1	0.0	0.0
10	21.5	136546.5	0.0	0.0	0.0	0.0	20482.0	0.0	0.0
11	21.3	144218.1	0.0	0.0	0.0	0.0	21632.7	0.0	0.0
12	1.0	6843.9	0.0	0.0	0.0	0.0	1026.6	0.0	0.0
13	20.1	133096.5	0.0	0.0	0.0	0.0	19964.5	0.0	0.0
14	4.9	30697.3	0.0	0.0	0.0	0.0	4604.6	0.0	0.0
15	15.8	96079.0	0.0	0.0	0.0	0.0	14411.9	0.0	0.0
16	20.4	121739.6	0.0	0.0	0.0	0.0	18260.9	0.0	0.0
17	20.1	114958.5	0.0	0.0	0.0	0.0	17243.8	0.0	0.0
18	19.7	106151.6	0.0	0.0	0.0	0.0	15922.7	0.0	0.0
19	18.9	93682.3	0.0	0.0	0.0	0.0	14052.4	0.0	0.0
20	0.4	1780.4	0.0	0.0	0.0	0.0	267.1	0.0	0.0
21	18.9	76673.7	0.0	0.0	0.0	0.0	11501.1	0.0	0.0
22	10.8	32839.5	0.0	0.0	0.0	0.0	4925.9	0.0	0.0
23	7.6	19852.3	0.0	0.0	0.0	0.0	2977.8	0.0	0.0
24	17.9	41524.0	0.0	0.0	0.0	0.0	6228.6	0.0	0.0
25	17.4	31977.0	0.0	0.0	0.0	0.0	4796.6	0.0	0.0
26	7.1	10257.0	0.0	0.0	0.0	0.0	1538.6	0.0	0.0
27	9.7	8268.7	0.0	0.0	0.0	0.0	1240.3	0.0	0.0
28	4.0	809.5	0.0	0.0	0.0	0.0	121.4	0.0	0.0

Cross section 2-2' W.O. 102637

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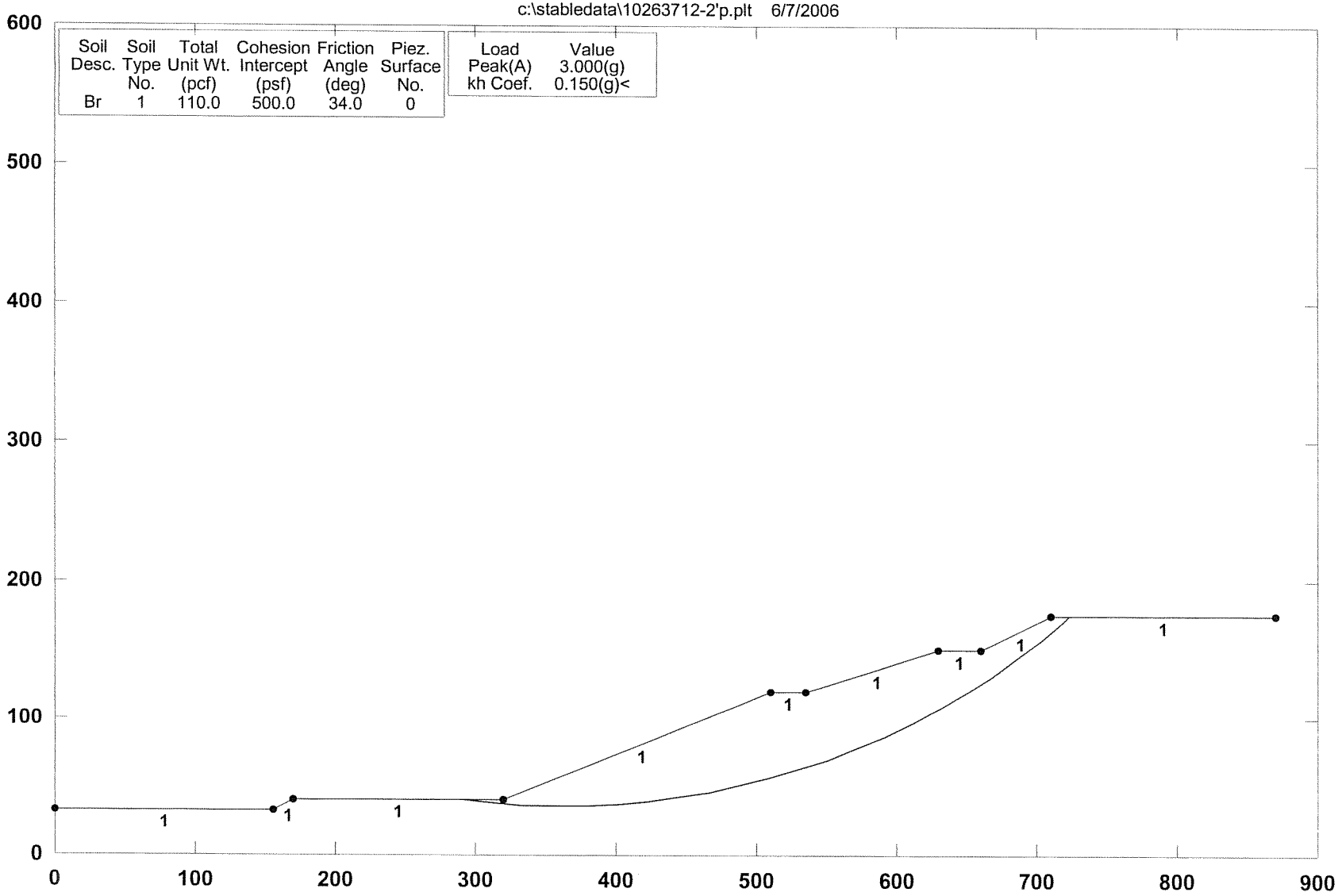

GSTABL7 v.2 FSmin=1.80

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

Plate C-12

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.0, September 2001 **
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****

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static Earthquake, and Applied Force Options.

****

Analysis Run Date: 6/6/2006
Time of Run:
Run By:
Input Data Filename: C:5-5'S.
Output Filename: C:5-5'S.OUT
Unit System: English
Plotted Output Filename: C:5-5'S.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 3-3'
W.O. 102637

BOUNDARY COORDINATES
16 Top Boundaries
16 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	100.00	30.00	102.00	1
2	30.00	102.00	65.00	103.00	1
3	65.00	103.00	95.00	107.00	1
4	95.00	107.00	127.00	115.00	1
5	127.00	115.00	207.00	148.00	1
6	207.00	148.00	225.00	160.00	1
7	225.00	160.00	270.00	190.00	1
8	270.00	190.00	295.00	204.00	1
9	295.00	204.00	332.00	218.00	1
10	332.00	218.00	360.00	219.00	1
11	360.00	219.00	383.00	232.00	1
12	383.00	232.00	470.00	260.00	1
13	470.00	260.00	525.00	267.00	1
14	525.00	267.00	568.00	267.00	1
15	568.00	267.00	583.00	263.00	1
16	583.00	263.00	620.00	250.00	1

ISOTROPIC SOIL PARAMETERS
1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
2000 Trial Surfaces Have Been Generated.
200 Surfaces Initiate From Each Of 10 Points Equally Spaced
Along The Ground Surface Between X = 65.00(ft)
and X = 207.00(ft)
Each Surface Terminates Between X = 332.00(ft)
and X = 610.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
27.00(ft) Line Segments Define Each Trial Failure Surface.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Evaluated = 2000
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	143.89	121.97
2	170.89	121.49

3	197.73	124.40
4	223.99	130.66
5	249.27	140.15
6	273.15	152.74
7	295.27	168.22
8	315.28	186.36
9	332.85	206.85
10	340.40	218.30

Circle Center At X = 161.4 ; Y = 334.8 and Radius, 213.6

Factor of Safety

*** **1.942** ***

Individual data on the 14 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	27.0	17239.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	26.8	46329.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	9.3	20990.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	17.0	46788.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	1.0	3190.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	24.3	86747.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	20.7	85455.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	3.2	13523.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	21.8	90103.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.3	1083.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	20.0	67332.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	16.7	34447.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.9	1095.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	7.6	4641.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION 3-3' W.O. 102637

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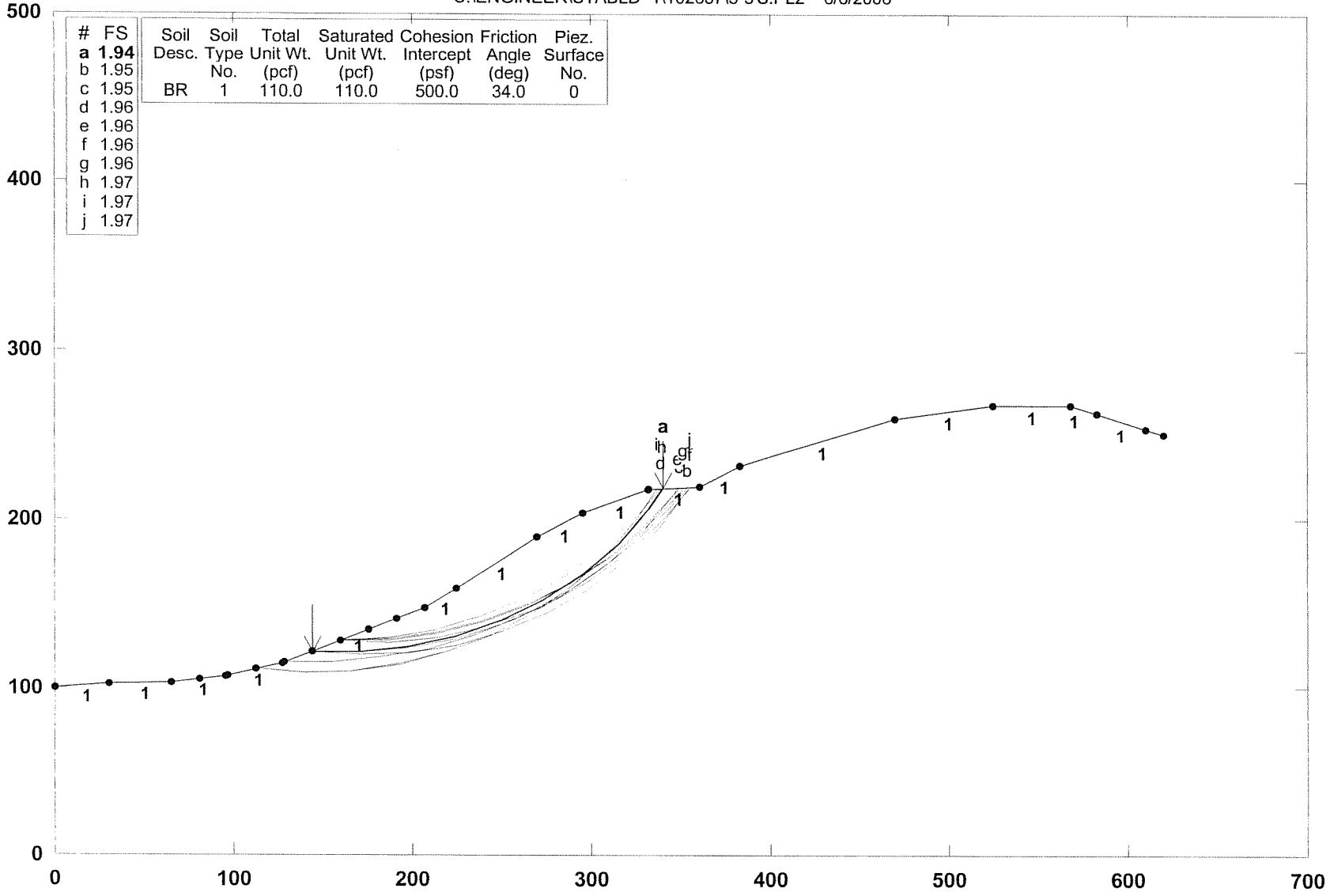
#	FS
a	**1.94**
b	1.95
c	1.95
d	1.96
e	1.96
f	1.96
g	1.96
h	1.97
i	1.97
j	1.97

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
BR	1	110.0	110.0	500.0	34.0	0



GSTABL7 v.2 FSmin=1.94

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Plate C-15

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.0, September 2001 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static Earthquake, and Applied Force Options.

Analysis Run Date: 6/6/2006
Time of Run:
Run By:
Input Data Filename: C:5-5'P.
Output Filename: C:5-5'P.OUT
Unit System: English
Plotted Output Filename: C:5-5'P.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 3-3'
W.O. 102637

BOUNDARY COORDINATES
16 Top Boundaries
16 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	100.00	30.00	102.00	1
2	30.00	102.00	65.00	103.00	1
3	65.00	103.00	95.00	107.00	1
4	95.00	107.00	127.00	115.00	1
5	127.00	115.00	207.00	148.00	1
6	207.00	148.00	225.00	160.00	1
7	225.00	160.00	270.00	190.00	1
8	270.00	190.00	295.00	204.00	1
9	295.00	204.00	332.00	218.00	1
10	332.00	218.00	360.00	219.00	1
11	360.00	219.00	383.00	232.00	1
12	383.00	232.00	470.00	260.00	1
13	470.00	260.00	525.00	267.00	1
14	525.00	267.00	568.00	267.00	1
15	568.00	267.00	583.00	263.00	1
16	583.00	263.00	620.00	250.00	1

ISOTROPIC SOIL PARAMETERS
1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0

A Horizontal Earthquake Loading Coefficient
Of0.150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of0.000 Has Been Assigned
Cavitation Pressure = 0.0(psf)
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	143.89	121.97
2	170.89	121.49
3	197.73	124.40
4	223.99	130.66
5	249.27	140.15
6	273.15	152.74
7	295.27	168.22
8	315.28	186.36
9	332.85	206.85

10 340.40 218.30

Janbu's Empirical Coefficient (fo) = 1.055

* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *

Factor Of Safety For The Preceding Specified Surface = 1.439

Table 1 - Individual Data on the 14 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	27.0	17247.7	0.0	0.0	0.0	0.0	2587.2	0.0	0.0
2	26.8	46339.0	0.0	0.0	0.0	0.0	6950.9	0.0	0.0
3	9.3	20988.6	0.0	0.0	0.0	0.0	3148.3	0.0	0.0
4	17.0	46775.6	0.0	0.0	0.0	0.0	7016.3	0.0	0.0
5	1.0	3201.2	0.0	0.0	0.0	0.0	480.2	0.0	0.0
6	24.3	86753.0	0.0	0.0	0.0	0.0	13013.0	0.0	0.0
7	20.7	85455.1	0.0	0.0	0.0	0.0	12818.3	0.0	0.0
8	3.1	13503.9	0.0	0.0	0.0	0.0	2025.6	0.0	0.0
9	21.9	90122.8	0.0	0.0	0.0	0.0	13518.4	0.0	0.0
10	0.3	1067.1	0.0	0.0	0.0	0.0	160.1	0.0	0.0
11	20.0	67348.8	0.0	0.0	0.0	0.0	10102.3	0.0	0.0
12	16.7	34443.4	0.0	0.0	0.0	0.0	5166.5	0.0	0.0
13	0.8	1090.3	0.0	0.0	0.0	0.0	163.5	0.0	0.0
14	7.6	4642.6	0.0	0.0	0.0	0.0	696.4	0.0	0.0

CROSS-SECTION 3-3' W.O. 102637

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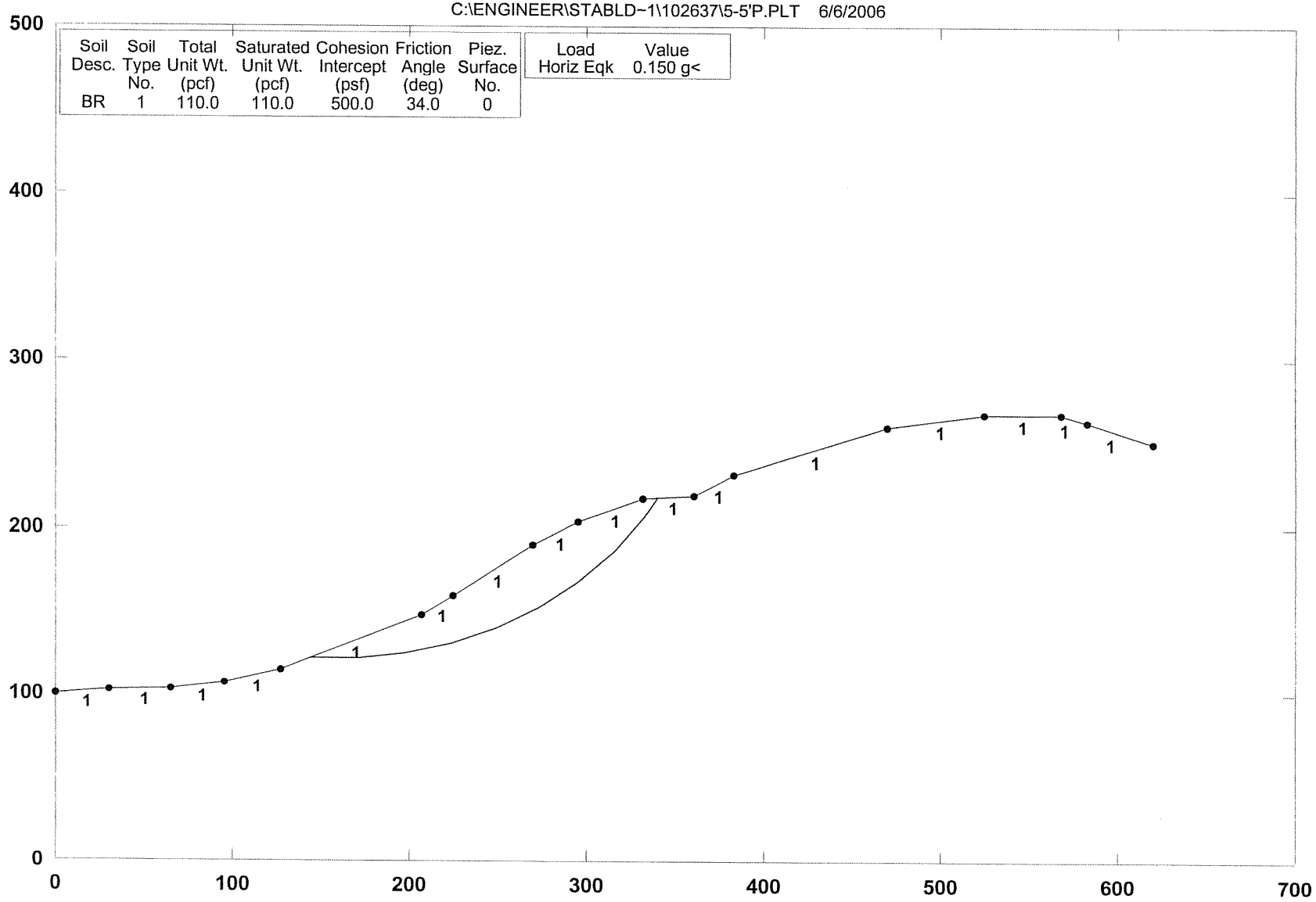
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
BR	1	110.0	110.0	500.0	34.0	0

Load	Value
Horiz Eqk	0.150 g<



GSTABL7 v.2 FSmin=1.44

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.0, September 2001 **
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****

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static Earthquake, and Applied Force Options.

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Analysis Run Date: 6/6/2006
Time of Run:
Run By:
Input Data Filename: C:6-6's.
Output Filename: C:6-6's.OUT
Unit System: English
Plotted Output Filename: C:6-6's.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 4-4'
W.O. 102637

BOUNDARY COORDINATES
11 Top Boundaries
16 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	105.00	30.00	95.00	1
2	30.00	95.00	67.00	85.00	2
3	67.00	85.00	75.00	85.00	2
4	75.00	85.00	160.00	117.00	2
5	160.00	117.00	180.00	128.00	1
6	180.00	128.00	188.00	137.00	1
7	188.00	137.00	325.00	220.00	1
8	325.00	220.00	407.00	263.00	1
9	407.00	263.00	440.00	263.00	1
10	440.00	263.00	450.00	265.00	1
11	450.00	265.00	600.00	265.00	1
12	30.00	95.00	33.00	90.00	1
13	33.00	90.00	60.00	72.00	1
14	60.00	72.00	75.00	72.00	1
15	75.00	72.00	152.00	108.00	1
16	152.00	108.00	160.00	117.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	115.0	115.0	220.0	24.0	0.00	0.0	0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
2000 Trial Surfaces Have Been Generated.
200 Surfaces Initiate From Each Of 10 Points Equally Spaced
Along The Ground Surface Between X = 60.00(ft)
and X = 90.00(ft)
Each Surface Terminates Between X = 325.00(ft)
and X = 550.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
30.00(ft) Line Segments Define Each Trial Failure Surface.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Evaluated = 2000
Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	86.67	89.39

2	116.60	91.38
3	146.33	95.39
4	175.72	101.40
5	204.64	109.38
6	232.96	119.30
7	260.53	131.11
8	287.25	144.75
9	312.98	160.18
10	337.61	177.30
11	361.03	196.06
12	383.12	216.35
13	403.79	238.09
14	422.95	261.18
15	424.26	263.00

Circle Center At X = 72.3 ; Y = 532.6 and Radius, 443.5

Factor of Safety

*** **1.630** ***

Individual data on the 21 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	29.8	15790.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.2	184.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	29.7	43272.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	5.7	10747.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	8.0	16074.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	15.7	37250.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	4.3	11681.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	8.0	25361.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	16.6	64004.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	28.3	128695.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	27.6	143753.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	26.7	150186.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	25.7	148483.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	12.0	68750.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	12.6	69901.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	23.4	118669.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	22.1	93522.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	20.7	65206.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	3.2	7805.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	15.9	20052.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	1.3	131.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CROSS-SECTION 4-4' W.O. 102637

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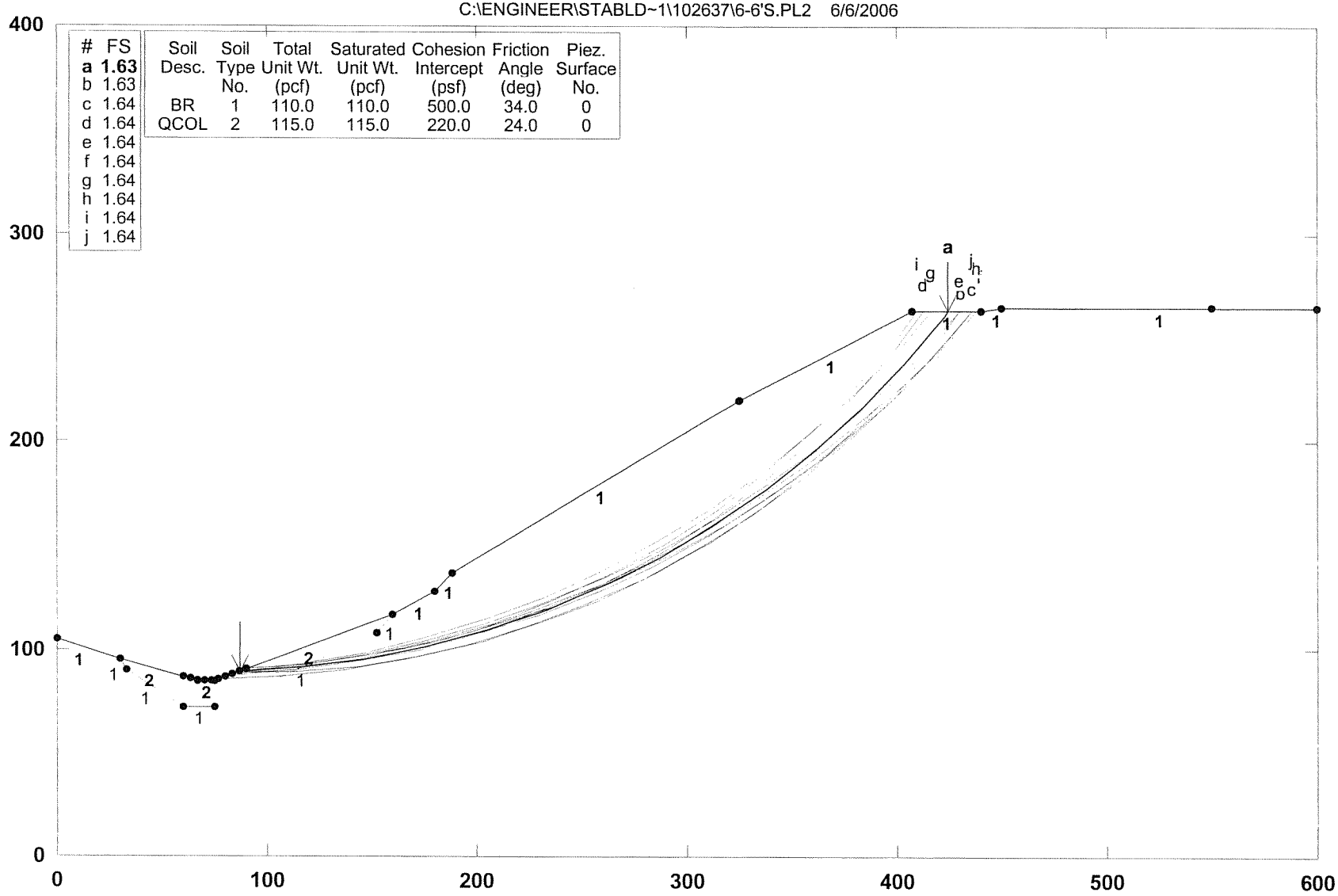

#	FS
a	**1.63**
b	1.63
c	1.64
d	1.64
e	1.64
f	1.64
g	1.64
h	1.64
i	1.64
j	1.64

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
BR	1	110.0	110.0	500.0	34.0	0
QCOL	2	115.0	115.0	220.0	24.0	0

GSTABL7 v.2 FSmin=1.63

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Plate C-21

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.0, September 2001 **
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****

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static Earthquake, and Applied Force Options.

****

Analysis Run Date: 6/6/2006
Time of Run:
Run By:
Input Data Filename: C:6-6'p.
Output Filename: C:6-6'p.OUT
Unit System: English
Plotted Output Filename: C:6-6'p.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 4-4'
W.O. 102637

BOUNDARY COORDINATES
11 Top Boundaries
16 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	105.00	30.00	95.00	1
2	30.00	95.00	67.00	85.00	2
3	67.00	85.00	75.00	85.00	2
4	75.00	85.00	160.00	117.00	2
5	160.00	117.00	180.00	128.00	1
6	180.00	128.00	188.00	137.00	1
7	188.00	137.00	325.00	220.00	1
8	325.00	220.00	407.00	263.00	1
9	407.00	263.00	440.00	263.00	1
10	440.00	263.00	450.00	265.00	1
11	450.00	265.00	600.00	265.00	1
12	30.00	95.00	33.00	90.00	1
13	33.00	90.00	60.00	72.00	1
14	60.00	72.00	75.00	72.00	1
15	75.00	72.00	152.00	108.00	1
16	152.00	108.00	160.00	117.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	115.0	115.0	220.0	24.0	0.00	0.0	0

A Horizontal Earthquake Loading Coefficient
Of0.150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of0.000 Has Been Assigned
Cavitation Pressure = 0.0(psf)
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	86.67	89.39
2	116.60	91.38
3	146.33	95.39
4	175.72	101.40
5	204.64	109.38
6	232.96	119.30
7	260.53	131.11
8	287.25	144.75

9	312.98	160.18
10	337.61	177.30
11	361.03	196.06
12	383.12	216.35
13	403.79	238.09
14	422.95	261.18
15	424.26	263.00

Janbu's Empirical Coefficient (fo) = 1.047

* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *

Factor Of Safety For The Preceding Specified Surface = 1.221

Table 1 - Individual Data on the 21 Slices

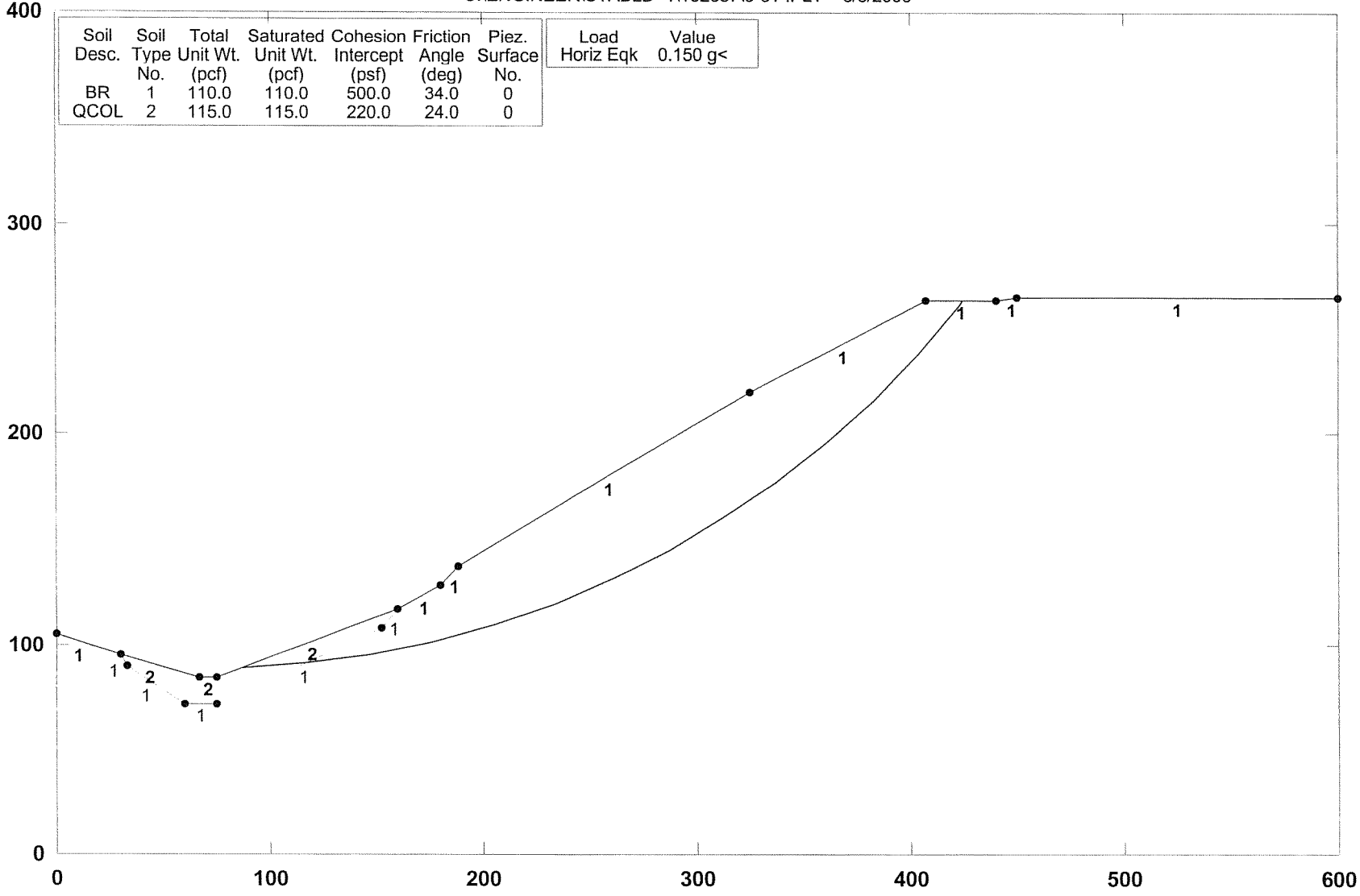
Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	29.8	15788.7	0.0	0.0	0.0	0.0	2368.3	0.0	0.0
2	0.2	183.9	0.0	0.0	0.0	0.0	27.6	0.0	0.0
3	29.7	43264.8	0.0	0.0	0.0	0.0	6489.7	0.0	0.0
4	5.7	10749.6	0.0	0.0	0.0	0.0	1612.4	0.0	0.0
5	8.0	16071.2	0.0	0.0	0.0	0.0	2410.7	0.0	0.0
6	15.7	37230.2	0.0	0.0	0.0	0.0	5584.5	0.0	0.0
7	4.3	11691.1	0.0	0.0	0.0	0.0	1753.7	0.0	0.0
8	8.0	25357.4	0.0	0.0	0.0	0.0	3803.6	0.0	0.0
9	16.6	63984.1	0.0	0.0	0.0	0.0	9597.6	0.0	0.0
10	28.3	128719.6	0.0	0.0	0.0	0.0	19307.9	0.0	0.0
11	27.6	143704.6	0.0	0.0	0.0	0.0	21555.7	0.0	0.0
12	26.7	150209.4	0.0	0.0	0.0	0.0	22531.4	0.0	0.0
13	25.7	148473.7	0.0	0.0	0.0	0.0	22271.1	0.0	0.0
14	12.0	68756.4	0.0	0.0	0.0	0.0	10313.5	0.0	0.0
15	12.6	69894.4	0.0	0.0	0.0	0.0	10484.2	0.0	0.0
16	23.4	118693.6	0.0	0.0	0.0	0.0	17804.0	0.0	0.0
17	22.1	93504.2	0.0	0.0	0.0	0.0	14025.6	0.0	0.0
18	20.7	65203.2	0.0	0.0	0.0	0.0	9780.5	0.0	0.0
19	3.2	7815.5	0.0	0.0	0.0	0.0	1172.3	0.0	0.0
20	15.9	20055.3	0.0	0.0	0.0	0.0	3008.3	0.0	0.0
21	1.3	131.1	0.0	0.0	0.0	0.0	19.7	0.0	0.0

CROSS-SECTION 4-4' W.O. 102637

C:\ENGINEER\STABLD~1\102637\6-6'P.PLT 6/6/2006

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
BR	1	110.0	110.0	500.0	34.0	0
QCOL	2	115.0	115.0	220.0	24.0	0

Load	Value
Horiz Eqk	0.150 g<

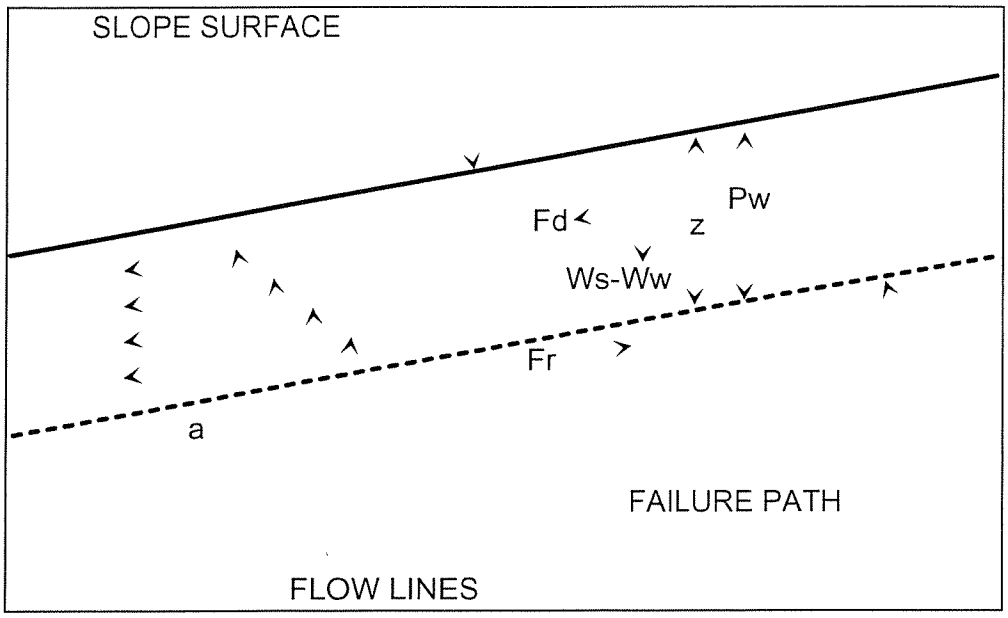


GSTABL7 v.2 FSmin=1.22

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

SURFICIAL STABILITY ANALYSIS



Assume: (1) Saturation To Slope Surface
(2) Sufficient Permeability To Establish Water Flow

Pw = Water Pressure Head=(z)(cos^2(a))
Ws = Saturated Soil Unit Weight
Ww = Unit Weight of Water (62.4 lb/cu.ft.)
u = Pore Water Pressure=(Ww)(z)(cos^2(a))
z = Layer Thickness
a = Angle of Slope
phi = Angle of Friction
c = Cohesion
Fd = (0.5)(z)(Ws)(sin(2a))
Fr = (z)(Ws-Ww)(cos^2(a))(tan(phi)) + c
Factor of Safety (FS) = Fr/Fd

2:1 Compacted Fill Slope

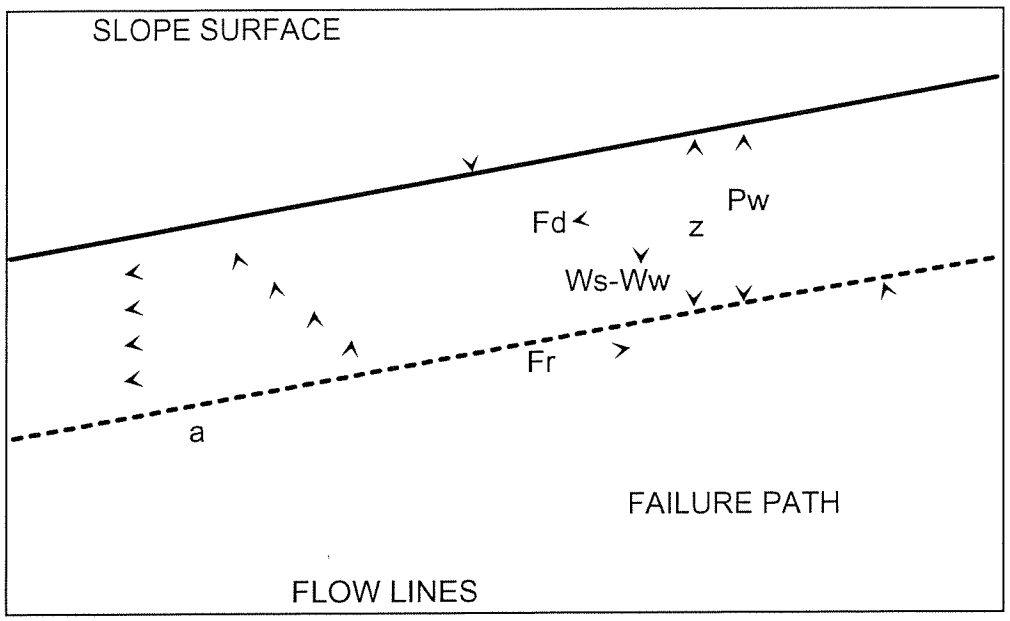
Given:

Ws (pcf)	z (ft)	a (degrees)	a (radians)	phi (degrees)	phi (radians)	c (psf)
110	4	26.6	0.464259	28	0.488693	400

Calculations:

Pw	u	Fd	Fr	**FS**
3.20	199.56	176.16	480.94	**2.73**

SURFICIAL STABILITY ANALYSIS



Assume: (1) Saturation To Slope Surface
(2) Sufficient Permeability To Establish Water Flow

Pw = Water Pressure Head=(z)(cos^2(a))
Ws = Saturated Soil Unit Weight
Ww = Unit Weight of Water (62.4 lb/cu.ft.)
u = Pore Water Pressure=(Ww)(z)(cos^2(a))
z = Layer Thickness
a = Angle of Slope
phi = Angle of Friction
c = Cohesion
Fd = (0.5)(z)(Ws)(sin(2a))
Fr = (z)(Ws-Ww)(cos^2(a))(tan(phi)) + c
Factor of Safety (FS) = Fr/Fd

2:1 Cut Slope

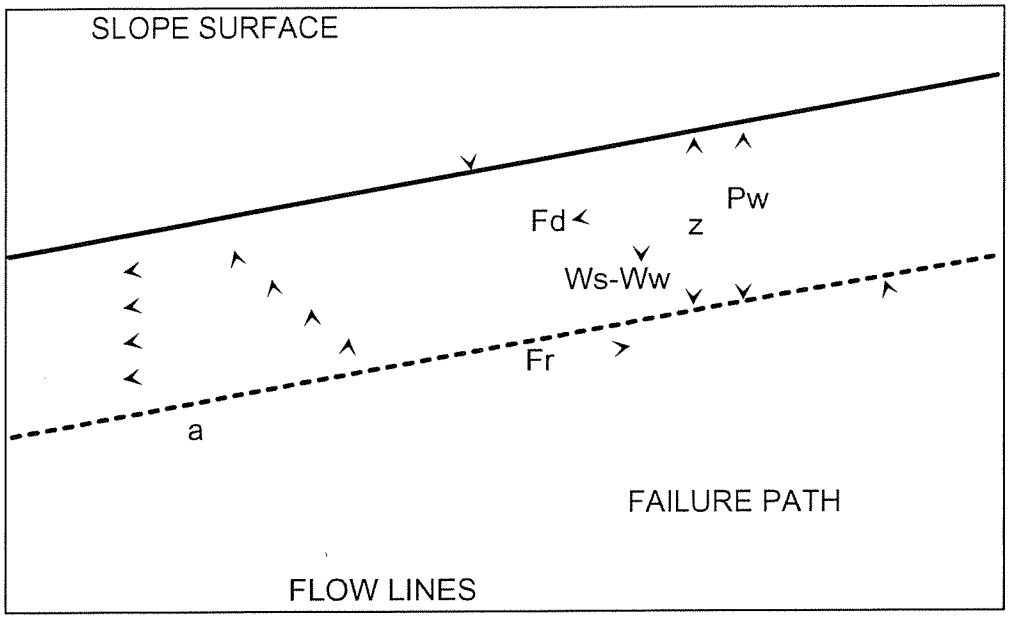
Given:

Ws (pcf)	z (ft)	a (degrees)	a (radians)	phi (degrees)	phi (radians)	c (psf)
110	4	26.6	0.464259	34	0.593413	500

Calculations:

Pw	u	Fd	Fr	**FS**
3.20	199.56	176.16	602.68	**3.42**

SURFICIAL STABILITY ANALYSIS



Assume: (1) Saturation To Slope Surface
(2) Sufficient Permeability To Establish Water Flow

Pw = Water Pressure Head=(z)(cos^2(a))
Ws = Saturated Soil Unit Weight
Ww = Unit Weight of Water (62.4 lb/cu.ft.)
u = Pore Water Pressure=(Ww)(z)(cos^2(a))
z = Layer Thickness
a = Angle of Slope
phi = Angle of Friction
c = Cohesion
Fd = (0.5)(z)(Ws)(sin(2a))
Fr = (z)(Ws-Ww)(cos^2(a))(tan(phi)) + c
Factor of Safety (FS) = Fr/Fd

2:1 Natural Slope

Given:

Ws	z	a		phi		c
(pcf)	(ft)	(degrees)	(radians)	(degrees)	(radians)	(psf)
115	4	26.6	0.464259	24	0.41888	220

Calculations:

Pw	u	Fd	Fr	**FS**
3.20	199.56	184.17	294.90	**1.60**

July 10, 2006
Work Order 102637

APPENDIX II

SEISMIC GROUND MOTION ASSESSMENT

APPENDIX II

TABLE A

CLOSEST DISTANCES BETWEEN SITE AND FAULT RUPTURES

No.	Fault Name	CD_1DRP	CD_2DRP	CDIST	CLODIS	CD_EPI	CD_HYPO
1	SIMI-SANTA ROSA	12.7	12.7	12.8	12.8	13.3	13.4 km
2	SANTA SUSANA	15.2	15.2	15.2	15.2	15.8	15.9 km
3	MALIBU COAST	17.0	13.5	16.4	16.4	13.8	16.4 km
4	NORTHRIDGE (E. Oak Ridge)	19.4	2.7	16.7	16.7	3.6	16.7 km
5	SANTA MONICA	19.9	16.4	19.2	19.2	16.7	19.2 km
6	SIERRA MADRE (San Fernando)	21.0	21.0	21.0	21.0	22.1	22.1 km
7	ANACAPA-DUME	23.2	11.1	18.2	18.2	12.2	18.9 km
8	OAK RIDGE (Onshore)	23.5	17.8	21.9	21.9	18.7	22.3 km
9	VERDUGO	23.7	23.7	23.7	23.7	25.0	25.0 km
10	HOLLYWOOD	26.6	22.9	25.6	25.6	23.9	26.2 km
11	HOLSER	27.2	21.1	24.6	24.6	21.6	24.6 km
12	SAN CAYETANO	28.1	28.1	28.1	28.1	28.6	28.6 km
13	SAN GABRIEL	28.2	28.2	28.2	28.2	28.2	28.3 km
14	PALOS VERDES	28.4	28.4	28.4	28.4	29.3	29.3 km
15	NEWPORT-INGLEWOOD (L.A. Basin)	30.2	30.2	30.2	30.2	31.2	31.2 km
16	UPPER ELYSIAN PARK BLIND THRUST	35.0	35.0	35.1	35.1	36.2	36.4 km
17	SIERRA MADRE	35.7	35.7	35.7	35.7	36.9	36.9 km
18	PUENTE HILLS BLIND THRUST	36.9	36.9	37.2	37.2	38.2	38.6 km
19	RAYMOND	41.4	41.0	41.3	41.3	42.1	42.4 km
20	VENTURA - PITAS POINT	47.0	47.0	47.0	47.0	47.8	47.8 km
21	SANTA YNEZ (East)	49.2	46.9	48.4	48.4	47.3	48.6 km
22	OAK RIDGE (Blind Thrust Offshore)	54.7	54.0	54.7	54.7	55.1	55.8 km
23	M.RIDGE-ARROYO PARIDA-SANTA ANA	55.5	55.5	55.5	55.5	56.4	56.4 km
24	OAK RIDGE MID-CHANNEL STRUCTURE	56.6	56.6	56.9	56.9	58.0	58.2 km
25	SAN ANDREAS - Whole M-1a	57.2	57.2	57.2	57.2	57.2	57.5 km
26	SAN ANDREAS - 1857 Rupture M-2a	57.2	57.2	57.2	57.2	57.2	57.4 km
27	SAN ANDREAS - Cho-Moj M-1b-1	57.2	57.2	57.2	57.2	57.2	57.2 km
28	SAN ANDREAS - Mojave M-1c-3	57.2	57.2	57.2	57.2	57.2	57.2 km
29	SAN ANDREAS - Carrizo M-1c-2	58.1	58.1	58.1	58.1	58.2	58.2 km
30	CHANNEL IS. THRUST (Eastern)	60.4	55.1	56.4	56.4	56.2	57.5 km
31	RED MOUNTAIN	61.2	61.2	61.2	61.2	62.0	62.0 km
32	CLAMSHELL-SAWPIT	61.2	54.6	56.1	56.1	55.9	57.2 km
33	WHITTIER	63.7	63.7	63.7	63.7	64.8	64.8 km
34	GARLOCK (West)	73.2	73.2	73.2	73.2	73.2	73.4 km
35	SAN JOSE	74.2	71.8	73.0	73.0	72.8	73.8 km
36	BIG PINE	75.3	75.3	75.3	75.3	75.3	75.3 km
37	SANTA CRUZ ISLAND	81.4	81.4	81.4	81.4	82.5	82.5 km
38	PLEITO THRUST	84.9	74.1	74.9	74.9	75.1	75.8 km
39	CUCAMONGA	86.4	81.1	82.2	82.2	82.4	83.3 km
40	CHINO-CENTRAL AVE. (Elsinore)	86.4	81.8	83.1	83.1	82.9	84.1 km
41	SAN JOAQUIN HILLS	87.1	87.1	87.1	87.1	88.6	88.6 km
42	NORTH CHANNEL SLOPE	94.6	94.6	95.0	95.0	95.7	96.2 km
43	SANTA YNEZ (West)	94.9	94.9	94.9	94.9	95.9	96.0 km
44	NEWPORT-INGLEWOOD (Offshore)	96.1	96.1	96.1	96.1	97.2	97.2 km

EXPLANATION

CD_1DRP = Closest distance to projection of rupture area along fault trace.
CD_2DRP = Closest distance to surface projection of the rupture area.
CDIST = Closest distance to seismogenic rupture.
CLODIS = Closest distance to subsurface rupture.
CD_EPI = Closest epicentral distance.
CD_HYPO = Closest hypocentral distance.

July 10, 2006
Work Order 102637

APPENDIX II

EARTHQUAKE EPICENTER MAP

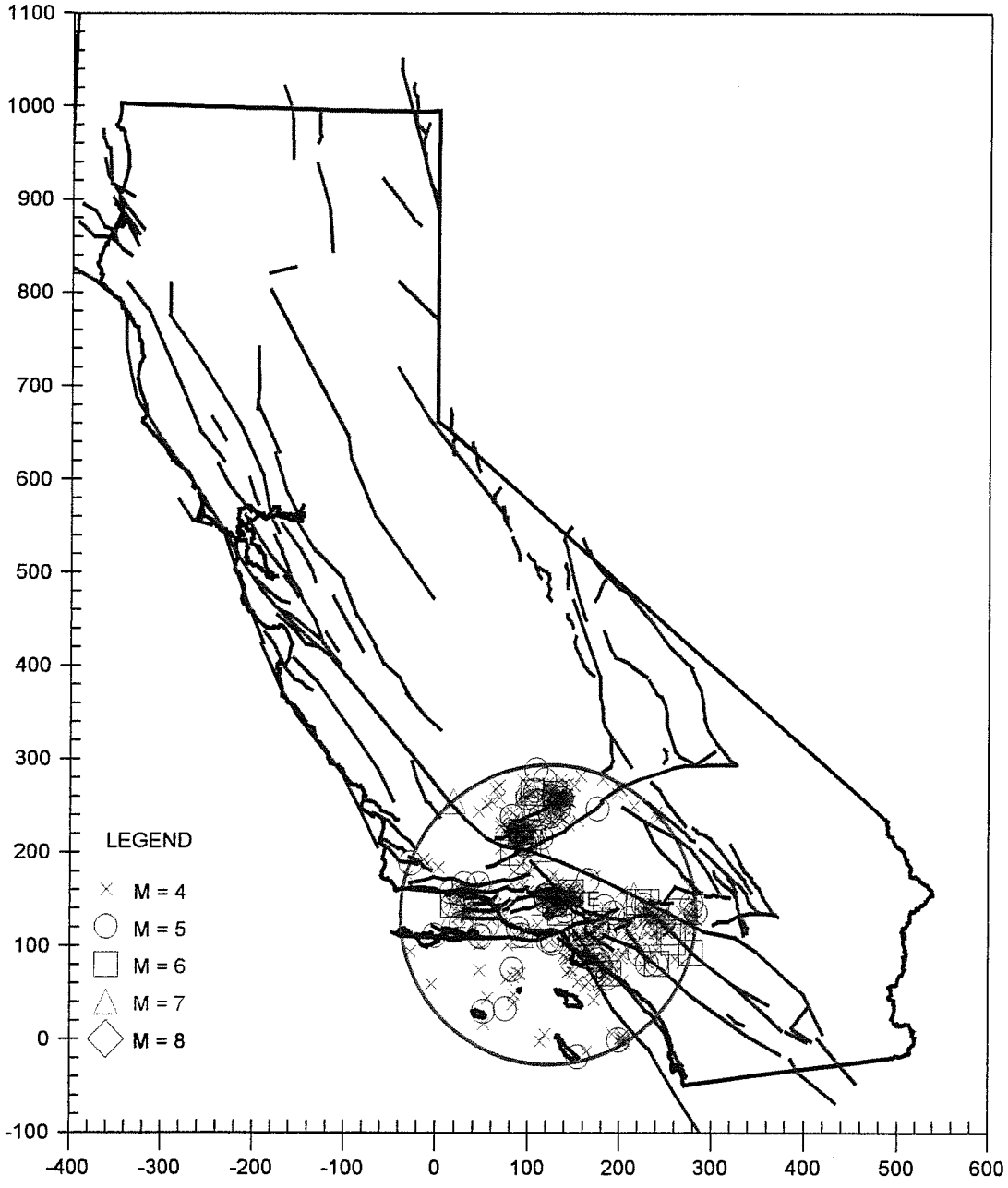
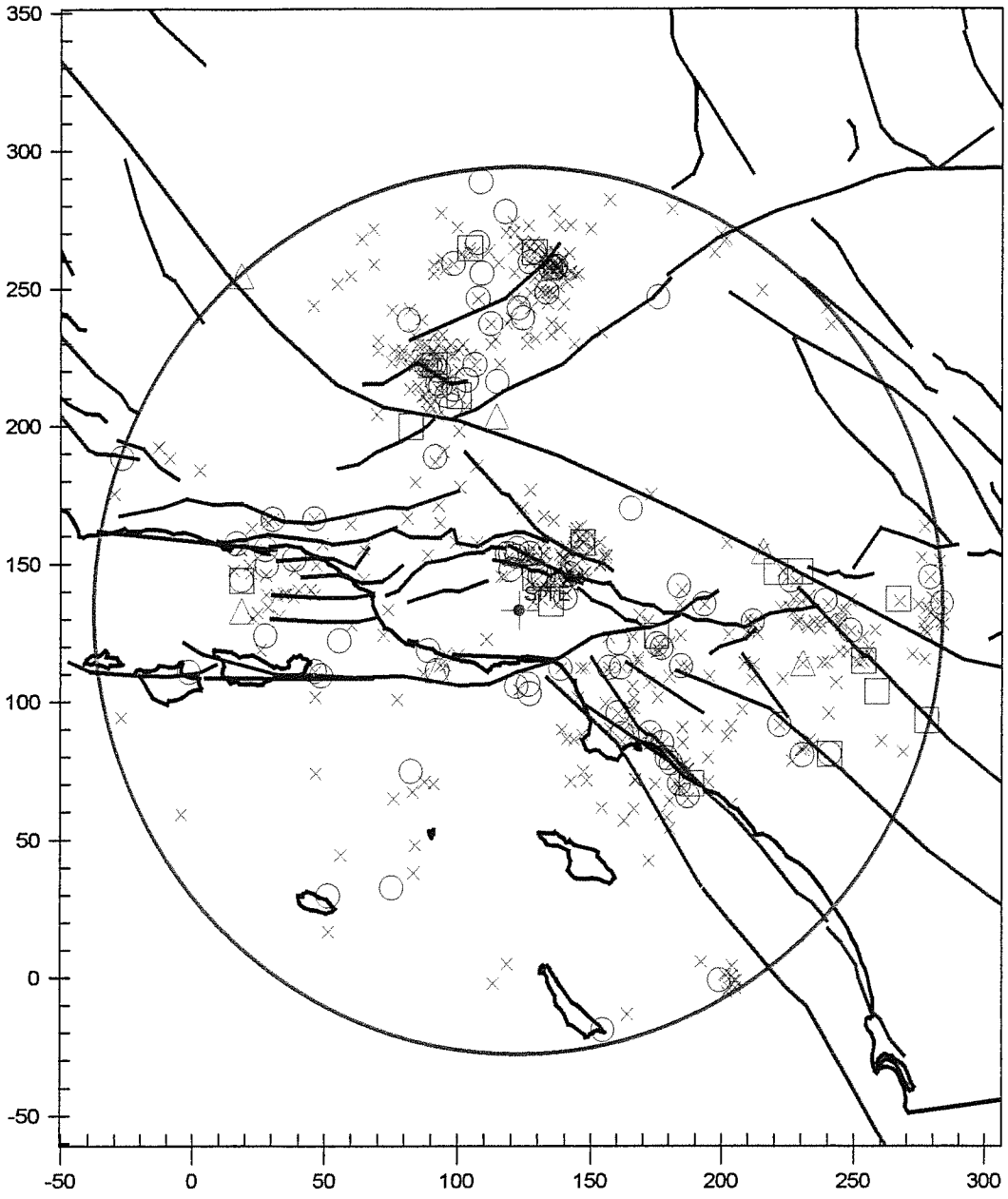


Figure A

July 10, 2006
Work Order 102637

APPENDIX II

EARTHQUAKE EPICENTER MAP



See Figure A for Legend
Figure B

July 10, 2006
Work Order 102637

APPENDIX II

CALIFORNIA FAULT MAP

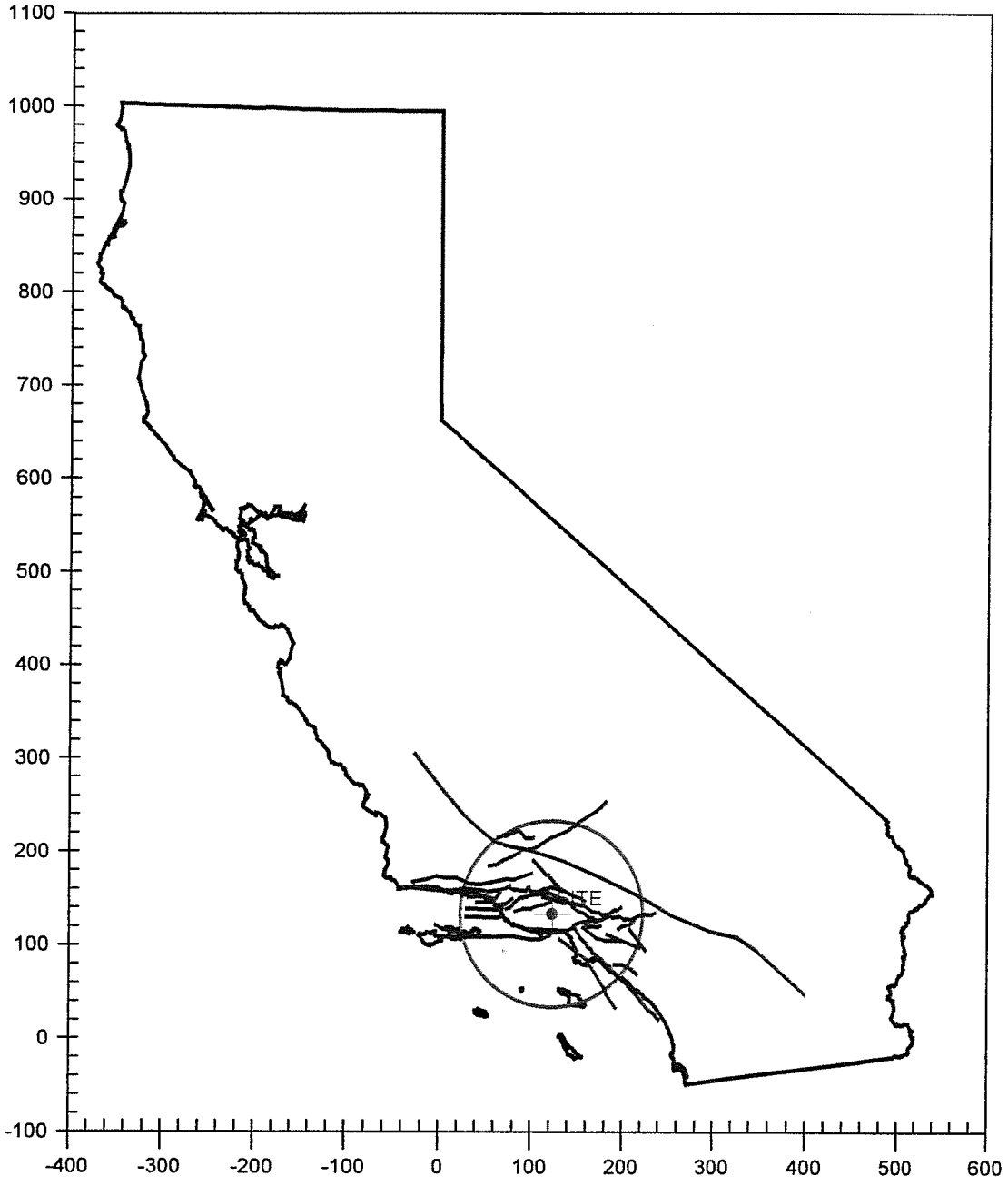


Figure C

July 10, 2006
Work Order 102637

APPENDIX II

CALIFORNIA FAULT MAP

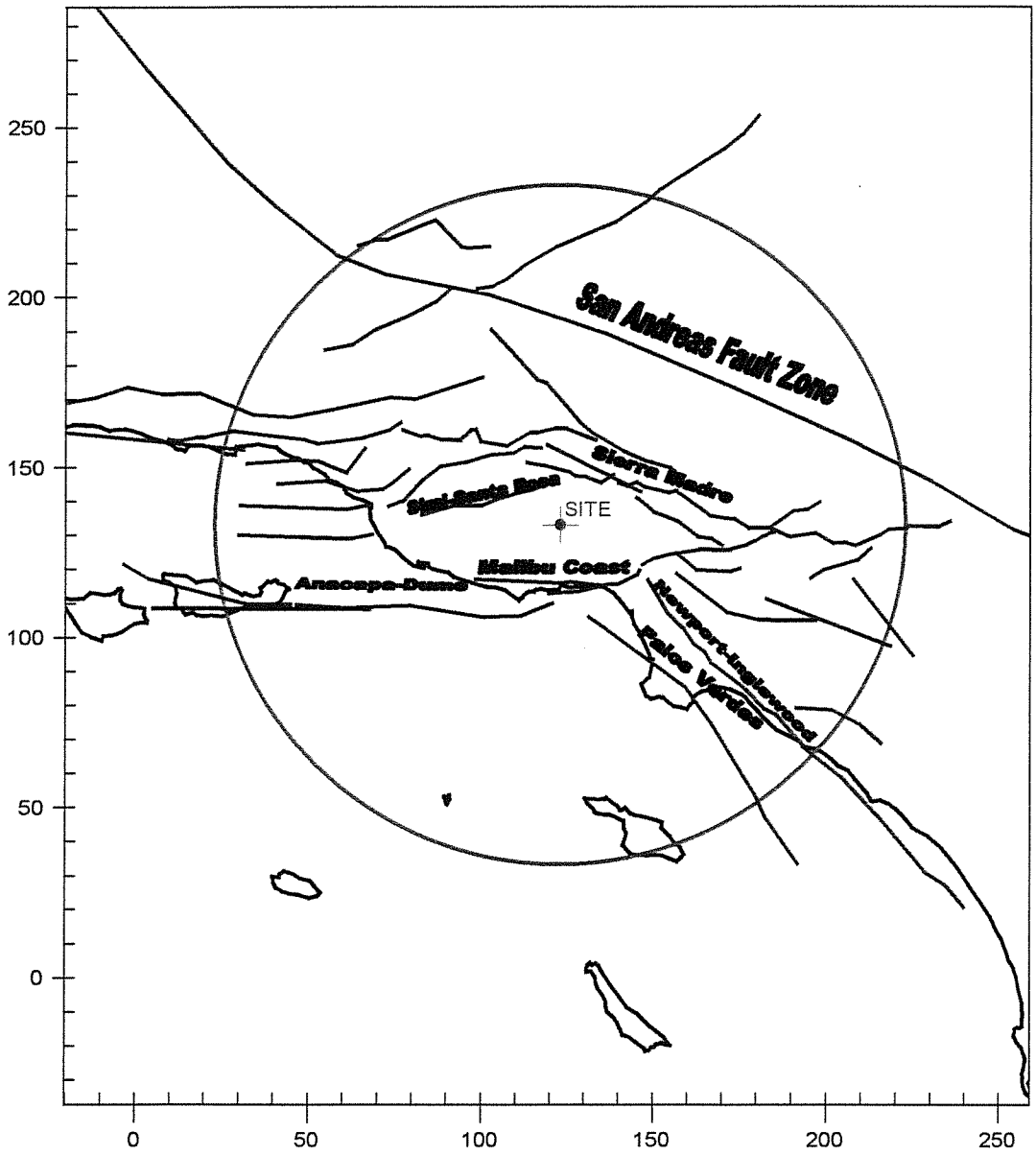


Figure D

APPENDIX II

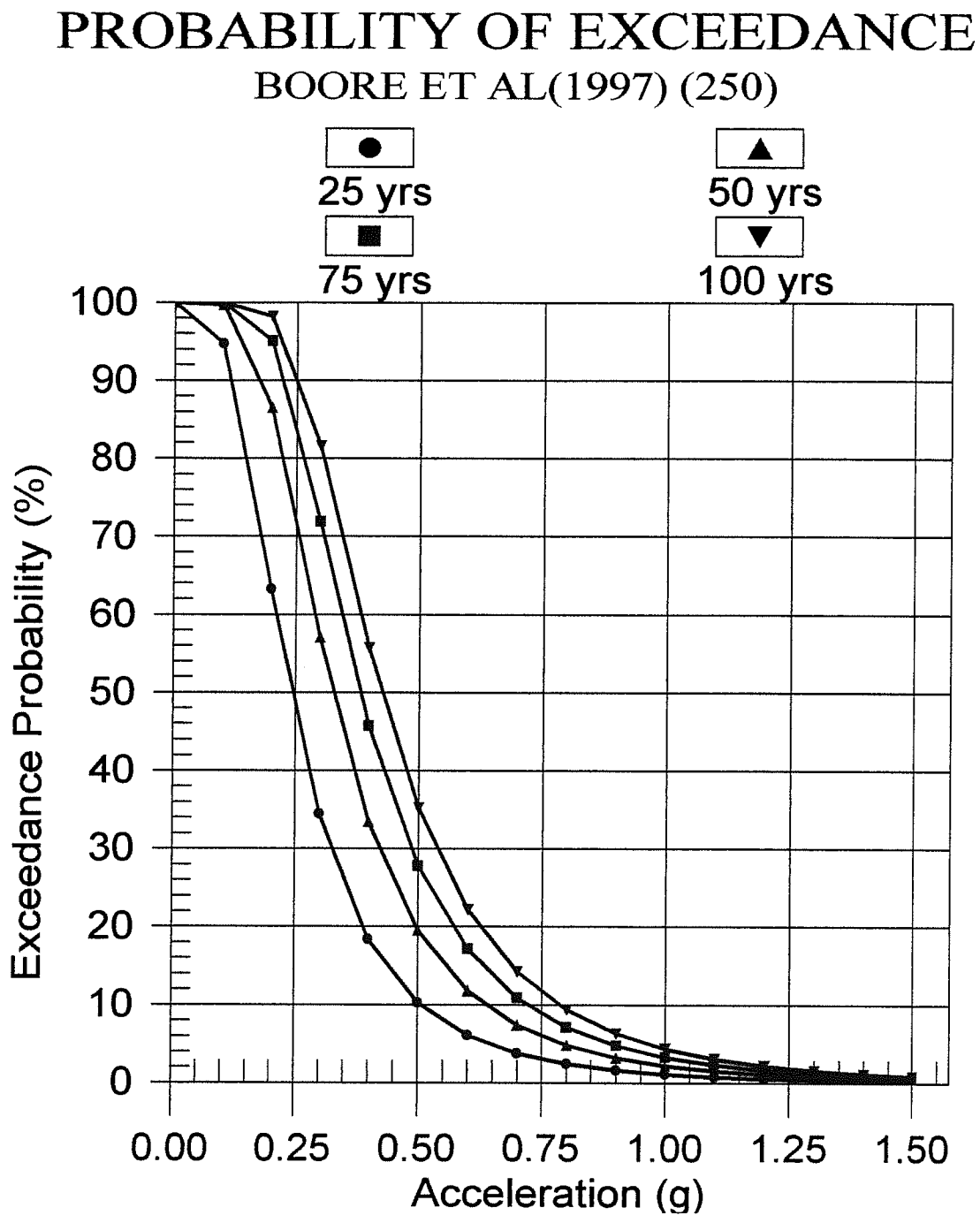


Figure E

July 10, 2006
Work Order 102637

APPENDIX II

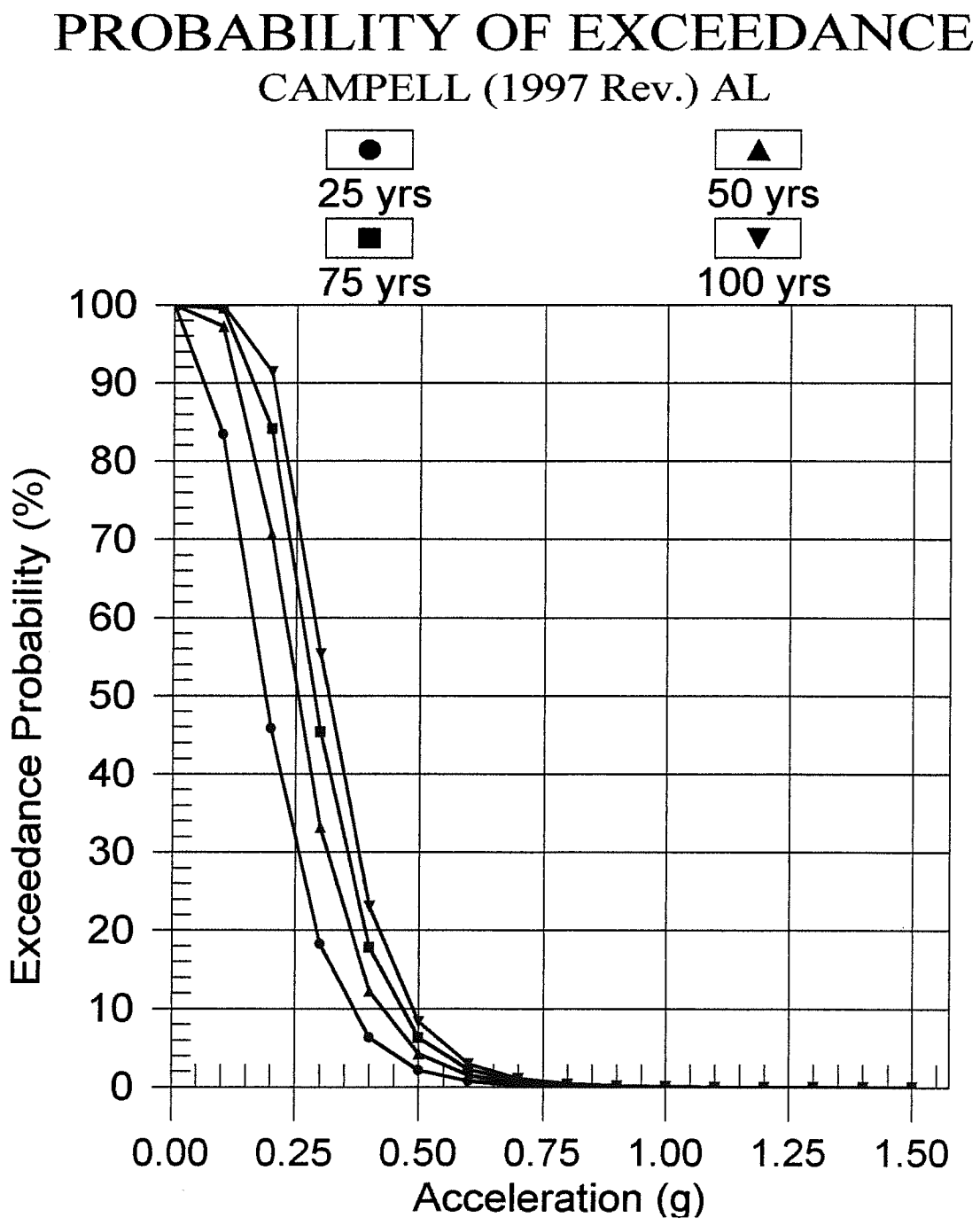


Figure F

APPENDIX II

PROBABILITY OF EXCEEDANCE

SADIGH ET AL. (1997) DEEP SOIL

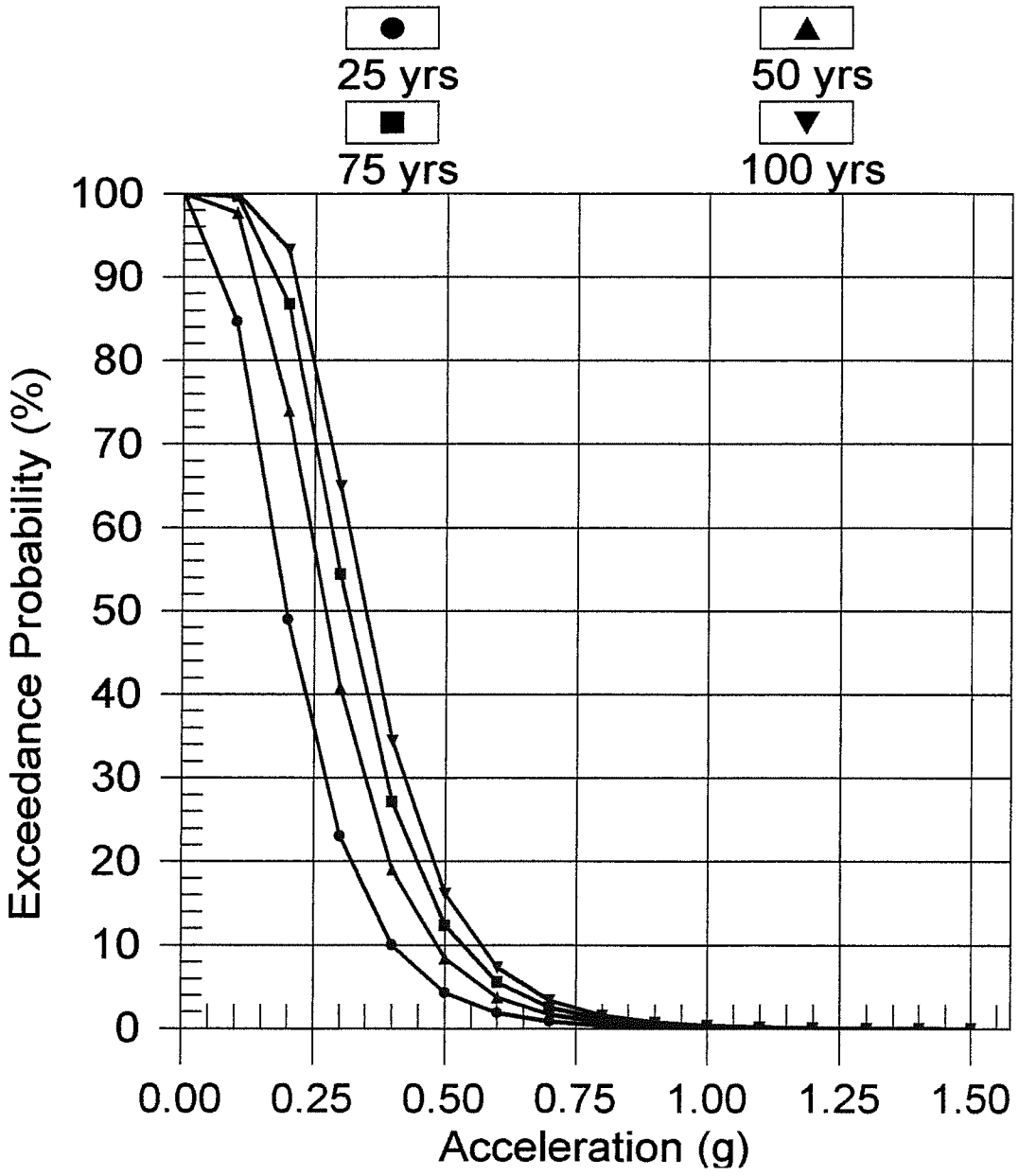


Figure G

July 10, 2006
Work Order 102637

APPENDIX III

EARTHWORK SPECIFICATIONS AND

TYPICAL GRADING/CONSTRUCTION DETAILS

PACIFIC SOILS ENGINEERING, INC.

EARTHWORK SPECIFICATIONS

These specifications present generally accepted standards and minimum earthwork requirements for the development of the project. These specifications shall be the project guidelines for earthwork except where specifically superceded in preliminary geology and soils reports, grading plan review reports or by prevailing grading codes or ordinances of the controlling agency.

I. GENERAL

A. The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications.

B. The project Soils Engineer and Engineering Geologist or their representatives shall provide testing services and geotechnical consultation during the duration of the project.

C. All clearing, grubbing, stripping and site preparation for the project shall be accomplished by the Contractor to the satisfaction of the Soils Engineer.

D. It is the Contractor's responsibility to prepare the ground surface to receive the fills to the satisfaction of the Soils Engineer and to place, spread, mix and compact the fill in accordance with the job specifications and as required by the Soils Engineer. The Contractor shall also remove all material considered by the Soils Engineer to be unsuitable for use in the construction of compacted fill.

E. The Contractor shall have suitable and sufficient equipment in operation to handle the amount of fill being placed. When necessary, equipment will be shut down temporarily in order to permit proper compaction of fills.

II. SITE PREPARATION

A. Excessive vegetation and all deleterious material shall be disposed of offsite as required by the Soils Engineer. Existing fill, soil, alluvium or rock materials determined by the Soils Engineer as being unsuitable for placement in compacted fills shall be removed and wasted from the site. Where applicable, the Contractor may obtain the approval of the Soils Engineer and the controlling authorities for the project to dispose of the above described materials, or a portion thereof, in designated areas onsite.

After removals as described above have been accomplished, excavation of earth materials deemed unsuitable in their natural, in-place condition, shall be removed as recommended by the Soils Engineer/Engineering Geologist.

B. After the removals as delineated in Item II, A above, the exposed surfaces shall be disced or bladed by the Contractor to the satisfaction of the Soils Engineer. The prepared ground surfaces shall then be brought to the specified moisture condition, mixed as required, and compacted and tested as specified. In areas where it is necessary to obtain the approval of the controlling agency, prior to placing fill, it will be the Contractor's responsibility to notify the proper authorities.

C. Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipelines or others not located prior to grading are to be removed or treated in a manner prescribed by the Soils Engineer and/or the controlling agency for the project.

III. COMPACTED FILLS

A. Any material imported or excavated on the property may be utilized in the fill, provided each material has been determined to be suitable by the Soils Engineer. Deleterious material not disposed of during clearing or demolition shall be removed from the fill as directed by the Soils Engineer.

B. Rock or rock fragments less than eight inches in the largest dimension may be utilized in the fill, provided they are not placed in concentrated pockets and the distribution of the rocks is approved by the Soils Engineer.

C. Rocks greater than eight inches in the largest dimension shall be taken offsite, or placed in accordance with the recommendations of the Soils Engineer in areas designated as suitable for rock disposal.

D. All fills, including onsite and import materials to be used for fill, shall be tested in the laboratory by the Soils Engineer. Proposed import materials shall be approved prior to importation.

E. The fill materials shall be placed by the Contractor in layers that when compacted shall not exceed six inches. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to obtain a near uniform moisture condition and a uniform blend of materials.

All compaction shall be achieved at optimum moisture content or above, as determined by the applicable laboratory standard. No upper limit on the moisture content is necessary; however, the Contractor must achieve the necessary compaction and will be alerted when the material is too wet and compaction cannot be attained.

F. Where the moisture content of the fill material is below the limit specified by the Soils Engineer, water shall be added and the materials shall be blended until a uniform moisture content, within specified limits, is achieved. Where the moisture content of the fill material is above the limits specified by the Soils Engineer, the fill materials shall be aerated by discing, blading or other satisfactory methods until the moisture content is within the limits specified.

G. Each fill layer shall be compacted to minimum project standards, in compliance with the testing methods specified by the controlling governmental agency and in accordance with the recommendations of the Soils Engineer.

In the absence of specific recommendations by the Soils Engineer to the contrary, the compaction standard shall be ASTM:D 1557-91.

H. Where a slope receiving fill exceeds a ratio of five-horizontal to one-vertical, the fill shall be keyed and benched through all unsuitable topsoil, colluvium, alluvium, or creep material, into sound bedrock or firm material, in accordance with the recommendations and approval of the Soils Engineer.

I. Side hill fills shall have a <u>minimum key width</u> of 15 feet into bedrock or firm materials, unless otherwise specified in the soils report and approved by the Soils Engineer in the field.

J. Drainage terraces and subdrainage devices shall be constructed in compliance with the ordinances of the controlling governmental agency and/or with the recommendations of the Soils Engineer and Engineering Geologist.

K. The Contractor shall be required to maintain the specified minimum relative compaction out to the finish slope face of the fill slopes, buttresses, and stabilization fills as directed by the Soils Engineer and/or the governing agency for the project. This may be achieved by either overbuilding the slope and cutting back to the compacted core, or by direct compaction of the slope face with suitable equipment, or by any other procedure which produces the designated result.

L. Fill-over-cut slopes shall be properly keyed through topsoil, colluvium or creep material into rock or firm material; and the transition shall be stripped of all soil or unsuitable materials prior to placing fill.

The cut portion should be made and evaluated by the Engineering Geologist prior to placement of fill above.

M. Pad areas in natural ground and cut shall be approved by the Soils Engineer. Finished surfaces of these pads may require scarification and recompaction.

IV. CUT SLOPES

A. The Engineering Geologist shall inspect all cut slopes and shall be notified by the Contractor when cut slopes are started.

B. If, during the course of grading, unforeseen adverse or potentially adverse geologic conditions are encountered, the Engineering Geologist and Soils Engineer shall investigate, analyze and make recommendations to treat these problems.

C. Non-erodible interceptor swales shall be placed at the top of cut slopes that face the same direction as the prevailing drainage.

D. Unless other specified in the soils or geological reports, no cut slope shall be excavated higher or steeper than that allowed by the ordinances of the controlling governmental agencies.

E. Drainage terraces shall be constructed in compliance with the ordinances of the controlling governmental agencies, and/or in accordance with the recommendations of the Soils Engineer or Engineering Geologist.

V. GRADING CONTROL

A. Fill placement shall be observed by the Soils Engineer and/or his representative during the progress of grading.

Field density tests shall be made by the Soils Engineer or his representative to evaluate the compaction and moisture compliance of each layer of fill. Density tests shall be performed at intervals not to exceed two feet of fill height. Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several inches. Density determinations shall be taken in the compacted material below the disturbed surface at a depth determined by the Soils Engineer or his representative.

B. Where tests indicate that the density of any layer of fill, or portion thereof, is below the required relative compaction, or improper moisture is in evidence, the particular layer or portion shall be reworked until the required density and/or moisture content has been attained. No addi-

tional fill shall be placed over an area until the last placed lift of fill has been tested and found to meet the density and moisture requirements and that lift approved by the Soils Engineer.

C. Where the work is interrupted by heavy rains, fill operations shall not be resumed until field observations and tests by the Soils Engineer indicate the moisture content and density of the fill are within the limits previously specified.

D. During construction, the Contractor shall properly grade all surfaces to maintain good drainage and prevent ponding of water. The Contractor shall take remedial measures to control surface water and to prevent erosion of graded areas until such time as permanent drainage and erosion control measures have been installed.

E. Observation and testing by the Soils Engineer shall be conducted during the filling and compacting operations in order that he will be able to state in his opinion all cut and filled areas are graded in accordance with the approved specifications.

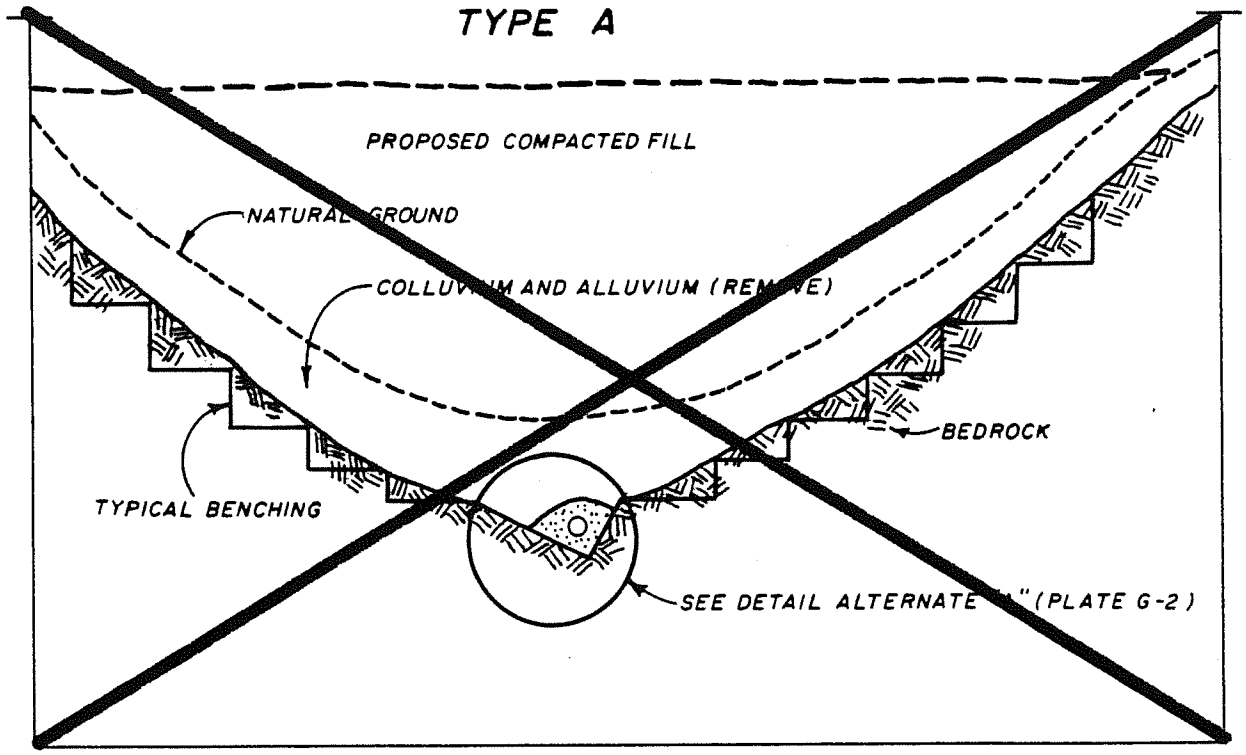
F. After completion of grading and after the Soils Engineer and Engineering Geologist have finished their observations of the work, final reports shall be submitted. No further excavation or filling shall be undertaken without prior notification of the Soils Engineer and/or Engineering Geologist.

VI. SLOPE PROTECTION

All finished cut and fill slopes shall be planted and/or protected from erosion in accordance with the project specifications and/or as recommended by a landscape architect.

CANYON SUBDRAIN DETAIL

TYPE A



TYPE B

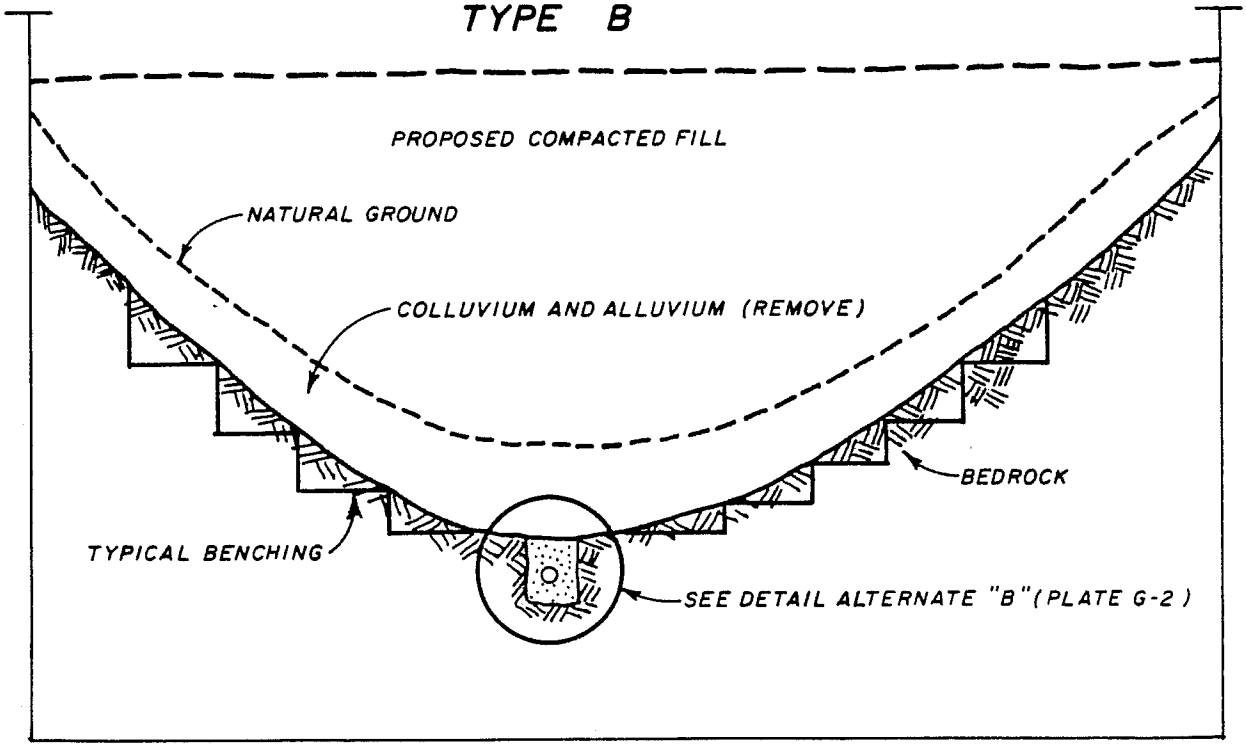
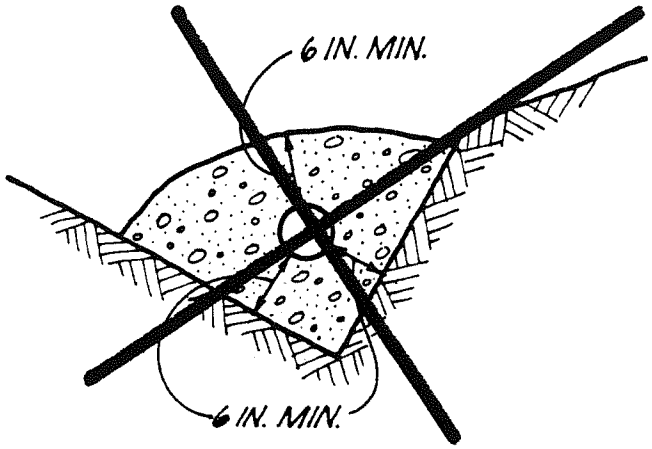
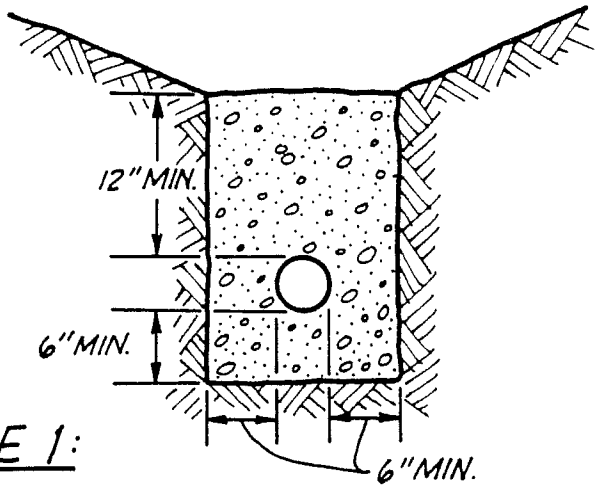


PLATE G-1

PACIFIC SOILS ENGINEERING, INC.

W.O. 102637 DATE 7/10/06





ALTERNATIVE 1:

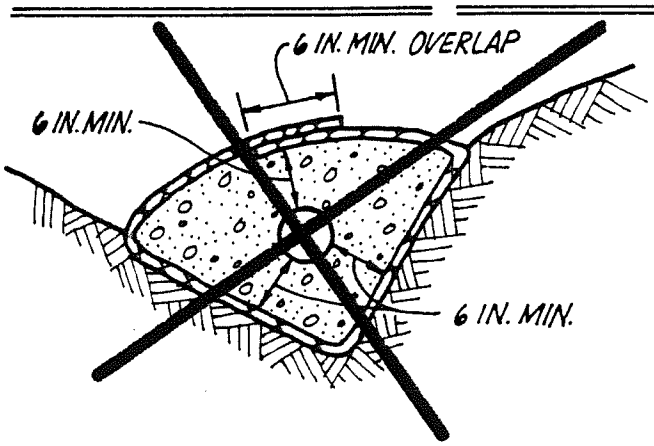
PIPE AND FILTER MATERIAL

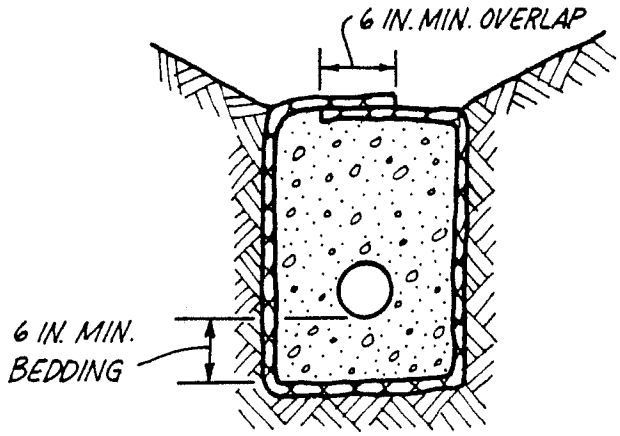
FILTER MATERIAL: MIN. VOLUME OF 9 FT.^{3}/LIN. FT. OF EQUAL MIXTURE OF NO. 2 AND NO. 3 ROCK. PIPE: 6 IN. ABS OR PVC PIPE OR APPROVED SUBSTITUTE WITH A MIN. OF 8 1/4 IN. PERFORATIONS PER LINEAL FT. IN BOTTOM HALF OF PIPE.

ASTM D2751, SDR 35 OR
ASTM D1527, SCHD. 40

ASTM D3034, SDR 35 OR
ASTM D1785, SCHD. 40

NOTE: FOR CONTINUOUS RUN IN EXCESS OF 500 FT. USE 8 IN. DIA. PIPE





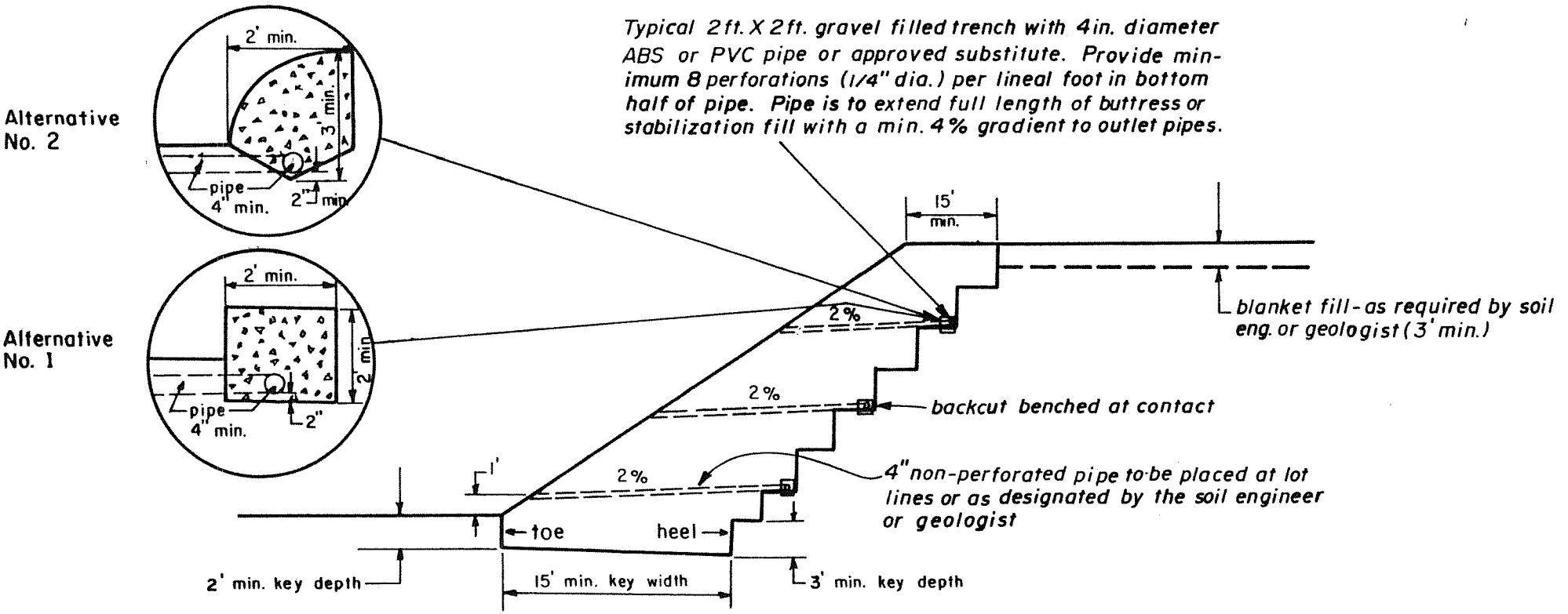
ALTERNATIVE 2:

PERFORATED PIPE SURROUNDED WITH ROCK & FILTER FABRIC

FILTER MATERIAL: MIN. VOLUME OF 9FT^3/LIN. FT. OF 3/4 IN. MAX. ROCK
PIPE: 6 IN. DIA. ABS OR PVC PIPE OR APPROVED SUBSTITUTE WITH A MIN. OF 8 1/4 IN. DIA. PERFORATIONS PER LINEAL FT. IN BOTTOM HALF OF PIPE
FILTER FABRIC: MIRAFI 140 FILTER FABRIC OR APPROVED EQUIVALENT

Plate G-2

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY CYPRESS, CALIFORNIA (714) 220-0770
W.O. 102637 DATE 7/10/06



NOTES:

1. ABS - ASTM D 2751, SDR 35 or ASTM D1527 Sched. 40
   PVC - ASTM D 3034, SDR 35 or ASTM D1785 Sched. 40
2. Outlets to be provided every 100 ft. and joined to perf. backdrain pipe by L or T's. Min. 2% gradient.
3. Gravel trench to be filled with approximately equal mixture of no. 2 and no. 3 rock.
4. The necessity for upper stages of backdrains shall be determined in the field by the soil engineer or geologist. Upper stage outlets should be emptied onto paved terrace drains

STABILIZATION / BUTTRESS FILL DETAIL

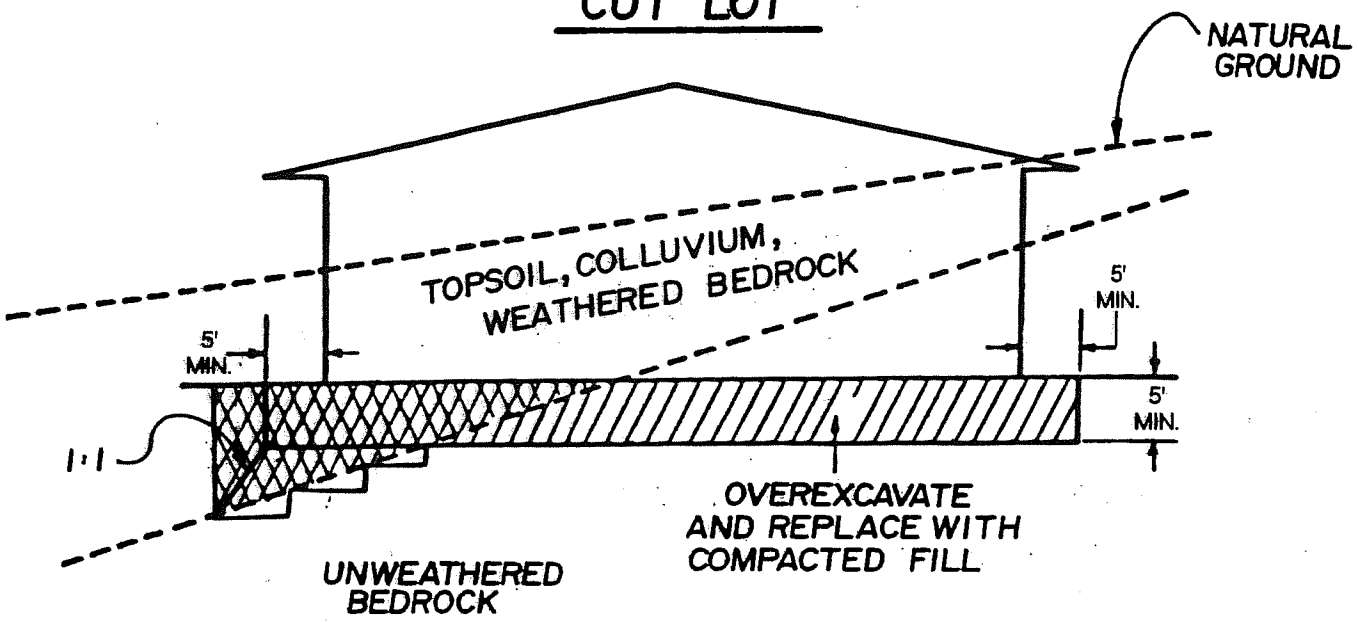
PLATE G-3

PACIFIC SOILS ENGINEERING, INC.

W.O. 102637 DATE 7/10/06

TYPICAL TRANSITION LOT DETAIL

CUT LOT



CUT-FILL LOT (TRANSITION)

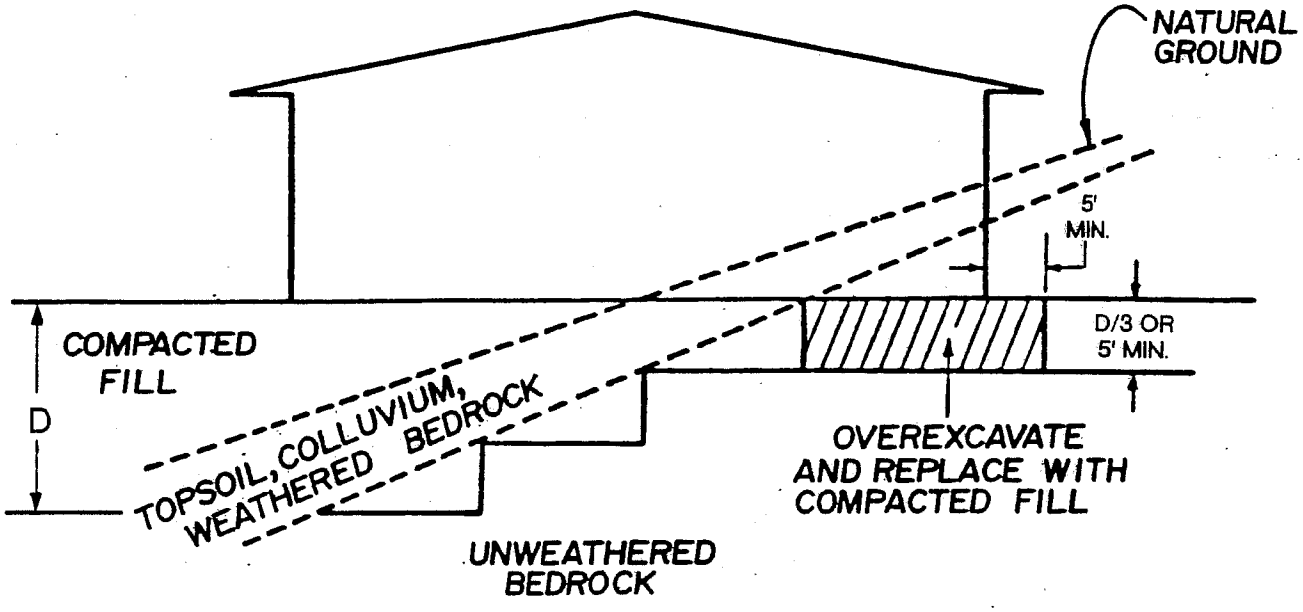


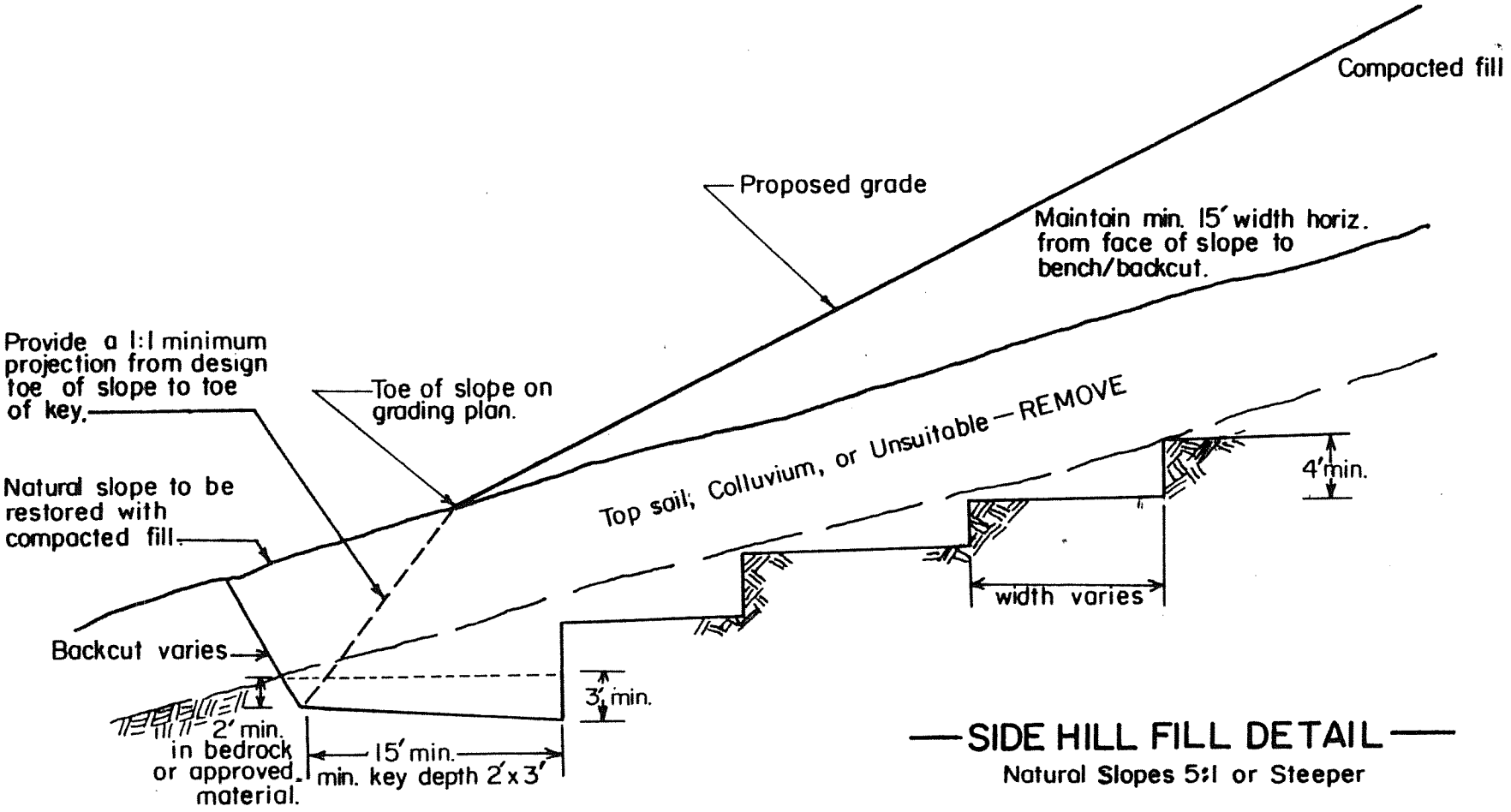
PLATE G-4

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY CYPRESS, CALIFORNIA (714)220-0770

W.O. 102637 DATE 7/10/06

NOTE: 1) Where natural slope gradient is 5:1 or less, see Plate G-6. Where the natural slope approaches or exceeds the design slope ratio, special recommendations will be provided by the soil engineer.

2) The need for and disposition of drains will be determined by the soil engineer based upon exposed conditions.



SIDE HILL FILL DETAIL

Natural Slopes 5:1 or Steeper

PLATE G-5

PACIFIC SOILS ENGINEERING, INC.

W.O. 102637 DATE 7/10/06

Detail for Fill Slope Toeing Out on Flat Alluviated Canyon

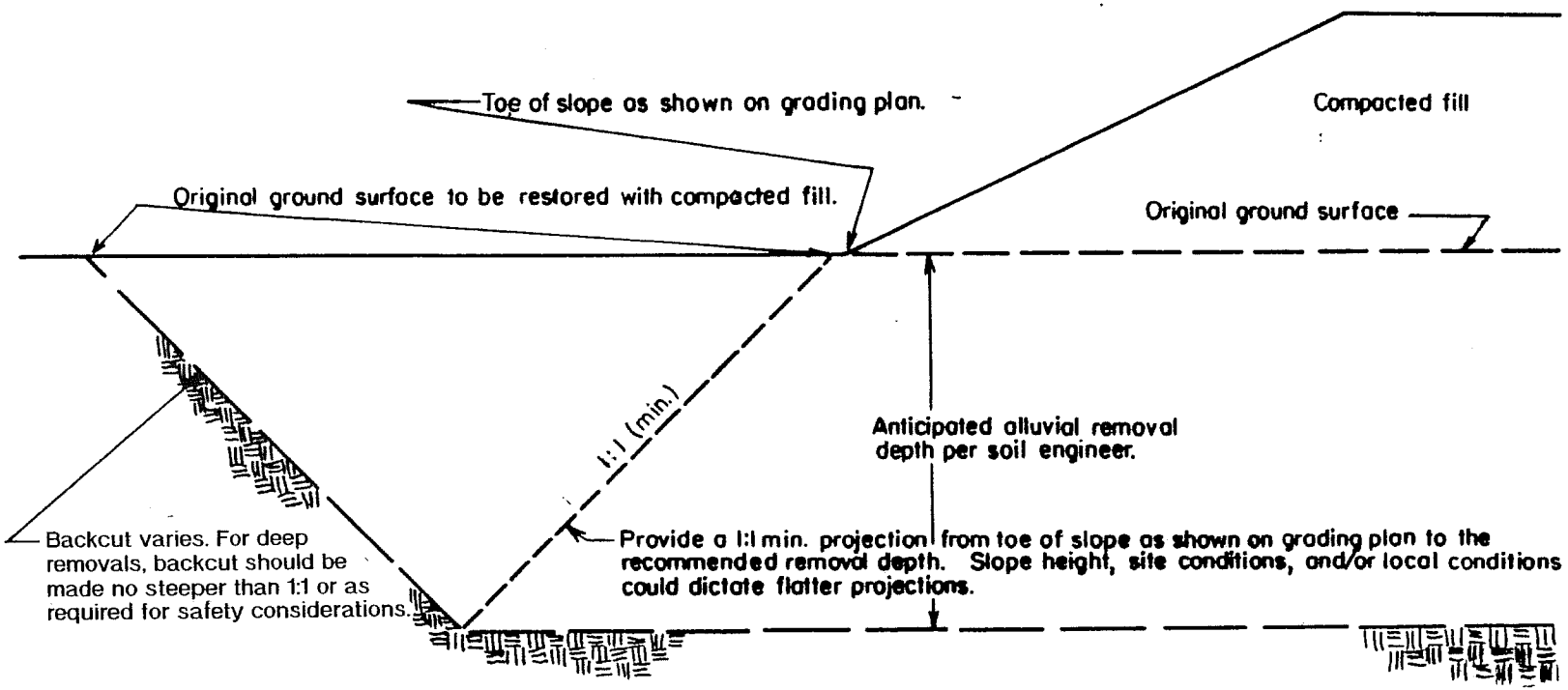
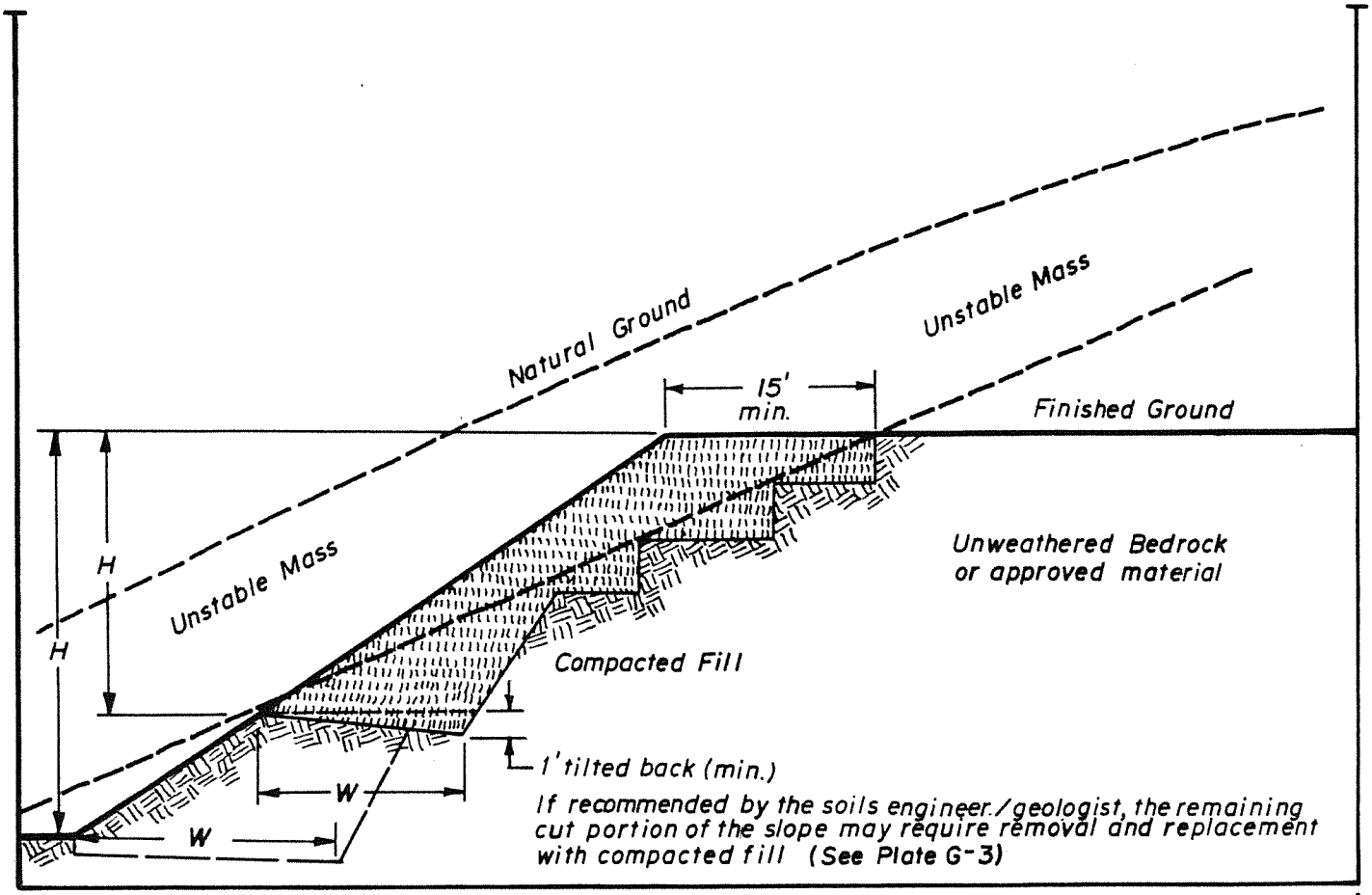


Plate G-6

PACIFIC SOILS ENGINEERING, INC.

W.O. 102637 DATE 7/10/06

Selective Grading Detail for Stabilization Fill
Unstable Material Exposed in Portion of Cut Slope



NOTE:

1. Subdrains are not required unless specified.
2. "W" shall be equipment width (15') for slope heights less than 25 feet. For slopes greater than 25 feet "W" shall be determined by the project soils engineer/geologist. At no time shall "W" be less than H/2.

PLATE G-7

PACIFIC SOILS ENGINEERING, INC.

W.O. 102637 DATE 7/10/06

Skin Fill On Natural Ground

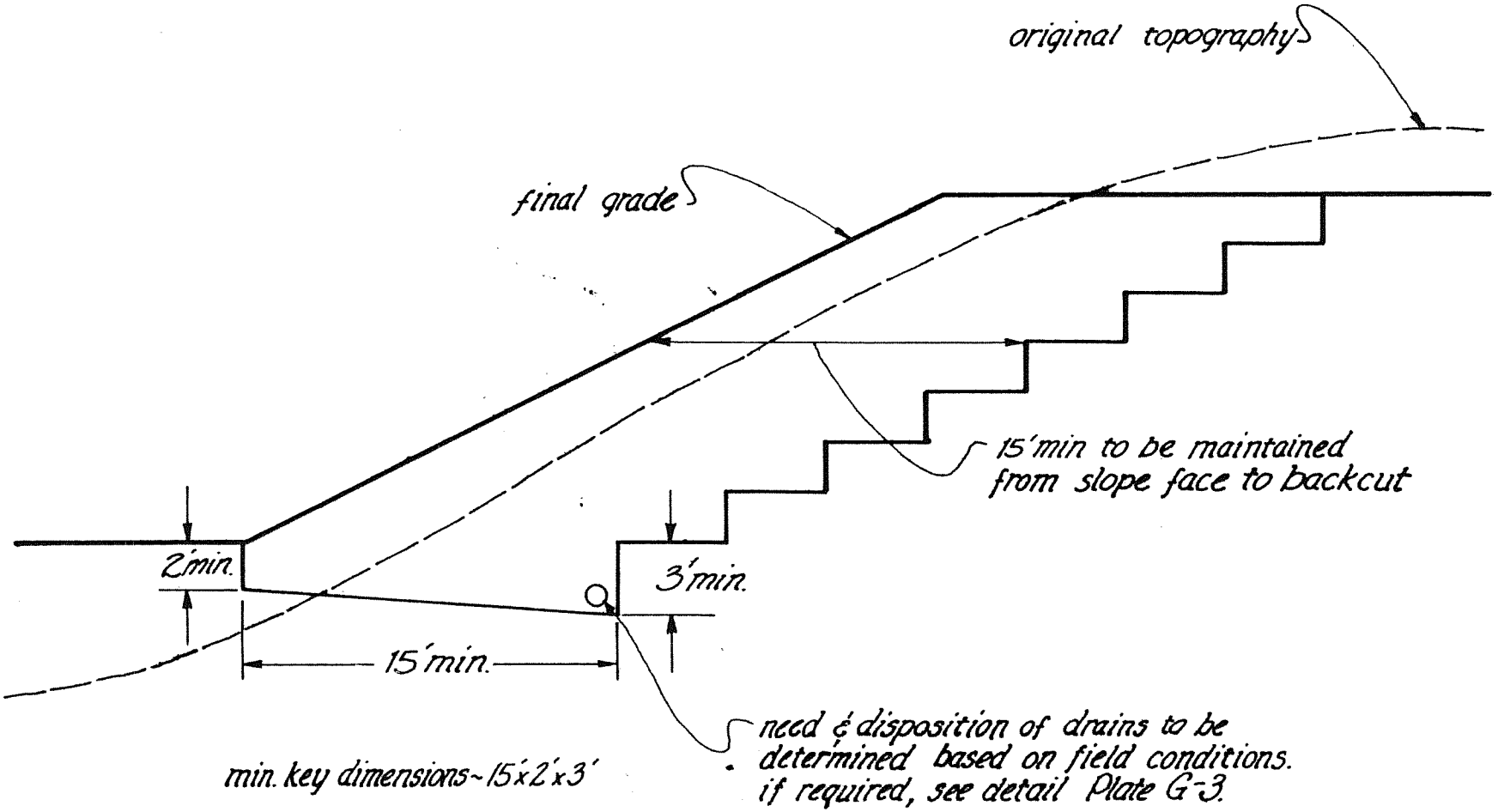


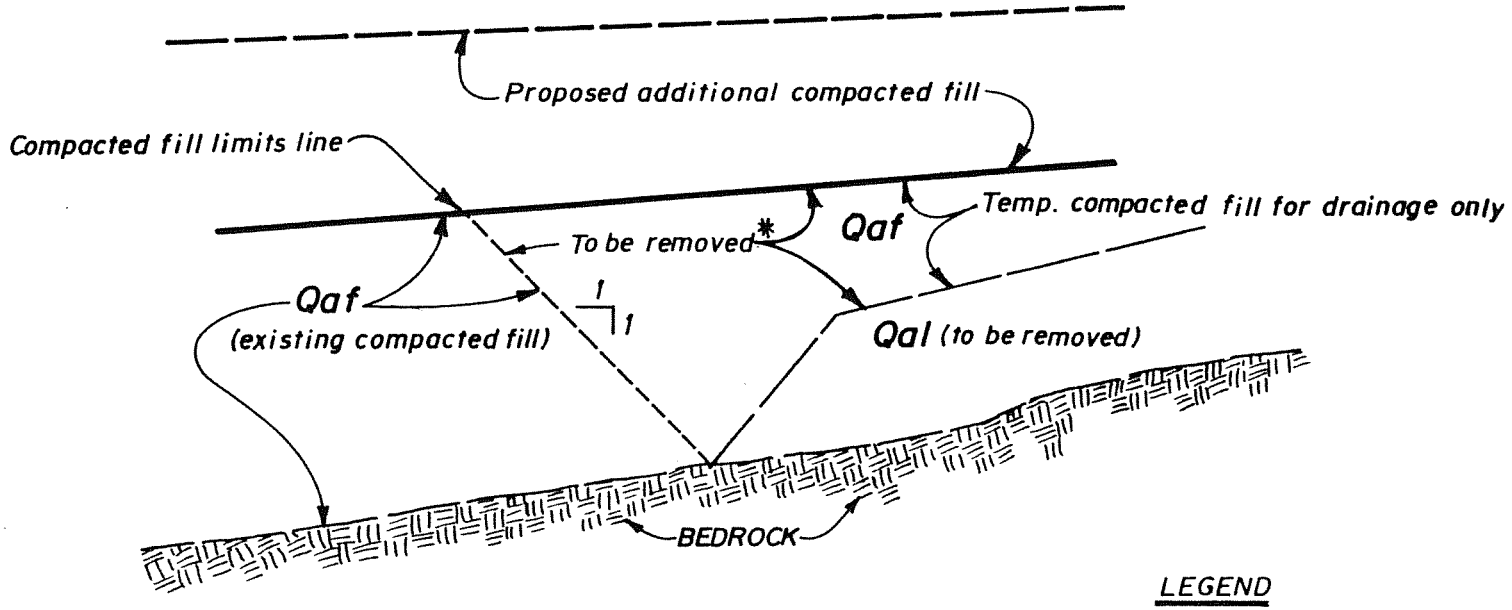
PLATE G-8

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY CYPRESS, CALIFORNIA (714)220-0770

W.O. 102637 **DATE** 7/10/06

REMOVAL ADJACENT TO EXISTING FILL

ADJOINING CANYON FILL



LEGEND

Qaf Artificial fill

Qal Alluvium

*before placing additional compacted fill

CROSS-SECTION B-B'

(Typ. up-canyon)

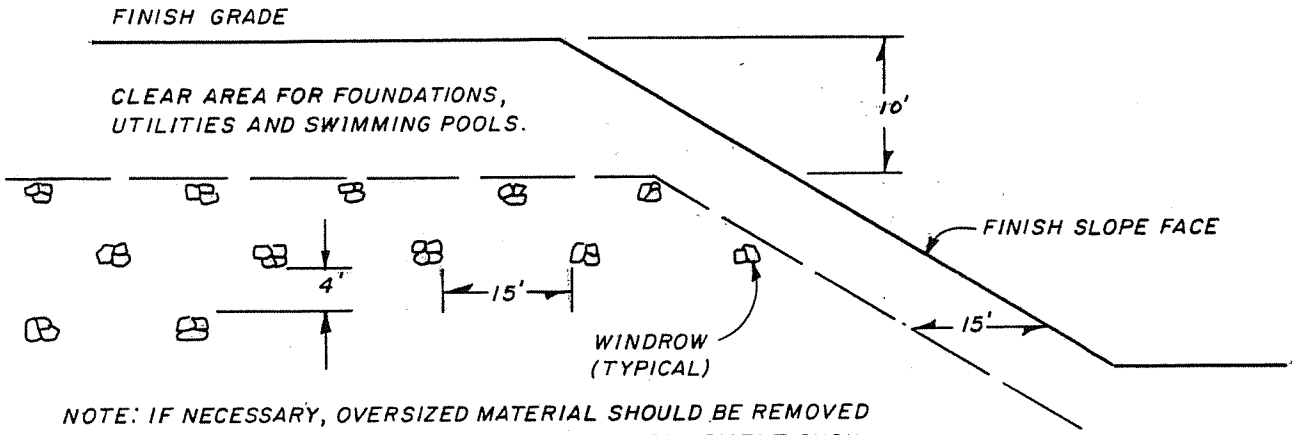
Not to scale

PLATE G-9

PACIFIC SOILS ENGINEERING, INC.

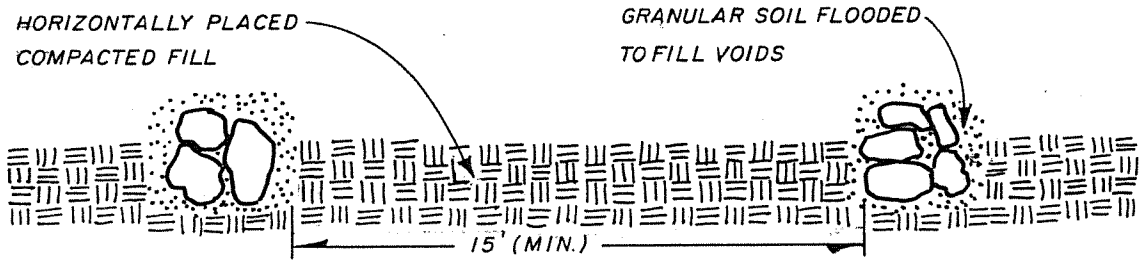
W.O. 102637 DATE 7/10/06

ROCK DISPOSAL DETAIL



NOTE: IF NECESSARY, OVERSIZED MATERIAL SHOULD BE REMOVED FROM THE 15 FOOT ZONE WITH SPECIAL EQUIPMENT, SUCH AS A ROCK RAKE, PRIOR TO PLACING THE NEXT FILL LIFT.

TYPICAL WINDROW DETAIL (END VIEW)



NOTE: COMPACTED FILL SHALL BE BROUGHT UP AT A HIGHER ELEVATION ALONG WINDROW SO GRANULAR SOIL CAN BE FLOODED IN A "TRENCH CONDITION".

PROFILE VIEW

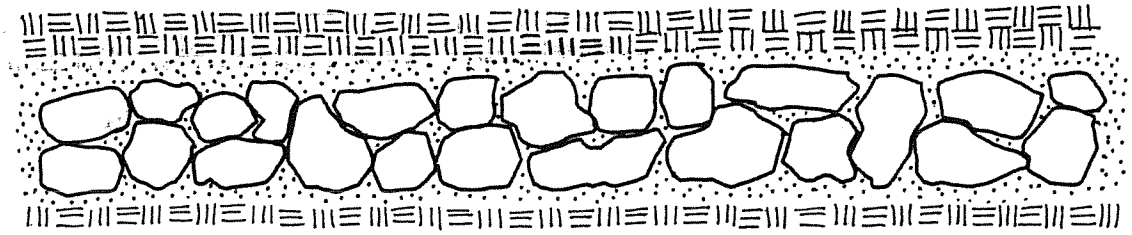
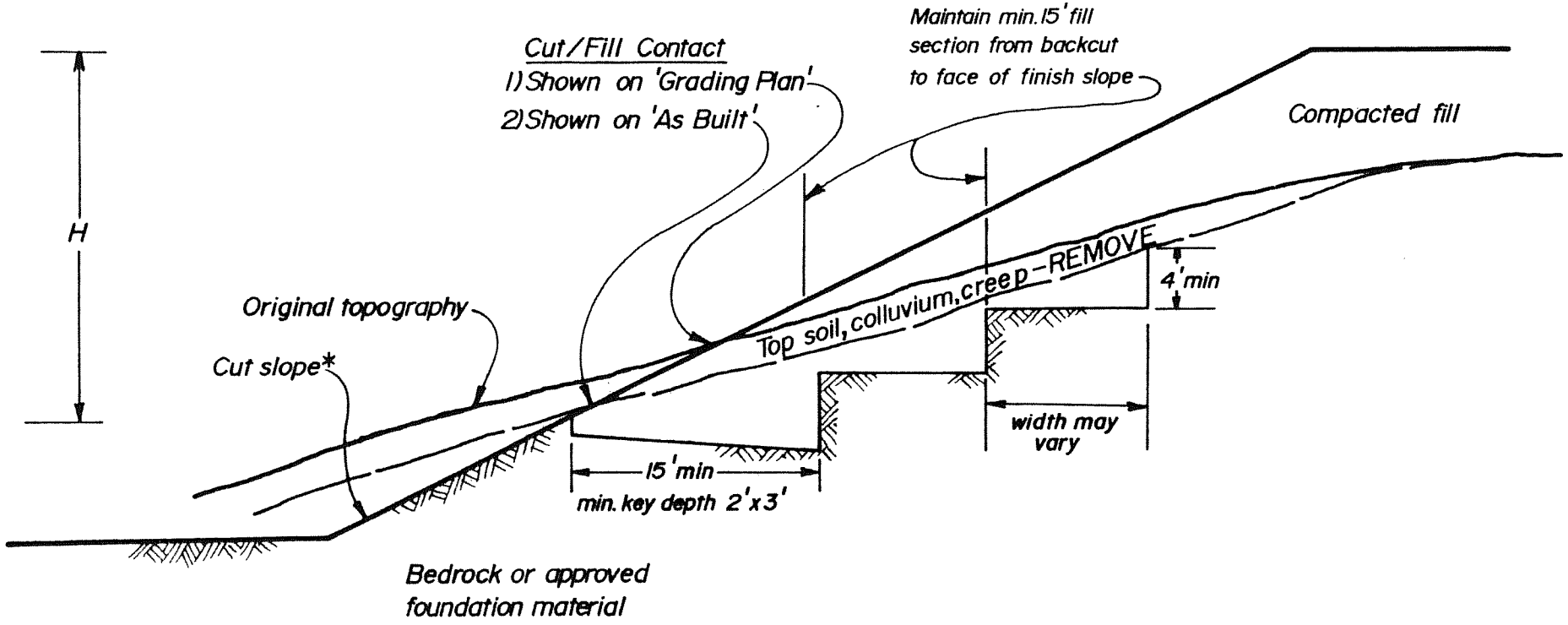


PLATE G-10

PACIFIC SOILS ENGINEERING, INC.

W.O. 102637 DATE 7/10/06



* The cut portion of the slope should be excavated and evaluated by the Engineering Geologist/Soils Engineer prior to constructing the fill portion.

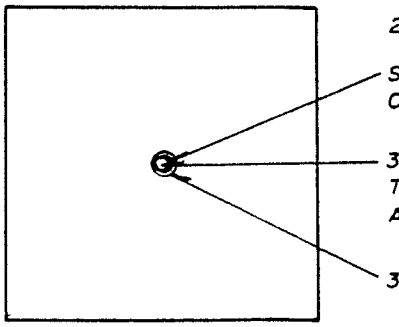
FILL OVER CUT DETAIL

PLATE G-11

PACIFIC SOILS ENGINEERING, INC.

W.O. 102637 DATE 7/10/06

SETTLEMENT PLATE DETAIL

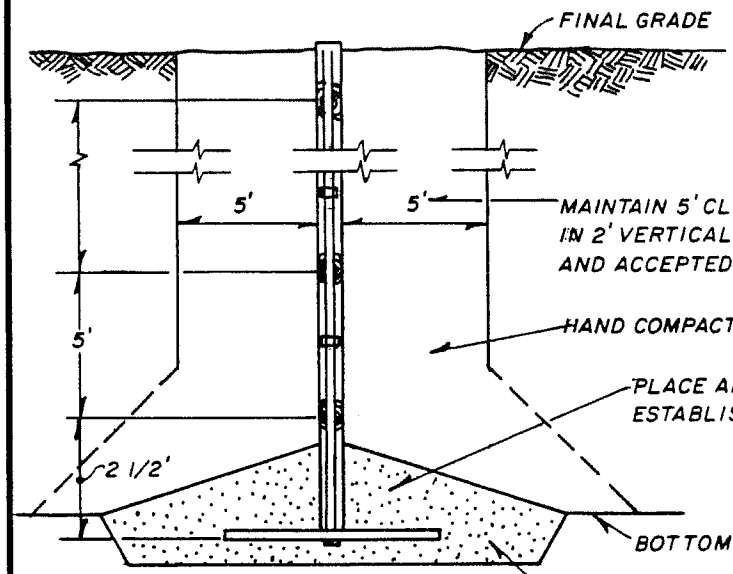


2' X 2' X 1/4" STEEL PLATE

STANDARD 3/4" PIPE NIPPLE, WELDED TOP AND UNDERSIDE OF PLATE.

3/4" Ø X 5' LONG GALVANIZED PIPE, STANDARD PIPE THREADS TOP AND BOTTOM. EXTENSIONS THREADED BOTH ENDS AND ADDED IN 5' INCREMENTS.

3" Ø SCHEDULE 40 PVC, ADD IN 5' INCREMENTS WITH GLUE JOINTS.



MAINTAIN 5' CLEARANCE OF HEAVY EQUIPMENT. HAND COMPACT IN 2' VERTICAL INCREMENTS OR ALTERNATIVE SUITABLE TO AND ACCEPTED BY SOILS ENGINEER.

HAND COMPACT INITIAL 5' (VERTICAL) WITHIN 10' HORIZONTAL.

PLACE AND HAND COMPACT INITIAL 2' OF FILL PRIOR TO ESTABLISHING INITIAL READING.

BOTTOM OF CLEANOUT

PROVIDE A MIN. 1' THICKNESS OF SAND/GRAVEL BEDDING.

NOTE

1) LOCATIONS OF SETTLEMENT PLATES SHALL BE CLEARLY MARKED AND READILY VISIBLE (RED FLAGGED) TO EQUIPMENT OPERATORS.

2) CONTRACTOR SHALL MAINTAIN 10' HORIZONTAL CLEARANCE FOR HEAVY EQUIPMENT WITHIN 5' (VERTICAL) OF PLATE BASE. FILL WITHIN CLEARANCE AREA SHALL BE HAND COMPACTED TO PROJECT SPECIFICATIONS OR COMPACTED BY ALTERNATIVE APPROVED SOILS ENGINEER.

3) AFTER 5' (VERTICAL) OF FILL IS IN PLACE, CONTRACTOR SHALL MAINTAIN 5' HORIZONTAL EQUIPMENT CLEARANCE. FILL IN CLEARANCE AREA SHALL BE HAND COMPACTED (OR APPROVED ALTERNATIVE) IN VERTICAL INCREMENTS NOT TO EXCEED 2 FEET.

4) IN THE EVENT OF DAMAGE TO SETTLEMENT PLATE OR EXTENSION RESULTING FROM EQUIPMENT OPERATING WITHIN PRESCRIBED CLEARANCE AREA, CONTRACTOR SHALL IMMEDIATELY NOTIFY SOILS ENGINEER AND SHALL BE RESPONSIBLE FOR RESTORING THE SETTLEMENT PLATES TO WORKING ORDER.

PLATE G-12

PACIFIC SOILS ENGINEERING, INC.

W.O. 102637 DATE 7/10/06

SURFACE SETTLEMENT MONUMENT DETAIL

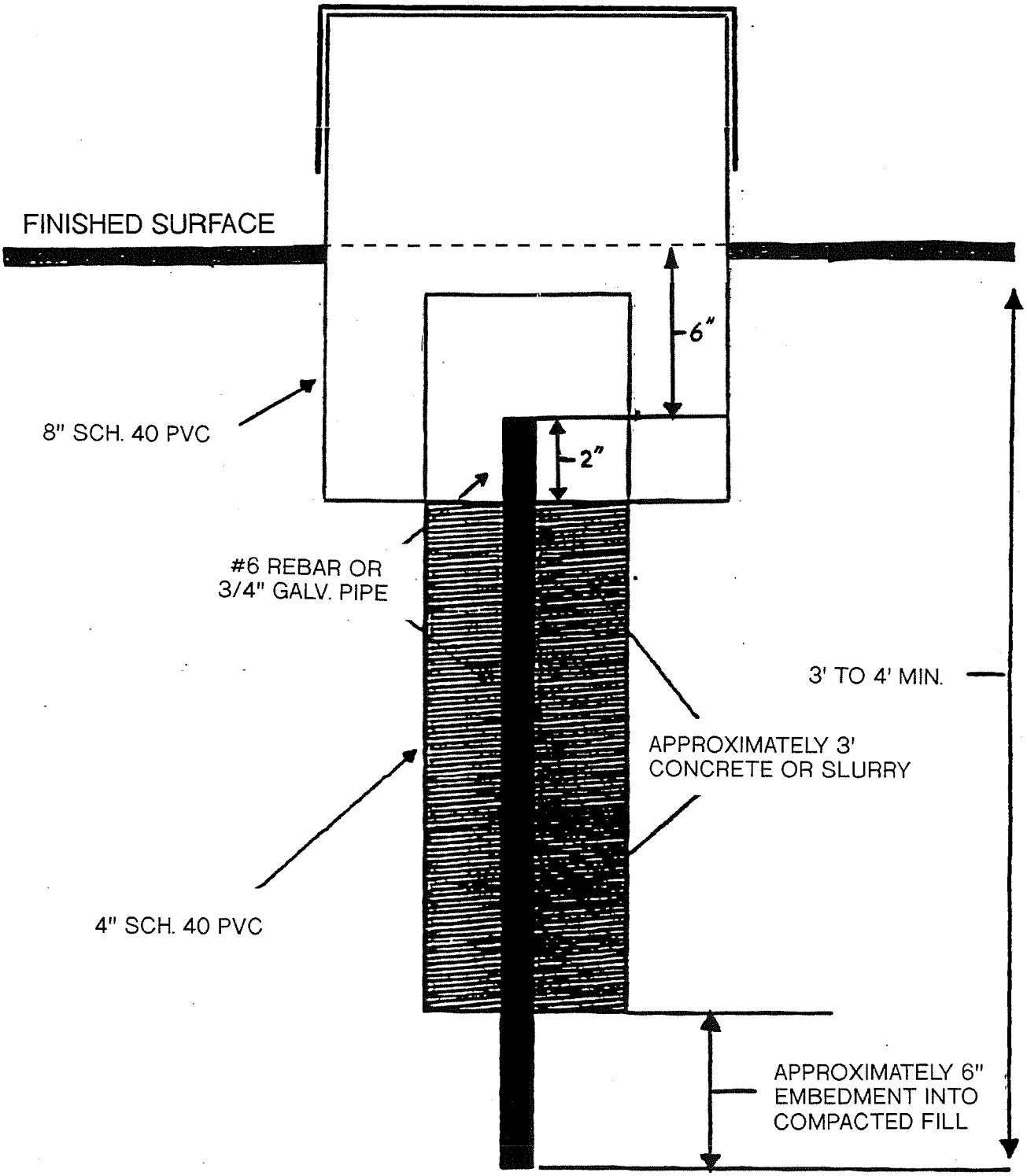


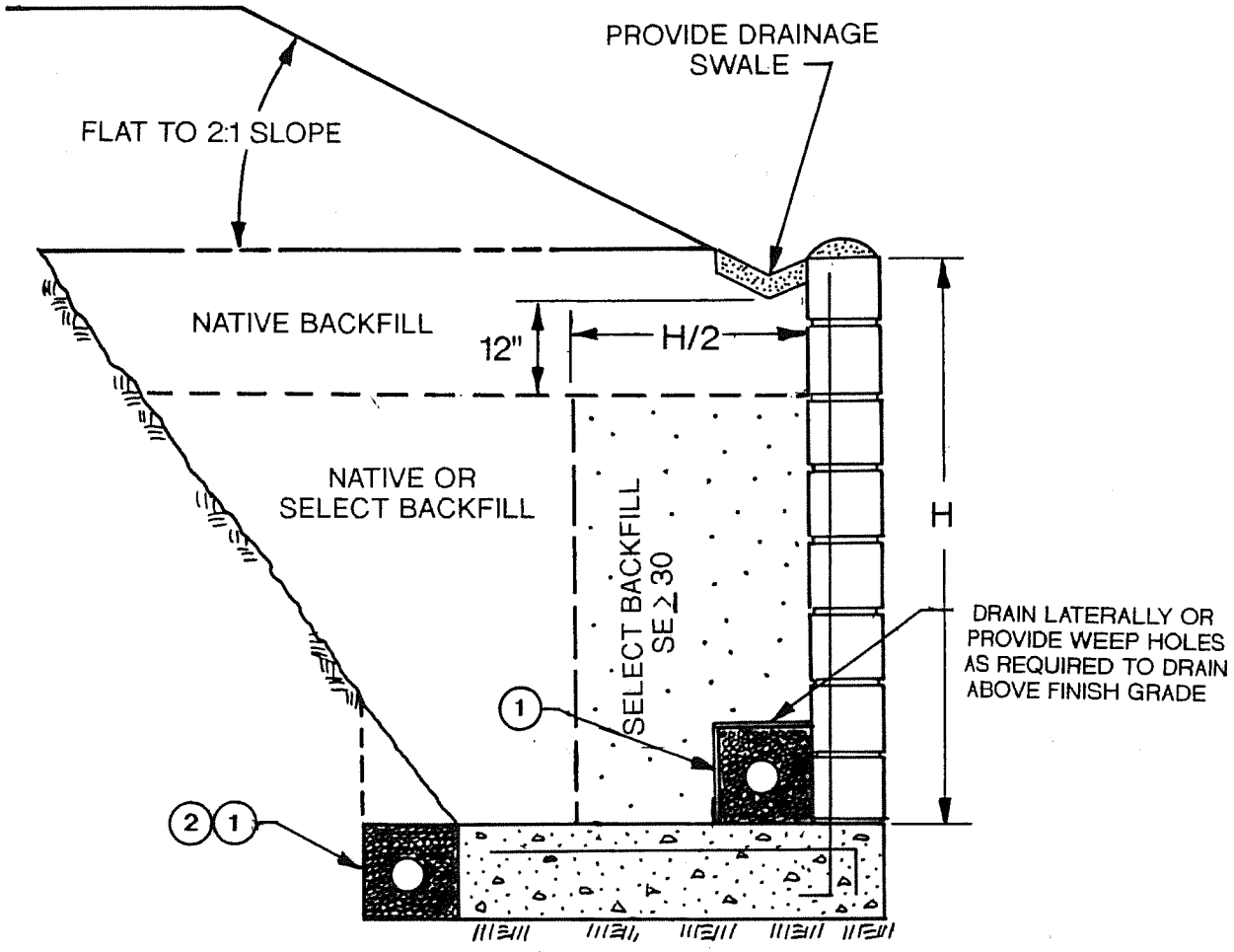
PLATE G-12a

PACIFIC SOILS ENGINEERING, INC.
10953 PROGRESS WAY CYPRESS, CALIFORNIA (714)220-0770

W.O. 102637 **DATE** 7/10/06

TYPICAL

RETAINING WALL BACKFILL



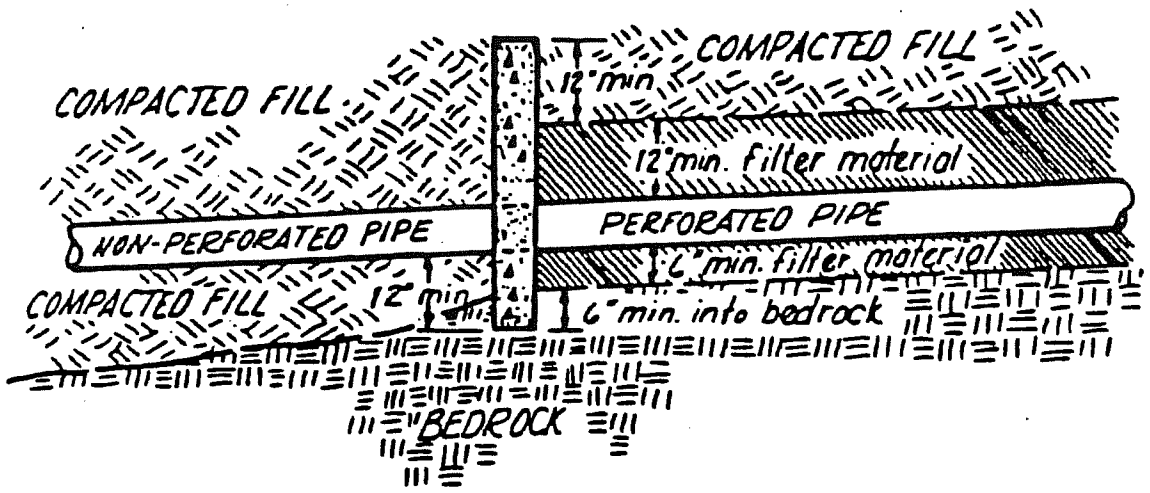
(1) 4-INCH PERFORATED PVC, SCHEDULE 40 OR APPROVED ALTERNATE. PLACE PERFORATION DOWN AND SURROUND WITH A MINIMUM OF 1 CUBIC FOOT PER LINEAL FOOT OF 3/4 INCH ROCK OR APPROVED ALTERNATE. ENCAPSULATE IN MIRAFI 140, OR EQUIVALENT

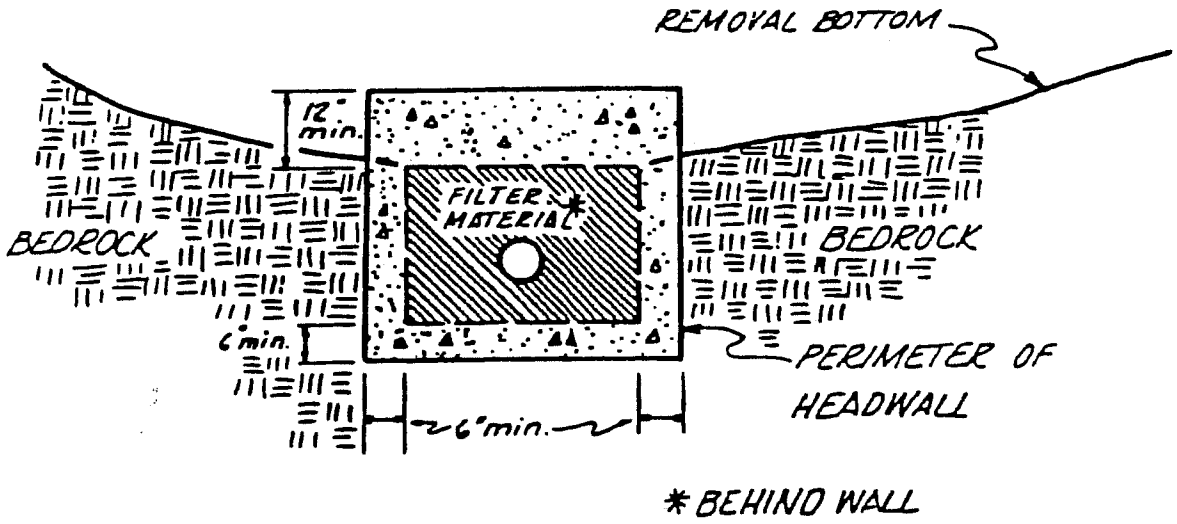
(2) PLACE DRAIN AS SHOWN WHERE PROVISIONS FOR DRAINAGE THROUGH THE WALL CANNOT BE ACCOMMODATED

PLATE G-13 NOT TO SCALE

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY CYPRESS, CALIFORNIA (714)220-0770

W.O. 102637 **DATE** 7/10/06





TYPICAL
CONCRETE HEADWALL
DETAIL

PLATE G-14

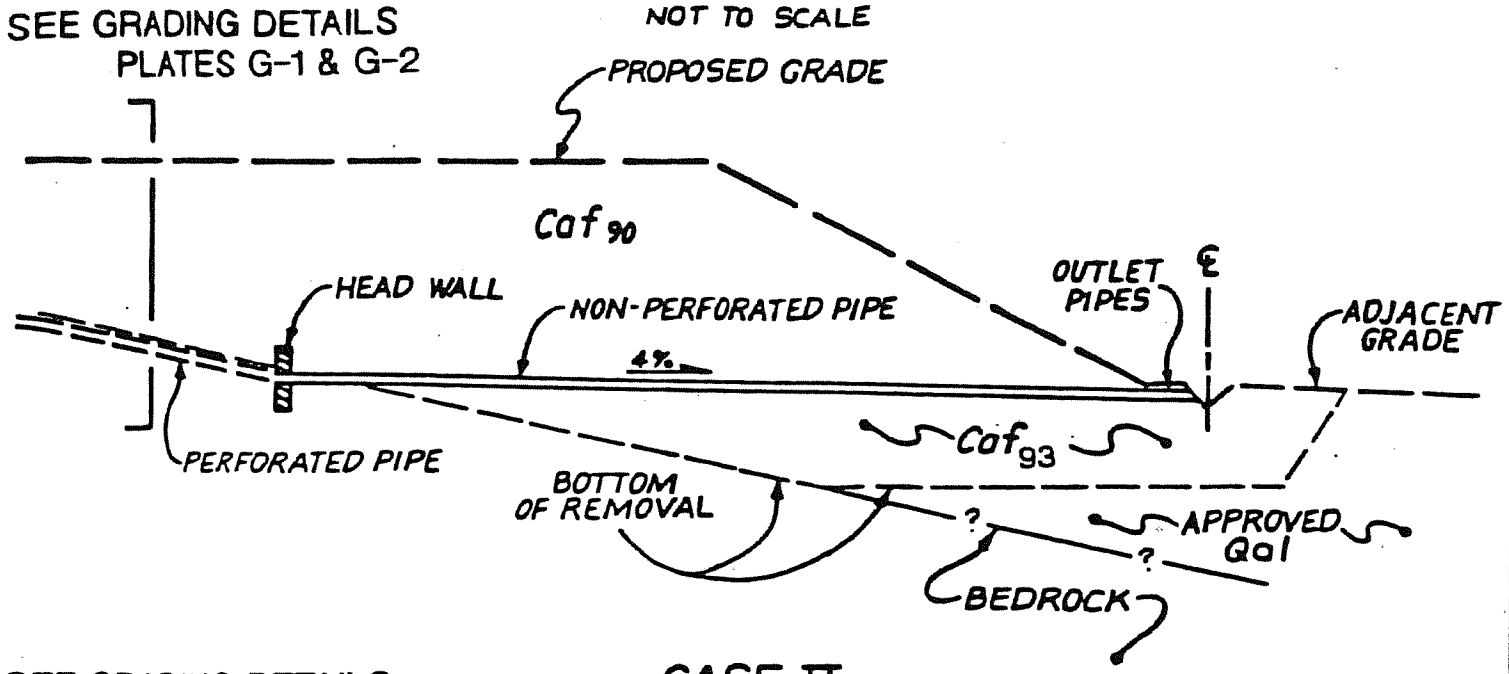
PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY CYPRESS, CALIFORNIA (714) 220-0770

W.O. 102637 DATE 7/10/06

TYPICAL CANYON SUBDRAIN OUTLET DETAIL

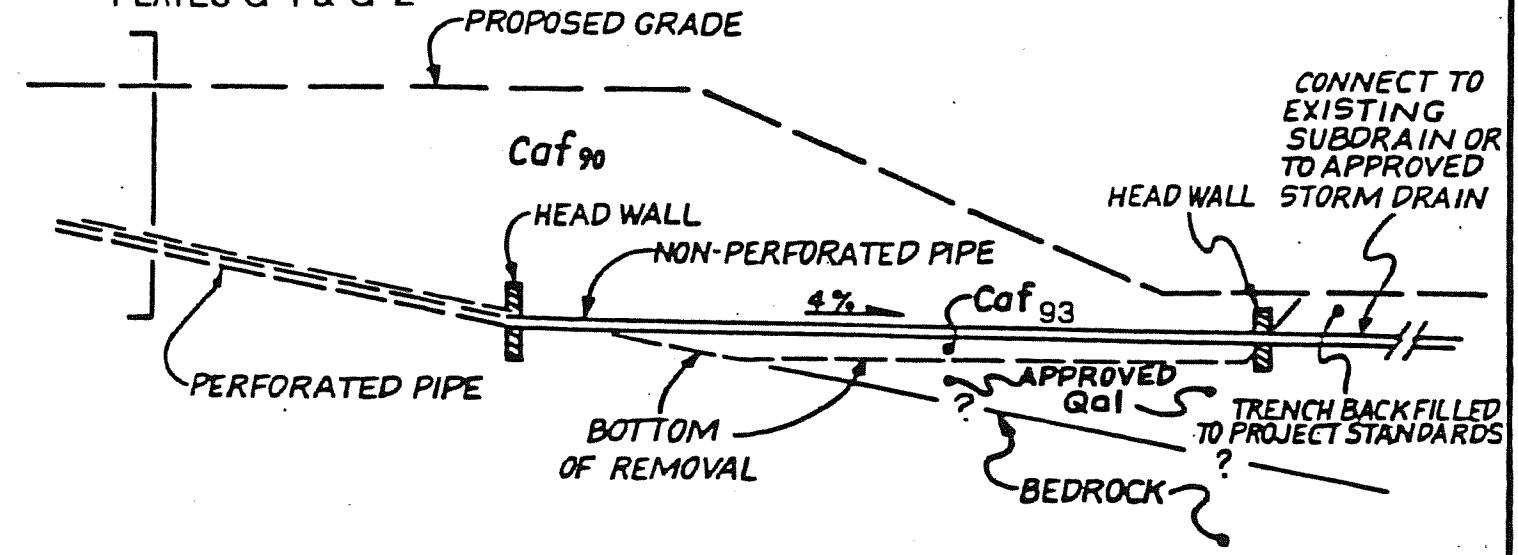
CASE I

NOT TO SCALE



CASE II

NOT TO SCALE



LEGEND:

Caf_{90} COMPACTED FILL TO 90% OF LABORATORY MAXIMUM

Caf_{93} COMPACTED FILL TO 93% OF LABORATORY MAXIMUM

PLATE G-15

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY CYPRESS, CALIFORNIA (714) 220-0770

W.O. 102637 DATE 7/10/06

July 10, 2006
Work Order 102637

APPENDIX IV

HOMEOWNER'S MAINTENANCE AND

IMPROVEMENTS CONSIDERATIONS

APPENDIX IV

HOMEOWNER'S MAINTENANCE AND IMPROVEMENTS CONSIDERATIONS

Expansive Soils

Some of the earth materials, which may be moved as part of the site grading, may be identified as being expansive in nature. As such, these materials are susceptible to large volume changes upon variations in their moisture content. These soils will swell upon the introduction of water and shrink upon drying. The forces associated with these volume changes can have significant negative impacts (in the form of differential movement) on foundations, walkways, and other lot improvements.

Homeowners purchasing property and living in an area containing expansive soils must assume a certain degree of responsibility for homeowner improvements and for maintaining conditions around their home. Provisions should be incorporated into the design and construction of homeowner improvements to account for the expansive nature of the on-site soils material. Lot maintenance and landscaping should also be conducted in consideration of expansive soil characteristics. Of primary importance is minimizing the moisture variation below all lot improvements. Such design, construction and homeowner maintenance provisions may include:

- Employing contractors for homeowner improvements who design and build in recognition of local building code and specific site soils conditions.
- Establishing and maintaining positive drainage away from all foundations, walkways, driveways, patios, and other hardscape improvements.
- Avoiding the construction of raised planters adjacent to structural improvements. Alternatively, planter sides/bottoms can be sealed with an impermeable membrane and drained away from the improvements via subdrains into approved disposal areas.
- Sealing and maintaining construction/control joints within concrete slabs and walkways to reduce the potential for moisture infiltration into the subgrade soils.
- Utilizing landscaping schemes with vegetation that requires minimal watering. Alternatively, watering should be done in a uniform manner as equally as possible on all sides of the foundation, keeping the soil "moist" but not allowing the soil to become saturated.
- Maintaining positive drainage away from structures.

- Roof gutters are considered an effective means of drainage. The roof gutters, if installed, should be outletted in such a way that positive drainage away from all structures and planters is maintained.
- Avoiding the placement of trees closer to the proposed structures than a distance of one-half the mature height of the tree. Alternate placement of trees (closes to the structures) may be performed based on recommendations from a qualified landscape architect.
- Observation of the soil conditions around the perimeter of the structure during extremely hot/dry or unusually wet weather conditions so that modifications can be made in irrigation programs to maintain relatively constant moisture conditions.

Sulfates

During the preliminary geotechnical investigation for the project, selected soil samples were tested for the presence of soluble sulfates. The samples were found to have sulfate concentrations, which were in the "negligible" to "moderate" range of sulfate exposure as classified in accordance with Table 19-A-4 of the UBC.

Homeowners and/or residents should be cautioned against the import and use of certain inorganic fertilizers, soil amendments, and/or other soils from offsite sources in the absence of specific information relating to their chemical composition. Some fertilizers have been known to leach sulfate compounds into soils otherwise containing "negligible" sulfate concentrations and increase the sulfate concentrations in near-surface soils to significant levels. In some cases, concrete improvements constructed in soils containing high levels of soluble sulfates may be affected by deterioration and loss of strength.

Site Drainage

The homeowners and/or residents should be made aware of the potential problems, which may develop when drainage is altered through construction of retaining walls, swimming pools, paved walkways, patios, etc. Ponded water, drainage over the slope face, leaking irrigation systems, overwatering or other conditions that could lead to ground saturation must be avoided.

- No water should be allowed to flow over the slopes. No alteration of pad gradients should be allowed that will prevent pad and roof runoff from being directed to approved disposal areas.

- As part of site maintenance by the homeowners and/or residents, all roof and pad drainage should be directed away from slopes and around structures to approved disposal areas. All berms constructed and compacted as part of fine grading and should be maintained by the resident. The recommended drainage patterns established at the time of the fine grading should be maintained throughout the life of the structure. No alterations to these drainage patterns should be made unless designed by qualified professionals in compliance with local code requirements.

Slope Drainage

The homeowners and/or residents should be made aware of the importance of maintaining and cleaning all interceptors' ditches, drainage terraces, downdrains and any other drainage devices installed to promote slope stability. Backdrain and subdrain outlet pipes, that may protrude through slope surfaces at the completion of grading operations, are designed to conduct subsurface water away from compacted fill sections and buttress/stabilization fills. These pipes, in conjunction with the graded features, are designed to promote project stability and must be protected in-place and not altered or damaged in any way.

Planting and Irrigation

Seeding and planting of the slopes should be planned to achieve, as rapidly as possible, a well-established and deep-rooted vegetal cover requiring minimal watering. It should be the responsibility of the landscape architect to provide such plants initially and of the residents to maintain such planting. Alteration of such a planting scheme is at the resident's risk. The homeowners and/or residents are responsible for proper irrigation and for maintenance and repair of properly installed irrigation systems. Leaks should be fixed immediately.

Burrowing Animals

The homeowners and/or residents must undertake a program to eliminate burrowing animals. This must be an ongoing program in order to promote slope stability.

Homeowner Improvements

Homeowner and/or resident improvements (pools, spas, patio slabs, retaining walls, planters, etc.) should be designed to account for the nature of the project. Design considerations on any

given lot may need to include provisions for differential bearing materials, ascending/descending slope conditions, perched (irrigation) water, special surcharge loading conditions, and long-term creep/settlement.

All homeowner and/or resident improvements should be designed and constructed by qualified professionals utilizing appropriate design methodologies which account for the on-site soils and geologic conditions. Each lot and proposed improvement should be evaluated on an individual basis.

Slope Setbacks

Manufactured cut and fill slopes are proposed onsite to maximum heights of 150± and 180± feet, respectively. In addition, natural slopes may exist above or below some pad areas. Both natural and manufactured slopes may be subject to long-term settlement and creep that can manifest itself in the form of both horizontal and vertical movement. These movements typically are produced as a result of weathering, erosion, gravity forces, and other natural phenomenon. A setback adjacent to slopes is required by most building codes, including the Uniform Building Code. This zone is intended to locate and support the residential structures away from these slopes and onto soils that are not subject to the potential adverse effects of these natural phenomena. The homeowner and/or resident may wish to construct patios, walls, walkways, planters, swimming pools, spas, etc. within this zone. Such facilities may be sensitive to settlement and creep and should not be constructed within the setback zone unless properly engineered. It is suggested that plans for such improvements be designed by a professional engineer who is familiar with hillside grading ordinances and design and construction requirements associated with hillside conditions. In addition, we recommend that the designer and contractor familiarize themselves with the site-specific geologic and geotechnical conditions on the specific lot.

APPENDIX E
Geologic/ Geotechnical Review of Existing Reports and VTTM

G3SoilWorks

GEOLOGY · GEOTECH · GROUNDWATER

Naim Associates Development
144 N. Wetherly Drive
West Hollywood, CA 90743

September 14, 2017
Project No. 1-1031

Attention: Mr. Michael Naim

Subject: Geologic / Geotechnical Review of Existing Reports and VTTM
West Hills Area, Vesting Tentative Tract Map No. 52652
County of Los Angeles, California

References: See attached List of Selected References

Dear Mr. Naim,

Pursuant to your authorization, G3SoilWorks, Inc. (G3) has reviewed the referenced documents to provide comment concerning the acceptability / applicability of these previously approved reports from a geologic / geotechnical standpoint relative to the existing tentative tract map. As part of our review, a site reconnaissance was also conducted by our geologist to observe the current site conditions and to note any changes that may have occurred subsequent to that addressed by others in the referenced reports.

PROPOSED DEVELOPMENT

The Vesting Tentative Tract Map (VTTM), dated January 25, 2017 (Reference 6), indicates twenty-five (25) proposed single-family residential lots (1 through 25), one public facility lot (26), one open space lot (27), one recreation lot (28), and one water storage lot (29). Conventional cut and fill grading techniques will be used to accommodate the proposed development. Cut and fill slopes are designed to slope ratios of 2:1 (Horizontal to Vertical) or flatter. The highest 2:1 cut slope is a 135± foot east facing slope above Lot 17. The highest 2:1 fill slope is a 203± foot north facing slope below Lots 22 and 23. The maximum plan excavation is roughly 80± feet, while the maximum depth of planned fill placement is on the order of 110± feet.

PROJECT BACKGROUND

Based on review of the Pacific Soils Engineering, Inc. (PSE) report dated July 10, 2006 (Reference No. 1), PSE performed an initial study in 1964 on a larger site which included both the easterly adjacent tract and our current Tentative Tract. A subsequent study was performed by Environmental Geotechnology Laboratory, Inc. in 1998; it was confined within the current tract limits, but evaluated a significantly different development plan. As part of the PSE Reference 1 study, both a subsurface exploratory program and a limited geologic reconnaissance was conducted to obtain additional structural information as well as to map surficial contacts of exposed geologic units. Additional laboratory testing was also performed as

part of this study on the samples secured during boring excavations. The locations of pertinent boring and backhoe excavations conducted as part of these studies, as well as their logs, geologic mapping information, and laboratory test data were compiled. These data, the results of subsequent geologic and geotechnical analyses, their findings, conclusions, and recommendations were presented in Reference No. 1.

In November 2006 (Reference No. 2), PSE prepared an addendum tentative map review and response to Los Angeles County Soils Engineering / Geologic comments. As part of this document, PSE noted several changes to lot line configurations and an adjustment of Kittridge Street in the southern portion of the tract. Also mentioned were the new divisions within the previous Open Space Lot, which included the public facility lot, a slightly smaller open space lot, the recreation lot, and the water storage lot. These revisions are incorporated into the current Reference 6 VTTM. Utilizing the new base map, PSE provided both an updated geologic map and pertinent cross-sections, performed updated / additional slope stability analyses, evaluated a shear key along portions of the southern tract line, and generated a related Limited Structural Use Area along affected southern portions of the tract.

In 2007 PSE prepared a second response (Reference No. 3) to County comments. Their response included extension of some of the previously submitted south boundary cross-sections to reflect pre- and post-off-site grading topographic information, updated slope stability analyses, discussion on recommended geological setback lines, and recommendations to mitigate potential adverse effects of heaving and other sulfate transformation phenomenon.

After reviewing the Reference No. 3, the Los Angeles County Soils Engineering and Geologic sections recommended Tentative Map Feasibility “Approval” (Reference Nos. 4 and 5).

MAP COMPARISON

To evaluate the suitability of the recommendations presented in the Reference No. 3 “Approved” report, G3 compared the base map used in Reference No. 3 and the current VTTM (Reference No. 6). Noted variations follow:

- Within Lots 1 through 25, no lot line modifications occurred and only minor (1 to 3 feet) pad grade alterations were made;
- Within the large north facing 2:1 fill slope, the access road which connects the Lot 26 Detention Basin to the proposed Welby Way cul-de-sac to the east has become more clearly defined. Grades within this area vary 2 to 3 feet from those on the Reference No. 3 base map;
- Along the toe of the west portion of the large north facing fill slope, two areas of rip-rap and “flood boundaries” have been added within the lower portion of a northeast draining swale to direct surface water offsite to the north.

The minor alterations from the Reference No. 3 base map to the current VTTM either have no significant geotechnical impact on the development, or in the case of the flood boundary addition, have enhanced drainage without adversely impacting the integrity of the fill slope.

CURRENT SITE CONDITIONS

Topographic relief across the site is approximately 370 feet with a low elevation of about 970 feet at the northern boundary, and a high elevation of about 1340 feet at the southwest corner. Existing natural slopes are inclined at gradients of 3:1 to approximately 1.5:1 (horizontal to vertical) and reach heights as great as about 250± feet. The site includes two significant canyons that drain to the north and east. The canyons are flanked by relatively narrow ridges, which descend from an isolated peak located at the southwest corner of the property. The crest of this peak has been removed by past grading operations leaving a flat pad at an elevation of about 1340 feet. In the southeast section of the site, an east facing 3:1 slope has also been manufactured. Also, previous grading includes a canyon fill that has been placed in the larger north draining canyon creating a level pad at an elevation of about 1085 feet.

During the recent site reconnaissance, a cover of both native and invasive grasses cloaked most of the terrain, interspersed / interrupted with coastal chaparral complex vegetation on the slopes and on the manufactured flatter areas. Trees were scattered and occasionally clustered on predominantly north facing slopes.

The condition of both natural and manufactured slopes, and manufactured flat pads, was consistent with features noted on the Reference No. 3 base map. No appreciable enlargement of localized erosion gullies was noted. The existing north facing, 90± feet high, 1.5:1 fill slope within the north draining canyon, showed no significant signs of surficial instability and the terrace drains appeared to be in satisfactory condition.

FINDINGS AND CONCLUSIONS

Based on our review of the referenced reports, the current VTTM, and recent site reconnaissance by our office, it is our opinion that these reports remain applicable from a geologic / geotechnical perspective relative to the existing tentative tract map. Previous recommendations are compatible with the current map and remain feasible for a Tentative Map consideration.

LIMITATIONS

This letter has been prepared based solely upon our review of the referenced documents, recent site reconnaissance, and our history and knowledge of the project site. During subsequent plan review phases for this tract, additional field exploration, laboratory testing, and engineering analyses will be required as stated in the County of Los Angeles approval conditions for Tentative Map Feasibility, and to enable our office to provide amended / additional recommendations, as appropriate.

CLOSURE

Our review was performed and opinions provided herein were developed in accordance with generally accepted professional engineering principles and local practice in the field of geotechnical engineering and reflect our best professional judgment. We make no other warranty, either express or implied.

We appreciate the opportunity to provide our services for the project and look forward to assisting you through project completion. If you have any questions or need additional information, please contact the undersigned.

We trust that this letter is adequate for your needs at this time. Should you have any questions or need additional information, please do not hesitate to contact the undersigned.

Respectfully submitted,
G3SoilWorks, Inc.

By: _____
Daniel J. Morikawa, P.E., G.E.
RGE 2726, Reg. Expires 9/30/18

REGISTERED PROFESSIONAL ENGINEER
DANIEL J. MORIKAWA
No. GE2726
Exp. 9-30
CIVIL
STATE OF CALIFORNIA

By: _____
Richard H. Spindler, P.G., C.E.G.
CEG 1802

CERTIFIED ENGINEERING GEOLOGIST
RICHARD H. SPINDLER
No. CEG 1802
Exp. 4-30-18
STATE OF CALIFORNIA

Attachment: List of Selected References

LIST OF SELECTED REFERENCES

1. Preliminary Geotechnical Report, Vesting Tentative Tract Map, Tract No. 52652, West Hills Area, County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated July 10, 2006, (WO 102637).
2. Addendum Tentative Map Review and Response to Los Angeles County Department of Public Works, Geotechnical and Materials Engineering Division (GMED), Geologic (8-24-06) and Soils Engineering (9-7-06) Review Sheets, Vesting Tentative Tract Map, Tract No. 52652, West Hills Area, County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated November 17, 2006, (WO 102637).
3. Response to Los Angeles County Department of Public Works, Geotechnical and Materials Engineering Division (GMED), Geologic (12-12-06) and Soils Engineering (12-14-06) Review Sheets, Vesting Tentative Tract Map, Tract No. 52652, West Hills Area, County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated February 14, 2007. (WO 102637).
4. County of Los Angeles Department of Public Works, Geotechnical and Materials Engineering Division, Geologic Review Sheet, dated April 30, 2007 (Approval).
5. County of Los Angeles Department of Public Works, Geotechnical and Materials Engineering Division, Soils Engineering Review Sheet, dated April 30, 2007 (Approval).
6. Vesting Tentative Tract Map Number 52652, County of Los Angeles, Scale: 1 inch = 60 feet: by Spindler Engineering, Inc., revised date of January 25, 2017.

APPENDIX F
Response to LACDPW Geotechnical Materials Division Geologic and Soils Engineering Review

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY, P.O. BOX 2249, CYPRESS, CALIFORNIA 90630
TELEPHONE: (714) 220-0770, FAX: (714) 220-9589
(Corporate Headquarters)

In accordance with policies of the County of Los Angeles, Department of Public Works, Materials Engineering Division, Pacific Soils Engineering, Inc. (PSE) is providing a PDF copy of the following reports:

> *Response to Los Angeles County Department of Public Works Geotechnical and Materials Division (GMED) Geologic (12-12-06) and Soils Engineering (12-14-06) Review Sheets, Vesting Tentative Tract Map, Tract No. 52652, West Hills Area, County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated February 14, 2007 (Work Order 102637).*

The above document contains text, tables and maps which taken together are all integral parts of a geotechnical report.

The information contained in this communication and/or attachments is the property of PSE and is confidential and may also be legally privileged. These electronic files lack original signatures and are non-certified recordings of documents prepared by PSE. These files are being provided at the request of the Receiving Party and are provided only for convenience of the Receiving Party. You should be aware that only complete printed copies of documents conveyed by PSE may be relied upon. Any use of the information obtained or derived from the attached electronic files, will be at the Receiving Party's sole risk. Any unauthorized use, distribution, copying or disclosure of this communication is strictly prohibited.

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PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY, P.O. BOX 2249, CYPRESS, CALIFORNIA 90630
TELEPHONE: (714) 220-0770, FAX: (714) 220-9589
(Corporate Headquarters)

FAYE ESTATES, LLC
23679 Calabasas Road, Suite 343
Calabasas, CA 91302

February 14, 2007
Work Order 102637

Attention: Ms. Faye Huang

Subject: **RESPONSE TO LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS**
Geotechnical and Materials Engineering Division (GMED)
Geologic (12-12-06) and Soils Engineering (12-14-06) Review Sheets
Vesting Tentative Tract Map, Tract No. 52652
West Hills Area
COUNTY OF LOS ANGELES, CALIFORNIA

References: (See Appendix)

Dear Ms. Huang:

Presented herein are responses to the Los Angeles County Department of Public Works Geotechnical and Materials Engineering Division, Geologic and Soils Engineering Review Sheets (References 18 and 19) regarding our geotechnical report, dated November 17, 2006 (Reference 17). Parts I and II address the geologic and soils engineering review comments, respectively, as they pertain to the current plan. In the interest of clarity, the County's remarks/conditions are reiterated and are followed by the Pacific Soils Engineering, Inc. (PSE) responses.

PART I

Response to Geologic Review Sheet dated 12-12-06

Remark:

"1. Provide the off-site topography on which the southern portions of Geotechnical Sections 5-5' through 10-10' are based. All contacts illustrated on Sections 5-5' through 10-10' must be shown on the map, i.e. existing af, proposed af/keyway, etc. and all substantiating data for existing conditions."

PSE Response:

As part of the initial slope stability analysis along the southerly tract line, it was noted that previous grading activities had occurred on the southerly facing descending slope south of the project. Given this observation, this firm researched available files at the County of Los Angeles and located pre-grading topographic information for the southerly adjacent property dating back to 1964, and used it to portray the previous offsite ground surface. This information (provided herein on Plate G) was located in reports on file with the County of Los Angeles concerning Tract No. 30057 (Reference 1).

This firm's research indicated that the grading immediately south of the tract line for the City of Los Angeles took place around 1970/71, and involved excavation of a cut slope and fill placement to create an access road for the then proposed water tank pad south of the western portion of the subject tract. A topographic map of the current conditions was provided to this firm by S.E.C. Civil Engineers, and accompanies this report as the base for Plate H.

This firm used the pre- and post-offsite grading topographic information to construct the southerly portions of Cross-Sections 5-5' through 10-10'. Cross-Sections 5-5' through 10-10' are indicated on both Plate G and Plate H; inferred geologic contacts are also depicted on Plate H. For ease of review, pre-grading topography has been added to Cross-Sections 5-5' through 10-10'.

Remark:

"2. Provide substantial detail for the geologic structure on the sections provided (5-5' through 10-10') to substantiate the Tmss/Tmsh contact. Based on the boring provided for the south-facing slope, B-102, shale and siltstone occur at several intervals in the upper 35 feet and could act as potential failure surfaces."

PSE Response:

As discussed during a previous meeting (January 9, 2007) at the offices of the Los Angeles County Materials Engineering Division with Ms. Karin Burger, Mr. Gan Lem, and representatives of PSE, the Tmss/Tmsh contact noted on the Geotechnical Map in the southern portion of the site was based on a prominent sandstone bed/interval mapped during a previous investigation. Although sandstone is the dominant lithology in this interval, interbedded siltstone/claystone beds

were noted in the boring log and were also included in the slope stability modeling (see PSE Response #2 in Part II of this transmittal).

Remark:

"3. Please describe why the area south of the "Geological Setback Line" is recommended to be placed into a restricted use area. If the consultant is recommending an RUA for this area the proposed tennis courts/recreation area may require relocation to an area not contained within an RUA."

PSE Response:

As discussed, the "RUA" designation will be removed and replaced with "Limited Structural Use" notation.

Remark:

"4. As stated previously on the review sheets dated 6/21/06 and 8/24/06: The consultant must address the potential for a heaving bedrock condition occurring within the proposed subdivision, which appears to have occurred within the neighboring tracts to the east (Tr 30057 and Tr 31548). (Please Note: Tract 45342 had extremely high sulfate levels without heaving but is sufficiently distant to the currently proposed tract to have little correlation with a potential for heaving at the subject site)."

PSE Response:

As indicated on page 4 of Reference 17, to mitigate potential adverse effects of heaving and other sulfide to sulfate transformation phenomenon, this firm recommends the overexcavation of cut pads a minimum of five feet below finished grade, then replacing the resultant void to proposed pad grade with engineered fill. Also, cut slopes which expose unoxidized (gray) bedrock should be removed and replaced with equipment width stabilization fill sections. In addition, it is recommended that structural improvements be designed to account for "moderate" to "severe" sulfate exposure levels per CBS Table 19-A-4.

Remark:

"5. The Soils Engineering review dated 12/14/06 is attached."

PSE Response:

Please see Part II of this transmittal for this firm's responses to the Soils Engineering Review Sheet.

PART II

Response to Soils Engineering Review Sheet dated 12-14-06

Remark:

"1. Requirements of the Geology Section are attached."

PSE Response:

Please see Part I of this transmittal for this firm's responses to the Geologic Review Sheet.

Remark:

"2. Provide the following information or test results for use in slope stability analyses of the south-facing slopes:

*a. Revised cross-sections based on **actual** site topography, as-built keyway dimensions, etc. as requested by the Geology Section.*

b. Along bedding (or repeated) shear strength test results to substantiate the shear strength parameters of sheared clay, fractures, beddings, and other weak zones used in the slope stability analyses."

PSE Response:

As presented in this firm's response to Remark No. 1 in Part I, both pre- and post-grading topography within the southerly adjacent Los Angeles City property is included herein on Plates G and H. Both topographies are also depicted on Cross-Sections 5-5' through 10-10'. In the absence of specific information available in the City files, keyway and backcut configurations within the offsite fill are conjectural.

During a recent meeting (February 8, 2007) at the offices of the Los Angeles County Materials Engineering Division with Ms. Karin Burger, Mr. Gan Lem, and representatives of PSE, the along bedding shear strength parameters for the slope stability analyses were discussed. In an effort to substantiate the "along bedding" shear strength parameters used in this firm's slope stability analyses, this firm reviewed our files involving nearby projects developed in similar bedrock materials. As part of the Reference 5 report, this firm performed direct shear tests on "slide plane" materials collected from several borings within then-existing landslides. Logs of these borings are presented herein on Plates B-1 through B-8. The results of the direct shear testing performed on "slide plane" material are presented on Plate C.

The results of these direct shear tests on slide plane material yielded shear strength parameters of C = 300 psf and Ø = 24°. However, this firm elected to reduce those values for the analyses presented herein, and has used parameters of C = 300 psf and Ø = 18 ° to represent shear strengths along bedding in our slope stability analyses.

It is our opinion that these parameters are reasonable and acceptable for this analysis given the fact that they were derived from previously sheared and mobilized slide plane material, were factored down, and are being used to represent strengths along bedding within intact bedrock.

This firm's updated slope stability analyses are presented on Plates D-1 through D-38.

Remark:

"3. Provide the following additional and/or revised slope stability analyses of the south-facing slopes:

*a. Revised stability analyses of cross-sections based on **actual** site topography, as-built keyway dimensions, etc. as necessary. Recommend mitigation if factors of safety are below County minimum standards.*

b. Additional stability analyses of the lower portions of the slopes. If the results of the stability analyses are below County minimum standards, then provide additional stability analyses of the upper portions of the slopes using a post failure geometry that assumes the lower portion of the slope has failed. Recommend mitigation if factors of safety are below County minimum standards.

c. Revised stability analyses utilizing shear strength parameters that are representative of sheared clay, fractures, beddings, and other weak zones as necessary. Recommend mitigation if factors of safety are below County minimum standards.

d. Additional stability analyses considering bedding dip angles of 12 to 23 degrees. Recommend mitigation if factors of safety are below County minimum standards.

PSE Response:

Updated slope stability analyses for Cross-Sections 5-5' through 10-10' are presented herein on Plates D-1 through D-38 and are summarized in Table I of the Appendix. The analyses block search was revised for the lower portions of the slope, the along bedding shear strength parameters were revised as indicated above, and a revised bedding dip range of 12° to 23 ° degrees was utilized in the analysis presented herein. The factors of safety, both static and pseudostatic, for Cross-Sections 5-5' through 10-10' are in excess of County of Los Angeles minimums.

Remark:

"4. As requested by the Geology Section, address the distress observed in areas adjacent to this proposed subdivision as stated in the letter by Slosson & Associates dated 12/4/91. Based on the results of additional investigation with respect to the distress observed in areas adjacent to this proposed subdivision, recommend mitigation as necessary."

PSE Response:

Please see the discussion of this issue in Sections 6.2.3 and 6.2.6.1 of Reference 14, and in the response to Remark 4, Part II of Reference 17.

Remark:

"5. Show all recommended mitigation measures on the Geotechnical map."

PSE Response:

The mitigation measures recommended by this firm are shown on the accompanying Geotechnical Map.

Remark:

"6. Include a copy of this review sheet with your response."

PSE Response:

Copies of the Geologic (dated 12/12/06) and Soils Engineering (dated 12/14/06) review sheets accompany this transmittal (Plates A-1 and A-2).

CLOSURE

Given the considerations outlined herein and in the referenced reports, the proposed grading indicated on the most recent map for the Vesting Tentative Tract Map, Tract No. 52652 (revised date of September 18, 2006) will be free from the hazards associated with landsliding, settlement and slippage provided that the grading construction is performed in an acceptable manner in accordance with applicable Code requirements and recommendations contained herein and in the Reference 14 and 17 reports. Further, the completed grading will not have a detrimental effect on the geologic stability of neighboring offsite properties.

The findings and recommendations contained herein and in this firm's Reference 14 and 17 reports are based upon the specific excavations and observations as noted. The materials and

conditions immediately adjacent to or beneath those observed may have different characteristics, and no representations are made as to the quality or extent of materials not observed.

This report is subject to review by the governing authorities. If you have any questions or require additional information, please contact this office at (714) 220-0770.

Respectfully submitted,
PACIFIC SOILS ENGINEERING, INC.

By: _____
WILLIAM D. JONES
Civil Engineering Associate

By: _____
RICHARD H. SPINDLER
CEG 1802/Reg. Exp.: 4-30-08
Certified Engineering Geologist

Reviewed by: _____
PAUL J. ERNST/RGE 2317
RCE 46394/Reg. Exp.: 3-31-07
Manager of Geotechnical Services



Distr.: (2) Addressee
(2) SEC Engineers, Inc. – Attn: Mr. Larry Gray
(2) County of L.A. – GMED – Attn: Soils & Geology

WDJ/RHS/PJE:cp-jp-26370006

APPENDIX

TABLE OF CONTENTS

Selected References ..... Pages 8 and 9

Summary of Slope Stability Calculations ..... Table I

County of Los Angeles Review Sheets ..... Plates A-1 and A-2

Boring Logs ..... Plates B-1 through B-8

Direct Shear Tests ..... Plate C

Gross and Surficial Slope Stability Calculations ..... Plates D-1 through D-38

Geotechnical Cross-Sections ..... Plate E
(in pocket)

Geotechnical Map ..... Plates F-1 and F-2
(in pocket)

Offsite Topography (Pre-Grade Geologic Map) ..... Plate G
(in pocket)

Offsite Topography (Post-Grade Geologic Map) ..... Plate H
(in pocket)

APPENDIX

REFERENCES

1. Preliminary Investigation of Tentative Tract 30057; by Pacific Soils Engineering, Inc., dated October 30, 1964 (W.O. 5228).

2. Sulfate Study, Larwin Castaic Project; by Pacific Soils Engineering, Inc., dated August 16, 1985 (W.O. 10690-R).

3. Response to Geologic Review Sheet, Tract No. 32355 and 31596 (Parent Tract 42754) County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated February 26, 1986 (W.O. 10690-E).

4. Distress Observed in the Vicinity of Vickiview Drive and Welby Way, West Hills, California; Letter by Slosson and Associates, dated December 4, 1991.

5. Supplementary Geotechnical Investigation and Geotechnical Grading Plan Review, Tract 45342, Calabasas Area, County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated May 20, 1998 (W.O. 102344).

6. Report of Geotechnical Engineering and Geological Investigation and Review of 100 Scale Grading Plan, Tentative Tract 52652, 58 Acres Kittridge & Randiwood Residential Development Project, West Hills, County of Los Angeles, California; by Environmental Geotechnology Laboratory, Inc., dated November 9, 1998 (Project No.: 98-139-002EG).

7. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated December 17, 1998.

8. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated December 17, 1998.

9. Response to County of Los Angeles Materials Engineering Division Geologic (11-16-98) and Geotechnical Engineering (11-17-98) Review Sheets, Tract 45342 – Calabasas, County of Los Angeles, California; by Pacific Soils Engineering, Inc, dated December 22, 1998 (W.O. 102344).

10. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated January 14, 1999.

11. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated January 20, 1999.

12. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated June 21, 2006.

13. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated June 29, 2006.

APPENDIX

REFERENCES

(Continued)

14. Preliminary Geotechnical Report, Vesting Tentative Tract Map, Tract No. 52652, West Hills Area, County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated July 10, 2006 (W.O. 102637).

15. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated August 24, 2006.

16. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated September 7, 2006.

17. Addendum Tentative Map Review and Response to Los Angeles County Department of Public Works, Geotechnical and Materials Engineering Division (GMED), Geologic (8-24-06) and Soils Engineering (9-7-06) Review Sheets, Vesting Tentative Tract Map, Tract No. 52652, West Hills Area, County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated November 17, 2006 (W.O. 102637).

18. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated December 12, 2006 (copy attached; Plate A-1)).

19. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated December 14, 2006 (copy attached; Plate A-2).

TABLE I

SUMMARY OF SLOPE STABILITY CALCULATIONS

Cross-Section	Location	Condition	Mitigation	Keyway Dimensions*	Factor-of-Safety		Calculations (on Plates D-1 throuth D-38)
					Static	Pseudostatic	
5-5'	South of Kittridge Street	Offsite natural slope above fill slope	Setback Line	N/A	1.78	1.26	D-1 through D-6
6-6'	Lot 15	Offsite natural slope above fill slope	Keyway & Setback Line	65(±) ft. Wide @ 1120' Elev.	1.71	1.30	D-7 through D-12
7-7'	Lot 15	Offsite natural slope above fill slope	Keyway & Setback Line	44(±) ft. Wide @ 1130' Elev.	1.74	1.25	D-13 though D-20
8-8'	Lot 16	Offsite natural slope above fill slope	Keyway & Setback Line	24(±) ft. Wide @ 1168' Elev.	1.60	1.14	D21 through D-26
9-9'	South of Access Road	Offsite natural slope above fill slope	Keyway & Setback Line	30(±) ft. Wide @ 1230' Elev.	2.29	1.50	D-27 through D-32
10-10'	South of Proposed Tennis Courts	Existing offsite 2:1 cut slope	Setback Line	N/A	2.17	1.42	D-33 through D-38

*N/A = Not Applicable

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
__ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT 52652
SUBDIVIDER Faye Estates, LLC
ENGINEER S.E.C. Civil Engineers
GEOLOGIST Pacific Soils Engineering, Inc.; EGL
SOILS ENGINEER Pacific Soils Engineering, Inc.; EGL

TENTATIVE MAP DATED 11/08/06 (revised) Exhibit A
LOCATION Woodland Hills

REPORT DATE 11/17/06, 7/10/06; 11/09/98
REPORT DATE 11/17/06, 7/10/06; 11/09/98

The Regional Planning Commission, developer, and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR PARCEL MAP:

1. Provide the off-site topography on which the southern portions of Geotechnical Sections 5-5' through 10-10' are based. All contacts illustrated on Sections 5-5' through 10-10' must be shown on the map, i.e. existing af, proposed af/keyway, etc. and all substantiating data for existing conditions.

2. Provide substantial detail for the geologic structure on the sections provided (5-5' through 10-10') to substantiate the Tmss/Tmsh contact. Based on the boring provided for the south-facing slope, B-102, shale and siltstone occur at several intervals in the upper 35 feet and could act as potential failure surfaces.

3. Please describe why the area south of the "Geological Setback Line" is recommended to be placed into a restricted use area. If the consultant is recommending an RUA for this area the proposed tennis courts/recreation area may require relocation to an area not contained within an RUA.

4. As stated previously on the review sheets dated 6/21/06 and 8/24/06: The consultant must address the potential for a heaving bedrock condition occurring within the proposed subdivision, which appears to have occurred within the neighboring tracts to the east (Tr 30057 and Tr 31548). (Please Note: Tract 45342 had extremely high sulfate levels without heaving but is sufficiently distant to the currently proposed tract to have little correlation with a potential for heaving at the subject site).

5. The Soils Engineering review dated 12/14/06 is attached.

NOTE Provide a copy of this review with your resubmittal

Prepared by Karin Burger Reviewed by _____ Date December 12, 2006

P:\Gmepub\Geology Review\Forms\Form01.doc
10/30/03

PLATE A-1

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 9.1
Job Number GMTR
Sheet 1 of 1 4

Review No. 3

Tentative Tract Map 52652

Location	Woodland Hills
Developer/Owner	Faye Estates, LLC
Engineer/Architect	SEC Civil Engineer
Soils Engineer	Pacific Soils (102637)
Geologist	Same as above

DISTRIBUTION:
___ Grading/ Drainage
1 Geo/Soils Central File
1 Land Development
1 Geologist
1 Soils Engineer
___ Engineer/Architect

Review of:
Revised Tentative Tract Map and Exhibit A Dated By Regional Planning 5/30/06
Soils Engineering and Geologic Reports Dated **11/17/06**, 8/18/06 and 7/10/06
Soils Engineering and Geologic Report By EGL Dated 11/9/98
Previous review sheet dated 9/7/06

ACTION:
Tentative Map feasibility is not recommended for approval.

REMARKS:
1. Requirements of the Geology Section are attached.

2. Provide the following information or test results for use in the slope stability analyses of the south-facing slopes:
   a. Revised cross-sections based on **actual** site topography, as-built keyway dimensions, etc. as requested by the Geology Section.
   b. Along bedding (or repeated) shear strength test results to substantiate the shear strength parameters of sheared clay, fractures, beddings, and other weak zones used in the slope stability analyses.

3. Provide the following additional and/or revised slope stability analyses of the south-facing slopes:
   a. Revised stability analyses of cross-sections based on **actual** site topography, as-built keyway dimensions, etc. as necessary. Recommend mitigation if factors of safety are below County minimum standards.
   b. Additional stability analyses of the lower potions of the slopes. If the results of the stability analyses are below County minimum standards, then provide additional stability analyses of the upper portions of the slopes using a post failure geometry that assumes the lower potion of the slope has failed. Recommend mitigation if factors of safety are below County minimum standards.
   c. Revised stability analyses utilizing shear strength parameters that are representative of sheared clay, fractures, beddings, and other weak zones as necessary. Recommend mitigation if factors of safety are below County minimum standards.
   d. Additional stability analyses considering bedding dip angles of 12 to 23 degrees. Recommend mitigation if factors of safety are below County minimum standards.

4. As requested by the Geology Section, address the distress observed in areas adjacent to this proposed subdivision as stated in the letter by Slosson & Associates dated 12/4/91. Based on the results of additional investigation with respect to the distress observed in areas adjacent to this proposed subdivision, recommend mitigation as necessary.

5. Show all recommended mitigation measures on the geotechnical map.

6. Include a copy of this review sheet with your response.

NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER:
A. ON-SITE SOILS ARE CORROSIVE TO CONCRETE AND FERROUS METALS.
B. ON-SITE SOILS HAVE A MEDIUM TO HIGH EXPANSION POTENTIAL.

REGISTERED ENGINEER NO. 2328 EXP. 6/30/07 GEOTECHNICAL STATE OF CALIFORNIA

Prepared by _____ Date 12/14/06
Gan Lem

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.
Gan:tract-52652

PLATE A-2

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/4/97
DATE FINISHED 11/4/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 998
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-105
LOGGED BY JMC
NOTE 0-27' 4500#; 27-52' 3700#; 52-80' 2700#; 80-103' 1,000#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
0	998					**SOIL:** Silty Clay, dry, loose, porous, roots.				
						LANDSLIDE DEBRIS (Qls): Silty Clay, light brown to tan, dry, loose, porous, roots, shale fragments, occasional krotovinas.				
	995									
5		R	1			Cherty Shale, dark gray brown, very hard, brittle, fractured.	31.2	57	43	
	990				@ 7' B: N10W10SW					
10		R	PUSH			Clay Shale, brown to dark olive gray, moist, dense, fractured, interbedded with Cherty Shale, dark gray, very hard, fractured, occasional Sandstone interbeds, yellowish orange, fine-grained, thin bedded, moist, dense, some gypsum along bedding, bedding continuous around boring.	29.7	84	81	
	985									
15		R	1		@ 15' B: N25W12SW		38.6	80	94	
	980									
20		R	2				82.6	33	55	
	975				@ 23' B: N15W25SW	Cherty Shale, dark gray, dense, very hard, bedding continuous around boring.				
25		R	2				84.5	32	53	
	970									
30		R	2				37.6	80	91	
					@ 31' B: N15W35SW	Clay Shale, brown to dark olive brown, moist, dense, fractured, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, moist, dense, bedding continuous around boring, common gypsum fracture filling and gypsum along bedding.				
	965				@ 33' J: N80E75SE					
35		R	3				29.5	81	73	
	960									

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

GROUNDWATER LEVEL
WATER SEEP
B BEDDING C CONTACT
J JOINTING F FAULT
S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-10

W.O. 102637

PLATE B-1

GEOTECHNICAL BORING LOG

PROJECT NO.	102344	PROJECT NAME	Shea Homes	BORING DESIG.	B-105
DATE STARTED	11/4/97	GROUND ELEV.	998	LOGGED BY	JMC
DATE FINISHED	11/4/97	GW DEPTH (FT)		NOTE	0-27' 4500#; 27-52' 3700#; 52-80' 2700#; 80-103' 1,000#
DRILLER		DRIVE WT.			
TYPE OF DRILL RIG	30" Bucket Auger	DROP			

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
		R	4		@ 40' B: N20W18SW @ 41' J: N10E70SE	Cherty Shale, dark gray, dense, very hard, fractured, bedding, continuous around boring. @ 41 feet, open fractures.	32.4	89	98	
	955									
45		R	3				46.2	74	98	
					@ 46' B: N10W18SW	Clay Shale, dark olive gray, moist, dense, moderately hard, fractured, interbedded with Sandstone, yellowish orange, fine-grained thin bedded, moist, dense, common thin bentonitic clay laminations, light gray to white, up to 1/4" thick.				
	950									
50		R	5		@ 50' B: N10W24SW		31.5	87	90	
	945									
55						@ 55 feet, Cherty Shale Bed, 1' thick, dark gray, dense, very hard, fractured, gypsum along fractures and bedding.				
					@ 56' B: N25W30SW					
	940									
60		R	9				27.2	89	83	
					@ 62' B: N10W15SW					
	935									
65										
					@ 67' B: N20W18SW					
	930									
70		R	3				31.8	87	93	
		B			@ 72' Qls: N55W12SW	@ 71 feet, Slide Plane, Fat Clay, gray brown, moist to very moist, soft, jumbled.				MAX DSR EI
	925					**MODELO FORMATION (Tm):** Clay Shale, dark brown to black, moist, dense, hard to very hard. @ 73 feet, very hard, ripper and core bucket used, refusal. Total Depth 74 feet. No water. No caving.				

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

- GROUNDWATER LEVEL
- WATER SEEP
- B BEDDING
- J JOINTING
- C CONTACT
- F FAULT
- S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-11

W.O. 102637

PLATE B-2

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/6/97
DATE FINISHED 11/6/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 1080
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-110
LOGGED BY JMC
NOTE 0-24' 3548#; 24-47' 2577#; 47-73' 1648#; 73-95' 810#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	1080					**SOIL:** Silty Clay, dark brown, dry, loose, porous, roots, shale fragments.				
						LANDSLIDE DEBRIS (Qls): Silty Clay, light brown to tan, dry, loose, porous, roots, shale fragments, caliche.				
5	1075									
						Silty Clay, dark olive brown, damp, abundant clay shale and cherty shale fragments, roots.				
10	1070	R	1				31.7	78	74	CON
						Clay Shale, dark olive gray, damp to moist, moderately dense, fractured, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, damp, dense, common Cherty Shale Beds, dark gray, highly fractured, bedding discontinuous.				
15	1065				@ 14' B: N60W15NE	@ 14 feet, bedding continuous around boring.				
					@ 18' B: N30W8NE	@ 18 feet, bedding continuous around boring.				
20	1060	R	PUSH				35.7	79	85	
					@ 22' B: N35W22NE	Cherty Shale, dark gray, dense, very hard, fractured with gypsum fracture filling.				
25	1055									
		B			@ 27' B: N40W23NE	Clay Shale, dark olive gray, moist, dense, moderately hard, fractured, gypsum along fracture and bedding surfaces, interbedded with Sandstone, yellowish orange, fine-grained, moist, dense, bedding continuous and unbroken around boring.				
30	1050	R	5		@ 30' B: N10W25NE	Cherty Shale, dark gray, dense, very hard, fractured, gypsum along fracture surfaces.	33.5	83	88	
						Clay Shale, brown to dark olive gray, moist, dense, moderately hard to hard, fractured, gypsum along fractures and bedding, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, moist, dense, common Cherty Shale Beds, dark gray, dense, very hard, fracture.				
35	1045				@ 35' B: N40W17NE					
					@ 38' B: N30W17NE	@ 38 feet, Cherty Shale Layer continuous around boring.				
	1040									

SAMPLE TYPES:
[R] RING (DRIVE) SAMPLE
[S] SPT (SPLIT SPOON) SAMPLE
[B] BULK SAMPLE [T] TUBE SAMPLE

GROUNDWATER LEVEL
WATER SEEP
[B] BEDDING [C] CONTACT
[J] JOINTING [F] FAULT [S] SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-23

W.O. 102637

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/6/97
DATE FINISHED 11/6/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 1080
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-110
LOGGED BY JMC
NOTE 0-24' 3548#; 24-47' 2577#; 47-73' 1648#; 73-95' 810#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT. URATION (%)	OTHER TESTS
	1040	R	2		@ 42' B: N10W12NE		32.9	84	88	CON
45	1035				@ 47' B: N20E12SE	@ 48 feet, Cherty Shale Bed, 6" thick, continuous around boring.				
50	1030	R	12			Clay Shale, dark brown, moist, dense, hard, fractured with gypsum, fracture filling, bedding continuous around boring, common Siliceous Shale and Cherty Shale interbeds.	48.6	71	96	
55	1025				@ 53' B: N40W17NE	@ 53 feet, cherty shale layer, continuous around boring.				
60	1020	R	8		@ 58' B: N25W13NE	Clay Shale, dark olive gray, moist, dense, moderately hard, fractured with gypsum fracture filling, interbedded with Sandstone, yellowish orange, fine-grained, moist, dense, common white bentonitic clay layers and nodules.	40.5	75	87	
65	1015			× × × × ×	@ 63' B: N40W10NE	Cherty Shale, dark gray, dense, very hard, fractured.				
70	1010	R	7		@ 69' B: N20W8NE	Cherty Shale, dark brown to dark olive gray, moist, dense, hard, fractured with gypsum along fractures and bedding, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, moderately dense.	41.9	79	100	
75	1005				@ 75' B: N50W15NE	@ 73 feet, Siliceous Shale Layer, 1' thick, yellowish orange, dense, very hard, fractured.				
	1000					Claystone, dark brown, moist, dense, fractured, massive.				
						@ 80 feet, Slide Plane: Clay, 1" thick, dark brown, soft,				

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

GROUNDWATER LEVEL
WATER SEEP
B BEDDING
J JOINTING
C CONTACT
F FAULT
S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-24

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/6/97
DATE FINISHED 11/6/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 1080
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-110
LOGGED BY JMC
NOTE 0-24' 3548#; 24-47' 2577#; 47-73' 1648#; 73-95' 810#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	1000	R	30/6"		@ 80' Qls: N50W15NE @ 81' B: N45W15NE	sheared. **MODELO FORMATION (Tm):** Clay Shale, brown to olive gray, moist, dense, hard, gypsum along bedding, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, moist, dense.	31.1	87	91	DS
85	995				@ 84' B: N40W15NE	@ 88 feet, very hard, refusal. Total Depth 88 feet. No water. No caving.				

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

- GROUNDWATER LEVEL
- WATER SEEP
- B BEDDING
- J JOINTING
- C CONTACT
- F FAULT
- S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-25

W.O. 102637

PLATE B-5

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/7/97
DATE FINISHED 11/7/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 985
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-114
LOGGED BY JMC
NOTE 0-24' 4500#; 24-52' 3700#; 52-80' 2700#; 80-103' 1,000#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT. URATION (%)	OTHER TESTS
	985					Pad in 2' of cut. **LANDSLIDE DEBRIS (Qls):** Clay Shale, olive gray, damp, moderately dense, fractured, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, occasional light gray bentonitic clay layers, caliche, roots.				
5	980									
					@ 8' J: N60E75SE	Clay Shale, dark olive gray, moist, dense, fractured, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, occasional light gray bentonitic clay layers up to 1" thick.				
10	975	R	PUSH				36.9	84	100	
						Clay Shale, brown to dark brown, moist, dense, moderately hard, occasionally diatomaceous, occasional light gray, bentonitic clay layers up to 1/2" thick.				
					@ 14' B: N70E12SE					
15	970									
20	965	R	1				36.2	80	88	
					@ 21' B: N50E12SE	@ 21 feet, Cherty to Siliceous Shale layer, yellowish orange to dark gray, dense, very hard, fractured, 1' thick.				
					@ 24' B: N40W16NE	@ 24 feet, Cherty Shale layer, dark gray, dense, very hard, highly fractured, discontinuous around boring.				
25	960					Clay Shale, dark olive gray, moist, dense, highly fractured, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, occasionally diatomaceous to cherty, common bentonitic clay layers up to 1/2" thick, bedding broken and discontinuous.				
					@ 27' B: N10W15NE					
30	955	R	2				24.9	88	73	
					@ 32' B: N10W8SW					
35	950									
					@ 36' B: N60W18SW	Diatomaceous to Siliceous Shale, light gray to yellowish orange, dense, very hard, fractured.				
					@ 39' J:					
	945									

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

- GROUNDWATER LEVEL
- WATER SEEP
- B BEDDING
- J JOINTING
- C CONTACT
- F FAULT
- S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-33

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/7/97
DATE FINISHED 11/7/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 985
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-114
LOGGED BY JMC
NOTE 0-24' 4500#; 24-52' 3700#; 52-80' 2700#; 80-103' 1,000#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT. URATION (%)	OTHER TESTS
	945	R	4		N70E80NW		38.5	84	99	
						Clay Shale, brown to dark brown, moist, dense, moderately hard, occasional Diatomaceous Shale layers, and Bentonitic Clay layers, slight petroliferous odor, bedding continuous around boring.				
					@ 44' B: N40W22SW					
45	940				@ 45' J: N45E52SE	Diatomaceous to Cherty Shale, light gray to dark gray, dense, hard to very hard, fractured, discontinuous bedding.				
					@ 49' B: N70W17SW					
50	935	R	9				25.3	94	87	
					@ 53' B: N50W15SW					
55	930					Clay Shale, brown to dark brown, moist, dense, moderately hard, fractured, occasional light gray bentonitic clay layers up to 1" thick, bedding continuous around boring.				
					@ 59' B: N40W12SW					
60	925	R	12				24.9	95	88	
						Claystone, brown to dark brown, moist, dense, highly fractured, sheared, massive, soft to firm.				
65	920									
					@ 68' J: N70E80NW					
70	915	R	7		@ 70' B: N60W10SW	Clay Shale, brown to dark brown, moist, dense, moderately hard, fractured, occasionally diatomaceous, bedding broken and discontinuous, gypsum along fractures and bedding, slight petroliferous odor.	40.7	79	98	
75	910				@ 75' B: N65W16SW					
	905									

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

- GROUNDWATER LEVEL
- WATER SEEP
- B BEDDING
- J JOINTING
- C CONTACT
- F FAULT
- S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-34

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/7/97
DATE FINISHED 11/7/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 985
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-114
LOGGED BY JMC
NOTE 0-24' 4500#; 24-52' 3700#; 52-80' 2700#; 80-103' 1,000#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	905	R	20				31.7	87	91	
					@ 83' B: N50W18SW	Cherty Shale, dark gray, dense, very hard, fractured, gypsum along bedding and fracture surfaces.				
85	900	B				Clay Shale, dark brown to black, moist, dense, hard, fractured, slight petroliferous odor, bedding broken and discontinuous.				
					@ 89' B: N40EVert.					
90	895	R	20/6"				24.1	84	65	
		B			@ 92' Qls: N60E12SE	Clay, dark gray, moist, highly sheared, some Sand, light gray, fine-grained, 1' thick.				MAX DSR
					@ 94' B: N60E12SE	**MODELO FORMATION (Tm):** Clay Shale, dark brown to black, moist, dense, hard to very hard.				
95	890					@ 97.5 feet, very hard, refusal.				
						Total Depth 97.5 feet. No water. No caving.				

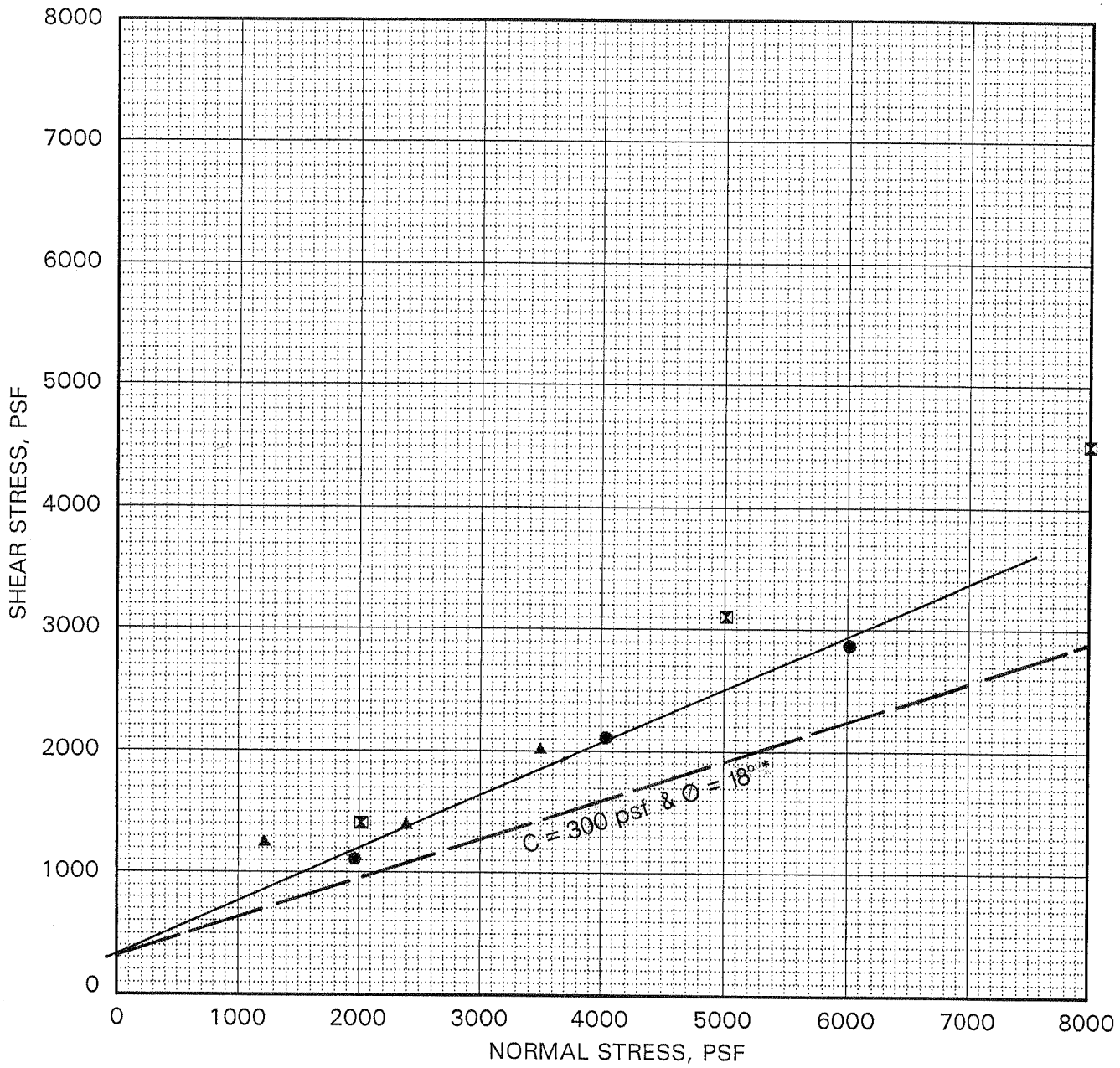
SAMPLE TYPES:
[R] RING (DRIVE) SAMPLE
[S] SPT (SPLIT SPOON) SAMPLE
[B] BULK SAMPLE [T] TUBE SAMPLE

GROUNDWATER LEVEL
WATER SEEP
[B] BEDDING [C] CONTACT
[J] JOINTING [F] FAULT
[S] SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-35

DIRECT SHEAR TEST



SLIDE PLANE MATERIAL	COHESION 300 psf.
	FRICTION ANGLE 24.0 degrees

*RESIDUAL VALUES UTILIZED IN ANALYSIS

symbol	boring	depth (ft.)	symbol	boring	depth (ft.)
●	B-105	71.0			
⊠	B-110	80.0			
▲	B-114	92.0			

DIRECT SHEAR TEST

PACIFIC SOILS ENGINEERING, INC.

FROM:
W.O. 102344 **PLATE B-22**

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\5ARS.in
Output Filename: C:\BILL'S engineer\stabldata\102637\5ARS.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\5ARS.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 5-5'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	190.00	113.00	193.00	2
2	113.00	193.00	160.00	213.00	2
3	160.00	213.00	170.00	213.00	2
4	170.00	213.00	225.00	237.00	2
5	225.00	237.00	235.00	237.00	2
6	235.00	237.00	290.00	260.00	2
7	290.00	260.00	300.00	260.00	2
8	300.00	260.00	365.00	279.00	2
9	365.00	279.00	405.00	285.00	2
10	405.00	285.00	440.00	285.00	2
11	440.00	285.00	475.00	293.00	1
12	475.00	293.00	515.00	307.00	1
13	515.00	307.00	570.00	287.00	1
14	570.00	287.00	642.00	287.00	1
15	642.00	287.00	670.00	294.00	1
16	670.00	294.00	840.00	294.00	1
17	0.00	173.00	70.00	175.00	1
18	70.00	175.00	93.00	180.00	1
19	93.00	180.00	123.00	192.00	1
20	123.00	192.00	165.00	191.00	1
21	165.00	191.00	182.00	194.00	1
22	182.00	194.00	230.00	210.00	1
23	230.00	210.00	300.00	248.00	1
24	300.00	248.00	437.00	281.00	1
25	437.00	281.00	440.00	285.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00

2 23.0 300.00 18.00
3 90.0 500.00 34.00

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
2000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	100.00	140.00	270.00	170.00	80.00
2	400.00	230.00	690.00	230.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 2000
Number of Trial Surfaces With Valid FS = 2000
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.338	198.250
2	138.163	197.802
3	151.912	191.804
4	166.751	189.612
5	181.711	188.516
6	411.240	271.595
7	419.848	283.879
8	419.871	285.000

Factor of Safety
*** 1.777 ***

Individual data on the 20 slices

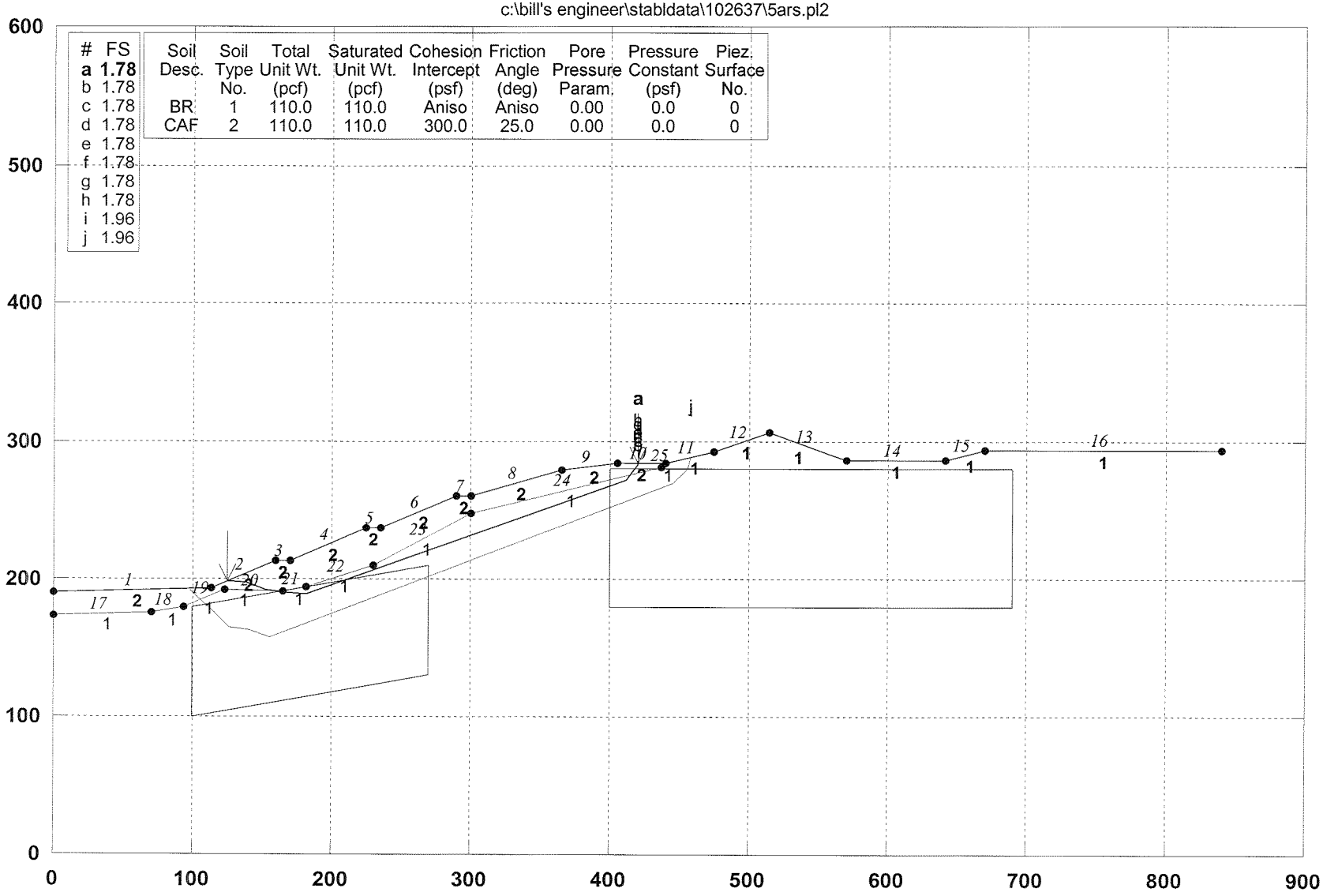
Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.8	4166.0	0.0	0.0	0.	0.	0.0	0.0	0.0
2	13.7	17891.6	0.0	0.0	0.	0.	0.0	0.0	0.0
3	4.0	8257.5	0.0	0.0	0.	0.	0.0	0.0	0.0
4	4.1	9600.8	0.0	0.0	0.	0.	0.0	0.0	0.0
5	5.0	12518.2	0.0	0.0	0.	0.	0.0	0.0	0.0
6	1.8	4479.6	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.2	8401.6	0.0	0.0	0.	0.	0.0	0.0	0.0
8	11.7	34278.8	0.0	0.0	0.	0.	0.0	0.0	0.0
9	0.3	941.7	0.0	0.0	0.	0.	0.0	0.0	0.0
10	43.0	147648.0	0.0	0.0	0.	0.	0.0	0.0	0.0
11	5.0	17550.6	0.0	0.0	0.	0.	0.0	0.0	0.0
12	5.0	16555.2	0.0	0.0	0.	0.	0.0	0.0	0.0
13	55.0	185987.1	0.0	0.0	0.	0.	0.0	0.0	0.0
14	10.0	33525.9	0.0	0.0	0.	0.	0.0	0.0	0.0
15	65.0	188794.2	0.0	0.0	0.	0.	0.0	0.0	0.0
16	40.0	87569.4	0.0	0.0	0.	0.	0.0	0.0	0.0
17	6.2	9975.4	0.0	0.0	0.	0.	0.0	0.0	0.0
18	2.7	3406.3	0.0	0.0	0.	0.	0.0	0.0	0.0
19	5.9	3470.7	0.0	0.0	0.	0.	0.0	0.0	0.0
20	0.0	1.4	0.0	0.0	0.	0.	0.0	0.0	0.0

CROSS-SECTION 5-5' W.O.102637

c:\bill's engineer\stabldata\102637\5ars.pl2

#	FS
a	**1.78**
b	1.78
c	1.78
d	1.78
e	1.78
f	1.78
g	1.78
h	1.78
i	1.96
j	1.96

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF	2	110.0	110.0	300.0	25.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.78

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-3

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\5ARP.in
Output Filename: C:\BILL'S engineer\stabldata\102637\5ARP.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\5ARP.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 5-5'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	190.00	113.00	193.00	2
2	113.00	193.00	160.00	213.00	2
3	160.00	213.00	170.00	213.00	2
4	170.00	213.00	225.00	237.00	2
5	225.00	237.00	235.00	237.00	2
6	235.00	237.00	290.00	260.00	2
7	290.00	260.00	300.00	260.00	2
8	300.00	260.00	365.00	279.00	2
9	365.00	279.00	405.00	285.00	2
10	405.00	285.00	440.00	285.00	2
11	440.00	285.00	475.00	293.00	1
12	475.00	293.00	515.00	307.00	1
13	515.00	307.00	570.00	287.00	1
14	570.00	287.00	642.00	287.00	1
15	642.00	287.00	670.00	294.00	1
16	670.00	294.00	840.00	294.00	1
17	0.00	173.00	70.00	175.00	1
18	70.00	175.00	93.00	180.00	1
19	93.00	180.00	123.00	192.00	1
20	123.00	192.00	165.00	191.00	1
21	165.00	191.00	182.00	194.00	1
22	182.00	194.00	230.00	210.00	1
23	230.00	210.00	300.00	248.00	1
24	300.00	248.00	437.00	281.00	1
25	437.00	281.00	440.00	285.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	600.0	37.0	0.00	0.0	0
2	110.0	110.0	500.0	34.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	600.00	37.00

2	23.0	300.00	18.00
3	90.0	600.00	37.00

Specified Peak Ground Acceleration Coefficient (A) = 0.520(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.338	198.250
2	138.163	197.802
3	151.912	191.804
4	166.751	189.612
5	181.711	188.516
6	411.240	271.595
7	419.848	283.879
8	419.871	285.000

Janbu's Empirical Coefficient (fo) = 1.036
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 1.257

Table 1 - Individual Data on the 20 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.8	4165.7	0.0	0.0	0.0	0.0	624.9	0.0	0.0
2	13.7	17891.5	0.0	0.0	0.0	0.0	2683.7	0.0	0.0
3	4.0	8258.4	0.0	0.0	0.0	0.0	1238.8	0.0	0.0
4	4.1	9599.7	0.0	0.0	0.0	0.0	1440.0	0.0	0.0
5	5.0	12518.0	0.0	0.0	0.0	0.0	1877.7	0.0	0.0
6	1.8	4479.9	0.0	0.0	0.0	0.0	672.0	0.0	0.0
7	3.2	8401.2	0.0	0.0	0.0	0.0	1260.2	0.0	0.0
8	11.7	34279.5	0.0	0.0	0.0	0.0	5141.9	0.0	0.0
9	0.3	941.1	0.0	0.0	0.0	0.0	141.2	0.0	0.0
10	43.0	147649.6	0.0	0.0	0.0	0.0	22147.4	0.0	0.0
11	5.0	17550.8	0.0	0.0	0.0	0.0	2632.6	0.0	0.0
12	5.0	16555.4	0.0	0.0	0.0	0.0	2483.3	0.0	0.0
13	55.0	185989.6	0.0	0.0	0.0	0.0	27898.4	0.0	0.0
14	10.0	33526.4	0.0	0.0	0.0	0.0	5029.0	0.0	0.0
15	65.0	188797.8	0.0	0.0	0.0	0.0	28319.7	0.0	0.0
16	40.0	87571.8	0.0	0.0	0.0	0.0	13135.8	0.0	0.0
17	6.2	9976.4	0.0	0.0	0.0	0.0	1496.5	0.0	0.0
18	2.7	3406.8	0.0	0.0	0.0	0.0	511.0	0.0	0.0
19	5.9	3470.4	0.0	0.0	0.0	0.0	520.6	0.0	0.0
20	0.0	1.4	0.0	0.0	0.0	0.0	0.2	0.0	0.0

CROSS-SECTION 5-5' W.O.102637

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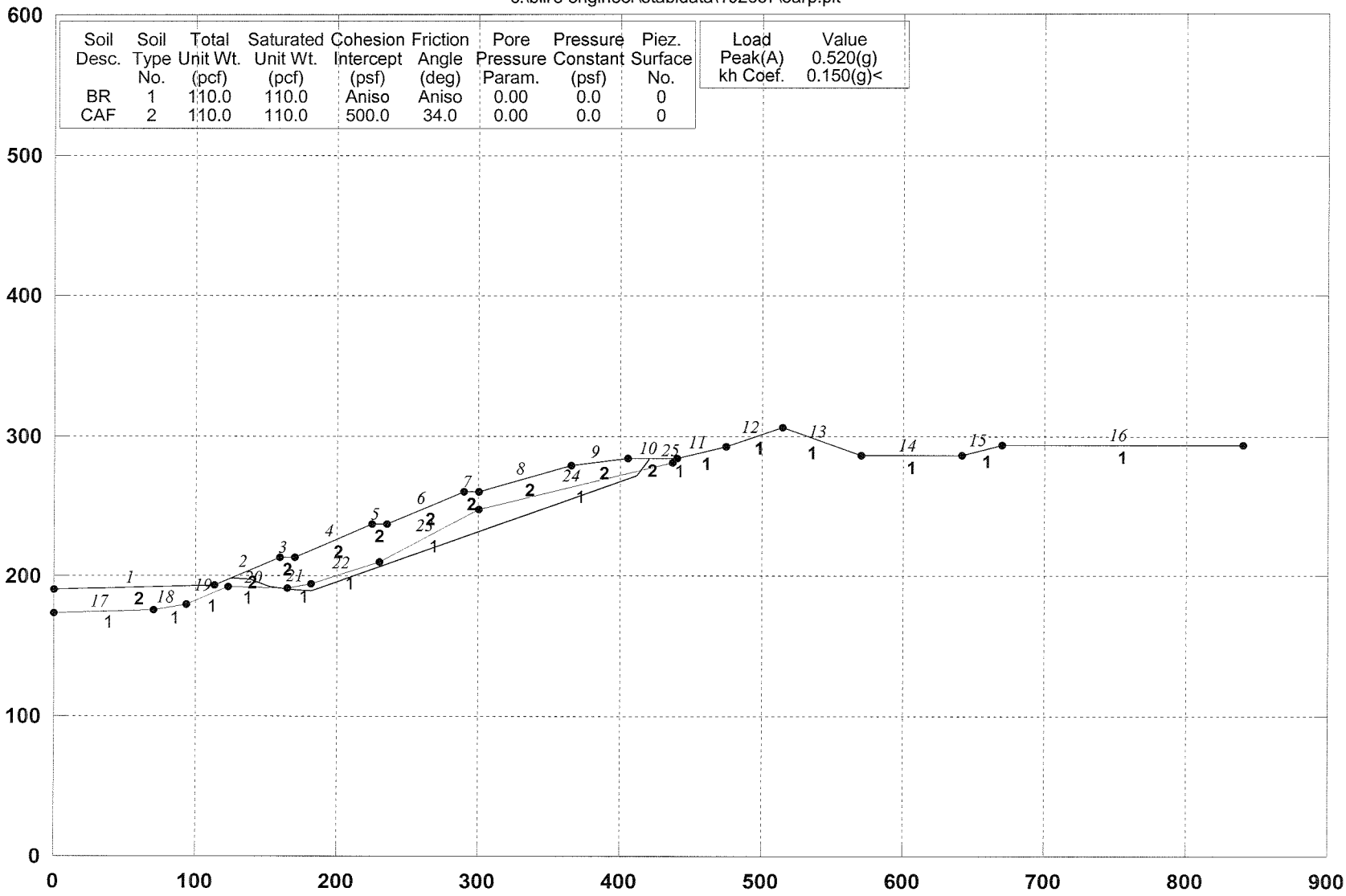
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF	2	110.0	110.0	500.0	34.0	0.00	0.0	0

Load	Value
Peak(A)	0.520(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.26

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

PLATE D-6

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\6ars.in
Output Filename: C:\BILL'S engineer\stabldata\102637\6ars.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\6ars.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 6-6'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
22 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	170.00	100.00	170.00	1
2	100.00	170.00	151.00	170.00	1
3	151.00	170.00	312.00	235.00	2
4	312.00	235.00	327.00	235.00	2
5	327.00	235.00	373.00	260.00	2
6	373.00	260.00	385.00	260.00	2
7	385.00	260.00	415.00	275.00	2
8	415.00	275.00	470.00	275.00	2
9	470.00	275.00	557.00	305.00	1
10	557.00	305.00	590.00	290.00	3
11	590.00	290.00	700.00	290.00	3
12	700.00	290.00	707.00	287.00	3
13	707.00	287.00	740.00	287.00	3
14	740.00	287.00	770.00	287.00	1
15	770.00	287.00	848.00	305.00	1
16	848.00	305.00	1000.00	305.00	1
17	151.00	170.00	210.00	169.00	1
18	210.00	169.00	467.00	268.00	1
19	467.00	268.00	470.00	275.00	1
20	557.00	305.00	625.00	240.00	1
21	625.00	240.00	693.00	240.00	1
22	693.00	240.00	740.00	287.00	1

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	400.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00
2	23.0	300.00	18.00
3	90.0	500.00	34.00

1 PIEZOMETRIC SURFACE(S) SPECIFIED
Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 2 Coordinate Points
Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	604.00	260.00
2	713.00	260.00

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
2000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 22.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	140.00	105.00	430.00	210.00	80.00
2	550.00	230.00	800.00	230.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 2000
Number of Trial Surfaces With Valid FS = 2000
Failure Surface Specified By 7 Coordinate Points

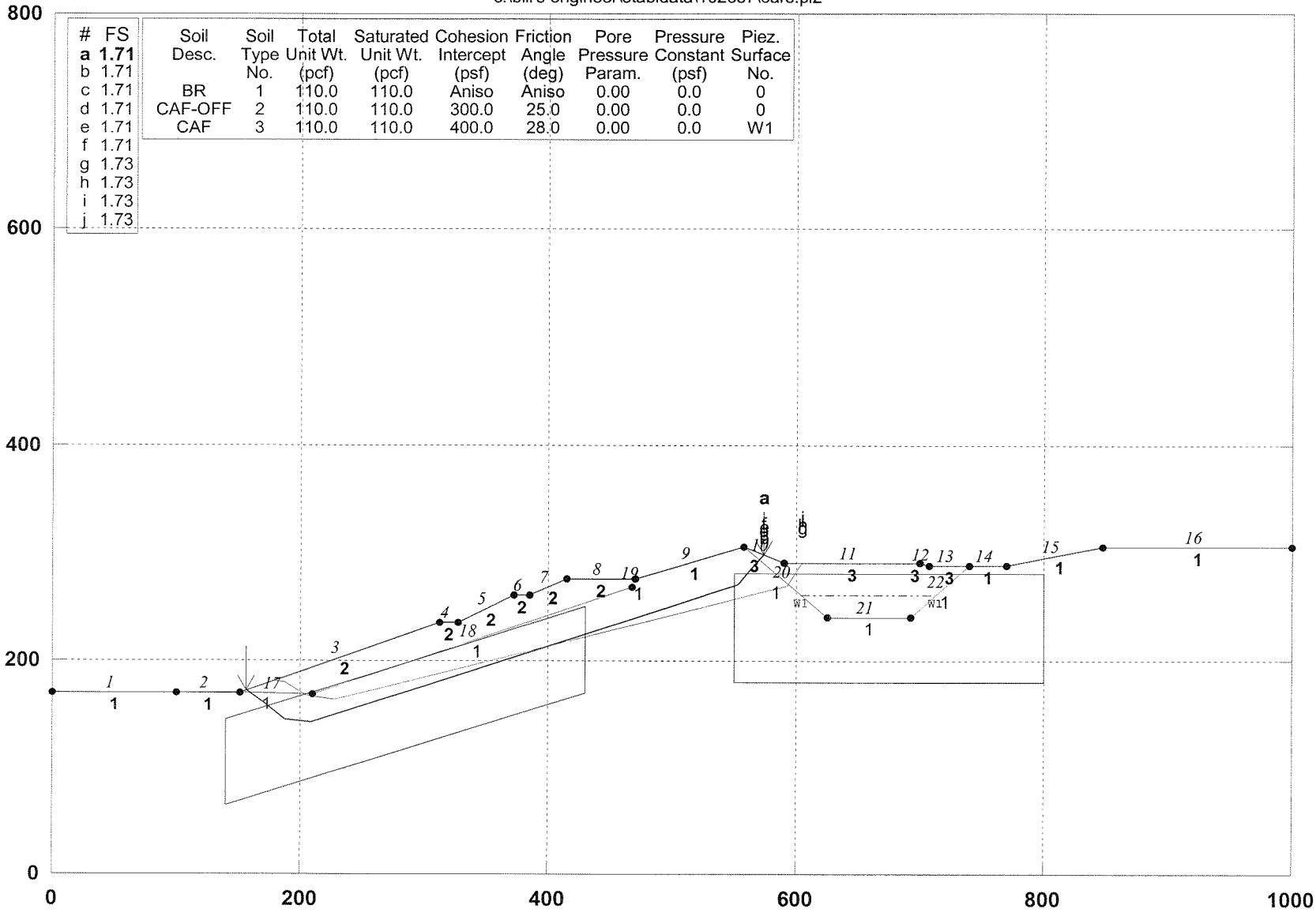
Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.624	172.270
2	171.337	160.322
3	186.894	144.766
4	208.801	142.738
5	553.036	270.594
6	566.150	288.259
7	573.528	297.487

Factor of Safety
*** **1.714** ***
Individual data on the 17 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	3.0	591.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	11.7	13885.1	0.0	0.0	0.	0.	0.0	0.0	0.0
3	15.6	49297.1	0.0	0.0	0.	0.	0.0	0.0	0.0
4	21.9	108826.1	0.0	0.0	0.	0.	0.0	0.0	0.0
5	1.2	6677.8	0.0	0.0	0.	0.	0.0	0.0	0.0
6	102.0	586629.0	0.0	0.0	0.	0.	0.0	0.0	0.0
7	15.0	84391.1	0.0	0.0	0.	0.	0.0	0.0	0.0
8	46.0	264727.8	0.0	0.0	0.	0.	0.0	0.0	0.0
9	12.0	71341.4	0.0	0.0	0.	0.	0.0	0.0	0.0
10	30.0	177363.9	0.0	0.0	0.	0.	0.0	0.0	0.0
11	52.0	263224.9	0.0	0.0	0.	0.	0.0	0.0	0.0
12	3.0	11815.4	0.0	0.0	0.	0.	0.0	0.0	0.0
13	83.0	311862.3	0.0	0.0	0.	0.	0.0	0.0	0.0
14	4.0	13538.5	0.0	0.0	0.	0.	0.0	0.0	0.0
15	9.2	20960.3	0.0	0.0	0.	0.	0.0	0.0	0.0
16	3.6	3783.0	0.0	0.0	0.	0.	0.0	0.0	0.0
17	3.8	1322.5	0.0	0.0	0.	0.	0.0	0.0	0.0

CROSS-SECTION 6-6' W.O.102637

c:\bill's engineer\stabldata\102637\6ars.pl2



GSTABL7 v.2 FSmin=1.71

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-9

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\6arp Sur.in
Output Filename: C:\BILL'S engineer\stabldata\102637\6arp Sur.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\6arp Sur.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 6-6'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
22 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	170.00	100.00	170.00	1
2	100.00	170.00	151.00	170.00	1
3	151.00	170.00	312.00	235.00	2
4	312.00	235.00	327.00	235.00	2
5	327.00	235.00	373.00	260.00	2
6	373.00	260.00	385.00	260.00	2
7	385.00	260.00	415.00	275.00	2
8	415.00	275.00	470.00	275.00	2
9	470.00	275.00	557.00	305.00	1
10	557.00	305.00	590.00	290.00	3
11	590.00	290.00	700.00	290.00	3
12	700.00	290.00	707.00	287.00	3
13	707.00	287.00	740.00	287.00	3
14	740.00	287.00	770.00	287.00	1
15	770.00	287.00	848.00	305.00	1
16	848.00	305.00	1000.00	305.00	1
17	151.00	170.00	210.00	169.00	1
18	210.00	169.00	467.00	268.00	1
19	467.00	268.00	470.00	275.00	1
20	557.00	305.00	625.00	240.00	1
21	625.00	240.00	693.00	240.00	1
22	693.00	240.00	740.00	287.00	1

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	600.0	37.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	500.0	34.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	600.00	37.00
2	23.0	300.00	18.00
3	90.0	600.00	37.00

1 PIEZOMETRIC SURFACE(S) SPECIFIED
Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 2 Coordinate Points
Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	604.00	260.00
2	713.00	260.00

Specified Peak Ground Acceleration Coefficient (A) = 0.520(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.624	172.271
2	171.337	160.322
3	186.894	144.766
4	208.801	142.738
5	553.036	270.594
6	566.150	288.259
7	573.528	297.487

Janbu's Empirical Coefficient (fo) = 1.043
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 1.295

Table 1 - Individual Data on the 17 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	3.0	592.0	0.0	0.0	0.0	0.0	88.8	0.0	0.0
2	11.7	13883.7	0.0	0.0	0.0	0.0	2082.6	0.0	0.0
3	15.6	49296.5	0.0	0.0	0.0	0.0	7394.5	0.0	0.0
4	21.9	108829.1	0.0	0.0	0.0	0.0	16324.4	0.0	0.0
5	1.2	6675.8	0.0	0.0	0.0	0.0	1001.4	0.0	0.0
6	102.0	586628.4	0.0	0.0	0.0	0.0	87994.3	0.0	0.0
7	15.0	84391.1	0.0	0.0	0.0	0.0	12658.7	0.0	0.0
8	46.0	264728.0	0.0	0.0	0.0	0.0	39709.2	0.0	0.0
9	12.0	71341.5	0.0	0.0	0.0	0.0	10701.2	0.0	0.0
10	30.0	177364.3	0.0	0.0	0.0	0.0	26604.6	0.0	0.0
11	52.0	263225.8	0.0	0.0	0.0	0.0	39483.9	0.0	0.0
12	3.0	11815.5	0.0	0.0	0.0	0.0	1772.3	0.0	0.0
13	83.0	311862.7	0.0	0.0	0.0	0.0	46779.4	0.0	0.0
14	4.0	13540.2	0.0	0.0	0.0	0.0	2031.0	0.0	0.0
15	9.1	20959.5	0.0	0.0	0.0	0.0	3143.9	0.0	0.0
16	3.6	3783.2	0.0	0.0	0.0	0.0	567.5	0.0	0.0
17	3.8	1322.5	0.0	0.0	0.0	0.0	198.4	0.0	0.0

CROSS-SECTION 6-6' W.O.102637

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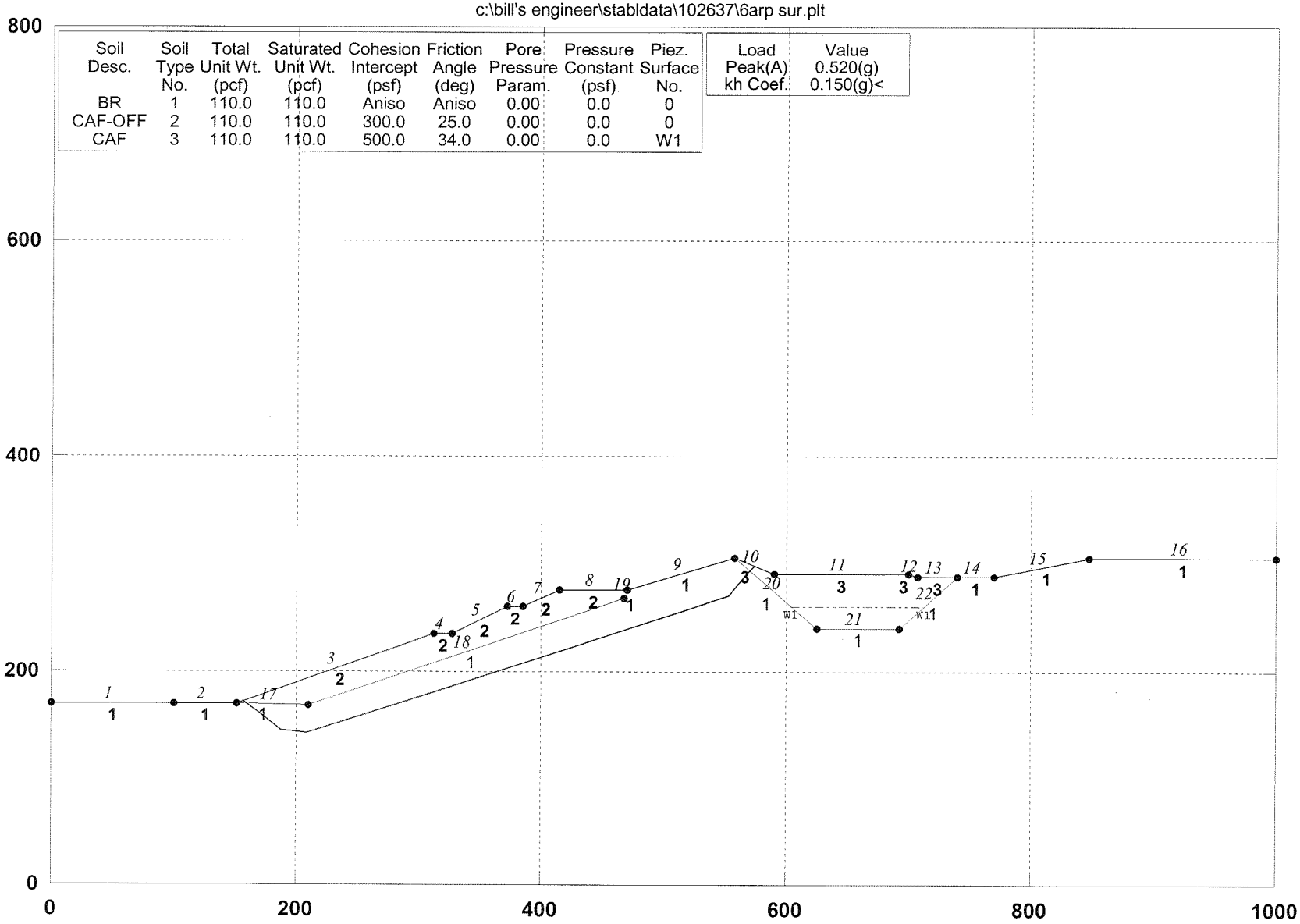
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF-OFF	2	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	3	110.0	110.0	500.0	34.0	0.00	0.0	W1

Load	Value
Peak(A)	0.520(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.30

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

PLATE D-12

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run:
Run By: Username
Input Data Filename: C:\BILL'S engineer\stabldata\102637\7ars.in
Output Filename: C:\BILL'S engineer\stabldata\102637\7ars.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\7ars.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 7-7'
W.O.102637

BOUNDARY COORDINATES
26 Top Boundaries
39 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	150.00	16.00	149.00	1
2	16.00	149.00	25.00	148.00	2
3	25.00	148.00	42.00	146.00	2
4	42.00	146.00	70.00	145.00	2
5	70.00	145.00	90.00	147.00	2
6	90.00	147.00	110.00	150.00	2
7	110.00	150.00	205.00	190.00	3
8	205.00	190.00	230.00	196.00	3
9	230.00	196.00	235.00	195.00	3
10	235.00	195.00	295.00	222.00	3
11	295.00	222.00	305.00	224.00	3
12	305.00	224.00	322.00	227.00	3
13	322.00	227.00	351.00	241.00	3
14	351.00	241.00	390.00	250.00	3
15	390.00	250.00	410.00	252.00	3
16	410.00	252.00	420.00	253.00	3
17	420.00	253.00	450.00	254.00	3
18	450.00	254.00	470.00	262.00	3
19	470.00	262.00	480.00	263.00	4
20	480.00	263.00	565.00	274.00	4
21	565.00	274.00	640.00	274.00	4
22	640.00	274.00	645.00	272.00	4
23	645.00	272.00	665.00	264.00	1
24	665.00	264.00	772.00	270.00	1
25	772.00	270.00	782.00	273.00	1
26	782.00	273.00	890.00	273.00	1
27	16.00	149.00	43.00	131.00	1
28	43.00	131.00	70.00	133.00	1
29	70.00	133.00	100.00	142.00	1
30	100.00	142.00	110.00	150.00	1
31	110.00	150.00	140.00	147.00	1
32	140.00	147.00	170.00	150.00	1
33	170.00	150.00	242.00	158.00	1
34	242.00	158.00	262.00	161.00	1
35	262.00	161.00	461.00	245.00	1
36	461.00	245.00	470.00	262.00	1
37	472.00	262.00	534.00	210.00	1
38	534.00	210.00	577.00	210.00	1
39	577.00	210.00	645.00	272.00	1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	110.0	110.0	220.0	24.0	0.00	0.0	0
3	110.0	110.0	300.0	25.0	0.00	0.0	0
4	110.0	110.0	400.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00
2	23.0	300.00	18.00
3	90.0	500.00	34.00

1 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	521.00	220.00
2	588.00	220.00

Janbus Empirical Coef is being used for the case of c & phi both > 0

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

2000 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	90.00	100.00	325.00	150.00	80.00
2	400.00	195.00	700.00	205.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *

Total Number of Trial Surfaces Attempted = 2000

Number of Trial Surfaces With Valid FS = 2000

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	92.379	147.357
2	104.962	140.504
3	123.566	133.162
4	138.695	120.082
5	498.346	240.655
6	512.352	254.932
7	522.177	268.458

Factor of Safety

*** **1.744** ***

Individual data on the 29 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	8.5	2772.2	0.0	0.0	0.	0.	0.0	0.0	0.0
2	4.1	3276.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	5.0	5604.3	0.0	0.0	0.	0.	0.0	0.0	0.0
4	13.6	25392.7	0.0	0.0	0.	0.	0.0	0.0	0.0
5	15.1	53714.0	0.0	0.0	0.	0.	0.0	0.0	0.0
6	1.3	6035.4	0.0	0.0	0.	0.	0.0	0.0	0.0
7	30.0	143216.2	0.0	0.0	0.	0.	0.0	0.0	0.0
8	35.0	177821.8	0.0	0.0	0.	0.	0.0	0.0	0.0
9	25.0	127870.7	0.0	0.0	0.	0.	0.0	0.0	0.0

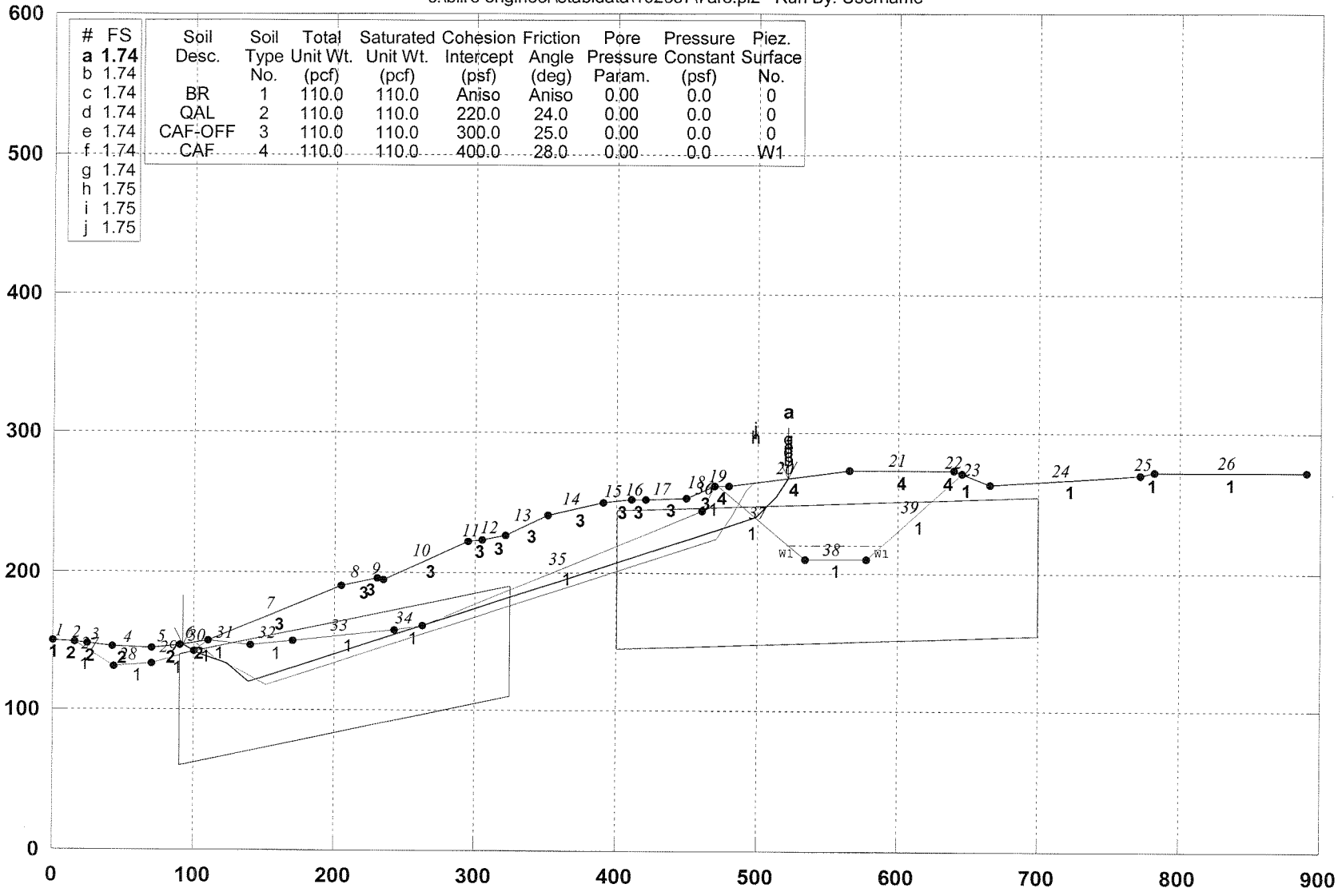
10	5.0	24183.3	0.0	0.0	0.	0.	0.0	0.0	0.0
11	7.0	33135.6	0.0	0.0	0.	0.	0.0	0.0	0.0
12	17.7	86704.6	0.0	0.0	0.	0.	0.0	0.0	0.0
13	7.1	35856.0	0.0	0.0	0.	0.	0.0	0.0	0.0
14	28.2	148392.8	0.0	0.0	0.	0.	0.0	0.0	0.0
15	10.0	53724.4	0.0	0.0	0.	0.	0.0	0.0	0.0
16	17.0	87543.1	0.0	0.0	0.	0.	0.0	0.0	0.0
17	29.0	151856.1	0.0	0.0	0.	0.	0.0	0.0	0.0
18	39.0	204655.8	0.0	0.0	0.	0.	0.0	0.0	0.0
19	20.0	95294.0	0.0	0.0	0.	0.	0.0	0.0	0.0
20	10.0	43765.4	0.0	0.0	0.	0.	0.0	0.0	0.0
21	30.0	112469.8	0.0	0.0	0.	0.	0.0	0.0	0.0
22	11.0	36190.1	0.0	0.0	0.	0.	0.0	0.0	0.0
23	9.0	30251.1	0.0	0.0	0.	0.	0.0	0.0	0.0
24	2.0	6734.8	0.0	0.0	0.	0.	0.0	0.0	0.0
25	8.0	25904.2	0.0	0.0	0.	0.	0.0	0.0	0.0
26	17.7	51949.9	0.0	0.0	0.	0.	0.0	0.0	0.0
27	0.6	1745.2	0.0	0.0	0.	0.	0.0	0.0	0.0
28	14.0	28483.5	0.0	0.0	0.	0.	0.0	0.0	0.0
29	9.8	6621.9	0.0	0.0	0.	0.	0.0	0.0	0.0

CROSS-SECTION 7-7' W.O.102637

c:\bill's engineer\stabldata\102637\7ars.pl2 Run By: Username

#	FS
a	**1.74**
b	1.74
c	1.74
d	1.74
e	1.74
f	1.74
g	1.74
h	1.75
i	1.75
j	1.75

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
QAL	2	110.0	110.0	220.0	24.0	0.00	0.0	0
CAF-OFF	3	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	4	110.0	110.0	400.0	28.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.74

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-16

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\7arp.in
Output Filename: C:\BILL'S engineer\stabldata\102637\7arp.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\7arp.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 7-7'
W.O.102637

BOUNDARY COORDINATES
26 Top Boundaries
39 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	150.00	16.00	149.00	1
2	16.00	149.00	25.00	148.00	2
3	25.00	148.00	42.00	146.00	2
4	42.00	146.00	70.00	145.00	2
5	70.00	145.00	90.00	147.00	2
6	90.00	147.00	110.00	150.00	2
7	110.00	150.00	205.00	190.00	3
8	205.00	190.00	230.00	196.00	3
9	230.00	196.00	235.00	195.00	3
10	235.00	195.00	295.00	222.00	3
11	295.00	222.00	305.00	224.00	3
12	305.00	224.00	322.00	227.00	3
13	322.00	227.00	351.00	241.00	3
14	351.00	241.00	390.00	250.00	3
15	390.00	250.00	410.00	252.00	3
16	410.00	252.00	420.00	253.00	3
17	420.00	253.00	450.00	254.00	3
18	450.00	254.00	470.00	262.00	3
19	470.00	262.00	480.00	263.00	4
20	480.00	263.00	565.00	274.00	4
21	565.00	274.00	640.00	274.00	4
22	640.00	274.00	645.00	272.00	4
23	645.00	272.00	665.00	264.00	1
24	665.00	264.00	772.00	270.00	1
25	772.00	270.00	782.00	273.00	1
26	782.00	273.00	890.00	273.00	1
27	16.00	149.00	43.00	131.00	1
28	43.00	131.00	70.00	133.00	1
29	70.00	133.00	100.00	142.00	1
30	100.00	142.00	110.00	150.00	1
31	110.00	150.00	140.00	147.00	1
32	140.00	147.00	170.00	150.00	1
33	170.00	150.00	242.00	158.00	1
34	242.00	158.00	262.00	161.00	1
35	262.00	161.00	461.00	245.00	1
36	461.00	245.00	470.00	262.00	1
37	472.00	262.00	534.00	210.00	1
38	534.00	210.00	577.00	210.00	1
39	577.00	210.00	645.00	272.00	1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	600.0	37.0	0.00	0.0	0
2	110.0	110.0	220.0	24.0	0.00	0.0	0
3	110.0	110.0	300.0	25.0	0.00	0.0	0
4	110.0	110.0	500.0	34.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	600.00	37.00
2	23.0	300.00	18.00
3	90.0	600.00	37.00

1 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	521.00	220.00
2	588.00	220.00

Specified Peak Ground Acceleration Coefficient (A) = 0.520(g)

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)

Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

Janbu's Empirical Coef. is being used for the case of c & phi both > 0

Trial Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	92.379	147.357
2	104.962	140.504
3	123.566	133.162
4	138.695	120.082
5	498.346	240.655
6	512.352	254.932
7	522.177	268.458

Janbu's Empirical Coefficient (fo) = 1.038

* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *

Factor Of Safety For The Preceding Specified Surface = 1.254

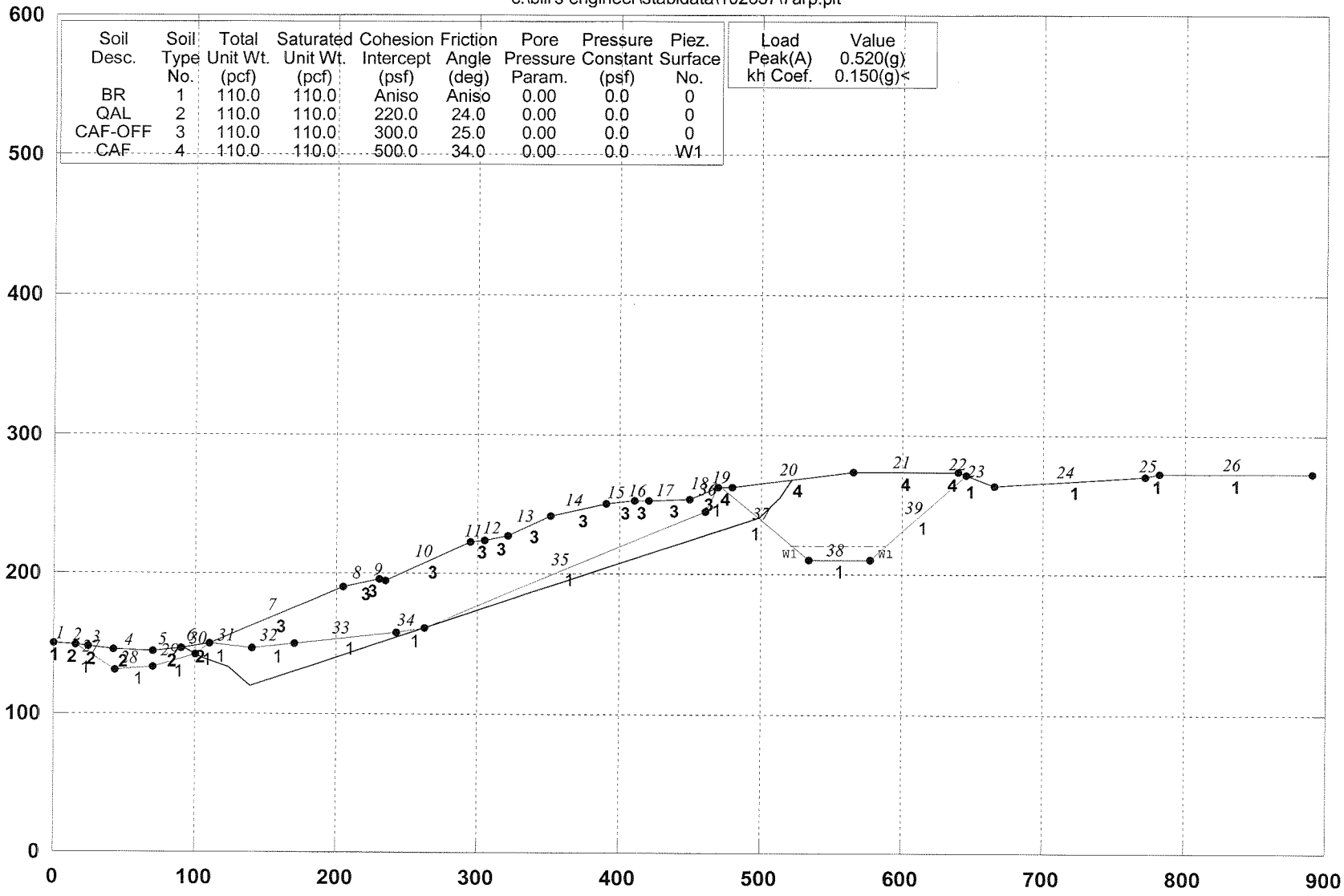
Table 1 - Individual Data on the 29 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	8.5	2772.0	0.0	0.0	0.0	0.0	415.8	0.0	0.0
2	4.1	3276.8	0.0	0.0	0.0	0.0	491.5	0.0	0.0
3	5.0	5604.0	0.0	0.0	0.0	0.0	840.6	0.0	0.0
4	13.6	25394.0	0.0	0.0	0.0	0.0	3809.1	0.0	0.0
5	15.1	53711.8	0.0	0.0	0.0	0.0	8056.8	0.0	0.0
6	1.3	6037.1	0.0	0.0	0.0	0.0	905.6	0.0	0.0
7	30.0	143217.1	0.0	0.0	0.0	0.0	21482.6	0.0	0.0
8	35.0	177822.6	0.0	0.0	0.0	0.0	26673.4	0.0	0.0
9	25.0	127871.2	0.0	0.0	0.0	0.0	19180.7	0.0	0.0
10	5.0	24183.4	0.0	0.0	0.0	0.0	3627.5	0.0	0.0
11	7.0	33135.7	0.0	0.0	0.0	0.0	4970.4	0.0	0.0
12	17.7	86709.0	0.0	0.0	0.0	0.0	13006.4	0.0	0.0
13	7.1	35843.5	0.0	0.0	0.0	0.0	5376.5	0.0	0.0
14	28.2	148401.8	0.0	0.0	0.0	0.0	22260.3	0.0	0.0
15	10.0	53724.6	0.0	0.0	0.0	0.0	8058.7	0.0	0.0
16	17.0	87543.3	0.0	0.0	0.0	0.0	13131.5	0.0	0.0
17	29.0	151856.3	0.0	0.0	0.0	0.0	22778.4	0.0	0.0
18	39.0	204656.0	0.0	0.0	0.0	0.0	30698.4	0.0	0.0

19	20.0	95294.1	0.0	0.0	0.0	0.0	14294.1	0.0	0.0
20	10.0	43765.4	0.0	0.0	0.0	0.0	6564.8	0.0	0.0
21	30.0	112469.8	0.0	0.0	0.0	0.0	16870.5	0.0	0.0
22	11.0	36190.0	0.0	0.0	0.0	0.0	5428.5	0.0	0.0
23	9.0	30251.1	0.0	0.0	0.0	0.0	4537.7	0.0	0.0
24	2.0	6734.8	0.0	0.0	0.0	0.0	1010.2	0.0	0.0
25	8.0	25904.1	0.0	0.0	0.0	0.0	3885.6	0.0	0.0
26	17.7	51949.6	0.0	0.0	0.0	0.0	7792.4	0.0	0.0
27	0.6	1745.7	0.0	0.0	0.0	0.0	261.8	0.0	0.0
28	14.0	28482.1	0.0	0.0	0.0	0.0	4272.3	0.0	0.0
29	9.8	6622.1	0.0	0.0	0.0	0.0	993.3	0.0	0.0

CROSS-SECTION 7-7' W.O.102637

c:\bill's engineer\stabldata\102637\7arp.plt



GSTABL7 v.2 FSmin=1.25

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

PLATE D-20

*** GSTABL7 ***

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\8ARS.in
Output Filename: C:\BILL'S engineer\stabldata\102637\8ARS.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\8ARS.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 8-8'
W.O.102637

BOUNDARY COORDINATES
20 Top Boundaries
28 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	200.00	100.00	170.00	1
2	100.00	170.00	120.00	160.00	1
3	120.00	160.00	160.00	160.00	1
4	160.00	160.00	190.00	172.00	2
5	190.00	172.00	200.00	172.00	2
6	200.00	172.00	253.00	200.00	2
7	253.00	200.00	262.00	200.00	2
8	262.00	200.00	320.00	225.00	2
9	320.00	225.00	335.00	225.00	2
10	335.00	225.00	386.00	250.00	2
11	386.00	250.00	395.00	250.00	2
12	395.00	250.00	440.00	270.00	2
13	440.00	270.00	485.00	270.00	2
14	485.00	270.00	598.00	302.00	1
15	598.00	302.00	608.00	298.00	3
16	608.00	298.00	629.00	298.00	3
17	629.00	298.00	681.00	280.00	3
18	681.00	280.00	713.00	273.00	3
19	713.00	273.00	734.00	268.00	1
20	734.00	268.00	1050.00	265.00	1
21	160.00	160.00	161.00	157.00	1
22	161.00	157.00	240.00	156.00	1
23	240.00	156.00	275.00	185.00	1
24	275.00	185.00	484.00	262.00	1
25	484.00	262.00	485.00	270.00	1
26	598.00	302.00	665.00	248.00	1
27	665.00	248.00	687.00	248.00	1
28	687.00	248.00	713.00	273.00	1

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	400.0	28.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00
2	23.0	300.00	18.00
3	90.0	500.00	34.00

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
2000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 22.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	150.00	105.00	300.00	105.00	90.00
2	510.00	215.00	625.00	245.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 2000
Number of Trial Surfaces With Valid FS = 2000
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	185.447	170.179
2	192.559	163.279
3	211.914	152.820
4	230.557	141.140
5	580.913	269.308
6	596.296	285.036
7	609.252	298.000

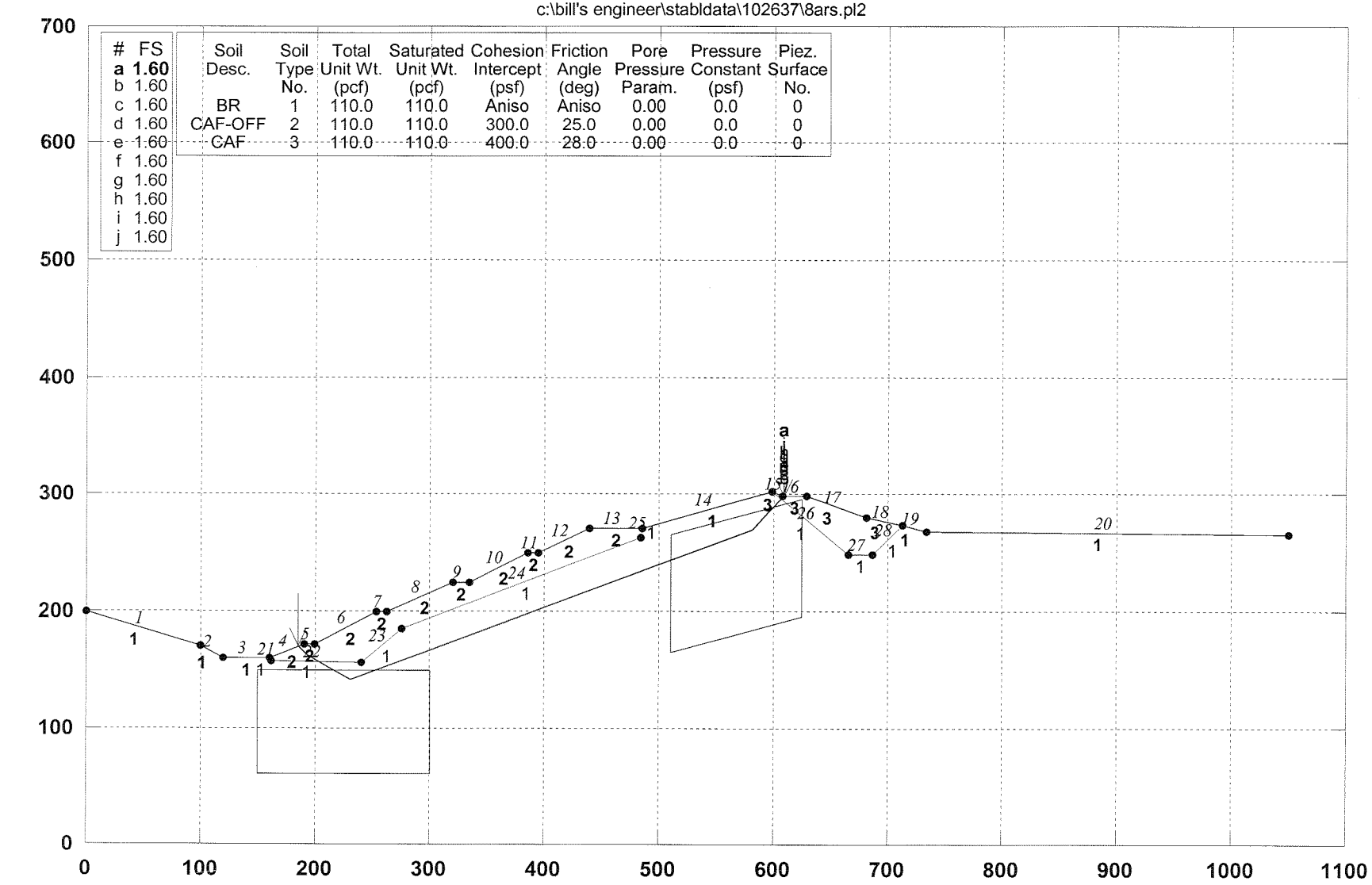
Factor of Safety
*** **1.598** ***

Individual data on the 23 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.6	1562.1	0.0	0.0	0.	0.	0.0	0.0	0.0
2	2.6	2105.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	7.4	8783.1	0.0	0.0	0.	0.	0.0	0.0	0.0
4	5.2	8907.1	0.0	0.0	0.	0.	0.0	0.0	0.0
5	6.7	16134.8	0.0	0.0	0.	0.	0.0	0.0	0.0
6	18.6	74317.2	0.0	0.0	0.	0.	0.0	0.0	0.0
7	9.4	49619.9	0.0	0.0	0.	0.	0.0	0.0	0.0
8	13.0	70919.8	0.0	0.0	0.	0.	0.0	0.0	0.0
9	9.0	48514.1	0.0	0.0	0.	0.	0.0	0.0	0.0
10	13.0	68328.0	0.0	0.0	0.	0.	0.0	0.0	0.0
11	45.0	245880.8	0.0	0.0	0.	0.	0.0	0.0	0.0
12	15.0	79854.1	0.0	0.0	0.	0.	0.0	0.0	0.0
13	51.0	273903.8	0.0	0.0	0.	0.	0.0	0.0	0.0
14	9.0	49846.0	0.0	0.0	0.	0.	0.0	0.0	0.0
15	45.0	249837.3	0.0	0.0	0.	0.	0.0	0.0	0.0
16	44.0	213894.1	0.0	0.0	0.	0.	0.0	0.0	0.0
17	1.0	3955.8	0.0	0.0	0.	0.	0.0	0.0	0.0
18	95.9	335673.3	0.0	0.0	0.	0.	0.0	0.0	0.0
19	15.4	37509.0	0.0	0.0	0.	0.	0.0	0.0	0.0
20	1.7	2974.2	0.0	0.0	0.	0.	0.0	0.0	0.0
21	8.4	8681.4	0.0	0.0	0.	0.	0.0	0.0	0.0
22	1.6	400.1	0.0	0.0	0.	0.	0.0	0.0	0.0
23	1.3	86.3	0.0	0.0	0.	0.	0.0	0.0	0.0

CROSS-SECTION 8-8' W.O.102637

c:\bill's engineer\stabldata\102637\8ars.pl2



#	FS
a	1.60
b	1.60
c	1.60
d	1.60
e	1.60
f	1.60
g	1.60
h	1.60
i	1.60
j	1.60

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF-OFF	2	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	3	110.0	110.0	400.0	28.0	0.00	0.0	0

GSTABL7 v.2 FSmin=1.60

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-23

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\8ARP.in
Output Filename: C:\BILL'S engineer\stabldata\102637\8ARP.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\8ARP.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 8-8'
W.O.102637

BOUNDARY COORDINATES
20 Top Boundaries
28 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	200.00	100.00	170.00	1
2	100.00	170.00	120.00	160.00	1
3	120.00	160.00	160.00	160.00	1
4	160.00	160.00	190.00	172.00	2
5	190.00	172.00	200.00	172.00	2
6	200.00	172.00	253.00	200.00	2
7	253.00	200.00	262.00	200.00	2
8	262.00	200.00	320.00	225.00	2
9	320.00	225.00	335.00	225.00	2
10	335.00	225.00	386.00	250.00	2
11	386.00	250.00	395.00	250.00	2
12	395.00	250.00	440.00	270.00	2
13	440.00	270.00	485.00	270.00	2
14	485.00	270.00	598.00	302.00	1
15	598.00	302.00	608.00	298.00	3
16	608.00	298.00	629.00	298.00	3
17	629.00	298.00	681.00	280.00	3
18	681.00	280.00	713.00	273.00	3
19	713.00	273.00	734.00	268.00	1
20	734.00	268.00	1050.00	265.00	1
21	160.00	160.00	161.00	157.00	1
22	161.00	157.00	240.00	156.00	1
23	240.00	156.00	275.00	185.00	1
24	275.00	185.00	484.00	262.00	1
25	484.00	262.00	485.00	270.00	1
26	598.00	302.00	665.00	248.00	1
27	665.00	248.00	687.00	248.00	1
28	687.00	248.00	713.00	273.00	1

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	600.0	37.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	500.0	34.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction	Counterclockwise	Cohesion	Friction

Range No.	Direction Limit (deg)	Intercept (psf)	Angle (deg)
1	12.0	600.00	37.00
2	23.0	300.00	18.00
3	90.0	600.00	37.00

Specified Peak Ground Acceleration Coefficient (A) = 0.520(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	185.447	170.179
2	192.559	163.279
3	211.914	152.820
4	230.557	141.140
5	580.913	269.308
6	596.296	285.036
7	609.252	298.000

Janbu's Empirical Coefficient (fo) = 1.040
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 1.142

Table 1 - Individual Data on the 23 Slices

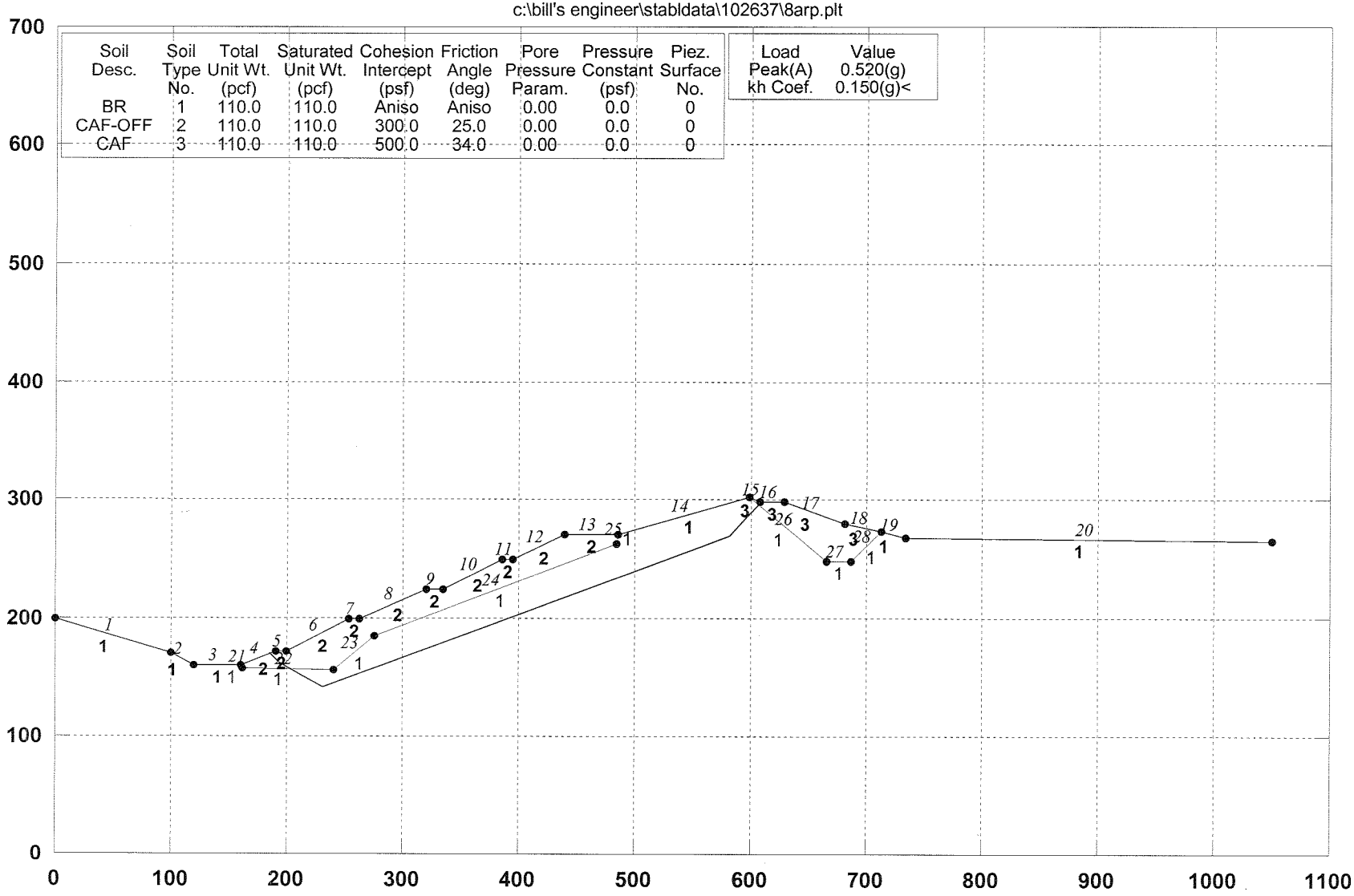
Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.6	1562.2	0.0	0.0	0.0	0.0	234.3	0.0	0.0
2	2.6	2105.5	0.0	0.0	0.0	0.0	315.8	0.0	0.0
3	7.4	8783.8	0.0	0.0	0.0	0.0	1317.6	0.0	0.0
4	5.2	8906.7	0.0	0.0	0.0	0.0	1336.0	0.0	0.0
5	6.7	16135.1	0.0	0.0	0.0	0.0	2420.3	0.0	0.0
6	18.6	74316.0	0.0	0.0	0.0	0.0	11147.4	0.0	0.0
7	9.4	49620.6	0.0	0.0	0.0	0.0	7443.1	0.0	0.0
8	13.0	70919.0	0.0	0.0	0.0	0.0	10637.9	0.0	0.0
9	9.0	48513.6	0.0	0.0	0.0	0.0	7277.0	0.0	0.0
10	13.0	68327.3	0.0	0.0	0.0	0.0	10249.1	0.0	0.0
11	45.0	245878.9	0.0	0.0	0.0	0.0	36881.8	0.0	0.0
12	15.0	79853.6	0.0	0.0	0.0	0.0	11978.0	0.0	0.0
13	51.0	273902.5	0.0	0.0	0.0	0.0	41085.4	0.0	0.0
14	9.0	49845.8	0.0	0.0	0.0	0.0	7476.9	0.0	0.0
15	45.0	249837.0	0.0	0.0	0.0	0.0	37475.6	0.0	0.0
16	44.0	213894.3	0.0	0.0	0.0	0.0	32084.1	0.0	0.0
17	1.0	3955.8	0.0	0.0	0.0	0.0	593.4	0.0	0.0
18	95.9	335674.6	0.0	0.0	0.0	0.0	50351.2	0.0	0.0
19	15.4	37510.0	0.0	0.0	0.0	0.0	5626.5	0.0	0.0
20	1.7	2974.7	0.0	0.0	0.0	0.0	446.2	0.0	0.0
21	8.4	8681.4	0.0	0.0	0.0	0.0	1302.2	0.0	0.0
22	1.6	400.1	0.0	0.0	0.0	0.0	60.0	0.0	0.0
23	1.3	86.3	0.0	0.0	0.0	0.0	12.9	0.0	0.0

CROSS-SECTION 8-8' W.O.102637

c:\bill's engineer\stabldata\102637\8arp.plt

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF-OFF	2	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	3	110.0	110.0	500.0	34.0	0.00	0.0	0

Load	Value
Peak(A)	0.520(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.14

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

PLATE D-26

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\9ARS.in
Output Filename: C:\BILL'S engineer\stabldata\102637\9ARS.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\9ARS.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 9-9'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
30 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	195.00	28.00	195.00	2
2	28.00	195.00	85.00	190.00	2
3	85.00	190.00	137.00	185.00	1
4	137.00	185.00	167.00	200.00	1
5	167.00	200.00	207.00	217.00	2
6	207.00	217.00	220.00	217.00	2
7	220.00	217.00	260.00	233.00	2
8	260.00	233.00	310.00	234.00	2
9	310.00	234.00	373.00	240.00	2
10	373.00	240.00	442.00	280.00	1
11	442.00	280.00	480.00	290.00	1
12	480.00	290.00	610.00	303.00	3
13	610.00	303.00	626.00	305.00	1
14	626.00	305.00	670.00	300.00	1
15	670.00	300.00	765.00	285.00	1
16	765.00	285.00	980.00	257.00	3
17	0.00	160.00	85.00	190.00	1
18	167.00	200.00	210.00	190.00	1
19	210.00	190.00	238.00	175.00	1
20	238.00	175.00	260.00	175.00	1
21	260.00	175.00	342.00	220.00	1
22	342.00	220.00	373.00	240.00	1
23	480.00	290.00	525.00	250.00	1
24	525.00	250.00	555.00	250.00	1
25	555.00	250.00	610.00	303.00	1
26	765.00	285.00	780.00	270.00	1
27	780.00	270.00	820.00	250.00	1
28	820.00	250.00	870.00	242.00	1
29	870.00	242.00	957.00	245.00	1
30	957.00	245.00	980.00	257.00	1

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	400.0	28.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00
2	23.0	300.00	18.00
3	90.0	500.00	34.00

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
2000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	135.00	130.00	400.00	190.00	100.00
2	460.00	230.00	700.00	230.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 2000
Number of Trial Surfaces With Valid FS = 2000
Failure Surface Specified By 8 Coordinate Points

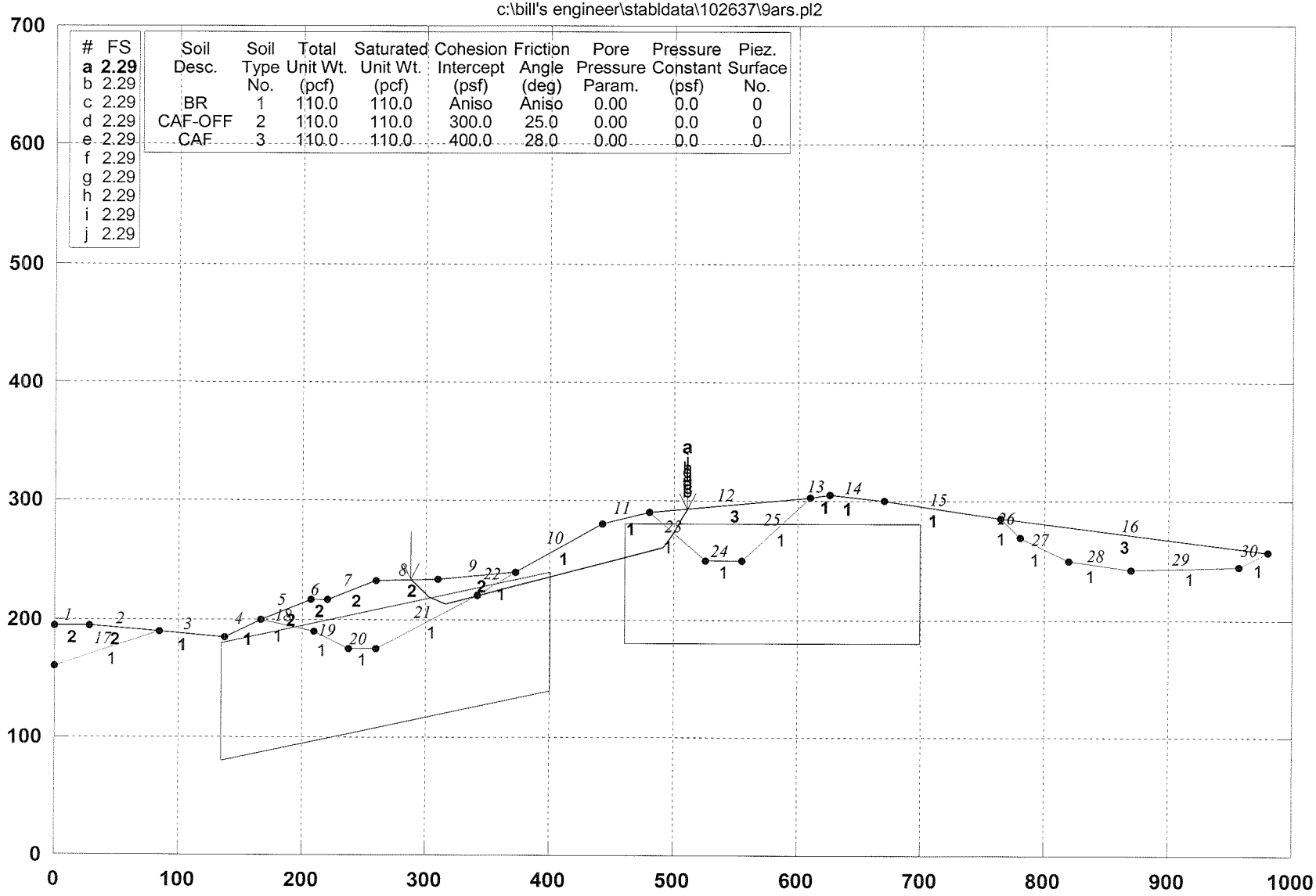
Point No.	X-Surf (ft)	Y-Surf (ft)
1	287.276	233.546
2	291.985	230.186
3	302.607	219.595
4	316.071	212.983
5	490.747	261.195
6	499.458	273.406
7	507.456	286.096
8	510.842	293.084

Factor of Safety
*** **2.286** ***
Individual data on the 13 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.7	894.5	0.0	0.0	0.	0.	0.0	0.0	0.0
2	10.6	10347.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	7.4	13130.1	0.0	0.0	0.	0.	0.0	0.0	0.0
4	6.1	13233.7	0.0	0.0	0.	0.	0.0	0.0	0.0
5	26.3	55610.5	0.0	0.0	0.	0.	0.0	0.0	0.0
6	30.6	47397.8	0.0	0.0	0.	0.	0.0	0.0	0.0
7	69.0	165323.0	0.0	0.0	0.	0.	0.0	0.0	0.0
8	38.0	133824.1	0.0	0.0	0.	0.	0.0	0.0	0.0
9	10.7	36441.1	0.0	0.0	0.	0.	0.0	0.0	0.0
10	8.4	22565.7	0.0	0.0	0.	0.	0.0	0.0	0.0
11	0.3	632.1	0.0	0.0	0.	0.	0.0	0.0	0.0
12	8.0	11079.9	0.0	0.0	0.	0.	0.0	0.0	0.0
13	3.4	1238.3	0.0	0.0	0.	0.	0.0	0.0	0.0

CROSS-SECTION 9-9' W.O.102637

c:\bill's engineer\stabldata\102637\9ars.pl2



#	FS
a	**2.29**
b	2.29
c	2.29
d	2.29
e	2.29
f	2.29
g	2.29
h	2.29
i	2.29
j	2.29

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF-OFF	2	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	3	110.0	110.0	400.0	28.0	0.00	0.0	0

GSTABL7 v.2 FSmin=2.29

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-29

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\9ARP.in
Output Filename: C:\BILL'S engineer\stabldata\102637\9ARP.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\9ARP.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 9-9'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
30 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	195.00	28.00	195.00	2
2	28.00	195.00	85.00	190.00	2
3	85.00	190.00	137.00	185.00	1
4	137.00	185.00	167.00	200.00	1
5	167.00	200.00	207.00	217.00	2
6	207.00	217.00	220.00	217.00	2
7	220.00	217.00	260.00	233.00	2
8	260.00	233.00	310.00	234.00	2
9	310.00	234.00	373.00	240.00	2
10	373.00	240.00	442.00	280.00	1
11	442.00	280.00	480.00	290.00	1
12	480.00	290.00	610.00	303.00	3
13	610.00	303.00	626.00	305.00	1
14	626.00	305.00	670.00	300.00	1
15	670.00	300.00	765.00	285.00	1
16	765.00	285.00	980.00	257.00	3
17	0.00	160.00	85.00	190.00	1
18	167.00	200.00	210.00	190.00	1
19	210.00	190.00	238.00	175.00	1
20	238.00	175.00	260.00	175.00	1
21	260.00	175.00	342.00	220.00	1
22	342.00	220.00	373.00	240.00	1
23	480.00	290.00	525.00	250.00	1
24	525.00	250.00	555.00	250.00	1
25	555.00	250.00	610.00	303.00	1
26	765.00	285.00	780.00	270.00	1
27	780.00	270.00	820.00	250.00	1
28	820.00	250.00	870.00	242.00	1
29	870.00	242.00	957.00	245.00	1
30	957.00	245.00	980.00	257.00	1

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	600.0	37.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	500.0	34.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	600.00	37.00
2	23.0	300.00	18.00
3	90.0	600.00	37.00

Specified Peak Ground Acceleration Coefficient (A) = 0.520(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	287.276	233.546
2	291.985	230.186
3	302.607	219.595
4	316.071	212.983
5	490.747	261.195
6	499.458	273.406
7	507.456	286.096
8	510.842	293.084

Janbu's Empirical Coefficient (fo) = 1.049
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 1.503

Table 1 - Individual Data on the 13 Slices

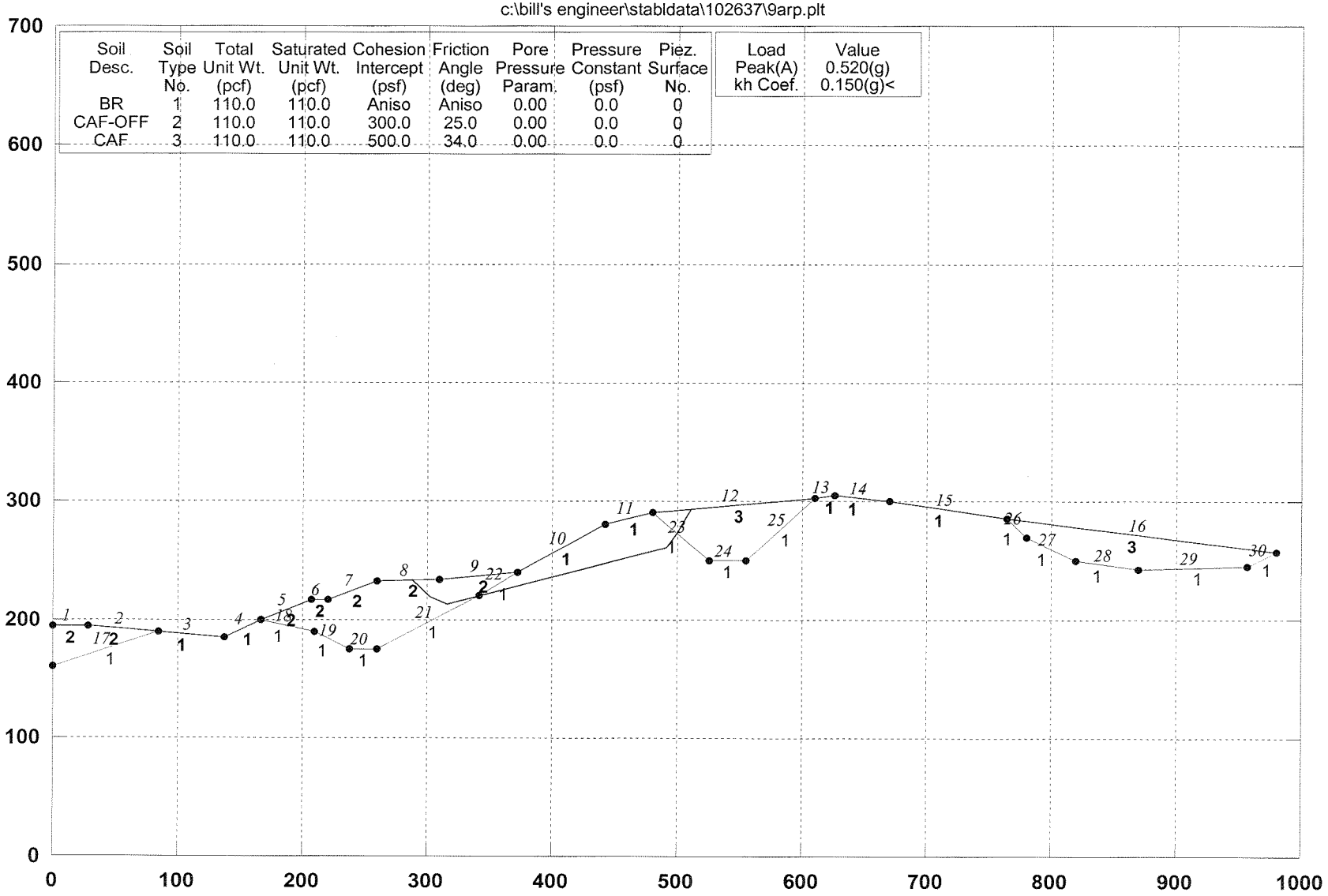
Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.7	894.5	0.0	0.0	0.0	0.0	134.2	0.0	0.0
2	10.6	10346.9	0.0	0.0	0.0	0.0	1552.0	0.0	0.0
3	7.4	13130.7	0.0	0.0	0.0	0.0	1969.6	0.0	0.0
4	6.1	13233.0	0.0	0.0	0.0	0.0	1984.9	0.0	0.0
5	26.3	55611.2	0.0	0.0	0.0	0.0	8341.7	0.0	0.0
6	30.6	47399.8	0.0	0.0	0.0	0.0	7110.0	0.0	0.0
7	69.0	165324.2	0.0	0.0	0.0	0.0	24798.6	0.0	0.0
8	38.0	133824.4	0.0	0.0	0.0	0.0	20073.7	0.0	0.0
9	10.7	36441.0	0.0	0.0	0.0	0.0	5466.1	0.0	0.0
10	8.4	22566.2	0.0	0.0	0.0	0.0	3384.9	0.0	0.0
11	0.3	631.7	0.0	0.0	0.0	0.0	94.8	0.0	0.0
12	8.0	11080.6	0.0	0.0	0.0	0.0	1662.1	0.0	0.0
13	3.4	1238.4	0.0	0.0	0.0	0.0	185.8	0.0	0.0

CROSS-SECTION 9-9' W.O.102637

c:\bill's engineer\stabldata\102637\9arp.plt

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF-OFF	2	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	3	110.0	110.0	500.0	34.0	0.00	0.0	0

Load	Value
Peak(A)	0.520(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.50

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

PLATE D-32

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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****
SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\10ARS.in
Output Filename: C:\BILL'S engineer\stabldata\102637\10ARS.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\10ARS.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 10-10'
W.O.102637

BOUNDARY COORDINATES
9 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	140.00	160.00	143.00	1
2	160.00	143.00	215.00	160.00	1
3	215.00	160.00	225.00	160.00	1
4	225.00	160.00	300.00	187.00	1
5	300.00	187.00	310.00	187.00	1
6	310.00	187.00	385.00	212.00	1
7	385.00	212.00	395.00	212.00	1
8	395.00	212.00	465.00	237.00	1
9	465.00	237.00	770.00	235.00	1

ISOTROPIC SOIL PARAMETERS
1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00
2	23.0	300.00	18.00
3	90.0	500.00	34.00

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
2000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	160.00	140.00	160.00	140.00	1.00
2	400.00	160.00	500.00	185.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 2000
Number of Trial Surfaces With Valid FS = 2000

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	155.644	142.918
2	160.000	139.806
3	445.697	201.228
4	455.817	212.299
5	466.167	223.157
6	469.268	236.972

Factor of Safety

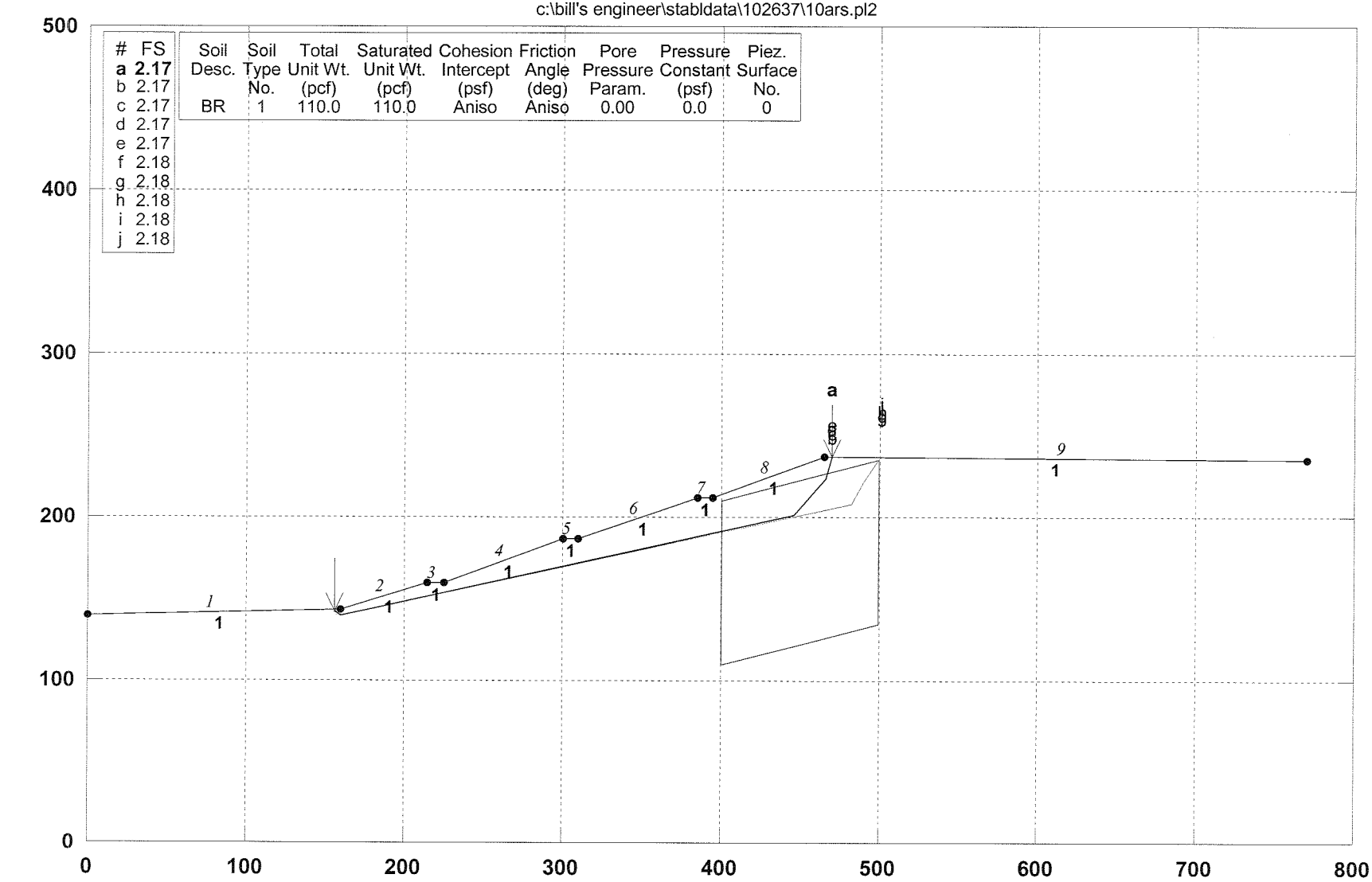
*** **2.167** ***

Individual data on the 12 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.4	765.1	0.0	0.0	0.	0.	0.0	0.0	0.0
2	55.0	34978.0	0.0	0.0	0.	0.	0.0	0.0	0.0
3	10.0	8023.8	0.0	0.0	0.	0.	0.0	0.0	0.0
4	75.0	96173.6	0.0	0.0	0.	0.	0.0	0.0	0.0
5	10.0	17622.5	0.0	0.0	0.	0.	0.0	0.0	0.0
6	75.0	159913.4	0.0	0.0	0.	0.	0.0	0.0	0.0
7	10.0	25021.1	0.0	0.0	0.	0.	0.0	0.0	0.0
8	50.7	140950.0	0.0	0.0	0.	0.	0.0	0.0	0.0
9	10.1	27998.1	0.0	0.0	0.	0.	0.0	0.0	0.0
10	9.2	18428.0	0.0	0.0	0.	0.	0.0	0.0	0.0
11	1.2	1854.6	0.0	0.0	0.	0.	0.0	0.0	0.0
12	3.1	2359.9	0.0	0.0	0.	0.	0.0	0.0	0.0

CROSS-SECTION 10-10' W.O.102637

c:\bill's engineer\stabldata\102637\10ars.pl2



#	FS
a	**2.17**
b	2.17
c	2.17
d	2.17
e	2.17
f	2.18
g	2.18
h	2.18
i	2.18
j	2.18

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0

GSTABL7 v.2 FSmin=2.17

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-35

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\10ARP.in
Output Filename: C:\BILL'S engineer\stabldata\102637\10ARP.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\10ARP.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 10-10'
W.O.102637

BOUNDARY COORDINATES
9 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	140.00	160.00	143.00	1
2	160.00	143.00	215.00	160.00	1
3	215.00	160.00	225.00	160.00	1
4	225.00	160.00	300.00	187.00	1
5	300.00	187.00	310.00	187.00	1
6	310.00	187.00	385.00	212.00	1
7	385.00	212.00	395.00	212.00	1
8	395.00	212.00	465.00	237.00	1
9	465.00	237.00	770.00	235.00	1

ISOTROPIC SOIL PARAMETERS
1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	600.0	37.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	600.00	37.00
2	23.0	300.00	18.00
3	90.0	600.00	37.00

Specified Peak Ground Acceleration Coefficient (A) = 0.520(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	155.644	142.918
2	160.000	139.806
3	445.697	201.228
4	455.817	212.299
5	466.167	223.157
6	469.268	236.972

Janbu's Empirical Coefficient (fo) = 1.037

* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *

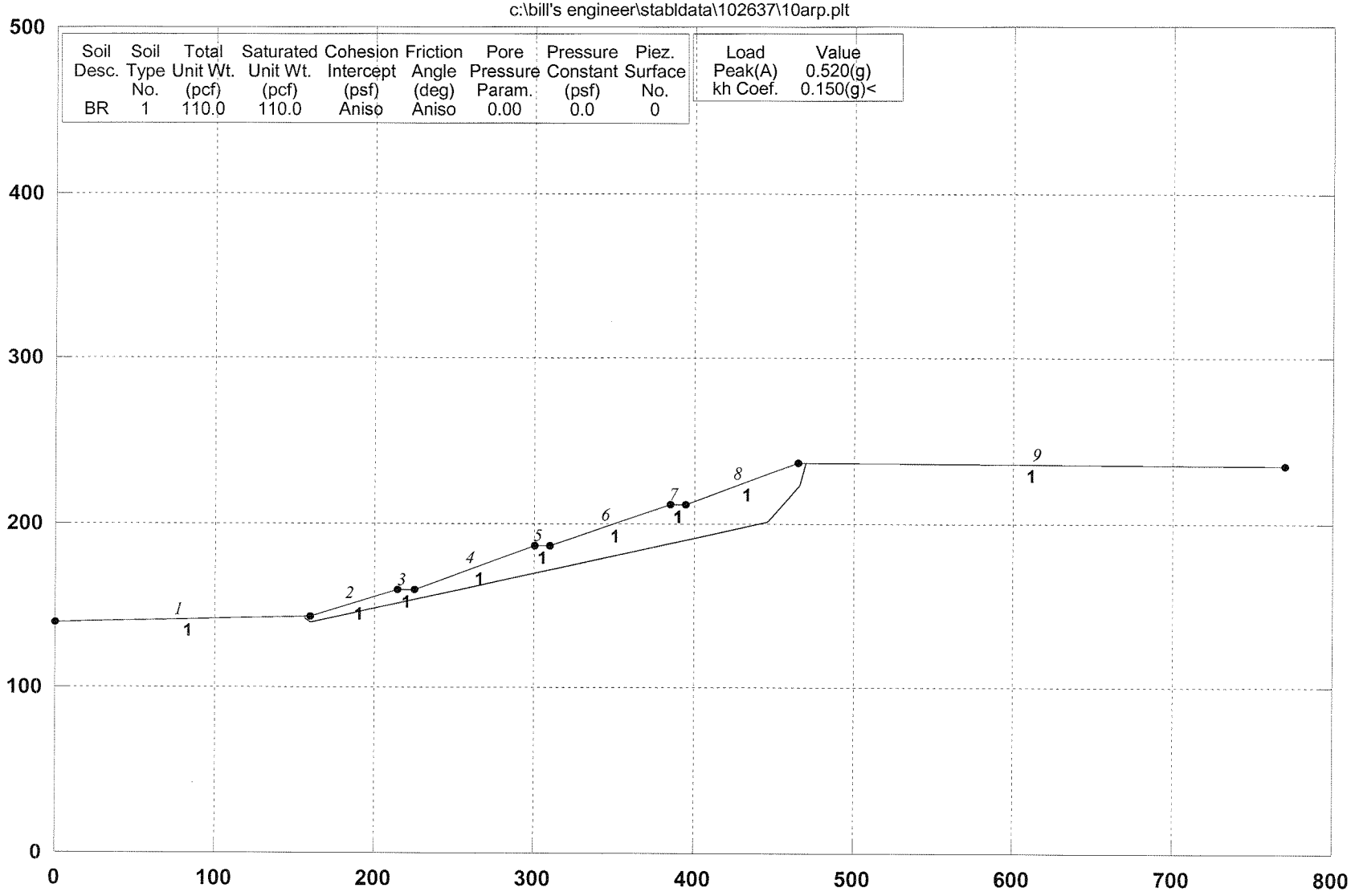
Factor Of Safety For The Preceding Specified Surface = 1.424

Table 1 - Individual Data on the 12 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.4	765.2	0.0	0.0	0.0	0.0	114.8	0.0	0.0
2	55.0	34979.7	0.0	0.0	0.0	0.0	5247.0	0.0	0.0
3	10.0	8024.1	0.0	0.0	0.0	0.0	1203.6	0.0	0.0
4	75.0	96174.6	0.0	0.0	0.0	0.0	14426.2	0.0	0.0
5	10.0	17622.5	0.0	0.0	0.0	0.0	2643.4	0.0	0.0
6	75.0	159912.9	0.0	0.0	0.0	0.0	23986.9	0.0	0.0
7	10.0	25020.9	0.0	0.0	0.0	0.0	3753.1	0.0	0.0
8	50.7	140948.8	0.0	0.0	0.0	0.0	21142.3	0.0	0.0
9	10.1	27996.7	0.0	0.0	0.0	0.0	4199.5	0.0	0.0
10	9.2	18429.1	0.0	0.0	0.0	0.0	2764.4	0.0	0.0
11	1.2	1855.1	0.0	0.0	0.0	0.0	278.3	0.0	0.0
12	3.1	2359.7	0.0	0.0	0.0	0.0	354.0	0.0	0.0

CROSS-SECTION 10-10' W.O.102637

c:\bill's engineer\stabldata\102637\10arp.plt

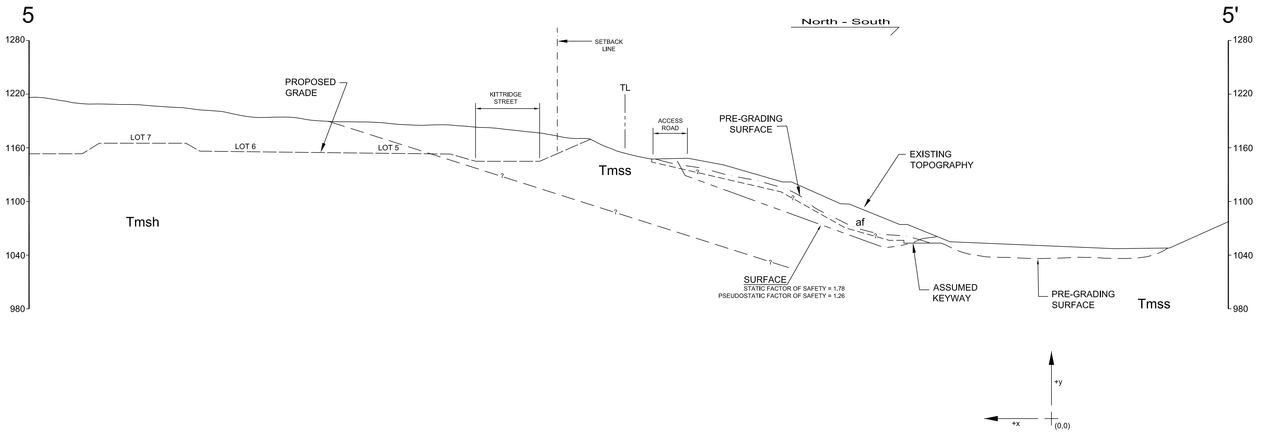


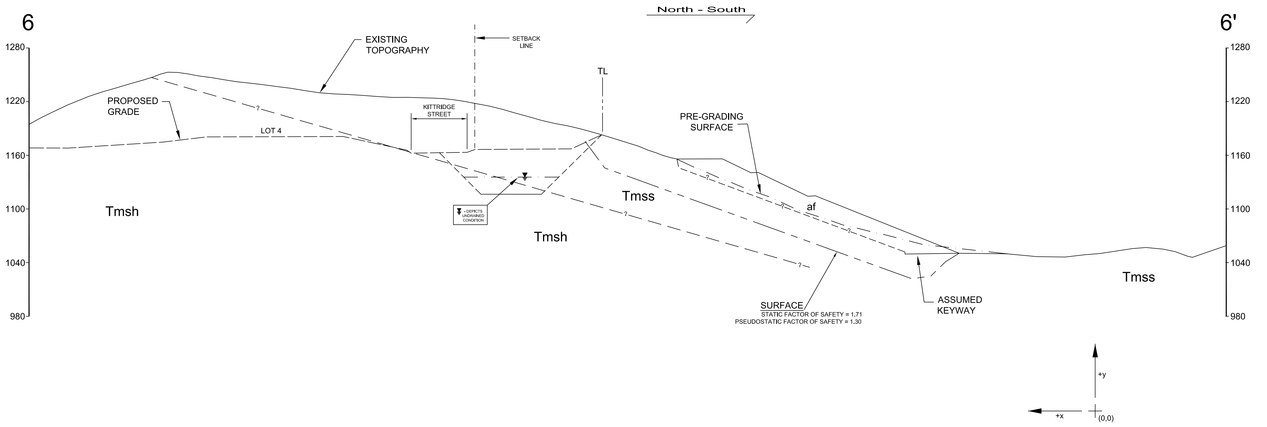
GSTABL7 v.2 FSmin=1.42

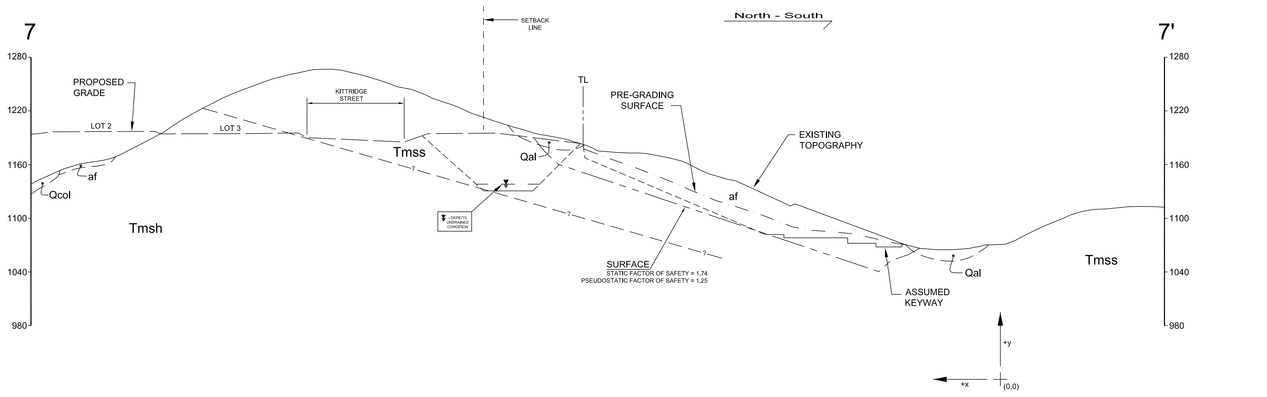
Factor Of Safety Is Calculated By The Simplified Janbu Method

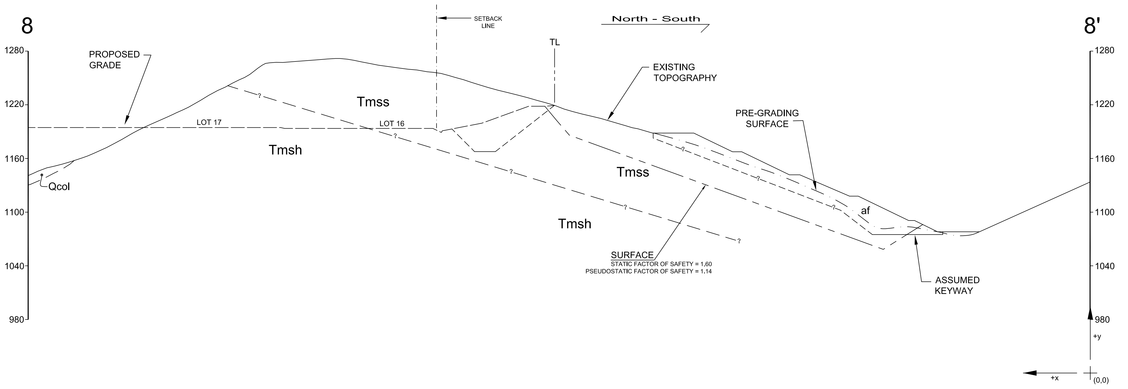
GSTABL7

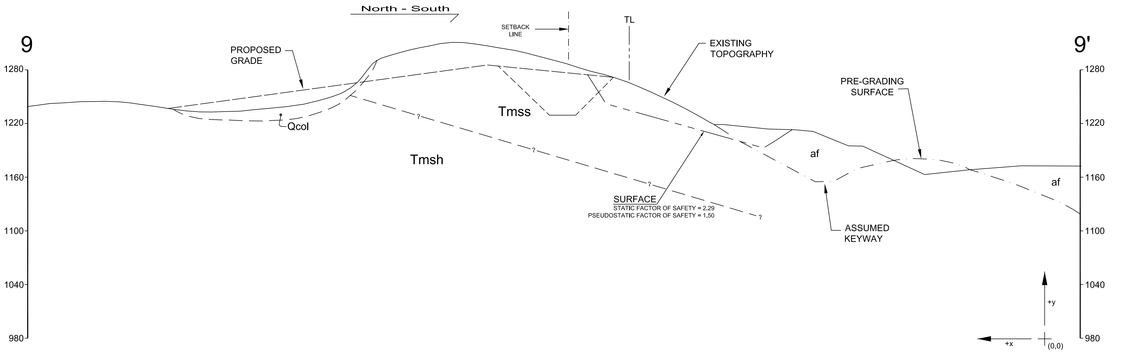
PLATE D-38

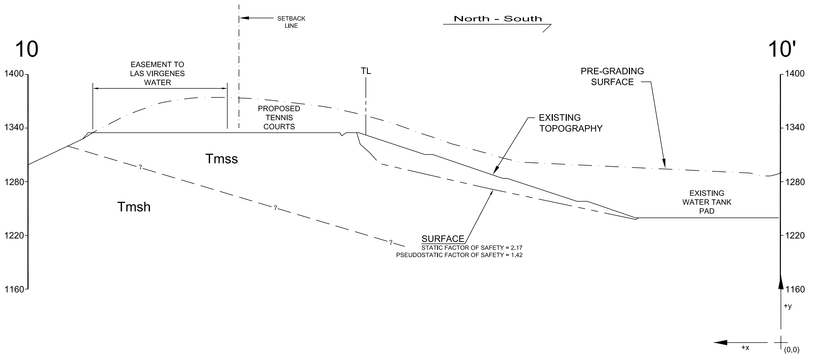












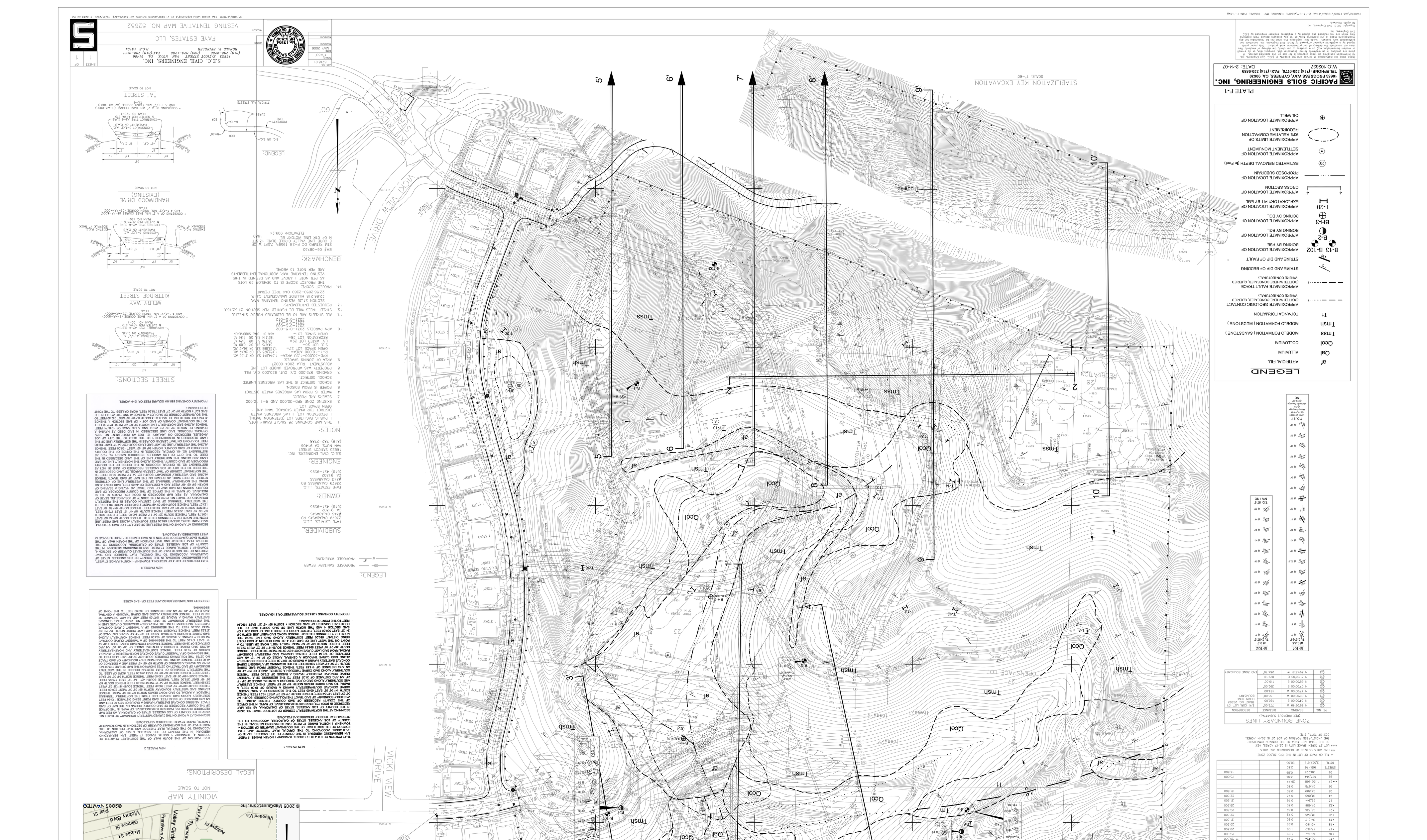
CROSS-SECTIONS 5-5' - 10-10'

SCALE : 1" = 60' H&V

PLATE E

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY, CYPRESS, CA. 90630
TELEPHONE: (714) 220-0770, FAX: (714) 220-9589

W.O.102637 DATE: 2-14-07


VICINITY MAP
NOT TO SCALE
Victory Blvd
Glenoaks Blvd
Glenoaks Blvd
Glenoaks

"MAJOR LAND DIVISION VESTING TENTATIVE TRACT NUMBER 52652 LOCATED IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA"

ORIGINAL 1/30/06 REVISED 5/22/06 REVISED 9/13/06

DELINEATIONS:

GROSS:
AREA WITHIN EACH LOT AND TO THE CENTERLINE OF ALL STREETS WITHIN THE DOTTED BORDER.

NET:
AREA WITHIN EACH LOT TO THE PROPERTY LINE OF ALL ADJACENT STREETS.

A R E A S

LOT NO.	GROSS (SQ. FT.)	GROSS (ACRES)	NET (SQ. FT.)	NET (ACRES)	PAD AREA-SQ.FT.
1	44,173	1.01			20,500
2	22,684	0.52			21,000
3	23,483	0.54			19,500
4	29,663	0.68			22,500
5	32,309	0.74			21,500
6	28,011	0.64			20,000
7	33,450	0.77			21,500
8	29,427	0.68			22,500
9	46,316	1.06			27,000
10	39,286	0.90			23,000
11	31,192	0.72			20,000
12	33,163	0.76			22,500
13	35,166	0.81			22,500
14	38,439	0.88			22,000
•15	108,424	2.49			** 20,500
•16	66,147	1.52			23,000
•17	47,460	1.09			20,500
•18	43,160	0.99			20,500
•19	34,817	0.80			21,500
•20	31,546	0.72			22,500
•21	35,736	0.82			23,500
•22	34,656	0.80			25,500
23	33,244	0.76			21,500
24	31,868	0.73			22,500
25	34,889	0.80			21,500
26	34,675	0.80			
••• 27	1,152,868	26.47			
28	167,314	3.84			75,000
29	38,776	0.89			16,500
STREETS	165,476	3.80			
TOTAL	2,527,818	58.03			

* ALL OR PART OF LOT IN THE RPD 30,000 ZONE.
** PAD AREA OUTSIDE OF RESTRICTED USE AREA.
*** LOT 27 (OPEN SPACE LOT) IS 26.47 ACRES, 46% OF THE TOTAL NET AREA OF THE COMMON OWNERSHIP. THE CONTRIBUTED PORTION OF LOT 27 IS 20.44 ACRES, 35% OF TOTAL SITE.

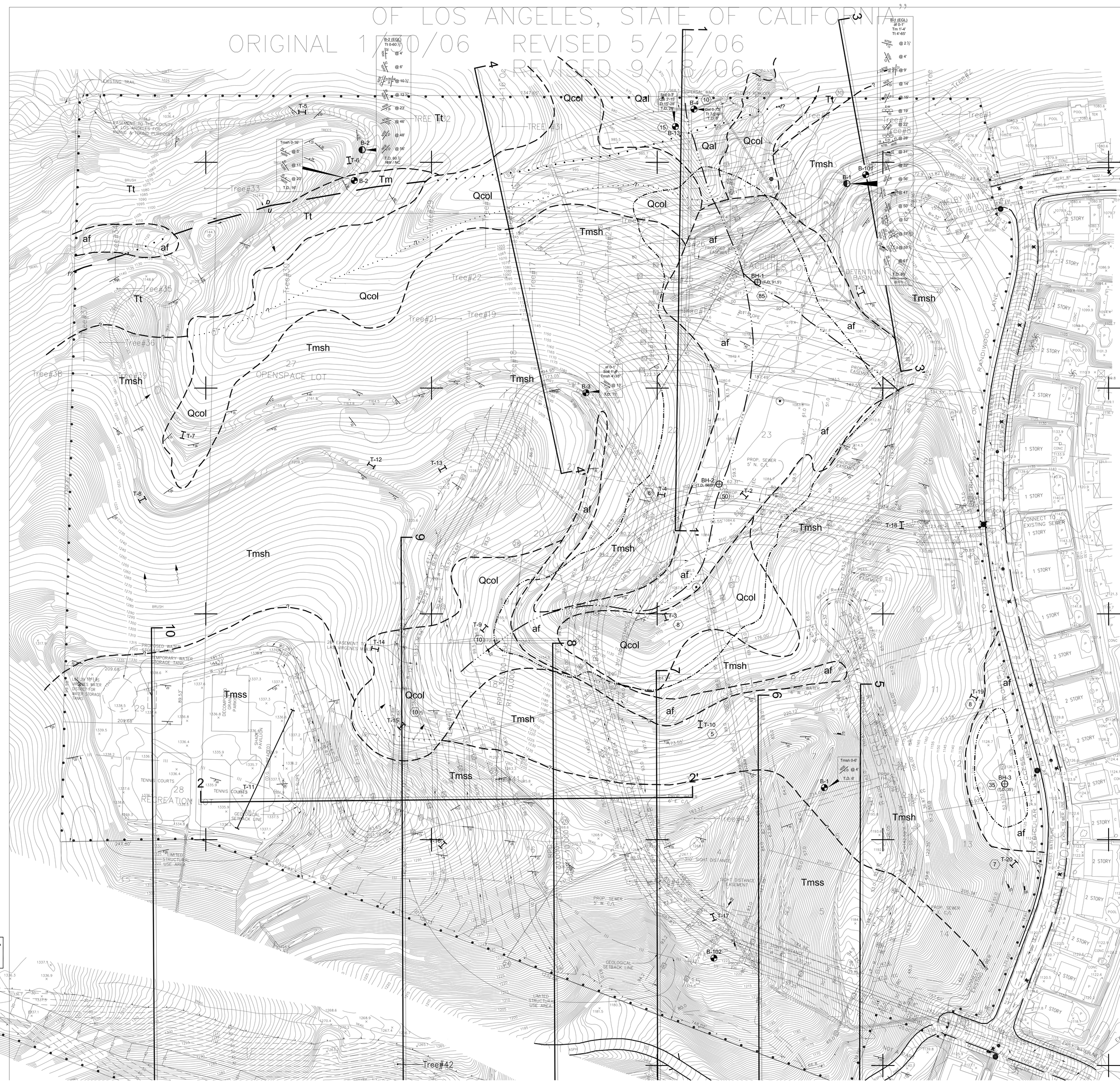
ZONE BOUNDARY LINES
(PER PREVIOUS SUBMITTAL)

PT. NO.	BEARING	DISTANCE	DESCRIPTION
①	N 68°48'16" W	775.00'	S.W. COR. LOT 171 TRACT NO. 23762 BEGIN ZONE BOUNDARY
②	N 34°00'00" E	180.00'	
③	N 05°00'00" W	85.00'	
④	N 47°00'00" W	154.00'	
⑤	N 07°00'00" E	392.00'	
⑥	N 69°00'00" E	110.00'	
⑦	N 31°00'00" E	879.19'	
⑧	N 89°45'21" W	254.75'	END ZONE BOUNDARY

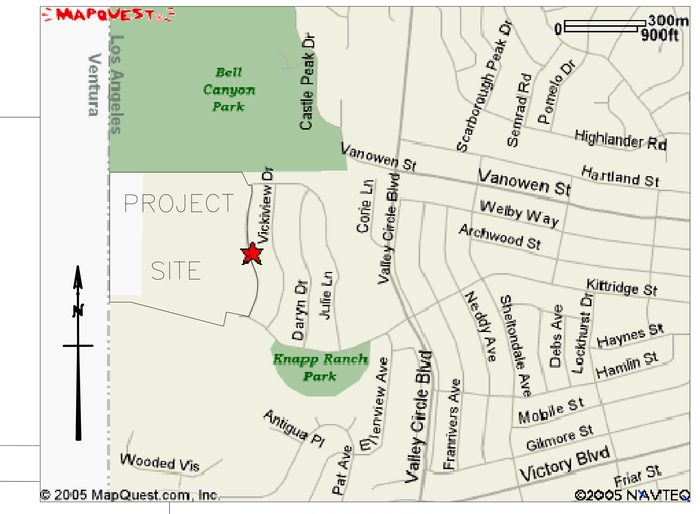
B-101
af 0-2.5'
Tc 2.5-9'
T.D. 9'
NW / NC

B-102
af 0-2'
Tc 2-5'
T.D. 5'
NW / NC

T.D. 91'
Moderate Seepage @ 37-58'
Heavy Seepage @ 91'
Moderate Seepage @ 74-90'
NC



1" = 60'



VICINITY MAP
NOT TO SCALE

LEGAL DESCRIPTIONS:

NEW PARCEL 1

THAT PORTION OF LOT 4 OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 17 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, AND THAT PORTION OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 17 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWESTERLY CORNER OF LOT 37 OF TRACT NO. 23762 IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 753, PAGES 60 TO 65 INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY; THENCE ALONG THE WESTERLY BOUNDARY OF SAID TRACT THE FOLLOWING COURSES: SOUTH 14° 06' 53" EAST 147.04 FEET; THENCE SOUTH 79° 53' 07" WEST 19.71 FEET; THENCE SOUTH 14° 06' 53" EAST 60.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 19.00 FEET, A RADIAL TO SAID CURVE BEARS NORTH 14° 06' 53" WEST, SAID CURVE BEING THE AND SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 90° 00' 00" AN ARC DISTANCE OF 29.85 FEET; THENCE TANGENT TO THE BEGINNING OF A TANGENT CURVE CONCAVE WESTERLY HAVING A RADIUS OF 273.00 FEET; THENCE SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 23° 24' 10" AN ARC DISTANCE OF 111.51 FEET; THENCE TANGENT FROM SAID CURVE SOUTH 13° 34' 41" WEST 100.00 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE EASTERLY HAVING A RADIUS OF 1077.00 FEET; THENCE SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 10° 39' 50" AN ARC DISTANCE OF 200.33 FEET; THENCE TANGENT FROM SAID CURVE SOUTH 24° 14' 31" WEST 223.89 FEET; THENCE SOUTH 31° 19' WEST 560.81 FEET; THENCE SOUTH 81° 28' 52" WEST 223.89 FEET; THENCE NORTH 69° 33' 30" WEST 1007.75 FEET, MORE OR LESS, TO A POINT ON THE WEST LINE OF SAID LOT 4 OF SAID SECTION 4; SAID POINT BEING DISTANT 550.00 FEET SOUTHERLY ALONG SAID LINE FROM THE NORTHERLY TERMINUS THEREOF; THENCE ALONG SAID WEST LINE NORTH 01° 24' 27" EAST 550.00 FEET TO THE NORTHWEST CORNER OF SAID LOT 4 OF SAID SECTION 4 AND THE NORTH LINE OF SAID SOUTH HALF OF THE SOUTHEAST QUARTER OF SAID SECTION 4; SOUTH 89° 45' 21" EAST 1596.94 FEET TO THE POINT OF BEGINNING.

PROPERTY CONTAINS 1,354,347 SQUARE FEET OR 31.09 ACRES.

NEW PARCEL 2

THAT PORTION OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 17 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF AND THAT PORTION OF THE NORTH HALF OF THE NORTHEAST QUARTER OF SECTION 9, IN SAID TOWNSHIP 1 NORTH, RANGE 12 WEST DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE CURVED WESTERLY BOUNDARY OF TRACT NO. 23762 IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 753, PAGES 60 TO 65 INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, SHOWN ON THE MAP OF SAID TRACT AS BEING CONCAVE EASTERLY HAVING A RADIUS OF 1077.00 FEET AND AN ARC DISTANCE OF 549.83 FEET, SAID POINT BEING DISTANCE 13.64 FEET SOUTHERLY ALONG SAID CURVED LINE FROM THE NORTHERLY TERMINUS THEREOF; THENCE ALONG SAID WESTERLY BOUNDARY AND ALONG THE LAST LEAVING SAID WESTERLY BOUNDARY NORTH 39° 34' 41" WEST 240.00 FEET; THENCE SOUTH 39° 07' 19" WEST 593.81 FEET; THENCE SOUTH 81° 28' 52" WEST 223.89 FEET; THENCE SOUTH 69° 34' 41" WEST 240.00 FEET; THENCE SOUTH 69° 05' 49" EAST 275.00 FEET; THENCE SOUTH 45° 44' 17" EAST 178.55 FEET; THENCE SOUTH 69° 05' 49" EAST 150.00 FEET; THENCE NORTH 20° 54' 11" EAST 123.07 FEET; THENCE SOUTH 69° 05' 49" EAST 210.00 FEET; MORE OR LESS, TO THE WEST LINE OF LOT 4 OF SAID SECTION 4; SAID POINT BEING DISTANT 550.00 FEET SOUTHERLY ALONG SAID LINE FROM THE NORTHWEST CORNER OF LOT 4 OF SAID SECTION 4; THENCE ALONG SAID WEST LINE OF LOT 4 OF SAID SECTION 4 AND THE WESTERLY BOUNDARY OF SAID TRACT NO. 23762 AS HAVING A BEARING OF NORTH 89° 05' 49" WEST AND A DISTANCE OF 44.00 FEET; THENCE ALONG THE SAID WESTERLY BOUNDARY OF SAID TRACT NO. 23762 THE FOLLOWING COURSES: SOUTH 69° 05' 49" EAST 44.00 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 19.00 FEET; THENCE SOUTHEASTERLY AND NORTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 90° 00' 00" AN ARC DISTANCE OF 29.85 FEET; THENCE TANGENT FROM SAID CURVE NORTH 20° 54' 11" EAST 171.00 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE WESTERLY HAVING A RADIUS OF 433.00 FEET; THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 39° 14' 49" AN ARC DISTANCE OF 296.58 FEET; THENCE TANGENT FROM SAID CURVE NORTH 18° 19' 22" WEST 230.00 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE EASTERLY, SAID CURVE BEING THE PREVIOUSLY DESCRIBED CURVED LINE IN THE WESTERLY BOUNDARY OF SAID TRACT NO. 23762; THENCE CONCAVE EASTERLY HAVING A RADIUS OF 1077.00 FEET AND AN ARC DISTANCE OF 549.83 FEET; THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 19° 40' 59" AN ARC DISTANCE OF 369.99 FEET TO THE POINT OF BEGINNING.

PROPERTY CONTAINS 587,820 SQUARE FEET OR 13.49 ACRES.

NEW PARCEL 3

THAT PORTION OF LOT 4 OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 17 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF AND THAT PORTION OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 17 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF AND THAT PORTION OF THE NORTH HALF OF THE NORTH EAST QUARTER OF SECTION 9, IN SAID TOWNSHIP 1 NORTH, RANGE 12 WEST DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WEST LINE OF SAID LOT 4 OF SAID SECTION 4, SAID POINT BEING DISTANT 550.00 FEET SOUTHERLY ALONG SAID WEST LINE FROM THE NORTHERLY TERMINUS THEREOF; THENCE SOUTH 89° 33' 50" EAST 1307.78 FEET; THENCE SOUTH 29° 54' 11" WEST 240.00 FEET; THENCE SOUTH 69° 05' 49" EAST 378.00 FEET; THENCE SOUTH 45° 44' 17" EAST 178.55 FEET; THENCE SOUTH 69° 05' 49" EAST 150.00 FEET; THENCE NORTH 20° 54' 11" EAST 123.07 FEET; THENCE SOUTH 69° 05' 49" WEST 210.00 FEET; MORE OR LESS, TO THE WEST LINE OF LOT 4 OF SAID SECTION 4; SAID POINT BEING THE WESTERLY BOUNDARY OF TRACT NO. 23762 IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 753, PAGES 60 TO 65 INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY SHOWN ON SAID MAP OF SAID TRACT AS HAVING A BEARING OF NORTH 69° 05' 49" WEST AND A DISTANCE OF 44.00 FEET; SAID POINT ALSO BEING THE NORTHERLY TERMINUS OF THE WESTERLY LINE OF KITTRIDGE STREET AS SHOWN ON SAID MAP OF TRACT NO. 23762; THENCE ALONG SAID WESTERLY BOUNDARY SOUTH 20° 54' 11" WEST 60.00 FEET TO THE NORTHEAST CORNER OF THAT CERTAIN PARCEL OF LAND DESCRIBED IN THE DEED TO THE CITY OF LOS ANGELES, RECORDED ON JUNE 25, 1971 AS INSTRUMENT NO. 38, OFFICIAL RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY; THENCE ALONG THE NORTHERLY LINE OF SAID LAND AND ALONG THE NORTHERLY LINE OF THE LAND DESCRIBED IN THE DEED TO THE CITY OF LOS ANGELES, RECORDED ON JUNE 25, 1971 AS INSTRUMENT NO. 45, OFFICIAL RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, NORTH 69° 05' 49" WEST 125.00 FEET; THENCE ALONG THE WESTERLY LINE OF LAST SAID LAND SOUTH 20° 54' 11" EAST 139.00 FEET TO A POINT ON THAT CERTAIN COURSE IN THE NORTHERLY LINE OF THE LAND DESCRIBED IN DESCRIPTION 1 OF THE DEED TO THE CITY OF LOS ANGELES, RECORDED ON JANUARY 12, 1962 AS INSTRUMENT NO. 1825, OFFICIAL RECORDS, SAID COURSE BEING SHOWN ON SAID MAP AS HAVING A BEARING OF NORTH 69° 05' 49" WEST AND A DISTANCE OF 19.61'; THENCE ALONG SAID NORTHERLY LINE NORTH 69° 05' 49" WEST 1232.08 FEET TO THE SOUTHEAST CORNER OF SAID LOT 4 OF SAID SECTION 4; THENCE ALONG THE SOUTH LINE OF SAID LOT 4 SOUTH 89° 05' 35" WEST 347.80 FEET TO THE SOUTHWEST CORNER OF SAID LOT 4; THENCE ALONG THE WEST LINE OF SAID LOT 4 NORTH 01° 24' 27" EAST 775.20 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

PROPERTY CONTAINS 585,484 SQUARE FEET OR 13.44 ACRES.

LEGEND:

SS PROPOSED SANITARY SEWER
W 8" PROPOSED WATERLINE

SUBDIVIDER:

FAYE ESTATES, L.L.C.
23679 CALABASAS RD
#343 CALABASAS
CA. 91302
(818) 421-9595

OWNER:

FAYE ESTATES, L.L.C.
23679 CALABASAS RD
#343 CALABASAS
CA. 91302
(818) 421-9595

ENGINEER:

S.E.C. CIVIL ENGINEERS, INC.
16823 SATICOY STREET
VAN NUYS, CA 91406
(818) 782-2788

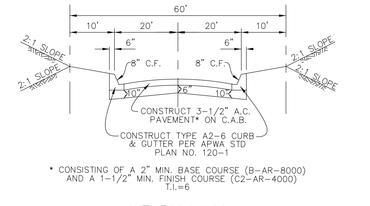
NOTES:

1. THIS MAP CONTAINS 25 SINGLE FAMILY LOTS, 1 PUBLIC FACILITIES LOT (DETENSION BASIN), 1 RECREATION LOT, 1 LAS VIRGENES WATER DISTRICT FOR WATER STORAGE TANK AND 1 OPEN SPACE LOT.
2. EXISTING ZONE RPD-30,000 AND R-1 10,000
3. SEWERS ARE PUBLIC.
4. WATER IS FROM LAS VIRGENES WATER DISTRICT.
5. POWER IS FROM EDISON.
6. SCHOOL DISTRICT IS THE LAS VIRGENES UNIFIED SCHOOL DISTRICT.
7. GRADING: 975,000 C.Y. CUT, 920,000 C.Y. FILL
8. PROPERTY WAS APPROVED UNDER LOT LINE ADJUSTMENT RLLA 2004 00027
9. AREA OF ZONING SPACES:
   RPD-30,000-1.5U AREA= 1,374,841 S.F. OR 31.56 AC.
   R-1-10,000 AREA= 1,152,875 S.F. OR 26.47 AC.
   OPEN SPACE LOT 27= 1,152,868 S.F. OR 26.47 AC.
   S.D. LOT 26= 34,675 S.F. OR 0.80 AC.
   L.V. WATER LOT 29= 38,776 S.F. OR 0.89 AC.
   RECREATION LOT 28= 167,314 S.F. OR 3.84 AC.
   OPEN SPACE LOT= 46% OF TOTAL SUBDIVISION
10. APN PARCELS 2031-015-002
    2031-015-003
    2031-015-012
    2031-015-013
11. ALL STREETS ARE TO BE DEDICATED PUBLIC STREETS.
12. STREET TREES WILL BE PLANTED PER SECTION 21.32.160.
13. REQUESTED ENTITLEMENTS:
    SECTION 21.38 VESTING TENTATIVE MAP.
    22.56.215 HILLSIDE MANAGEMENT C.U.P.
    22.56.2050-2260 OAK TREE PERMIT.
14. PROJECT SCOPE:
    THE PROJECT SCOPE IS TO DEVELOP 29 LOTS AS PER NOTE 1 ABOVE AND AS DEFINED IN THIS VESTING TENTATIVE MAP. ADDITIONAL ENTITLEMENTS ARE PER NOTE 13 ABOVE.

BENCHMARK:

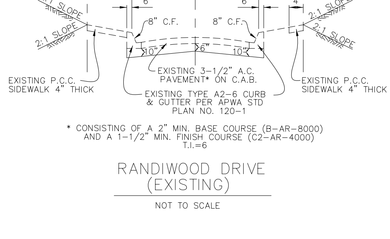
BM# 06-08730
STM "STMPO DC F-2B 1959", 7.5FT W OF E CURB LINE VALLEY CIRCLE BLVD; 13.9FT N OF CTR LINE VICTORY BL.
ELEVATION: 909.24 1980

STREET SECTIONS:



* CONSISTING OF A 3" MIN. BASE COURSE (B=AR=8000) AND A 1-1/2" MIN. FINISH COURSE (C2=AR=4000) T.I.=6

WELBY WAY
KITTRIDGE STREET
NOT TO SCALE



* CONSISTING OF A 3" MIN. BASE COURSE (B=AR=8000) AND A 1-1/2" MIN. FINISH COURSE (C2=AR=4000) T.I.=6

RANDIWOOD DRIVE
(EXISTING)
NOT TO SCALE

PLATE F-2

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY, CYPRESS, CA. 90630
TELEPHONE: (714) 220-0770, FAX: (714) 220-9589

W.O.102637 DATE: 2-14-07

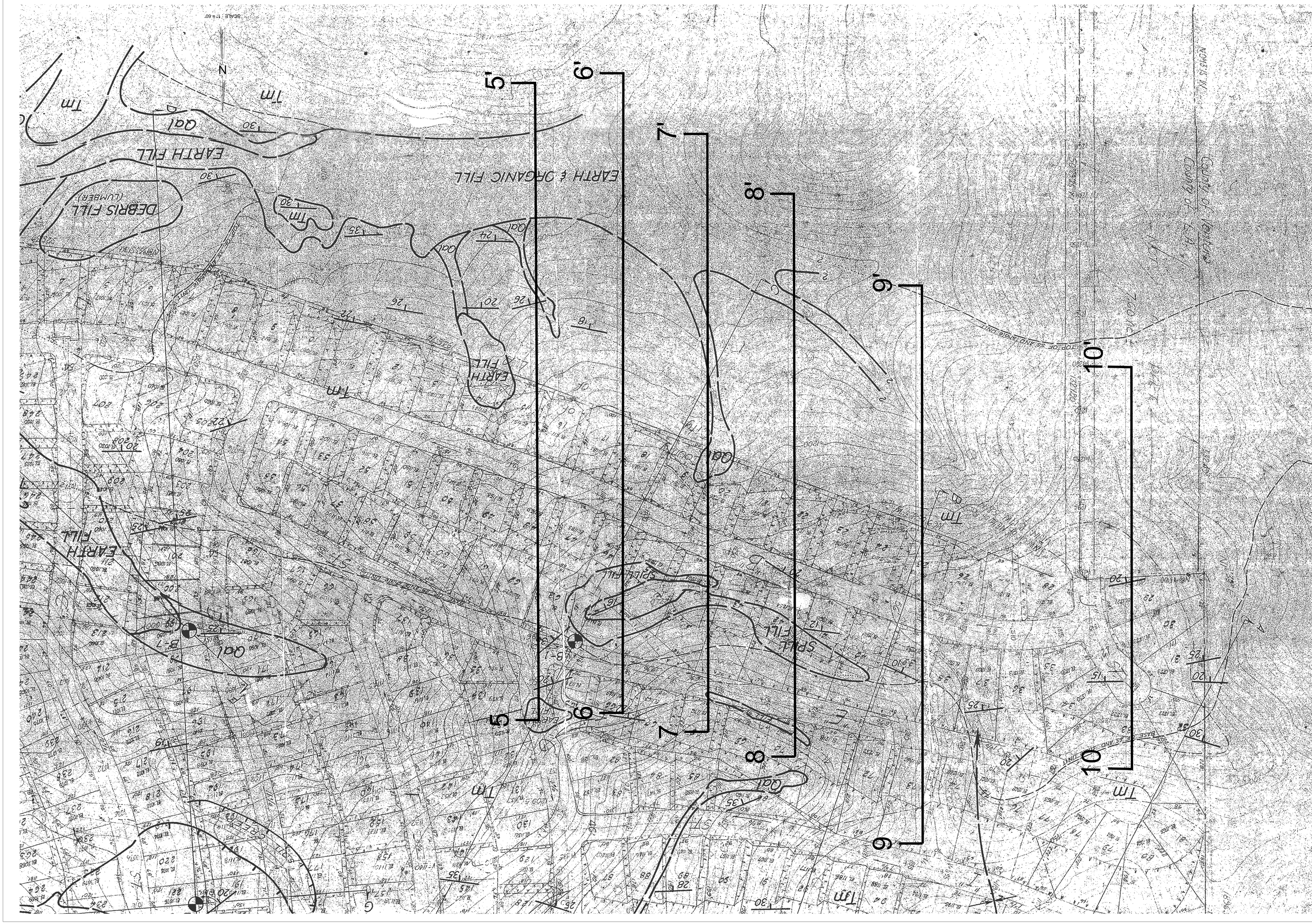
MODIFIED PORTION OF MAP
CONTAINED IN REFERENCE
1 REPORT

OFFSITE PRE-GRADE GEOLOGIC MAP

PLATE G

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY, CYPRESS, CA. 90630
TELEPHONE: (714) 220-0770, FAX: (714) 220-9589
W.O. 102637 DATE:2-14-07

SEE PLATE F-1 FOR GEOTECHNICAL LEGEND



COAST LIVE OAK WOODLAND

SOUTHERN CALIFORNIA WALNUT WOODLAND

10

9

8

7

6

5

10'

9'

8'

7'

6'

5'

Tmss

Tmsh

af

Qal

KITTRIDGE

VICKIVIEW DRIVE

DARYN DRIVE

SCALE : 1" = 60'

PORTION OF COMPOSITE TOPOGRAPHIC MAP
PROVIDED BY S.E.C. ENGINEERING, UNDATED

OFFSITE POST-GRADE GEOLOGIC MAP

PLATE H

SEE PLATE F-1 FOR GEOTECHNICAL LEGEND

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY, CYPRESS, CA. 90630
TELEPHONE: (714) 220-0770, FAX: (714) 220-9589
W.O. 102637 DATE:2-14-07

APPENDIX G
Phase I Environmental Site Assessment

November 3, 2015
Project No. 1-4001-A

Mr. Michael Naim
Michael Naim Associates Development
Penthouse, 144 N Wetherly Dr.
West Hollywood Ca 90048

Subject: **PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT**
APN # 2031- 015-011, 2031-015-022 and 2031- 015-033
West Hills Area, Los Angeles County, California.

Mr. Naim:

G3Soilworks (G3) is pleased to submit the attached report that describes and presents the activities and the results of a Phase I Environmental Site Assessment (Phase I ESA) that was completed for the above referenced property.

Action Recommended:

- A total of fifteen oil wells, five observed and ten reported in the Department of Oil, Gas, and Geothermal Resources (DOGGR) files, each represent a recognized environmental condition. G3 recommends that the DOGGR be notified with a request to conduct a file review and provide their requirements for the disposition of each well based on the proposed land use.
- G3 recommends implementing the above DOGGR requirements/recommendations and that the immediate vicinity of the wells be assessed for and remediated from residual impacts caused by the drilling process. Such impacts may include drilling mud pits and oil or fuel impacted soil.
- The two storage tanks and feasible amounts of concrete debris should be removed from the site for general environmental and geotechnical improvements.
- A comprehensive Stormwater Pollution and Prevention Plan (SWPPP) should be prepared, implemented and maintained at the Site to prevent further on site erosion of soil and slope failure.

Details and additional information on the above recommendations are presented in the body of this report.

We appreciate the opportunity to be of service to you. If you should have any questions or comments regarding this report, please contact Stanley White at (714) 668-5600.

Respectfully submitted,

G3SoilWorks

By: _____

Doug Stout

Staff Geologist

By: _____

Stanley G. White, P.G.

Director of Environmental Services

Distribution: 1 – Addressee (Email)

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1
1.1 Purpose and Scope of Work 1
1.2 Non-Scope Considerations 1
1.3 Significant Assumptions 2
1.4 Limitations and Exceptions 2
1.5 Reliance 2
2.0 SITE DESCRIPTION 3
2.1 Current Uses of the Site 3
2.2 Location and Description 3
2.3 Current Uses of Adjoining Properties 3
2.4 General Vicinity Description 4
3.0 USER/OWNER PROVIDED INFORMATION 4
3.1 Requested Documents and Information 4
4.0 RECORDS REVIEW 5
4.1 Physical Setting 5
4.1.1 Geography 5
4.1.2 Geology 6
4.1.3 Groundwater 6
4.2 Historical Review 7
4.2.1 Aerial Photograph and Map Review 7
4.2.2 City Directory Review 12
4.2.3 Zoning Land Use Records 12
4.3 Environmental Database Review 12
4.3.2 Local and Regional Water Agency Records 13
4.4 Additional Environmental Record Sources 13
4.4.1 South Coast Air Quality Management District (SCAQMD) 13
4.4.2 Los Angeles Regional Water Quality Control Board (LARWQCB) 13

4.4.3 Los Angeles County Department of Environmental Health 14
4.4.4 City of Los Angeles, City Clerk, Office of Records and Information 14
4.4.5 State of California Regional Water Quality Control Board Geotracker Database Website (Geotracker) 14
4.4.6 State of California Department of Toxic Substances Control Envirostor Database Website (Envirostore) 14

5.0 SITE RECONNAISSANCE 15
5.1 Methodology 15
5.2 Limiting Conditions 16
5.3 Observations 16

8.0 CONCLUSIONS AND RECOMMENDATIONS 21

9.0 DEVIATIONS 22

10.0 ADDITIONAL NON-SCOPE SERVICES 23

11.0 REFERENCES 24

TABLES

Table 1 – Land Use/Development of Adjoining Properties
Table 2 - Historical Aerial Photograph and Map Review Summary
Table 3 – Oil Well Summary
Table 4 – Site Reconnaissance Observations

FIGURES

Figure 1 - Site Location Map
Figure 2 - Site Map
Figure 3 – Oil Well Locations

APPENDICES

APPENDIX A - Client Supplied Information
APPENDIX B - Historical Aerial Photographs and Topographic Maps
APPENDIX C - EDR Sandborn Maps
APPENDIX D – Site Photographs
APPENDIX E – EDR Radius Search
APPENDIX F - DOGGR Well Logs

1.0 Introduction

1.1 Purpose and Scope of Work

This report presents the results of G3SoilWorks's (G3) Phase I Environmental Site Assessment (ESA) prepared for Naim Associates Development for three parcels, APN# 2031- 015-011 (45 acres), 2031-015-022 (6.7 acres) and 2031- 015-033 (3.25 acres) (Site). The Site consists of a total of approximately 55 acres located in the West Hills area of the San Fernando Valley approximately 3 miles north of the 101 freeway and 0.5 mile west of Valley Circle Boulevard and is described in Section 2.2 of this report. This report was completed to identify, to the extent feasible, Recognized Environmental Conditions (REC's) in connection with the subject Site. The work was completed by environmental professionals and has been performed in accordance with our proposal dated September 24, 2015. Our work consisted of the following and was completed in general accordance with the scope of limitations of the American Society of Testing and Materials (ASTM) Practice E 1527-13.

- Review geologic and hydrologic information for the Site and vicinity;
- Conduct a visual site reconnaissance to determine if any potential environmental hazards are on the Site;
- Interview knowledgeable persons regarding the Site, past and present uses, and related pertinent information;
- Review available file information the owners may have regarding REC' associated with the Site;
- Review historical aerial photographs and maps, as available, of the Site and vicinity;
- Review Federal, State and local databases (i.e., EDR all-appropriate-inquiry) for the Site and vicinity to identify RECs associated with the Site and adjacent properties;
- Review Department of Oil and Gas (DOG) maps for the Site and Vicinity to determine the proximity of oil fields and oil wells to the Site;
- Prepare a report including findings, conclusions and recommendations regarding the identified RECs.

1.2 Non-Scope Considerations

There are a number of non-scope issues which are sometimes assessed concurrently with a Phase I ESA. Unless specifically agreed in the contract proposal documents, these non-scope considerations are not included as part of the Phase I assessment. Examples of non-scope issues include:

- Asbestos containing building materials
- Lead-based paint
- Wetlands
- Health and Safety
- Regulatory Compliance
- Endangered Species
- Chain of Title Review

No Non-scope issues were addressed in this report.

1.3 Significant Assumptions

There were no significant assumptions made for this assessment.

1.4 Limitations and Exceptions

The following regulatory agencies were unable to process file requests based on Assessor's Parcel Numbers. Therefore, no file review could be conducted.

- South Coast Air Quality Control Board
- Los Angeles Regional Water Control Board
- Los Angeles County Department of Environmental Health
- Los Angeles County Clerk's Office

1.5 Reliance

This report is for the sole benefit and exclusive use of Naim Associates Development. The Scope of Work was presented in our proposal in accordance with generally accepted environmental practices. No other warranty, either expressed or implied, is made. This report should not be regarded as a guarantee that no further contamination beyond that which could be detected within the scope of this assessment is present at the Site.

G3SoilWorks makes no warranties or guarantees as to the completeness or accuracy of information provided by others. Changes in conditions after the site visit, or additional information which was not found or available at the time of this report may result in a modification of the conclusions and recommendations in this report. Any reliance on this report by Third Parties shall be at the Third Party's sole risk.

2.0 Site Description

2.1 Current Uses of the Site

The Site is currently an undeveloped vacant property with a few access roads and trails. Initially, two oil wells were been identified within the Site perimeter. Scrub brush, hills, and erosion channels comprise most of the Site. Water storage tanks are located at the southwestern edge of the property. Residential structures border to the east. The west and north of the site is vacant undeveloped land.

2.2 Location and Description

The Site consists of approximately 55 acres located in the Western Foothills of the San Fernando Valley. The Site is accessed at the west end of Kittridge St. in West Hills, CA. A Site Location Map and a Project Site and Vicinity Map are presented as Figure 1 and 2, respectively.

2.3 Current Uses of Adjoining Properties

The Site is bordered by multi-family residents on the east side, a water storage facility to the southwest, and open space south, west, north, and northwest, based on our research and observations during our site visit. Additional details are presented in Table 1 below.

TABLE 1

LAND USE/DEVELOPMENT OF ADJOINING PROPERTIES

DIRECTION	CURRENT LAND USE/DEVELOPMENT
North	Undeveloped land, open and consisting of dry erosion channels and slopes of the Simi Hills.
Northwest	Undeveloped land, open and consisting of dry erosion channels and slopes of the Simi Hills.
West	Undeveloped land, open and consisting of dry erosion channels and slopes of the Simi Hills.
Southwest	Undeveloped land, open and consisting of dry erosion channels and slopes of the Simi Hills.
South	Undeveloped land occupied by dry erosion channels and the Simi Hills is adjacent. South of the undeveloped land exists Multi-family residential

DIRECTION	CURRENT LAND USE/DEVELOPMENT
	structures, paved roadways, gutters, and curbs.
Southeast	Adjacent to the Site is Partially Developed land occupied by two silo facilities. Beyond is undeveloped land, open and consisting of dry erosion channels and slopes of the West Hills.
East	Developed land occupied by multi-family residential structures, paved roadways, gutters, and curbs.
Northeast	Adjacent to the site is undeveloped land, open and consisting of dry erosion channels and slopes of the west hills. Beyond is developed land occupied by multi-family residential structures, paved roadways, gutters, and curbs.

2.4 General Vicinity Description

The general vicinity of the Site is characterized by residential property, light commercial business properties and undeveloped land. The Site is located at the foothills of the Simi Hills in the San Fernando Valley. The Site is an undeveloped parcel of land, bound by the Simi Hills to the north and west and residential communities to the east, northeast, and southeast. The site has undulating terrain, with low spots in the center and high spots on the perimeter.

3.0 User/Owner Provided Information

3.1 Requested Documents and Information

The ASTM E1527-13 specifies that the Site Owner, key Site Manager, and the Site User (owner or tenant) provide any helpful documents that may be available. The Property owner provided copies of their documents and files for this Phase I. The following documents, regarding the Site, were reviewed for this Phase I ESA:

- December 4, 1991 - Slosson and Associates Consulting Geologists letter. This firm submitted a letter to the LACDPW to report observed distress in the vicinity of Vickiview Drive and Welby Way, West Hills, CA. The letter was provided as a professional courtesy to the LACDPW.
- November 4, 1997 –Pacific Soils Engineering,
- November 9, 1998 - Environmental Geotechnology Laboratory Report of Geotechnical Engineering and Geological Investigations and Review of 100-Scale Grading Plan. This

geotechnical report was completed to evaluate the soil and geology for planned development.

- November 9, 1998 – Department of Public Works Materials Engineering Division Geologic Review of Tentative Tract/Minor Land Subdivision 52652. Based on the results of the review, the Tentative Map was not approved for feasibility.
- July 10, 2006 – Pacific Soils Engineering, Inc., Preliminary Geotechnical Report. This geotechnical report was completed in conjunction with proposed development by the previous owners of the Site. Maps in this report indicated the hand drawn locations of two oils observed in the field.
- November 17, 2006 Pacific Soils Engineering, Inc., Addendum Tentative Map Review and Response to Los Angeles County Department of Public Works. This addendum was a response to LACDPW's comments from this firm's Preliminary Geotechnical Report dated July 10, 2006.
- February 14, 2007 Pacific Soils Engineering, Inc., Response to Los Angeles County Department of Public Works. This response was to LACDPW's comments from this firm's Preliminary Geotechnical Report dated November 17, 2006.

4.0 Records Review

4.1 Physical Setting

4.1.1 Geography

The Site is located approximately 2560 feet above mean sea level (MSL), with an undulating surface topography. The perimeter of the Site is generally higher elevation than the center, creating a bowl effect (United States Geological Survey [USGS] Topographic Map, Calabasas California 2015). The Site is situated in the southwest corner of the City of West Hills, east adjacent to the West Hills of San Fernando Valley. A regional topographic map is included in Figure 1.

4.1.2 Geology

The site is located in the foothills of the Simi Hills in the Western portion of the San Fernando Valley. The Valley and adjacent mountains are part of the Transverse range physiographic province. This province is east-west trending and comprised of mountain ranges and sediment-filled basins. The east-west trend seen in these ranges is unique among California ranges, which generally follow a northwest-southwest trend.

The transverse ranges and their associated sediment filled basins are the product of the San Andreas Fault. The fault is a transform-type portion of the contact between the North American and the Pacific Ocean plates and is the dominant force driving Southern California's evolving landscape. Dextral slip along the fault system in the late Tertiary-Quaternary created the San Fernando and San Gabriel Valley.

The Site sits on the southeastern foothills of the Simi Hills. This portion of the Simi Hills geology primarily consists of the Monterey formation and an unnamed shale-sandstone formation. This formation comprises siliceous shale bedded with semi-friable sandstone. The beds generally strike northeast and dip to the southeast and are part of the northern limb of a syncline.

The Chatsworth and North Reservoir Faults, which trace northeast to southwest, are the closest faults to the Site. The Chatsworth Fault, the closest proximal of the two faults, is a north-dipping reverse fault that was last determined to slip in the Late Quaternary The proximity of the fault creates landsliding hazards for the Site.

4.1.3 Groundwater

Groundwater within the San Fernando Valley Groundwater Basin occurs in saturated portions of Quaternary surficial deposits. The groundwater in the basin is mainly unconfined, with some exceptions at the west end of the basin. Groundwater in the basin generally flows from the perimeter to the basin's center. The basin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the east by the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills. Several structures restrict the groundwater flow within the

basin. Faults in the basin create cascading, barrier, and basement rock variation conditions; the Chatsworth fault, the closest proximal fault to the Site, is known to cause these restrictions.

The aquifers within in the San Fernando Valley Groundwater Basin consist of the Saugus Formation, which is a semiconfined aquifer, and Pleistocene and Holocene alluvium. The Holocene alluvium consists primarily of coarse-grained, unsorted gravel and sand deposited from the surrounding highlands. Clay content is highest in the western portion of the basin and decreases eastward. The highest permeability and specific yield are reported to be in the central and eastern portions of the basin, corresponding with the lower clay content.

Water quality chemistry in the basin is predominantly calcium sulfate-bicarbonate in the west and calcium bicarbonate in the east. TDS can range from 326 to 615 mg/L and conductivity can range from 540 to 996 µmhos. An elevated sulfate concentration occurs in the western part of the basin. Inorganics, Radiologicals, Nitrates, Pesticides, VOCS and SVOCs have been found above MCL concentrations in western-basin public supply wells.

4.2 Historical Review

4.2.1 Aerial Photograph and Map Review

Available historical aerial photographs were reviewed from Environmental Data Resources (EDR), and Google Earth (© Google, Inc.). The results of the reviews are summarized in Table 2, and copies of the EDR, aerial photographs are presented in Appendix B.

Available topographic maps from EDR were reviewed. The results of the review are also summarized in Table 2 and copies1952 of the topographic maps are also presented in Appendix B.

TABLE 2

HISTORICAL AERIAL PHOTOGRAPH AND TOPOGRAPHIC MAP REVIEW SUMMARY

DATE	REFERENCE	OBSERVATIONS
1928	Aerial Photographs	The Site and adjacent properties appear to be undeveloped natural land.
1938, 1947	Aerial Photographs	The Site and adjacent properties appear to be undeveloped natural land.
1952	Aerial Photographs	The Site and adjacent properties appear to be undeveloped natural land. A small dirt trail now exists through the site. Southeast of the site is evidence of a small settlement.
1959	Aerial Photographs	The Site and adjacent properties appear to be undeveloped natural land. A small dirt trail exists through the site. South of the site there is evidence of miscellaneous earth working.
1967	Aerial Photographs	The Site appears to be undeveloped natural land. Several small dirt trails exist through the site. The vicinity north and west of the site is undeveloped natural land. East adjacent of the Site, land appears to have been cleared of vegetation and graded for housing. Further southeast of the Site also appears to have been cleared of vegetation and graded for housing. What appear to be paved roads exist in the graded housing tracts.

DATE	REFERENCE	OBSERVATIONS
1977	Aerial Photographs	The Site appears to be undeveloped natural land. Several small dirt trails exist through the site. The vicinity north and west of the site is undeveloped natural land. East adjacent of the site a residential community appears to be completed. Southwest adjacent of the site, two water storage tanks appear to have been constructed. South adjacent of the site, erosion control structures appear to have been built into the slopes.
1979	Aerial Photographs	The Site appears to be undeveloped natural land. Several small dirt trails exist through the site. The vicinity north and west of the site is undeveloped natural land. The vicinity east and southeast of the site appears to be a residential community with paved roads and gutters. South adjacent of the site erosion control structures appear to have been built into the slopes.
1983	Aerial Photographs	The Site appears to be undeveloped natural land. Several small dirt trails exist through the site. The vicinity north and west of the site is undeveloped natural land. The vicinity east and southeast of the site appears to be a residential community with paved roads and gutters. South adjacent of the site erosion control structures appear to have been built into the slopes.
1983	Aerial Photographs	The Site appears to be undeveloped natural land. Several small dirt trails exist through the site. The vicinity north and west of the site is undeveloped natural land. The vicinity east and southeast of the site appears to be residential communities with paved roads and gutters. South adjacent of the site erosion control structures appear to have been built into the slopes. The vicinity northeast of the site appears to have been cleared of vegetation and graded for residential construction.

DATE	REFERENCE	OBSERVATIONS
1989,1994	Aerial Photographs	The Site appears to be undeveloped natural land. Several small dirt trails exist through the site. The vicinity north and west of the site is undeveloped natural land. The vicinity east, northeast, and southeast of the site appears to be a residential communities with paved roads and gutters. South adjacent of the site erosion control structures appear to have been built into the slopes. The vicinity further south of the site appears to have been cleared of vegetation and graded for residential construction.
2002, 2005, 2009	Aerial Photographs	The Site appears to be undeveloped natural land. Several small dirt trails exist through the site. The vicinity north and west of the site is undeveloped natural land. The vicinity east, northeast, southeast, and far south of the site appears to be residential communities with paved roads and gutters. South adjacent of the site erosion control structures appear to have been built into the slopes.
2015	Aerial Photographs	The Site appears to be undeveloped natural land. Several small dirt trails exist through the site. The vicinity north and west of the site is undeveloped natural land. The vicinity east, northeast, southeast, and far south of the site appears to be residential communities with paved roads and gutters. South adjacent of the site erosion control structures appear to have been built into the slopes. Vegetation appears to have grown over the gutters for the slope erosion control.
1903	Topographic Map: Calabasas Quadrangle	The Site and vicinity appear to be natural undeveloped land at the foot of the Simi Hills.

DATE	REFERENCE	OBSERVATIONS
1903	Topographic Map Camulos Quadrangle	The Site and vicinity appear to be natural undeveloped land at the foot of the Simi Hills.
1910	Topographic Map Southern CA Sheet 3 Quadrangle	The Site and vicinity appear to be natural undeveloped land at the foot of the Simi Hills.
1932	Topographic Map Dry Canyon Quadrangle	The Site and vicinity appear to be natural undeveloped land at the foot of the Simi Hills.
1947	Topographic Map: Calabasas Quadrangle	The Site and vicinity appear to be natural undeveloped land at the foot of the Simi Hills. Local Roads noted but not named. A settlement appears to exist to the northeast of the site.
1952	Topographic Map: Calabasas Quadrangle	The Site and vicinity appear to be natural undeveloped land at the foot of the Simi Hills. Local Roads noted but not named. A settlement appears to exist to the northeast of the site.
1967	Topographic Map: Calabasas Quadrangle	The Site and vicinity north and west appear to be natural undeveloped land at the foot of the Simi Hills. The vicinity east appears to be developed for residential and commercial property. Local Roads noted and a few named.
1976	Topographic Map: Calabasas Quadrangle	The Site and vicinity north and west appear to be natural undeveloped land at the foot of the Simi Hills. The vicinity east appears to be developed for residential and commercial property. Local Roads noted and a few named.

DATE	REFERENCE	OBSERVATIONS
2012	Topographic Map: Calabasas Quadrangle	The Site and vicinity north and west appear to be natural undeveloped land at the foot of the Simi Hills. The vicinity east appears to be developed for residential and commercial property. Local Roads noted and a few named.
1940	Topographic Map Chatsworth Quadrangle	The Site is not shown in this map.

1 EDR, 2 Google, Inc.

4.2.1 Historical Sanborn Fire Insurance Map

Historical Sanborn Fire Insurance (Sanborn) map coverage of the Site was requested from EDR. No Sanborn maps were provided due to lack of coverage. A copy of the EDR Sanborn Map report is presented in Appendix C.

4.2.2 City Directory Review

The Site consists of raw undeveloped land and is bounded by residential property and vacant land, therefore no abstract of city directory data was searched.

4.2.3 Zoning Land Use Records

Based on the Los Angeles County West Chatsworth & Westhills Zoning Map, June 2012, the Site is zoned R-1 for single-family residence.

4.3 Environmental Database Review

An Environmental Data Resource (EDR) report of Standard Environmental Record Sources (Records) was prepared specifically for the Site. The Site was not listed in any of the data bases searched by EDR. The search included queries to multiple databases for cases within the specified search distance of the Site. For a radius map showing the locations of database listed properties adjacent to the Site and a complete list of all the databases searched, refer to the EDR Radius Map Report in Appendix E.

4.3.1 Adjacent Properties Agency Records

The following adjacent properties, located less than 1 mile from the Site were identified in the EDR report.

- Realty Inspection Service Inc. is located at 6772 Julie Lane, Canoga Park, Ca 91307 (Map ID A1). This facility is classified as a handler, RCRA Non-Generator of hazardous wastes is listed on the NRL and Finds database.

  The potential for environmental impact to the Site from the Realty Inspection Service Inc appears low due to the following: No violations were listed on the database and the Realty Inspection Service Inc. is located at a lower elevation than the Site.

- Bell Creek Debris Disposal Site is located at 6800 Valley Circle Boulevard Los Angeles, Ca (Map ID 2) is listed on the WMUDS/SWAT database.

  The potential for environmental impact to the Site from the Bell Creek Debris Disposal Site low due to the following: No violations were listed on the databases and Bell Creek Debris Disposal is at a lower elevation.

4.3.2 Local and Regional Water Agency Records

The EDR report of Records prepared specifically for the Site includes local and regional water agency records. The search included queries to multiple databases for water wells within the specified search distance of the Site. No groundwater wells were identified in the EDR report to be on or near the Site

For a radius map showing the Site and a complete list of all the databases searched, refer to the EDR Radius Map Report in Appendix E.

4.4 Additional Environmental Record Sources

4.4.1 South Coast Air Quality Management District (SCAQMD)

On October 14, 2015, information was queried from SCAQMD Records department internet database regarding the Site. The internet search returned no records based on parcel numbers, tract number, or lot numbers or latitude and longitude.

4.4.2 Los Angeles Regional Water Quality Control Board (LARWQCB)

On October 14, 2014, information was queried from LARWQCB regarding the Site. The GeotTracker system used by the LARWQCB returned no records based on assessor's parcel numbers, tract numbers, lot numbers or latitude and longitude. LARWQCB records could only be accessed by address.

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4.4.3 Los Angeles County Department of Environmental Health

On October 14, 2015, information was requested from RCDEH regarding the Site. The RCDEH referred our search to the Custody of Records for Public health. Lou Reyes from the Custody of Records for Public Health informed us no records were available based on assessor's parcel numbers, tract numbers, lot numbers, or latitude and longitude and records are maintained only for sites with a mailing address.

4.4.4 City of Los Angeles, City Clerk, Office of Records and Information

On October 14, 2015, information was request from the LA County Clerk office via email. No reply has been received. If documents delivered by the LA County Clerk reveal potential environmental hazards to this site, the environmental hazards will be discussed in and additional cover.

4.4.5 State of California Regional Water Quality Control Board Geotracker Database Website (Geotracker)

The Geotracker database did not identify any additional potential soil or groundwater contaminant source sites not included in the EDR report.

4.4.6 State of California Department of Toxic Substances Control Envirostor Database Website (Envirostore)

The Envirostore database did not identify any additional potential soil or groundwater contaminant source sites not included in the EDR report.

4.4.7 Department of Oil, Gas and Geothermal Resources

The Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) website was searched and ten oil wells were identified as located on the Site. The locations are show on Figure 3 and in Photographs 1 through 5. The oil well information available on the website is summarized in Table 3 and available well logs are presented in Appendix F. The five additional oil wells observed during the Site Reconnaissance (see Section 5) are included in Table 4 and Figure 3.

TABLE 3

OIL WELL SUMMARY

API	District	Well Status	Well Type	Well Number	Lease Name	Operator Name	Lat83:	Long83:	Well Data
3701166	1	Plugged	Oil & Gas production	6	Knapp	Canoga Oil Co.	34.194594	-118.666617	May be confidential
3701**68**	1	Dry Hole	Oil & Gas - production	2	Knapp	W. J. McCarthy-Wally Dennis	34.194186	-118.665256	May be confidential
3701**65**	1	Plugged	Oil & Gas - production	5	Knapp	Canoga Oil Co.	34.193869	-118.665945	May be confidential
3701**64**	1	Plugged	Oil & Gas - production	4	Knapp	Canoga Oil Co.	34.194433	-118.666111	May be confidential
3701**67**	1	Buried	Oil & Gas - production	1	Lucky Star	Liu Cheng and Lin	34.194576	-118.665596	Yes
3701**60**	1	Plugged	Oil & Gas - production	4-1	Knapp	Cache Oil Co.	34.194698	-118.665678	Yes
3701**62**	1	Plugged	Oil & Gas - production	1-A	Knapp	Canoga Oil Co.	34.194842	-118.666127	Yes
3701**61**	1	Buried	Oil & Gas - production	1	Knapp	Canoga Oil Co.	34.194923	-118.666135	No
3701**63**	1	Plugged	Oil & Gas - production	3	Knapp	Canoga Oil Co.	34.194698	-118.666653	Yes
3701**69**	1	Plugged	Oil & Gas - production	1	Lunnon	Wallace M. Nelson	34.19142	-118.667387	May be confidential
1	Identified in the field								
2	Identified in the field								
3	Identified in the field								
4	Identified in the field								
5	Identified in the field								

67 Mapped well number

5.0 Site Reconnaissance

5.1 Methodology

On Tuesday, October 21, 2015 a representative from G3 visited the Site to evaluate present use and environmental conditions at the Site. Access to the Site was limited to crossing a barb wire fence in the northeastern corner of the Site at the end of Welby Way and through a Los Angeles County Park that extends from the end of West Vanowen Street and along the north property line of the Site. Due to the topographical range of elevations across the Site and

accessibility, our methodology consisted of walking the Site in three sections: Central portions of the Site with average or midrange elevation, followed by the northern portion at low elevations and then the higher elevations in the southern part of the Site. Much of the Site had been previously graded and large fill slopes were observed along the southern and central portions of the Site. The surface of the fill slopes were drained by inter-connected “v” ditches covered with gunite. The gunite ditches were in various stages of disrepair, having long sections filled with soil, brush and debris to severely cracked and broken sections. No drain pipes or indication of canyon fill subdrains were observed near the base of the fill slopes. Chunks of concrete and miscellaneous debris were observed on some of the interior facing fill slopes. During the Site reconnaissance, a total of five oil wells were observed in the northeast portion of the Site (see Figure 3 and Appendix D Photos 1-5). None of the wells identified by DOGGR (see Figure 3) were located during the Site Reconnaissance. Two abandoned tanks were observed at the site, one corrugated metal tank was observed on a slope near the center of the Site and a steel storage tank was observed near the exposed oil wells in the north portion of the Site (see Appendix D photos 10 and 11).

5.2 Limiting Conditions

G3’s findings are based on the Site conditions observed during a preliminary reconnaissance on Tuesday, October 21, 2015. During the Site Reconnaissance, no limiting conditions were noted with the exception that:

- The Site corners and property lines were not steaked, marked or delineated. During the site reconnaissance, the property lines were extrapolated from an aerial photograph, and;
- There was no vehicle access to the Site, therefore the reconnaissance of the 55 acre Site was completed on foot.

5.3 Observations

During our Site visit, G3 personnel made observations of the Site conditions as described in Table 4 below:

TABLE 4

SITE RECONNAISSANCE OBSERVATIONS

ITEM OR CONDITION	OBSERVED EVIDENCE	NO EVIDENCE OBSERVED	COMMENTS
Hazardous Substances & Petroleum Products	☐	☒	
Storage Tanks & Related Equipment	☒	☐	1 empty, abandoned storage tank in the northeastern portion of the Site and a corrugated abandoned tank near the center of the Site.
Odors	☐	☒	
Standing Surface Water or Other Pools of Liquid	☐	☒	
Products or Other Unidentified Contents	☐	☒	
Transformers or Equipment containing Polychlorinated Biphenyls (PCBs)	☐	☒	
Pits, Ponds, or Lagoons	☐	☒	
Stressed Vegetation (other than from insufficient water)	☐	☒	
Evidence of Mounds, Depressions or Filled or Graded Areas Suggesting Trash or Other Solid Waste Disposal	☐	☒	
Waste Water or any Discharge (including storm water) into a Drain, Ditch, or Stream on or Adjacent to the Site	☒	☐	Slope erosion and runoff in the northeastern portion of the Site.

ITEM OR CONDITION	OBSERVED EVIDENCE	NO EVIDENCE OBSERVED	COMMENTS
Wells (active, inactive, or abandoned)	☒	☐	A total of 5 oil wells were observed near the northeastern portion of the Site.
Septic Systems or Cesspools	☐	☒	
Drains and Sumps	☐	☒	
Prior Structures	☒	☐	Miscellaneous concrete, scrap steel and large cables in the vicinity of the oil wells.
Roads, Tracks, Railroad Tracks or Spurs	☐	☒	

6.0 Interviews

On October 23, 2015, Mr. Michael Naim of Associates Development (property owner) was interviewed by phone. During the interview Mr. Naim confirmed that the remedial grading had been completed in the southern portion of the Site by a previous owner that the northern portion of the Site was undeveloped and that to his knowledge two oil wells had been previously reported on the property.

On October 23, 2015, Mr. Richard Spindler, CEG, G3Soilworks, During the interview Mr. Spindler confirmed that the remedial grading had been completed in the southern portion of the Site by a previous owner that the northern portion of the Site was undeveloped and that to his knowledge two oil wells had been previously reported on the property.

7.0 Findings

A cursory summary of findings is provided below. Details are not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein.

- Based on available historical information, the northern half of the Site has been continuously undeveloped, raw land. Development in the southern portion of the Site consists of remedial grading, and the placement of artificial fill with large constructed fill slopes.
- A total of 5 oil wells were observed in the northern one third of the Site.
- The Site sits on the northern limb of a synclinal fold, dipping to the southeast. The geologic beds in this limb are shales and sandstone-shales, and appear to contain low amounts of groundwater.
- The Site is bounded by residential structures to east and southeast and by open, undeveloped land to the west, and northwest.
- Soil erosion and slope failure was observed at various intervals along portions of some of the interior natural slopes.
- A query of DOGGR website indicated 10 oil wells on the Site. During the site reconnaissance, five additional oil wells were observed, each in unknown states of abandonment, photos (5, 6, 7, and 9).
- Derelict concrete structures and concrete debris were observed at several locations within the site.
- Two abandoned storage tanks, one corrugated, were discovered above ground on the Site. Both tanks were in moderate to severe states of corrosion.

8.0 Conclusions and Recommendations

We have performed a *Phase I Environmental Site Assessment* in conformance with the scope and limitations of ASTM E1527 of the 55 acre Site APN # 2031- 015-011, 2031-015-022 and 2031- 015-033, the *property*. Any exceptions to, or deletions from, this practice are described in Section 9 of this report. This assessment has revealed no evidence of *recognized environmental conditions* in connection with the *property* except for the following:

- A total of fifteen oil wells, five observed and ten reported in the DOGGR files each represent a recognized environmental condition. G3 recommends that the DOGGR be notified with a request to conduct a file review and provide their requirements for the disposition of each well based on the proposed land use.
- G3 recommends implementing the above DOGGR requirements/recommendations and that the immediate vicinity of the wells be assessed and residual impacts from the drilling and use of the wells be remediated. Impacts may include drilling mud pits and oil or fuel impacted soil.
- The two storage tanks and feasible amounts of concrete debris should be removed from the site for general environmental and geotechnical improvements.
- A comprehensive Stormwater Pollution and Prevention Plan (SWPPP) should be prepared, implemented and maintained at the Site to prevent further on site erosion of soil and slope failure.

9.0 Deviations

No deviations or deletions from the ASTM Standard Practice were addressed in this report.

10.0 Additional Non-Scope Services

There are environmental issues outside the scope of the ASTM E1527-13 that can be assessed in connection with a commercial real estate transaction. These are dealt with as non-scope considerations since they do not typically present a Superfund Liability. The specific level of inquiry (if any) is defined in the proposal, which contains a Scope of Work. These non-scope services are very client specific and not covered by the ASTM standard. They are frequently related to the business environmental risk which is defined in the ASTM standard as “risk which can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate.’’

No non-scope issues were addressed in this report.

11.0 References

California Department of Conservation, Division of Oil, Gas and Geothermal Resources Well Finder, Website, copyright, 2004.

California Regional Water Quality Control Board Website, Geotracker Database.

County of Los Angeles, Department of Regional Planning website, West Chatsworth & Westhills Zoning Map, June 2012

Environmental Data Resources (EDR), Inc., EDR-Radius Map Report, October 07, 2015.

Environmental Data Resources (EDR), Inc., Sanborn Map Request, October 07, 2015.

Environmental Data Resources (EDR), Inc., Aerial Photo Request, October 07, 2015.

Environmental Data Resources (EDR), Inc., City Directory Request, N/A.

Environmental Data Resources (EDR), Inc., Historical Topographic Map Request October 07, 2015.

United States Geological Survey (USGS), http://pubs.usgs.gov/fs/2011/3139, October 06, 2015.

United States Geological Survey (USGS), http://pubs.usgs.gov/of/1996/ofr-96-0263/geoset.htm, October 06, 2015.

California Department of Water Resources, http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/4-12.pdf, October 06, 2015.

Sanitation Department City of Los Angeles, http://lacitysan.org/irp/drafteirsections/013_3.9-geology.pdf, October 06, 2015.

Slosson and Associates. Distress Observed in the Vicinity of Vickiview Drive and Welby Way, West Hills, California. December 4, 1991.

Environmental Geotechnology Lab. Report of Geotechnical Engineering and Geological Investigation and Review of 100-Scale Grading Plan Tentative Tract 52652, 58 Acres Kittridge & Randiwood Residential Development Project, West Hills, County of Los Angeles, California. November 9, 1998.

Pacific Soils Engineering, Inc., Preliminary Geotechnical Report - Vesting Tentative Tract Map, Tract No. 52652 West Hills Area County of Los Angeles, California. July 10, 2006.

Pacific Soils Engineering, Inc., Addendum Tentative Map Review and Response to Los Angeles County Department of Public Works. November 17, 2006.

Pacific Soils Engineering, Inc., Response to Los Angeles County Department of Public Works. February 14, 2007.

Google Earth website, Aerial Photo review.

12.0 List and Signatures of Environmental Professionals

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312.

We have the specific qualifications based on education, training and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standard and practices set forth in 40 CFR Part 312.

Stanley G. White, Director of Environmental Services

B.A. Geology, Humboldt State University, Arcata, CA
California State Registered Geologist (R.G) No. 7342
40-hour OSHA Safety Training
Annual 8-hour OSHA Safety Training Refresher
8-hour OSHA Supervisor Training

Mr. White has over 25 years of project experience, which includes managing environmental programs. He has been responsible for Phase I Assessments, Phase II Assessments, and remediation projects leading to regulatory closure. He has extensive field experience which includes the use of Geoprobe and hollow-stem auger drilling equipment; soil gas sampling; CPT equipment; geophysical surveys; groundwater monitoring well installation and sampling; drum and pond sampling; underground storage tank removals; soil and groundwater remediation system layout; installation and operation; and risk-based corrective actions.

Principal areas of responsibility for this ESA report: Project Management, Quality Control, Technical Review, Research, Site Reconnaissance, and Report Generation oversight.

Douglas G. Stout, Staff Geologist

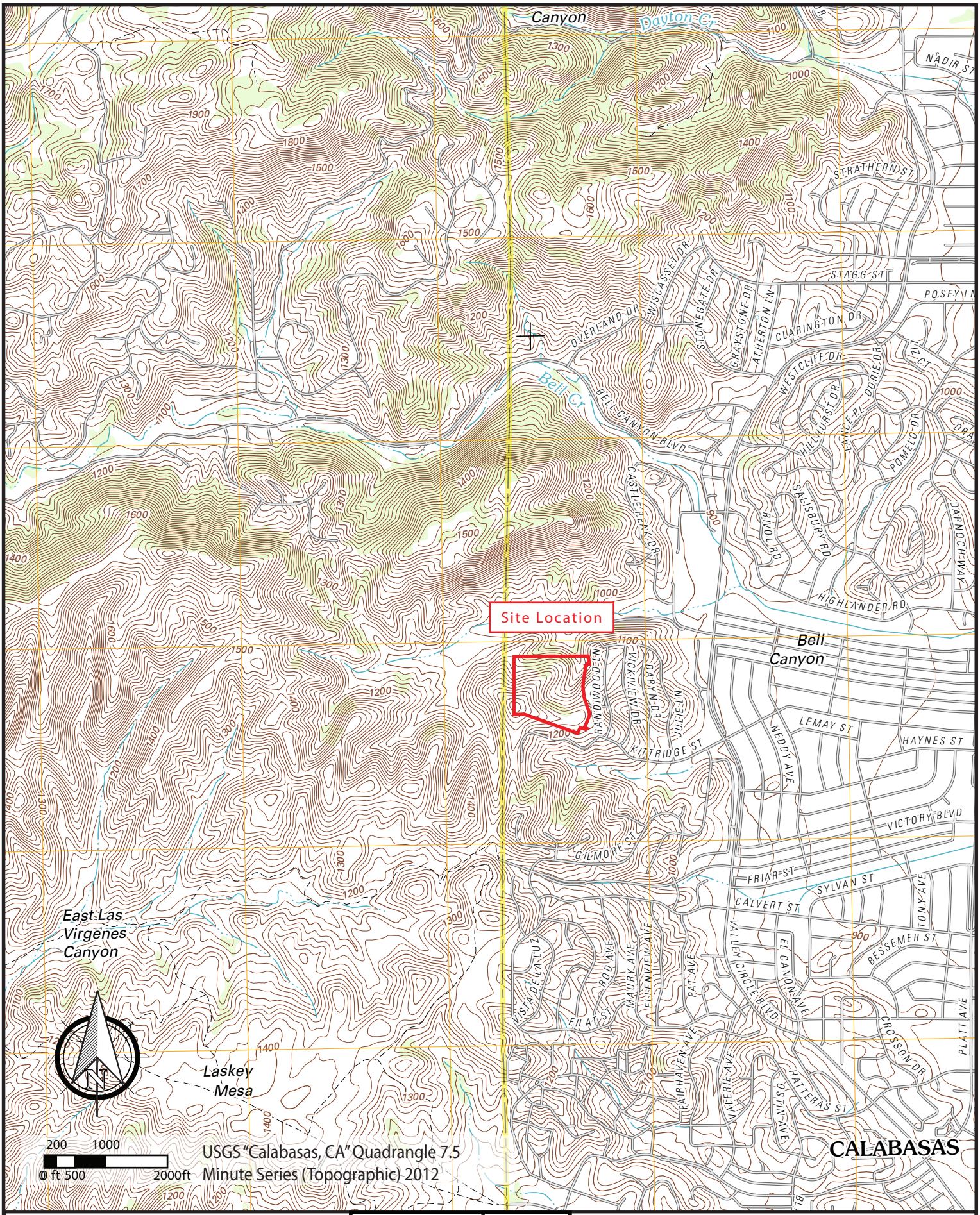
B.S. Geology, Florida State University, Tallahassee, FL

Mr. Stout has over 3 years of project experience, which includes extensive production well water quality testing. He has contributed to Phase I assessments in the past. His field experience includes the use of Geoprobe, hand auger drilling equipment, and rotary drilling;

specific conductance, total dissolved solid, pH, H_2S content, Fe content, chloride concentration, and turbidity testing; production and monitoring well installation and sampling.

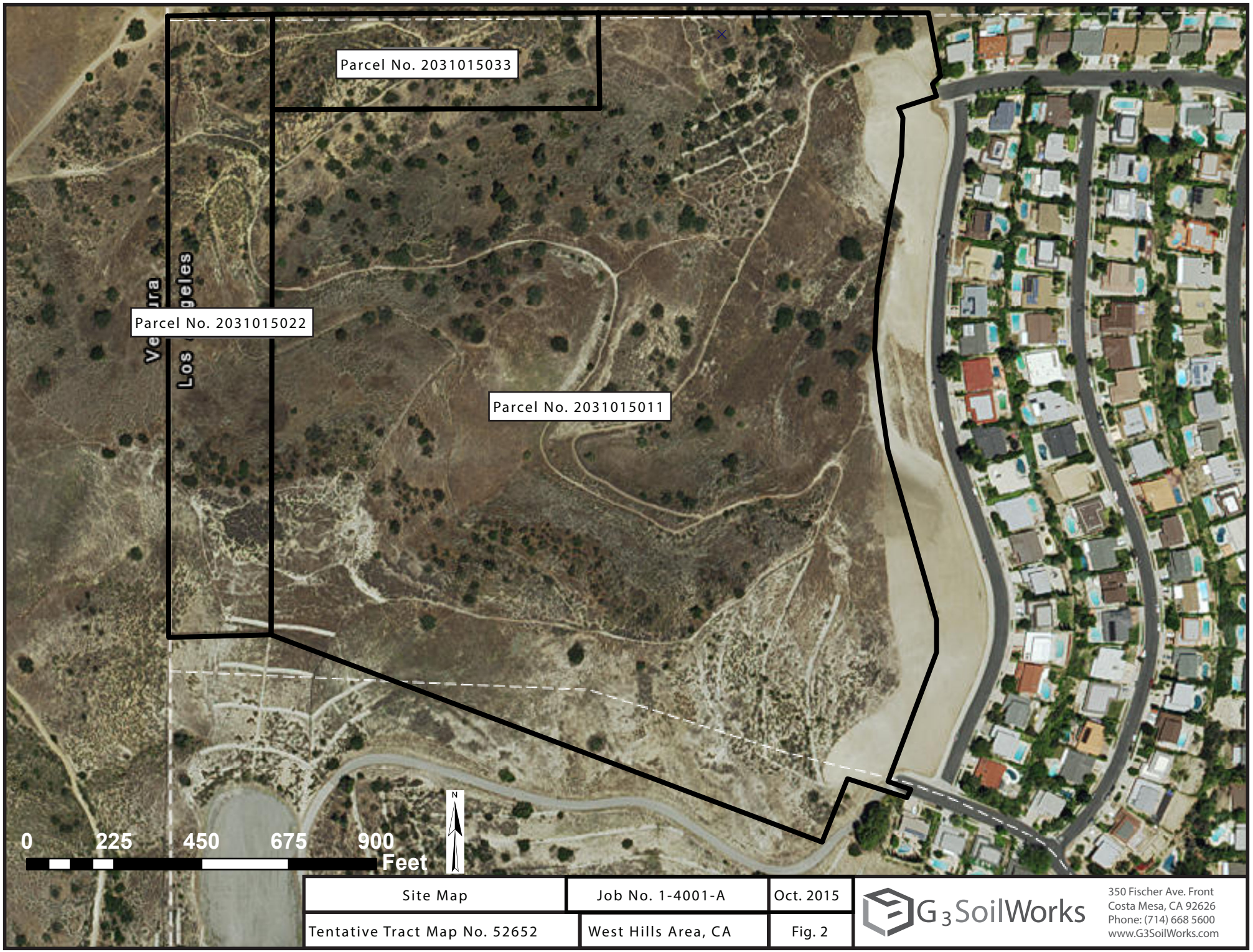
Principal areas of responsibility for this ESA report: Historical Review, Physical Setting-Groundwater, User / Owner Provided information.

FIGURES



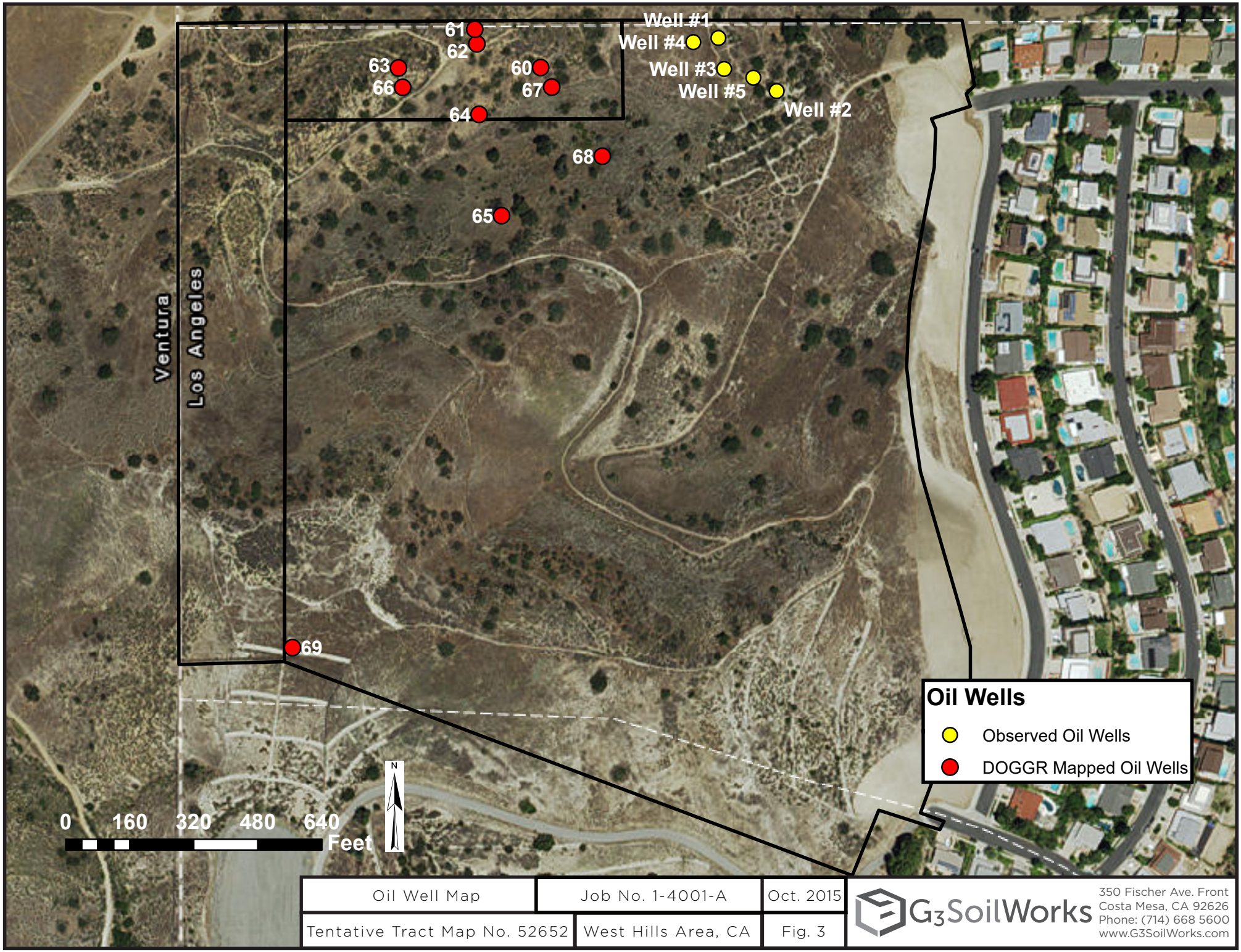
Site Location Map		Job No. 1-4001-A	Nov 2015
West Hills	Cornoa, CA		Fig. 1

G3SoilWorks
350 Fischer Ave. Front
Costa Mesa, CA 92626
Phone: (714) 668 5600
www.G3SoilWorks.com



Site Map	Job No. 1-4001-A	Oct. 2015
Tentative Tract Map No. 52652	West Hills Area, CA	Fig. 2

G3SoilWorks
350 Fischer Ave. Front
Costa Mesa, CA 92626
Phone: (714) 668 5600
www.G3SoilWorks.com



Oil Well Map	Job No. 1-4001-A	Oct. 2015
Tentative Tract Map No. 52652	West Hills Area, CA	Fig. 3

G3SoilWorks
350 Fischer Ave. Front
Costa Mesa, CA 92626
Phone: (714) 668 5600
www.G3SoilWorks.com

APPENDIX A

Client Supplied Information

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY, P.O. BOX 2249, CYPRESS, CALIFORNIA 90630
TELEPHONE: (714) 220-0770, FAX: (714) 220-9589
(Corporate Headquarters)

R SPINDLER
@ G3 SOILWORKS.COM.

FAYE ESTATES, LLC
23679 Calabasas Road, Suite 343
Calabasas, CA 91302

February 14, 2007
Work Order 102637

11A-668.5C

Attention: Ms. Faye Huang C: 818 - 815 6138

RECEIVED
FEB 20 2007
PROCESSING CENTER
LAND DEVELOPMENT DIVISION

Subject: **RESPONSE TO LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS**
Geotechnical and Materials Engineering Division (GMED)
Geologic (12-12-06) and Soils Engineering (12-14-06) Review Sheets
Vesting Tentative Tract Map, Tract No. 52652
West Hills Area
COUNTY OF LOS ANGELES, CALIFORNIA

References: (See Appendix)

Dear Ms. Huang:

Presented herein are responses to the Los Angeles County Department of Public Works Geotechnical and Materials Engineering Division, Geologic and Soils Engineering Review Sheets (References 18 and 19) regarding our geotechnical report, dated November 17, 2006 (Reference 17). Parts I and II address the geologic and soils engineering review comments, respectively, as they pertain to the current plan. In the interest of clarity, the County's remarks/conditions are reiterated and are followed by the Pacific Soils Engineering, Inc. (PSE) responses.

PART I

Response to Geologic Review Sheet dated 12-12-06

Remark:

"1. *Provide the off-site topography on which the southern portions of Geotechnical Sections 5-5' through 10-10' are based. All contacts illustrated on Sections 5-5' through 10-10' must be shown on the map, i.e. existing af, proposed af/keyway, etc. and all substantiating data for existing conditions."*

PSE Response:

As part of the initial slope stability analysis along the southerly tract line, it was noted that previous grading activities had occurred on the southerly facing descending slope south of the project. Given this observation, this firm researched available files at the County of Los Angeles and located pre-grading topographic information for the southerly adjacent property dating back to 1964, and used it to portray the previous offsite ground surface. This information (provided herein on Plate G) was located in reports on file with the County of Los Angeles concerning Tract No. 30057 (Reference 1).

This firm's research indicated that the grading immediately south of the tract line for the City of Los Angeles took place around 1970/71, and involved excavation of a cut slope and fill placement to create an access road for the then proposed water tank pad south of the western portion of the subject tract. A topographic map of the current conditions was provided to this firm by S.E.C. Civil Engineers, and accompanies this report as the base for Plate H.

This firm used the pre- and post-offsite grading topographic information to construct the southerly portions of Cross-Sections 5-5' through 10-10'. Cross-Sections 5-5' through 10-10' are indicated on both Plate G and Plate H; inferred geologic contacts are also depicted on Plate H. For ease of review, pre-grading topography has been added to Cross-Sections 5-5' through 10-10'.

Remark:

"2. *Provide substantial detail for the geologic structure on the sections provided (5-5' through 10-10') to substantiate the Tmss/Tmsh contact. Based on the boring provided for the south-facing slope, B-102, shale and siltstone occur at several intervals in the upper 35 feet and could act as potential failure surfaces."*

PSE Response:

As discussed during a previous meeting (January 9, 2007) at the offices of the Los Angeles County Materials Engineering Division with Ms. Karin Burger, Mr. Gan Lem, and representatives of PSE, the Tmss/Tmsh contact noted on the Geotechnical Map in the southern portion of the site was based on a prominent sandstone bed/interval mapped during a previous investigation. Although sandstone is the dominant lithology in this interval, interbedded siltstone/claystone beds

were noted in the boring log and were also included in the slope stability modeling (see PSE Response #2 in Part II of this transmittal).

Remark:

"3. Please describe why the area south of the "Geological Setback Line" is recommended to be placed into a restricted use area. If the consultant is recommending an RUA for this area the proposed tennis courts/recreation area may require relocation to an area not contained within an RUA."

PSE Response:

As discussed, the "RUA" designation will be removed and replaced with "Limited Structural Use" notation.

Remark:

"4. As stated previously on the review sheets dated 6/21/06 and 8/24/06: The consultant must address the potential for a heaving bedrock condition occurring within the proposed subdivision, which appears to have occurred within the neighboring tracts to the east (Tr 30057 and Tr 31548). (Please Note: Tract 45342 had extremely high sulfate levels without heaving but is sufficiently distant to the currently proposed tract to have little correlation with a potential for heaving at the subject site)."

PSE Response:

As indicated on page 4 of Reference 17, to mitigate potential adverse effects of heaving and other sulfide to sulfate transformation phenomenon, this firm recommends the overexcavation of cut pads a minimum of five feet below finished grade, then replacing the resultant void to proposed pad grade with engineered fill. Also, cut slopes which expose unoxidized (gray) bedrock should be removed and replaced with equipment width stabilization fill sections. In addition, it is recommended that structural improvements be designed to account for "moderate" to "severe" sulfate exposure levels per CBS Table 19-A-4.

Remark:

"5. The Soils Engineering review dated 12/14/06 is attached."

PSE Response:

Please see Part II of this transmittal for this firm's responses to the Soils Engineering Review Sheet.

PART II

Response to Soils Engineering Review Sheet dated 12-14-06

Remark:

"1. Requirements of the Geology Section are attached."

PSE Response:

Please see Part I of this transmittal for this firm's responses to the Geologic Review Sheet.

Remark:

"2. Provide the following information or test results for use in slope stability analyses of the south-facing slopes:

*a. Revised cross-sections based on **actual** site topography, as-built keyway dimensions, etc. as requested by the Geology Section.*

b. Along bedding (or repeated) shear strength test results to substantiate the shear strength parameters of sheared clay, fractures, beddings, and other weak zones used in the slope stability analyses."

PSE Response:

As presented in this firm's response to Remark No. 1 in Part I, both pre- and post-grading topography within the southerly adjacent Los Angeles City property is included herein on Plates G and H. Both topographies are also depicted on Cross-Sections 5-5' through 10-10'. In the absence of specific information available in the City files, keyway and backcut configurations within the offsite fill are conjectural.

During a recent meeting (February 8, 2007) at the offices of the Los Angeles County Materials Engineering Division with Ms. Karin Burger, Mr. Gan Lem, and representatives of PSE, the along bedding shear strength parameters for the slope stability analyses were discussed. In an effort to substantiate the "along bedding" shear strength parameters used in this firm's slope stability analyses, this firm reviewed our files involving nearby projects developed in similar bedrock materials. As part of the Reference 5 report, this firm performed direct shear tests on "slide plane" materials collected from several borings within then-existing landslides. Logs of these borings are presented herein on Plates B-1 through B-8. The results of the direct shear testing performed on "slide plane" material are presented on Plate C.

The results of these direct shear tests on slide plane material yielded shear strength parameters of C = 300 psf and Ø = 24°. However, this firm elected to reduce those values for the analyses presented herein, and has used parameters of C = 300 psf and Ø = 18 ° to represent shear strengths along bedding in our slope stability analyses.

It is our opinion that these parameters are reasonable and acceptable for this analysis given the fact that they were derived from previously sheared and mobilized slide plane material, were factored down, and are being used to represent strengths along bedding within intact bedrock.

This firm's updated slope stability analyses are presented on Plates D-1 through D-38.

Remark:

"3. Provide the following additional and/or revised slope stability analyses of the south-facing slopes:

*a. Revised stability analyses of cross-sections based on **actual** site topography, as-built keyway dimensions, etc. as necessary. Recommend mitigation if factors of safety are below County minimum standards.*

b. Additional stability analyses of the lower portions of the slopes. If the results of the stability analyses are below County minimum standards, then provide additional stability analyses of the upper portions of the slopes using a post failure geometry that assumes the lower portion of the slope has failed. Recommend mitigation if factors of safety are below County minimum standards.

c. Revised stability analyses utilizing shear strength parameters that are representative of sheared clay, fractures, beddings, and other weak zones as necessary. Recommend mitigation if factors of safety are below County minimum standards.

d. Additional stability analyses considering bedding dip angles of 12 to 23 degrees. Recommend mitigation if factors of safety are below County minimum standards.

PSE Response:

Updated slope stability analyses for Cross-Sections 5-5' through 10-10' are presented herein on Plates D-1 through D-38 and are summarized in Table I of the Appendix. The analyses block search was revised for the lower portions of the slope, the along bedding shear strength parameters were revised as indicated above, and a revised bedding dip range of 12° to 23 ° degrees was utilized in the analysis presented herein. The factors of safety, both static and pseudostatic, for Cross-Sections 5-5' through 10-10' are in excess of County of Los Angeles minimums.

Remark:

"4. As requested by the Geology Section, address the distress observed in areas adjacent to this proposed subdivision as stated in the letter by Slosson & Associates dated 12/4/91. Based on the results of additional investigation with respect to the distress observed in areas adjacent to this proposed subdivision, recommend mitigation as necessary."

PSE Response:

Please see the discussion of this issue in Sections 6.2.3 and 6.2.6.1 of Reference 14, and in the response to Remark 4, Part II of Reference 17.

Remark:

"5. Show all recommended mitigation measures on the Geotechnical map."

PSE Response:

The mitigation measures recommended by this firm are shown on the accompanying Geotechnical Map.

Remark:

"6. Include a copy of this review sheet with your response."

PSE Response:

Copies of the Geologic (dated 12/12/06) and Soils Engineering (dated 12/14/06) review sheets accompany this transmittal (Plates A-1 and A-2).

CLOSURE

Given the considerations outlined herein and in the referenced reports, the proposed grading indicated on the most recent map for the Vesting Tentative Tract Map, Tract No. 52652 (revised date of September 18, 2006) will be free from the hazards associated with landsliding, settlement and slippage provided that the grading construction is performed in an acceptable manner in accordance with applicable Code requirements and recommendations contained herein and in the Reference 14 and 17 reports. Further, the completed grading will not have a detrimental effect on the geologic stability of neighboring offsite properties.

The findings and recommendations contained herein and in this firm's Reference 14 and 17 reports are based upon the specific excavations and observations as noted. The materials and

conditions immediately adjacent to or beneath those observed may have different characteristics, and no representations are made as to the quality or extent of materials not observed.

This report is subject to review by the governing authorities. If you have any questions or require additional information, please contact this office at (714) 220-0770.

Respectfully submitted,
PACIFIC SOILS ENGINEERING, INC.

By: _____
WILLIAM D. JONES
Civil Engineering Associate

By: _____
RICHARD H. SPINDLER
CEG 1802/Reg. Exp.: 4-30-08
Certified Engineering Geologist

Reviewed by: _____
PAUL J. ERNST/RGE 2317
RCE 46394/Reg. Exp.: 3-31-07
Manager of Geotechnical Services



Distr.: (2) Addressee
(2) SEC Engineers, Inc. – Attn: Mr. Larry Gray
(2) County of L.A. – GMED – Attn: Soils & Geology

WDJ/RHS/PJE:cp-jp-26370006

APPENDIX

TABLE OF CONTENTS

Selected References ..... Pages 8 and 9

Summary of Slope Stability Calculations ..... Table I

County of Los Angeles Review Sheets ..... Plates A-1 and A-2

Boring Logs ..... Plates B-1 through B-8

Direct Shear Tests ..... Plate C

Gross and Surficial Slope Stability Calculations ..... Plates D-1 through D-38

Geotechnical Cross-Sections ..... Plate E
(in pocket)

Geotechnical Map ..... Plates F-1 and F-2
(in pocket)

Offsite Topography (Pre-Grade Geologic Map) ..... Plate G
(in pocket)

Offsite Topography (Post-Grade Geologic Map) ..... Plate H
(in pocket)

APPENDIX

REFERENCES

1. Preliminary Investigation of Tentative Tract 30057; by Pacific Soils Engineering, Inc., dated October 30, 1964 (W.O. 5228).

2. Sulfate Study, Larwin Castaic Project; by Pacific Soils Engineering, Inc., dated August 16, 1985 (W.O. 10690-R).

3. Response to Geologic Review Sheet, Tract No. 32355 and 31596 (Parent Tract 42754) County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated February 26, 1986 (W.O. 10690-E).

4. Distress Observed in the Vicinity of Vickiview Drive and Welby Way, West Hills, California; Letter by Slosson and Associates, dated December 4, 1991.

5. Supplementary Geotechnical Investigation and Geotechnical Grading Plan Review, Tract 45342, Calabasas Area, County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated May 20, 1998 (W.O. 102344).

6. Report of Geotechnical Engineering and Geological Investigation and Review of 100 Scale Grading Plan, Tentative Tract 52652, 58 Acres Kittridge & Randiwood Residential Development Project, West Hills, County of Los Angeles, California; by Environmental Geotechnology Laboratory, Inc., dated November 9, 1998 (Project No.: 98-139-002EG).

7. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated December 17, 1998.

8. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated December 17, 1998.

9. Response to County of Los Angeles Materials Engineering Division Geologic (11-16-98) and Geotechnical Engineering (11-17-98) Review Sheets, Tract 45342 – Calabasas, County of Los Angeles, California; by Pacific Soils Engineering, Inc, dated December 22, 1998 (W.O. 102344).

10. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated January 14, 1999.

11. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated January 20, 1999.

12. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated June 21, 2006.

13. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated June 29, 2006.

APPENDIX

REFERENCES

(Continued)

14. Preliminary Geotechnical Report, Vesting Tentative Tract Map, Tract No. 52652, West Hills Area, County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated July 10, 2006 (W.O. 102637).

15. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated August 24, 2006.

16. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated September 7, 2006.

17. Addendum Tentative Map Review and Response to Los Angeles County Department of Public Works, Geotechnical and Materials Engineering Division (GMED), Geologic (8-24-06) and Soils Engineering (9-7-06) Review Sheets, Vesting Tentative Tract Map, Tract No. 52652, West Hills Area, County of Los Angeles, California; by Pacific Soils Engineering, Inc., dated November 17, 2006 (W.O. 102637).

18. Geologic Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated December 12, 2006 (copy attached; Plate A-1)).

19. Soils Engineering Review Sheet, Materials Engineering Division, Department of Public Works, County of Los Angeles, dated December 14, 2006 (copy attached; Plate A-2).

TABLE I

SUMMARY OF SLOPE STABILITY CALCULATIONS

Cross-Section	Location	Condition	Mitigation	Keyway Dimensions*	Factor-of-Safety		Calculations (on Plates D-1 throuth D-38)
					Static	Pseudostatic	
5-5'	South of Kittridge Street	Offsite natural slope above fill slope	Setback Line	N/A	1.78	1.26	D-1 through D-6
6-6'	Lot 15	Offsite natural slope above fill slope	Keyway & Setback Line	65(±) ft. Wide @ 1120' Elev.	1.71	1.30	D-7 through D-12
7-7'	Lot 15	Offsite natural slope above fill slope	Keyway & Setback Line	44(±) ft. Wide @ 1130' Elev.	1.74	1.25	D-13 though D-20
8-8'	Lot 16	Offsite natural slope above fill slope	Keyway & Setback Line	24(±) ft. Wide @ 1168' Elev.	1.60	1.14	D21 through D-26
9-9'	South of Access Road	Offsite natural slope above fill slope	Keyway & Setback Line	30(±) ft. Wide @ 1230' Elev.	2.29	1.50	D-27 through D-32
10-10'	South of Proposed Tennis Courts	Existing offsite 2:1 cut slope	Setback Line	N/A	2.17	1.42	D-33 through D-38

*N/A = Not Applicable

P.R. 23572
T.M. 23762/B005

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 9.1
Job Number GMTR
Sheet 1 of 1 4

Review No. 3

Tentative Tract Map 52652

Location	Woodland Hills
Developer/Owner	Faye Estates, LLC
Engineer/Architect	SEC Civil Engineer
Soils Engineer	Pacific Soils (102637)
Geologist	Same as above

DISTRIBUTION:
___ Grading/ Drainage
1 Geo/Soils Central File
1 Land Development
1 Geologist
1 Soils Engineer
___ Engineer/Architect

Review of:
Revised Tentative Tract Map and Exhibit A Dated ~~By Regional~~ Planning 5/30/06
Soils Engineering and Geologic Reports Dated **11/17/06**, 8/18/06 and 7/10/06
Soils Engineering and Geologic Report By EGL Dated ~~11/9/98~~
Previous review sheet dated 9/7/06

T.M. 2

ACTION:
Tentative Map feasibility is not recommended for approval.

REMARKS:
1. Requirements of the Geology Section are attached.

2. Provide the following information or test results for use in the slope stability analyses of the south-facing slopes:
   a. Revised cross-sections based on **actual** site topography, as-built keyway dimensions, etc. as requested by the Geology Section.
   b. Along bedding (or repeated) shear strength test results to substantiate the shear strength parameters of sheared clay, fractures, beddings, and other weak zones used in the slope stability analyses.

3. Provide the following additional and/or revised slope stability analyses of the south-facing slopes:
   a. Revised stability analyses of cross-sections based on **actual** site topography, as-built keyway dimensions, etc. as necessary. Recommend mitigation if factors of safety are below County minimum standards.
   b. Additional stability analyses of the lower potions of the slopes. If the results of the stability analyses are below County minimum standards, then provide additional stability analyses of the upper portions of the slopes using a post failure geometry that assumes the lower potion of the slope has failed. Recommend mitigation if factors of safety are below County minimum standards.
   c. Revised stability analyses utilizing shear strength parameters that are representative of sheared clay, fractures, beddings, and other weak zones as necessary. Recommend mitigation if factors of safety are below County minimum standards.
   d. Additional stability analyses considering bedding dip angles of 12 to 23 degrees. Recommend mitigation if factors of safety are below County minimum standards.

4. As requested by the Geology Section, address the distress observed in areas adjacent to this proposed subdivision as stated in the letter by Slosson & Associates dated 12/4/91. Based on the results of additional investigation with respect to the distress observed in areas adjacent to this proposed subdivision, recommend mitigation as necessary.

5. Show all recommended mitigation measures on the geotechnical map.

6. Include a copy of this review sheet with your response.

NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER:
A. ON-SITE SOILS ARE CORROSIVE TO CONCRETE AND FERROUS METALS.
B. ON-SITE SOILS HAVE A MEDIUM TO HIGH EXPANSION POTENTIAL.

REGISTERED ENGINEER NO. 2328 EXP. 6/30/07 GEOTECHNICAL STATE OF CALIFORNIA

Prepared by _____ Date 12/14/06
Gan Lem

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.
Gan:tract-52652

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
__ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT 52652
SUBDIVIDER Faye Estates, LLC
ENGINEER S.E.C. Civil Engineers
GEOLOGIST Pacific Soils Engineering, Inc.; EGL
SOILS ENGINEER Pacific Soils Engineering, Inc.; EGL

TENTATIVE MAP DATED 5/30/06 (revised) Exhibit A
LOCATION Woodland Hills

REPORT DATE 7/10/06; 11/09/98
REPORT DATE 7/10/06; 11/09/98

The Regional Planning Commission, developer, and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR PARCEL MAP:

1. As requested on the review sheet dated 6/21/06: All structural data obtained for the site must be plotted on geotechnical map, i.e. attitudes of bedding, shearing, faults, joints, fractures, etc. This must include previously obtained structural data from bucket auger borings B-1 and B-2 [from the previous subsurface investigation].

2. As requested on the review sheet dated 6/21/06: Based on the data provided to date, all south-facing slopes must be evaluated for potential daylighted bedding conditions utilizing appropriate material strengths that represent the geologic conditions [to determine feasibility of lots 15, 16, 17, & 26 and the primary access road on the current tentative map].

3. As discussed/requested on the review sheet dated 6/21/06: Shales of the Modelo and Topanga Formations that contain large amounts of soluble iron sulfides, such as described for the subject site, are associated with heaving when exposed to oxygen and water: a process in which sulfide minerals oxidize to form sulfate compounds, specifically gypsum, which greatly expands the volume of the rock. The consultant must address the potential of this hazard occurring within the proposed subdivision, which appears to have occurred within the neighboring tracts to the east (Tr 30057 and Tr 31548). Please refer to the Pacific Soils reports for Tract 42754 document the heaving process and recommended mitigation measures for such hazards.

4. As discussed/requested on the review sheet dated 6/21/06: The consultant must review the letter provided by Slosson & Associates, dated 12/04/91 (attached), which discusses distress observed in the area of Vickiview Drive and Welby Way. This letter indicated that an "apparent northerly movement vector is suggested by approximately east/west trending cracks in the streets and on properties comprising the northerly portion of Randiwood Lanes, Vickiview Drive, Daryn Drive as well as the intersection of these streets with Welby Way," as well as a number of other potential causes to observed distress throughout the tracts adjacent to the proposed tract. Please review the possibilities contributing to the observed distress, provide a detailed discussion of the observations, and provide preventative measures that may be necessary for the proposed tract.

5 The Soils Engineering review dated 9/7/06 is attached.

NOTE Provide a copy of this review with your resubmittal

Prepared by Kevin Burger Reviewed by _____ Date August 24, 2006

Kevin Burger

P:\Gmepub\Geology Review\Forms\Form01.doc
10/30/03

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 9.1
Job Number GMTR
Sheet 1 of 1

Review No. 2

Tentative Tract Map 52652

Location	Woodland Hills
Developer/Owner	Faye Estates, LLC
Engineer/Architect	SEC Civil Engineer
Soils Engineer	Pacific Soils (102637)
Geologist	Same as above

DISTRIBUTION:
___ Grading/ Drainage
___ Geo/Soils Central File
___ District Engineer
___ Geologist
___ Soils Engineer
___ Engineer/Architect

Review of:
Revised Tentative Tract Map and Exhibit A Dated ~~By~~ Regional Planning 5/30/06
Soils Engineering and Geologic Reports Dated **8/18/06** and **7/10/06**
Soils Engineering and Geologic Report By EGL ~~Dated~~ 11/9/98
Previous review sheet dated 6/29/06

ACTION:
Tentative Map feasibility is not recommended for approval.

REMARKS:
1. Requirements of the Geology Section are attached. Provide the following as requested by the Geology Section:
   a. Updated geological map and sections with all geologic and structural information (i.e., beddings, shearing, faults, joints, fractures, etc.). Provide static, seismic and surficial slope stability analyses for these cross-sections with the updated geologic information. Indicate the various shear strength parameters surface used in the analyses, in the appropriate segments of each failure plane. Therefore, provide additional shear strength test results of sheared clay, fractures, beddings, and other weak zones. Recommend mitigation if factors of safety are below County minimum standards.
   b. Additional cross-sections of the south facing slopes that may have daylighted or adverse bedding conditions. Provide static, seismic and surficial slope stability analyses for these cross-sections. Indicate the various shear strength parameters and phreatic surface used in the analyses, in the appropriate segments of each failure plane. Therefore, provide additional shear strength test results of along bedding materials. Recommend mitigation if factors of safety are below County minimum standards
   c. Additional investigation to address the distress observed in areas adjacent to this proposed subdivision as stated in the letter by Slosson & Associates dated 12/4/91. Based on the results of additional investigation with respect to the distress observed in areas adjacent to this proposed subdivision, recommend mitigation as necessary.

2. Show all recommended mitigation measures on the geotechnical map.

3. Include a copy of this review sheet with your response.

NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER:
A. ON-SITE SOILS ARE CORROSIVE TO CONCRETE AND FERROUS METALS.
B. ON-SITE SOILS HAVE A MEDIUM TO HIGH EXPANSION POTENTIAL.

REGISTERED PROFESSIONAL ENGINEER
GAN N. LEM
NO. 2328
EXP. 6/30/07
GEOTECHNICAL
STATE OF CALIFORNIA

Prepared by _____ Date 9/7/06
Gan Lem

NOTICE: **Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.**
Gan:tract-52652

D A P T S PAYMENT HISTORY RECEIPT DETAIL 08/14/06
LAPIQ 10:30:16

****

END OF DATA PAGE 1

RECEIPT: LD0000004416 ORG/LOC: **LD 0000** DATE: **08/01/06** TIME: **15:45** DEPOSITED:
AMOUNT: **5806.00** RECEIVED BY: **TRAN, CHI B** ON: **08/02/06**
STATUS: **P PAID** CONFIRMED BY: **TRAN, CHI B** BATCH: **0562**
REVERSAL TOT: LAST REVRSD BY: REASON:
PROJ/APPL/IMPRV: **TR 52652** **INITIATE NORMAL** ORG/LOC: **LD 0000**
NAME: **RANDIWOOD BTW.KITTRIDGE/WELBY**
PAYOR NAME: **FAYE ESTATES, LLC** HOLD: _ DRAWER: **02**
PAYOR ADDRESS: **6104 PASEO AVE, 2670 WOODLAND HILLS, C** PHONE:

FEE DESCRIPTION	CALC FACTOR	U/M	CALCULATED AMOUNT	----OVERRIDE---- CODE	NEW AMOUNT
TENT TR-GEOTECH RPT	**1800000.00**	**CU YDS**	**5806.00**		

PAYMENT TYPE	REFERENCE	AMT TENDERED	CHANGE GIVEN
CHECK	**336**	**5806.00**	**0.00**

DPC440 NEXT TRANSACTION: _____ PF1 = HELP

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
__ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT 52652
SUBDIVIDER Faye Estates, LLC
ENGINEER S.E.C. Civil Engineers
GEOLOGIST Environmental Geotechnology Laboratory, Inc.
SOILS ENGINEER Environmental Geotechnology Laboratory, Inc.

TENTATIVE MAP DATED 5/30/06 (revised) Exhibit A
LOCATION Woodland Hills

REPORT DATE 11/09/98
REPORT DATE 11/09/98

The Regional Planning Commission, developer, and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR PARCEL MAP:

1. The consultant must utilize a copy of the most recently proposed tentative map as a base for the geotechnical map (please verify that elevations are legible prior to submittal or map will be returned without review). Additional subsurface data, cross-sections, slope stability analyses, etc. will be required to address feasibility of the proposed tentative map. Please also discuss the potential for high groundwater and/or perched groundwater in the vicinity of the proposed subdivision and incorporate into slope stability analyses as appropriate.

2. All structural data obtained for the site must be plotted on geotechnical map, i.e. attitudes of bedding, shearing, faults, joints, fractures, etc. This must include previously obtained structural data from bucket auger borings B-1 and B-2.

3. Based on the data provided to date, all south-facing slopes must be evaluated for potential daylighted bedding conditions utilizing appropriate material strengths that represent the geologic conditions.

4. As Requested Previously: Please address whether there are existing landslide(s) within the northern portion of the proposed subdivision, failing to the north, and supported by description of the quality of rock, structure, aerial photos, and topography. Please note that several landslides were identified within the adjacent tracts (referenced in Comment #5), although, they were not delineated on the published geologic map available for the area and review.

5. Shales of the Modelo and Topanga Formations that contain large amounts of soluble iron sulfides, such as described for the subject site, are associated with heaving when exposed to oxygen and water: a process in which sulfide minerals oxidize to form sulfate compounds, specifically gypsum, which greatly expands the volume of the rock. The consultant must address the potential of this hazard occurring within the proposed subdivision, which appears to have occurred within the neighboring tracts to the east (Tr 30057 and Tr 31548). Please refer to the Pacific Soils reports for Tract 42754 document the heaving process and recommended mitigation measures for such hazards.

6. The consultant must review the letter provided by Slosson & Associates, dated 12/04/91 (attached), which discusses distress observed in the area of Vickiview Drive and Welby Way. This letter indicated that an "apparent northerly movement vector is suggested by approximately east/west trending cracks in the streets and on properties comprising the northerly portion of Randiwood Lanes, Vickiview Drive, Daryn Drive as well as the intersection of these streets with Welby Way," as well as a number of other potential causes to observed distress throughout the tracts adjacent to the proposed tract. Please review the possibilities contributing to the observed distress, provide a detailed discussion of the observations, and provide preventative measures that may be necessary for the proposed tract.

7. Provide the reference list, as shown in the Table of Contents but does not appear to have been included. Provide this office with the referenced Pacific Soils reports (c. 1965) or and Geosoils report (c. 1982) and/or verify which referenced reports are on file at this office along with a complete reference.

8. The Soils Engineering review dated 6/29/06 is attached.

NOTE Provide a copy of this review with your resubmittal

Prepared by Karin Burger Reviewed by _____ Date June 21, 2006

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 9.1
Job Number LX001129
Sheet 1 of 2

Tentative Tract Map 52652

DISTRIBUTION:
___ Grading/ Drainage
___ Geo/Soils Central File
___ District Engineer
___ Geologist
___ Soils Engineer
___ Engineer/Architect

Location	Woodland Hills
Developer/Owner	Faye Estates, LLC
Engineer/Architect	SEC Civil Engineer
Soils Engineer	EGL (98-139-002EG)
Geologist	Same as above

Review of:
Revised Tentative Tract Map and Exhibit A Dated By Regional Planning **5/30/06**
Soils Engineering and Geologic Report Dated 11/9/98
Previous review sheet dated 3/18/06

ACTION:
Tentative Map feasibility is not recommended for approval.

REMARKS:
As previously requested:

1. Submit an update soils report/letter, which addresses and evaluates current site conditions and the most recent tentative map, for all reports older than one year to verify the validity and applicability of the original soils report.

2. Provide a geotechnical map that is based on the most recent tentative map.

3. Requirements of the Geology Section are attached. Provide the following as requested by the Geology Section:
   a. Additional subsurface information to address the geology at this site including the landslide that is mapped to the north of the proposed subdivision, groundwater conditions considering the high moisture content in the fill soils, etc.
   b. Additional cross-sections to fully address the slope stability of the slopes at this site; including natural slopes, fill slopes, and cut slopes with daylighted or adverse bedding conditions.
   c. Additional investigation to address the distress observed in areas adjacent to this proposed subdivision as stated in the letter by Slosson & Associates dated 12/4/91 (copy of which is attached to the Geologic Review Sheet).

4. Provide static, seismic and surficial slope stability analyses for the above cross-sections with the updated geologic information. Indicate the various shear strength parameters and phreatic surface used in the analyses, in the appropriate segments of each failure plane. Therefore, provide additional shear strength test results of sheared clay, fractures, beddings, and other weak zones as indicated in logs of borings and test pits presented in the 11/9/98 report. Recommend mitigation if factors of safety are below County minimum standards.

5. Page 8 of the 11/9/98 report states that the upper 5 to 7 feet of the Modelo Formation is subject to downhill creep. Recommend mitigation for any development proposed near the slope crest as necessary.

6. Test results presented in the 11/9/98 report show existing canyon fill soils (of up to 84 feet deep) have variable dry densities of 70 to 94 pcf (which correspond to 76 to 98 percent relative compaction) and moisture contents of 22 to 43 percent. The report also states the following: (1) unsuitable soils were NOT removed prior to placement of the canyon fill, based on cuttings and samples obtained from the borings drilled at this site and (2) outlets for any subrains installed in the canyon cannot be located. The soils engineer recommends that minimum of 5 feet of the existing fill at the proposed development be removed and recompacted. This is not acceptable, considering that the predicted total settlement after partial removal and recompaction is estimated to be 12 inches. Recommend revised mitigation as necessary. (It is noted that the predicted differential settlement is estimated to be 0.75 inch, which is NOT substantiated by the highly variable fill densities).

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Tentative Tract Map 52652

REMARKS (CONT'):

7. Areas with compressible soils greater than 5 feet in thickness that will not be mitigated must be delineated and noted as "Unsuitable Soils - Not suitable for the Support of Structures" on the final map.

8. Logs of borings and test pits presented in the 11/9/098 report show extensive gypsum throughout the Modelo and Topanga Formations (a by product form from oxidation of sulfide mineral). Recommend mitigation for the potential expansion or heave associated with bedrock containing large amount of soluble iron sulfides.

9. Based on the results of additional investigation with respect to the distress observed in areas adjacent to this proposed subdivision as stated in the letter by Slosson & Associates dated 12/4/91, recommend mitigation as necessary.

10. Show the following on the geotechnical map:
    a. Existing and proposed grades.
    b. Approximate limits and depth of removal and recompaction of unsuitable soils.
    c. Delineate the approximate limits of all existing unmitigated fill/unsuitable soils greater than 5 feet in thickness and prominently label with the note: "Unsuitable Soils - Not suitable for the Support of Structures".
    d. Location of "Restricted Use Areas", if applicable.
    e. All recommended mitigation measures.

11. Include a copy of this review sheet with your response.

NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER:
A. ON-SITE SOILS ARE CORROSIVE TO CONCRETE AND FERROUS METALS.
B. ON-SITE SOILS HAVE A MEDIUM TO HIGH EXPANSION POTENTION.



Prepared by _____ Date 6/29/06

Gan Lem

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.
Gan:tract-52652

PACIFIC SOILS ENGINEERING, INC.
10653 PROGRESS WAY, P.O. BOX 2249, CYPRESS, CALIFORNIA 90630
TELEPHONE: (714) 220-0770, FAX: (714) 220-9589
(Corporate Headquarters)

FAYE ESTATES, LLC
23679 Calabasas Road, Suite 343
Calabasas, CA 91302

November 17, 2006

Work Order 102637

Attention: Ms. Faye Huang

Subject: **ADDENDUM TENTATIVE MAP REVIEW AND RESPONSE TO LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS**
Geotechnical and Materials Engineering Division (GMED)
Geologic (8-24-06) and Soils Engineering (9-7-06) Review Sheets
Vesting Tentative Tract Map, Tract No. 52652
West Hills Area
COUNTY OF LOS ANGELES, CALIFORNIA

RECEIVED
NOV 22
PROCESSING CENTER
LAND DEVELOPMENT DIVISION

References: (See Appendix)

Dear Ms. Huang:

Presented herein are responses to the Los Angeles County Department of Public Works Geotechnical and Materials Engineering Division, Geologic and Soils Engineering Review Sheets (References 15 and 16) regarding our geotechnical report, dated July 10, 2006 (Reference 14); and comments from this firm concerning map modifications contained on the Vesting Tentative Tract Map with a revised date of September 18, 2006. Part I of this transmittal comments on the current plan modifications as compared to the plans submitted with Reference 14, while Parts II and III address the geologic and soils engineering review comments, respectively, as they pertain to the current plan. In the interest of clarity, the County's remarks/conditions are reiterated and are followed by the Pacific Soils Engineering, Inc. (PSE) responses.

Part I

Map Modifications

Presented below is a summary of the plan modifications depicted on Sheet 1 of 1 of the 60-scale Vesting Tentative Tract Map for Tract No. 52652, with a revised date of September 18, 2006 by SEC Engineers, Inc. To accommodate the large format of the single sheet Vesting Tentative Map No. 52652, the Geotechnical Map has been divided into two (southern and northern) overlapping plates. Geotechnical data from Reference 14 have been plotted on the two map plates which serve

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT AND PERMITS TRACKING SYSTEM

DATE: 08/01/06 DPR4051
TIME: 15:45:18 PAGE 1
ROUTE TO: LD0000 REQUESTED BY: XXXXXXX

FEE RECEIPT

RECEIPT NUMBER: LD00000004418

THIS IS A RECEIPT FOR THE AMOUNT OF FEES COLLECTED AS LISTED BELOW. THE RECEIPT NUMBER, DATE AND AMOUNT VALIDATED HEREON HAS ALSO BEEN VALIDATED ON YOUR APPLICATION OR OTHER DOCUMENT AND HAS BECOME A PART OF THE RECORD OF THE COUNTY OF LOS ANGELES, FROM WHICH THIS RECEIPT MAY BE IDENTIFIED. PLEASE RETAIN THIS RECEIPT AS PROOF OF PAYMENT. ANY REQUEST FOR REFUND MUST REFERENCE THIS RECEIPT NUMBER.

DATE PAYMENT RECEIVED: 08/01/06 15:45:12
PROJ/APPL/IMPRV NBR: TR 52652
PROPERTY ADDRESS:
RELATED PROJECT: PJ 029008
PAYOR NAME: FAYE ESTATES, LLC
ADDRESS: 6104 PASEO AVE, 2670

WOODLAND HILLS, CA 91367
PHONE: EXTN:

FEE ITEM	FEE DESCRIPTION	STATISTICAL CODE	CALCULATION FACTOR	UNIT OF MEASURE	EXTENDED AMOUNT
9C	TENT TR-GEOTECH RPT	A019492	1800000.00	CU YDS	$5,806.00

TOTAL FEES PAID: $5,806.00

PAYMENT TYPE	REFERENCE	AMT TENDERED	CHANGE GIVEN	AMOUNT APPLIED
CHECK	336	$5,806.00	$0.00	$5,806.00

OFFICE: LD 0000 DRAWER: 02
CASHIER: CBT

ITEMS WITH AN ASTERISK (*) WILL REQUIRE FURTHER DEPOSITS
WHENEVER ACTUAL COSTS EXCEED THE DEPOSIT AMOUNT
********** END OF REPORT **********

Dist. Office 9.1

Sheet 1 of 1

GEOTECHNICAL FEES DUE

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Dist. Office
___ Geologist
___ Soils Engineer
1 Dev / Owner
___ Eng / Arch

TENTATIVE TRACT 52652
SUBDIVIDER Faye Estates, LLC
ENGINEER S.E.C. Civil Engineers
GEOLOGIST Environmental Geotechnology Laboratory, Inc.
SOILS ENGINEER Same as above

TENTATIVE MAP DATED 1/30/06 (revised)
LOCATION Woodland Hills

REPORT DATE 11/09/98
REPORT DATE 11/09/98

Geologic Report(s) Dated
Soils Engineering Report(s) Dated
Geology and Soils Engineering Report(s) Dated 11/09/98

Soils Review Sheet dated 3/16/06 by Gan Lem
Geology Review Sheet dated 3/8/06 by Karin Vazquez
For: Report Rvw for tentative map

THE ABOVE-REFERENCED GEOTECHNICAL REVIEW SHEETS WILL NOT BE ISSUED UNTIL THE FEES OUTLINED BELOW ARE COLLECTED. PROVIDE AN ITEMIZED FEE RECEIPT OF PAYMENT TO THE PROCESSING CENTER, 3RD FLOOR LAND DEVELOPMENT DIVISION, 900 SOUTH FREMONT AVENUE, ALHAMBRA, CA 91803.

BUILDING / POOL PLAN CHECK No. _____

		Fees Due*	Fees Paid
GEOTECH SITE AND PLAN REVIEW..... **(Fee Item JB)**	$		$
GEOTECH REPORT, SITE AND PLAN REVIEW..... **(Fee Item JD)**	$		$
GEOTECH REVIEW OF ADDENDA REPORTS			
___ HRS @ $101.20/ HR..... **(Fee Item JF)**	$		$
TOTAL	$		$
BALANCE DUE	$		$

*** Based on a valuation of:** $

GRADING PLAN CHECK No. _____

		Fees Due*	Fees Paid
GEOTECH SITE AND PLAN REVIEW..... **(Fee Item JL)**	$		$
GEOTECH REPORT REVIEW..... **(Fee Item JN)**	$		$
GEOTECH REVIEW OF ADDENDA REPORTS			
___ HRS @ $101.20 / HR..... **(Fee Item JP)**	$		$
TOTAL	$		$
BALANCE DUE	$		$

*** Based on** _____ **cubic yards**

TENTATIVE SUBDIVISION MAP No. 52652

		Fees Due*	Fees Paid
GEOTECH REPORT REVIEW..... **(Fee Item 9C)**	$	4618.00	$
GEOTECH REVIEW ADDENDA REPORTS	$		$
___ HRS @ $101.00 / HR..... **(Fee Item 9D)**	$		$
TOTAL	$	4618.00	$
BALANCE DUE	$	**4618.00**	$

*** Based on 975,000 cubic yards**

MISCELLANEOUS APPLICATION No. _____

		Fees Due	Fees Paid
GEOTECH SITE AND PLAN REVIEW..... **(Fee Item JH)**	$		$
GEOTECH REPORT REVIEW..... **(Fee Item JJ)**	$		$
TOTAL	$		$
BALANCE DUE	$		$

*** NOTE: Fees due are based on valuation or yardage information obtained at the time of review. The actual fees required may vary if the valuation or yardage quantity is changed. Contact the Building & Safety or Land Development Division plan checker to verify the quantity used to calculate the fees.**

P:\Gmepub\Geology Review\Forms\Form10.doc
7/6/07

Paid 8/1/06

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
__ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT 52652
SUBDIVIDER Faye Estates, LLC
ENGINEER S.E.C. Civil Engineers
GEOLOGIST Environmental Geotechnology Laboratory, Inc.
SOILS ENGINEER Environmental Geotechnology Laboratory, Inc.

TENTATIVE MAP DATED 1/30/06 (revised)
LOCATION Woodland Hills

REPORT DATE 11/09/98
REPORT DATE 11/09/98

The Regional Planning Commission, developer, and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR PARCEL MAP:

1. The consultant must utilize a copy of the most recently proposed tentative map as a base for the geotechnical map (please verify that elevations are legible prior to submittal or map will be returned without review). Additional subsurface data, cross-sections, slope stability analyses, etc. will be required to address feasibility of the proposed tentative map. Please also discuss the potential for high groundwater and/or perched groundwater in the vicinity of the proposed subdivision and incorporate into slope stability analyses as appropriate.

2. All structural data obtained for the site must be plotted on geotechnical map, i.e. attitudes of bedding, shearing, faults, joints, fractures, etc. This must include previously obtained structural data from bucket auger borings B-1 and B-2.

3. Based on the data provided to date, all south-facing slopes must be evaluated for potential daylighted bedding conditions utilizing appropriate material strengths that represent the geologic conditions.

4. As Requested Previously: Please address whether there are existing landslide(s) within the northern portion of the proposed subdivision, failing to the north, and supported by description of the quality of rock, structure, aerial photos, and topography. Please note that several landslides were identified within the adjacent tracts (referenced in Comment #5), although, they were not delineated on the published geologic map available for the area and review of av.

5. Shales of the Modelo and Topanga Formations that contain large amounts of soluble iron sulfides, such as described for the subject site, are associated with heaving when exposed to oxygen and water: a process in which sulfide minerals oxidize to form sulfate compounds, specifically gypsum, which greatly expands the volume of the rock. The consultant must address the potential of this hazard occurring within the proposed subdivision, which appears to have occurred within the neighboring tracts to the east (Tr 30057 and Tr 31548). Please refer to the Pacific Soils reports for Tract 42754 document the heaving process and recommended mitigation measures for such hazards.

6. The consultant must review the letter provided by Slosson & Associates, dated 12/04/91 (attached), which discusses distress observed in the area of Vickiview Drive and Welby Way. This letter indicated that an "apparent northerly movement vector is suggested by approximately east/west trending cracks in the streets and on properties comprising the northerly portion of Randiwood Lanes, Vickiview Drive, Daryn Drive as well as the intersection of these streets with Welby Way," as well as a number of other potential causes to observed distress throughout the tracts adjacent to the proposed tract. Please review the possibilities contributing to the observed distress, provide a detailed discussion of the observations, and provide preventative measures that may be necessary for the proposed tract.

7. Provide the reference list, as shown in the Table of Contents but does not appear to have been included. Provide this office with the referenced Pacific Soils reports (c. 1965) or and Geosoils report (c. 1982) and/or verify which referenced reports are on file at this office along with a complete reference.

8. The Soils Engineering review dated 3/16/06 is attached.

NOTE Provide a copy of this review with your resubmittal

Prepared by Karin Vazquez Reviewed by _____ Date March 8, 2006

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 9.1
Job Number LX001129 & GMTR
Sheet 1 of 2

Tentative Tract Map 52652

Location	Woodland Hills
Developer/Owner	Faye Estates, LLC
Engineer/Architect	SEC Civil Engineer
Soils Engineer	EGL (98-139-002EG)
Geologist	Same as above

DISTRIBUTION:
___ Grading/ Drainage
___ Geo/Soils Central File
___ District Engineer
___ Geologist
___ Soils Engineer
___ Engineer/Architect

Review of:
Revised Tentative Tract Map Dated By Regional Planning **1/30/06**
Soils Engineering and Geologic Report Dated 11/9/98
Previous review sheet dated 1/14/99

ACTION:
Tentative Map feasibility is not recommended for approval.

REMARKS:
1. Submit an update soils report/letter, which addresses and evaluates current site conditions and the most recent tentative map, for all reports older than one year to verify the validity and applicability of the original soils report.

2. Provide a geotechnical map that is based on the most recent tentative map.

3. Requirements of the Geology Section are attached. Provide the following as requested by the Geology Section:
   a. Additional subsurface information to address the geology at this site including the landslide that is mapped to the north of the proposed subdivision, groundwater conditions considering the high moisture content in the fill soils, etc.
   b. Additional cross-sections to fully address the slope stability of the slopes at this site; including natural slopes, fill slopes, and cut slopes with daylighted or adverse bedding conditions.
   c. Additional investigation to address the distress observed in areas adjacent to this proposed subdivision as stated in the letter by Slosson & Associates dated 12/4/91 (copy of which is attached to the Geologic Review Sheet).

4. Provide static, seismic and surficial slope stability analyses for the above cross-sections with the updated geologic information. Indicate the various shear strength parameters and phreatic surface used in the analyses, in the appropriate segments of each failure plane. Therefore, provide additional shear strength test results of sheared clay, fractures, beddings, and other weak zones as indicated in logs of borings and test pits presented in the 11/9/98 report. Recommend mitigation if factors of safety are below County minimum standards.

5. Page 8 of the 11/9/98 report states that the upper 5 to 7 feet of the Modelo Formation is subject to downhill creep. Recommend mitigation for any development proposed near the slope crest as necessary.

6. Test results presented in the 11/9/98 report show existing canyon fill soils (of up to 84 feet deep) have variable dry densities of 70 to 94 pcf (which correspond to 76 to 98 percent relative compaction) and moisture contents of 22 to 43 percent. The report also states the following: (1) unsuitable soils were NOT removed prior to placement of the canyon fill, based on cuttings and samples obtained from the borings drilled at this site and (2) outlets for any subrains installed in the canyon cannot be located. The soils engineer recommends that minimum of 5 feet of the existing fill at the proposed development be removed and recompacted. This is not acceptable, considering that the predicted total settlement after partial removal and recompaction is estimated to be 12 inches. Recommend revised mitigation as necessary. (It is noted that the predicted differential settlement is estimated to be 0.75 inch, which is NOT substantiated by the highly variable fill densities).

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Tentative Tract Map 52652

REMARKS (CONT'):

7. Areas with compressible soils greater than 5 feet in thickness that will not be mitigated must be delineated and noted as "Unsuitable Soils - Not suitable for the Support of Structures" on the final map.

8. Logs of borings and test pits presented in the 11/9/098 report show extensive gypsum throughout the Modelo and Topanga Formations (a by product form from oxidation of sulfide mineral). Recommend mitigation for the potential expansion or heave associated with bedrock containing large amount of soluble iron sulfides.

9. Based on the results of additional investigation with respect to the distress observed in areas adjacent to this proposed subdivision as stated in the letter by Slosson & Associates dated 12/4/91, recommend mitigation as necessary.

10. Show the following on the geotechnical map:
    a. Existing and proposed grades.
    b. Approximate limits and depth of removal and recompaction of unsuitable soils.
    c. Delineate the approximate limits of all existing unmitigated fill/unsuitable soils greater than 5 feet in thickness and prominently label with the note: "Unsuitable Soils - Not suitable for the Support of Structures".
    d. Location of "Restricted Use Areas", if applicable.
    e. All recommended mitigation measures.

11. Include a copy of this review sheet with your response.

NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER:
A. ON-SITE SOILS ARE CORROSIVE TO CONCRETE AND FERROUS METALS.
B. ON-SITE SOILS HAVE A MEDIUM TO HIGH EXPANSION POTENTION.



Prepared by _____ Date 3/16/06

Gan Lem

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.
Gan:tract-52652

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave.
Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913
Calling hours - Monday through Thursday 8-9 a.m. & 3-4 p.m.

District Office 9.1

DISTRIBUTION:
__ Drainage and Grading
__ Geo/Soils Central File
__ District Engineer
__ Geologist
__ Soils Engineer
__ Engineer/Architect

Tentative Tract Map 52652
Location West of Randiwood Lane, West Hills
Developer/Owner Han & Hsia
Engineer/Architect Dolinsky
Soils Engineer EGL
Geologist Same as above

NOTES TO THE PLAN CHECKER: 1) THE SUBJECT DEVELOPMENT IS LOCATED WITHIN A "SEISMIC HAZARD ZONE" AND MAY BE SUBJECT TO SEISMICALLY INDUCED LANDSLIDES. 2) THE ON-SITES SOILS ARE SEVERELY CORROSIVE TO CONCRETE AND STEEL. 3) TYPE V CEMENT SHOULD BE UTILIZED FOR ALL CONCRETE STRUCTURES IN CONTACT WITH THE ON-SITE SOILS. 4) THE ON-SITE SOILS ARE MEDIUM EXPANSIVE. 5) PROPOSED FILL WILL BE COMPACTED TO MINIMUM RELATIVE COMPACTION OF 92-95 PERCENT MAXIMUM DRY DENSITY.

REGISTERED PROFESSIONAL ENGINEER
SCOTT T. EZELL
No. C52251
Exp. 12-31-01
CIVIL
STATE OF CALIFORNIA

FTZ
Prepared by _____ Date 1/14/99
Scott T. Ezell

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.
SCOTT:52652W

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave.
Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913
Calling hours - Monday through Thursday 8-9 a.m. & 3-4 p.m.

District Office 9.1

Sheet 1 of 1

DISTRIBUTION:

__ Drainage and Grading
__ Geo/Soils-Central File
__ District Engineer
__ Geologist
__ Soils Engineer
__ Engineer/Architect

Tentative Tract Map 52652
Location West of Randiwood Lane, West Hills
Developer/Owner Han & Hsia
Engineer/Architect Dollnsky
Soils Engineer ---
Geologist ---

Review of:

Tentative Tract Map Dated By Regional Planning 11/23/98

12/31/02

ACTION:

Tentative Map is not approved for feasibility.

REMARKS:

1. Provide three copies of a soils report, with sufficient subsurface exploration data, pertinent test results and analyses, which addresses and evaluates the site and the proposed development. The report must comply with the provisions of **"Guidelines for the Preparation of Soils Reports for Land Development"** prepared by County of Los Angeles, Department of Public Works.

2. **Upon receipt of the geotechnical report requested, a complete review will be conducted.**

3. Provide an owner's statement clarifying if grading is proposed by the applicant.

4. Provide chemical test results (sulfate, chloride, PH or resistivity, etc.) for the onsite soils to address the presence of chemicals deleterious to construction materials and utility lines. Recommend mitigation as necessary.

5. The Soils Engineer must sign, stamp and indicate the date of registration expiration on the soils report and all addenda. Original manual signature and wet stamp are required.

6. Requirements of the Geology Section are attached.

7. Include a copy of this review sheet with your response.

NOTE TO THE PLAN CHECKER: THE SUBJECT DEVELOPMENT IS LOCATED WITHIN A "SEISMIC HAZARD ZONE" AND MAY BE SUBJECT TO SEISMICALLY INDUCED LANDSLIDES.

REGISTERED PROFESSIONAL ENGINEER
SCOTT T. EZELL
No. C52251
Exp. 12-31-02
CIVIL
STATE OF CALIFORNIA

Prepared by _____ Date 1217/98
Scott T. Ezell

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.
SCOTT:52552

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT AND PERMITS TRACKING SYSTEM

DATE: 12/30/98 DPR4051

TIME: 08:23:16 PAGE 1

ROUTE TO: FS0000 REQUESTED BY: XXXXXXX

STC

FEE RECEIPT

RECEIPT NUMBER: FS00000009912

THIS IS A RECEIPT FOR THE AMOUNT OF FEES COLLECTED AS LISTED BELOW. THE RECEIPT NUMBER, DATE AND AMOUNT VALIDATED HEREON HAS ALSO BEEN VALIDATED ON YOUR APPLICATION OR OTHER DOCUMENT AND HAS BECOME A PART OF THE RECORD OF THE COUNTY OF LOS ANGELES, FROM WHICH THIS RECEIPT MAY BE IDENTIFIED. PLEASE RETAIN THIS RECEIPT AS PROOF OF PAYMENT. ANY REQUEST FOR REFUND MUST REFERENCE THIS RECEIPT NUMBER.

DATE PAYMENT RECEIVED: 12/30/98 08:23:00
PROJ/APPL/IMPRV NBR: TR 52652
PROPERTY ADDRESS:
RELATED PROJECT: PJ 029008
PAYOR NAME: JOHN DOLINSKY ASSOCIATES
ADDRESS: 6363 SUNSET BLVD

HOLLYWOOD CA 90028
PHONE: (213) 465-4643 EXTN:

FEE ITEM	FEE DESCRIPTION	STATISTICAL CODE	CALCULATION FACTOR	UNIT OF MEASURE	EXTENDED AMOUNT
9C	TENT TR-GEOTECH RPT	A019492			$402.00

TOTAL FEES PAID: $402.00

PAYMENT TYPE	REFERENCE	AMT TENDERED	CHANGE GIVEN	AMOUNT APPLIED
CHECK	4901	$402.00	$0.00	$402.00

OFFICE: FS 0000 DRAWER: 03
CASHIER: YB

ITEMS WITH AN ASTERISK (*) WILL REQUIRE FURTHER DEPOSITS
WHENEVER ACTUAL COSTS EXCEED THE DEPOSIT AMOUNT
********** END OF REPORT **********

Attention: Mr. John Dolir

[redacted]

Subject: **Report of Geotechnical Engineering and Geological Investigation and Review of 100-Scale Grading Plan**
Tentative Tract 52652, 58 Acres Kittridge & Randiwood Residential Development Project, West Hills, County of Los Angeles, California
EGL Project No.: 98-139-002EG

Gentlemen:

This report presents the results of EGL's investigation and a summary of geotechnical recommendations, with regard to the 100-scale grading plan of the subject development. The purpose of this study was to obtain additional geotechnical data in order to evaluate the planned development with respect to soil and geologic conditions. The review is based on the data obtained during this and previous investigations (see references).

Results of the 100-scale grading plan review indicate that it is geotechnically feasible to develop the site essentially as planned if the EGL's recommendations are implemented in tract design and construction. Any revisions made to the proposed plans should be reviewed by this office as soon as possible to help minimizing added expanses and delays.

This opportunity to be of service is sincerely appreciated. If you have any questions pertaining to this report, please call the undersigned.

Respectfully submitted,

Environmental Geotechnology Laboratory, Inc.

REGISTERED PROFESSIONAL ENGINEER
JACK C. S. LEE
No. 2153
Exp. 3/31/00
GEOTECHNICAL
STATE OF CALIFORNIA

Jack C. Lee, GE 2153
Principal

CERTIFIED ENGINEERING GEOLOGIST
HANK H. L. JONG
1646
Exp. 11/30/00
STATE OF CALIFORNIA

Hank H. Jong, Ph.D, CEG 1646
Principal

JIM JENNINGS
Independent Biological Consultant

PMB # 141
501 W. Glenoaks Blvd.
Glendale, CA 91202

Coastal California Gnatcatcher (Polioptila *californica californica*) Survey Report

Project: West Hills (Tentative Tract 52652) California Gnatcatcher Study

Location: Los Angeles County, West Hills (See Map)

Surveyed For: Envicom Corporation

[redacted]

REPORT OF GEOTECHNICAL ENGINEERING
AND GEOLOGICAL INVESTIGATION
AND REVIEW OF 100-SCALE GRADING PLAN

Tentative Tract 52652
58 Acres Kittridge & Randiwood
Residential Development Project
West Hills, County of Los Angeles
California

Prepared by
ENVIRONMENTAL GEOTECHNOLOGY LABORATORY, INC.
Project No.: 98-139-002EG
November 9, 1998

Environmental Geotechnology Laboratory

November 9, 1998

John Dolinsky & Associates
6363 Sunset Boulevard
Hollywood, California 90028

Attention: Mr. John Dolinsky

Subject: **Report of Geotechnical Engineering and Geological Investigation and Review of 100-Scale Grading Plan**
Tentative Tract 52652, 58 Acres Kittridge & Randiwood Residential Development Project, West Hills, County of Los Angeles, California
EGL Project No.: 98-139-002EG

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Environmental Geotechnology Laboratory, Inc.

REGISTERED PROFESSIONAL ENGINEER
JACK C. S. LEE
No. 2153
Exp. 3/31/99
GEOTECHNICAL
STATE OF CALIFORNIA

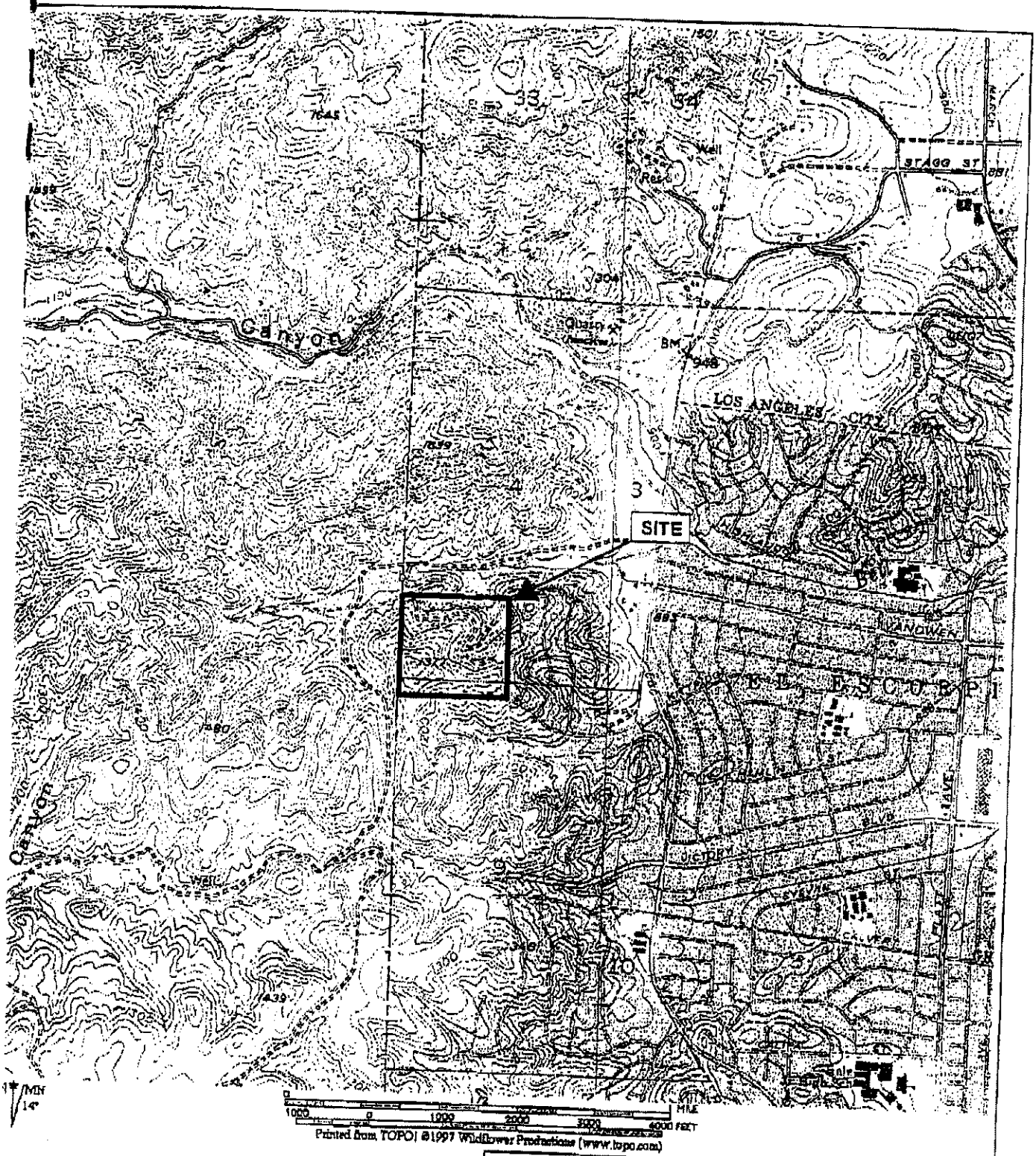
Jack C. Lee, GE 2153
Principal

CERTIFIED ENGINEERING GEOLOGIST
HANK H. L. JONG
1646
Exp. 11/30/00
STATE OF CALIFORNIA

Hank H. Jong, Ph.D, CEG 1646
Principal

Dist: (6) Addressee

11823 Slauson Avenue, Unit 18, Santa Fe Springs, CA 90670 • Tel.: (562) 945-0689, Fax: (562) 945-0364



Environmental Geotechnology Laboratory	Project Name: Tentative Tract 52652 West Hills, County of Los Angeles, California

SITE LOCATION MAP

11/98

FIGURE 1

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 PURPOSE 1
1.2 SCOPE OF WORK 1
1.3 PREVIOUS INVESTIGATIONS 2
1.4 PROPOSED DEVELOPMENT 3
2.0 SITE DESCRIPTION 3
2.1 Physiography/Geomorphology 3
2.2 Vegetation and Drainage 4
2.3 Adjacent Improvements and Development Background 4
3.0 FIELD AND LABORATORY INVESTIGATIONS 5
4.0 GEOLOGIC CONDITIONS 5
5.0 FAULTING AND SEISMICITY 10
5.1 SEISMICITY 10
5.2 ESTIMATED EARTHQUAKE GROUND MOTIONS 11
6.0 SLOPE STABILITY 11
6.1 GENERAL 11
6.2 FILL SLOPES 11
6.3 CUT SLOPES 11
6.4 CUT SLOPE STABILIZATION 11
6.5 SURFICIAL SLOPE STABILITY AND LANDSCAPING 11
7.0 EXCAVATION CHARACTERISTICS 12
8.0 SOIL EXPANSION CHARACTERISTICS 12
9.0 SETTLEMENT OF FILLS 12
10.0 CONCLUSIONS AND RECOMMENDATIONS 13
10.1 GENERAL 13
10.2 SEISMICITY 13
10.3 GRADING 13
10.3.1 Site Preperation 14
10.3.2 Surficial Soil Removals 14

and a hollow-stemmed drilling rig. Trenches extended to a maximum depth of 13.5 feet and drill-holes to a maximum depth of 91.5 feet. Trenches and bucket-auger excavations were logged downhole by an engineering geologist certified by the State of California. All excavations were backfilled with the excavated material at the completion of geologic logging and sampling. Illustrated logs of all excavations are included in Appendix A;

- Laboratory testing of representative samples to determine the engineering properties of on-site soils. The results of the laboratory testing are presented in Appendix B and on the logs of the excavations. Soil samples will be discarded 30 days after the date of this report unless this office receives a specific request and fee to retain the samples for a longer period of time.

- Preparation of a Geologic Map and Geologic Cross Sections to illustrate subsurface conditions immediately beneath the property. These illustrations are based upon the 100-scale "Property and Topographic Survey" prepared by Lawrence V. Vadasz, dated October of 1985 and 100-scale preliminary grading plan provided by John Dolinsky Associates, dated March of 1998. These maps were provided to our office for use in this study.

- Analysis of seismic hazards likely to affect the property. Seismic setting of the site is provided on Figure 2;

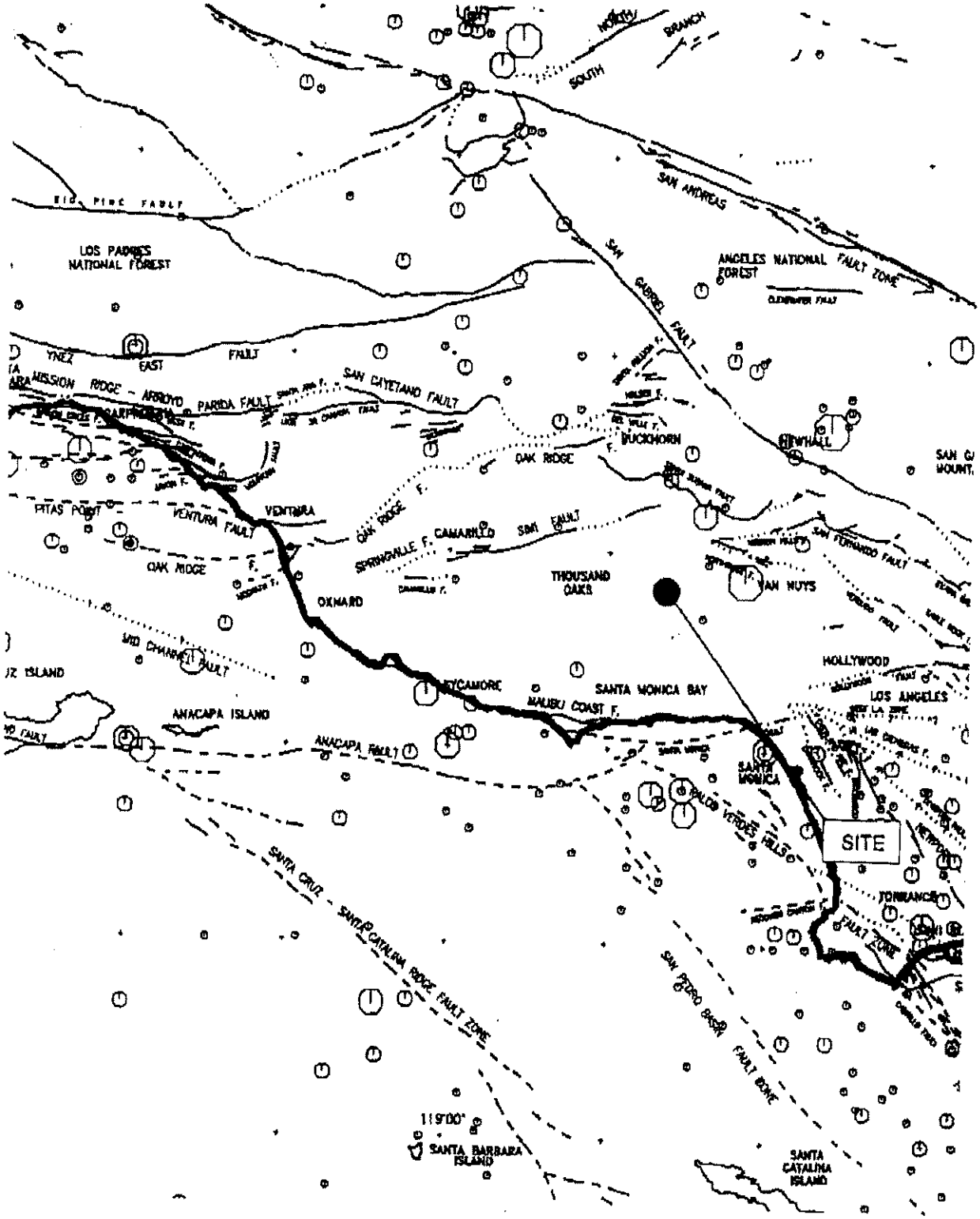
- Engineering and geologic analysis of the site conditions;

- Development of geotechnical recommendations for site development.

At the completion of our field investigation, laboratory testing and site analysis, this report was prepared to present our professional opinions in the form of findings, conclusions and geotechnical recommendations for grading, foundation design, slab-on-grade construction, underground trenches, temporary excavations and drainage.

1.3 Previous Investigations

Previous investigations utilized in the preparation of this report include small scale maps and accompanying reports published by a variety of professional organizations and government agencies. Also reviewed were site-specific studies commissioned from private consultants for earlier development efforts on both the subject and nearby properties. These private studies were


SITE
LOS PADRES NATIONAL FOREST
ANGELES NATIONAL FOREST
SAN ANDREAS
SAN GABRIEL FAULT
SAN CAYETANO FAULT
VENTURA FAULT
OAK RIDGE
SIMI FAULT
SANTA MONICA BAY
MALIBU COAST F.
ANACAPA FAULT
ANACAPA ISLAND
SANTA CRUZ - SANTA CATALINA RIDGE FAULT ZONE
SAN PEDRO BASIN FAULT ZONE
SANTA BARBARA ISLAND
SANTA CATALINA ISLAND
OXNARD
THOUSAND OAKS
VAN NUYS
HOLLYWOOD
LOS ANGELES
SANTA MONICA
TORRANCE
PALOS VERDES HILLS
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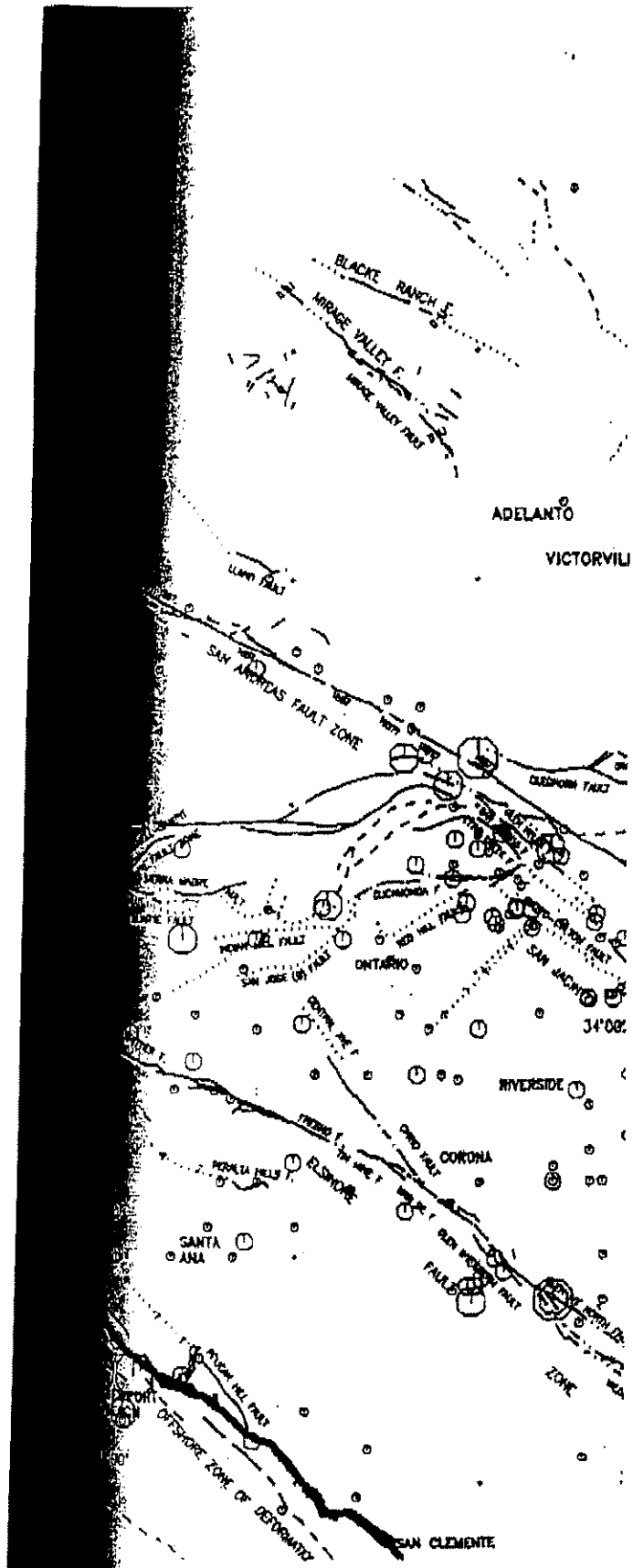

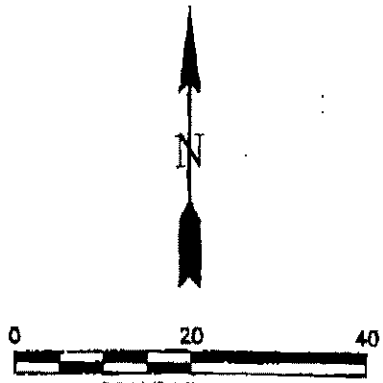

LEGEND

REPORTED EARTHQUAKE MAGNITUDES.

- 3.5 TO 3.9
- 4.0 TO 4.9
- 5.0 TO 5.9
- 6.0 TO 6.9
- 7.0 AND GREATER

EPICENTER AND MAGNITUDE DATA ARE FROM THE CALTECH EARTHQUAKE CATALOG FOR THE PERIOD FROM 1800 TO DECEMBER 1991 WITH THE 1992 JOSHUA TREE, LANDERS AND BIG BEAR EVENTS ADDED. ONLY EARTHQUAKES OF MAGNITUDE 3.5 AND LARGER ARE SHOWN.

APPROXIMATE LOCATION OF ACTIVE AND POTENTIALLY ACTIVE FAULTS, DOTTED WHERE CONCEALED, QUERIED WHERE CONJECTURAL. FAULT LOCATIONS BASED ON: ZIONY AND JONES, 1989; GEOLOGIC MAP SERIES OF CALIFORNIA, 1977–1986 (1:250,000 SCALE); GEOLOGIC MAP SERIES, CALIFORNIA CONTINENTAL MARGIN, 1986–1987 (1:250,000 SCALE); HAUKSSON, 1990; AND WRIGHT, 1991.

Environmental Geotechnology Laboratory

Site Address:

Tentative Tract 52652
Kittridge & Randlwood
West Hills, California

SEISMIC SETTING

11/98

FIGURE 2

prepared based on subsurface explorations with a specific emphasis on engineering geology and geotechnical engineering. Where appropriate, the results are incorporated into the current evaluation.

All of the previous studies referenced in this report are public record on file with the County of Los Angeles, the City of Los Angeles or the Los Angeles Department of Water and Power, or were provided by our client for our use in preparing the current investigation. (See References).

1.4 Proposed Development

We understand that the property is proposed for approximately 90 lots for single-family, residential use. The current plan proposes conventional cut and fill grading techniques involving approximately 750,000 cubic yards of cut and 925,000 cubic yards of fill to create level building pads. Fill slopes will be constructed at gradients of 2:1 and will range up to about 130 feet high. Cut-slopes will be constructed at gradients of 2:1 and will range up to about 100 feet high. The maximum depth of fill at the completion is estimated to be approximately 100 feet, and the maximum depth of cut will be about 65 feet. Infrastructure for the development is anticipated to include roadways and utilities such as water and sewer services.

2.0 SITE DESCRIPTION

The subject property consists of approximately 58 acres located west of Randiwood Lane in West Hills, California. The property is included within the Los Angeles County, and is bounded on the north and south by Los Angeles City, and on the west by Ventura County. Knapp Ranch Park is located immediately south of the property adjacent to a tank facility operated by the City of Los Angeles Department of Water and Power. Bell Canyon Park is located immediately to the north.

2.1 Physiography/Geomorphology

The property is elevated above the west edge of the San Fernando Valley about midway between Laskey Mesa and Bell Canyon. Relief across the property is approximately 370 feet with a low elevation of about 970 feet at the northern boundary, and a high elevation of about 1340 feet at the southwest corner. Existing natural slopes are inclined at gradients of up to about 1½:1 and reach heights as great as about 300 feet. The site includes two significant canyons that drain north and east to a larger drainage which flows eastward to the San Fernando Valley. The canyons are flanked by relatively narrow ridges which descend from an isolated peak located at the southwest corner of the property. The crest of this peak has been removed by past grading operations leaving

3.0 FIELD AND LABORATORY INVESTIGATIONS

3.1 Field Investigation

This investigation has conducted excavation and geologic logging of 20 exploratory backhoe trenches and drilling, sampling and geologic logging of 2 bucket auger borings and 3 hollow stem borings to evaluate site conditions relative to slope stability, foundation design and construction, and removal depths beneath the planned construction areas. The approximate locations of these trenches and borings and previous exploratory borings are shown on the enclosed 100-scale grading plan/Geological Map (Figure 3), Geological Cross Sections are provided on Figure 4, and the logs are included in Appendix A.

3.2 Laboratory Testing

Laboratory testing of representative soil and bedrock samples performed by EGL consists of in-situ moisture content and density, direct shear, consolidation, maximum density, expansion index, and etc. The results of our laboratory test are presented in the Appendix B.

4.0 GEOLOGIC CONDITIONS

Geologic conditions beneath the subject property have been interpreted and characterized based upon our review of published and unpublished references, our observations of isolated exposures available during surface mapping, and our subsurface exploration. Our interpretations involve projections of data and require that geologic conditions are reasonably consistent between points of exposure. Work should continue under the review of an engineering geologist to ensure that geologic conditions different from those described below are recognized and evaluated as soon as possible. Certain subsurface conditions such as groundwater levels and the consistency of near-surface soils will vary with the seasons.

4.1 Geologic Setting

The site is located in the western Transverse Ranges geomorphic province of California, on the northern side of the Santa Monica Mountains. The Santa Monica Mountains consist of

metamorphic and crystalline Jurassic and Cretaceous-aged rocks overlain by a sequence of Miocene-aged marine and non-marine sedimentary rocks. Regional, north-south directed compressional forces have deformed these rocks into a series of east-trending folds and faults. Throughout much of the Santa Monica Mountains, the underlying rocks have been deformed into a broad, east-plunging anticline in which the northern and southern limbs of the fold generally correspond with the northern and southern flanks of the mountains. Near the west end of the mountains, however, this general structural pattern is interrupted by subsidiary faults and folds. The southern boundary of the Santa Monica Mountains is marked by a system of major faults including the Malibu Coast, Santa Monica and Hollywood faults. Regionally significant faults known to exist in the area include the Malibu Coast fault mapped about 11 miles south of the property, and a series of faults that extend along the northern edges of San Fernando Valley and Simi Valley. These faults are mapped about 7 miles north of the property.

Bedrock beneath the subject property is included within the north limb of the well-defined San Fernando Syncline which plunges easterly beneath Laskey Mesa. Published studies (Dibblee, 1992; Weber et al., 1984) indicate that most of the property is underlain by shale/claystone/siltstone of Upper Miocene Age. A massive outcrop of hard, pale yellow sandstone that crops out along the ridge line at the southern boundary of the property is recognized as a separate stratigraphic horizon that can be traced westward as a distinct unit for a distance of about two miles. Dibblee assigns the shale units to the Monterey Formation and identifies the overlying sandstone as "unnamed". Weber assigns both the shale and sandstone units to the Modelo Formation. Weber's assignments are consistent with designations provided during earlier work on the subject property by Pacific Soils (1965).

Outcrops of coarser-grained sandstone and conglomerate exposed at the northern edge of the property are distinct from either the overlying shale or sandstone. Dibblee includes these exposures in a separate stratigraphic unit which he identifies as "Detrital Sediments of Lindero Canyon". Dibblee maps a depositional contact between these materials and the overlying shale. The same materials are identified by Pacific Soils Engineering, Inc. (1965) as Topanga Formation, and are further subdivided into sandstone and conglomeratic sections. Pacific Soils also maps a depositional contact between these materials and the overlying Modelo Formation, but indicates that the Topanga Formation sediments are faulted just inside the northern tract boundary. Designations of Modelo Formation and Topanga Formation will be used for the purposes of this study.

4.2 Earth Materials

Earth materials observed during our investigation include artificial fill that occurs both as roadway spill fill and as certified fill placed during earlier grading operations, alluvium, soil and slopewash, and bedrock assigned to the Modelo and Topanga Formations.

4.2.1 Artificial Fill (af)

Artificial fill is present on the property as spill along the edges of the dirt access roads and as canyon fills placed during grading for Tract 23762. Spill fills are anticipated to be of limited thickness; the canyon fills range in depth up to about 80 feet. Earlier studies by GeoSoils, Inc. (1982) report that the canyon fill was compacted and certified by Pacific Soils Engineering during grading for the adjacent tract; however we have been unable to recover the records for this work. During our recent program of field exploration, three hollow-stemmed auger borings were advanced through these canyon fills to evaluate the consistency and engineering properties of the fill materials. The fill was found to consist of clayey silt with some sand and siltstone fragment. The in-situ dry densities ranging between 69.8 pcf and 94.2 pcf and moisture contents ranging between 22.2 % and 42.7 %. Examination of cuttings and samples suggests that native soil, slopewash and alluvium was not removed prior to placing the fill. We were unable to locate an outlet for any subdrain that may have been placed below the main canyon fill. The various generations/origins of artificial fill have been differentiated on the attached geologic map.

4.2.2 Soil /Slopewash

Nearly all natural slopes on the property are blanketed with a mantle of native soil and slopewash that consists of moderate- to dark-brown, silty to clayey fine-grained sand to sandy silt that is typically damp to moist and loose. Where observed in our exploratory excavations, this material reached a maximum thickness of 9.5 feet. Thicknesses of less than three feet were found to be typical. Soil has not been delineated on the attached geologic map.

4.2.3 Alluvium (Qal)

Alluvial material currently exposed on the property is limited to the northern edge of the site beyond the toe of the existing canyon fill. Our program of subsurface exploration did not include excavations in these materials due to the limited occurrence. However, earlier studies indicate that alluvium on the site consists of silt and clayey silt to sandy clay that is unconsolidated to compact, and moist. Borings completed by Pacific Soils Engineering in the onsite alluvial area indicate a thickness of about 15 feet.

4.2.4 Bedrock - Modelo Formation/Mudstone Facies (Tmsh)

Bedrock beneath most of the property is mapped as mudstone and diatomaceous mudstone/shale of the Miocene-aged Modelo Formation. Thin sandstone interbeds occur locally in the mudstone section as do thin sandstone dikes. The mudstone is typically thin bedded to laminated and near the surface is lightly to moderately fractured. Where less weathered, this material is generally moderate to dark-brown and olive, and grades to shades of light brown and pale yellow where exposed at the surface. This unit is commonly weathered for several feet below the soil profile; we expect that the upper 5 to 7 feet of this unit is subject to downhill creep where located in close proximity to slopes.

4.2.5 Bedrock - Modelo Formation/Sandstone Facies (Tmss)

The crest of the ridge that extends along the southern edge of the property is supported by a resistant unit of fine-grained sandstone. Where exposed in our exploratory excavations, this material is typically pale yellow and is interbedded with thin mudstone lenses. Where observed in a long trench excavated across the level pad at the southwest corner of the property, the material is generally well-cemented and lightly to moderately fractured with local areas of more severe fracturing.

4.2.6 Bedrock - Topanga Formation (Tt)

Bedrock beneath the northernmost edge of the property is assigned to the Miocene-aged Topanga Formation. Surfaces exposures consist primarily of massive sandstone and conglomerate; however, subsurface studies encountered significant thicknesses of clayey siltstone. Where Pacific Soils encountered fine-grained units near within the Topanga Formation, the units were mapped as fault-bounded slivers of Modelo Formation. In our opinion, these material differ from fine-grained units of the Modelo Formation exposed elsewhere on the property in that they are very poorly bedded, sandstone occurs as fragmental interbeds, and they contain sulfide deposits manifested as pea-sized accumulations of brassy yellow, metallic minerals. Although these deposits may well be bounded by faults, we have included them within the Topanga Formation. Where weathered, this material ranges from pale to dark shades of yellow brown and dark yellowish-orange, and commonly contains thick veins of gypsum.

Exposed sandstone units tend to be pale to moderate yellow-brown, medium- to coarse-grained, and moderately to highly fractured. Bedding is difficult to define both because bedding features are rare, and because the few shale partings observed tend to be contorted. Pebble to cobble

conglomerate units tend to weather to dark yellow brown to dark yellow-orange where exposed at the surface and are typically unfractured and moderately hard.

4.3 Geologic Structure

Beneath most of the property, measured bedding attitudes reflect the south dipping limb of the San Fernando anticline. Measured bedding orientations generally strike between N70°W and N70°E and dip southward at angles ranging between about 13 and 30 degrees. A series of steep-dipping, north-trending faults were noted on the graded pad at the southwest corer of the property; however, displacement across these structures appears to be minimal.

Within the Topanga Formation beneath the northern part of the property, geologic structure is decidedly more complicated. Pacific Soils Engineering mapped a series of faults through this area as indicated on the attached geologic map. At that time, reversals in geologic structure were attributed to drag along these fault surfaces. Our current program of subsurface exploration included two deep borings excavated within units mapped as the Topanga Formation. One of these (B-2) was located near Boring B-2 excavated by Pacific Soils Engineering. Bedding attitudes at this location were found to be generally consistent (north-dipping) with those reported by Pacific Soils within the depth of the original exploration, however, beginning just below the bottom of the original borings, bedding reverses direction and dips at steep angles to the south. The nature of this reversal could not be determined with the information f this investigation.

In the vicinity of Boring B-2, Topanga Formation bedrock is highly disturbed with bedding dips inclined both to the north and to the south across a range of bedding inclinations. Much of the bedrock exposed in B-2 was found to be sheared, fractured and deeply weathered. These may be caused by previous ground movement (faults, shear zones or landslides) in the vicinity of B-1.

4.4 Groundwater

Most of the property is elevated on bedrock ridges well- above the alluvial aquifer that underlies the San Fernando Valley. Although local perched groundwater levels may develop within the fill or bedrock in response to irrigation or prolonged precipitation, the property is not expected to be subject to hazards associated with fluctuations in regional groundwater surfaces.

No subdrain outlet was located associated with the existing fill soils. Canyon and sidehill subdrain should be provided to remove the subsurface water that may accumulate above the fill/bedrock

contact. All future fills should be provided with subdrains as outlined in subsequent sections of this report.

5.0 FAULTING AND SEISMICITY

5.1 Seismicity

The subject site is located in southern California, which is a tectonically active area. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults, the intensity, and the magnitude of the seismic event. California Division of Mines and Geology (CDMG) requires that faults within 100 kilo-meters (km) of a site that could effect the site or the proposed project be identified. Table 1 indicates the distance of the fault zones and the associated maximum credible earthquake that can be produced by nearby seismic events.

As indicated in Table 1, the Simi-Santa Rose fault zone which is located approximately 7 miles south of the site is considered to have the most significant effect at the site from a design standpoint.

TABLE 1

Characteristics and Estimated Earthquakes for Regional Faults

Fault Name	Approximate Distance to Site(mile)	Maximum Credible Earthquake (MCE)
Simi-Santa Rosa	7	6.7
Northridge Hills	7	6.9
Santa Susana	9	6.6
Malibu Coast	11	6.7
Santa Monica-Hollywood	12	6.6
Oak Ridge	12	6.7
Verdugo	14	6.7
Sierra Madre-San Fernando	14	7.0
Holser	16	6.5
San Cayetano	16	6.8

5.2 Estimated Earthquake Ground Motions

In order to provide estimates of the seismic ground motions at the subject site, EGL has utilized the seismic hazard map published by California Divisions of Mines and Geology (CDMG Open File Report 96-08)/U.S. Geological Survey (USGS Open File Report 97-706). According to this report, the peak ground acceleration at the subject site for a 10% probability of exceedance in 50 years is about 0.55g. This report also indicates that the subject site is located within a zone where the magnitude range is 6.5-7.0.

6.0 SLOPE STABILITY

6.1 General

Stability of existing slopes have been considered and calculations are presented in Appendix C. Shear strength parameters were derived using in-place and remolded shear strengths of the weathered sandstone bedrock and soil materials obtained from this investigation, and evaluated in light of past experience in similar soil and bedrock terraces.

6.2 Fill Slopes

Fill slopes are currently planned at 2:1 or flatter up to a maximum height of 130 feet. Planned fill slopes are considered satisfactory and should possess adequate factors of safety against instabilities provided they are properly constructed and maintained.

6.3 Cut Slopes

Cut slopes are currently planned at 2:1 (horizontal to vertical) up to 100 feet in height. Cut slopes should possess adequate factors of safety against deep-seated failure providing jointing, bedding, or other planar structure is favorably oriented.

6.4 Cut Slope Stabilization

Cut slope stabilization is not anticipated due to favorable geologic structure found in our study. However, frequent observations should be conducted by the project engineering geologist during grading to make a final determination as to the need for stabilization, whether anticipated at this time or not.

6.5 Surficial Slope Stability and Landscaping

All slopes will be subject to surficial erosion. Therefore, slopes should be protected from surface runoff by means of top-of-slope compacted earth berms or concrete interceptor drains. All slopes

should be landscaped with a suitable plant material requiring minimal cultivation and irrigation water in order to thrive. An irrigation system should be installed. Overwatering and subsequent saturation of slope surfaces should be avoided.

7.0 EXCAVATION CHARACTERISTICS

Based on our subsurface explorations and surface mapping, excavations can be expected to range from easy to difficult, using conventional earth moving equipment. Materials excavated during grading should be broken down sufficiently for normal handling and placement in compacted fill. However, hard portions of bedrock, in particular the massive sandstone, could result in oversize rock fragments which may require special handling and disposal.

8.0 SOIL EXPANSION CHARACTERISTICS

The soil and bedrock materials encountered throughout the site are expected to generally range from medium to high expansive. Special foundation design recommendations for soil expansiveness should be based on testing of soils exposed at the pad grade after the completion of the site's rough grading.

9.0 SETTLEMENT OF FILLS

The proposed residences will be founded on various depths of fill materials. The estimate total and differential settlements will depend on the total depths of the fill (both existing and proposed fill) to the bedrock surface. Considering that the existing fill has been placed more than 30 years, it is our opinion that the primary consolidation of the existing fill has been completed, therefore the most future settlement within the existing fill will be due to the surcharge of the new fill.

Since the new fill will be compacted to 92-95 percent, the settlement of the new fill will be minimum. The estimated total and differential settlement underlain by various combination of fill and bedrock strata are presented below:

Thickness of Existing Fill (feet)	Thickness of New Fill (feet)	Total Settlement (inches)	Differential Settlement (inches)
0	<10	<1	<0.5
0	<100	<4	<0.5
80	30	12	0.75

The differential settlement is estimated for a single family house with a maximum width or length less than 50 feet. EGL estimates that 70 percent of the total settlement will occur upon the completion of the site's rough grading.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 General

It is our opinion that the subject site is suitable for the proposed development from a geotechnical engineering and geologic point of view providing that the recommendations presented in this report are implemented during tract design, grading and construction.

All grading should be conducted in accordance with the grading codes of the County of Los Angeles and EGL's attached Grading Guidelines (Appendix D), except where specifically supersede in this report.

Pertinent geotechnical recommendations for design, construction and grading should be incorporated into the 40-scale grading plans.

10.2 Seismicity

Our studies of regional and local seismicity indicate that there are no known active faults crossing the property. However, the site is located in a seismically active region and is subject to seismically induced ground shaking from nearby and distant faults, which is characteristics of all Southern California communites.

Based on our review of the USGS and CDMG open file report, it is reasonable to assume during a 50-year life the structure at the subject site will be subjected to an earthquake of a Richter magnitude of at least 6.5. Horizontal accelerations induced by an earthquake may affect

structures. Experience has shown that wood frame structures, designed in accordance with the current Uniform Building Code or City code, tend to provide resistance to earthquake effects.

The Uniform Building Code is intended to accommodate horizontal acceleration up to 0.4g for Seismic Zone 4. The proposed structures should be designed to accommodate this acceleration, at a minimum. However, the Project Structural Engineer should be aware of the information provided above to determine if any additional structural strengthening is warranted.

10.3 Grading

10.3.1 Site Preparation

Prior to initiating grading operations, any existing vegetation, trash, debris, over-sized materials (greater than 6 inches), and other deleterious materials within construction areas should be removed from the site.

10.3.2 Surficial Soil Removals

In areas to receive fill, unsuitable surfacial materials, including existing topsoil, alluvium, slope wash and deteriorated bedrock, should be removed to expose competent natural soils and/or bedrock as directed by the project geotechnical engineer and/or engineering geologist. Based on our study, it is anticipated that the near surface materials of the existing canyon fill placed during the grading of Tract 23762 should be removed to a minimum depth of 5 feet below the existing grade prior to filling. The actual removal depths should be determined in the field as conditions are exposed. Visual inspection and/or testing may be used to define removal requirements.

10.3.3 Treatment of Removal Bottoms

Soils exposed within areas approved for fill placement should be scarified to a depth of 6 inches, conditioned to near optimum moisture content, then compacted in-place to minimum project standards

10.3.4 Structural Backfill

The onsite soils may be used as compacted fill, provided they are free of organic materials and debris. Soils imported from off-site sources should be approved by the project geotechnical consultant prior to transporting to the site. Fills should be placed in relatively thin lifts, brought to near optimum moisture content, then compacted to the following relative compaction based on laboratory standard ASTM D-1557-91:

Depth	Relative Compaction
From finish Surface to 30 feet Deep	92%
More than 30 feet below finish surface	95%

The recommended compaction standards is slightly higher than the County Grading Code requirements of 90 percent which are proved to reduce the potential long term settlement of deep fill over 40 feet.

All areas to receive fill, including processed areas, removal areas, and toe of fill benches should be observed and approved by the geotechnical consultant prior to placement of fill. Fills may then be properly placed and compacted until design grades are reached.

10.3.5 Fill Slopes

Permanent fill slopes should be constructed no steeper than 2:1 (horizontal to vertical) and keyed and benches into approved soil/bedrock materials. Fill materials should be placed and compacted in accordance with the text of this report and the Grading Guidelines (Appendix D). Typical key details for fill slopes have been included.

10.3.6 Fill Keys

Fill keys, where required, should be a minimum of 12 feet wide (or H/2) and should extend a minimum of 3 feet into competent bedrock materials. All fill keys should be observed and approved by the project geotechnical consultant prior to placing fill.

10.3.7 Benching

Fills placed on slopes steeper than 5:1 should be keyed and benched into competent materials as the fill is placed. Keys and benches should be observed by the project geotechnical engineer and engineering geologist. Removal and deep benching on sidehill slopes where will be necessary prior to placement of fills on slopes where creep or slopewash exist. Typical benching details have been included in Appendix D.

10.3.8 Subdrainage

Subdrains should be anticipated for all of the major drainages and side canyons. Recommended canyon subdrains should be incorporated on the 40-scale grading plans when they are prepared.

The general construction details of subdrain placement are shown in the Appendix D.

10.3.9 Testing and Reporting

Fill soils should be tested at the time of placement to ascertain that the necessary moisture and compaction is achieved. The results of observation and testing services should be presented in the compaction report after the completion of the rough grading of the site.

10.3.10 Fill Slope Compaction

Fill materials should be placed and compacted in accordance with the Grading Guidelines, Appendix D. To achieve proper slope face compaction, it has been the practice to track walk and/or grid roll the outer zone of fill slopes. Overfill and cut back to a compacted slope face may also be used.

Clean, cohesionless sand should not be used exclusively for fill slopes; some selective grading may be required in this regard.

10.4 Overexcavation

Cut pads should be observed by the project engineering geologist and geotechnical engineer to determine the need for overexcavation and replacement with fill. This may be necessary to reduce water infiltration into highly fractured bedrock or other permeable zones, and/or due to differing expansion characteristics of foundation materials.

A minimum of five feet overexcavation (below finish pad grade) and replacement with compacted fill will be required in some areas that were heavily disturbed by fault movement.

Lots which will require overexcavation as well as depth of excavation should be tabulated based on the review of the 40-scale grading plans. Additional lots may require overexcavation as determined during rough grading based on the field conditions exposed.

10.5 Foundation Design

Materials encountered during the subject investigation are considered varied from medium to high in expansion potential. The following foundation design and construction recommendations are presented on a preliminary basis. Final foundation recommendations should be evaluated at the completion of the site's rough grading.

10.5.1 Foundation Setback

It is recommended that all settlement-sensitive foundations be located a minimum of 15 horizontal feet from the descending slope face.

10.5.2 Bearing Value

An allowable bearing value of 1500 pounds per square foot may be used for design of shallow continuous footings 12 inches wide and 18 inches deep, and shallow pad footings at least 24 square inch and 18 inches deep. This value may be increased by 200 pounds per square foot for each additional foot of depth or width to a maximum value of 2000 pounds per square foot. This value may be increased by one-third when considering short duration seismic or wind loads.

10.5.3 Lateral Resistance

Passive earth pressure may be computed as an equivalent fluid pressure of 250 pounds per cubic foot, with a maximum earth pressure of 2000 pounds per square foot.

An allowable coefficient of friction between soil and concrete of 0.40 may be used with the dead load forces. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

10.5.4 Foundation Construction

All footings for structures and walls should be founded in approved compacted fill or competent natural materials and should be founded at least 18 inches below the lowest adjacent ground surface. More specific recommendations will be made when more definite structure details are known.

All continuous footings should have a minimum of two No. 4 reinforcing bars placed at the top and bottom of the footing. A grade beam reinforced as recommended above for footings and at least 12 inches square should be utilized across the garage entrance. The base of the reinforced beam should be at the same elevation as the bottom of the adjoining footings.

10.5.5 Concrete Slabs

Concrete slabs in moisture sensitive areas should be underlain with a vapor barrier consists of a minimum of six mil polyvinyl chloride membrane with all laps sealed. A minimum of one inch of sand should be placed over the membrane to aid in uniform curing of concrete.

Concrete slabs should be reinforced with a minimum 6x6-6/6 welded wire mesh or its equivalent. All slab reinforcement should be supported to ensure proper positioning during placement of concrete. Garage slab should be pours separately from the residence footings. A positive separation should be maintained with expansion joint materials to permit relative movement.

10.6 Retaining Wall

The earth pressure to be utilized for cantilever retaining wall may be computed as an equivalent fluid having density of 40 pounds per cubic foot (pcf) provided the slope backfill behind the wall is level.

Wall should be provided with subdrains, as shown in the attached figure, to reduce the potential for the buildup of hydrostatic pressure. Backdrains could consist of free drainage materials (SE of 30 or greater) or CalTran Class 2 permeable materials immediately behind the wall and extending to within 18 inches of the ground surface. A perforated pipe should be installed at the base of the backdrain and sloped to discharge to a suitable collection facility or through weep holes. Alternatively, commercially available drainage fabric may be used. The fabric manufacturer's recommendations should be followed in the installation of the drainage fabric backdrain.

10.7 Trench Excavation

All trench excavations should conform to CAL-OSHA and local safety codes. All utilities trench backfill should be brought to near optimum moisture content and then compacted to obtain a minimum relative compaction of 90 percent of ASTM D-1557-91.

11.0 CORROSION POTENTIAL

Chemical laboratory tests were conducted on the existing onsite near surface materials sampled during EGL's field investigation to aid in evaluation of soil corrosion potential and the attack on concrete by sulfate soils. The testing results are presented below:

Sample Location	PH	Chloride (ppm)	Sulfate (ppm)	Min. Resistivity (ohm/cm)
BH-1 @ 0'-5'	7.48	160	3090	420

APPENDIX A
FIELD INVESTIGATION

Subsurface conditions were explored by excavating 20 test pits, two bucket auger borings and two 8-inch diameter hollow stem auger borings to a maximum depth of 91.5 feet at approximate locations shown on the enclosed Geological Plan, Figure 2. Upon completion of excavating, the test pits and borings were backfilled with onsite soils that were removed from the excavations.

The excavating of the test pits and borings were supervised by an EGL's engineer and an engineering geologist, who continuously logged the borings and visually classified the soils in accordance with the Unified Soil Classification System. Ring samples were taken at frequent intervals. These samples taken from hollow stem borings were obtained by driving a sampler with successive blows of 140-pound hammer dropping from a height of 30 inches.

Representative undisturbed samples of the subsurface soils were retained in a series of brass rings, each having an inside diameter of 2.42 inches and a height of 1.00 inch. All ring samples were transported to our laboratory. Bulk surface soil samples were also collected for additional classification and testing.

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TENTATIVE TRACT/MINOR LAND SUBDIVISION 52652 TENTATIVE MAP DATED 11/23/98
ENGINEER Dolinsky LOCATION Woodland Hills
SUBDIVIDER Han,Shu; Hsia, Lydia; Shing,Ching
GEOLOGY CONSULTANT Environmental Geotechnology Laboratory REPORT DATE 11/9/98
SOILS CONSULTANT Environmental Geotechnology Laboratory REPORT DATE 11/9/98

The Regional Planning Commission, developer and engineer are advised that:

PRIOR TO APPROVAL OF TENTATIVE TRACT OR MINOR LAND SUBDIVISION MAP:

1) The geotechnical engineering units review sheet is attached (dated 1/14/99 ?).
2) Dark shales of the Modelo/Topanga Formation are known to contain large amounts of soluble iron sulfides. Upon exposure to oxygen and water the sulfide minerals are oxidized to form sulfate compounds, including gypsum. Heaving is associated with this process. Previously submitted reports by Pacific Soils documents this process. Please discuss the potential for this hazard and provide mitigation as necessary. As per the submitted boring logs gypsum and dark shales exist beneath the site. It should also be noted that the structures east of the proposed subdivision has suffered from this geotechnical hazard. This hazard could specific impact cut pads which expose these materials.
3) Topography and grading depicted on the submitted Tentative Tract Map and Geologic Map is unreadable. Please utilize the topographic map prepared by Lawerence Vadasz on October,1985 (Regional Planning Date 11/23/98) as a base for the grading plan and geologic map. A complete review of the proposed project can not be completed until this requirement is fulfilled.
4) As noted on the submitted geologic map the overall structure appears to dip to the south. However the log of boring B-1 indicates that dips to the south are present below 22'. This structure is adverse for the stability of the steep high natural north facing slope below boring B-1. Provide this office with a geologic cross section oriented in a north south direction through Boring B-1 and extend to the bottom of the canyon north of the proposed project. Show on the cross section all the structural data collected in B-1.
5) As noted on the submitted geologic map the overall structure appears to dip to the south. However the log boring B-1 indicates that dips to the south are present below 22'. This structure is adverse for the stability of the steep high natural north facing slope below boring B-1. The description of the material contain descriptions of highly fractured and sheared bedrock, and polished surfaces. This description, structure, aerial photos and topography point to the possibility of a landslide that failed to the north into the large deep canyon.
Page 9 of the submitted report indicates that B-2 also indicates that the bedrock, in the area, also is highly disturbed with a wide range of structural variations. The report goes on to indicate that there is a possibility of landsliding in the area of B-1.
Please completely discuss the possibility of landsliding in the area of B-1 and B-2.
6) Provide this office with a north-south oriented geologic cross section through B-2 and extend to the bottom of the canyon north of the proposed project.
7) Provide this office with a series of north-south oriented geologic cross sections through the south facing slopes along the southern boundary of the proposed subdivision.
8) Please provide this office with page 20 (references) of the submitted report. This page was left out of the submitted reports.
9) Please provide this office with a copy of Pacific Soils Engineering reports dated 1965 and Geosoils report dated 1982.
10) On 12/4/91 this office received a letter from Slosson & Associates regarding distress observed in the area of Vickiview Drive and Welby Way. In this letter it was indicated that an "apparent northerly movement vector is suggested by approximately east/west trending cracks in the streets and on properties comprising the northerly portion of Randiwood Lanes, Vickiview Drive, Daryn Drive as well as the intersection of these streets with Welby Way". This letter goes on to list a number of possibilities that could account for this distress. The letter indicates that a east-west trending normal fault was mapped across the area and that the north side of the fault may be moving down relative to the south and therefore causing the distress. A number of other possibilities as also discussed. A copy of this letter is attached. This distress/fault may impact the proposed development. Please respond in detail.
11) Please recommend subdrains where deemed necessary and depict on the geologic map.

12) The submitted geotechnical report indicates that subsurface materials contain a high percentage of water. Please discuss the possibility of groundwater/perched groundwater in the area after development has been completed. Yard watering can often increase groundwater. Provide mitigation as deemed necessary. See item 11 above. Should groundwater/perched groundwater be utilized in the slope stability analyses?

NOTES: Provide a copy of this review with your resubmittal.

Reviewer: _____ Date January 20, 1999

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

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Alhambra, CA 91803
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Fax: (626) 458-4913
Calling hours - Monday through Thursday 8-9 a.m. & 3-4 p.m.

District Office 9.1

Sheet 1 of 3

DISTRIBUTION:

Tentative Tract Map 52652
Location West of Randiwood Lane, West Hills
Developer/Owner Han & Hsia
Engineer/Architect Dolinsky
Soils Engineer EGL
Geologist Same as above

__ Drainage and Grading
__ Geo/Soils Central File
__ District Engineer
__ Geologist
__ Soils Engineer
__ Engineer/Architect

Review of:

Tentative Tract Map Dated By Regional Planning 11/23/98
Geotechnical Report Dated 11/9/98

Previous review sheet dated 12/17/98

ACTION:

Tentative Map is not approved for feasibility.

REMARKS:

1. Ultimate shear strength parameters must be used in static and surficial slope stability analyses. Indicate the type of shear strength parameters (i.e. ultimate, peak, etc.) used in the slope stability analyses.

2. Clarify if the direct shear test samples were undisturbed or remolded.

3. Based on the high moisture contents in the existing fill material and the potential water infiltration due to rainfall and irrigation, it appears that a phreatic surface could develop within the existing fill material. Therefore, the slope stability analyses must consider a maximum expected phreatic surface.

4. Upon clarification of the above-mentioned items, a complete review of the slope stability analyses submitted will be conducted.

5. Provide static, seismic and surficial slope stability analyses for all slopes steeper than 2:1 gradient. Also, provide a geotechnical cross section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.

6. Provide static and seismic slope stability analyses for the area located near boring B-1. The analyses must consider the adverse shears indicated on the boring log. Shear strength parameters utilized must be representative of the clay shear material. Also, provide a geotechnical cross section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.

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DISTRIBUTION:

Tentative Tract Map 52652
Location West of Randiwood Lane, West Hills
Developer/Owner Han & Hsia
Engineer/Architect Dolinsky
Soils Engineer EGL
Geologist Same as above

__ Drainage and Grading
__ Geo/Soils Central File
__ District Engineer
__ Geologist
__ Soils Engineer
__ Engineer/Architect

REMARKS CONT.:

7. Provide static and seismic slope stability analyses for all adverse bedding conditions in the vicinity of the southern tract boundary. Shear strength parameters utilized must be representative of the bedding plane material. Also, provide a geotechnical cross section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.

8. Per the geotechnical report, the existing fill is compressible (up to 12 inches of total settlement); subdrains were not confirmed; unsuitable soils were not removed prior to fill placement; and fill material and structures are proposed over the fill material without removal and recompaction of the fill material. This is unacceptable. Verify and recommend mitigation as necessary.

9. Discuss the creep-affected bedrock areas. Provide analyses and mitigation as necessary.

10. It appears that settlement monuments will be required in the deep fill areas to confirm the anticipated amounts of settlement. Verify and revise as necessary.

11. All compressible soil greater than five feet in thickness that will not be mitigated must be designated as "Restricted Use Area".

12. Provide an owner's statement clarifying if grading is proposed by the applicant and the intended use of the areas outside of the proposed lots (e.g. Open Space, Remainder Parcel, etc.).

13. Show the following on the geotechnical map:

    a. Approximate limits and depth of removal and recompaction of unsuitable soils.
    b. Locations of settlement monuments, if applicable.
    c. Limits of "Restricted Use Areas", if applicable.

14. Requirements of the Geology Section are attached.

15. Include a copy of this review sheet with your response.

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TENTATIVE TRACT/MINOR LAND SUBDIVISION 52652 TENTATIVE MAP DATED 11/23/98
ENGINEER Dolinsky LOCATION Woodland Hills
SUBDIVIDER Han,Shu; Hsia,Lydia; Lin,Shing Ching ☐ CONTRACT CITY (JOB #)
GEOLOGY CONSULTANT NA REPORT DATE NA
SOILS CONSULTANT NA REPORT DATE NA

The Regional Planning Commission, developer and engineer are advised that:

PRIOR TO APPROVAL OF TENTATIVE TRACT OR MINOR LAND SUBDIVISION MAP:

(✔) The site is located within a "Seismic Hazard Zone" and may be subject to seismically induced landsldies. Therefore submitted three (3) copies of the reports requested below.

(✔) A soils report will be required The geotechnical engineeering units review is attached (dated 12/17/98).

(✔) An engineering geologic report will be required to evaluate the feasibility of the proposed subdivision.

(✔) Submit to this office a complete "Zoning & Subdivision Application". Will Grading be done by the Applicant?

NOTES: Provide a copy of this review with your resubmittal.

Reviewer: Wtgomery Date December 17, 1998

NOTICE: Public safety relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.

F-RS:FORM.1
7/15/97

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
__ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT 52652
SUBDIVIDER Faye Estates, LLC
ENGINEER S.E.C. Civil Engineers
GEOLOGIST Pacific Soils Engineering, Inc.; EGL
SOILS ENGINEER Pacific Soils Engineering, Inc.; EGL

TENTATIVE MAP DATED 11/08/06 (revised) Exhibit A
LOCATION Woodland Hills

REPORT DATE 11/17/06, 7/10/06; 11/09/98
REPORT DATE 11/17/06, 7/10/06; 11/09/98

The Regional Planning Commission, developer, and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR PARCEL MAP:

1. Provide the off-site topography on which the southern portions of Geotechnical Sections 5-5' through 10-10' are based. All contacts illustrated on Sections 5-5' through 10-10' must be shown on the map, i.e. existing af, proposed af/keyway, etc. and all substantiating data for existing conditions.

2. Provide substantial detail for the geologic structure on the sections provided (5-5' through 10-10') to substantiate the Tmss/Tmsh contact. Based on the boring provided for the south-facing slope, B-102, shale and siltstone occur at several intervals in the upper 35 feet and could act as potential failure surfaces.

3. Please describe why the area south of the "Geological Setback Line" is recommended to be placed into a restricted use area. If the consultant is recommending an RUA for this area the proposed tennis courts/recreation area may require relocation to an area not contained within an RUA.

4. As stated previously on the review sheets dated 6/21/06 and 8/24/06: The consultant must address the potential for a heaving bedrock condition occurring within the proposed subdivision, which appears to have occurred within the neighboring tracts to the east (Tr 30057 and Tr 31548). (Please Note: Tract 45342 had extremely high sulfate levels without heaving but is sufficiently distant to the currently proposed tract to have little correlation with a potential for heaving at the subject site).

5. The Soils Engineering review dated 12/14/06 is attached.

NOTE Provide a copy of this review with your resubmittal

Prepared by Karin Burger Reviewed by _____ Date December 12, 2006

P:\Gmepub\Geology Review\Forms\Form01.doc
10/30/03

PLATE A-1

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 9.1
Job Number GMTR
Sheet 1 of 1 4

Review No. 3

Tentative Tract Map 52652

Location	Woodland Hills
Developer/Owner	Faye Estates, LLC
Engineer/Architect	SEC Civil Engineer
Soils Engineer	Pacific Soils (102637)
Geologist	Same as above

DISTRIBUTION:
___ Grading/ Drainage
1 Geo/Soils Central File
1 Land Development
1 Geologist
1 Soils Engineer
___ Engineer/Architect

Review of:
Revised Tentative Tract Map and Exhibit A Dated By Regional Planning 5/30/06
Soils Engineering and Geologic Reports Dated **11/17/06**, 8/18/06 and 7/10/06
Soils Engineering and Geologic Report By EGL Dated 11/9/98
Previous review sheet dated 9/7/06

ACTION:
Tentative Map feasibility is not recommended for approval.

REMARKS:
1. Requirements of the Geology Section are attached.

2. Provide the following information or test results for use in the slope stability analyses of the south-facing slopes:
   a. Revised cross-sections based on **actual** site topography, as-built keyway dimensions, etc. as requested by the Geology Section.
   b. Along bedding (or repeated) shear strength test results to substantiate the shear strength parameters of sheared clay, fractures, beddings, and other weak zones used in the slope stability analyses.

3. Provide the following additional and/or revised slope stability analyses of the south-facing slopes:
   a. Revised stability analyses of cross-sections based on **actual** site topography, as-built keyway dimensions, etc. as necessary. Recommend mitigation if factors of safety are below County minimum standards.
   b. Additional stability analyses of the lower potions of the slopes. If the results of the stability analyses are below County minimum standards, then provide additional stability analyses of the upper portions of the slopes using a post failure geometry that assumes the lower potion of the slope has failed. Recommend mitigation if factors of safety are below County minimum standards.
   c. Revised stability analyses utilizing shear strength parameters that are representative of sheared clay, fractures, beddings, and other weak zones as necessary. Recommend mitigation if factors of safety are below County minimum standards.
   d. Additional stability analyses considering bedding dip angles of 12 to 23 degrees. Recommend mitigation if factors of safety are below County minimum standards.

4. As requested by the Geology Section, address the distress observed in areas adjacent to this proposed subdivision as stated in the letter by Slosson & Associates dated 12/4/91. Based on the results of additional investigation with respect to the distress observed in areas adjacent to this proposed subdivision, recommend mitigation as necessary.

5. Show all recommended mitigation measures on the geotechnical map.

6. Include a copy of this review sheet with your response.

NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER
A. ON-SITE SOILS ARE CORROSIVE TO CONCRETE AND FERROUS METALS.
B. ON-SITE SOILS HAVE A MEDIUM TO HIGH EXPANSION POTENTIAL.

REGISTERED GEOTECHNICAL ENGINEER
NO. 2328
EXP. 6/30/07
STATE OF CALIFORNIA

Prepared by _____ Date 12/14/06
Gan Long

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.
Gan:tract-52652

PLATE A-2

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/4/97
DATE FINISHED 11/4/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 998
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-105
LOGGED BY JMC
NOTE 0-27' 4500#; 27-52' 3700#; 52-80' 2700#; 80-103' 1,000#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
						SOIL: Silty Clay, dry, loose, porous, roots.				
						LANDSLIDE DEBRIS (Qls): Silty Clay, light brown to tan, dry, loose, porous, roots, shale fragments, occasional krotovinas.				
	995									
5		R	1			Cherty Shale, dark gray brown, very hard, brittle, fractured.	31.2	57	43	
	990				@ 7' B: N10W10SW	Clay Shale, brown to dark olive gray, moist, dense, fractured, interbedded with Cherty Shale, dark gray, very hard, fractured, occasional Sandstone interbeds, yellowish orange, fine-grained, thin bedded, moist, dense, some gypsum along bedding, bedding continuous around boring.				
10		R	PUSH				29.7	84	81	
	985									
15		R	1		@ 15' B: N25W12SW		38.6	80	94	
	980									
20		R	2				82.6	33	55	
	975				@ 23' B: N15W25SW	Cherty Shale, dark gray, dense, very hard, bedding continuous around boring.				
25		R	2				84.5	32	53	
	970									
30		R	2				37.6	80	91	
	965				@ 31' B: N15W35SW @ 33' J: N80E75SE	Clay Shale, brown to dark olive brown, moist, dense, fractured, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, moist, dense, bedding continuous around boring, common gypsum fracture filling and gypsum along bedding.				
35		R	3				29.5	81	73	
	960									

SAMPLE TYPES:
[R] RING (DRIVE) SAMPLE
[S] SPT (SPLIT SPOON) SAMPLE
[B] BULK SAMPLE [T] TUBE SAMPLE

GROUNDWATER LEVEL
WATER SEEP
[B] BEDDING [C] CONTACT
[J] JOINTING [F] FAULT
[S] SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-10

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/4/97
DATE FINISHED 11/4/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 998
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-105
LOGGED BY JMC
NOTE 0-27' 4500#; 27-52' 3700#; 52-80' 2700#; 80-103' 1,000#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
		R	4		@ 40' B: N20W18SW @ 41' J: N10E70SE	Cherty Shale, dark gray, dense, very hard, fractured, bedding, continuous around boring. @ 41 feet, open fractures.	32.4	89	98	
	955									
45		R	3				46.2	74	98	
					@ 46' B: N10W18SW	Clay Shale, dark olive gray, moist, dense, moderately hard, fractured, interbedded with Sandstone, yellowish orange, fine-grained thin bedded, moist, dense, common thin bentonitic clay laminations, light gray to white, up to 1/4" thick.				
	950									
50		R	5		@ 50' B: N10W24SW		31.5	87	90	
	945									
55						@ 55 feet, Cherty Shale Bed, 1' thick, dark gray, dense, very hard, fractured, gypsum along fractures and bedding.				
					@ 56' B: N25W30SW					
	940									
60		R	9				27.2	89	83	
					@ 62' B: N10W15SW					
	935									
65										
					@ 67' B: N20W18SW					
	930									
70		R	3				31.8	87	93	
		B				@ 71 feet, Slide Plane, Fat Clay, gray brown, moist to very moist, soft, jumbled.				MAX DSR El
					@ 72' Qls: N55W12SW	**MODELO FORMATION (Tm):** Clay Shale, dark brown to black, moist, dense, hard to very hard. @ 73 feet, very hard, ripper and core bucket used, refusal.				
	925					Total Depth 74 feet. No water. No caving.				

SAMPLE TYPES:
[R] RING (DRIVE) SAMPLE
[S] SPT (SPLIT SPOON) SAMPLE
[B] BULK SAMPLE [T] TUBE SAMPLE

GROUNDWATER LEVEL
WATER SEEP
[B] BEDDING [C] CONTACT
[J] JOINTING [F] FAULT
[S] SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-11

GEOTECHNICAL BORING LOG

PROJECT NO.	102344	PROJECT NAME	Shea Homes	BORING DESIG.	B-110
DATE STARTED	11/6/97	GROUND ELEV.	1080	LOGGED BY	JMC
DATE FINISHED	11/6/97	GW DEPTH (FT)		NOTE	0-24' 3548#; 24-47' 2577#; 47-73' 1648#; 73-95' 810#
DRILLER		DRIVE WT.			
TYPE OF DRILL RIG	30" Bucket Auger	DROP			

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	1080					**SOIL:** Silty Clay, dark brown, dry, loose, porous, roots, shale fragments.				
						LANDSLIDE DEBRIS (Qls): Silty Clay, light brown to tan, dry, loose, porous, roots, shale fragments, caliche.				
5	1075									
						Silty Clay, dark olive brown, damp, abundant clay shale and cherty shale fragments, roots.				
10	1070	R	1				31.7	78	74	CON
						Clay Shale, dark olive gray, damp to moist, moderately dense, fractured, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, damp, dense, common Cherty Shale Beds, dark gray, highly fractured, bedding discontinuous.				
					@ 14' B: N60W15NE	@ 14 feet, bedding continuous around boring.				
15	1065									
					@ 18' B: N30W8NE	@ 18 feet, bedding continuous around boring.				
20	1060	R	PUSH				35.7	79	85	
					@ 22' B: N35W22NE	Cherty Shale, dark gray, dense, very hard, fractured with gypsum fracture filling.				
25	1055									
					@ 27' B: N40W23NE	Clay Shale, dark olive gray, moist, dense, moderately hard, fractured, gypsum along fracture and bedding surfaces, interbedded with Sandstone, yellowish orange, fine-grained, moist, dense, bedding continuous and unbroken around boring.				
		B								
30	1050	R	5		@ 30' B: N10W25NE	Cherty Shale, dark gray, dense, very hard, fractured, gypsum along fracture surfaces.	33.5	83	88	
						Clay Shale, brown to dark olive gray, moist, dense, moderately hard to hard, fractured, gypsum along fractures and bedding, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, moist, dense, common Cherty Shale Beds, dark gray, dense, very hard, fracture.				
35	1045				@ 35' B: N40W17NE					
					@ 38' B: N30W17NE	@ 38 feet, Cherty Shale Layer continuous around boring.				
	1040									

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

- GROUNDWATER LEVEL
- WATER SEEP
- B BEDDING
- J JOINTING
- C CONTACT
- F FAULT
- S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-23

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/6/97
DATE FINISHED 11/6/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 1080
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-110
LOGGED BY JMC
NOTE 0-24' 3548#; 24-47' 2577#; 47-73' 1648#; 73-95' 810#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	1040	R	2		@ 42' B: N10W12NE		32.9	84	88	CON
45	1035				@ 47' B: N20E12SE	@ 48 feet, Cherty Shale Bed, 6" thick, continuous around boring.				
50	1030	R	12			Clay Shale, dark brown, moist, dense, hard, fractured with gypsum, fracture filling, bedding continuous around boring, common Siliceous Shale and Cherty Shale interbeds.	48.6	71	96	
					@ 53' B: N40W17NE	@ 53 feet, cherty shale layer, continuous around boring.				
55	1025				@ 58' B: N25W13NE	Clay Shale, dark olive gray, moist, dense, moderately hard, fractured with gypsum fracture filling, interbedded with Sandstone, yellowish orange, fine-grained, moist,				
60	1020	R	8			dense, common white bentonitic clay layers and nodules.	40.5	75	87	
					@ 63' B: N40W10NE	Cherty Shale, dark gray, dense, very hard, fractured.				
65	1015					Cherty Shale, dark brown to dark olive gray, moist, dense, hard, fractured with gypsum along fractures and bedding, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, moderately dense.				
					@ 69' B: N20W8NE					
70	1010	R	7				41.9	79	100	
						@ 73 feet, Siliceous Shale Layer, 1' thick, yellowish orange, dense, very hard, fractured.				
75	1005				@ 75' B: N50W15NE					
						Claystone, dark brown, moist, dense, fractured, massive.				
						@ 80 feet, Slide Plane: Clay, 1" thick, dark brown, soft,				
	1000									

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

- GROUNDWATER LEVEL
- WATER SEEP
- B BEDDING
- J JOINTING
- C CONTACT
- F FAULT
- S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-24

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/6/97
DATE FINISHED 11/6/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 1080
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-110
LOGGED BY JMC
NOTE 0-24' 3548#; 24-47' 2577#; 47-73' 1648#; 73-95' 810#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	1000	R	30/6"		@ 80' Qls: N50W15NE @ 81' B: N45W15NE	sheared. **MODELO FORMATION (Tm):** Clay Shale, brown to olive gray, moist, dense, hard, gypsum along bedding, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, moist, dense.	31.1	87	91	DS
85	995				@ 84' B: N40W15NE					
						@ 88 feet, very hard, refusal.				
						Total Depth 88 feet. No water. No caving.				

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

GROUNDWATER LEVEL
WATER SEEP
B BEDDING
J JOINTING
C CONTACT
F FAULT
S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-25

W.O. 102637

PLATE B-5

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/7/97
DATE FINISHED 11/7/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 985
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-114
LOGGED BY JMC
NOTE 0-24' 4500#; 24-52' 3700#; 52-80' 2700#; 80-103' 1,000#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	985					Pad in 2' of cut.				
						LANDSLIDE DEBRIS (Qls): Clay Shale, olive gray, damp, moderately dense, fractured, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, occasional light gray bentonitic clay layers, caliche, roots.				
5	980									
					@ 8' J: N60E75SE	Clay Shale, dark olive gray, moist, dense, fractured, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, occasional light gray bentonitic clay layers up to 1" thick.				
10	975	R	PUSH				36.9	84	100	
						Clay Shale, brown to dark brown, moist, dense, moderately hard, occasionally diatomaceous, occasional light gray, bentonitic clay layers up to 1/2" thick.				
					@ 14' B: N70E12SE					
15	970									
20	965	R	1				36.2	80	88	
					@ 21' B: N50E12SE	@ 21 feet, Cherty to Siliceous Shale layer, yellowish orange to dark gray, dense, very hard, fractured, 1' thick.				
					@ 24' B: N40W16NE	@ 24 feet, Cherty Shale layer, dark gray, dense, very hard, highly fractured, discontinuous around boring.				
25	960					Clay Shale, dark olive gray, moist, dense, highly fractured, interbedded with Sandstone, yellowish orange, fine-grained, thin bedded, occasionally diatomaceous to cherty, common bentonitic clay layers up to 1/2" thick, bedding broken and discontinuous.				
					@ 27' B: N10W15NE					
30	955	R	2				24.9	88	73	
					@ 32' B: N10W8SW					
35	950									
					@ 36' B: N60W18SW	Diatomaceous to Siliceous Shale, light gray to yellowish orange, dense, very hard, fractured.				
					@ 39' J:					
	945									

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

- GROUNDWATER LEVEL
- WATER SEEP
- B BEDDING
- J JOINTING
- C CONTACT
- F FAULT
- S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-33

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/7/97
DATE FINISHED 11/7/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 985
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-114
LOGGED BY JMC
NOTE 0-24' 4500#; 24-52' 3700#; 52-80' 2700#; 80-103' 1,000#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	945	R	4		N70E80NW		38.5	84	99	
						Clay Shale, brown to dark brown, moist, dense, moderately hard, occasional Diatomaceous Shale layers, and Bentonitic Clay layers, slight petroliferous odor, bedding continuous around boring.				
					@ 44' B: N40W22SW					
45	940				@ 45' J: N45E52SE	Diatomaceous to Cherty Shale, light gray to dark gray, dense, hard to very hard, fractured, discontinuous bedding.				
					@ 49' B: N70W17SW					
50	935	R	9				25.3	94	87	
					@ 53' B: N50W15SW					
						Clay Shale, brown to dark brown, moist, dense, moderately hard, fractured, occasional light gray bentonitic clay layers up to 1" thick, bedding continuous around boring.				
55	930									
					@ 59' B: N40W12SW					
60	925	R	12				24.9	95	88	
						Claystone, brown to dark brown, moist, dense, highly fractured, sheared, massive, soft to firm.				
65	920									
					@ 68' J: N70E80NW					
						Clay Shale, brown to dark brown, moist, dense, moderately hard, fractured, occasionally diatomaceous, bedding broken and discontinuous, gypsum along fractures and bedding, slight petroliferous odor.				
70	915	R	7		@ 70' B: N60W10SW		40.7	79	98	
75	910				@ 75' B: N65W16SW					
	905									

SAMPLE TYPES:
- [R] RING (DRIVE) SAMPLE
- [S] SPT (SPLIT SPOON) SAMPLE
- [B] BULK SAMPLE [T] TUBE SAMPLE

- GROUNDWATER LEVEL
- WATER SEEP
- [B] BEDDING [C] CONTACT
- [J] JOINTING [F] FAULT
- [S] SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-34

GEOTECHNICAL BORING LOG

PROJECT NO. 102344
DATE STARTED 11/7/97
DATE FINISHED 11/7/97
DRILLER
TYPE OF DRILL RIG 30" Bucket Auger

PROJECT NAME Shea Homes
GROUND ELEV. 985
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. B-114
LOGGED BY JMC
NOTE 0-24' 4500#; 24-52' 3700#; 52-80' 2700#; 80-103' 1,000#

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	905	R	20				31.7	87	91	
					@ 83' B: N50W18SW	Cherty Shale, dark gray, dense, very hard, fractured, gypsum along bedding and fracture surfaces.				
85	900	B				Clay Shale, dark brown to black, moist, dense, hard, fractured, slight petroliferous odor, bedding broken and discontinuous.				
					@ 89' B: N40EVert.					
90	895	R	20/6"				24.1	84	65	
		B			@ 92' Qls: N60E12SE	Clay, dark gray, moist, highly sheared, some Sand, light gray, fine-grained, 1' thick.				MAX DSR
					@ 94' B: N60E12SE	MODELO FORMATION (Tm): Clay Shale, dark brown to black, moist, dense, hard to very hard.				
95	890					@ 97.5 feet, very hard, refusal.				
						Total Depth 97.5 feet. No water. No caving.				

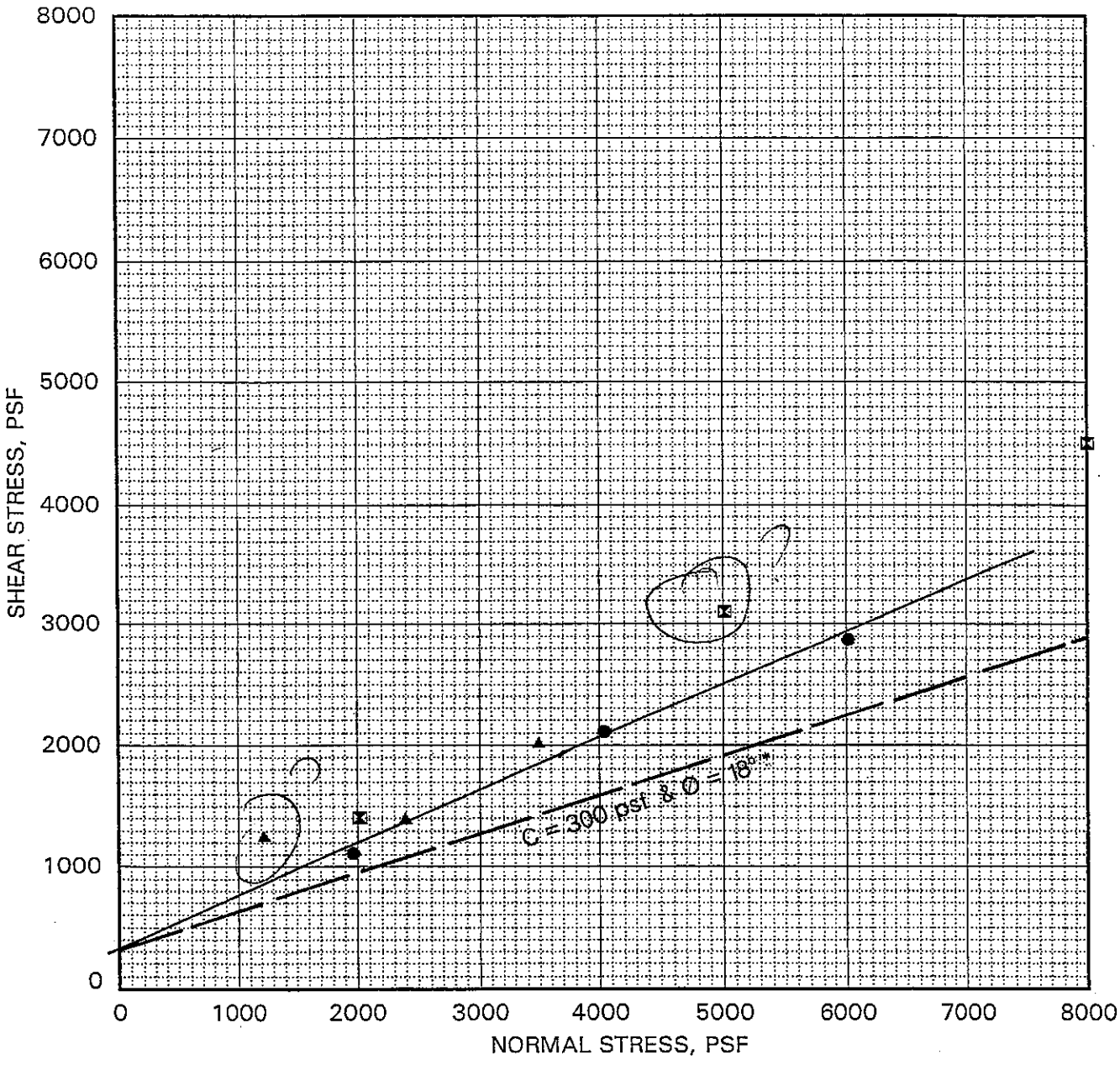
SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

- GROUNDWATER LEVEL
- WATER SEEP
- B BEDDING
- J JOINTING
- C CONTACT
- F FAULT
- S SHEAR

PACIFIC SOILS ENGINEERING, INC.

PLATE A-35

DIRECT SHEAR TEST



SLIDE PLANE MATERIAL	COHESION 300 psf.
	FRICTION ANGLE 24.0 degrees

*RESIDUAL VALUES UTILIZED IN ANALYSIS

symbol	boring	depth (ft.)	symbol	boring	depth (ft.)
●	B-105	71.0			
⊠	B-110	80.0			
▲	B-114	92.0			

DIRECT SHEAR TEST

PACIFIC SOILS ENGINEERING, INC.

FROM:
W.O. 102344 **PLATE B-22**

W.O. 102637 Plate C

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\5ARS.in
Output Filename: C:\BILL'S engineer\stabldata\102637\5ARS.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\5ARS.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 5-5'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	190.00	113.00	193.00	2
2	113.00	193.00	160.00	213.00	2
3	160.00	213.00	170.00	213.00	2
4	170.00	213.00	225.00	237.00	2
5	225.00	237.00	235.00	237.00	2
6	235.00	237.00	290.00	260.00	2
7	290.00	260.00	300.00	260.00	2
8	300.00	260.00	365.00	279.00	2
9	365.00	279.00	405.00	285.00	2
10	405.00	285.00	440.00	285.00	2
11	440.00	285.00	475.00	293.00	1
12	475.00	293.00	515.00	307.00	1
13	515.00	307.00	570.00	287.00	1
14	570.00	287.00	642.00	287.00	1
15	642.00	287.00	670.00	294.00	1
16	670.00	294.00	840.00	294.00	1
17	0.00	173.00	70.00	175.00	1
18	70.00	175.00	93.00	180.00	1
19	93.00	180.00	123.00	192.00	1
20	123.00	192.00	165.00	191.00	1
21	165.00	191.00	182.00	194.00	1
22	182.00	194.00	230.00	210.00	1
23	230.00	210.00	300.00	248.00	1
24	300.00	248.00	437.00	281.00	1
25	437.00	281.00	440.00	285.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00

PLATE D-1

2	23.0	300.00	18.00
3	90.0	500.00	34.00

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
2000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	100.00	140.00	270.00	170.00	80.00
2	400.00	230.00	690.00	230.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 2000
Number of Trial Surfaces With Valid FS = 2000
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.338	198.250
2	138.163	197.802
3	151.912	191.804
4	166.751	189.612
5	181.711	188.516
6	411.240	271.595
7	419.848	283.879
8	419.871	285.000

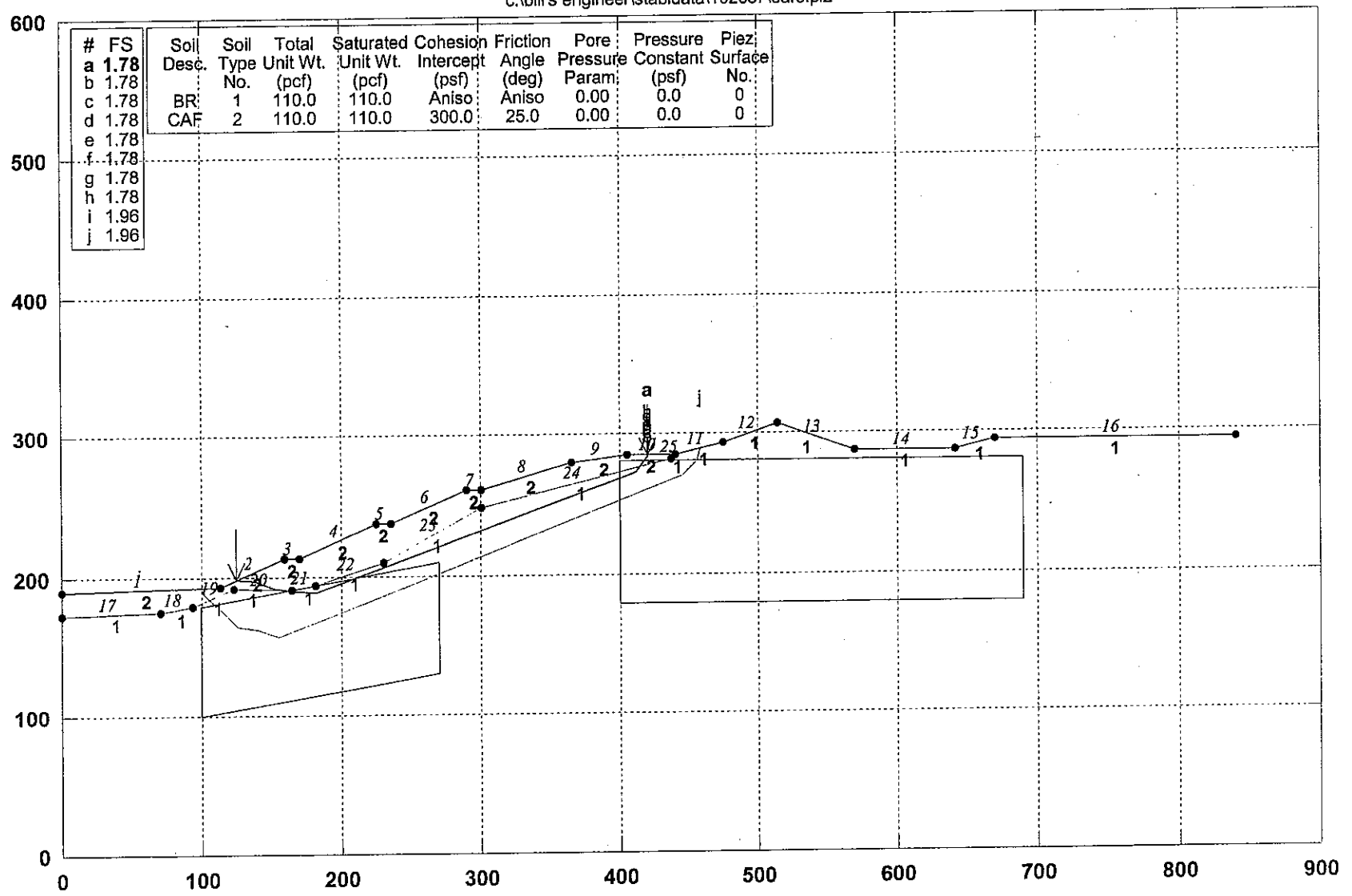
Factor of Safety
*** **1.777** ***

Individual data on the 20 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.8	4166.0	0.0	0.0	0.	0.	0.0	0.0	0.0
2	13.7	17891.6	0.0	0.0	0.	0.	0.0	0.0	0.0
3	4.0	8257.5	0.0	0.0	0.	0.	0.0	0.0	0.0
4	4.1	9600.8	0.0	0.0	0.	0.	0.0	0.0	0.0
5	5.0	12518.2	0.0	0.0	0.	0.	0.0	0.0	0.0
6	1.8	4479.6	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.2	8401.6	0.0	0.0	0.	0.	0.0	0.0	0.0
8	11.7	34278.8	0.0	0.0	0.	0.	0.0	0.0	0.0
9	0.3	941.7	0.0	0.0	0.	0.	0.0	0.0	0.0
10	43.0	147648.0	0.0	0.0	0.	0.	0.0	0.0	0.0
11	5.0	17550.6	0.0	0.0	0.	0.	0.0	0.0	0.0
12	5.0	16555.2	0.0	0.0	0.	0.	0.0	0.0	0.0
13	55.0	185987.1	0.0	0.0	0.	0.	0.0	0.0	0.0
14	10.0	33525.9	0.0	0.0	0.	0.	0.0	0.0	0.0
15	65.0	188794.2	0.0	0.0	0.	0.	0.0	0.0	0.0
16	40.0	87569.4	0.0	0.0	0.	0.	0.0	0.0	0.0
17	6.2	9975.4	0.0	0.0	0.	0.	0.0	0.0	0.0
18	2.7	3406.3	0.0	0.0	0.	0.	0.0	0.0	0.0
19	5.9	3470.7	0.0	0.0	0.	0.	0.0	0.0	0.0
20	0.0	1.4	0.0	0.0	0.	0.	0.0	0.0	0.0

CROSS-SECTION 5-5' W.O.102637

c:\bill's engineer\stabldata\102637\5ars.pl2



#	FS
a	1.78
b	1.78
c	1.78
d	1.78
e	1.78
f	1.78
g	1.78
h	1.78
i	1.96
j	1.96

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param	Pressure Constant (psf)	Piez Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF	2	110.0	110.0	300.0	25.0	0.00	0.0	0

GSTABL7 v.2 FSmin=1.78

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-3

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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****

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\5ARP.in
Output Filename: C:\BILL'S engineer\stabldata\102637\5ARP.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\5ARP.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 5-5'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	190.00	113.00	193.00	2
2	113.00	193.00	160.00	213.00	2
3	160.00	213.00	170.00	213.00	2
4	170.00	213.00	225.00	237.00	2
5	225.00	237.00	235.00	237.00	2
6	235.00	237.00	290.00	260.00	2
7	290.00	260.00	300.00	260.00	2
8	300.00	260.00	365.00	279.00	2
9	365.00	279.00	405.00	285.00	2
10	405.00	285.00	440.00	285.00	2
11	440.00	285.00	475.00	293.00	1
12	475.00	293.00	515.00	307.00	1
13	515.00	307.00	570.00	287.00	1
14	570.00	287.00	642.00	287.00	1
15	642.00	287.00	670.00	294.00	1
16	670.00	294.00	840.00	294.00	1
17	0.00	173.00	70.00	175.00	1
18	70.00	175.00	93.00	180.00	1
19	93.00	180.00	123.00	192.00	1
20	123.00	192.00	165.00	191.00	1
21	165.00	191.00	182.00	194.00	1
22	182.00	194.00	230.00	210.00	1
23	230.00	210.00	300.00	248.00	1
24	300.00	248.00	437.00	281.00	1
25	437.00	281.00	440.00	285.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	600.0	37.0	0.00	0.0	0
2	110.0	110.0	500.0	34.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	600.00	37.00

PLATE D-4

2	23.0	300.00	18.00
3	90.0	600.00	37.00

Specified Peak Ground Acceleration Coefficient (A) = 0.520(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.338	198.250
2	138.163	197.802
3	151.912	191.804
4	166.751	189.612
5	181.711	188.516
6	411.240	271.595
7	419.848	283.879
8	419.871	285.000

Janbu's Empirical Coefficient (fo) = 1.036
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 1.257

Table 1 - Individual Data on the 20 Slices

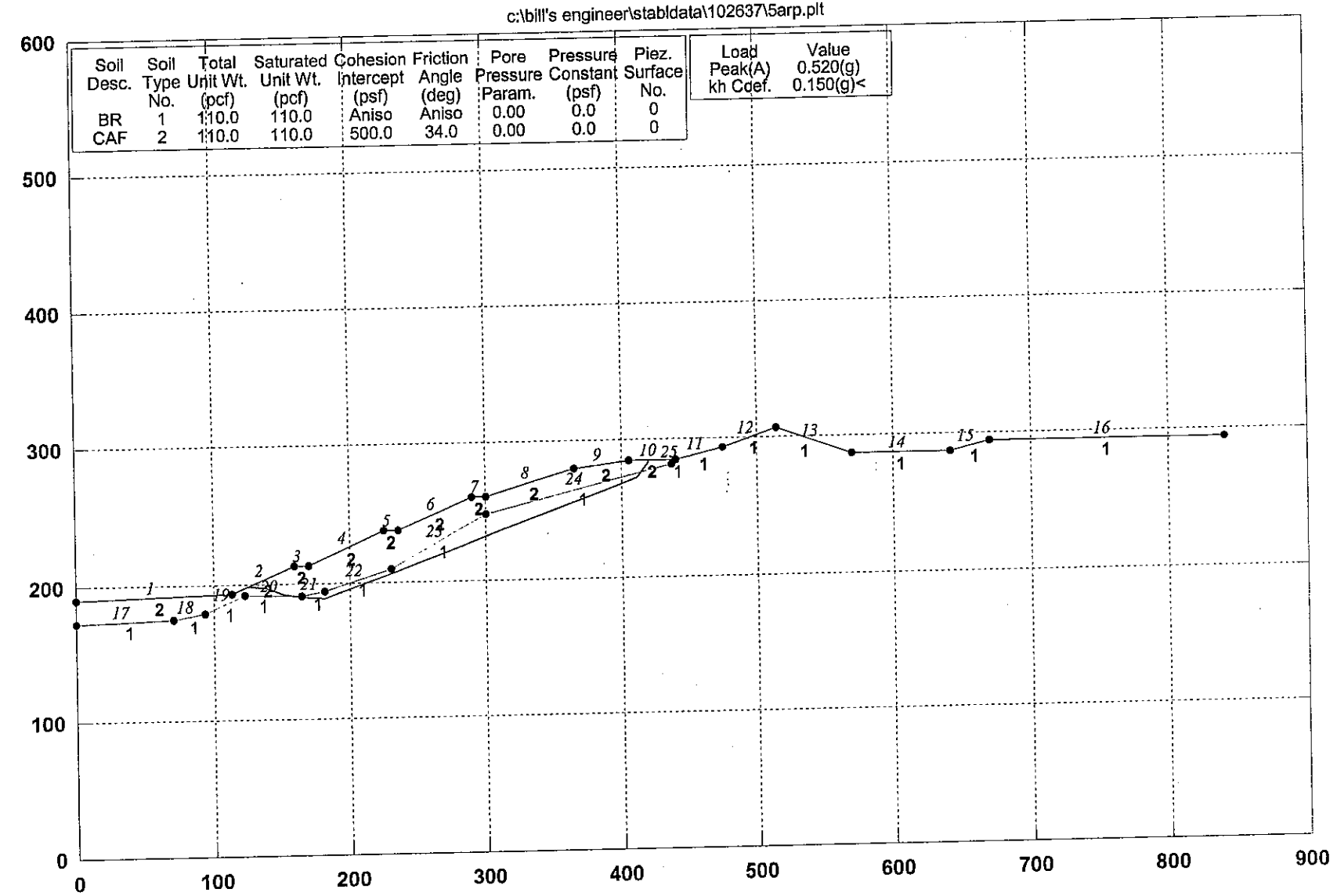
Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.8	4165.7	0.0	0.0	0.0	0.0	624.9	0.0	0.0
2	13.7	17891.5	0.0	0.0	0.0	0.0	2683.7	0.0	0.0
3	4.0	8258.4	0.0	0.0	0.0	0.0	1238.8	0.0	0.0
4	4.1	9599.7	0.0	0.0	0.0	0.0	1440.0	0.0	0.0
5	5.0	12518.0	0.0	0.0	0.0	0.0	1877.7	0.0	0.0
6	1.8	4479.9	0.0	0.0	0.0	0.0	672.0	0.0	0.0
7	3.2	8401.2	0.0	0.0	0.0	0.0	1260.2	0.0	0.0
8	11.7	34279.5	0.0	0.0	0.0	0.0	5141.9	0.0	0.0
9	0.3	941.1	0.0	0.0	0.0	0.0	141.2	0.0	0.0
10	43.0	147649.6	0.0	0.0	0.0	0.0	22147.4	0.0	0.0
11	5.0	17550.8	0.0	0.0	0.0	0.0	2632.6	0.0	0.0
12	5.0	16555.4	0.0	0.0	0.0	0.0	2483.3	0.0	0.0
13	55.0	185989.6	0.0	0.0	0.0	0.0	27898.4	0.0	0.0
14	10.0	33526.4	0.0	0.0	0.0	0.0	5029.0	0.0	0.0
15	65.0	188797.8	0.0	0.0	0.0	0.0	28319.7	0.0	0.0
16	40.0	87571.8	0.0	0.0	0.0	0.0	13135.8	0.0	0.0
17	6.2	9976.4	0.0	0.0	0.0	0.0	1496.5	0.0	0.0
18	2.7	3406.8	0.0	0.0	0.0	0.0	511.0	0.0	0.0
19	5.9	3470.4	0.0	0.0	0.0	0.0	520.6	0.0	0.0
20	0.0	1.4	0.0	0.0	0.0	0.0	0.2	0.0	0.0

CROSS-SECTION 5-5' W.O.102637

c:\bill's engineer\stabldata\102637\5arp.plt

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF	2	110.0	110.0	500.0	34.0	0.00	0.0	0

Load	Value
Peak(A)	0.520(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.26

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

PLATE D-6

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\6ars.in
Output Filename: C:\BILL'S engineer\stabldata\102637\6ars.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\6ars.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 6-6'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
22 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	170.00	100.00	170.00	1
2	100.00	170.00	151.00	170.00	1
3	151.00	170.00	312.00	235.00	2
4	312.00	235.00	327.00	235.00	2
5	327.00	235.00	373.00	260.00	2
6	373.00	260.00	385.00	260.00	2
7	385.00	260.00	415.00	275.00	2
8	415.00	275.00	470.00	275.00	2
9	470.00	275.00	557.00	305.00	1
10	557.00	305.00	590.00	290.00	3
11	590.00	290.00	700.00	290.00	3
12	700.00	290.00	707.00	287.00	3
13	707.00	287.00	740.00	287.00	3
14	740.00	287.00	770.00	287.00	1
15	770.00	287.00	848.00	305.00	1
16	848.00	305.00	1000.00	305.00	1
17	151.00	170.00	210.00	169.00	1
18	210.00	169.00	467.00	268.00	1
19	467.00	268.00	470.00	275.00	1
20	557.00	305.00	625.00	240.00	1
21	625.00	240.00	693.00	240.00	1
22	693.00	240.00	740.00	287.00	1

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	400.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00
2	23.0	300.00	18.00
3	90.0	500.00	34.00

PLATE D-7

1 PIEZOMETRIC SURFACE(S) SPECIFIED
Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 2 Coordinate Points
Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	604.00	260.00
2	713.00	260.00

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
2000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 22.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	140.00	105.00	430.00	210.00	80.00
2	550.00	230.00	800.00	230.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 2000
Number of Trial Surfaces With Valid FS = 2000
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.624	172.270
2	171.337	160.322
3	186.894	144.766
4	208.801	142.738
5	553.036	270.594
6	566.150	288.259
7	573.528	297.487

Factor of Safety
*** **1.714** ***
Individual data on the 17 slices

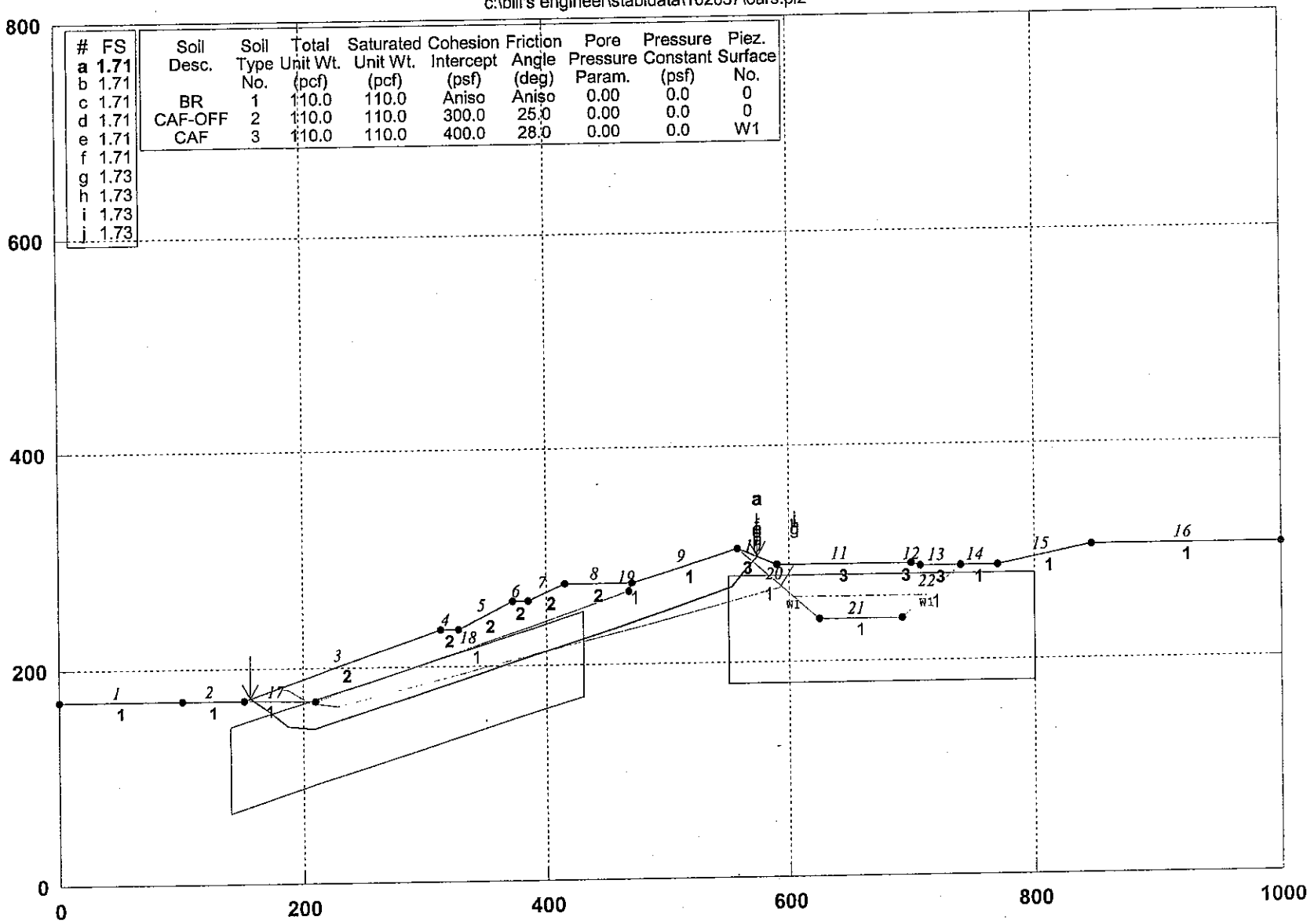
Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	3.0	591.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	11.7	13885.1	0.0	0.0	0.	0.	0.0	0.0	0.0
3	15.6	49297.1	0.0	0.0	0.	0.	0.0	0.0	0.0
4	21.9	108826.1	0.0	0.0	0.	0.	0.0	0.0	0.0
5	1.2	6677.8	0.0	0.0	0.	0.	0.0	0.0	0.0
6	102.0	586629.0	0.0	0.0	0.	0.	0.0	0.0	0.0
7	15.0	84391.1	0.0	0.0	0.	0.	0.0	0.0	0.0
8	46.0	264727.8	0.0	0.0	0.	0.	0.0	0.0	0.0
9	12.0	71341.4	0.0	0.0	0.	0.	0.0	0.0	0.0
10	30.0	177363.9	0.0	0.0	0.	0.	0.0	0.0	0.0
11	52.0	263224.9	0.0	0.0	0.	0.	0.0	0.0	0.0
12	3.0	11815.4	0.0	0.0	0.	0.	0.0	0.0	0.0
13	83.0	311862.3	0.0	0.0	0.	0.	0.0	0.0	0.0
14	4.0	13538.5	0.0	0.0	0.	0.	0.0	0.0	0.0
15	9.2	20960.3	0.0	0.0	0.	0.	0.0	0.0	0.0
16	3.6	3783.0	0.0	0.0	0.	0.	0.0	0.0	0.0
17	3.8	1322.5	0.0	0.0	0.	0.	0.0	0.0	0.0

CROSS-SECTION 6-6' W.O.102637

c:\bill's engineer\stabldata\102637\6ars.pl2

#	FS
a	1.71
b	1.71
c	1.71
d	1.71
e	1.71
f	1.71
g	1.73
h	1.73
i	1.73
j	1.73

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF-OFF	2	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	3	110.0	110.0	400.0	28.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.71

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-9

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\6arp Sur.in
Output Filename: C:\BILL'S engineer\stabldata\102637\6arp Sur.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\6arp Sur.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 6-6'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
22 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	170.00	100.00	170.00	1
2	100.00	170.00	151.00	170.00	1
3	151.00	170.00	312.00	235.00	2
4	312.00	235.00	327.00	235.00	2
5	327.00	235.00	373.00	260.00	2
6	373.00	260.00	385.00	260.00	2
7	385.00	260.00	415.00	275.00	2
8	415.00	275.00	470.00	275.00	2
9	470.00	275.00	557.00	305.00	1
10	557.00	305.00	590.00	290.00	3
11	590.00	290.00	700.00	290.00	3
12	700.00	290.00	707.00	287.00	3
13	707.00	287.00	740.00	287.00	3
14	740.00	287.00	770.00	287.00	1
15	770.00	287.00	848.00	305.00	1
16	848.00	305.00	1000.00	305.00	1
17	151.00	170.00	210.00	169.00	1
18	210.00	169.00	467.00	268.00	1
19	467.00	268.00	470.00	275.00	1
20	557.00	305.00	625.00	240.00	1
21	625.00	240.00	693.00	240.00	1
22	693.00	240.00	740.00	287.00	1

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	600.0	37.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	500.0	34.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	600.00	37.00
2	23.0	300.00	18.00
3	90.0	600.00	37.00

1 PIEZOMETRIC SURFACE(S) SPECIFIED
Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 2 Coordinate Points
Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	604.00	260.00
2	713.00	260.00

Specified Peak Ground Acceleration Coefficient (A) = 0.520(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 7 Coordinate Points

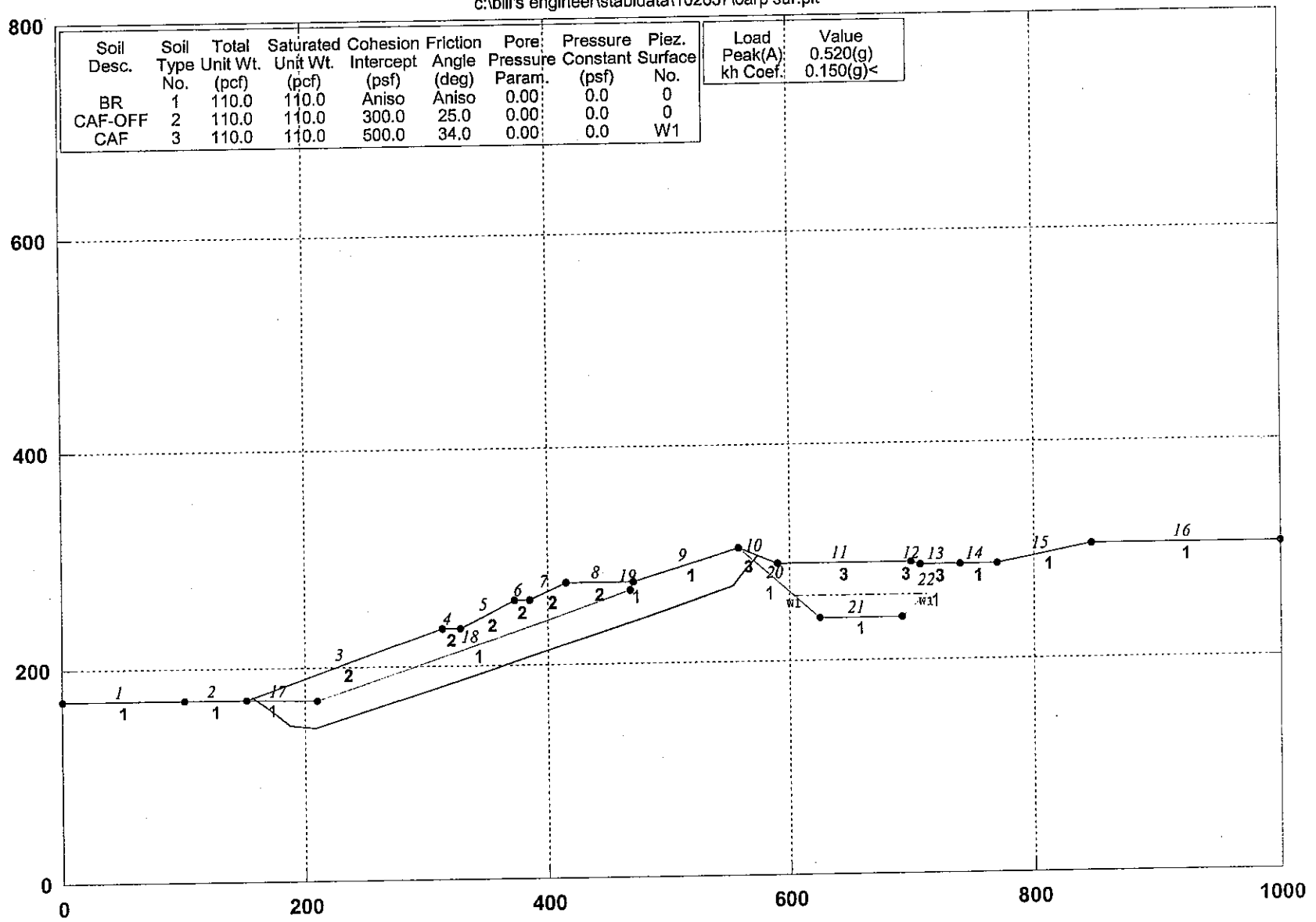
Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.624	172.271
2	171.337	160.322
3	186.894	144.766
4	208.801	142.738
5	553.036	270.594
6	566.150	288.259
7	573.528	297.487

Janbu's Empirical Coefficient (fo) = 1.043
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 1.295
Table 1 - Individual Data on the 17 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	3.0	592.0	0.0	0.0	0.0	0.0	88.8	0.0	0.0
2	11.7	13883.7	0.0	0.0	0.0	0.0	2082.6	0.0	0.0
3	15.6	49296.5	0.0	0.0	0.0	0.0	7394.5	0.0	0.0
4	21.9	108829.1	0.0	0.0	0.0	0.0	16324.4	0.0	0.0
5	1.2	6675.8	0.0	0.0	0.0	0.0	1001.4	0.0	0.0
6	102.0	586628.4	0.0	0.0	0.0	0.0	87994.3	0.0	0.0
7	15.0	84391.1	0.0	0.0	0.0	0.0	12658.7	0.0	0.0
8	46.0	264728.0	0.0	0.0	0.0	0.0	39709.2	0.0	0.0
9	12.0	71341.5	0.0	0.0	0.0	0.0	10701.2	0.0	0.0
10	30.0	177364.3	0.0	0.0	0.0	0.0	26604.6	0.0	0.0
11	52.0	263225.8	0.0	0.0	0.0	0.0	39483.9	0.0	0.0
12	3.0	11815.5	0.0	0.0	0.0	0.0	1772.3	0.0	0.0
13	83.0	311862.7	0.0	0.0	0.0	0.0	46779.4	0.0	0.0
14	4.0	13540.2	0.0	0.0	0.0	0.0	2031.0	0.0	0.0
15	9.1	20959.5	0.0	0.0	0.0	0.0	3143.9	0.0	0.0
16	3.6	3783.2	0.0	0.0	0.0	0.0	567.5	0.0	0.0
17	3.8	1322.5	0.0	0.0	0.0	0.0	198.4	0.0	0.0

CROSS-SECTION 6-6' W.O.102637

c:\bill's engineer\stabldata\102637\6arp sur.plt



GSTABL7 v.2 FSmin=1.30

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

PLATE D-12

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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****

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run:
Run By: Username
Input Data Filename: C:\BILL'S engineer\stabldata\102637\7ars.in
Output Filename: C:\BILL'S engineer\stabldata\102637\7ars.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\7ars.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 7-7'
W.O.102637

BOUNDARY COORDINATES
26 Top Boundaries
39 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	150.00	16.00	149.00	1
2	16.00	149.00	25.00	148.00	2
3	25.00	148.00	42.00	146.00	2
4	42.00	146.00	70.00	145.00	2
5	70.00	145.00	90.00	147.00	2
6	90.00	147.00	110.00	150.00	2
7	110.00	150.00	205.00	190.00	3
8	205.00	190.00	230.00	196.00	3
9	230.00	196.00	235.00	195.00	3
10	235.00	195.00	295.00	222.00	3
11	295.00	222.00	305.00	224.00	3
12	305.00	224.00	322.00	227.00	3
13	322.00	227.00	351.00	241.00	3
14	351.00	241.00	390.00	250.00	3
15	390.00	250.00	410.00	252.00	3
16	410.00	252.00	420.00	253.00	3
17	420.00	253.00	450.00	254.00	3
18	450.00	254.00	470.00	262.00	3
19	470.00	262.00	480.00	263.00	4
20	480.00	263.00	565.00	274.00	4
21	565.00	274.00	640.00	274.00	4
22	640.00	274.00	645.00	272.00	4
23	645.00	272.00	665.00	264.00	1
24	665.00	264.00	772.00	270.00	1
25	772.00	270.00	782.00	273.00	1
26	782.00	273.00	890.00	273.00	1
27	16.00	149.00	43.00	131.00	1
28	43.00	131.00	70.00	133.00	1
29	70.00	133.00	100.00	142.00	1
30	100.00	142.00	110.00	150.00	1
31	110.00	150.00	140.00	147.00	1
32	140.00	147.00	170.00	150.00	1
33	170.00	150.00	242.00	158.00	1
34	242.00	158.00	262.00	161.00	1
35	262.00	161.00	461.00	245.00	1
36	461.00	245.00	470.00	262.00	1
37	472.00	262.00	534.00	210.00	1
38	534.00	210.00	577.00	210.00	1
39	577.00	210.00	645.00	272.00	1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	110.0	110.0	220.0	24.0	0.00	0.0	0
3	110.0	110.0	300.0	25.0	0.00	0.0	0
4	110.0	110.0	400.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00
2	23.0	300.00	18.00
3	90.0	500.00	34.00

1 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	521.00	220.00
2	588.00	220.00

Janbus Empirical Coef is being used for the case of c & phi both > 0

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

2000 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	90.00	100.00	325.00	150.00	80.00
2	400.00	195.00	700.00	205.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *

Total Number of Trial Surfaces Attempted = 2000

Number of Trial Surfaces With Valid FS = 2000

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	92.379	147.357
2	104.962	140.504
3	123.566	133.162
4	138.695	120.082
5	498.346	240.655
6	512.352	254.932
7	522.177	268.458

Factor of Safety

*** 1.744 ***

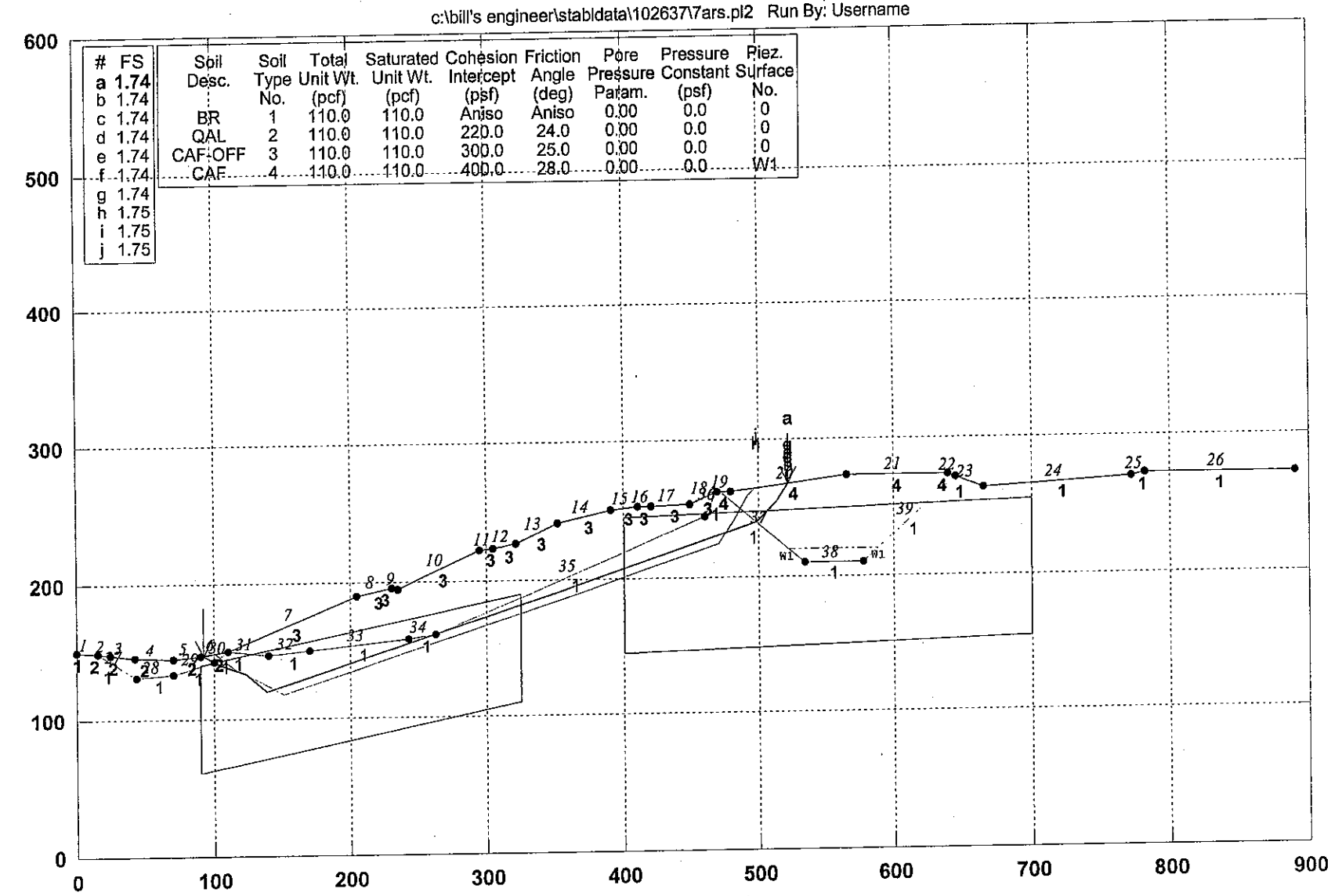
Individual data on the 29 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	8.5	2772.2	0.0	0.0	0.	0.	0.0	0.0	0.0
2	4.1	3276.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	5.0	5604.3	0.0	0.0	0.	0.	0.0	0.0	0.0
4	13.6	25392.7	0.0	0.0	0.	0.	0.0	0.0	0.0
5	15.1	53714.0	0.0	0.0	0.	0.	0.0	0.0	0.0
6	1.3	6035.4	0.0	0.0	0.	0.	0.0	0.0	0.0
7	30.0	143216.2	0.0	0.0	0.	0.	0.0	0.0	0.0
8	35.0	177821.8	0.0	0.0	0.	0.	0.0	0.0	0.0
9	25.0	127870.7	0.0	0.0	0.	0.	0.0	0.0	0.0

10	5.0	24183.3	0.0	0.0	0.	0.	0.0	0.0	0.0
11	7.0	33135.6	0.0	0.0	0.	0.	0.0	0.0	0.0
12	17.7	86704.6	0.0	0.0	0.	0.	0.0	0.0	0.0
13	7.1	35856.0	0.0	0.0	0.	0.	0.0	0.0	0.0
14	28.2	148392.8	0.0	0.0	0.	0.	0.0	0.0	0.0
15	10.0	53724.4	0.0	0.0	0.	0.	0.0	0.0	0.0
16	17.0	87543.1	0.0	0.0	0.	0.	0.0	0.0	0.0
17	29.0	151856.1	0.0	0.0	0.	0.	0.0	0.0	0.0
18	39.0	204655.8	0.0	0.0	0.	0.	0.0	0.0	0.0
19	20.0	95294.0	0.0	0.0	0.	0.	0.0	0.0	0.0
20	10.0	43765.4	0.0	0.0	0.	0.	0.0	0.0	0.0
21	30.0	112469.8	0.0	0.0	0.	0.	0.0	0.0	0.0
22	11.0	36190.1	0.0	0.0	0.	0.	0.0	0.0	0.0
23	9.0	30251.1	0.0	0.0	0.	0.	0.0	0.0	0.0
24	2.0	6734.8	0.0	0.0	0.	0.	0.0	0.0	0.0
25	8.0	25904.2	0.0	0.0	0.	0.	0.0	0.0	0.0
26	17.7	51949.9	0.0	0.0	0.	0.	0.0	0.0	0.0
27	0.6	1745.2	0.0	0.0	0.	0.	0.0	0.0	0.0
28	14.0	28483.5	0.0	0.0	0.	0.	0.0	0.0	0.0
29	9.8	6621.9	0.0	0.0	0.	0.	0.0	0.0	0.0

CROSS-SECTION 7-7' W.O.102637

c:\bill's engineer\stabldata\102637\7ars.pl2 Run By: Username



#	FS
a	1.74
b	1.74
c	1.74
d	1.74
e	1.74
f	1.74
g	1.74
h	1.75
i	1.75
j	1.75

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Riez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
QAL	2	110.0	110.0	220.0	24.0	0.00	0.0	0
CAF-OFF	3	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	4	110.0	110.0	400.0	28.0	0.00	0.0	W1

GSTABL7 v.2 FSmin=1.74

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-16

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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****
SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\7arp.in
Output Filename: C:\BILL'S engineer\stabldata\102637\7arp.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\7arp.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 7-7'
W.O.102637

BOUNDARY COORDINATES
26 Top Boundaries
39 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	150.00	16.00	149.00	1
2	16.00	149.00	25.00	148.00	2
3	25.00	148.00	42.00	146.00	2
4	42.00	146.00	70.00	145.00	2
5	70.00	145.00	90.00	147.00	2
6	90.00	147.00	110.00	150.00	2
7	110.00	150.00	205.00	190.00	3
8	205.00	190.00	230.00	196.00	3
9	230.00	196.00	235.00	195.00	3
10	235.00	195.00	295.00	222.00	3
11	295.00	222.00	305.00	224.00	3
12	305.00	224.00	322.00	227.00	3
13	322.00	227.00	351.00	241.00	3
14	351.00	241.00	390.00	250.00	3
15	390.00	250.00	410.00	252.00	3
16	410.00	252.00	420.00	253.00	3
17	420.00	253.00	450.00	254.00	3
18	450.00	254.00	470.00	262.00	3
19	470.00	262.00	480.00	263.00	4
20	480.00	263.00	565.00	274.00	4
21	565.00	274.00	640.00	274.00	4
22	640.00	274.00	645.00	272.00	4
23	645.00	272.00	665.00	264.00	1
24	665.00	264.00	772.00	270.00	1
25	772.00	270.00	782.00	273.00	1
26	782.00	273.00	890.00	273.00	1
27	16.00	149.00	43.00	131.00	1
28	43.00	131.00	70.00	133.00	1
29	70.00	133.00	100.00	142.00	1
30	100.00	142.00	110.00	150.00	1
31	110.00	150.00	140.00	147.00	1
32	140.00	147.00	170.00	150.00	1
33	170.00	150.00	242.00	158.00	1
34	242.00	158.00	262.00	161.00	1
35	262.00	161.00	461.00	245.00	1
36	461.00	245.00	470.00	262.00	1
37	472.00	262.00	534.00	210.00	1
38	534.00	210.00	577.00	210.00	1
39	577.00	210.00	645.00	272.00	1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	600.0	37.0	0.00	0.0	0
2	110.0	110.0	220.0	24.0	0.00	0.0	0
3	110.0	110.0	300.0	25.0	0.00	0.0	0
4	110.0	110.0	500.0	34.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	600.00	37.00
2	23.0	300.00	18.00
3	90.0	600.00	37.00

1 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	521.00	220.00
2	588.00	220.00

Specified Peak Ground Acceleration Coefficient (A) = 0.520(g)

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)

Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

Janbu's Empirical Coef. is being used for the case of c & phi both > 0

Trial Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	92.379	147.357
2	104.962	140.504
3	123.566	133.162
4	138.695	120.082
5	498.346	240.655
6	512.352	254.932
7	522.177	268.458

Janbu's Empirical Coefficient (fo) = 1.038

* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *

Factor Of Safety For The Preceding Specified Surface = 1.254

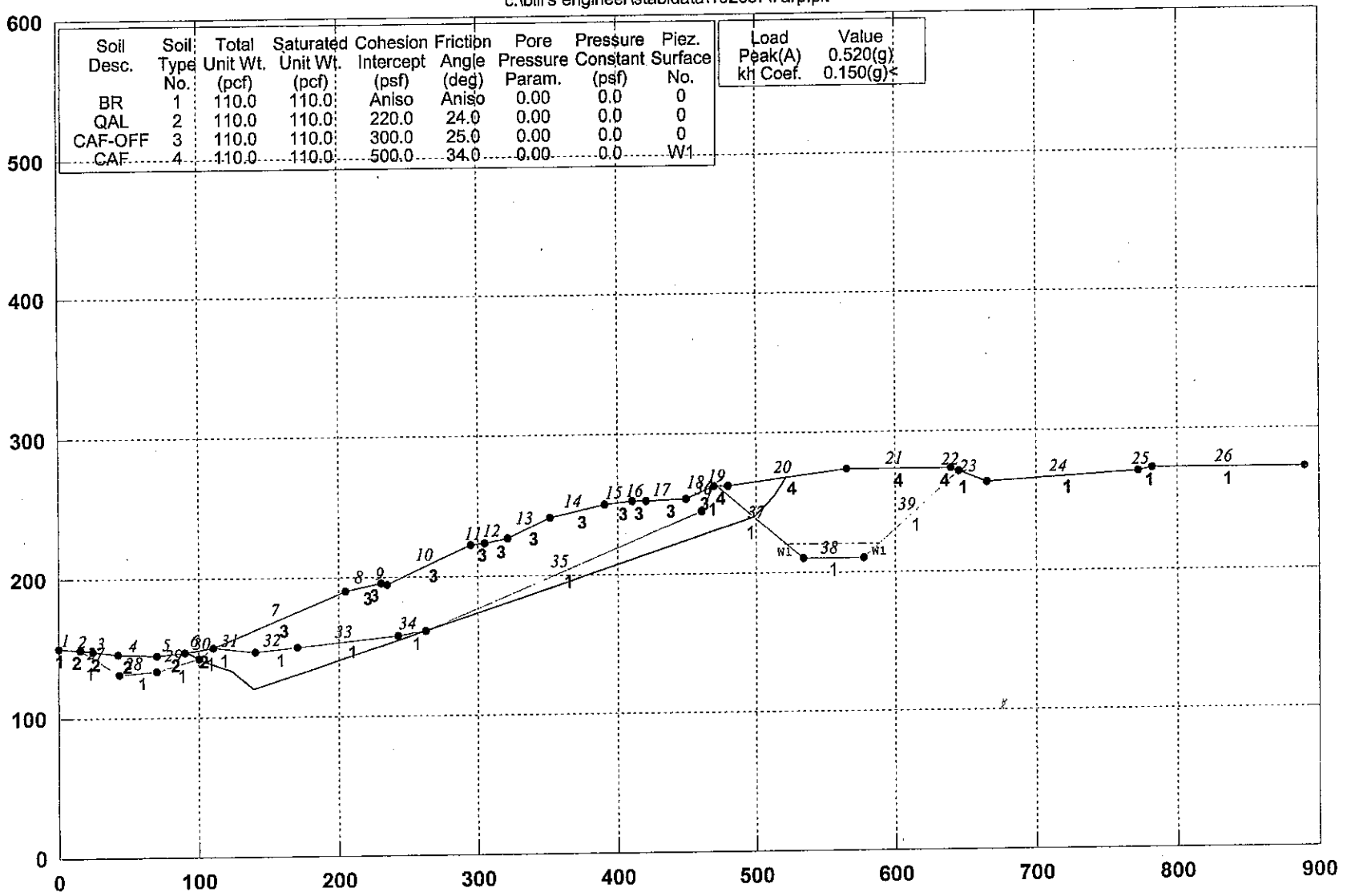
Table 1 - Individual Data on the 29 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	8.5	2772.0	0.0	0.0	0.0	0.0	415.8	0.0	0.0
2	4.1	3276.8	0.0	0.0	0.0	0.0	491.5	0.0	0.0
3	5.0	5604.0	0.0	0.0	0.0	0.0	840.6	0.0	0.0
4	13.6	25394.0	0.0	0.0	0.0	0.0	3809.1	0.0	0.0
5	15.1	53711.8	0.0	0.0	0.0	0.0	8056.8	0.0	0.0
6	1.3	6037.1	0.0	0.0	0.0	0.0	905.6	0.0	0.0
7	30.0	143217.1	0.0	0.0	0.0	0.0	21482.6	0.0	0.0
8	35.0	177822.6	0.0	0.0	0.0	0.0	26673.4	0.0	0.0
9	25.0	127871.2	0.0	0.0	0.0	0.0	19180.7	0.0	0.0
10	5.0	24183.4	0.0	0.0	0.0	0.0	3627.5	0.0	0.0
11	7.0	33135.7	0.0	0.0	0.0	0.0	4970.4	0.0	0.0
12	17.7	86709.0	0.0	0.0	0.0	0.0	13006.4	0.0	0.0
13	7.1	35843.5	0.0	0.0	0.0	0.0	5376.5	0.0	0.0
14	28.2	148401.8	0.0	0.0	0.0	0.0	22260.3	0.0	0.0
15	10.0	53724.6	0.0	0.0	0.0	0.0	8058.7	0.0	0.0
16	17.0	87543.3	0.0	0.0	0.0	0.0	13131.5	0.0	0.0
17	29.0	151856.3	0.0	0.0	0.0	0.0	22778.4	0.0	0.0
18	39.0	204656.0	0.0	0.0	0.0	0.0	30698.4	0.0	0.0

19	20.0	95294.1	0.0	0.0	0.0	0.0	14294.1	0.0	0.0
20	10.0	43765.4	0.0	0.0	0.0	0.0	6564.8	0.0	0.0
21	30.0	112469.8	0.0	0.0	0.0	0.0	16870.5	0.0	0.0
22	11.0	36190.0	0.0	0.0	0.0	0.0	5428.5	0.0	0.0
23	9.0	30251.1	0.0	0.0	0.0	0.0	4537.7	0.0	0.0
24	2.0	6734.8	0.0	0.0	0.0	0.0	1010.2	0.0	0.0
25	8.0	25904.1	0.0	0.0	0.0	0.0	3885.6	0.0	0.0
26	17.7	51949.6	0.0	0.0	0.0	0.0	7792.4	0.0	0.0
27	0.6	1745.7	0.0	0.0	0.0	0.0	261.8	0.0	0.0
28	14.0	28482.1	0.0	0.0	0.0	0.0	4272.3	0.0	0.0
29	9.8	6622.1	0.0	0.0	0.0	0.0	993.3	0.0	0.0

CROSS-SECTION 7-7' W.O.102637

c:\bill's engineer\stabldata\102637\7arp.plt



GSTABL7 v.2 FSmin=1.25

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

PLATE D-20

```
                    *** GSTABL7 ***
              ** GSTABL7 by Garry H. Gregory, P.E. **
  ** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
            (All Rights Reserved-Unauthorized Use Prohibited)
*******************************************************************************
                  SLOPE STABILITY ANALYSIS SYSTEM
      Modified Bishop, Simplified Janbu, or GLE Method of Slices.
      (Includes Spencer & Morgenstern-Price Type Analysis)
      Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
      Nonlinear Undrained Shear Strength, Curved Phi Envelope,
      Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
      Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
*******************************************************************************
Analysis Run Date:
Time of Run:
Run By:
Input Data Filename:       C:\BILL'S engineer\stabldata\102637\8ARS.in
Output Filename:           C:\BILL'S engineer\stabldata\102637\8ARS.OUT
Unit System:               English
Plotted Output Filename:   C:\BILL'S engineer\stabldata\102637\8ARS.PLT
PROBLEM DESCRIPTION:  CROSS-SECTION 8-8'
                      W.O.102637
BOUNDARY COORDINATES
   20 Top   Boundaries
   28 Total Boundaries
```

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	200.00	100.00	170.00	1
2	100.00	170.00	120.00	160.00	1
3	120.00	160.00	160.00	160.00	1
4	160.00	160.00	190.00	172.00	2
5	190.00	172.00	200.00	172.00	2
6	200.00	172.00	253.00	200.00	2
7	253.00	200.00	262.00	200.00	2
8	262.00	200.00	320.00	225.00	2
9	320.00	225.00	335.00	225.00	2
10	335.00	225.00	386.00	250.00	2
11	386.00	250.00	395.00	250.00	2
12	395.00	250.00	440.00	270.00	2
13	440.00	270.00	485.00	270.00	2
14	485.00	270.00	598.00	302.00	1
15	598.00	302.00	608.00	298.00	3
16	608.00	298.00	629.00	298.00	3
17	629.00	298.00	681.00	280.00	3
18	681.00	280.00	713.00	273.00	3
19	713.00	273.00	734.00	268.00	1
20	734.00	268.00	1050.00	265.00	1
21	160.00	160.00	161.00	157.00	1
22	161.00	157.00	240.00	156.00	1
23	240.00	156.00	275.00	185.00	1
24	275.00	185.00	484.00	262.00	1
25	484.00	262.00	485.00	270.00	1
26	598.00	302.00	665.00	248.00	1
27	665.00	248.00	687.00	248.00	1
28	687.00	248.00	713.00	273.00	1

```
ISOTROPIC SOIL PARAMETERS
  3 Type(s) of Soil
```

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	400.0	28.0	0.00	0.0	0

```
ANISOTROPIC STRENGTH PARAMETERS
     1 soil type(s)
 Soil Type  1 Is Anisotropic
 Number Of Direction Ranges Specified =  3
```

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00
2	23.0	300.00	18.00
3	90.0	500.00	34.00

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
2000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 22.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	150.00	105.00	300.00	105.00	90.00
2	510.00	215.00	625.00	245.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 2000
Number of Trial Surfaces With Valid FS = 2000
Failure Surface Specified By 7 Coordinate Points

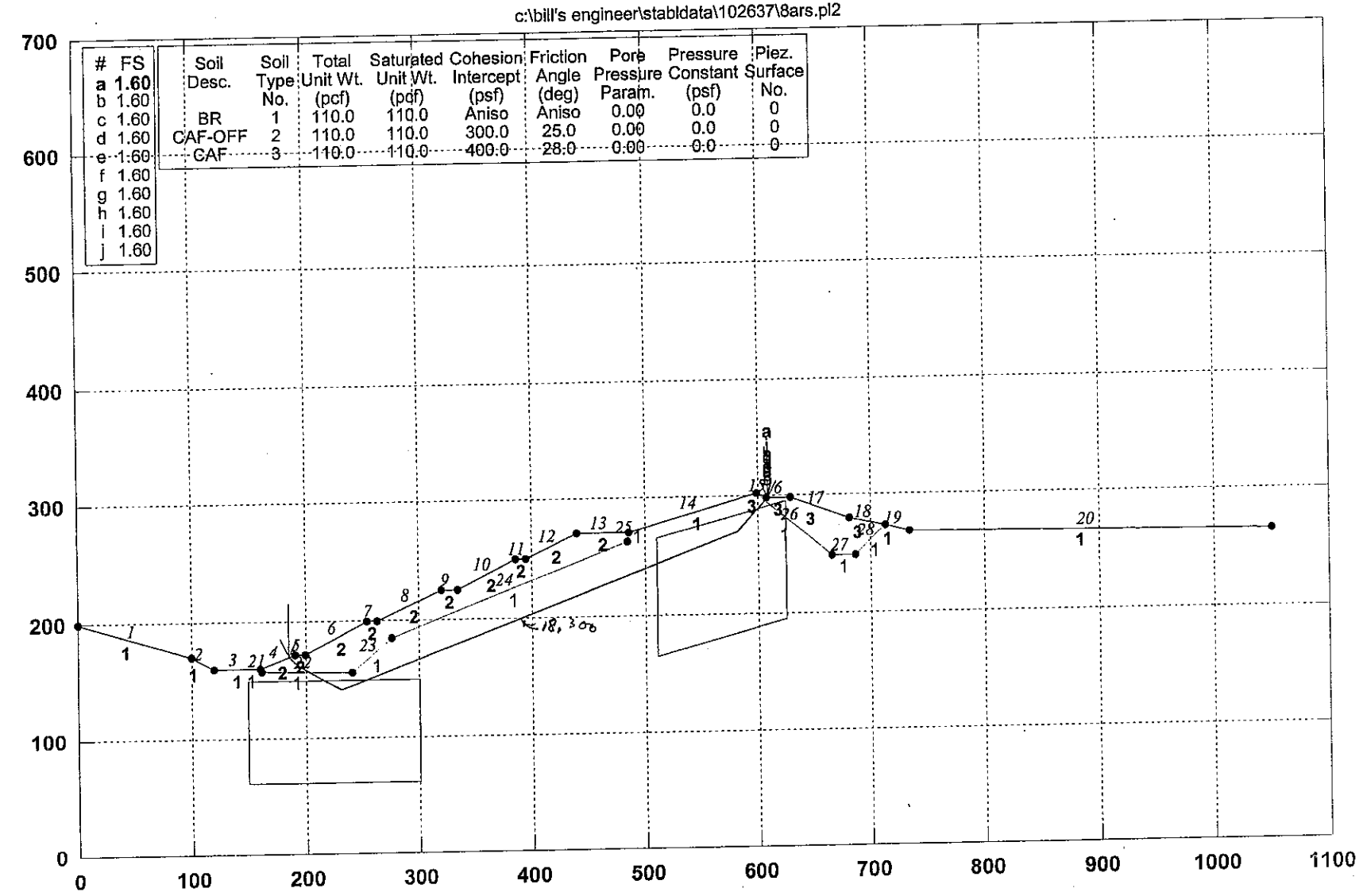
Point No.	X-Surf (ft)	Y-Surf (ft)
1	185.447	170.179
2	192.559	163.279
3	211.914	152.820
4	230.557	141.140
5	580.913	269.308
6	596.296	285.036
7	609.252	298.000

Factor of Safety
*** 1.598 ***
Individual data on the 23 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.6	1562.1	0.0	0.0	0.	0.	0.0	0.0	0.0
2	2.6	2105.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	7.4	8783.1	0.0	0.0	0.	0.	0.0	0.0	0.0
4	5.2	8907.1	0.0	0.0	0.	0.	0.0	0.0	0.0
5	6.7	16134.8	0.0	0.0	0.	0.	0.0	0.0	0.0
6	18.6	74317.2	0.0	0.0	0.	0.	0.0	0.0	0.0
7	9.4	49619.9	0.0	0.0	0.	0.	0.0	0.0	0.0
8	13.0	70919.8	0.0	0.0	0.	0.	0.0	0.0	0.0
9	9.0	48514.1	0.0	0.0	0.	0.	0.0	0.0	0.0
10	13.0	68328.0	0.0	0.0	0.	0.	0.0	0.0	0.0
11	45.0	245880.8	0.0	0.0	0.	0.	0.0	0.0	0.0
12	15.0	79854.1	0.0	0.0	0.	0.	0.0	0.0	0.0
13	51.0	273903.8	0.0	0.0	0.	0.	0.0	0.0	0.0
14	9.0	49846.0	0.0	0.0	0.	0.	0.0	0.0	0.0
15	45.0	249837.3	0.0	0.0	0.	0.	0.0	0.0	0.0
16	44.0	213894.1	0.0	0.0	0.	0.	0.0	0.0	0.0
17	1.0	3955.8	0.0	0.0	0.	0.	0.0	0.0	0.0
18	95.9	335673.3	0.0	0.0	0.	0.	0.0	0.0	0.0
19	15.4	37509.0	0.0	0.0	0.	0.	0.0	0.0	0.0
20	1.7	2974.2	0.0	0.0	0.	0.	0.0	0.0	0.0
21	8.4	8681.4	0.0	0.0	0.	0.	0.0	0.0	0.0
22	1.6	400.1	0.0	0.0	0.	0.	0.0	0.0	0.0
23	1.3	86.3	0.0	0.0	0.	0.	0.0	0.0	0.0

CROSS-SECTION 8-8' W.O.102637

c:\bill's engineer\stabldata\102637\8ars.pl2



#	FS
a	1.60
b	1.60
c	1.60
d	1.60
e	1.60
f	1.60
g	1.60
h	1.60
i	1.60
j	1.60

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF-OFF	2	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	3	110.0	110.0	400.0	28.0	0.00	0.0	0

GSTABL7 v.2 FSmin=1.60

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-23

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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****
SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\8ARP.in
Output Filename: C:\BILL'S engineer\stabldata\102637\8ARP.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\8ARP.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 8-8'
W.O.102637

BOUNDARY COORDINATES
20 Top Boundaries
28 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	200.00	100.00	170.00	1
2	100.00	170.00	120.00	160.00	1
3	120.00	160.00	160.00	160.00	1
4	160.00	160.00	190.00	172.00	2
5	190.00	172.00	200.00	172.00	2
6	200.00	172.00	253.00	200.00	2
7	253.00	200.00	262.00	200.00	2
8	262.00	200.00	320.00	225.00	2
9	320.00	225.00	335.00	225.00	2
10	335.00	225.00	386.00	250.00	2
11	386.00	250.00	395.00	250.00	2
12	395.00	250.00	440.00	270.00	2
13	440.00	270.00	485.00	270.00	2
14	485.00	270.00	598.00	302.00	1
15	598.00	302.00	608.00	298.00	3
16	608.00	298.00	629.00	298.00	3
17	629.00	298.00	681.00	280.00	3
18	681.00	280.00	713.00	273.00	3
19	713.00	273.00	734.00	268.00	1
20	734.00	268.00	1050.00	265.00	1
21	160.00	160.00	161.00	157.00	1
22	161.00	157.00	240.00	156.00	1
23	240.00	156.00	275.00	185.00	1
24	275.00	185.00	484.00	262.00	1
25	484.00	262.00	485.00	270.00	1
26	598.00	302.00	665.00	248.00	1
27	665.00	248.00	687.00	248.00	1
28	687.00	248.00	713.00	273.00	1

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	600.0	37.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	500.0	34.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction	Counterclockwise	Cohesion	Friction

Range No.	Direction Limit (deg)	Intercept (psf)	Angle (deg)
1	12.0	600.00	37.00
2	23.0	300.00	18.00
3	90.0	600.00	37.00

Specified Peak Ground Acceleration Coefficient (A) = 0.520(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	185.447	170.179
2	192.559	163.279
3	211.914	152.820
4	230.557	141.140
5	580.913	269.308
6	596.296	285.036
7	609.252	298.000

Janbu's Empirical Coefficient (fo) = 1.040
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 1.142

Table 1 - Individual Data on the 23 Slices

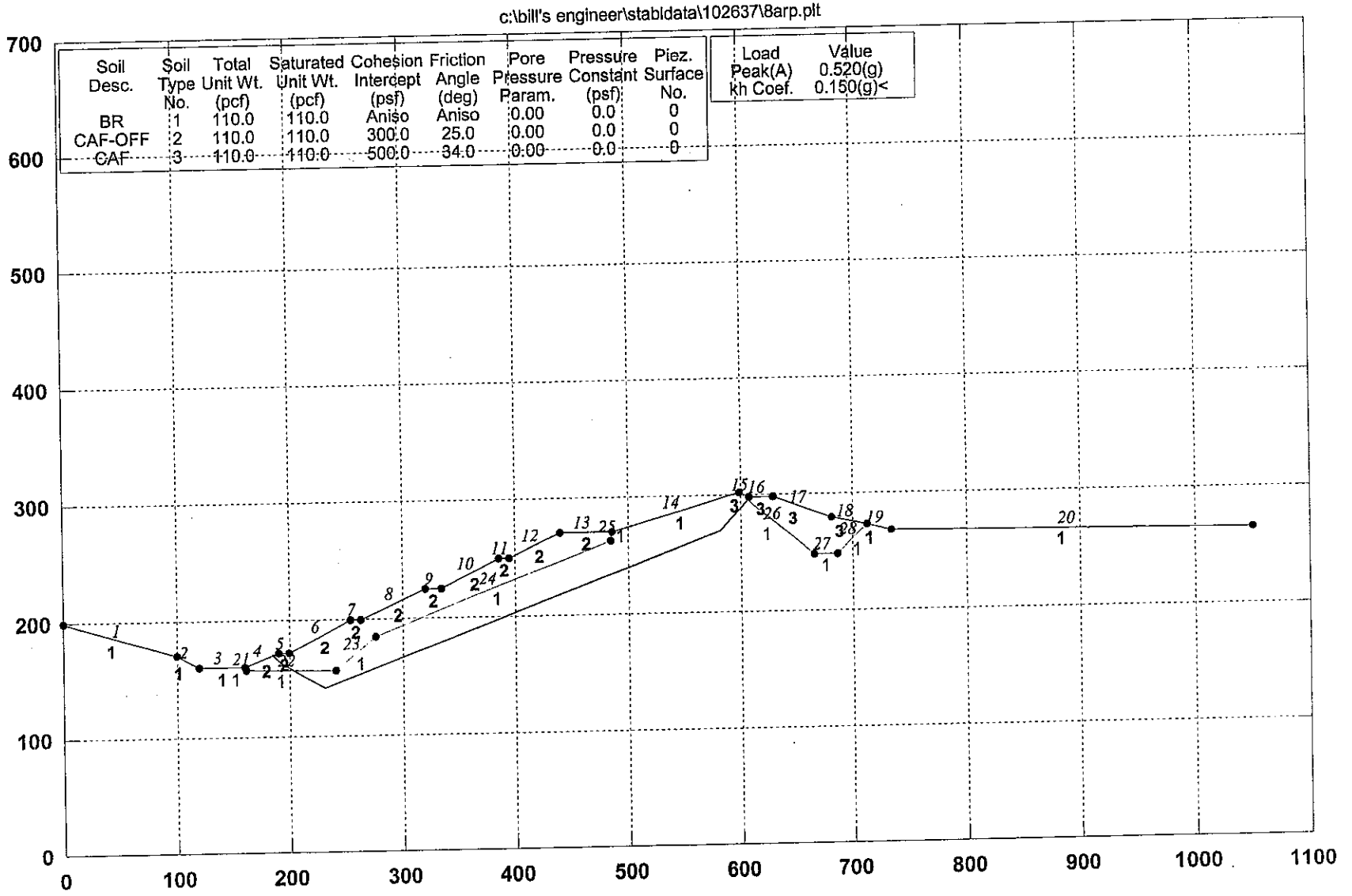
Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Surcharge Load Ver (lbs)	Surcharge Load (lbs)
1	4.6	1562.2	0.0	0.0	0.0	0.0	234.3	0.0	0.0
2	2.6	2105.5	0.0	0.0	0.0	0.0	315.8	0.0	0.0
3	7.4	8783.8	0.0	0.0	0.0	0.0	1317.6	0.0	0.0
4	5.2	8906.7	0.0	0.0	0.0	0.0	1336.0	0.0	0.0
5	6.7	16135.1	0.0	0.0	0.0	0.0	2420.3	0.0	0.0
6	18.6	74316.0	0.0	0.0	0.0	0.0	11147.4	0.0	0.0
7	9.4	49620.6	0.0	0.0	0.0	0.0	7443.1	0.0	0.0
8	13.0	70919.0	0.0	0.0	0.0	0.0	10637.9	0.0	0.0
9	9.0	48513.6	0.0	0.0	0.0	0.0	7277.0	0.0	0.0
10	13.0	68327.3	0.0	0.0	0.0	0.0	10249.1	0.0	0.0
11	45.0	245878.9	0.0	0.0	0.0	0.0	36881.8	0.0	0.0
12	15.0	79853.6	0.0	0.0	0.0	0.0	11978.0	0.0	0.0
13	51.0	273902.5	0.0	0.0	0.0	0.0	41085.4	0.0	0.0
14	9.0	49845.8	0.0	0.0	0.0	0.0	7476.9	0.0	0.0
15	45.0	249837.0	0.0	0.0	0.0	0.0	37475.6	0.0	0.0
16	44.0	213894.3	0.0	0.0	0.0	0.0	32084.1	0.0	0.0
17	1.0	3955.8	0.0	0.0	0.0	0.0	593.4	0.0	0.0
18	95.9	335674.6	0.0	0.0	0.0	0.0	50351.2	0.0	0.0
19	15.4	37510.0	0.0	0.0	0.0	0.0	5626.5	0.0	0.0
20	1.7	2974.7	0.0	0.0	0.0	0.0	446.2	0.0	0.0
21	8.4	8681.4	0.0	0.0	0.0	0.0	1302.2	0.0	0.0
22	1.6	400.1	0.0	0.0	0.0	0.0	60.0	0.0	0.0
23	1.3	86.3	0.0	0.0	0.0	0.0	12.9	0.0	0.0

CROSS-SECTION 8-8' W.O.102637

c:\bill's engineer\stabldata\102637\8arp.plt

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF-OFF	2	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	3	110.0	110.0	500.0	34.0	0.00	0.0	0

Load	Value
Peak(A)	0.520(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.14

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

PLATE D-26

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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****
SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\9ARS.in
Output Filename: C:\BILL'S engineer\stabldata\102637\9ARS.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\9ARS.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 9-9'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
30 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	195.00	28.00	195.00	2
2	28.00	195.00	85.00	190.00	2
3	85.00	190.00	137.00	185.00	1
4	137.00	185.00	167.00	200.00	1
5	167.00	200.00	207.00	217.00	2
6	207.00	217.00	220.00	217.00	2
7	220.00	217.00	260.00	233.00	2
8	260.00	233.00	310.00	234.00	2
9	310.00	234.00	373.00	240.00	2
10	373.00	240.00	442.00	280.00	1
11	442.00	280.00	480.00	290.00	1
12	480.00	290.00	610.00	303.00	3
13	610.00	303.00	626.00	305.00	1
14	626.00	305.00	670.00	300.00	1
15	670.00	300.00	765.00	285.00	1
16	765.00	285.00	980.00	257.00	3
17	0.00	160.00	85.00	190.00	1
18	167.00	200.00	210.00	190.00	1
19	210.00	190.00	238.00	175.00	1
20	238.00	175.00	260.00	175.00	1
21	260.00	175.00	342.00	220.00	1
22	342.00	220.00	373.00	240.00	1
23	480.00	290.00	525.00	250.00	1
24	525.00	250.00	555.00	250.00	1
25	555.00	250.00	610.00	303.00	1
26	765.00	285.00	780.00	270.00	1
27	780.00	270.00	820.00	250.00	1
28	820.00	250.00	870.00	242.00	1
29	870.00	242.00	957.00	245.00	1
30	957.00	245.00	980.00	257.00	1

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	400.0	28.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00
2	23.0	300.00	18.00
3	90.0	500.00	34.00

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
2000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	135.00	130.00	400.00	190.00	100.00
2	460.00	230.00	700.00	230.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 2000
Number of Trial Surfaces With Valid FS = 2000
Failure Surface Specified By 8 Coordinate Points

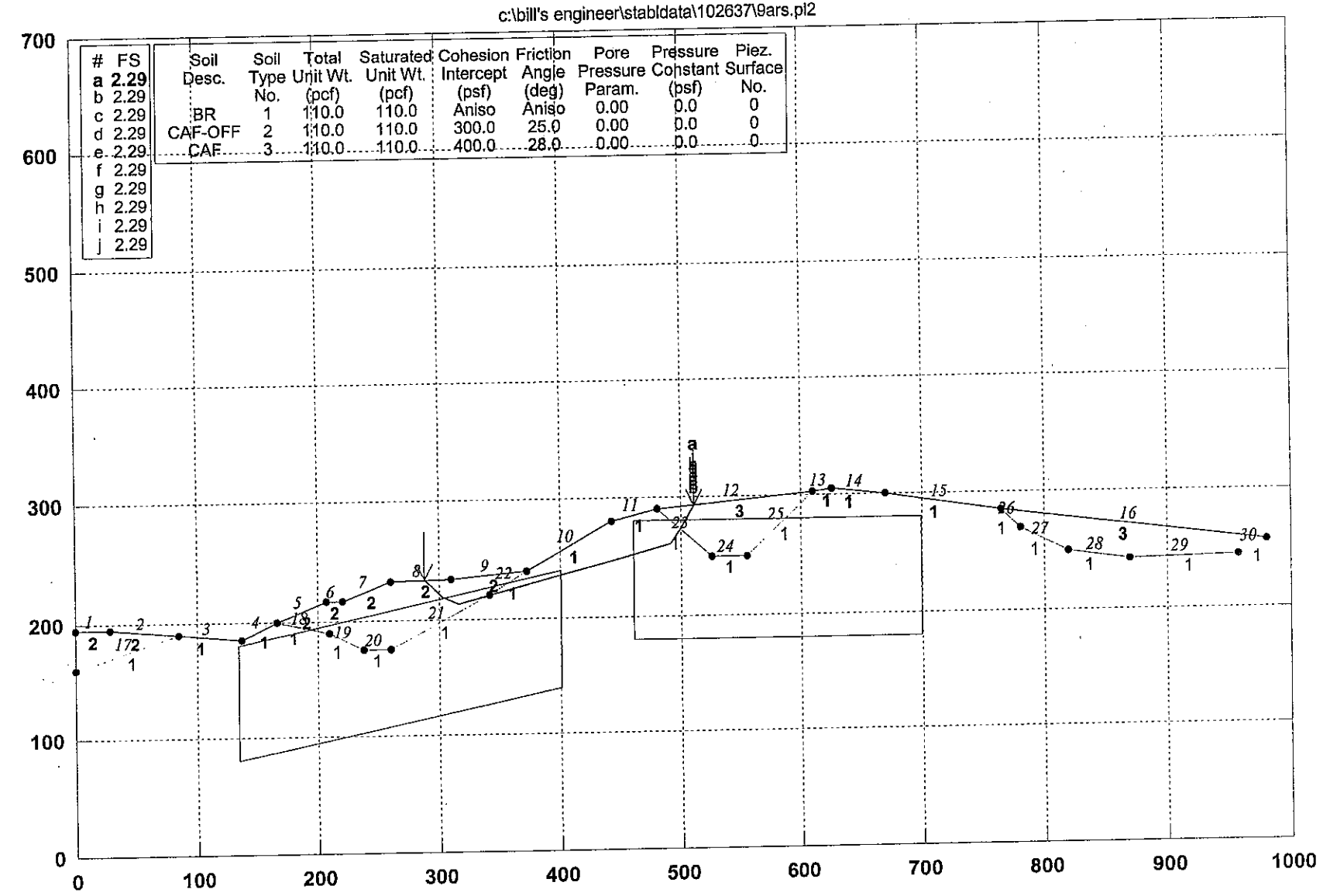
Point No.	X-Surf (ft)	Y-Surf (ft)
1	287.276	233.546
2	291.985	230.186
3	302.607	219.595
4	316.071	212.983
5	490.747	261.195
6	499.458	273.406
7	507.456	286.096
8	510.842	293.084

Factor of Safety
*** **2.286** ***
Individual data on the 13 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)	
1	4.7	894.5	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
2	10.6	10347.7	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
3	7.4	13130.1	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
4	6.1	13233.7	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
5	26.3	55610.5	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
6	30.6	47397.8	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
7	69.0	165323.0	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
8	38.0	133824.1	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
9	10.7	36441.1	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
10	8.4	22565.7	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
11	0.3	632.1	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
12	8.0	11079.9	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
13	3.4	1238.3	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0

CROSS-SECTION 9-9' W.O.102637

c:\bill's engineer\stabldata\102637\9ars.pl2



#	FS
a	2.29
b	2.29
c	2.29
d	2.29
e	2.29
f	2.29
g	2.29
h	2.29
i	2.29
j	2.29

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF-OFF	2	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	3	110.0	110.0	400.0	28.0	0.00	0.0	0

GSTABL7 v.2 FSmin=2.29

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-29

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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****

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
****

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\9ARP.in
Output Filename: C:\BILL'S engineer\stabldata\102637\9ARP.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\9ARP.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 9-9'
W.O.102637

BOUNDARY COORDINATES
16 Top Boundaries
30 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	195.00	28.00	195.00	2
2	28.00	195.00	85.00	190.00	2
3	85.00	190.00	137.00	185.00	1
4	137.00	185.00	167.00	200.00	1
5	167.00	200.00	207.00	217.00	2
6	207.00	217.00	220.00	217.00	2
7	220.00	217.00	260.00	233.00	2
8	260.00	233.00	310.00	234.00	2
9	310.00	234.00	373.00	240.00	2
10	373.00	240.00	442.00	280.00	1
11	442.00	280.00	480.00	290.00	1
12	480.00	290.00	610.00	303.00	3
13	610.00	303.00	626.00	305.00	1
14	626.00	305.00	670.00	300.00	1
15	670.00	300.00	765.00	285.00	1
16	765.00	285.00	980.00	257.00	3
17	0.00	160.00	85.00	190.00	1
18	167.00	200.00	210.00	190.00	1
19	210.00	190.00	238.00	175.00	1
20	238.00	175.00	260.00	175.00	1
21	260.00	175.00	342.00	220.00	1
22	342.00	220.00	373.00	240.00	1
23	480.00	290.00	525.00	250.00	1
24	525.00	250.00	555.00	250.00	1
25	555.00	250.00	610.00	303.00	1
26	765.00	285.00	780.00	270.00	1
27	780.00	270.00	820.00	250.00	1
28	820.00	250.00	870.00	242.00	1
29	870.00	242.00	957.00	245.00	1
30	957.00	245.00	980.00	257.00	1

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	600.0	37.0	0.00	0.0	0
2	110.0	110.0	300.0	25.0	0.00	0.0	0
3	110.0	110.0	500.0	34.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	600.00	37.00
2	23.0	300.00	18.00
3	90.0	600.00	37.00

Specified Peak Ground Acceleration Coefficient (A) = 0.520(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	287.276	233.546
2	291.985	230.186
3	302.607	219.595
4	316.071	212.983
5	490.747	261.195
6	499.458	273.406
7	507.456	286.096
8	510.842	293.084

Janbu's Empirical Coefficient (fo) = 1.049
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 1.503

Table 1 - Individual Data on the 13 Slices

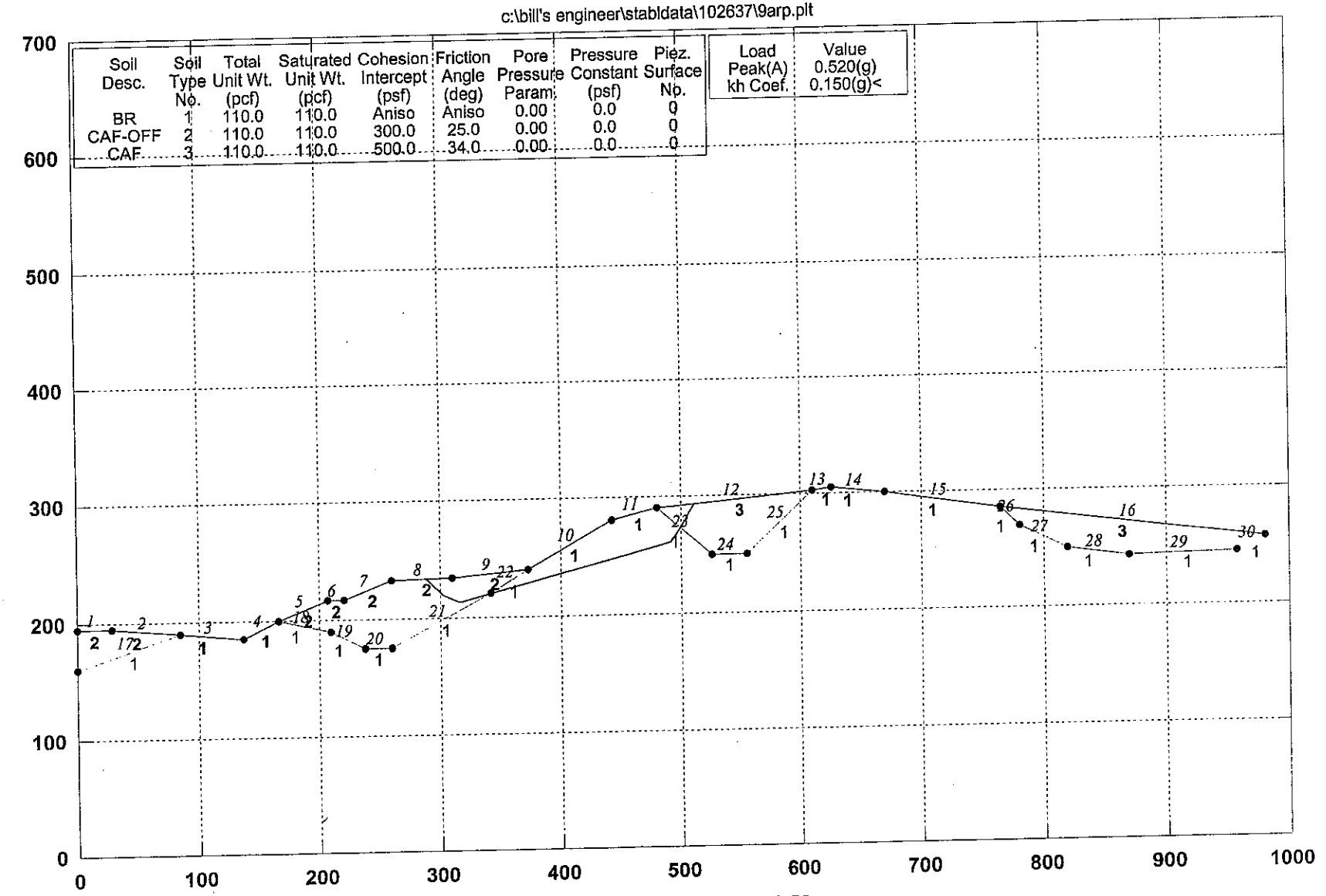
Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.7	894.5	0.0	0.0	0.0	0.0	134.2	0.0	0.0
2	10.6	10346.9	0.0	0.0	0.0	0.0	1552.0	0.0	0.0
3	7.4	13130.7	0.0	0.0	0.0	0.0	1969.6	0.0	0.0
4	6.1	13233.0	0.0	0.0	0.0	0.0	1984.9	0.0	0.0
5	26.3	55611.2	0.0	0.0	0.0	0.0	8341.7	0.0	0.0
6	30.6	47399.8	0.0	0.0	0.0	0.0	7110.0	0.0	0.0
7	69.0	165324.2	0.0	0.0	0.0	0.0	24798.6	0.0	0.0
8	38.0	133824.4	0.0	0.0	0.0	0.0	20073.7	0.0	0.0
9	10.7	36441.0	0.0	0.0	0.0	0.0	5466.1	0.0	0.0
10	8.4	22566.2	0.0	0.0	0.0	0.0	3384.9	0.0	0.0
11	0.3	631.7	0.0	0.0	0.0	0.0	94.8	0.0	0.0
12	8.0	11080.6	0.0	0.0	0.0	0.0	1662.1	0.0	0.0
13	3.4	1238.4	0.0	0.0	0.0	0.0	185.8	0.0	0.0

CROSS-SECTION 9-9' W.O.102637

c:\bill's engineer\stabldata\102637\9arp.plt

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
CAF-OFF	2	110.0	110.0	300.0	25.0	0.00	0.0	0
CAF	3	110.0	110.0	500.0	34.0	0.00	0.0	0

Load	Value
Peak(A)	0.520(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.50

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

PLATE D-32

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date:
Time of Run:
Run By:
Input Data Filename: C:\BILL'S engineer\stabldata\102637\10ARS.in
Output Filename: C:\BILL'S engineer\stabldata\102637\10ARS.OUT
Unit System: English
Plotted Output Filename: C:\BILL'S engineer\stabldata\102637\10ARS.PLT
PROBLEM DESCRIPTION: CROSS-SECTION 10-10'
W.O.102637

BOUNDARY COORDINATES
9 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	140.00	160.00	143.00	1
2	160.00	143.00	215.00	160.00	1
3	215.00	160.00	225.00	160.00	1
4	225.00	160.00	300.00	187.00	1
5	300.00	187.00	310.00	187.00	1
6	310.00	187.00	385.00	212.00	1
7	385.00	212.00	395.00	212.00	1
8	395.00	212.00	465.00	237.00	1
9	465.00	237.00	770.00	235.00	1

ISOTROPIC SOIL PARAMETERS
1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	110.0	110.0	500.0	34.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	12.0	500.00	34.00
2	23.0	300.00	18.00
3	90.0	500.00	34.00

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
2000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	160.00	140.00	160.00	140.00	1.00
2	400.00	160.00	500.00	185.00	100.00

* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 2000
Number of Trial Surfaces With Valid FS = 2000

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	155.644	142.918
2	160.000	139.806
3	445.697	201.228
4	455.817	212.299
5	466.167	223.157
6	469.268	236.972

Factor of Safety

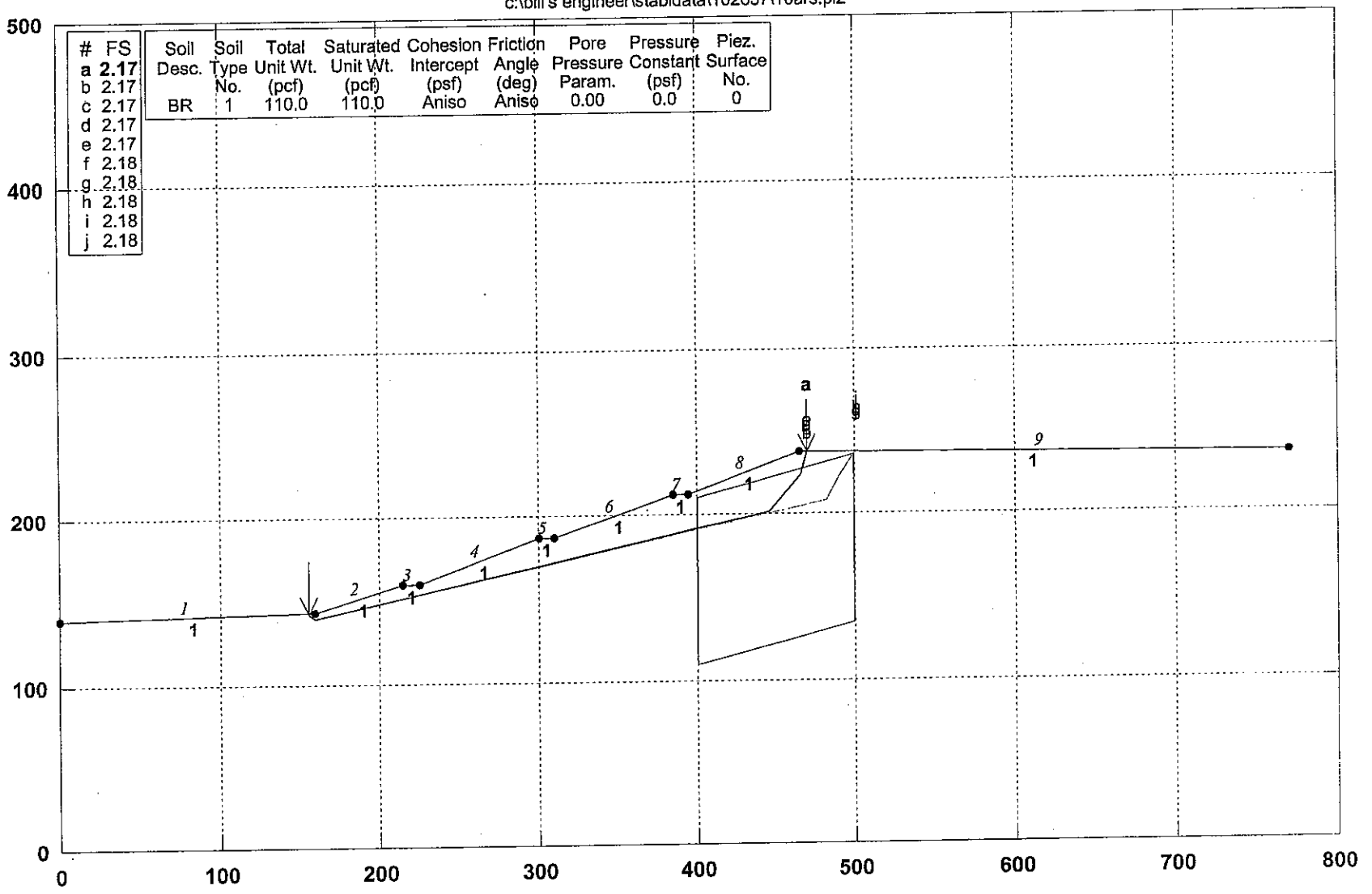
*** **2.167** ***

Individual data on the 12 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.4	765.1	0.0	0.0	0.	0.	0.0	0.0	0.0
2	55.0	34978.0	0.0	0.0	0.	0.	0.0	0.0	0.0
3	10.0	8023.8	0.0	0.0	0.	0.	0.0	0.0	0.0
4	75.0	96173.6	0.0	0.0	0.	0.	0.0	0.0	0.0
5	10.0	17622.5	0.0	0.0	0.	0.	0.0	0.0	0.0
6	75.0	159913.4	0.0	0.0	0.	0.	0.0	0.0	0.0
7	10.0	25021.1	0.0	0.0	0.	0.	0.0	0.0	0.0
8	50.7	140950.0	0.0	0.0	0.	0.	0.0	0.0	0.0
9	10.1	27998.1	0.0	0.0	0.	0.	0.0	0.0	0.0
10	9.2	18428.0	0.0	0.0	0.	0.	0.0	0.0	0.0
11	1.2	1854.6	0.0	0.0	0.	0.	0.0	0.0	0.0
12	3.1	2359.9	0.0	0.0	0.	0.	0.0	0.0	0.0

CROSS-SECTION 10-10' W.O.102637

c:\bill's engineer\stabldata\102637\10ars.pl2



#	FS
a	2.17
b	2.17
c	2.17
d	2.17
e	2.17
f	2.18
g	2.18
h	2.18
i	2.18
j	2.18

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0

GSTABL7 v.2 FSmin=2.17

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

PLATE D-35

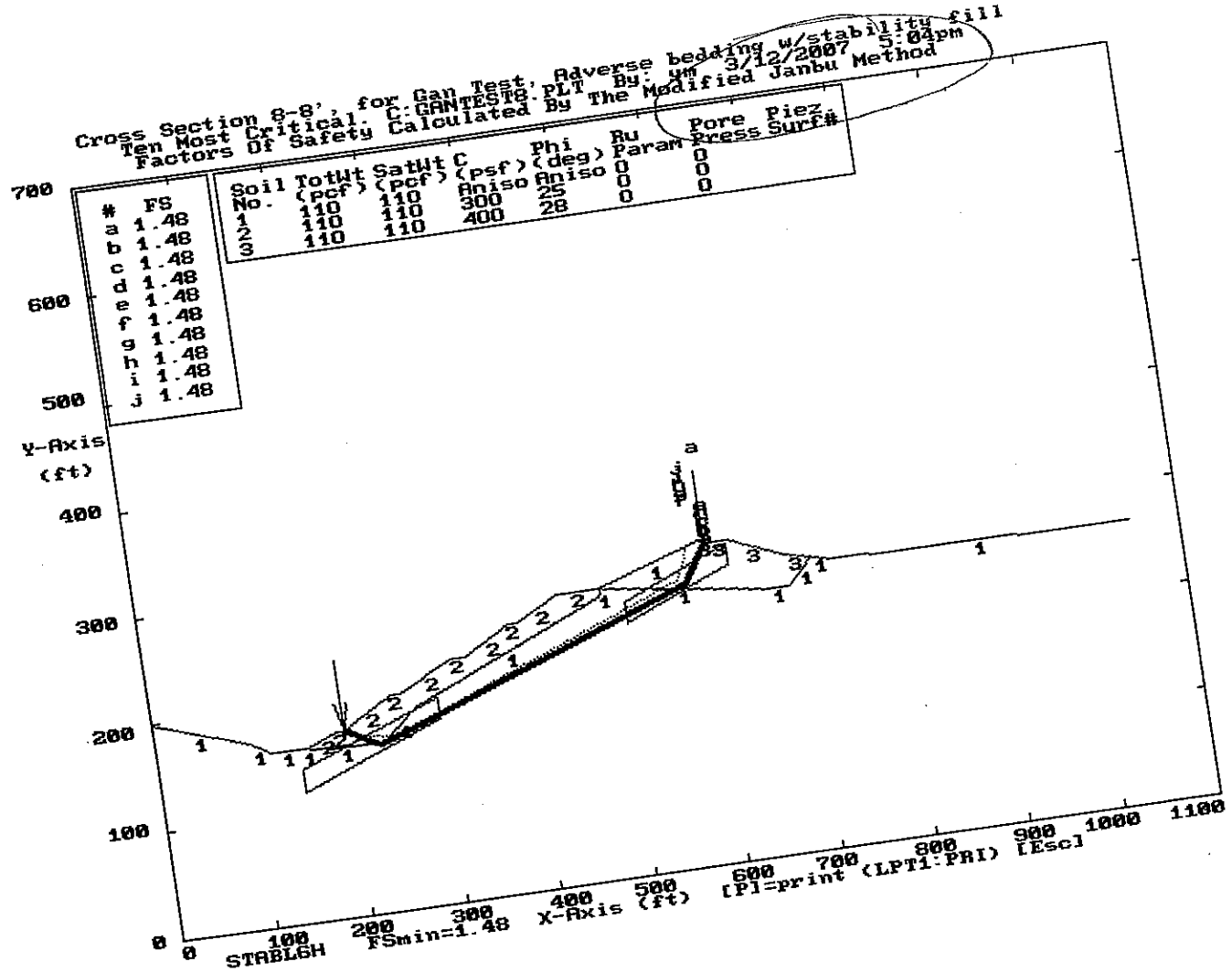
```
                    *** GSTABL7 ***
              ** GSTABL7 by Garry H. Gregory, P.E. **
   ** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
            (All Rights Reserved-Unauthorized Use Prohibited)
*******************************************************************************
                  SLOPE STABILITY ANALYSIS SYSTEM
      Modified Bishop, Simplified Janbu, or GLE Method of Slices.
      (Includes Spencer & Morgenstern-Price Type Analysis)
      Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
      Nonlinear Undrained Shear Strength, Curved Phi Envelope,
      Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
      Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
*******************************************************************************
Analysis Run Date:
Time of Run:
Run By:
Input Data Filename:       C:\BILL'S engineer\stabldata\102637\10ARP.in
Output Filename:           C:\BILL'S engineer\stabldata\102637\10ARP.OUT
Unit System:               English
Plotted Output Filename:   C:\BILL'S engineer\stabldata\102637\10ARP.PLT
PROBLEM DESCRIPTION:  CROSS-SECTION 10-10'
                      W.O.102637
BOUNDARY COORDINATES
    9 Top   Boundaries
    9 Total Boundaries
Boundary     X-Left      Y-Left     X-Right     Y-Right     Soil Type
   No.         (ft)        (ft)        (ft)        (ft)     Below Bnd
    1          0.00      140.00      160.00      143.00         1
    2        160.00      143.00      215.00      160.00         1
    3        215.00      160.00      225.00      160.00         1
    4        225.00      160.00      300.00      187.00         1
    5        300.00      187.00      310.00      187.00         1
    6        310.00      187.00      385.00      212.00         1
    7        385.00      212.00      395.00      212.00         1
    8        395.00      212.00      465.00      237.00         1
    9        465.00      237.00      770.00      235.00         1
ISOTROPIC SOIL PARAMETERS
  1 Type(s) of Soil
 Soil  Total  Saturated  Cohesion Friction   Pore   Pressure   Piez.
 Type Unit Wt. Unit Wt. Intercept   Angle  Pressure Constant Surface
  No.  (pcf)    (pcf)     (psf)     (deg)   Param.    (psf)     No.
   1   110.0    110.0     600.0     37.0    0.00       0.0      0
ANISOTROPIC STRENGTH PARAMETERS
     1 soil type(s)
 Soil Type  1 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion      Friction
   Range       Direction Limit    Intercept       Angle
    No.            (deg)            (psf)         (deg)
     1              12.0             600.00         37.00
     2              23.0             300.00         18.00
     3              90.0             600.00         37.00
 Specified Peak Ground Acceleration Coefficient (A) =   0.520(g)
 Specified Horizontal Earthquake Coefficient (kh) =   0.150(g)
 Specified Vertical Earthquake Coefficient (kv) =   0.000(g)
 Specified Seismic Pore-Pressure Factor =   0.000
 Janbu's Empirical Coef. is being used for the case of  c & phi both > 0
 Trial Failure Surface Specified By  6 Coordinate Points
   Point      X-Surf      Y-Surf
    No.         (ft)        (ft)
     1        155.644     142.918
     2        160.000     139.806
     3        445.697     201.228
     4        455.817     212.299
     5        466.167     223.157
     6        469.268     236.972
 Janbu's Empirical Coefficient (fo) =  1.037
```

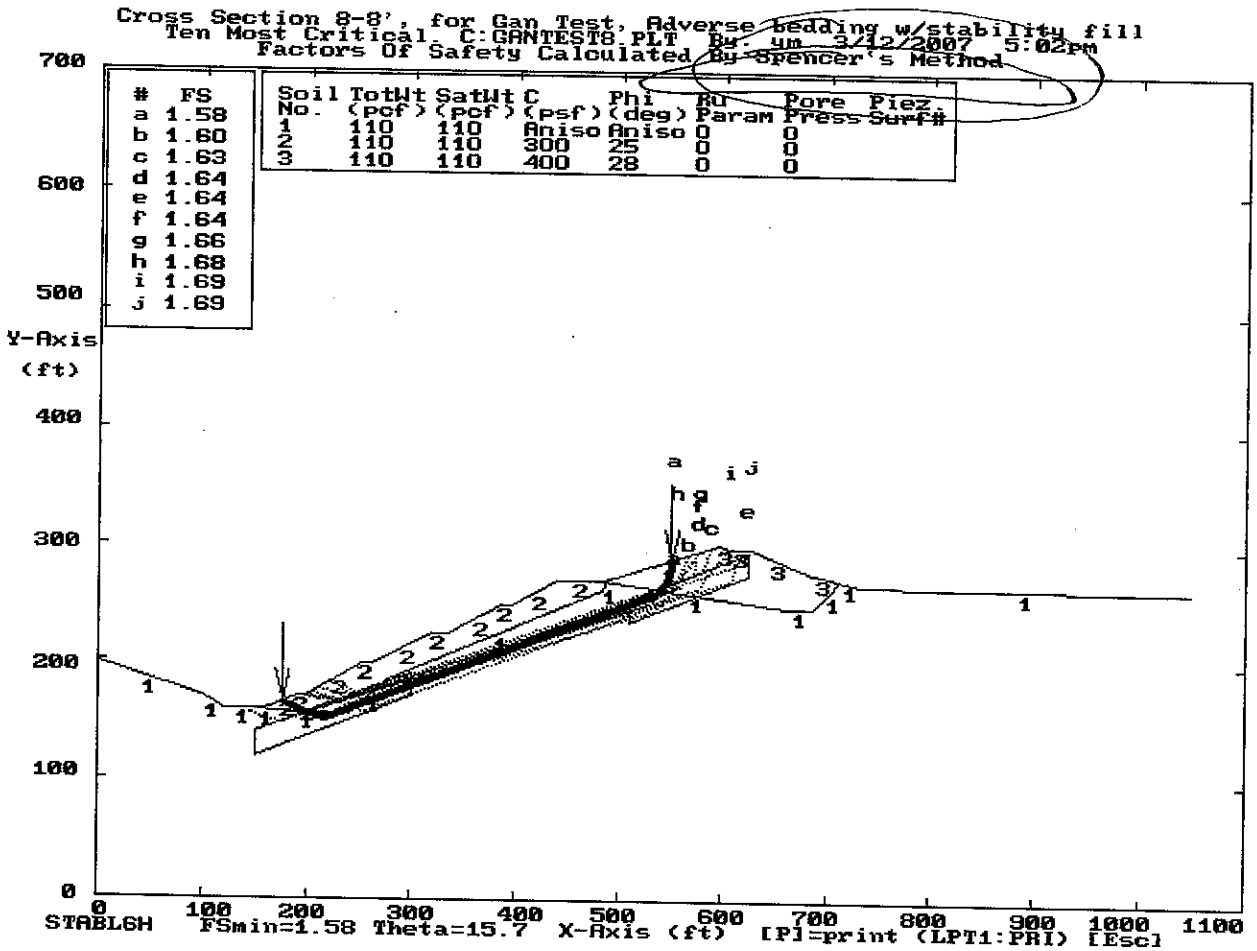
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *

Factor Of Safety For The Preceding Specified Surface = 1.424

Table 1 - Individual Data on the 12 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.4	765.2	0.0	0.0	0.0	0.0	114.8	0.0	0.0
2	55.0	34979.7	0.0	0.0	0.0	0.0	5247.0	0.0	0.0
3	10.0	8024.1	0.0	0.0	0.0	0.0	1203.6	0.0	0.0
4	75.0	96174.6	0.0	0.0	0.0	0.0	14426.2	0.0	0.0
5	10.0	17622.5	0.0	0.0	0.0	0.0	2643.4	0.0	0.0
6	75.0	159912.9	0.0	0.0	0.0	0.0	23986.9	0.0	0.0
7	10.0	25020.9	0.0	0.0	0.0	0.0	3753.1	0.0	0.0
8	50.7	140948.8	0.0	0.0	0.0	0.0	21142.3	0.0	0.0
9	10.1	27996.7	0.0	0.0	0.0	0.0	4199.5	0.0	0.0
10	9.2	18429.1	0.0	0.0	0.0	0.0	2764.4	0.0	0.0
11	1.2	1855.1	0.0	0.0	0.0	0.0	278.3	0.0	0.0
12	3.1	2359.7	0.0	0.0	0.0	0.0	354.0	0.0	0.0


Cross Section 8-8', for Gan Test, Adverse bedding w/stability fill
Ten Most Critical. C:GANTEST8.PLT By: ym 3/12/2007 5:04pm
Factors Of Safety Calculated By The Modified Janbu Method
FS
a 1.48
b 1.48
c 1.48
d 1.48
e 1.48
f 1.48
g 1.48
h 1.48
i 1.48
j 1.48
Soil No. TotWt (pcf) SatWt (pcf) C (psf) Phi (deg) Ru Param Pore Press Piez Surf#
1 110 110 300 25 0 0
2 110 110 400 28 0 0
3 110 110 400 28 0 0
Y-Axis (ft)
X-Axis (ft)
STABLGH FSmin=1.48
[Pl=print (LPT1:PRI) [Esc]


Cross Section 8-8', for Gan Test, Adverse bedding w/stability fill
Ten Most Critical, C:GANTEST8.PLT By: ym 3/12/2007 5:02pm
Factors Of Safety Calculated By Spencer's Method
FS
a 1.58
b 1.60
c 1.63
d 1.64
e 1.64
f 1.64
g 1.66
h 1.68
i 1.69
j 1.69
Soil No. | TotWt (pcf) | SatWt (pcf) | C (psf) | Phi (deg) | Ru Param | Pore Press | Piez Surf#
1 | 110 | 110 | Aniso | Aniso | 0 | 0
2 | 110 | 110 | 300 | 25 | 0 | 0
3 | 110 | 110 | 400 | 28 | 0 | 0
Y-Axis (ft)
700
600
500
400
300
200
100
0
0 100 200 300 400 500 600 700 800 900 1000 1100
STABL6H FSmin=1.58 Theta=15.7 X-Axis (ft) [P]=print (LPT1:PRI) [Esc]

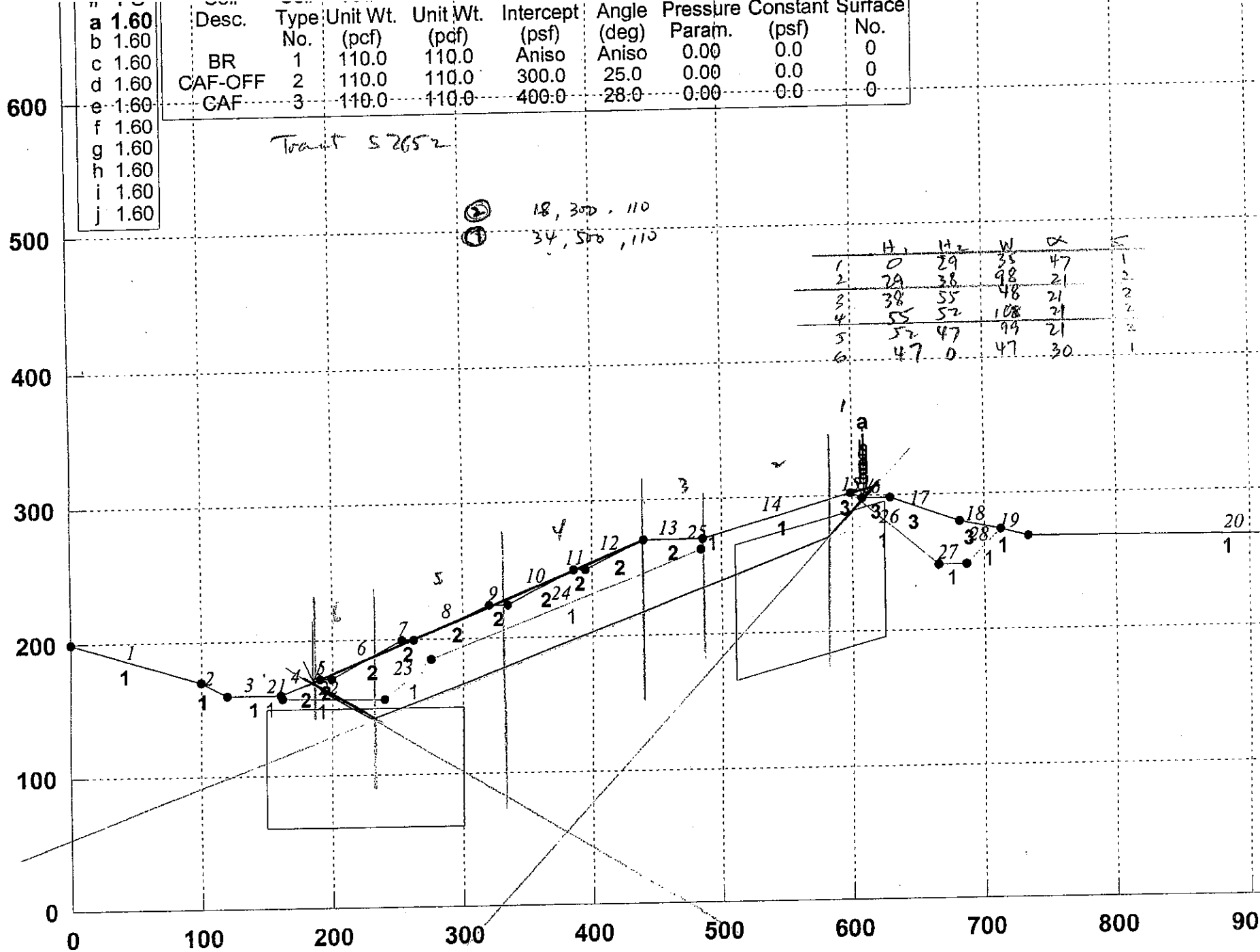
	Soil Desc.	Soil Type No.	Unit Wt. (pcf)	Unit Wt. (pcf)	Intercept (psf)	Angle (deg)	Pressure Param.	Constant (psf)	Surface No.
a 1.60									
b 1.60									
c 1.60	BR	1	110.0	110.0	Aniso	Aniso	0.00	0.0	0
d 1.60	CAF-OFF	2	110.0	110.0	300.0	25.0	0.00	0.0	0
e 1.60	CAF	3	110.0	110.0	400.0	28.0	0.00	0.0	0
f 1.60									
g 1.60									
h 1.60									
i 1.60									
j 1.60									

Tract 52652

② 18, 300, 110

① 34, 500, 110

	H_1	H_2	W	α	S
1	0	29	35	47	1
2	29	38	98	21	2
3	38	55	48	21	3
4	55	52	108	21	4
5	52	47	99	21	5
6	47	0	47	30	1



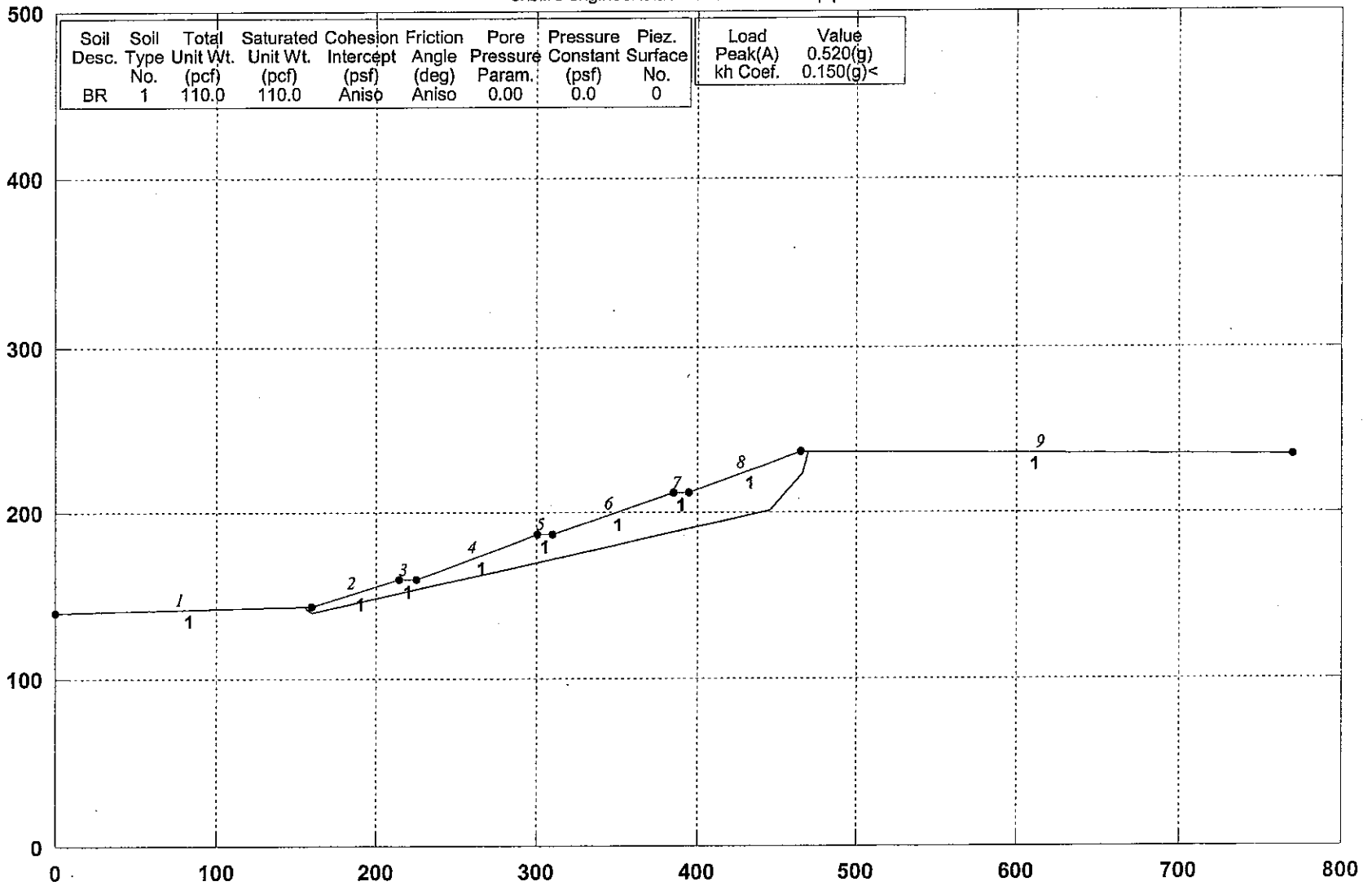
GSTABL7 v.2 FSmin=1.60

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi b

GSTABL7

CROSS-SECTION 10-10' W.O.102637

c:\bill's engineer\stabldata\102637\10arp.plt



GSTABL7 v.2 FSmin=1.42

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

PLATE D-38

Environmental
Geotechnology
Laboratory

November 9, 1998

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LAND DEVELOPMENT

John Dolinsky & Associates
6363 Sunset Boulevard
Hollywood, California 90028

Attention: Mr. John Dolinsky

Subject: **Report of Geotechnical Engineering and Geological Investigation and Review of 100-Scale Grading Plan**
Tentative Tract 52652, 58 Acres Kittridge & Randiwood Residential Development Project, West Hills, County of Los Angeles, California
EGL Project No.: 98-139-002EG

Gentlemen:

This report presents the results of EGL's investigation and a summary of geotechnical recommendations, with regard to the 100-scale grading plan of the subject development. The purpose of this study was to obtain additional geotechnical data in order to evaluate the planned development with respect to soil and geologic conditions. The review is based on the data obtained during this and previous investigations (see references).

Results of the 100-scale grading plan review indicate that it is geotechnically feasible to develop the site essentially as planned if the EGL's recommendations are implemented in tract design and construction. Any revisions made to the proposed plans should be reviewed by this office as soon as possible to help minimizing added expanses and delays.

This opportunity to be of service is sincerely appreciated. If you have any questions pertaining to this report, please call the undersigned.

Respectfully submitted,

Environmental Geotechnology Laboratory, Inc.

REGISTERED PROFESSIONAL ENGINEER
JACK C. S. LEE
No. 2153
Exp. 12/31/99
GEOTECHNICAL
STATE OF CALIFORNIA

Jack C. Lee, GE 2153
Principal

CERTIFIED ENGINEERING GEOLOGIST
HANK H. L. JONG
1646
Exp. 11/30/00
STATE OF CALIFORNIA

Hank H. Jong, Ph.D, CEG 1646
Principal

Dist: (6) Addressee

SLOSSON AND ASSOCIATES
CONSULTING GEOLOGISTS
15500 Erwin Street, Suite 1123
Van Nuys, California 91411
(818) 376-6540 • (818) 785-0835
FAX (818) 376-6543

December 4, 1991

To: Los Angeles County Department of
Public Works
Materials Engineering Division
900 S. Fremont Avenue, 4th Floor
Alhambra, California 91803

Attention: Mr. Mike Johnson

SUBJECT: Distress observed in the vicinity of Vickiview Drive and Welby Way, West Hills, California

Out of professional courtesy and professional obligation, this letter is intended to inform you of possible areal distress features observed at the ground surface in the approximate vicinity of the intersection of Vickiview Drive and Welby Way in West Hills, California. It is our understanding that this area comprises the northerly portion of Tract ~~23572~~ 23762 / 30257 in the County of Los Angeles.

While making observations of distress features affecting a property in this area, this office noted that the distress was generally not confined to the property observed. Observation of distress features (i.e., cracking with displacement) to properties in the vicinity was suggestive of possible areal distress (i.e., subsidence) which may be related by common adverse geological condition(s) affecting the entire area. An apparent northerly movement vector is suggested by approximately east/west-trending cracks in the streets and on properties comprising the northerly portion of Randiwood Lane, Vickiview Drive, Daryn Drive as well as the intersection of these streets with Welby Way.

In an attempt to better understand the nature of the distress to the residence in our own investigation, a review of the site history was conducted. It was learned that the grading of the subject tract was supervised by Pacific Soils Engineering, Inc., as documented by their "Final Supervised Compaction Report, Tract

Mr. Mike Johnson
Los Angeles County Department of
Public Works
Vickiview Drive and Welby Way
December 4, 1991

23572, Lots 1 through 171 Inclusive" dated August 19, 1966. The majority of the grading consisted of a cut which lowered the pre-existing ridgeline approximately 100 feet, utilizing conventional grading techniques.

A number of possibilities exist as to the cause of distress (i.e., apparent settlement or subsidence) in the area which appears to exhibit a northerly movement vector. The following is a list of the geologic conditions that are known to exist in the area and their possible effect(s) on the distressed area:

1. Aerial photo analyses in conjunction with geologic maps of the region and tract reveal a fault that trends roughly east to west across the tract and appears to dip steeply to the north. The actual trace of this structure is ±200 feet to the south of the distressed area. When the tract was graded, the ground surface in the area of the distress was cut and lowered approximately 100'. This down-cutting may have caused the surface expression of the fault to move northerly or closer to the residence relative to the trace of the fault at the natural ground surface. The fault appears to display normal displacement with the north side moving down relative to the south side. This motion is consistent with the displacement displayed by east/west-trending cracks. A sympathetic splay or fracturing resulting from fault motion may have reduced the strength of the bedrock allowing it to settle to the north.

2. On-site visits were conducted on 3/11/90, 1/23/91, and 10/29/91. It was noted that distortions of man-made features (i.e., homes, roads, driveways, etc.) are prevalent within the previously described area surrounding the distressed residence observed by this office.

   The roughly east/west-trending lineation noted in the aerial photo review was investigated in the field. The linear feature appears to be associated with a fault which cuts the sedimentary section (Modelo Formation shale and Topanga Formation sandstone) causing an abrupt change in the dip direction. On the north side of the geologic structure, the section dips to the north which is adverse to the stability of the north-facing natural slope which faces the east/west-trending drainage bounding the tract.

   Deep colluvium and soils exist along the northern slope and they appear to be undergoing creep as evidenced by

Mr. Mike Johnson
Los Angeles County Department of
Public Works
Vickiview Drive and Welby Way
December 4, 1991

the loose nature of the materials. Pre-grading aerial photos indicate two possible landslides along this slope. The fracturing of rock associated with fault motion may have sufficiently reduced the strength of the bedrock to allow landslides and creep-related features to form.

The combination of faulting, fracturing and bedrock tilting appears to have produced an area of instability that encompasses the northern boundary of Tract 23572.

3. The Canoga Park oil field is located just west of the distressed area. This field consists of 10 exploratory wells which intersected shallow (i.e., ±750 feet) oil-bearing sands within the Topanga Formation (CDMG, 1974). One well was completed and produced 1,224 barrels of oil during the period between 1952 and 1963. This well is located ±500 feet northwest of the corner of Randiwood Lane and Welby Way. Production from "shallow" petroleum reservoirs is often coincidental with subsidence or "sinking" of the ground surface. The possibility exists that the production from this field allowed for periods of settlement or subsidence along the east/ west-trending fault during or soon following seismic activity (i.e., 1971, 1987, etc.). Subsidence along this structure could possibly produce the northward deflections displayed by the distressed residence(s). It is known that for at least one residence in the area, distress was reported following seismic events in 1971, 1980, and 1987.

   Also noted during the review of the Canoga Park oil field data was the fact that the Topanga units, intersected at depth by the drilling, dip to the north. This is consistent with the surface exposures seen by this office on the north side of the east/west-trending fault.

4. The outline of an arcuate or semi-circular feature cutting across the distressed area is apparent on aerial photographs and topographic surveys indicating the existence of a possible landslide. This feature appears to overlie the trace of the fault and displays a possible movement toward the north. Again, fracturing related to fault motion in conjunction with the adversely oriented bedding north of the fault may have significantly reduced the strength of the bedrock in this area thereby allowing a failure to occur. Northward motion of a (possible) landslide could lead to the distress evident at the site.

Mr. Mike Johnson
Los Angeles County Department of
Public Works
Vickiview Drive and Welby Way
December 4, 1991

5. Three of the ten Canoga Park oil field wells were located and observed by this office. None appear to have been properly abandoned according to California Department of Oil and Gas standards; in fact, it appears that no attempt has been made to mitigate the hazardous condition created by the "open" holes. These wells, which exist to the northeast of the site in the open area, need to be properly abandoned. On the aforementioned well which was evidently the producing well, the pipe was cut off just above the first crank or turn valve. It appears that the valve was turned to the shut position and the handle bent so that it could not be opened. It also appears that oil is currently seeping around this section of pipe stem. To reiterate, this does not appear to be a properly abandoned well. This should be noted by the County of Los Angeles and should be reported to the California Division of Oil and Gas and steps should be taken to mitigate the hazard.

In summary, there appear to be numerous conditions which may be causing possible areal distress to structures, roadways, sidewalks, driveways, etc. If the distress noted is related to a large scale adverse condition, such a condition may present a hazard to numerous properties on the previously noted streets. As it appears that this area is within the jurisdiction of Los Angeles County, it is suggested that the distress features should be observed and investigated as soon as possible.

Michael B. Phipps
Senior Staff Engineering Geologist

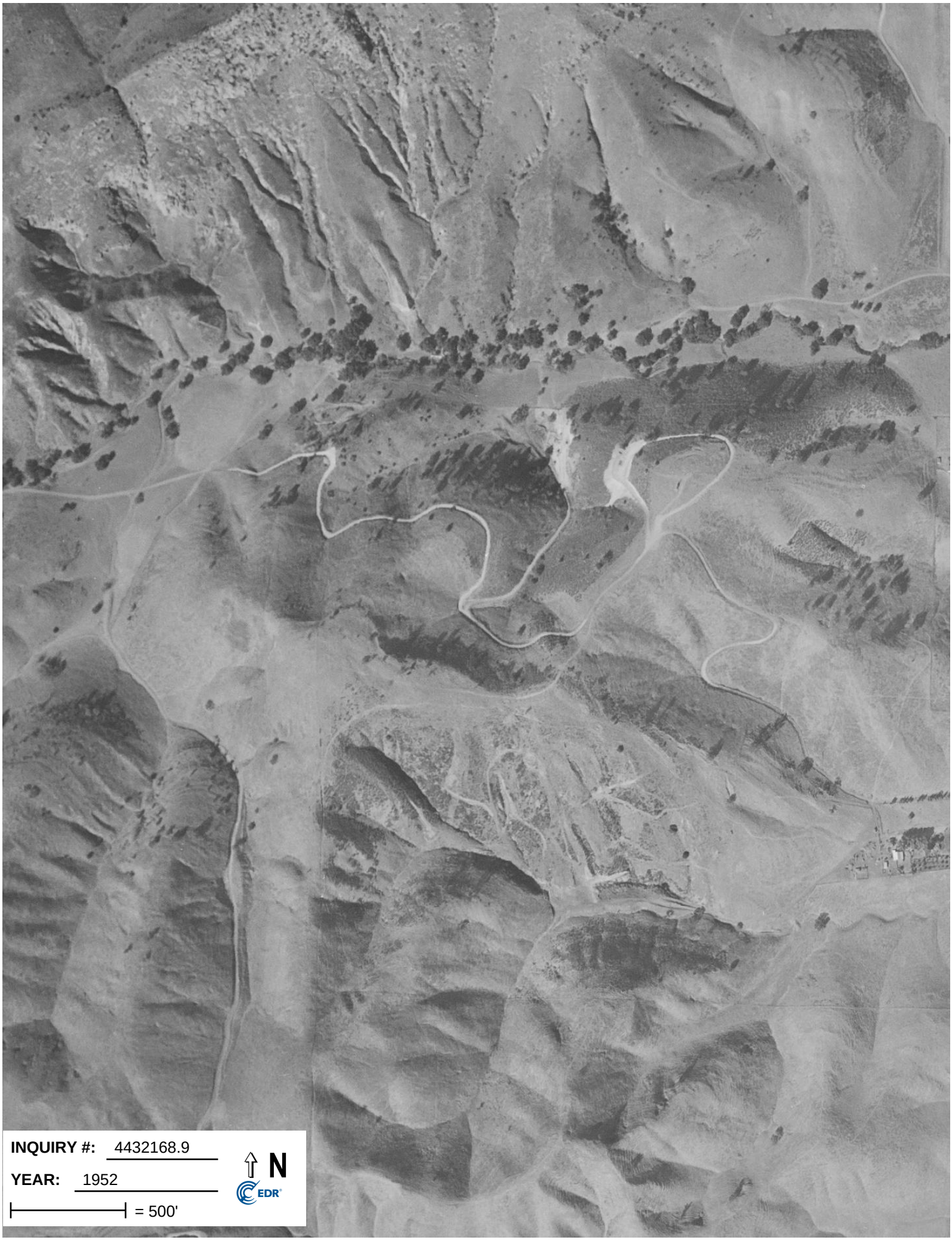
Thomas L. Slosson
Supervising Engineering Geologist
R.G. #4204, C.E.G. #1327

MBP:TLS/hc

Ref: D0066-Misc

APPENDIX B

Historical Aerial Photographs and Topographic Maps


INQUIRY #: 4432168.9
YEAR: 1952
= 500'
N
EDR



INQUIRY #: 4432168.9

YEAR: 1959

= 500'

N

EDR


INQUIRY #: 4432168.9
YEAR: 1967
= 500'
N
EDR


INQUIRY #: 4432168.9
YEAR: 1977
= 500'
N
EDR


INQUIRY #: 4432168.9
YEAR: 1979
= 500'
N
EDR


INQUIRY #: 4432168.9
YEAR: 1983
= 500'
N
EDR


INQUIRY #: 4432168.9
YEAR: 1989
= 500'
N
EDR


INQUIRY #: 4432168.9
YEAR: 1994
= 500'
N
EDR


INQUIRY #: 4432168.9
YEAR: 2002
= 500'
N
EDR


INQUIRY #: 4432168.9
YEAR: 2005
= 500'
N
EDR


INQUIRY #: 4432168.9
YEAR: 2009
= 500'
N
EDR

West Hills, Naim Associates
Tract No. 2031015033, 2031015022, 2031015011
West Hills, CA 91307

Inquiry Number: 4432168.9
October 08, 2015

The EDR Aerial Photo Decade Package

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Shelton, Connecticut 06484
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www.edrnet.com

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Date EDR Searched Historical Sources:

Aerial Photography October 08, 2015

Target Property:

Tract No. 2031015033, 2031015022, 2031015011

West Hills, CA 91307

Year	Scale	Details	Source
1928	Aerial Photograph. Scale: 1"=500'	Flight Year: 1928	USGS
1938	Aerial Photograph. Scale: 1"=500'	Flight Year: 1938	USGS
1947	Aerial Photograph. Scale: 1"=500'	Flight Year: 1947	USGS
1952	Aerial Photograph. Scale: 1"=500'	Flight Year: 1952	USGS
1959	Aerial Photograph. Scale: 1"=500'	Flight Year: 1959	USGS
1967	Aerial Photograph. Scale: 1"=500'	Flight Year: 1967	USGS
1977	Aerial Photograph. Scale: 1"=500'	Flight Year: 1977	EDR Proprietary Brewster Pacific
1979	Aerial Photograph. Scale: 1"=500'	Flight Year: 1979	EDR Proprietary Brewster Pacific
1983	Aerial Photograph. Scale: 1"=500'	Flight Year: 1983	EDR Proprietary Brewster Pacific
1989	Aerial Photograph. Scale: 1"=500'	Flight Year: 1989	USGS
1994	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1994	USGS/DOQQ
2002	Aerial Photograph. Scale: 1"=500'	Flight Year: 2002	USGS
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	USDA/NAIP
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
2010	Aerial Photograph. Scale: 1"=500'	Flight Year: 2010	USDA/NAIP
2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	USDA/NAIP


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YEAR: 1928
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EDR



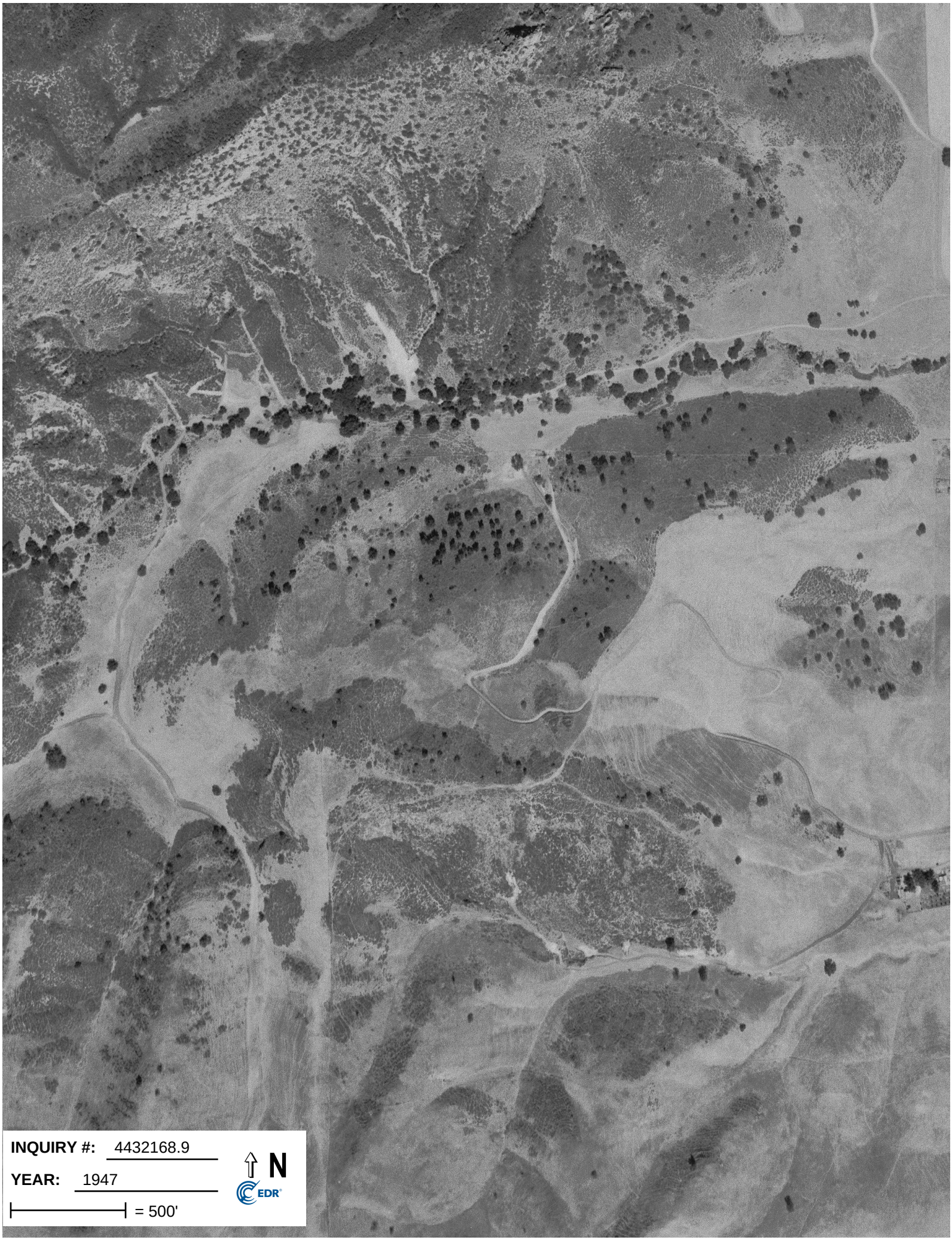
INQUIRY #: 4432168.9

YEAR: 1938

= 500'

N

EDR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YEAR: 1947
= 500'
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EDR

West Hills, Naim Associates
Tract No. 2031015033, 2031015022, 2031015011
West Hills, CA 91307

Inquiry Number: 4432168.4
October 07, 2015

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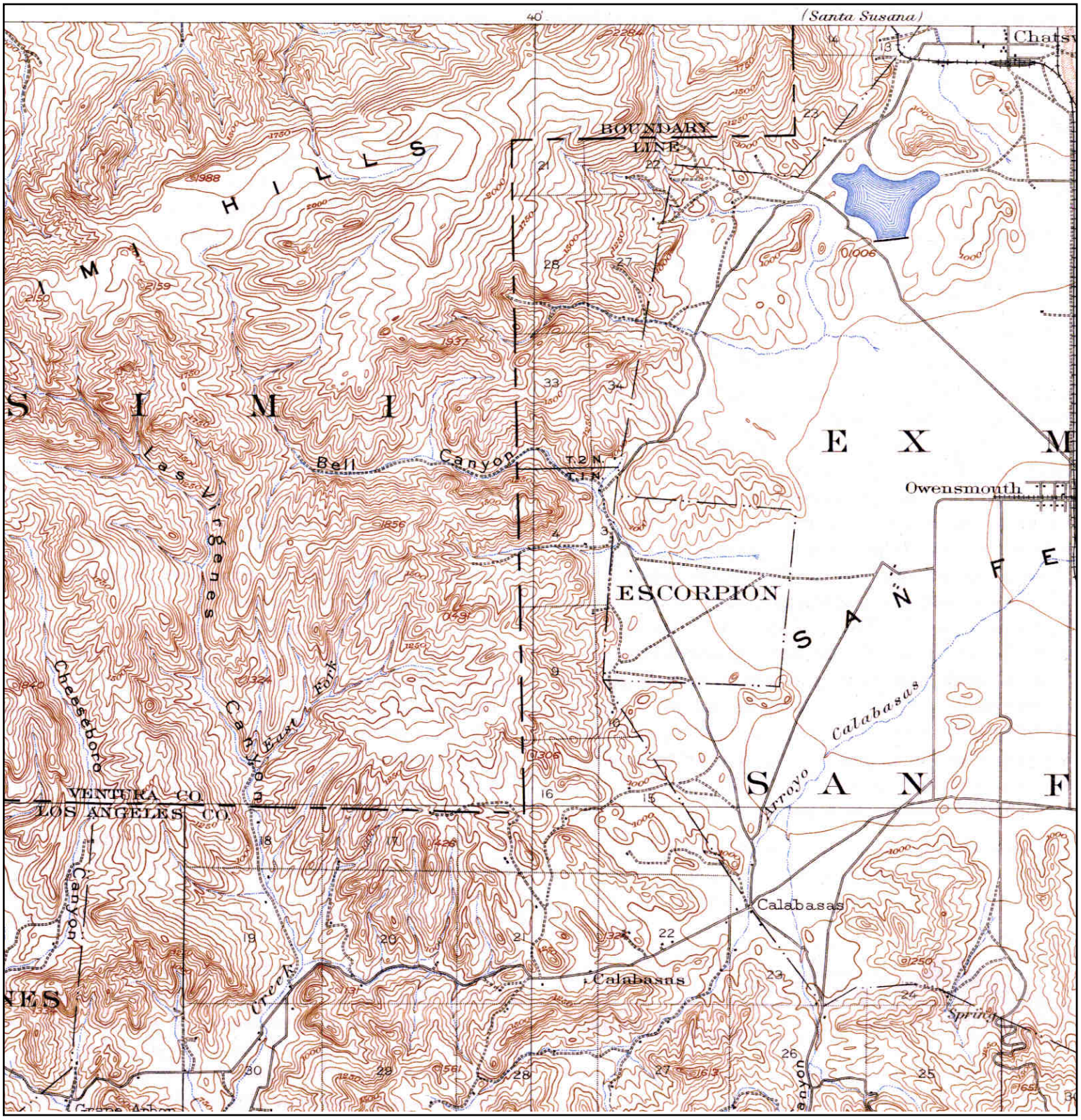
Historical Topographic Map



N	TARGET QUAD NAME: CALABASAS MAP YEAR: 1903 SERIES: 15 SCALE: 1:62500	SITE NAME: West Hills, Naim Associates ADDRESS: Tract No. 2031015033, 2031015022, 2031015011 West Hills, CA 91307 LAT/LONG: 34.1928 / -118.6649	CLIENT: G3Soil Works CONTACT: Stanley White INQUIRY#: 4432168.4 RESEARCH DATE: 10/07/2015

Historical Topographic Map



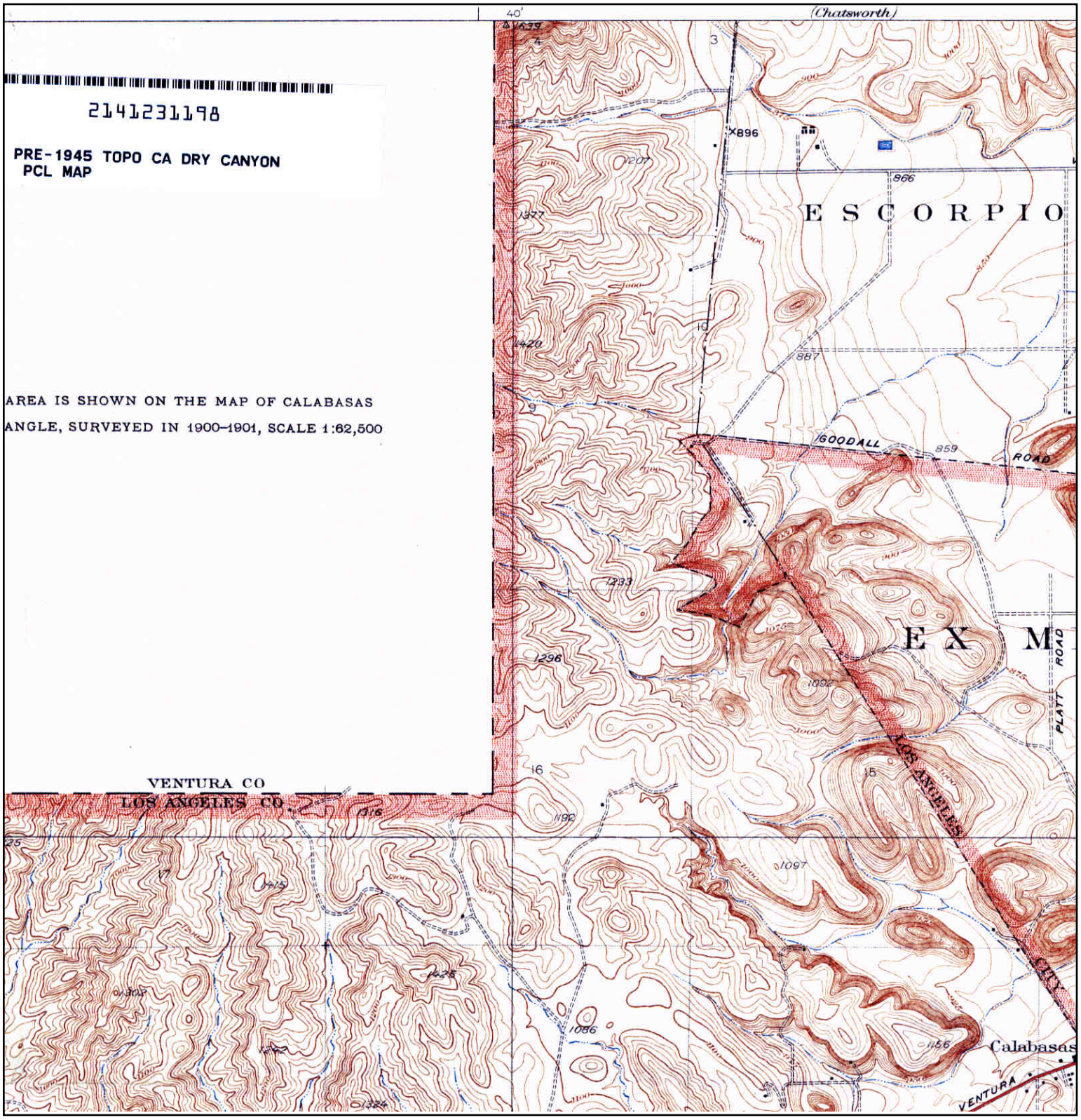
N	TARGET QUAD NAME: CAMULOS MAP YEAR: 1903 SERIES: 30 SCALE: 1:125000	SITE NAME: West Hills, Naim Associates ADDRESS: Tract No. 2031015033, 2031015022, 2031015011 West Hills, CA 91307 LAT/LONG: 34.1928 / -118.6649	CLIENT: G3Soil Works CONTACT: Stanley White INQUIRY#: 4432168.4 RESEARCH DATE: 10/07/2015

Historical Topographic Map



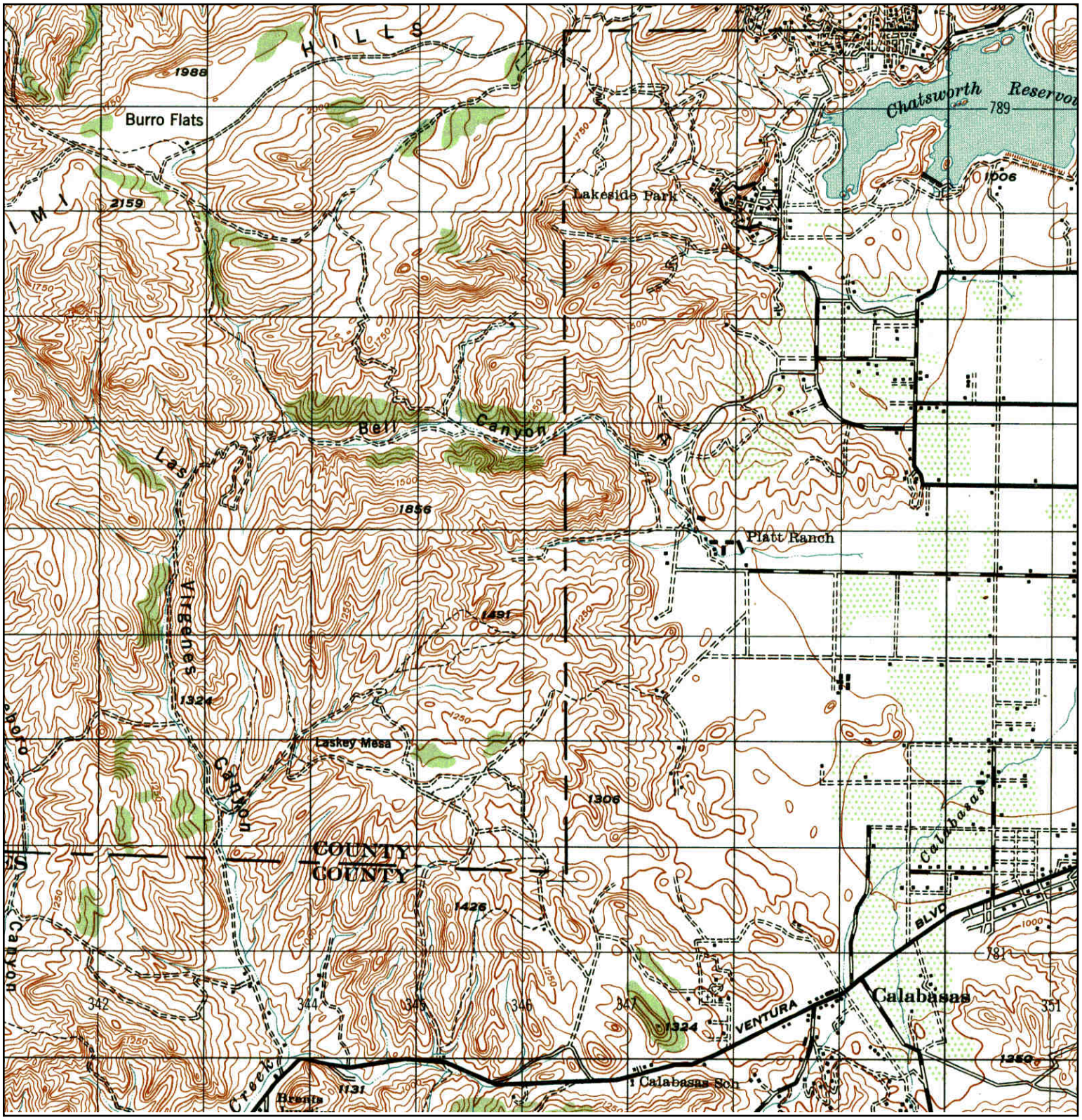
N	TARGET QUAD NAME: SOUTHERN CA SHEET 3 MAP YEAR: 1910 SERIES: 60 SCALE: 1:250000	SITE NAME: West Hills, Naim Associates ADDRESS: Tract No. 2031015033, 2031015022, 2031015011 West Hills, CA 91307 LAT/LONG: 34.1928 / -118.6649	CLIENT: G3Soil Works CONTACT: Stanley White INQUIRY#: 4432168.4 RESEARCH DATE: 10/07/2015

Historical Topographic Map



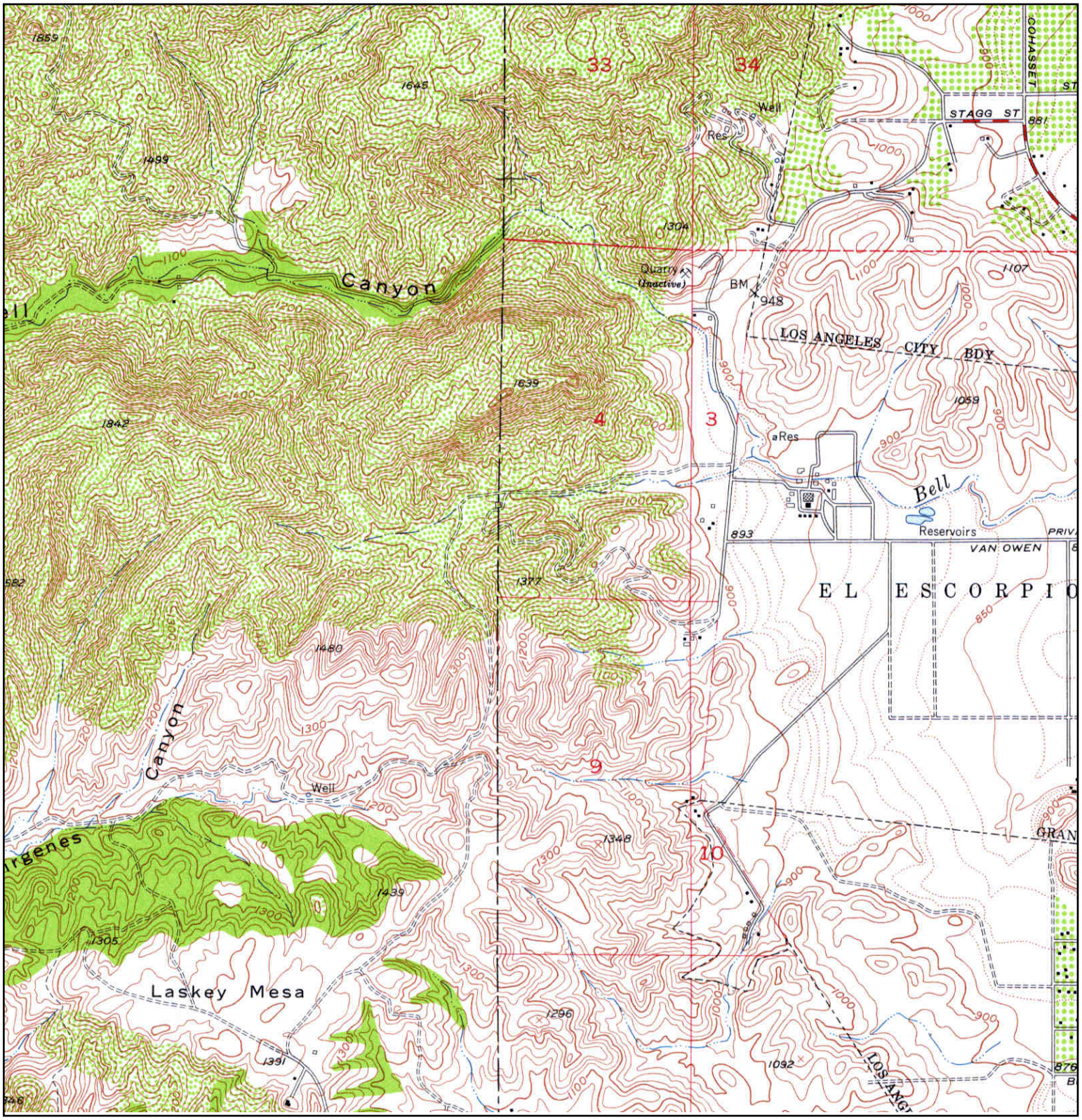
N	TARGET QUAD NAME: DRY CANYON MAP YEAR: 1932 SERIES: 6 SCALE: 1:24000	SITE NAME: West Hills, Naim Associates ADDRESS: Tract No. 2031015033, 2031015022, 2031015011 West Hills, CA 91307 LAT/LONG: 34.1928 / -118.6649	CLIENT: G3Soil Works CONTACT: Stanley White INQUIRY#: 4432168.4 RESEARCH DATE: 10/07/2015

Historical Topographic Map



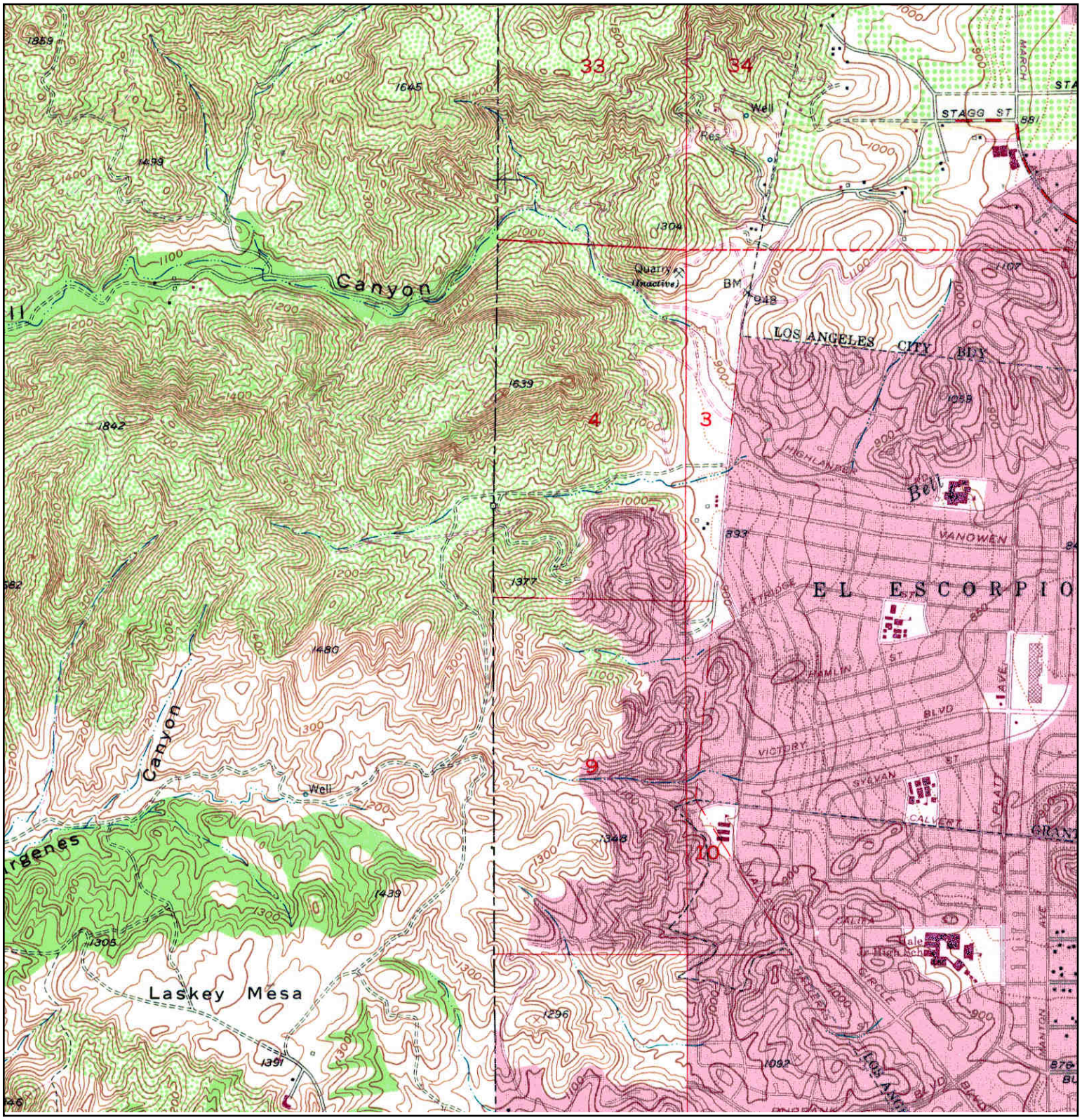
N	TARGET QUAD		SITE NAME:	West Hills, Naim Associates	CLIENT:	G3Soil Works
	NAME:	CALABASAS	ADDRESS:	Tract No. 2031015033, 2031015022, 2031015011	CONTACT:	Stanley White
	MAP YEAR:	1947		West Hills, CA 91307	INQUIRY#:	4432168.4
	SERIES:	15	LAT/LONG:	34.1928 / -118.6649	RESEARCH DATE:	10/07/2015
	SCALE:	1:50000				

Historical Topographic Map



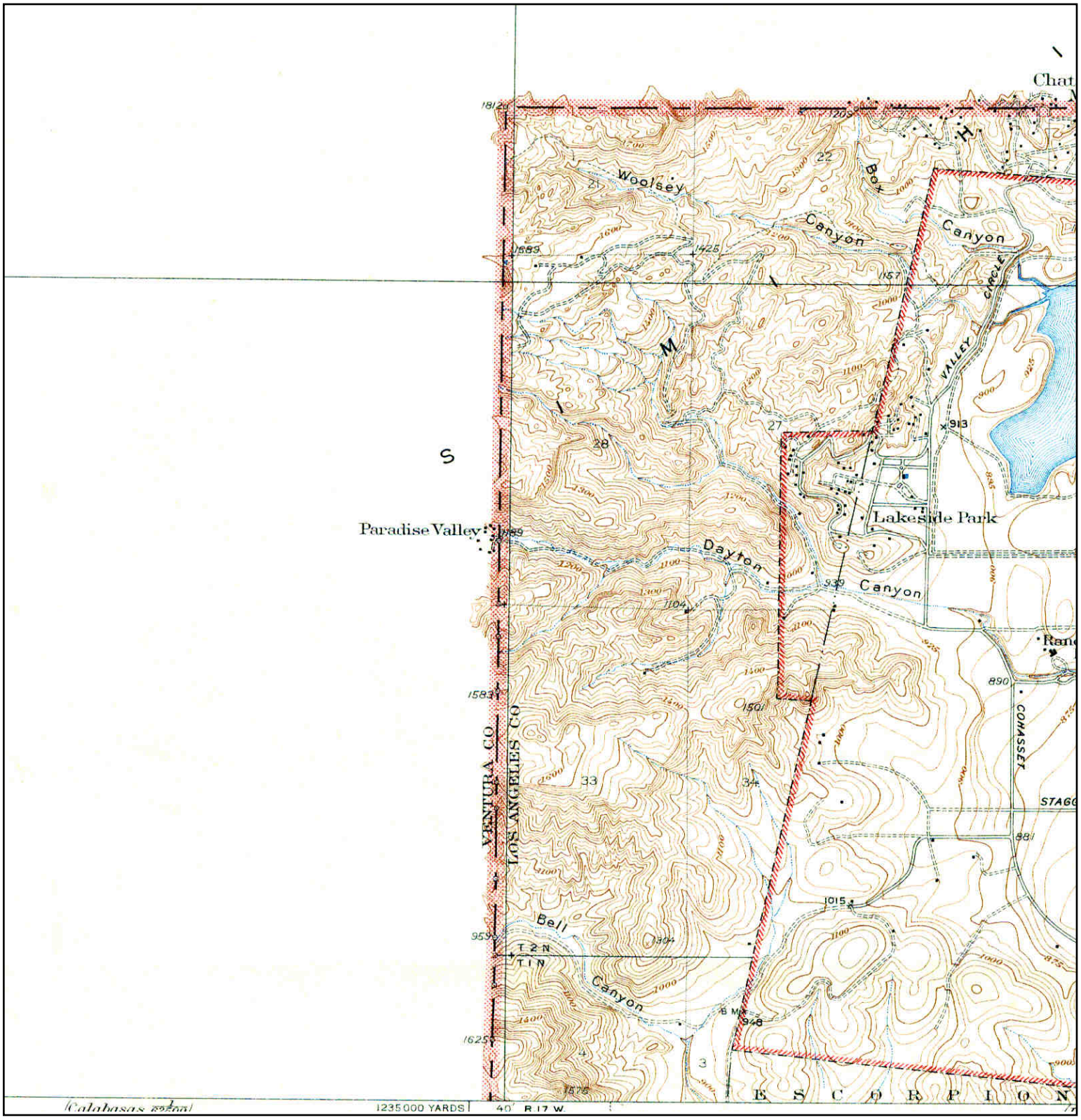
N	TARGET QUAD NAME: CALABASAS MAP YEAR: 1952 SERIES: 7.5 SCALE: 1:24000	SITE NAME: West Hills, Naim Associates ADDRESS: Tract No. 2031015033, 2031015022, 2031015011 West Hills, CA 91307 LAT/LONG: 34.1928 / -118.6649	CLIENT: G3Soil Works CONTACT: Stanley White INQUIRY#: 4432168.4 RESEARCH DATE: 10/07/2015

Historical Topographic Map



N	TARGET QUAD NAME: CALABASAS MAP YEAR: 1967 PHOTOREVISED FROM :1952 SERIES: 7.5 SCALE: 1:24000	SITE NAME: West Hills, Naim Associates ADDRESS: Tract No. 2031015033, 2031015022, 2031015011 West Hills, CA 91307 LAT/LONG: 34.1928 / -118.6649	CLIENT: G3Soil Works CONTACT: Stanley White INQUIRY#: 4432168.4 RESEARCH DATE: 10/07/2015

Historical Topographic Map



N	ADJOINING QUAD				
	NAME:	CHATSWORTH	SITE NAME:	West Hills, Naim Associates	CLIENT: G3Soil Works
	MAP YEAR:	1940	ADDRESS:	Tract No. 2031015033, 2031015022, 2031015011	CONTACT: Stanley White
				West Hills, CA 91307	INQUIRY#: 4432168.4
	SERIES:	6			RESEARCH DATE: 10/07/2015
	SCALE:	1:24000	LAT/LONG:	34.1928 / -118.6649	

APPENDIX C

Sandborn Maps

West Hills, Naim Associates
Tract No. 2031015033, 2031015022, 2031015011
West Hills, CA 91307

Inquiry Number: 4432168.3
October 07, 2015

Certified Sanborn® Map Report

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

10/07/15

Site Name:
West Hills, Naim Associates
Tract No. 2031015033,
West Hills, CA 91307

Client Name:
G3Soil Works
350 Fischer Ave
Costa Mesa, CA 92626

EDR Inquiry # 4432168.3

Contact: Stanley White

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by G3Soil Works were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Site Name: West Hills, Naim Associates
Address: Tract No. 2031015033, 2031015022,
City, State, Zip: West Hills, CA 91307
Cross Street:
P.O. # NA
Project: 1-4001-A
Certification # 6045-4124-8123

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results
Certification # 6045-4124-8123

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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APPENDIX D

Site Photographs



Photo 1 Access Road



Photo 2 North Road Property Line



Photo 3 North Road Property Line



Photo 4 Slope Failure



Photo 5 Observed Oil Well No 1



Photo 6 Observed Oil Well No2



Photo 7 Observed Oil Well No. 3& 4



Photo 8 Observed Oil Well No. 3



Photo 9 *Observed Oil Well No. 5*



Photo 10 *Abandoned Tank*



Photo 11 *Corrugated Tank*



Photo 12 *Erosion Gulley Crossing Road*

APPENDIX E

EDR Radius Search

West Hills, Naim Associates
Tract No. 2031015033, 2031015022, 2031015011
West Hills, CA 91307

Inquiry Number: 4432168.2s
October 07, 2015

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	11
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-13
Physical Setting Source Map Findings	A-15
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

TRACT NO. 2031015033, 2031015022, 2031015011
WEST HILLS, CA 91307

COORDINATES

Latitude (North):	34.1928000 - 34° 11' 34.08''
Longitude (West):	118.6649000 - 118° 39' 53.64''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	346586.8
UTM Y (Meters):	3784591.2
Elevation:	1110 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5630735 CALABASAS, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20120428
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
TRACT NO. 2031015033, 2031015022, 2031015011
WEST HILLS, CA 91307

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	REALTY INSPECTION SE	6772 JULIE LANE	RCRA NonGen / NLR, FINDS	Lower	983, 0.186, ENE
2	BELL CREEK DEBRIS DI	6800 VALLEY CIRCLE B	WMUDS/SWAT	Lower	1808, 0.342, ENE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List

US INST CONTROL ..... Sites with Institutional Controls

Federal ERNS list

ERNS ..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ..... State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ..... EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST ..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
SLIC ..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ..... Underground Storage Tank Listing
UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
ODI ..... Open Dump Inventory
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... National Clandestine Laboratory Register

AOCONCERN San Gabriel Valley Areas of Concern
HIST Cal-Sites Historical Calsites Database
SCH School Property Evaluation Program
CDL Clandestine Drug Labs
Toxic Pits Toxic Pits Cleanup Act Sites
US CDL Clandestine Drug Labs

Local Lists of Registered Storage Tanks

SWEEPS UST SWEEPS UST Listing
HIST UST Hazardous Substance Storage Container Database
CA FID UST Facility Inventory Database

Local Land Records

LIENS Environmental Liens Listing
LIENS 2 CERCLA Lien Information
DEED Deed Restriction Listing

Records of Emergency Release Reports

HMIRS Hazardous Materials Information Reporting System
CHMIRS California Hazardous Material Incident Report System
LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing
SPILLS 90 SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS Formerly Used Defense Sites
DOD Department of Defense Sites
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR Financial Assurance Information
EPA WATCH LIST EPA WATCH LIST
2020 COR ACTION 2020 Corrective Action Program List
TSCA Toxic Substances Control Act
TRIS Toxic Chemical Release Inventory System
SSTS Section 7 Tracking Systems
ROD Records Of Decision
RMP Risk Management Plans
RAATS RCRA Administrative Action Tracking System
PRP Potentially Responsible Parties
PADS PCB Activity Database System
ICIS Integrated Compliance Information System
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS Material Licensing Tracking System
COAL ASH DOE Steam-Electric Plant Operation Data
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
RADINFO Radiation Information Database
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS Incident and Accident Data
CONSENT Superfund (CERCLA) Consent Decrees
INDIAN RESERV Indian Reservations

UMTRA - Uranium Mill Tailings Sites
LEAD SMELTERS - Lead Smelter Sites
US AIRS - Aerometric Information Retrieval System Facility Subsystem
US MINES - Mines Master Index File
FINDS - Facility Index System/Facility Registry System
CA BOND EXP. PLAN - Bond Expenditure Plan
Cortese - "Cortese" Hazardous Waste & Substances Sites List
CUPA Listings - CUPA Resources List
DRYCLEANERS - Cleaner Facilities
EMI - Emissions Inventory Data
ENF - Enforcement Action Listing
Financial Assurance - Financial Assurance Information Listing
HAZNET - Facility and Manifest Data
HIST CORTESE - Hazardous Waste & Substance Site List
LOS ANGELES CO. HMS - HMS: Street Number List
HWP - EnviroStor Permitted Facilities Listing
HWT - Registered Hazardous Waste Transporter Database
MINES - Mines Site Location Listing
MWMP - Medical Waste Management Program Listing
NPDES - NPDES Permits Listing
PEST LIC - Pesticide Regulation Licenses Listing
PROC - Certified Processors Database
Notify 65 - Proposition 65 Records
LA Co. Site Mitigation - Site Mitigation List
UIC - UIC Listing
WASTEWATER PITS - Oil Wastewater Pits Listing
WDS - Waste Discharge System
WIP - Well Investigation Program Case List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP - EDR Proprietary Manufactured Gas Plants
EDR US Hist Auto Stat - EDR Exclusive Historic Gas Stations
EDR US Hist Cleaners - EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF - Recovered Government Archive Solid Waste Facilities List
RGA LUST - Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: The Waste Management Unit Database System is used for program tracking and inventory of waste management units. The source is the State Water Resources Control Board.

A review of the WMUDS/SWAT list, as provided by EDR, and dated 04/01/2000 has revealed that there is 1 WMUDS/SWAT site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BELL CREEK DEBRIS DI	6800 VALLEY CIRCLE B	ENE 1/4 - 1/2 (0.342 mi.)	2	9

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

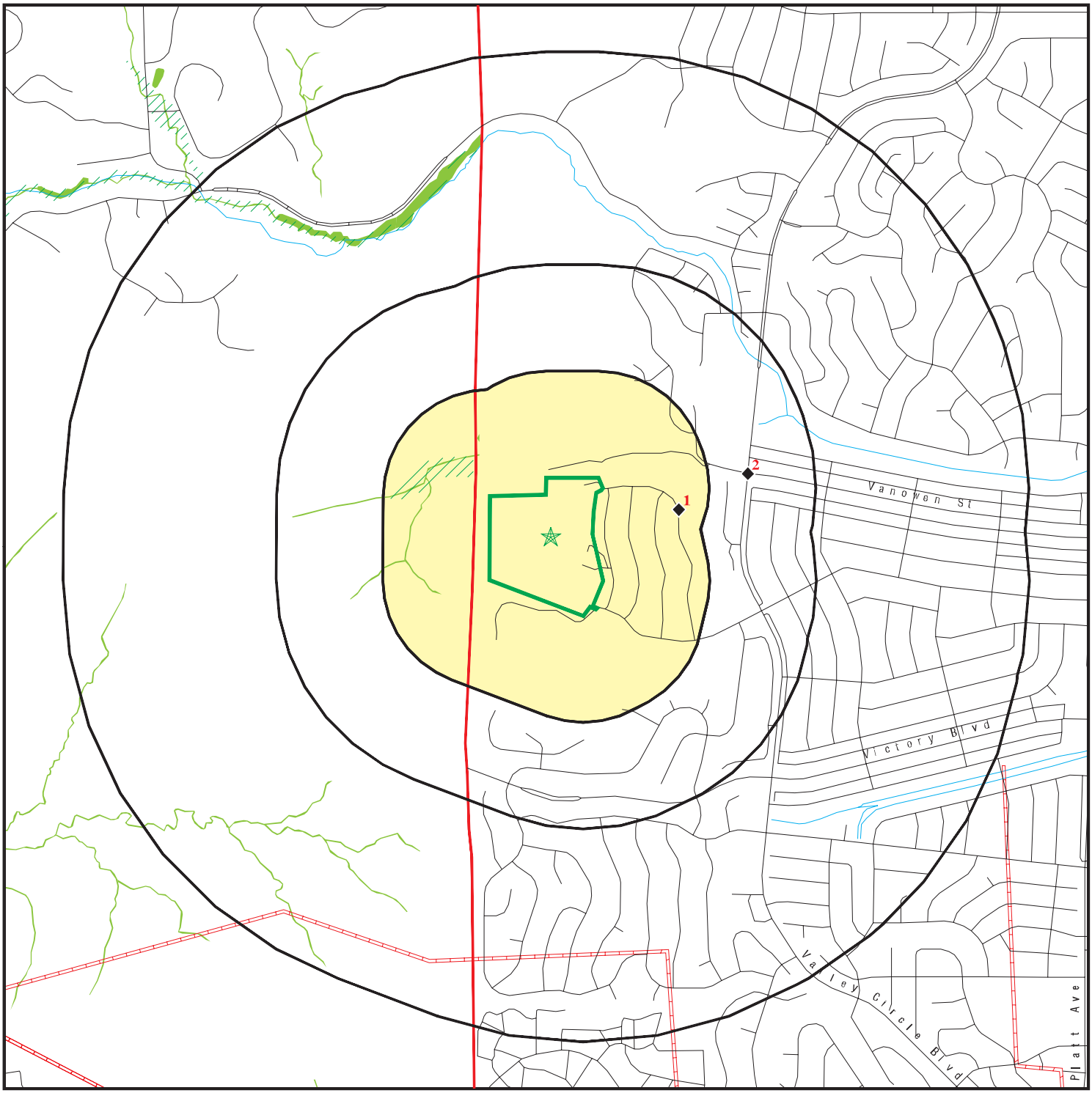
A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 06/09/2015 has revealed that there is 1 RCRA NonGen / NLR site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
REALTY INSPECTION SE	***6772 JULIE LANE***	***ENE 1/8 - 1/4 (0.186 mi.)***	***1***	***8***

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 4432168.2S



0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- Pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	West Hills, Naim Associates	CLIENT:	G3Soil Works
ADDRESS:	Tract No. 2031015033, 2031015022, 2031015011 West Hills CA 91307	CONTACT:	Stanley White
LAT/LONG:	34.1928 / 118.6649	INQUIRY #:	4432168.2s
		DATE:	October 07, 2015 2:26 pm

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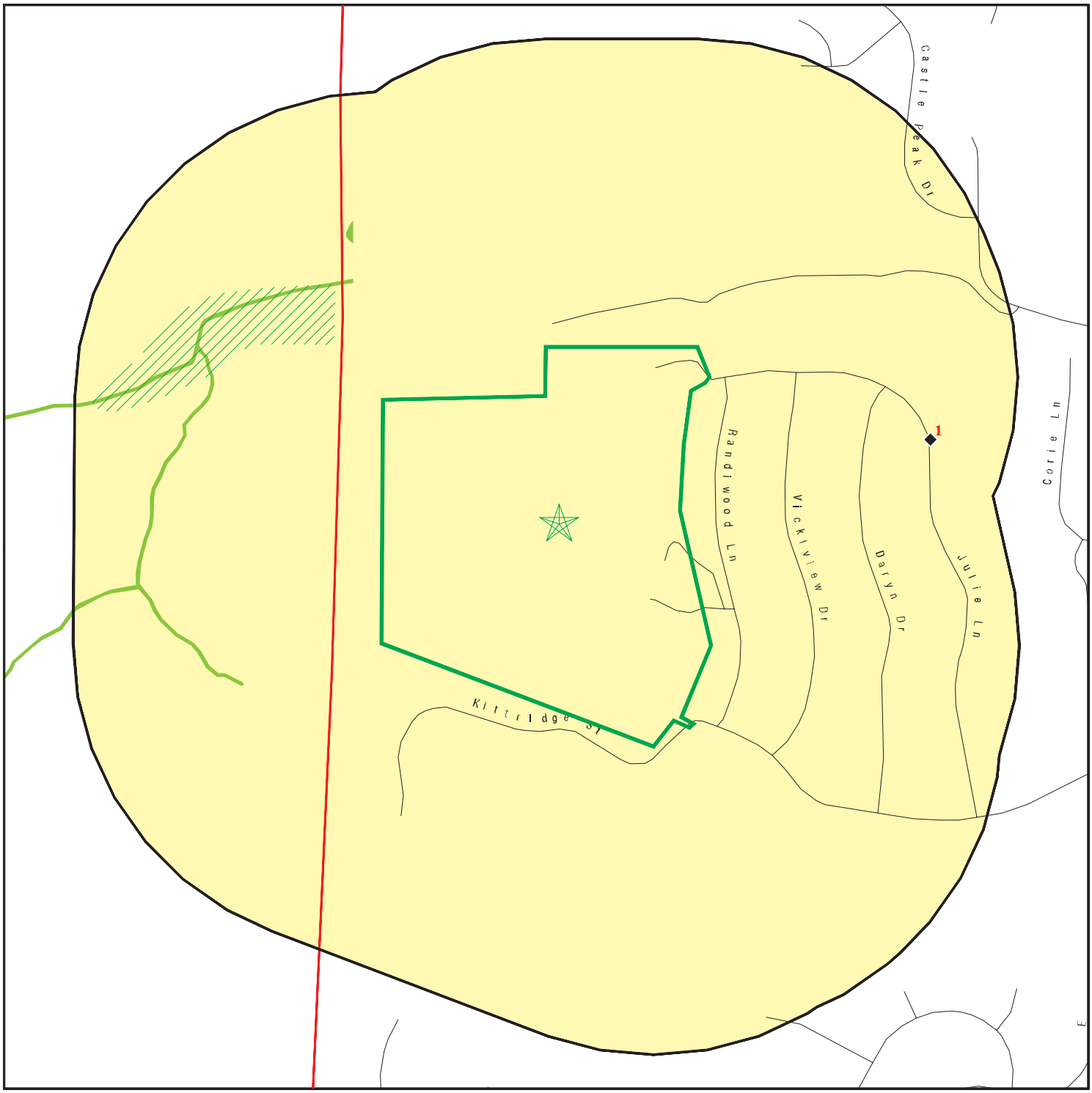
DETAIL MAP - 4432168.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- County Boundary
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	West Hills, Naim Associates	CLIENT:	G3Soil Works
ADDRESS:	Tract No. 2031015033, 2031015022, 2031015011 West Hills CA 91307	CONTACT:	Stanley White
		INQUIRY #:	4432168.2s
LAT/LONG:	34.1928 / 118.6649	DATE:	October 07, 2015 2:27 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
CERCLIS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	1	NR	NR	1
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
AOCONCERN	1.000		0	0	0	0	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	1	NR	NR	NR	1
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
LOS ANGELES CO. HMS	TP		NR	NR	NR	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	TP		NR	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
LA Co. Site Mitigation	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	0	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	1	1	0	0	2

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
ENE
1/8-1/4
0.186 mi.
983 ft.

REALTY INSPECTION SERVICE INC
6772 JULIE LANE
CANOGA PARK, CA 91307

RCRA NonGen / NLR **1000292822**
FINDS **CAD982486557**

Relative:
Lower

Actual:
1023 ft.

RCRA NonGen / NLR:

Date form received by agency:	04/18/1990
Facility name:	REALTY INSPECTION SERVICE INC
Facility address:	6772 JULIE LANE CANOGA PARK, CA 91307
EPA ID:	CAD982486557
Contact:	ENVIRONMENTAL MANAGER
Contact address:	6772 JULIE LANE LOS ANGELES, CA 91307
Contact country:	US
Contact telephone:	(818) 348-4387
Contact email:	Not reported
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	JAMES PUGLIESE & ROBERT ZEILON
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No

REALTY INSPECTION SERVICE INC (Continued) **1000292822**

Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110008279246

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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2 **BELL CREEK DEBRIS DISPOSAL SIT** **WMUDS/SWAT** **S102360917**
ENE **6800 VALLEY CIRCLE BOULEVARD** **N/A**
1/4-1/2 **LOS ANGELES, CA 0**
0.342 mi.
1808 ft.

Relative:
Lower

Actual:
898 ft.

WMUDS/SWAT:

Edit Date:	Not reported
Complexity:	Not reported
Primary Waste:	Not reported
Primary Waste Type:	Not reported
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Base Meridian:	Not reported
NPID:	Not reported
Tonnage:	0
Regional Board ID:	Not reported
Municipal Solid Waste:	False
Superorder:	False
Open To Public:	False
Waste List:	False
Agency Type:	Not reported
Agency Name:	L A CO FLOOD CONTROL DISTRICT
Agency Department:	Not reported
Agency Address:	P.O. BOX 2418 TERMINAL ANNEX
Agency City,St,Zip:	LOS ANGELES 90051
Agency Contact:	Not reported
Agency Telephone:	2132264111
Land Owner Name:	L A CO FLOOD CONTROL DISTRICT
Land Owner Address:	2250 ALCAZAR STREET
Land Owner City,St,Zip:	LOS ANGELES, CA 90033
Land Owner Contact:	Not reported
Land Owner Phone:	2132264111
Region:	4
Facility Type:	Not reported
Facility Description:	Not reported
Facility Telephone:	Not reported
SWAT Facility Name:	BELL CREEK DEBRIS DISPOSAL SITE
Primary SIC:	Not reported
Secondary SIC:	Not reported
Comments:	Not reported

BELL CREEK DEBRIS DISPOSAL SIT (Continued) **S102360917**

Last Facility Editors: Not reported
Waste Discharge System: False
Solid Waste Assessment Test Program: True
Toxic Pits Cleanup Act Program: False
Resource Conservation Recovery Act: False
Department of Defence: False
Solid Waste Assessment Test Program: L A CO FLOOD CONTROL DISTRICT
Threat to Water Quality: Not reported
Sub Chapter 15: False
Regional Board Project Officer: LT
Number of WMUDS at Facility: 1
Section Range: Not reported
RCRA Facility: Not reported
Waste Discharge Requirements: Not reported
Self-Monitoring Rept. Frequency: Not reported
Waste Discharge System ID: 4 190422NUR
Solid Waste Information ID: 19-AR-1022

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 75

Source: EPA
Telephone: N/A
Last EDR Contact: 07/09/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 75

Source: EPA
Telephone: N/A
Last EDR Contact: 07/09/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 75

Source: EPA
Telephone: N/A
Last EDR Contact: 07/09/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/10/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Varies

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 11/11/2013
Date Made Active in Reports: 02/13/2014
Number of Days to Update: 94

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 11/11/2013
Date Made Active in Reports: 02/13/2014
Number of Days to Update: 94

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/28/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 13

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/12/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/22/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/17/2015
Date Data Arrived at EDR: 08/18/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 16

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/18/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/30/2014
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 10

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Semi-Annually

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 03/17/2015
Date Data Arrived at EDR: 05/01/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 52

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land

Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 24

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 04/30/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 53

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 02/12/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 29

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/08/2015
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 02/09/2015
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/05/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 48

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 03/30/2015
Date Data Arrived at EDR: 04/28/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 55

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/10/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 03/17/2015
Date Data Arrived at EDR: 05/01/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 52

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/23/2014
Date Data Arrived at EDR: 11/25/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 65

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/05/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 48

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 12/14/2014
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 28

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 05/06/2015
Date Data Arrived at EDR: 05/19/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 34

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 04/30/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 53

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 09/30/2014
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 10

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/26/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 27

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/29/2014
Date Data Arrived at EDR: 10/01/2014
Date Made Active in Reports: 11/06/2014
Number of Days to Update: 36

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 06/08/2015
Date Data Arrived at EDR: 06/09/2015
Date Made Active in Reports: 07/10/2015
Number of Days to Update: 31

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/22/2015
Date Data Arrived at EDR: 06/24/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 70

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/24/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 47

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 05/26/2015
Date Data Arrived at EDR: 05/28/2015
Date Made Active in Reports: 06/05/2015
Number of Days to Update: 8

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/12/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/01/2015
Next Scheduled EDR Contact: 08/17/2015
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 06/01/2015
Date Data Arrived at EDR: 06/02/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 106
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21
Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/04/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 30
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs
A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/18/2015
Number of Days to Update: 8
Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 08/07/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 05/15/2015
Date Data Arrived at EDR: 06/02/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 106

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 06/11/2015
Date Data Arrived at EDR: 06/16/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/08/2015
Date Data Arrived at EDR: 06/09/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 35

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 06/09/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/24/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 68

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 07/28/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 6

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/28/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 06/06/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 09/18/2014
Number of Days to Update: 8

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 07/08/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/14/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/14/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/21/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 06/01/2015
Date Data Arrived at EDR: 06/02/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 106

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/12/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/14/2015
Next Scheduled EDR Contact: 08/24/2015
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/25/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/12/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 110

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 01/29/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/12/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2015
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 05/14/2015
Next Scheduled EDR Contact: 08/24/2015
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 10/15/2014
Date Made Active in Reports: 11/17/2014
Number of Days to Update: 33

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/17/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/23/2015
Date Data Arrived at EDR: 02/06/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 07/09/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/20/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/20/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/31/2015
Date Data Arrived at EDR: 04/09/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 63
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 06/04/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/12/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/07/2015
Date Data Arrived at EDR: 07/09/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 69

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/09/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/04/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 46

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/28/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/14/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/26/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 11/25/2014
Date Data Arrived at EDR: 11/26/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 07/07/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 07/22/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 40

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 07/22/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 40

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/22/2015
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 05/14/2015
Date Data Arrived at EDR: 06/03/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 91

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/01/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 01/18/2015
Date Data Arrived at EDR: 02/27/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 26

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 06/24/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 18

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/10/2015
Date Data Arrived at EDR: 08/27/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 35

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 09/03/2015
Next Scheduled EDR Contact: 12/21/2015
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 03/25/2014
Date Made Active in Reports: 04/28/2014
Number of Days to Update: 34

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/25/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 08/24/2015
Date Data Arrived at EDR: 08/26/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 36

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/06/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 07/24/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/17/2015
Date Data Arrived at EDR: 08/18/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 16

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/14/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 10/15/2014
Date Made Active in Reports: 11/19/2014
Number of Days to Update: 35

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/17/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Annually

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/24/2015
Date Data Arrived at EDR: 08/26/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 36

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/26/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 07/13/2015
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/14/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Varies

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 05/07/2015
Date Data Arrived at EDR: 06/09/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 35

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 06/09/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 08/17/2015
Date Data Arrived at EDR: 08/18/2015
Date Made Active in Reports: 09/11/2015
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/18/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 06/07/2015
Date Data Arrived at EDR: 06/10/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 34

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 06/15/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 27

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 08/04/2015
Date Data Arrived at EDR: 08/25/2015
Date Made Active in Reports: 10/05/2015
Number of Days to Update: 41

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 10/05/2015
Next Scheduled EDR Contact: 01/04/2016
Data Release Frequency: No Update Planned

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 11/19/2014
Date Data Arrived at EDR: 12/15/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 45

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/19/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing

Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Varies

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/20/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 07/21/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 08/05/2015
Number of Days to Update: 12

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 08/10/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 07/21/2015
Date Data Arrived at EDR: 07/22/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 12

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List
Cupa Facility List

Date of Government Version: 06/05/2015
Date Data Arrived at EDR: 06/09/2015
Date Made Active in Reports: 07/10/2015
Number of Days to Update: 31

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing
Cupa facility list.

Date of Government Version: 11/20/2014
Date Data Arrived at EDR: 11/24/2014
Date Made Active in Reports: 01/07/2015
Number of Days to Update: 44

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 07/15/2015
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 17

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/11/2014
Date Data Arrived at EDR: 06/13/2014
Date Made Active in Reports: 07/07/2014
Number of Days to Update: 24

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 08/10/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/24/2015
Date Data Arrived at EDR: 08/25/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 37

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 08/03/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 05/20/2015
Date Data Arrived at EDR: 08/03/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 31

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 05/26/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/05/2015
Number of Days to Update: 7

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 08/03/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 07/13/2015
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 20

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 07/06/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 08/04/2015
Date Data Arrived at EDR: 08/07/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 27

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 08/11/2015
Date Data Arrived at EDR: 08/14/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 20

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 08/07/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/21/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 05/19/2015
Date Data Arrived at EDR: 06/18/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 34

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/07/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/25/2015
Date Data Arrived at EDR: 08/27/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 34

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 08/11/2015
Date Data Arrived at EDR: 08/14/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 20

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/20/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 11/24/2014
Date Data Arrived at EDR: 01/30/2015
Date Made Active in Reports: 03/04/2015
Number of Days to Update: 33
Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 07/10/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/20/2015
Date Data Arrived at EDR: 07/21/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 13
Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/21/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2015
Date Data Arrived at EDR: 07/27/2015
Date Made Active in Reports: 08/10/2015
Number of Days to Update: 14
Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/20/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/15/2015
Date Data Arrived at EDR: 01/29/2015
Date Made Active in Reports: 03/10/2015
Number of Days to Update: 40
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/15/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 03/30/2015
Date Data Arrived at EDR: 04/02/2015
Date Made Active in Reports: 04/13/2015
Number of Days to Update: 11
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/17/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/03/2015
Date Data Arrived at EDR: 05/26/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 16
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/27/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/03/2015
Date Data Arrived at EDR: 06/04/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 32
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 06/04/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List

A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 05/28/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/15/2015
Number of Days to Update: 17

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/22/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites

Currently permitted USTs in Marin County.

Date of Government Version: 10/08/2014
Date Data Arrived at EDR: 10/22/2014
Date Made Active in Reports: 12/15/2014
Number of Days to Update: 54

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 07/06/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 05/22/2015
Date Data Arrived at EDR: 05/26/2015
Date Made Active in Reports: 06/05/2015
Number of Days to Update: 10

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/22/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List

CUPA Facility List

Date of Government Version: 06/01/2015
Date Data Arrived at EDR: 06/03/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 33

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing

CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/30/2015
Date Data Arrived at EDR: 07/07/2015
Date Made Active in Reports: 07/16/2015
Number of Days to Update: 9

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/26/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 12/05/2011
Date Data Arrived at EDR: 12/06/2011
Date Made Active in Reports: 02/07/2012
Number of Days to Update: 63
Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23
Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 06/03/2015
Date Data Arrived at EDR: 06/04/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 48
Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 08/01/2015
Date Data Arrived at EDR: 08/10/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 24
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/06/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 08/03/2015
Date Data Arrived at EDR: 08/10/2015
Date Made Active in Reports: 09/11/2015
Number of Days to Update: 32
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/06/2015
Next Scheduled EDR Contact: 08/24/2015
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 08/01/2015
Date Data Arrived at EDR: 08/11/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 23
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/11/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 07/01/2015
Date Data Arrived at EDR: 07/07/2015
Date Made Active in Reports: 08/05/2015
Number of Days to Update: 29
Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/15/2015
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 17
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 07/15/2015
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 17
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 05/07/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 10
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 05/07/2015
Date Data Arrived at EDR: 07/27/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 7
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 06/30/2015
Date Data Arrived at EDR: 07/07/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 7

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 08/10/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/23/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 23

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2014
Date Data Arrived at EDR: 11/21/2014
Date Made Active in Reports: 12/29/2014
Number of Days to Update: 38

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 06/03/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 08/06/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 08/06/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 10

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/25/2015
Date Data Arrived at EDR: 08/27/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 34

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 07/20/2015
Date Data Arrived at EDR: 07/22/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 12

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/15/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 06/10/2015
Date Data Arrived at EDR: 06/16/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 28

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 06/29/2015
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/22/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 06/10/2015
Date Data Arrived at EDR: 06/16/2015
Date Made Active in Reports: 07/10/2015
Number of Days to Update: 24

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/10/2015
Date Data Arrived at EDR: 08/14/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 20

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 08/07/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 08/25/2015
Date Data Arrived at EDR: 08/26/2015
Date Made Active in Reports: 10/01/2015
Number of Days to Update: 36

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/24/2015
Next Scheduled EDR Contact: 12/07/2015
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/12/2015
Date Data Arrived at EDR: 06/16/2015
Date Made Active in Reports: 07/10/2015
Number of Days to Update: 24

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/26/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/19/2015
Date Data Arrived at EDR: 06/24/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 20

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 06/19/2015
Date Data Arrived at EDR: 06/30/2015
Date Made Active in Reports: 07/07/2015
Number of Days to Update: 7

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 06/22/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 18

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/01/2015
Date Data Arrived at EDR: 07/07/2015
Date Made Active in Reports: 07/14/2015
Number of Days to Update: 7

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 06/05/2015
Date Data Arrived at EDR: 06/09/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 27

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Semi-Annually

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 07/13/2015
Date Data Arrived at EDR: 07/28/2015
Date Made Active in Reports: 08/03/2015
Number of Days to Update: 6

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 07/24/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 08/17/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 17

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/12/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/12/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 07/29/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 36

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/27/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 05/27/2015
Date Data Arrived at EDR: 06/17/2015
Date Made Active in Reports: 07/06/2015
Number of Days to Update: 19

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/17/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 07/08/2015
Date Data Arrived at EDR: 07/13/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 9

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 07/06/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 08/04/2015
Date Data Arrived at EDR: 08/07/2015
Date Made Active in Reports: 09/03/2015
Number of Days to Update: 27

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/18/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/12/2015
Number of Days to Update: 26

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 08/01/2015
Date Data Arrived at EDR: 08/06/2015
Date Made Active in Reports: 08/24/2015
Number of Days to Update: 18

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/06/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 08/18/2015
Number of Days to Update: 25

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/20/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/26/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 03/19/2015
Date Made Active in Reports: 04/07/2015
Number of Days to Update: 19

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/11/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Telephone: 281-546-1505
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: 800-823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

WEST HILLS, NAIM ASSOCIATES
TRACT NO. 2031015033, 2031015022, 2031015011
WEST HILLS, CA 91307

TARGET PROPERTY COORDINATES

Latitude (North):	34.1928 - 34° 11' 34.08''
Longitude (West):	118.6649 - 118° 39' 53.64''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	346586.8
UTM Y (Meters):	3784591.2
Elevation:	1110 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5630735 CALABASAS, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

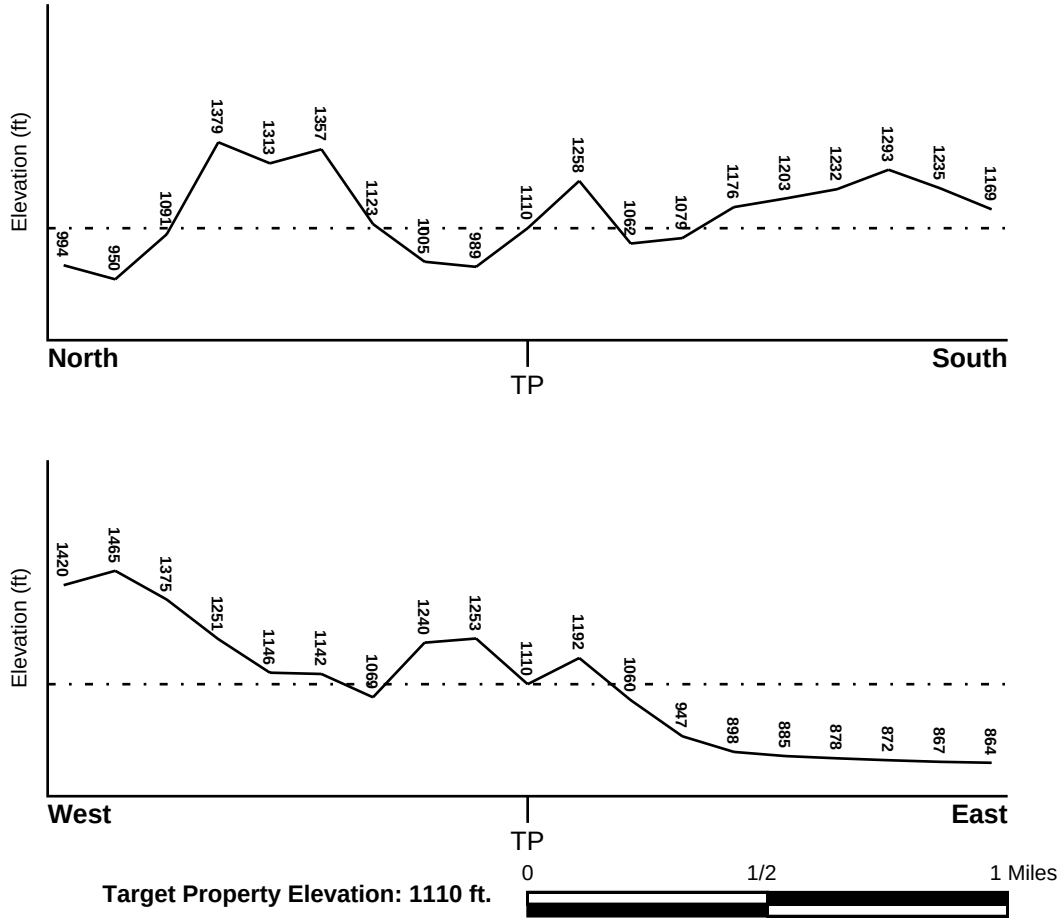
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General East

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: 06111C - FEMA DFIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
CALABASAS	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
1	1/2 - 1 Mile SE	Not Reported

For additional site information, refer to Physical Setting Source Map Findings.

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

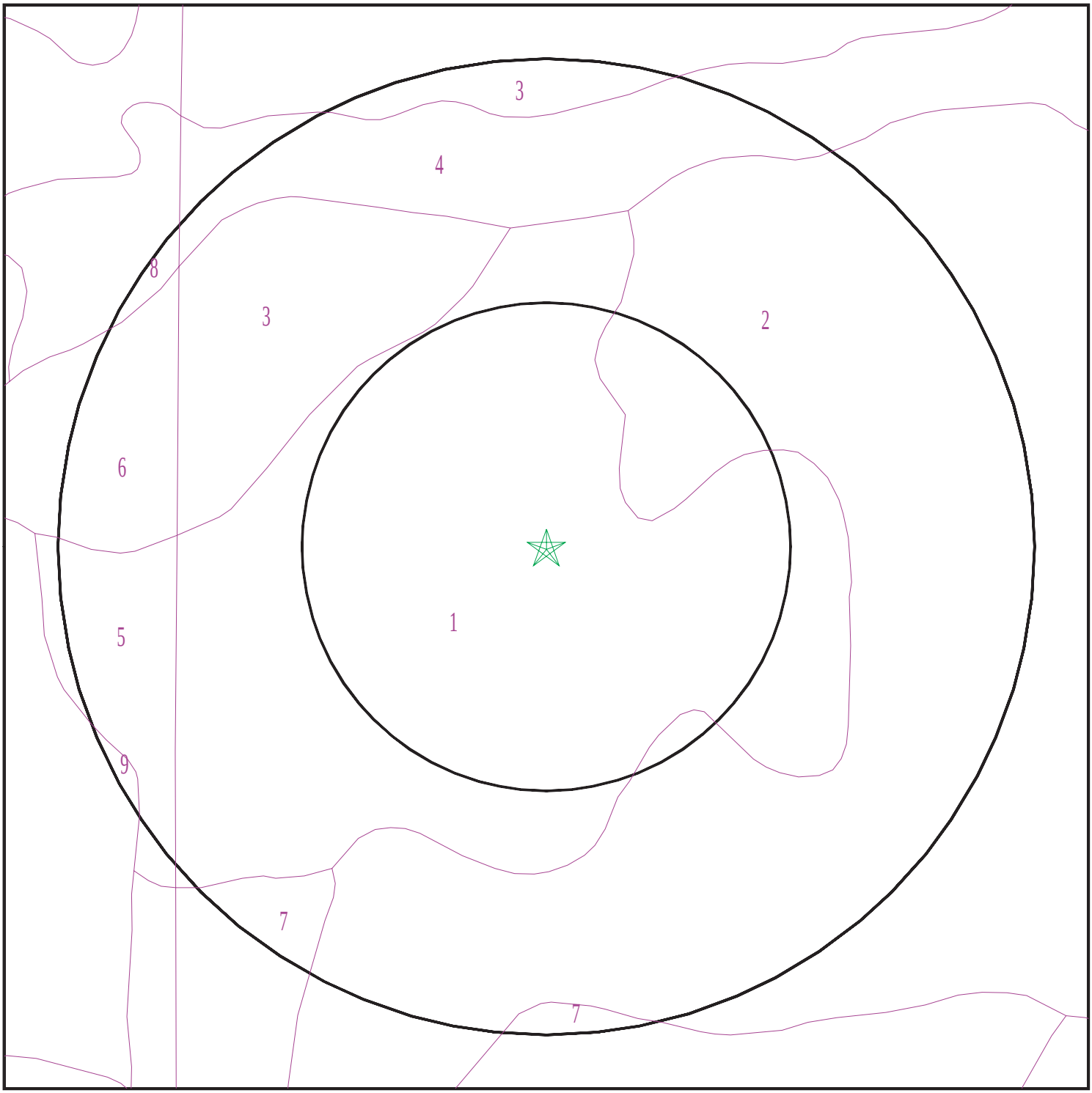
Era:	Cenozoic
System:	Tertiary
Series:	Miocene
Code:	Tm *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 4432168.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	West Hills, Naim Associates	CLIENT:	G3Soil Works
ADDRESS:	Tract No. 2031015033, 2031015022, 2031015011 West Hills CA 91307	CONTACT:	Stanley White
LAT/LONG:	34.1928 / 118.6649	INQUIRY #:	4432168.2s
		DATE:	October 07, 2015 2:27 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Balcom

Soil Surface Texture: silty clay loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	37 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 7.9
2	37 inches	40 inches	weathered bedrock	Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 2

Soil Component Name: Xerorthents

Soil Surface Texture: variable

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 89 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	59 inches	variable	Not reported	Not reported	Max: Min:	Max: Min:
2	59 inches	64 inches	unweathered bedrock	Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 3

Soil Component Name: Gaviota

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 38 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	14 inches	18 inches	unweathered bedrock	Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 4

Soil Component Name: Cropley

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class:
Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	35 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 7.4
2	35 inches	64 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 7.4

Soil Map ID: 5

Soil Component Name: CASTAIC

Soil Surface Texture: silty clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
2	25 inches	29 inches	weathered bedrock	Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 6

Soil Component Name: GAVIOTA

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 38 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
2	7 inches	11 inches	unweathered bedrock	Not reported	Not reported	Max: 0 Min: 0	Max: Min:

Soil Map ID: 7

Soil Component Name: Gazos

Soil Surface Texture: silty clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 82 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	27 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 5.6

Soil Map ID: 8

Soil Component Name: CROPLEY

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	27 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.6
2	27 inches	59 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 7.4

Soil Map ID: 9

Soil Component Name: Calleguas

Soil Surface Texture: channery loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	channery loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	9 inches	18 inches	very channery loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 14 Min: 4	Max: 8.4 Min: 7.9
3	18 inches	22 inches	weathered bedrock	Not reported	Not reported	Max: Min:	Max: Min:

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

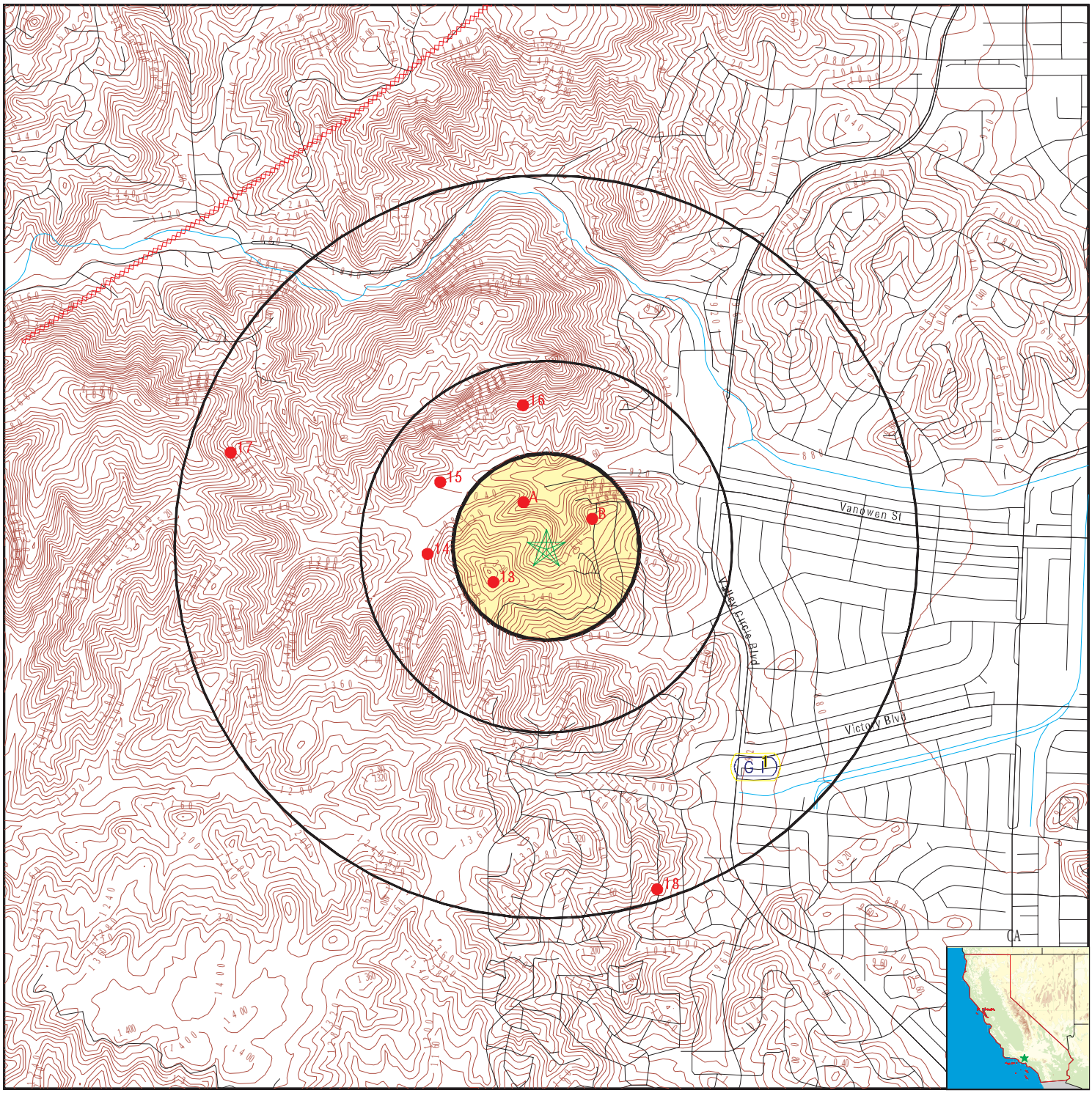
MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	CAOG11000201114	0 - 1/8 Mile NW
A2	CAOG11000201118	0 - 1/8 Mile NNW
A3	CAOG11000201117	1/8 - 1/4 Mile NNW
A4	CAOG11000201116	1/8 - 1/4 Mile NNW
A5	CAOG11000201113	1/8 - 1/4 Mile NNW
A6	CAOG11000201109	1/8 - 1/4 Mile NNW
B7	CAOG11000204557	1/8 - 1/4 Mile ENE
B8	CAOG11000204533	1/8 - 1/4 Mile NE
A9	CAOG11000201111	1/8 - 1/4 Mile NNW
A10	CAOG11000201115	1/8 - 1/4 Mile NW
A11	CAOG11000201110	1/8 - 1/4 Mile NNW
A12	CAOG11000201112	1/8 - 1/4 Mile NW
13	CAOG11000201119	1/8 - 1/4 Mile SW
14	CAOG11000290466	1/4 - 1/2 Mile West
15	CAOG11000290469	1/4 - 1/2 Mile WNW
16	CAOG11000200860	1/4 - 1/2 Mile North
17	CAOG11000290465	1/2 - 1 Mile WNW
18	CAOG11000204809	1/2 - 1 Mile SSE

PHYSICAL SETTING SOURCE MAP - 4432168.2s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

N

SITE NAME:	West Hills, Naim Associates	CLIENT:	G3Soil Works
ADDRESS:	Tract No. 2031015033, 2031015022, 2031015011 West Hills CA 91307	CONTACT:	Stanley White
LAT/LONG:	34.1928 / 118.6649	INQUIRY #:	4432168.2s
		DATE:	October 07, 2015 2:27 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation			Database	EDR ID Number
1 **SE** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	913670216 Not Reported Not Reported Not Reported 19 09/29/1987	**AQUIFLOW**	**69680**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

A1
NW
0 - 1/8 Mile

OIL_GAS **CAOG11000201114**

District nun:	1	Api number:	03701165
Blm well:	N	Redrill can:	Not Reported
Dryhole:	N	Well status:	P
Operator name:	Canoga Oil Co.		
County name:	Los Angeles	Fieldname:	Canoga Park
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Knapp	Wellnumber:	5
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000201114		

A2
NNW
0 - 1/8 Mile

OIL_GAS **CAOG11000201118**

District nun:	1	Api number:	03701168
Blm well:	N	Redrill can:	Not Reported
Dryhole:	Y	Well status:	P
Operator name:	W. J. McCarthy-Wally Dennis		
County name:	Los Angeles	Fieldname:	Any Field
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Knapp	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000201118		

A3
NNW
1/8 - 1/4 Mile

OIL_GAS **CAOG11000201117**

District nun:	1	Api number:	03701167
Blm well:	N	Redrill can:	Not Reported
Dryhole:	N	Well status:	I
Operator name:	Liu Cheng and Lin		
County name:	Los Angeles	Fieldname:	Canoga Park
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Lucky Star	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	AOG
Site id:	CAOG11000201117		

A4
NNW **OIL_GAS** **CAOG11000201116**
1/8 - 1/4 Mile

District nun:	1	Api number:	03701167
Blm well:	N	Redrill can:	Not Reported
Dryhole:	N	Well status:	I
Operator name:	Liu Cheng and Lin		
County name:	Los Angeles	Fieldname:	Canoga Park
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Lucky Star	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	AOG
Site id:	CAOG11000201116		

A5
NNW **OIL_GAS** **CAOG11000201113**
1/8 - 1/4 Mile

District nun:	1	Api number:	03701164
Blm well:	N	Redrill can:	Not Reported
Dryhole:	N	Well status:	P
Operator name:	Canoga Oil Co.		
County name:	Los Angeles	Fieldname:	Canoga Park
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Knapp	Wellnumber:	4
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000201113		

A6
NNW **OIL_GAS** **CAOG11000201109**
1/8 - 1/4 Mile

District nun:	1	Api number:	03701160
Blm well:	N	Redrill can:	Not Reported
Dryhole:	N	Well status:	P
Operator name:	Cache Oil Co.		
County name:	Los Angeles	Fieldname:	Canoga Park
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Knapp	Wellnumber:	4-1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000201109		

B7
ENE **OIL_GAS** **CAOG11000204557**
1/8 - 1/4 Mile

District nun:	1	Api number:	03705262
Blm well:	N	Redrill can:	Not Reported
Dryhole:	Y	Well status:	P
Operator name:	Canoga Oil Co.		
County name:	Los Angeles	Fieldname:	Any Field
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Knapp	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000204557		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

B8
NE **OIL_GAS** **CAOG11000204533**
1/8 - 1/4 Mile

District nun:	1	Api number:	03705219
Blm well:	N	Redrill can:	Not Reported
Dryhole:	Y	Well status:	P
Operator name:	William C. Blanks		
County name:	Los Angeles	Fieldname:	Any Field
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Blanks	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000204533		

A9
NNW **OIL_GAS** **CAOG11000201111**
1/8 - 1/4 Mile

District nun:	1	Api number:	03701162
Blm well:	N	Redrill can:	Not Reported
Dryhole:	N	Well status:	P
Operator name:	Canoga Oil Co.		
County name:	Los Angeles	Fieldname:	Canoga Park
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Knapp	Wellnumber:	1-A
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000201111		

A10
NW **OIL_GAS** **CAOG11000201115**
1/8 - 1/4 Mile

District nun:	1	Api number:	03701166
Blm well:	N	Redrill can:	Not Reported
Dryhole:	N	Well status:	P
Operator name:	Canoga Oil Co.		
County name:	Los Angeles	Fieldname:	Canoga Park
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Knapp	Wellnumber:	6
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000201115		

A11
NNW **OIL_GAS** **CAOG11000201110**
1/8 - 1/4 Mile

District nun:	1	Api number:	03701161
Blm well:	N	Redrill can:	Not Reported
Dryhole:	N	Well status:	I
Operator name:	Canoga Oil Co.		
County name:	Los Angeles	Fieldname:	Canoga Park
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Knapp	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	AOG
Site id:	CAOG11000201110		

A12
NW **OIL_GAS** **CAOG11000201112**
1/8 - 1/4 Mile

District nun:	1	Api number:	03701163
Blm well:	N	Redrill can:	Not Reported
Dryhole:	N	Well status:	P
Operator name:	Canoga Oil Co.		
County name:	Los Angeles	Fieldname:	Canoga Park
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		

Comments:	Not Reported		
Leasename:	Knapp	Wellnumber:	3
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000201112		

13
SW **OIL_GAS** **CAOG11000201119**
1/8 - 1/4 Mile

District nun:	1	Api number:	03701169
Blm well:	N	Redrill can:	Not Reported
Dryhole:	Y	Well status:	P
Operator name:	Wallace M. Nelson		
County name:	Los Angeles	Fieldname:	Any Field
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Lunnon	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000201119		

14
West **OIL_GAS** **CAOG11000290466**
1/4 - 1/2 Mile

District nun:	2	Api number:	11105546
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Eagle Oil & Refining Co. Inc.		
County name:	Ventura	Fieldname:	Any Field
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Barrett	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000290466		

Map ID
Direction
Distance

Database EDR ID Number

15
WNW
1/4 - 1/2 Mile

OIL_GAS **CAOG11000290469**

District nun:	2	Api number:	11105549
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	Terminal Drilling Company		
County name:	Ventura	Fieldname:	Any Field
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Barrett-Crummer	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000290469		

16
North
1/4 - 1/2 Mile

OIL_GAS **CAOG11000200860**

District nun:	1	Api number:	03700494
Blm well:	N	Redrill can:	Not Reported
Dryhole:	N	Well status:	I
Operator name:	Frank Knapp		
County name:	Los Angeles	Fieldname:	Any Field
Area name:	Any Area	Section:	4
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Knapp	Wellnumber:	3
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	AOG
Site id:	CAOG11000200860		

17
WNW
1/2 - 1 Mile

OIL_GAS **CAOG11000290465**

District nun:	2	Api number:	11105545
Blm well:	N	Redrill can:	No
Dryhole:	Y	Well status:	P
Operator name:	George Allen		
County name:	Ventura	Fieldname:	Any Field
Area name:	Any Area	Section:	5
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Teddy	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Not Directionally drilled	Gissymbol:	PDH
Site id:	CAOG11000290465		

18
SSE **OIL_GAS** **CAOG11000204809**
1/2 - 1 Mile

District nun:	1	Api number:	03705634
Blm well:	N	Redrill can:	Not Reported
Dryhole:	Y	Well status:	P
Operator name:	Glenn H. McCarthy		
County name:	Los Angeles	Fieldname:	Any Field
Area name:	Any Area	Section:	9
Township:	01N	Range:	17W
Base meridian:	SB	Elevation:	Not Reported
Locationde:	Not Reported		
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Moss-Lasage	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000204809		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
91307	217	64

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for LOS ANGELES COUNTY, CA

Number of sites tested: 63

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.711 pCi/L	98%	2%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	0.933 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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APPENDIX F

DOGGR Oil Well Logs

API #				Well Name
037 - 01160				"Knapp" 4-1
Task	Date	Initial	no. of pgs. / logs	Notes
Prepped Data file	9/9/14	mac	13	
Scanned Data file	1/27/15	mac	14	2 pg l
QC/ Upload / Verify	1/27/15	gde	14	
Scanned Log/s	1/28/15	GN	TIFS 2 PDFS 2	
QC/ Upload / Verify	1/28/15	GN	22	Archive 3/4/15
Update Scanning	Date	Initial	no. of pgs. / logs	Notes
Scanned Data file				
QC/ Upload / Verify				
Scanned Log/s			TIFS PDFS	
QC/ Upload / Verify				
Update Scanning	Date	Initial	no. of pgs. / logs	Notes
Scanned Data file				
QC/ Upload / Verify				
Scanned Log/s			TIFS PDFS	
QC/ Upload / Verify				
Update Scanning	Date	Initial	no. of pgs. / logs	Notes
Scanned Data file				
QC/ Upload / Verify				
Scanned Log/s			TIFS PDFS	
QC/ Upload / Verify				
Update Scanning	Date	Initial	no. of pgs. / logs	Notes
Scanned Data file				
QC/ Upload / Verify				
Scanned Log/s			TIFS PDFS	
QC/ Upload / Verify				
Update Scanning	Date	Initial	no. of pgs. / logs	Notes
Scanned Data file				
QC/ Upload / Verify				
Scanned Log/s			TIFS PDFS	
QC/ Upload / Verify				

New field designation from Los Angeles County to CANOGA PARK field effective 1-1-61.

Letter from S.F. dated 1-14-62 filed in Field Boundary file.

FORM 159 (9-49)

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS

REPORT OF WELL ABANDONMENT

Los Angeles 15, California, November 23, 1951

Mr T J Curtis
Cache Oil Co
744 Loma Avenue
Long Beach 4 Calif

Dear Sir

Your report of abandonment of Well No. "Knapp" 4-1,
Sec. 4, T. 1 N, R. 17 W, S B B. & M., - - - oil field,
Los Angeles County, dated November 8, 1951, has been examined in conjunction with records filed in this office.

A review of the reports and records shows that the requirements of this Division, which are based on all information filed with it, have been fulfilled.

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
Topo 22	JGW		11-23-51 12		

Yours truly

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Musser
Deputy Supervisor

cc Mr R D Bush
Company
Mr C J Thrapp
Mr H R Boone
es

15414 9-49 7500 SPO

12

.00.
RNIA STATE PRINTING OFFICE

SUBMIT LOG IN DUPLICATE

FILL THIS BLANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF PAPER ONLY

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
NOV 9 1951
LOS ANGELES

WELL SUMMARY REPORT

Operator Cache Oil Co Field (Canoga Park) Los Angeles County

Well No. Knapp 4-1 Sec. 4, T. 1N, R. 17W, SB B. & M.

Location 1225' N 900 E of S 1/4 Cor Sec 4 Elevation above sea level 1150± U.S.G.S. feet.

All depth measurements taken from top of _____, which is _____ feet above ground.

In compliance with the provisions of Chapter 93, Statutes of 1939, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date 11/8/51 Signed T J Giulio

_____ (Engineer or Geologist) _____ (Superintendent) Title Agent (President, Secretary or Agent)

Commenced drilling 5/30/50 Completed drilling 6/9/50 Drilling tools ~~Cable~~ Rotary

Total depth 375' Plugged depth 325'

Junk

GEOLOGICAL MARKERS — DEPTH

Commenced producing Never (date) Flowing/gas lift/pumping (cross out unnecessary words)

	Clean Oil bbl. per day	Gravity Clean Oil	Per Cent Water including emulsion	Gas Mcf. per day	Tubing Pressure	Casing Pressure
Initial production						
Production after 30 days						

Casing Record (Present Hole)

Size of Casing (A. P. I.)	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cementing if through perforations
9 5/8	325	0	36#	SH		J-55	12 1/4	80	273

Perforations

Size of Casing	From	To	Size of Perforations	Number of Rows	Distance Between Centers	Method of Perforations
	ft.	ft.				
9 5/8	325 ft.	273 ft.	80 Mesh	14	2 1/2	Slotted
	ft.	ft.				
	ft.	ft.				
	ft.	ft.				

11

Electrical Log Depths 0 - 325' (Attach Copy of Log)

FORM 103
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
NOV 9 1951
LOS ANGELES

History of Oil or Gas Well

OPERATOR Cache Oil Co FIELD Los Angeles County (Canoga Park)

Well No. Knapp 4-1, Sec. 4, T. 1N, R. 17W, SB B. & M.

Signed W G Curtis

Date 11/8/51 Title Agent
(President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. **Use this form in reporting the history of all important operations at the well, together with the dates thereof, prior to the first production.** Include in your report such information as size of hole drilled to cementing or landing depth of casings, number of sacks of cement used in the plugging, number of sacks or number of feet of cement drilled out of casing, depth at which cement plugs started, and depth at which hard cement encountered. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

Date	
5/30/50	12¼ from 0 To 375'
	Cement plug from 375 To 325'
	9⅝ casing set @ 325 Perf from 325' T 273
6/9/50	& cemented w/ 80 Sacks Victor cement at 273'
	Plugged w/ readymix cement from 325 To 253
11/8/51	Put bridge plug @ 10' filled w/ cement

10

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Special Report on Operations Witnessed

No. T 1-53721

Los Angeles 15 Calif. November 14 19 51

Mr. T J Curtis
Long Beach 4 Calif.
~~Agent~~ for CACHE OIL CO.

DEAR SIR:

Operations at your well No. "Knapp" 4-1 Sec. 4, T. 1 N., R. 17 W., S B B. & M., xxx Field, in Los Angeles County, were witnessed by J L White, Inspector, representative of the supervisor, on November 8, 19 51. There was also present A G McHale and T J Curtis, Operators

Casing Record 9-5/8" ld. 325', c.p. 273', perf. 273'-325'; T.D. 375', plugged with cement 375'-325' and with ready-mix cement and gravel 325'-253' and 12'-1' below surface.

Junk None

The operations were performed for the purpose of witnessing plugging operations in the process of abandonment.

~~The inspector arrived at the well at xxxxxxxxxxxxxxxx and Mr. xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx reported:~~

THE INSPECTOR ARRIVED AT THE WELL AT 12:45 P.M. AND NOTED

1. Thirty-five cu. ft. of ready-mix cement and gravel was poured into the hole, estimated to fill from 325' to 253'.
2. A bridging plug was placed 12" below the surface.
3. Five cu. ft. of ready-mix cement and gravel was poured on the plug at 12', filling to 1' below the surface.

The operations were completed at 2:30 p.m.

THE PLUGGING OPERATIONS ARE APPROVED.

cc - Company

JLW:ES

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Wiessen Deputy

44226 5-51 14,250 ② SPO

ORM 111 (1-49)

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS

No. P 1-50821

Los Angeles 15 Calif. November 14 19 51

MR. T J Curtis
744 Loma Avenue
Long Beach 5 Calif.

~~Agent~~ for CACHE OIL CO.

DEAR SIR:

Your proposal to abandon Well No. "Knapp" 4-1,

Section 4, T. 1 N., R. 17 W., S B B. & M., xxx Field, Los Angeles County,

dated Nov 8 1951, received Nov 9 19 51, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

RECORDS: The condition of the well is as stated in the notice.

THE NOTICE STATES:
"The present condition of the well is as follows:
1. Total depth. 375', plugged with cement 375'-325'
2. Complete casing record.
9-5/8 cem. @ 325 Pref from 273 to 325, c.p. 273'
3. Last produced. Never"

PROPOSAL:
"The proposed work is as follows:
Plug w/ ready mix cement from 325 to 253
Put bridge plug @ 10' and filled w/ cement"

DECISION
THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS the placing of each cement plug.

cc Company

ERMA:ES

W

Bond No. 1,501,371

R. D. BUSH
State Oil and Gas Supervisor

By Elt. Messer Deputy

43268 4-51 25M SPO

FORM 108. 36141 11-50 15M ② SPO

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
NOV 9 1951
LOS ANGELES

Notice of Intention to Abandon Well

This notice must be given at least five days before work is to begin; one copy only

Los Angeles Calif. Nov 8 1951

DIVISION OF OIL AND GAS

Los Angeles Calif.

In compliance with Secs. 3228, 3229, 3230, 3231 and 3232, Ch. 93, Stat. 1939, notice is hereby given that it is our intention to abandon well No. Knabb 4-1

Sec. 4, T. 1N, R. 17W, SB B. & M. Canoga Park Area Field, Los Angeles County, commencing work on the day of ~~May 30~~ Nov 8 1951.

The present condition of the well is as follows:

1. Total depth. 375', plugged with cement 375-325'

2. Complete casing record.
9 5/8 Cem. @ 325' Perf from 273 To 325, c.p. 273'

3. Last produced. Never (Date) (Net oil) (Gravity) (Cut)

The proposed work is as follows:

Plug w/ ready mix cement from 325 To 253
Put bridge plug @ 10' and filled w/ cement

Abandon

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
		EB	1,501,371	EB	EB

Cache Oil Co
(Name of Operator)

7 By W F Curtis

ADDRESS ONE COPY OF NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

FOLLOW-UP
6-29
8/9
10/22

1015 West Olympic Boulevard
Los Angeles 15 California

May 29 1951

Cache Oil Co
744 Loma Avenue
Long Beach 4 California

Gentlemen

Since my letter to you of May 10, 1951, was written, I have ascertained that your well No. "Knapp" 4-1, Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., Los Angeles County, has been drilled to approximately 325 feet. Therefore, the log, history, drillers log, well summary in duplicate, and a copy of the electric log should be filed at this office immediately.

I am enclosing a supply of forms for your convenience.

Yours truly

E H MUSSER
Deputy Supervisor

Note Address reply to attention
of Mr E R Murray-Aaron

ERMA:eb

2nd letter written 7/26/51 gm
3rd letter written 10/8/51 gm

6

FOLLOW-UP
6-10

1015 West Olympic Boulevard
Los Angeles 15 California

May 10 1951

Cache Oil Co.
744 Loma Avenue
Long Beach 4 California

Gentlemen

In a notice received on June 14, 1950, you proposed to drill well No. "Knapp" 4-1, Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., Los Angeles County.

If you do not intend to drill this well, will you please so inform us by letter. Upon receipt of such information, we will cancel your notice, and request the State Oil and Gas Supervisor to return your drilling bond to you.

Yours truly

E H MUSSER
Deputy Supervisor

Note Address reply to attention
of Mr E R Murray-Aaron

eb

Reported T-D-325±
Knapp, landowner, to Erma

5

Los Angeles

May 10 1951

R D BUSH

Please refer to your letter of May 4, 1951, inquiring if all conditions have been fulled under bond covering Cache Oil Co. well No. "Knapp" 4-1, Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., Los Angeles County.

The company has not yet started drilling this well, and we are writing to inquire if it wishes the notice cancelled.

E. H. Mussen

Deputy Supervisor

ERMA:eb

36440 11-50 2500 ② SPO

STATE OF CALIFORNIA

SAN FRANCISCO 11

DIVISION OF OIL AND GAS
RECEIVED
MAY 7 - 1951
LOS ANGELES, CALIFORNIA

Inter-Departmental Communication

Date: May 4, 1951

To: E. H. MUSSER
Los Angeles

From: **State Division of Oil and Gas**

Have all the conditions been fulfilled, and if so when, under bond covering Cache Oil Co. well No. "Knapp" 4-1, Sec. 4, T. 1 N., R. 17 W., S. B. B. & M?

R. D. Brush

State Oil and Gas Supervisor

3

RM 111.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Report on Proposed Operations

No. P 1-48410

Los Angeles 15, Calif. June 20, 1950

Mr. T. J. Curtis

Long Beach 4, Calif.

~~Agent~~ for CACHE OIL CO.

121

Dear Sir:

Your proposal to drill Well No. "Knapp" 4-1,

Section 4, T. 1 N., R17 W., S.B. B. & M., xxxx Field, Los Angeles County,

dated xxx 19___, received June 14, 1950, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:

"Location of Well: 1225' N; 900' E fr S¼ cor Sec 4
Elevation of ground above sea level to be reported later
All depth measurements taken from top of K. B. which is 5 feet above ground."

PROPOSAL:

"PROPOSED CASING PROGRAM

Size of Casing Inches A.P.I.	Weight	Grade and Type	Top	Bottom	Cementing Depths
14"			Surface	14'	Cem. 14'
9 5/8"			"	323	Comb. string c.p. 273 Perf. 273-323
7"			"	?	

Intended zone or zones of completion:

Name	Perforated interval
	273' - 323'

It is understood that if changes in this plan become necessary we are to notify you before running casing."

DECISION:

THE PROPOSAL IS APPROVED PROVIDED THAT

1. Any hole to be sidetracked in any oil or gas zone shall be filled with cement, if possible.
2. THIS DIVISION SHALL BE NOTIFIED TO WITNESS a test of the effectiveness of the 9-5/8" shut-off through perforations above the zone to be produced.

CLB:OH

cc- Company

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Musser Deputy

2

Bond No. 1,501,371

105

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS

037-01160
DIVISION OF OIL AND GAS
RECEIVED
JUN 14 1950
LOS ANGELES, CALIFORNIA

Notice of Intention to Drill New Well

This notice and surety bond must be filed before drilling begins

Calif. 19

DIVISION OF OIL AND GAS

In compliance with Section 3203, Chapter 93, Statutes of 1939, notice is hereby given that it is our intention to commence the work of drilling well No. "Knapp" 4-1, Sec. 4, T. 1 N, R. 17 W, SB. B. & M., —— Field, Los Angeles County.

Legal description of lease 20 acres in the W½ NE¼ SW¼ SE¼ Sec. 4 T 1N R 17 W SB. B&M.
(Attach map or plat to scale)

Location of Well: 1225' N; 900' E fr S¼ cor Sec 4
(Give exact footage from section corners or other legal subdivision or streets)

1740 W
1225 N } Fr. SE Cor. Sec. 4

Elevation of ground above sea level to be reported later feet.

All depth measurements taken from top of K.B. which is 5 feet above ground.
(Derrick Floor, Rotary Table or Kelly Bushing)

PROPOSED CASING PROGRAM

SIZE OF CASING INCHES A.P.I.	WEIGHT	GRADE AND TYPE	TOP	BOTTOM	CEMENTING DEPTHS
14"			surface	14'	cem. 14'
9 5/8"			✓	323	comb. string cem. 273' perf. 273-323
7"			✓	?	

Intended zone or zones of completion:

NAME	PERFORATED INTERVAL
/	273' - 323'

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
TOPO 22	9/14	EB	650371	EB	EB

It is understood that if changes in this plan become necessary we are to notify you before running casing.

Address 744 Loma Ave Long Beach Cache Oil Co.
(Name of Operator)

Telephone Number 99960 By M J Curtis

SEND ONE COPY OF NOTICE TO DIVISION OFFICE IN DISTRICT WHERE WELL IS LOCATED

Map

SURVEY OF THE EAST-WEST 1/4 1/4 LINE OF S.E. 1/4 SEC. 4, T.1N., R.17W., S.B.M.

M. B. C.S. 60 in the State of California

For CURTIS & McHALE No. 52-4132-A

Date MAY 26, 1950 Scale 1" = 300' D. M.

JOHN W. BAILEY
SURVEYS, INC.
Licensed Surveyors
14440 Victory Blvd
Van Nuys, Calif.
Phones STate 5-0204
STate 5-0061

DIVISION OF OIL AND GAS
RECEIVED
JUN 29 1950
LOS ANGELES, CALIFORNIA

Knapp 1 -

33	34
	Fd 2" I.P.
4	3

2615.90

To W. 1/4 cor.

Center of Section 4

To

N. 89° 46' 54" W. 2624.54

E. 1/4 cor.

1312.27 1312.27

2632.64 1316.32

Set 2"x 2" Sta 26+51.07
Set 2"x 2" Sta 23+19.69
Set 2"x 2" Sta 19+88.30
Set 2"x 2" Sta 17+41.91
Set 2"x 2" Sta 16+66.91
Set 2" I.P. Sta 13+25.52
Set 2"x 2" Sta 9+94.14
Set 2"x 2" Sta 6+62.76
Set 2"x 2" Sta. 3+31.38
Fd 2" I.P. LS 2313 Sta 0+00

1314.61 2629.21

N. 89° 48' 54" W. 2651.07

1325.55 1325.52

N. 01° 09' 50" E

S 00° 43' 50" W 1030.0

WELL LOCATION

(wells shown in red)
Canoga Oil Company
"Knapp"

20± Ac

55° 04' 18" W 2125.97

N 00° 00' 30" E

1316.32 1314.60

4 3

To Sec. cor. Fd. County Surveyor's Monument 1338.81 1338.80 Fd 2" I.P.

S 89° 50' 52" E 2671.61

9 10

S. 1/4 cor.

1

W½ NE¼ SW¼ SE¼

FORM 154.7

18 199

SCHLUMBERGER

WELL SURVEYING CORPORATION

Location of Well

DIVISION OF OIL AND GAS
RECEIVED
FEB 24 1949
LOS ANGELES, CALIFORNIA

Elevation K.B.:
D.F.:
or G.L.:

COMPANY: V. F. STABECK

WELL: KNAPP NO. 4

RUN NO.: 1

FIELD: CANOGA PARK

LOCATION: 4- 1N - 17W

COUNTY: LOS ANGELES

STATE: CALIFORNIA

FILING No.

COMPANY: V. F. STABECK

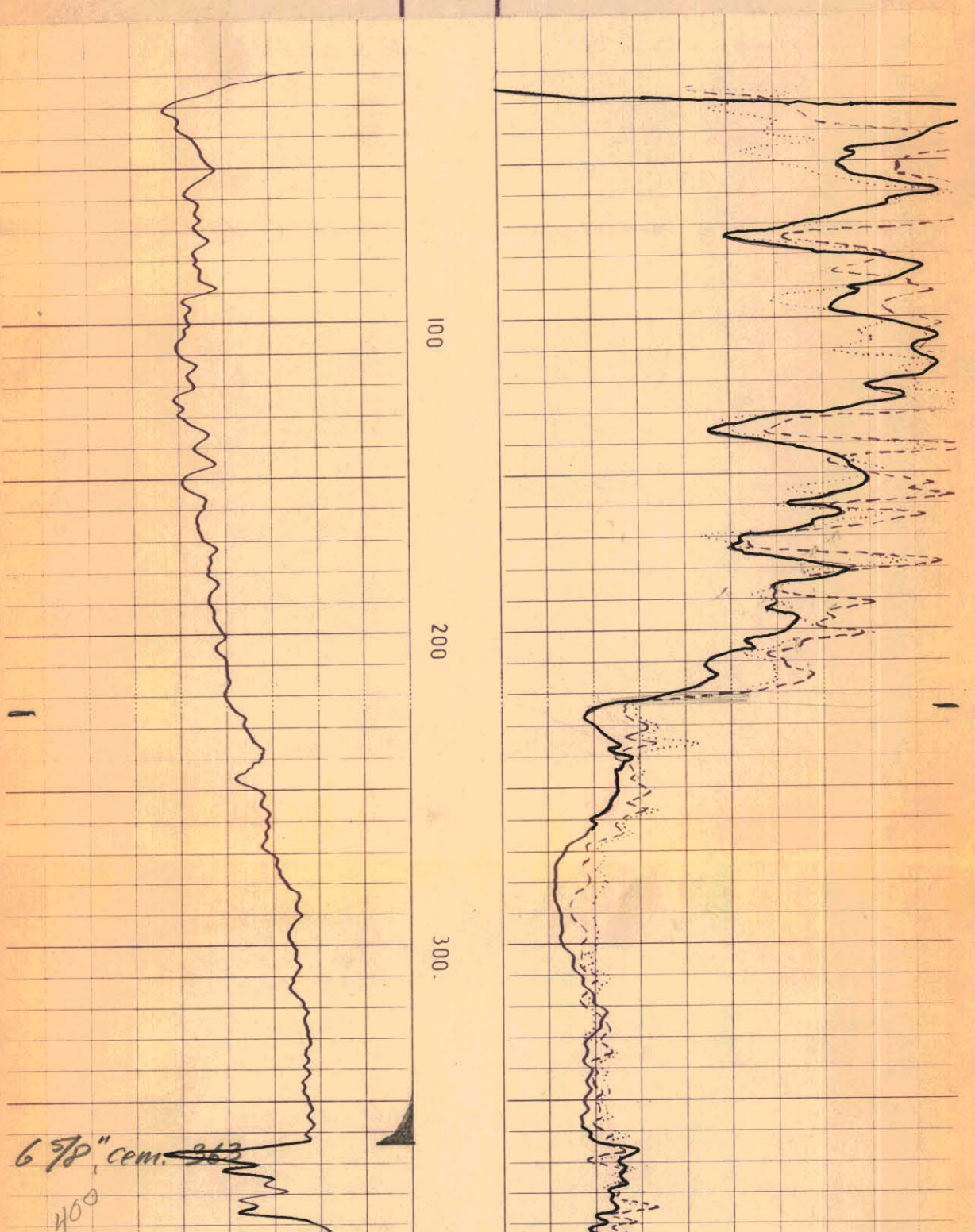
CANOGA OIL COMPANY
"Knapp" 4 (037-01160)
Sec. 4-1N-17W CANOGA PARK

B 199

RUN	L					
Date	1-7-48					
First Reading	776					
Last Reading	33					
Footage Measured	743		MAP	MAP BOOK / CARDS	BOND	FORMS 114 / 121
Csg Shoe Schlum.	—					
Csg Shoe Driller	15					
Max. Depth Reached	779					
Bottom Driller	782					
Depth Datum	Top Table					
Mud Nature	Natural					
" Density	60					
" Viscosity	30					
" Resistivity	0.6 @ 64 °F	@ °F	@ °F	@ °F	@ °F	@ °F
Maximum Temp.	— °F	°F	°F	°F	°F	°F
Bit Size	6 1/4"					
Spacings: AM	32"					
AM'						
OA	12'					
	19'					
Observers	G. Hepburn					
Rig Time:						

REMARKS

SELF-POTENTIAL	DEPTHS	RESISTIVITY
50 millivolts		60 -ohms. m^2m.



V. F. STABECK
CANOGA PARK
KNAPP NO. 4

WELL SURVEYING CORPORATION

COMPANY (CASCHE) OIL CO.

Location of Well

COUNTY: LOS ANGELES
FIELD OR
LOCATION: CANOGA PARK
WELL: KNAPP NO. 4-1
COMPANY: CASCHE OIL CO

CACHE OIL CO.
"Knapp" 4-1 (037-01160)
Sec. 4-1N-17W CANOGA PARK

FIELD: CANOGA PARK
LOCATION: 4 - IN - 17W
COUNTY: LOS ANGELES
STATE: CALIF.
FILING No.

Elevation: D.F.
K.B.:
or G.L.:

RECEIVED
NOV 21 1950
DIVISION OF OIL & GAS
LOS ANGELES

18 299

18 299

RUN NO.	1
Date	6-7-50
First Reading	375
Last Reading	55
Footage Measured	340
Csg Shoe Schlum.	—
Csg Shoe Driller	—
Max. Depth Reached	376
Bottom Driller	375
Depth Datum	Top Table
Mud Nature	Gel.Pyro.Tan.
" Density	80
" Viscosity	40
" Resistivity	5.4 @ 72 °F
" Resistivity BHT	5.7 @ 66 °F
" pH	— @ — °F
" Water Loss	— CC/30 Min.
Maximum Temp. °F.	66°F
Bit Size	7 5/8"
Spacings — AM	17"
A O	10'
AO'	19'
E.S. Rig Time	1/2 hr.
Truck No.	292
Recorded By	JD.Pound
Witnessed By	Curtis

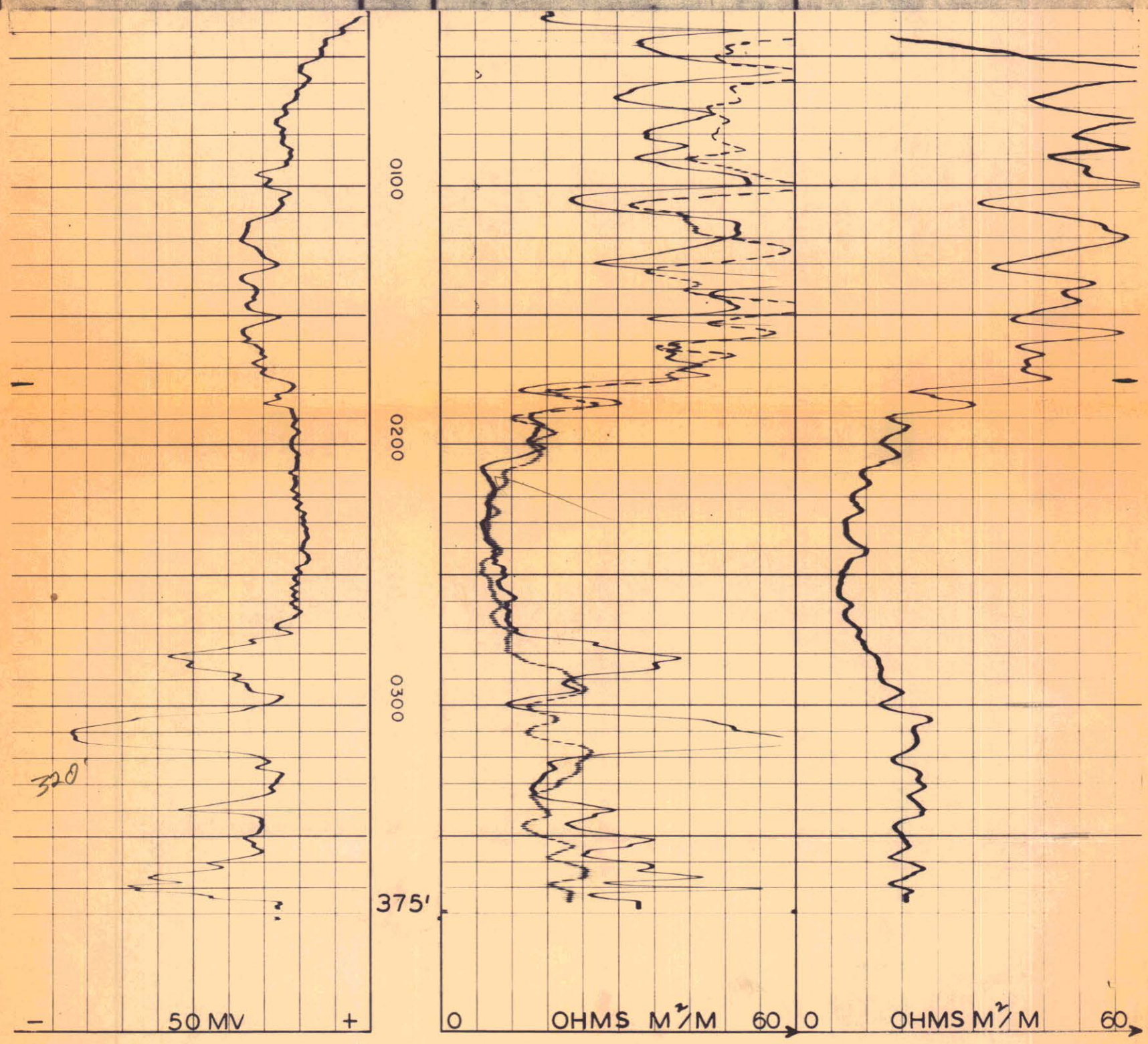
REMARKS

SPONTANEOUS-POTENTIAL
50 millivolts

DEPTHS

RESISTIVITY
0 -ohms. m²/m. 60
0 AM 17" 60
0 OA 10' 60

RESISTIVITY
0 -ohms. m²/m. 60
0 OA' 19' 60



CASCHE OIL CO.
CANOGA PARK
KNAPP Nº 4-1

ARCHIVE 2/10/15

API #	037 - 01162		
Task	Date	Initial	no. of pgs./ logs
Prepped, # efile	6/6/14	MAC	27
Scanned-efile	1/27/15	Mac	27
QC/Upload/Verify	1/28/15	gde	27
Scanned-Log/s			
QC/Upload/Verify			
Update scanning	Date	Initial	no. of pgs./ logs
Prepped, # efile			
Scanned-efile			
QC/Upload/Verify			
Scanned-Log/s			
QC/Upload/Verify			

New field designation from Los Angeles County to CANOGA PARK field effective 1-1-61.

Letter from S.F. dated 1-19-62 filed in Field Boundary file.

FORM 159 (9-49)

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS

REPORT OF WELL ABANDONMENT

Los Angeles 15, California, July 16, 1952

Vincent F Stabeck, Agent
Canoga Oil Company
4447 Avenue 42 W
Los Angeles 65 California

Dear Sir

CNS

Your report of abandonment of Well No. "Knapp" 1-A,
Sec. 4, T. 1 N, R. 17 W S B B. & M., - - - oil field,
Los Angeles County, dated June 30, 1952, has been
examined in conjunction with records filed in this office.

A review of the reports and records shows that the requirements of this Division, which are based on all information filed with it, have been fulfilled.

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
TOPO 22	CNS		no bond required		ry

11-3-76
R. Johnson visited the probable wellsite. See photo #(5) in Knapp Bros "Frank Knapp" 1 & note the 6" I.D. casing

Yours truly

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Nusser
Deputy Supervisor

cc Mr R D Bush
Company
Mr C J Thrapp
Mr H R Boone

es

26

57615 2-52 12M SPO

FORM 103
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
JUL 1 1952
LOS ANGELES, CALIFORNIA

History of Oil or Gas Well

OPERATOR Canoga Oil Co. (Company) FIELD Wildcat (Los Angeles County)

Well No. "Knapp" (No) 1-A., Sec. 4, T. 1N, R. 17W, S. B. B. & M.

Signed Canoga Oil Co

Date June 30, 1952 Title V.P. Staken, Pres.
(President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. **Use this form in reporting the history of all important operations at the well, together with the dates thereof, prior to the first production.** Include in your report such information as size of hole drilled to cementing or landing depth of casings, number of sacks of cement used in the plugging, number of sacks or number of feet of cement drilled out of casing, depth at which cement plugs started, and depth at which hard cement encountered. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

Date

July 5 1951

Well was cleaned out to 223 ft
Cement was put in with dump bailer
and filled up to 180 ft
10 ft cement plug was also put in top of
casing
Paul Betts, inspector witnessed
operations

25

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Special Report on Operations Witnessed

No. T 1-53154

Los Angeles 15 Calif. July 18 1951

Mr. Vincent F Staheck
Los Angeles Calif.
Agent for CANOGA OIL COMPANY

12-1

DEAR SIR:

Operations at your well No. "Knapp" 1-A Sec. 4, T. 1 N, R. 17 W, S B B. & M., xxxx Field, in Los Angeles County, were witnessed by Paul Betts, Inspector, representative of the supervisor, on July 5, 1951. There was also present J. Kals, Operator; Earl Grabhorn, Driller.

Casing Record 6" cem. 203'; 4-1/2" perforated liner ld. 200'-225'. T.D. 225'. plugged with cement 223'-186'± and 10' - surface.

Junk None

The operations were performed for the purpose of witnessing the placing of cement plugs from 223'-186'± and 10'-surface in the process of abandonment.

The inspector arrived at the well at 12:10 p.m. and [redacted]

NOTED:

1. The hole was cleaned out to 223'.
2. Three sacks of cement was dumped in the hole at 223', calculated to fill to 186'.
3. One sack of cement was dumped on a wooden plug driven to 10', and filled the hole with cement to the surface.

The operations were completed at 1:30 p.m.

THE PLUGGING OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED.

PWB:OH F/S

cc Company

R. D. BUSH
State Oil and Gas Supervisor

24 By [signature] Deputy

16330 10-49 17,500 ② SPO

Los Angeles

R D BUSH

June 19 1951

Canoga Oil Co. pleaded guilty today to the charge of violating Sec. 3203 and 3204 and was fined $100 on each count. Of this amount, one-half was suspended so the firm will pay a total fine of $100.

/s/ E H Musser

Deputy Supervisor

EHM:my

Los Angeles

June 12 1951

R D BUSH

The arraignment of Canoga Oil Co. on charges of violation of Sec. 3203 and 3204 of the Public Resources Code was continued for one week. The hearing is now set for 1:30 p.m. on Tuesday, June 19, at Lincoln Heights Jail in Los Angeles. The case is No. 97229 in the Municipal Court.

The defendant's attorney, Mr. Brock, requested the week's continuance in order to study the complaint. I believe that he will enter a guilty plea.

Deputy Supervisor

EHM:my

FORM 111 (1-49)

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS

No. P 1-50062

Los Angeles 15 Calif. June 12 19 51

MR. Vincent F Stabeck

Los Angeles Calif.

121

Agent for CANOGA OIL COMPANY

DEAR SIR:

Your proposal to abandon Well No. "Knapp" 1-A,

Section 4, T. 1 N, R 17 W, S B B. & M., (Canoga Park Area) Field, Los Angeles County,

dated June 9 19 51, received June 11 1951, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:

"The present condition of the well is as follows:

1. Total depth. 225 feet

2. Complete casing record.
   6" O*D to 203 feet
   4" O-D 200 to 225 feet

3. Last produced. May 20th (Date) ½bbl (Net oil) 28 (Gravity) .05% (Cut)"

PROPOSAL:

"The proposed work is as follows:
Plug hole with cement from 225 feet to 180 feet
Top plug- from 10 feet to surface."

DECISION:

THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS the location and hardness of cement plugs at 180' and at the surface.

NOTE: This division shall be consulted if the proposed work is not to be performed under your direct supervision.

NOTE: A complete report in duplicate on the enclosed forms should be filed with this division after the completion of the above work.

ERMA:OH

cc- Company

W4

R. D. BUSH
State Oil and Gas Supervisor

21 By E. Haussen Deputy

No bond required.

4326 4-51 25M S&G

FORM 108. 36141 11-50 15M ② SPO

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
JUN 11 1951
LOS ANGELES

Notice of Intention to Abandon Well

This notice must be given at least five days before work is to begin; one copy only

037-01162

Los Angeles: Calif. June 9th 1951

DIVISION OF OIL AND GAS

Los Angeles, Calif.

In compliance with Secs. 3228, 3229, 3230, 3231 and 3232, Ch. 93, Stat. 1939, notice is hereby given that it is our intention to abandon well No. "Knapp" 1-A / Knapp #1-A.

Sec. 4, T. 1-No., R. 17-W., S.B. B. & M. Wildcat Field, Los Angeles County, commencing work on the 16th day of June 1951.

The present condition of the well is as follows:

1. Total depth. 225 feet

2. Complete casing record.

6" O*D to 203 feet

4" O-D ~~200~~ 200 to ~~225~~ 225 feet

3. Last produced.

Date	Net oil	Gravity	Cut
~~May~~ 20th	¼bbl	28	.05%

The proposed work is as follows:

Plug hole with cement from 225 feet to 180 feet
Top plug- from 10 feet to surface

Abandon

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
		EB	None	EB	EB

Canoga Oil Company
(Name of Operator)

20 By Jos. L. Kaula Sec.

ADDRESS ONE COPY OF NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

1015 West Olympic Blvd
Los Angeles 15 California

June 5 1951

Mr Frank G Munroe
458 South Spring Street
Los Angeles California

Dear Sir

I have been informed by the Los Angeles County District Attorney's office that you have replied for Canoga Oil Co. in the matter of the abatement of the public nuisance created by the drilling of well No. "Knapp" 1-A, Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., Los Angeles County. It is my understanding that you stated that the nuisance would be removed by plugging well No. "Knapp" 1-A.

A notice to abandon should be submitted at once proposing to plug the well in the following manner: place a cement plug from 225 to 180 feet and from 10 feet to the surface. This Division must be notified to witness the cementing operations.

I enclose a supply of forms on which the notice should be submitted.

Yours truly

E H MUSSER
Deputy Supervisor

EHM:my
encl
cc - Mr R D Bush

REJECTION OF COMPLAINT

On this 4th day of June, 1951 at 1:45 o'clock p m.

the matter of CANOGA OIL CO.

was submitted by E. A. Musser, 1015 W. Olympic Blvd

for consideration of a complaint charging the following offenses:

Misdemeanor of Vio. Sec. 3203 Public Resources Code

After due consideration thereof, no complaint was issued for the following reasons:

Attorney Frank B. Monro of Law Firm Munroe and Brock called me by telephone and informed me that the oil well drilled within 15 feet of an existing well in violation of the public nuisance law is going to be capped. There is not a violation of law which would require a prosecution.

RECOMMENDATION: 1._____Further investigation. 2._____Submit to City Attorney.

S. ERNEST ROLL

By /s/ Richard E Pachtman

RICHARD E. PACHTMAN, Deputy

In submitting the above matter for consideration of a complaint, written reports of substantially all available evidence have been submitted to the District Attorney's Office (copies of which are attached hereto) except the following:

COPY-9/6/51-my

Los Angeles

R D BUSH

June 4 1951

I enclose a copy of an information form I have filed with the Los Angeles City Attorney today giving details of offenses committed by Canoga Oil Co. by the drilling of well No. "Knapp" 1-A, Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., Los Angeles County. A date will be set for the arraignment of the corporation, through its attorney, probably within the next two weeks.

On Friday, June 1, I had a discussion with Mr. T. C. Williams, Deputy City Attorney for Los Angeles, regarding the matter of jurisdiction over misdemeanor cases. It is his opinion that any violation where the overt act is alleged to be the failure to file records with the Supervisor or his district deputy is committed at the office where the records are required to be filed. In Los Angeles County, the county charter provides that all offenses constituting misdemeanors occurring within the city of Los Angeles or any other incorporated city having a city attorney, must be handled by such city attorney and not by the district attorney. Failure to file production reports and logs would be examples. If the well involved is in county territory and the overt act constituting the offense is committed at the well, then the district attorney has jurisdiction. Examples of this would be the failure to comply with an order or the refusal to permit an inspection of a well.

According to Mr. Williams, the present offense, failure to file a notice of intention to drill and drilling bond, could be handled by either the city attorney or the district attorney, depending upon the manner of pleading. If the overt act is alleged to be the drilling of a well in county territory, the district attorney could file; but if the offense is the failure to file a notice of intention to drill with the district deputy at his office in Los Angeles, then the city attorney has jurisdiction.

Actually, it is better for us to have the city attorney handle cases wherever possible as it is easier and quicker to do it here than to have to go out to the justice court in the township. In the present case, I decided to proceed through the city attorney for violation of Sections 3203 and 3204.

E. H. Messer

Deputy Supervisor

EHM:my

17

1015 West Olympic Blvd
Los Angeles 15 California

June 4 1951

Mr T C Williams
Deputy City Attorney
Room 260 City Hall
Los Angeles 12

Dear Sir

I enclose information form in duplicate covering the offenses committed by Canoga Oil Co. Two separate charges should be made, one for Section 3203 and the other for Section 3204 of the Public Resources Code.

My telephone number is TRinity 5191.

Yours truly

E H MUSSER
Deputy Supervisor

EHM:my

enc

Los Angeles

R D Bush

June 1 1951

I am enclosing a copy of a letter to Canoga Oil Company from the Los Angeles District Attorney notifying the operator to abate the nuisance created by the drilling of well No. "Knapp" 1-A, Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., Los Angeles County. This will be followed up if the operator does not proceed to plug and abandon the well, in accordance with your letter of May 29, 1951. I intend to give the operator the option of abandoning either well No. "Knapp" 1 or "Knapp" 1-A.

The District Attorney would take no action as to violation of sections 3203 and 3204 for failure to file notice of intention to drill and drilling bond. He referred me to the City Attorney for this violation, since the county does not have any jurisdiction.

I was informed that the county does not have jurisdiction as the notice and bond are required to be filed with the District Deputy, and since his office is in the City of Los Angeles the offense is considered to be committed at that point.

I have an appointment this afternoon with the Deputy City Attorney and will endeavor to have him take the proper action.

E. H. Musser

Deputy Supervisor

EHM:eb

May 31, 1951

Canoga Oil Company
c/o Vincent Stabeck, President
4447 Avenue 42 W
Los Angeles 65 California

PLEASE DIRECT YOUR REPLY TO RICHARD E. PACHTMAN

Gentlemen:

You are hreby notified to discontinue and abate that certain public nuisance consisting of a well drilled for oil and permitted to produce oil, described as Well No. "Knapp 1-A," which is located within 150 feet of a drilled well which is producing or is capable of producing oil. Said public nuisance being location in Los Angeles County and described as Section 4, Township 1 North, Range 17 West, San Bernardino Base and Meridian, within five (5) days of the service of this notice upon you.

Your attention is called to Section 3600 of the Public Resources Code of the State of California, declaring this act to be a public nuisance and to Section 373a of the Penal Code, declaring it a misdemeanor to maintain such nuisance after receipt of reasonable notice from the District Attorney, providing that every day of such maintenance is a separate and distinct offense and declaring it the duty of the District Attorney to prosecute all persons guilty of violating that section by continuous prosecutions until the nuisance is abated and removed.

Very truly yours

S. ERNEST ROLL
District Attorney

By

RICHARD E. PACHTMAN
Deputy District Attorney

REP:fw

100.
ORNIA STATE PRINTING OFFICE

L.A. County

SUBMIT LOG IN DUPLICATE
TH[illegible]BLANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF PAPER ONLY

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
MAY 26 1951
LOS ANGELES

WELL SUMMARY REPORT

Operator Canoga Oil Company Field (Wildcat) Los Angeles County

Well No. Knapp No. 1A Sec. 4, T. 1 No., R. 17 W., S.B. B. & M.

Location 50' S. & 770' E. from N.W. cor. S½ of SE¼ Sec. 4 T. 1N - R. 17W. (1870W / 1270N ft. SE Cor. Sec. 4)

Elevation above sea level 1000 feet.

All depth measurements taken from top of ground, which is -- feet above ground.

In compliance with the provisions of Chapter 93, Statutes of 1939, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date 5/24/51

Signed Jos. L. Kals

(Engineer or Geologist) J. L. Kals (Superintendent) Title Secretary (President, Secretary or Agent)

Commenced drilling February 26, 1951 Completed drilling March 23, 1951 Drilling tools ~~Cable~~ Rotary

Total depth 225 ft. Plugged depth

Junk None

GEOLOGICAL MARKERS	DEPTH
None	

Commenced producing March 29, 1951 (date) Flowing/gas lift/pumping (cross out unnecessary words)

	Clean Oil bbl. per day	Gravity Clean Oil	Per Cent Water including emulsion	Gas Mcf. per day	Tubing Pressure	Casing Pressure
Initial production	One bbl.	28	.04	None	None	None
Production after 30 days	One bbl.	28	.04	"	"	"

Casing Record (Present Hole)

Size of Casing (A. P I.)	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cementing if through perforations
6" OD	203 ft.	Ground	14#	New	Lapweld		8 5/8	40	

Perforations

Size of Casing	From	To	Size of Perforations	Number of Rows	Distance Between Centers	Method of Perforations
4½" OD	200 ft.	225 ft.	60 Mesh	10	2 In.	Slotting
	ft.	ft.				
	ft.	ft.				
	ft.	ft.				
	ft.	ft.				

13

Electrical Log Depths No log was run. (Attach Copy of Log)

FORM 103
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
MAY 26 1951
LOS ANGELES

History of Oil or Gas Well

OPERATOR Canoga Oil Company FIELD (Wildcat) Los Angeles County

Well No. Knapp No. 1-A, Sec. 4, T. 1 N., R. 17 W., S. BB. & M.

Signed Jos. F. Kala

Date 5/24/51 Title Secretary
(President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. **Use this form in reporting the history of all important operations at the well, together with the dates thereof, prior to the first production.** Include in your report such information as size of hole drilled to cementing or landing depth of casings, number of sacks of cement used in the plugging, number of sacks or number of feet of cement drilled out of casing, depth at which cement plugs started, and depth at which hard cement encountered. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

Date	
Feb. 26 1951	Well spudded in with 8 5/8 bit. 8 5/8 Hile was drilled to 206 ft. 5 5/8 Core hole 206 - 225 feet.
Mar. 16 1951	6 Inch O.D. casing was run to 203 and cemented with 40 sacks, which brought cement to top of hole. Annular space between casing and wall of hole completely filled with cement, since this hole is to be used as an air injection hole to force oil out of Knapp No. 1 and C. & M. No. 1.
Mar. 21 1951	Found top of wooden plug at 201 ft. when cement was drilled out.
Mar. 22 1951	Hole was bailed out and no water was found to enter hole. Only clean oil entered hole after well stood 24 hours.

BOND
RECORD

037-01162

FORM 101
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
MAY 26 1951
LOS ANGELES

LOG AND CORE RECORD OF OIL OR GAS WELL

Operator Canoga Oil Company Field (Wildcat) Los Angeles County

Well No. Knapp No. 1-A Sec. 4, T. 1 N., R. 17 W., S.B. B. & M.

FORMATIONS PENETRATED BY WELL

DEPTH TO		Thickness	Drilled or Cored	Recovery	DESCRIPTION
Top of Formation	Bottom of Formation				
206	214	8	Cored	4.5	Oil sand
214	222	8	"	6.5	" " and shale
222	225	2	"	1	" " and 1 ft. of hard shale at bottom.

FORM 135. 89588 10-31 1M
CALIFORNIA STATE PRINTING OFFICE

L.A. County

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Memorandum of Failure to Give Notice

No. N 1-274

San Francisco 11 Cal. May 25 19 51

Mr. Vincent Stabeck

4447 Avenue 42 W, Los Angeles 65 Cal.

President (Title), CANOGA OIL COMPANY ~~Company~~

DEAR SIR:

According to the subjoined report of the Deputy Supervisor of District 1, you have drilled a well without filing notice of intention and $5,000 drilling bond.

This is to record your violation of section 3203 of the Public Resources Code providing for the notice of intention to drill and of section 3204 of the Public Resources Code providing for the filing of the $5,000 drilling bond.

cc - Mr J L Kals
Secretary-Treasurer
7658 Jordan Avenue
Canoga Park California

- E H Musser

R. D. Bush
State Oil and Gas Supervisor

Los Angeles 15 Cal. May 24 19 51

MR. R. D. BUSH
State Oil and Gas Supervisor
San Francisco, Cal.

DEAR SIR:

This is to report that Canoga Oil Company, operating at well No. "Knapp" 1-A Section 4, T. 1 N, R. 17 W, S. B. B. & M., in XXX Oil Field, in Los Angeles County, failed to submit notice of intention to drill (Drill, redrill, plug, deepen, test, abandon, etc.), as required by Section 3203, Chapter 718, Statutes 1915, as amended.

Our usual report on proposed operations is therefore omitted and approval of the following described work, has been which is being performed without filing notice, is withheld.

Work being done or completed without filing notice:

Drilled to 225 feet.

Cemented 6-inch casing at 203 feet with 40 sacks of cement.

Landed a 4-inch perforated liner from 200 to 225 feet.

Installed a pump and pumped the well.

E. H. Musser

10

Deputy Supervisor, District 1

36440 11-50 2500 (2) SPO

STATE OF CALIFORNIA
SAN FRANCISCO 11

DIVISION OF OIL AND GAS
RECEIVED
MAY 25 1951
LOS ANGELES CALIFORNIA

Inter-Departmental Communication

Date: May 24 1951

To: E H MUSSER
Los Angeles

From: **State Division of Oil and Gas**

Replying to your letter of May 23 regarding the drilling of a well without notice or bond by Canoga Oil Company, issue an "N" report, and also place the matter in the hands of the District Attorney for prosecution.

R. D. Bush

State Oil and Gas Supervisor

9

E H MUSSER
Los Angeles

May 29 1951

Replying to your letter of May 25 regarding Canoga Oil Company, since prosecution is to proceed for failure to file notice and bond for well No. "Knapp" 1-A, Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., Los Angeles County, the complaint should include the illegal location of the well and the company required to plug and abandon either well No. "Knapp" 1 or "Knapp" 1-A.

/s/ R D Bush

State Oil and Gas Supervisor

Los Angeles

May 25 1951

R D BUSH

Loudermer called at No 7

I enclose a copy of a letter I have just received from Canoga Oil Company regarding well No. "Knapp" 1-A, Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., Los Angeles County, for which our report No. N 1-274 was issued on May 24. We are requesting the operator to file a corrected production report since there were several things wrong with the original report in addition to the production's having been shown as coming from well No. "Knapp" 1 whereas it actually came from well No. "Knapp" 1-A.

I still feel that the company knew perfectly well what it was filing and that the report was not filed in error. However, in view of the explanation, I do not think it would be wise to bring any action for filing a false report. I do feel, however, that we should take action against the operator for the failure to file a notice to drill and a bond despite the explanation as to the purpose of drilling the well.

The next question is what action to take regarding the new well, well No. "Knapp" 1-A, because of the fact that it is an illegal location under the spacing act. I do not have a written location for the well, but it was roughly measured by our engineer as being only 15 feet from well No. "Knapp" 1. It appears to me that the proper action to take here is to demand that the new well be completely plugged and abandoned or, perhaps, to give the operator a choice of plugging and abandoning either well No. "Knapp" 1 or "Knapp" 1-A. If it should refuse to abandon one or the other of the wells, I believe we should issue a formal order to abandon "Knapp" 1-A.

Please let me know what action you wish taken.

E H Musser

Deputy Supervisor

ma

EHM:my

enc

7

Los Angeles

R D BUSH

May 23 1951

I enclose a copy of a letter I have just written to Canoga Oil Company asking for records of the work done at a new well on its property in Los Angeles County for which we have not had a notice of intention to drill or a drilling bond.

An inspection of the property and a discussion with the landowner, Mr. Knapp, indicate that the new well, which Mr. Knapp calls "Knapp" 7, is located approximately 15 feet from well No. "Knapp" 1. It is reported that it was drilled about four months ago to approximately the same depth as the other wells, roughly 200 feet.

Very recently, Canoga Oil Company filed a report of production for the month of April showing that well No. "Knapp" 1 produced 26 barrels of oil in 29 days. Our visit to the property showed that there is no pumping equipment on well No. "Knapp" 1, and Mr. Knapp says there has been none since some time in 1947. There is a pump, however, on the new well; but it was not operating at the time of our visit.

The purpose of the company in filing this production report was apparently to obtain a release of the lease from escrow, the termination of which depended upon the actual production of oil from the property. It appears to us, however, that the operator has filed a false report in that the production is stated to have come from well No. "Knapp" 1 when in fact it must have come from the new well, "Knapp" 7. At the present time, I have been unable to obtain any information concerning the drilling of the well other than that which I have given you.

Do you wish me to issue an "N" report with no further information, or do you wish me to wait until I obtain more data regarding the actual work done at the well? I believe that this is a case where we should take legal action against the operator, probably for failure to file a notice to drill and drilling bond and, also, for the filing of a false production report. In addition to the fact that the report stated the production came from "Knapp" 1, there is considerable doubt as to whether or not the production was actually formation oil pumped from the well. We are not ready, however, to press a charge on this point as yet. Please let me have your opinion as to what should be done in this case.

E. H. Messer

Deputy Supervisor
EHM:my
encl

6

1015 West Olympic Blvd.
Los Angeles 15 California

May 23 1951

Mr Vincent F Stabeck
4447 Avenue 42 W
Los Angeles California

Agent for Canoga Oil Company

Dear Sir

An inspection of your "Knapp" lease in Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., Los Angeles County, indicates that a well, presumably well No. "Knapp" 7, has been drilled. You are, no doubt, aware that the required notice of intention to drill and drilling bond have not been filed nor has any other record for such a well been filed since.

A report of the work done should be filed at once, in duplicate, on our forms, a supply of which is furnished herewith.

The inspection of your lease by our engineer indicates that the production you recently reported for the month of April 1951 for well No. "Knapp" 1 must have come from well No. "Knapp" 7, the new well for which you failed to file a notice of intention to drill.

I suggest that you give an explanation of this apparent error.

Yours truly

E. H. Musser

E H MUSSER
Deputy Supervisor

cc - Mr R D Bush
- Company, Canoga Park

EHM:my

REGISTERED

5

FORM 109-X. 91197 9-40 8M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Report on Test of Water Shut-off
OR
Special Report on Operations Witnessed

No. T.....
Page 1

Camegar Oil Co

Well No. "Knapp" lease, Sec....., T....., R....., ...B. & M.,

Mr Knapp, the landowner, accompanied me to lease at 8.30 am May 22, 1951.

We found the six wells which had been drilled and had been reported to the Division of Oil and Gas. These wells were all idle or abandoned and had no pumping equipment. Well No 1 had a swaged nipple on top of the casing with a four inch opening. The fluid level in this well was at approximately 20'. Mr. Knapp bailed a small can of greenish-colored oil from this well.

A seventh well, located approximately 15' southerly from well No 1, had a small idle pumping unit on it. Two drums of black oil were at this well. A 50 bbl tank located 50' SW'ly from well No 7 contained 15"-18" of black oil. This black oil did not have the appearance of being natural crude oil.

J Lamp White.

R. D. BUSH
State Oil and Gas Supervisor

4 By.....Deputy

DIVISION OF OIL & GAS
RECEIVED
MAY 24 1951
LOS ANGELES

May 22nd, 1951

State of California
Department of Natural Resources
Division of Oil and Gas
1015 West Olympic Boulevard
Los Angeles 14, California

Attention: E. H. Musser

Dear Sir:

I wish to make a correction on the production report for April, 1951 on the producing well located on the Knapp Lease of the Canoga Oil Company. This well was inadvertantly listed as "No. 1", whereas it should be "No. 1-A".

This hole was drilled for the purpose of injecting air with a compressor into the oil sand in which the original water well and the C & M No. 1 well are bottomed. It is the belief of several engineers consulted that by injecting air under pressure into this hole, the original water well and the C & M could be made into good producers.

When drilling this compressor hole, considerable oil sand was encountered and due to the terms of our Lease and certain stipulations with the land owner, it was necessary to produce oil from the Lease within a short period of time. As that time was expiring, oil was produced from said compressor hole which, as has been said, is close to the original water well which is called No. 1. It was due to an error that the production report was turned in as coming from No. 1, the water hole, instead of No. 1-A.

It is our intention, as soon as proper compressor units can be put on the property, for which negotiations are pending at the present time, this compressor hole will not be used to produce oil but for injection purposes only.

Since filing the report, subsequent refinery tests have been run on the oil and the corrected gravity after cuts and temperature readings is 28° gravity plus. The cut run by the Newhall Refinery showed 4/10 of 1% sediment,- no water.

Very truly yours,

CANOGA OIL COMPANY

JLK:a

3

By Joseph L. Kals
Joseph L. Kals

TELEPHONE TRINITY 5508

ARTHUR C. FISHER
ATTORNEY AND COUNSELOR
412 WEST SIXTH STREET
LOS ANGELES 14, CALIFORNIA

DIVISION OF OIL & GAS
RECEIVED
APR 28 1951
LOS ANGELES

April 27, 1951

Honorable E. H. Musser
Division of Oil and Gas
1015 West Olympic Boulevard
Los Angeles 15, California

Dear Sir:

An action is pending in which I represent the fee owner of the following property in Los Angeles County: the South half of the Southeast quarter of Section 4, the North half of the Northeast quarter of Section 9, and Lot 1 in Section 10, Township 1 North, Range 17 West, S. B. B. & M.

A Stipulation was filed predicating the outcome of the action upon the production of oil and gas from said property prior to May 19, 1950. My client is under the impression that some oil has been placed in a hole located on the property with the intention of attempting to establish production therefrom.

This letter is written to request that your deputy in charge of the area make a careful investigation before any statement is made on behalf of the Division of Oil and Gas that oil is being produced from the above described premises.

Very respectfully,

Arthur C. Fisher

ACF/vm

2

CRIMINAL DIVISION — OFFICE OF CITY ATTORNEY

DEFENDANT: CANOGA OIL CO., a corporation c/o Vincent Stabeck, President
ADDRESS: 6447 Avenue 42 W, Los Angeles 65
HEARING NO.
VIOLATION: Sec. 3203-3204-3236 Public Resources Code
TELEPHONE NO. CLeveland 7-5295
Attorney: Frank G. Munroe, Rowan Bldg., Los Angeles; Telephone: MIchigan 9346

COMPLAINING WITNESS: E. H. Nusser
DATE OF OFFENSE: On or about February 26, 1951
ADDRESS: 1015 West Olympic Boulevard, Los Angeles 15
TELEPHONE NO. TRinity 5191

WILL TESTIFY that no notice of intention to drill the well now known as "Knapp" 1-A, in Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., in Los Angeles County, or any drilling bond, as required by the Public Resources Code was filed with the State Oil and Gas Supervisor, or his District Deputy, before commencing such drilling or at any time since.

Signature E. H. Nusser

WITNESS: J. L. White and E. R. Murray-Aaron
ADDRESS: 1015 West Olympic Boulevard, Los Angeles 15
TELEPHONE NO. TRinity 5191

WILL TESTIFY that he visited the property ~~on May 22, 1951,~~ recently, and observed that an extra well for which the Division of Oil and Gas had no previous record had been drilled approximately 15 feet away from well No. "Knapp" 1, an existing oil well reported to be capable of producing oil.

WITNESS: Frank Knapp
ADDRESS: N-5 Canoga Park, Sec. 4, T. 1 N., R. 17 W., Los Angeles County (approx. 3 miles west of Topanga Canyon Blvd. on Van Owen Blvd.)
TELEPHONE NO.
Telephone: None

WILL TESTIFY that a new oil well, now designated "Knapp" 1-A was drilled about 3 or 4 months ago and located about 15 feet from well No. "Knapp" 1, a previously drilled well.

WITNESSES - ADDITIONAL - SEE OVER

EVIDENCE ITEMIZED:

STATEMENT OF DEFENDANT:

STATEMENT OF FACTS: (Note: Documentary evidence, if any, in possession of)

Defendant drilled an oil well without filing the required notice and drilling bond with the State. A letter from J. L. Kale, Secretary-Treasurer of Canoga Oil Co., and an official log, history, and production report signed by Mr. Kale give details of the drilling and production obtained.

DEPUTY _____ DATE _____

(OVER FOR FURTHER FACTS)

ARCHIVED 3/10/15

API #	037 - 01163		
Task	Date	Initial	no. of pgs./ logs
Prepped, # efile	6/6/14	mac	13
Scanned-efile	1/27/15	mac	13
QC/Upload/Verify	1/27/15	Ldc	13
Scanned-Log/s			
QC/Upload/Verify	1/28/15	JN	
Update scanning	Date	Initial	no. of pgs./ logs
Prepped, # efile			
Scanned-efile			
QC/Upload/Verify			
Scanned-Log/s			
QC/Upload/Verify			

NBP

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Special Report on Operations Witnessed

No. T 1-49737

Los Angeles 15, Calif. May 13, 1949

Mr. Vincent F. Stabeck
Los Angeles 4, Calif.
Agent for CANOGA OIL COMPANY

121

DEAR SIR:

Operations at your well No. "Knapp" 3 Sec. 4, T. 1 N., R. 17 W., S.B. B. & M.,
(Canoga Park Area) ~~xxxx~~ in Los Angeles County, were witnessed by
Paul Betts, Inspector, representative of the supervisor,
on April 28, 1949. There was also present V. F. Stabeck

Casing Record	Junk
No casing in hole. T. D. 273', plugged with cement 20' to surface.	xxxx

The operations were performed for the purpose of inspecting the cement plug, placed from 20' to the surface, in the process of abandonment.

The inspector arrived at the well at 3:15 p.m. and Mr. Stabeck reported:

1. The hole was filled with heavy mud.
2. A wooden plug was driven to 24'.
3. The hole was bridged with brick from 24'-20'.
4. On April 27, 1949, 6 sacks of cement was dumped into the hole at 20'.

THE INSPECTOR NOTED THAT the hole was capped with set cement at the surface.

The inspection was completed at 3:25 p.m.

THE PLUGGING OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED.

PWB:OH

cc- Company

R/ma

R. D. BUSH
State Oil and Gas Supervisor

13 By E. H. Wiesan Deputy

86681 2-48 16,250 ② SPO

FORM 103.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
MAY 2 1949
LOS ANGELES, CALIFORNIA

History of Oil or Gas Well

OPERATOR Canoga Oil Company FIELD Los Angeles County

Well No. "Knapp" 3, Sec. 4, T. 1 N., R. 17 W., S.B. B. & M.

Signed V. F. Staack

Date May 2, 1949 Title President
(President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. **Use this form in reporting the history of all important operations at the well, together with the dates thereof, prior to the first production.** Include in your report such information as size of hole drilled to cementing or landing depth of casings, number of sacks of cement used in the plugging, number of sacks or number of feet of cement drilled out of casing, depth at which cement plugs started, and depth at which hard cement encountered. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

Date	
1949 4/27	Filled hole with heavy mud. Drove a wooden plug to 24'. Dumped a 4' brick bridge on wooden plug at 24'. Dumped 6-1/2 sacks of cement at 20' which filled the hole to the surface.

12

1015 West Olympic Boulevard
Los Angeles 15, California
May 18, 1949

Mr. Vincent F. Stabeck
910 E. 92nd Street
Los Angeles 2, California

Agent for Canoga Oil Company

Dear Sir:

Your report of abandonment of well No. "Knapp" 3, Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., Los Angeles County, dated May 2, 1949, and submitted to this division on our form No. 103, has been examined in conjunction with records filed in this office.

A review of the reports and records shows that the requirements of this division, which are based on all information filed with it, have been fulfilled.

Yours truly,

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Musser
Deputy Supervisor

cc - Mr. R. D. Bush
Company

es

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
Topo 22	J.W.B				es

11

CB

STENOGRAPHER

Date Received 2-24-49 Form 100 ✓ 101 ✓ 103 ✓ Suspended

Elec. Log. _____ Radio Log _____

Direct. Surv. _____ Other Data _____

Location OK _____

Elevation OK _____ Steno. EO

ENGINEER

BOND 18-470-592 ✓ Release ___ Date Elig. _____ 150b _____

End Prem. Yr. ___ Release Requested ___ Superseded ___ Aban. _____

HOLD BOND ✓ Reason Uncompleted

_____

Data Needed None

_____ Final Letter ___ Eng. OHB

SUBMIT LOG IN DUPLICATE

FILL TH[illegible]ANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF PA[illegible]LY

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
FEB 24 1949
LOS ANGELES, CALIFORNIA

WELL SUMMARY REPORT

Operator Canoga Oil Company Field Los Angeles County

Well No. "Knapp" 3 Sec. 4, T. 1 N., R. 17 W., S.B. B. & M.

Location 110' S. & 610' E. from NW cor. $S\frac{1}{2}$ $SE\frac{1}{4}$ of Sec. 4.

Elevation of ground above sea level 1025 feet.

All depth measurements taken from top of _____, which is _____ feet above ground.

In compliance with the provisions of Chapter 93, Statutes of 1939, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date February 22, 1949 Signed V. F. Stabeck

V. F. Stabeck (Engineer or Geologist) V. F. Stabeck (Superintendent) Title President (President, Secretary or Agent)

Commenced drilling May 10, 1947 Completed drilling June 6, 1947 Drilling tools Cable ~~Rotary~~

Total depth 273' Plugged depth

Junk None

GEOLOGICAL MARKERS	DEPTH

Commenced producing _____ (date) Flowing/gas lift/pumping (cross out unnecessary words)

	Clean Oil bbl. per day	Gravity Clean Oil	Per Cent Water including emulsion	Gas Mcf. per day	Tubing Pressure	Casing Pressure
Initial production						
Production after 30 days						

Casing Record (Present Hole)

Size of Casing (A. P. I.)	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Casing landed in	Number of Sacks of Cement	Depth of Cementing if through perforations

Perforations

Size of Casing	From	To	Size of Perforations	Number of Rows	Distance Between Centers	Method of Perforations
	ft.	ft.				
	ft.	ft.				
	ft.	ft.				
	ft.	ft.				
	ft.	ft.				

MAP | MAP BOOK | CARDS | BOND | FORMS 114 | 121

9

Electrical Log Depths _____ (Attach Copy of Log)

FORM 103.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
FEB 24 1949
LOS ANGELES, CALIFORNIA

History of Oil or Gas Well

OPERATOR Canoga Oil Company FIELD Los Angeles County

Well No. "Knapp" 3, Sec. 4, T. 1 N., R. 17 W., S.B. B. & M.

Signed V. F. Stalick

Date February 22, 1949 Title President
(President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. **Use this form in reporting the history of all important operations at the well, together with the dates thereof, prior to the first production.** Include in your report such information as size of hole drilled to cementing or landing depth of casings, number of sacks of cement used in the plugging, number of sacks or number of feet of cement drilled out of casing, depth at which cement plugs started, and depth at which hard cement encountered. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

Date	
1947	
5/10	Spudded in and drilled a cable tool hole to 273'. No oil or gas showings were encountered.
6/16	Suspended operations.

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
					EO

8

ORM 101.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
FEB 24 1949
LOS ANGELES, CALIFORNIA

LOG AND CORE RECORD OF OIL OR GAS WELL

Operator Canoga Oil Company Field Los Angeles County

Well No. "Knapp" 3 Sec. 4, T. 1 N., R. 17 W., S.B. B. & M.

FORMATIONS PENETRATED BY WELL

DEPTH TO Top of Formation	DEPTH TO Bottom of Formation	Thickness	Drilled or Cored	Recovery	DESCRIPTION
0	64	64	Drilled		Surface formation
64	82	18	"		Boulder bed
82	101	19	"		Brown shale
101	273	172	"		Sandy gray shale and sticky gray bluish shale

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121

7

ORM 111 (1-49)

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS

No. P 1-46412

Los Angeles 15, Calif. March 2, 1949

Mr. Vincent F. Stabeck

Los Angeles 4, Calif.

121

Agent for CANOGA OIL COMPANY

Dear Sir:

Your proposal to abandon Well No. "Knapp" 3, Section 4, T. 1 N., R. 17 W., S.B. B. & M., (Canoga Park Area) Field, Los Angeles County, dated Feb. 23, 1949, received Feb. 24, 1949, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

RECORDS: The condition of the well is as stated in the notice.

THE NOTICE STATES:

"The present condition of the well is as follows:

1. Complete casing record.
   No casing in the hole.
   Total depth 273'.
   No oil or gas showings encountered.

2. Last produced. Never produced."

PROPOSAL:

"The proposed work is as follows:
Plug with cement from a depth of 20' to the surface and abandon."

DECISION:

THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS the location and hardness of the cement plug at the surface.

NOTE: A complete report in duplicate on the enclosed forms should be filed with this division after the completion of the above work.

CLB:OH

cc- Company

3/6/88

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Musser Deputy

6

2402 1-49 36,500 SPO

Bond No. 18-470-592

FORM 108. 99470 11-48 14,250
② SPO

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
FEB 24 1949
LOS ANGELES, CALIFORNIA

Notice of Intention to Abandon Well

This notice must be given at least five days before work is to begin; one copy only

Los Angeles Calif. February 23 1949

DIVISION OF OIL AND GAS

Los Angeles Calif.

In compliance with Secs. 3228, 3229, 3230, 3231 and 3232, Ch. 93, Stat. 1939, notice is hereby given that it is our intention to abandon well No. "Knapp" 3

Sec. 4, T. 1 N., R. 17 W., S.B. B. & M. xxx Field, Los Angeles County, commencing work on the 10th day of March 1949.

The present condition of the well is as follows:

1. Complete casing record.

No casing in the hole
Total depth 273'.
No oil or gas showings encountered.

2. Last produced. Never produced
Date | Net oil | Gravity | Cut

The proposed work is as follows:

Plug with cement from a depth of 20' to the surface and abandon.

abandon

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
		M	18-470-592	EO	EO

5

Canoga Oil Company
(Name of Operator)

By W. F. Stalick

ADDRESS NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

Form 156

Place Los Angeles

Date October 7, 1948

REPORT OF PROPERTY AND WELL TRANSFER

Former Owner Vincent F. Stoback

Description and list of wells: "Knapp" 1, "Knapp" 2, "Knapp" 3, "Knapp" 4

Sec. 4, T. 1 N., R. 17 W., S. B. B. & M., Los Angeles County ~~x~~field,

New Owner Canoga Oil Company, Date June 30, 1948

Address 224-1/2 South Brand Blvd., Glendale 4, California

Request for designation of agent for Los Angeles County should be sent to _____, address: _____

(Designation of agent form attached)

Reported by: Vincent F. Stoback (Letter dated 10-5-48)

Confirmed by: Canoga Oil Company (Letter dated 10-5-48)

Type of Organization corporation
(individual, partnership, corporation, etc.)

Our records are being changed accordingly.

Bonds covering these wells are not eligible for release as records have not been filed. (A bond has never been filed for "Knapp" 1.)

E. H. Musser
Deputy Supervisor

my
cc - M. Cooley

4

FORM 111.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Report on Proposed Operations

No. P 1-43272

Los Angeles 15, Calif. April 14, 1947

Mr. Vincent F. Stabeck

Los Angeles 4, Calif.

Agent for VINCENT F. STABECK

121

Dear Sir:

Your proposal to drill Well No. "Knapp" 3,

Section 4, T. 1 N., R. 17 W., S.B. B. & M., (Canoga Park Area) ~~Field,~~ Los Angeles County,

dated April 4, 1947, received April 4, 1947, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:

"The well is 110 feet S. and 610 feet E. from N W Cor of S½ SE¼ Sec. 4
Elevation of ground above sea level 1025 feet.
All depth measurements taken from top of mat, which is one foot above ground.
We estimate that the first productive oil or gas sand should be encountered at a depth of about 160 feet."

PROPOSAL:

"We propose to use the following strings of casing, either cementing or landing them as herein indicated:

Size of Casing	Weight	Grade and Type	Depth	Landed or Cemented
8 5/8	32	Grade B	160	Cemented

Well is to be drilled with cable tools.
It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing."

DECISION:

THE PROPOSAL IS APPROVED PROVIDED THAT

1. Mud fluid consistent with good drilling practice shall be used and the column of mud fluid maintained at all times to the surface, particularly while pulling the drill pipe.
2. Blowout prevention equipment, sufficient to provide a complete close-in of the well under pressure at any time, shall be installed.
3. Any hole to be sidetracked in any oil or gas zone shall be filled with cement, if possible.
3. THIS DIVISION SHALL BE NOTIFIED TO WITNESS a test of the effectiveness of the 8-5/8" shut-off.

CLB:OH

cc- Vincent F. Stabeck

R/CTB

Records Filed
100
101
103
E. Log

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Messer Deputy

3

Bond No. 18-470-592

037-01163

DIVISION OF OIL AND GAS
RECEIVED
APR 4 - 1947
LOS ANGELES, CALIFORNIA

FORM 105.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Notice of Intention to Drill New Well

This notice must be given and surety bond filed before drilling begins

Conoga Oil Company Los Angeles Calif. April 4, 1947

DIVISION OF OIL AND GAS

Los Angeles, Calif.

"Knapp" #3

In compliance with Section 3203, Chapter 93, Statutes of 1939, notice is hereby given that it is our intention to commence the work of drilling well No. "Knapp" (No.) 3, Sec. 4, T. 1N, JLW R. 17W, S.B. B. & M., Field, Los Angeles County.

Lease consists of 170 acres

The well is 110 feet ~~N. or~~ S., and 610 feet E. ~~or W.~~ from NW Cor of Sec of SE¼ Sec 4
(Give location in distance from section corners or other corners of legal subdivision)

Elevation of ground above sea level 1025 feet.

All depth measurements taken from top of mat, which is one feet above ground.

We estimate that the first productive oil or gas sand should be encountered at a depth of about 160 feet.

We propose to use the following strings of casing, either cementing or landing them as herein indicated:

Size of Casing, Inches	Weight, Lb. Per Foot	Grade and Type	Depth	Landed or Cemented
8 5/8	32	Grade B.	160	cemented

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
Topo 22 JLW.	JLW	Ends	18-470-592	Ends	Ends

Well is to be drilled with ~~rotary~~ cable tools.

It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing.

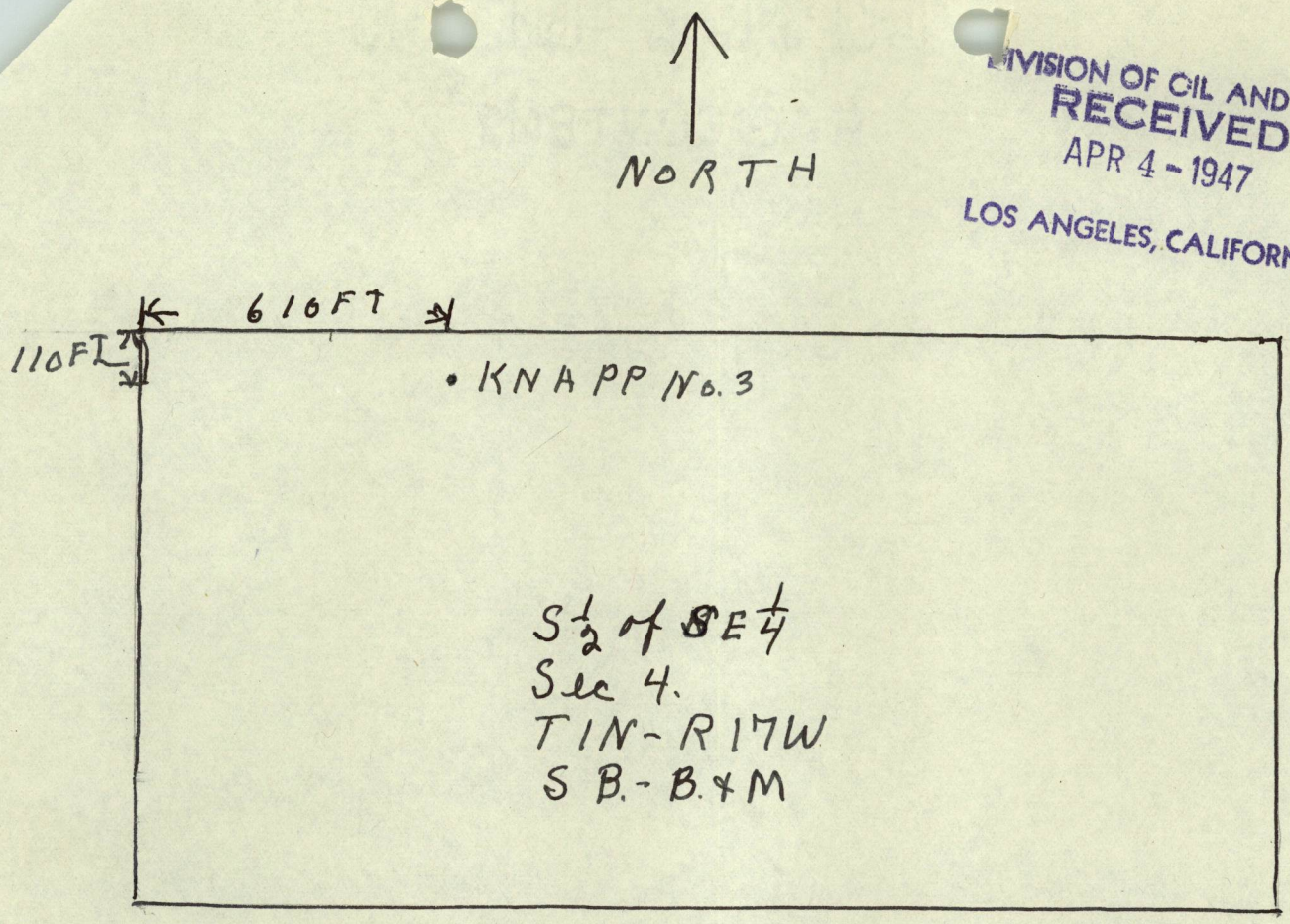
Address 627½ N. Commonwealth Vincent G. Stateck
(Name of Operator)

Telephone number No. 0688 By

ADDRESS NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

2

DIVISION OF OIL AND GAS
RECEIVED
APR 4 - 1947
LOS ANGELES, CALIFORNIA



MAP SHOWING LOCATION of

KNAPP No. 3

V. F. STABECK

1 in = 440

18 322

SCHLUMBERGER

WELL SURVEYING CORPORATION

COUNTY: LOS ANGELES
FIELD OR LOCATION: CANOGA PARK
WELL: KNAPP NO. 6
COMPANY: CANOGA OIL COMPANY

CANOGA OIL CO.
"Knapp" 6 (037-01166)
Sec. 4-1N-17W CANOGA PARK

ion of Well

WELL KNAPP NO. 6
FIELD: CANOGA PARK
LOCATION: 4 — IN — 17W

COUNTY: LOS ANGELES
STATE: CALIF.

FILING No.

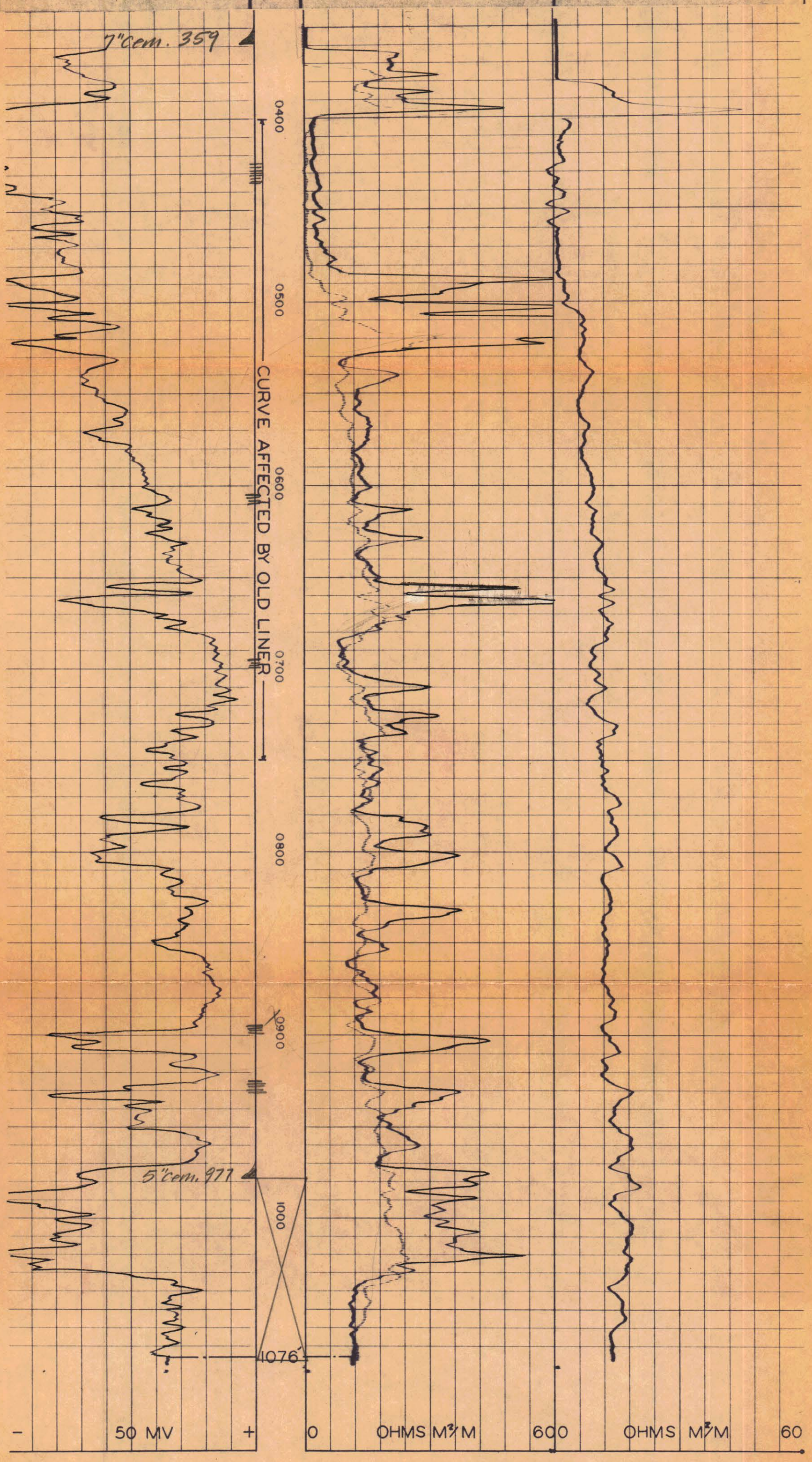
DIVISION OF OIL & GAS
RECEIVED
OCT 18 1951
LOS ANGELES

Elevation: D.F.
K.B.:
or G.L.:

RUN NO.	1 (RD)			
Date	4-27-50			
First Reading	1076			
Last Reading	362			
Footage Measured	714			
Csg Shoe Schlum.	362			
Csg Shoe Driller	357			
Max. Depth Reached	1077			
Bottom Driller	1075			
Depth Datum	Kelly Bush.			
Mud Nature	Natural			
" Density	80			
" Viscosity	Unavailable	@ °F	@ °F	@ °F
" Resistivity	18.0 @ 80 °F	@ °F	@ °F	@ °F
" Resistivity BHT	19.0 @ 76 °F	@ °F	@ °F	@ °F
" pH	— @ — °F	@ °F	@ °F	@ °F
" Water Loss	— CC 30 Min.	CC/30 Min.	CC/30 Min.	CC/30 Min.
Maximum Temp. °F	76°F			
Bit Size	6 1/8"			
Spacings — AM	17"			
AO	10'			
AO	19'			
E.S. Rig Time	1/2 hrs.			
Truck No.	522			
Recorded By	Akana			
Witnessed By	VFStabeck			

REMARKS

SPONTANEOUS-POTENTIAL	DEPTHS	RESISTIVITY	RESISTIVITY
50 millivolts		0 -ohms. $m^2/m.$ 60	0 -ohms. $m^2/m.$ 60
− |↔| + 5		0 AM 17" 60	0 OA' 19' 60
		0 OA 10' 60	



CANOGA OIL CO.
CANOGA PARK
KNAPP NO. 6
2nd hole

Note: perfs & Elog do not seem to agree. JL2

18 322

SCHLUMBERGER

WELL SURVEYING CORPORATION

COUNTY: LOS ANGELES
FIELD OR LOCATION: CANOGA PARK
WELL: KNAPP NO. 6
COMPANY: CANOGA OIL COMPANY

CANOGA OIL CO.
"Knapp" 6 (037-01166)
Sec. 4-1N-17W CANOGA PARK

ion of Well

WELL KNAPP NO. 6
FIELD: CANOGA PARK
LOCATION: 4 — IN — 17W

COUNTY: LOS ANGELES
STATE: CALIF.

FILING No.

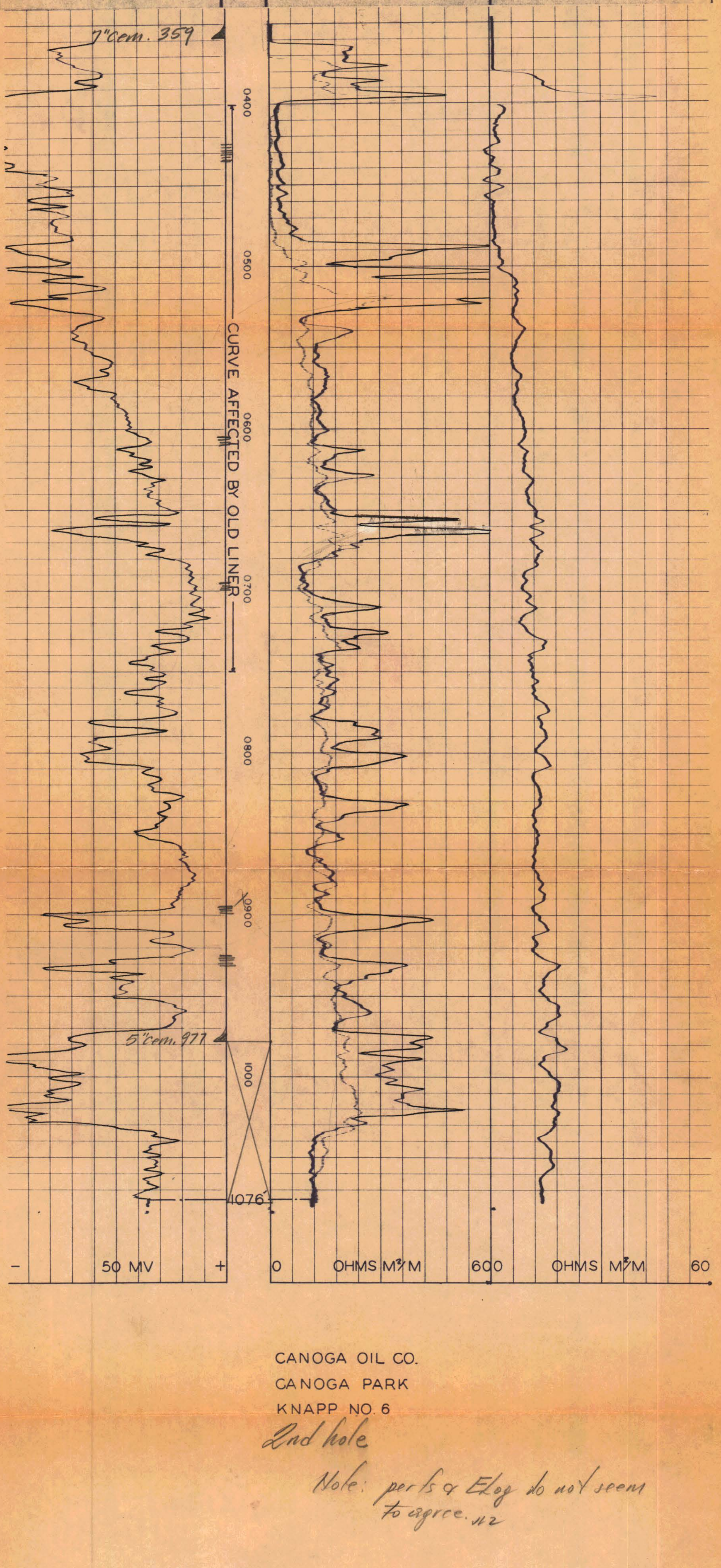
DIVISION OF OIL & GAS
RECEIVED
OCT 18 1951
LOS ANGELES

Elevation: D.F.
K.B.:
or G.L.:

RUN NO.	1 (RD)			
Date	4-27-50			
First Reading	1076			
Last Reading	362			
Footage Measured	714			
Csg Shoe Schlum.	362			
Csg Shoe Driller	357			
Max. Depth Reached	1077			
Bottom Driller	1075			
Depth Datum	Kelly Bush.			
Mud Nature	Natural			
" Density	80			
" Viscosity	Unavailable	@ °F	@ °F	@ °F
" Resistivity	18.0 @ 80 °F	@ °F	@ °F	@ °F
" Resistivity BHT	19.0 @ 76 °F	@ °F	@ °F	@ °F
" pH	— @ — °F	@ °F	@ °F	@ °F
" Water Loss	— CC 30 Min.	CC/30 Min.	CC/30 Min.	CC/30 Min.
Maximum Temp. °F	76°F			
Bit Size	6 1/8"			
Spacings — AM	17"			
AO	10'			
AO	19'			
E.S. Rig Time	1/2 hrs.			
Truck No.	522			
Recorded By	AKane			
Witnessed By	VFStabeck			

REMARKS

SPONTANEOUS-POTENTIAL	DEPTHS	RESISTIVITY	RESISTIVITY
50 millivolts		-ohms. $m^2/m.$ 60	-ohms. $m^2/m.$ 60
− |↔| + (5)		0 AM 17" 60	0 OA' 19' 60
		0 OA 10' 60	



CANOGA OIL CO.
CANOGA PARK
KNAPP NO. 6
2nd hole

Note: perfs & Elog do not seem to agree. JL2

18 322

SCHLUMBERGER

WELL SURVEYING CORPORATION

COUNTY: LOS ANGELES
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WELL: KNAPP NO. 6
COMPANY: CANOGA OIL COMPANY

CANOGA OIL CO.
"Knapp" 6 (037-01166)
Sec. 4-1N-17W CANOGA PARK

ion of Well

WELL KNAPP NO. 6
FIELD: CANOGA PARK
LOCATION: 4 — IN — 17W

COUNTY: LOS ANGELES
STATE: CALIF.

FILING No.

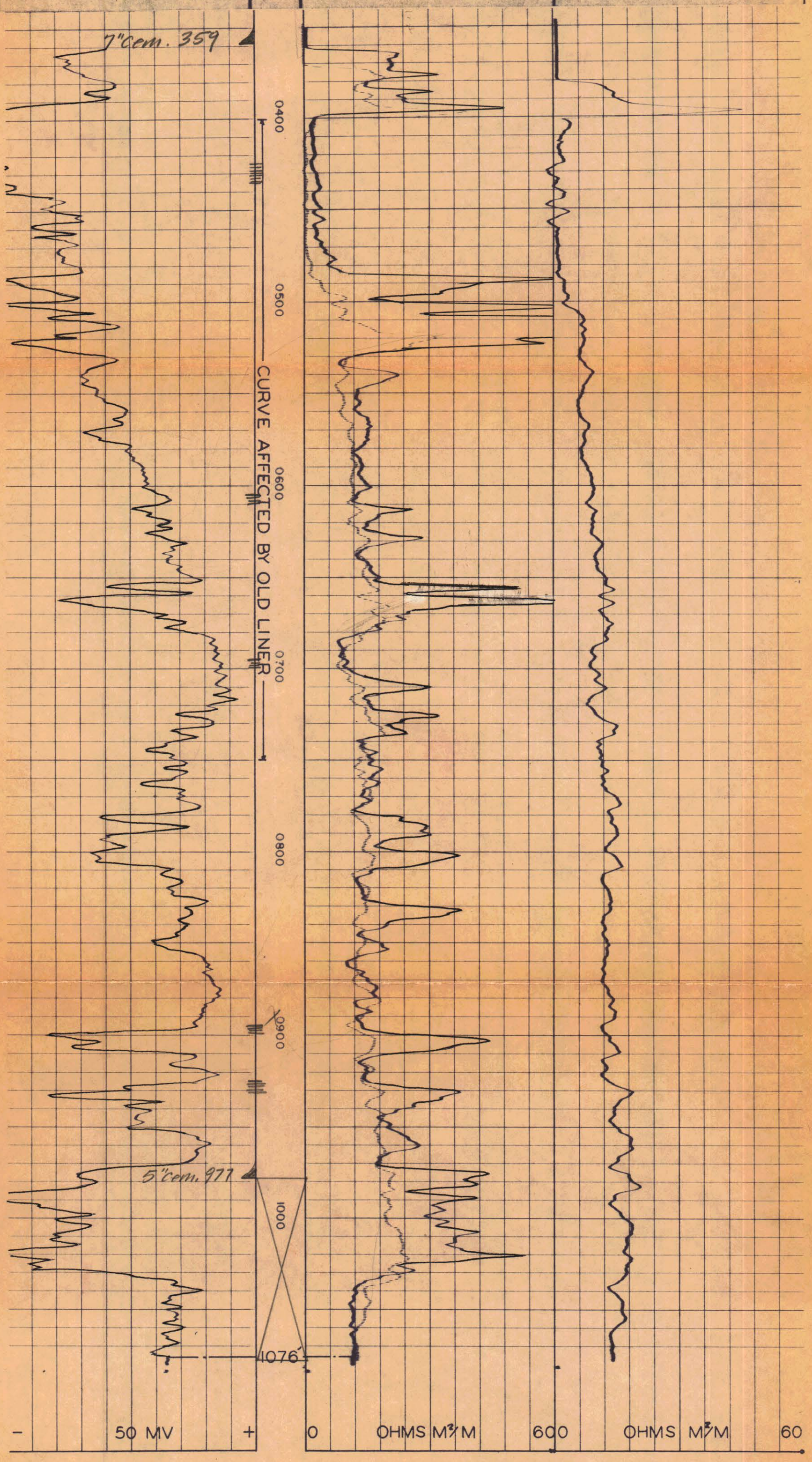
DIVISION OF OIL & GAS
RECEIVED
OCT 18 1951
LOS ANGELES

Elevation: D.F.
K.B.:
or G.L.:

RUN NO.	1 (RD)			
Date	4-27-50			
First Reading	1076			
Last Reading	362			
Footage Measured	714			
Csg Shoe Schlum.	362			
Csg Shoe Driller	357			
Max. Depth Reached	1077			
Bottom Driller	1075			
Depth Datum	Kelly Bush.			
Mud Nature	Natural			
" Density	80			
" Viscosity	Unavailable	@ °F	@ °F	@ °F
" Resistivity	18.0 @ 80 °F	@ °F	@ °F	@ °F
" Resistivity BHT	19.0 @ 76 °F	@ °F	@ °F	@ °F
" pH	— @ — °F	@ °F	@ °F	@ °F
" Water Loss	— CC 30 Min.	CC/30 Min.	CC/30 Min.	CC/30 Min.
Maximum Temp. °F	76°F			
Bit Size	6 1/8"			
Spacings — AM	17"			
AO	10'			
AO	19'			
E.S. Rig Time	1/2 hrs.			
Truck No.	522			
Recorded By	Akana			
Witnessed By	VFStabeck			

REMARKS

SPONTANEOUS-POTENTIAL	DEPTHS	RESISTIVITY	RESISTIVITY
50 millivolts		0 -ohms. $m^2/m.$ 60	0 -ohms. $m^2/m.$ 60
− |↔| + 5		0 AM 17" 60	0 OA' 19' 60
		0 OA 10' 60	



CANOGA OIL CO.
CANOGA PARK
KNAPP NO. 6
2nd hole

Note: perfs & Elog do not seem to agree. JL2

API #				Well Name
037 - 01167				Lucky Star 1
Task	Date	Initial	no. of pgs. / logs	Notes
Prepped Data file	11/28/15	SN	52	
Scanned Data file	11/28/15	SN	52	
QC/ Upload / Verify	11/28/15	gde	52	
Scanned Log/s	11/28/15	SN	TIFS 1 PDFS 1	
QC/ Upload / Verify	11/28/15	gde	1 1	ARCHIVE
Update Scanning	Date	Initial	no. of pgs. / logs	Notes
Scanned Data file				
QC/ Upload / Verify				
Scanned Log/s			TIFS PDFS	
QC/ Upload / Verify				
Update Scanning	Date	Initial	no. of pgs. / logs	Notes
Scanned Data file				
QC/ Upload / Verify				
Scanned Log/s			TIFS PDFS	
QC/ Upload / Verify				
Update Scanning	Date	Initial	no. of pgs. / logs	Notes
Scanned Data file				
QC/ Upload / Verify				
Scanned Log/s			TIFS PDFS	
QC/ Upload / Verify				
Update Scanning	Date	Initial	no. of pgs. / logs	Notes
Scanned Data file				
QC/ Upload / Verify				
Scanned Log/s			TIFS PDFS	
QC/ Upload / Verify				
Update Scanning	Date	Initial	no. of pgs. / logs	Notes
Scanned Data file				
QC/ Upload / Verify				
Scanned Log/s			TIFS PDFS	
QC/ Upload / Verify				

LIU, CHENG AND LIN
1250 Wilshire Blvd., Suite 100
Los Angeles, CA 90017

LOS ANGELES COUNTY
Canoga Park

Agent: Warren S. Liu, 7500 Lilla Place
Canoga Park, CA 91304

5-81
Partnership

✓

Sanchez, David

From: Campion, Jim
Sent: Wednesday, December 29, 1999 2:53 PM
To: Sanchez, David
Subject: RE: Request for Formal Order Numbers

See Below.

Jim Campion
Technical Services Manager
California Division of Oil, Gas, and Geothermal Resources

-----Original Message-----
From: Sanchez, David
Sent: Wednesday, December 29, 1999 2:24 PM
To: Campion, Jim
Subject: Request for Formal Order Numbers

Please assign us Formal Order Numbers to use for FO's on the following groups of wells

Coal Oil Inc. (C6300) "Freeman" 1 (037-07933), Seal Beach ***[Campion, Jim]*** FO # 882
Pedro Petroleum Corp. (P2000) "Fulton" 2 (037-16426) and "Fulton" 3 (037-16427), Santa Fe Springs ***[Campion, Jim]*** 883
Robert A. New (N1210) "L & W" 1 (071-00170) and "L & W" 2 (071-20014), Mahala ***[Campion, Jim]*** 884
Weir Oil Co., Inc. (W0900) "Fee" 1 (059-01727) and "Fee" 2 (059-02281), Huntington Beach ***[Campion, Jim]*** 885

We will not issue an FO for Liu, Cheng and Lin "Lucky Star" 1 (037-01167), at this time, as the operator is defunct, the well is not a hazard, and abandonment would be prohibitively expensive. ***[Campion, Jim]*** ok

David Sanchez

51

May 22, 2002

The Liu, Cheng and Lin "Lucky Star" 1 is inaccessible and cannot be abandoned unless a new road is bulldozed to the well.

This well will be considered buried idle.

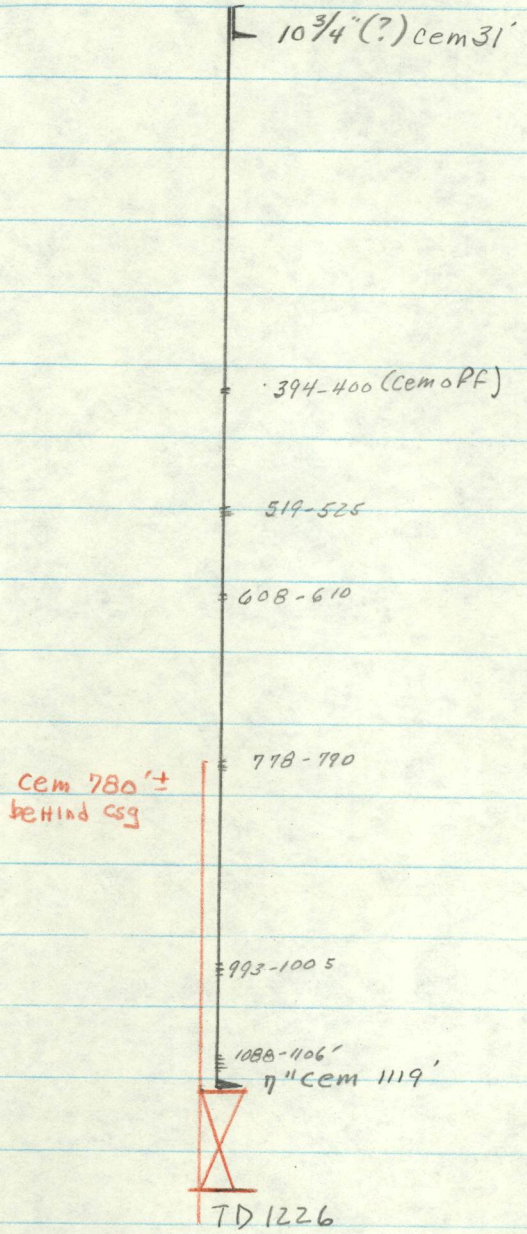
Mark Gamache

OPERATOR: LIU, CHENG AND LIN. WELL: "LUCKY STAR" 1

Formerly: KNAPP BROS "FRANK KNAPP" 1

Casing History: 10 3/4" (?) cem 31'; 7" cem 1119', perf 394'-400' (cem off), 519'-525'; 608'-610'; 778'-790; 993'-1005' & 1088'-1106'.

TD 1226'. Plugged w/cem 1226'-1124'.



ABANDON PROGRAM:

1. Clean out to 1119'
2. Plug w/cem from 1119'-419'
3. Mud.
4. CAVITY @ 270± (BFW)
5. Plug w/cem from 270' to 0' ~~downsqueeze~~
6. Clean-up.

R. Samuelson 3/30/82

Approximate cost $18,000 (does not include bulldozing roadway for rig)

DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS
245 West Broadway, Suite 475
Long Beach, CA. 90802-4455

Dear Sir or Madam:

This letter is to inform you that the well listed on the enclosed copy of the idle well list is abandoned.

Sincerely,

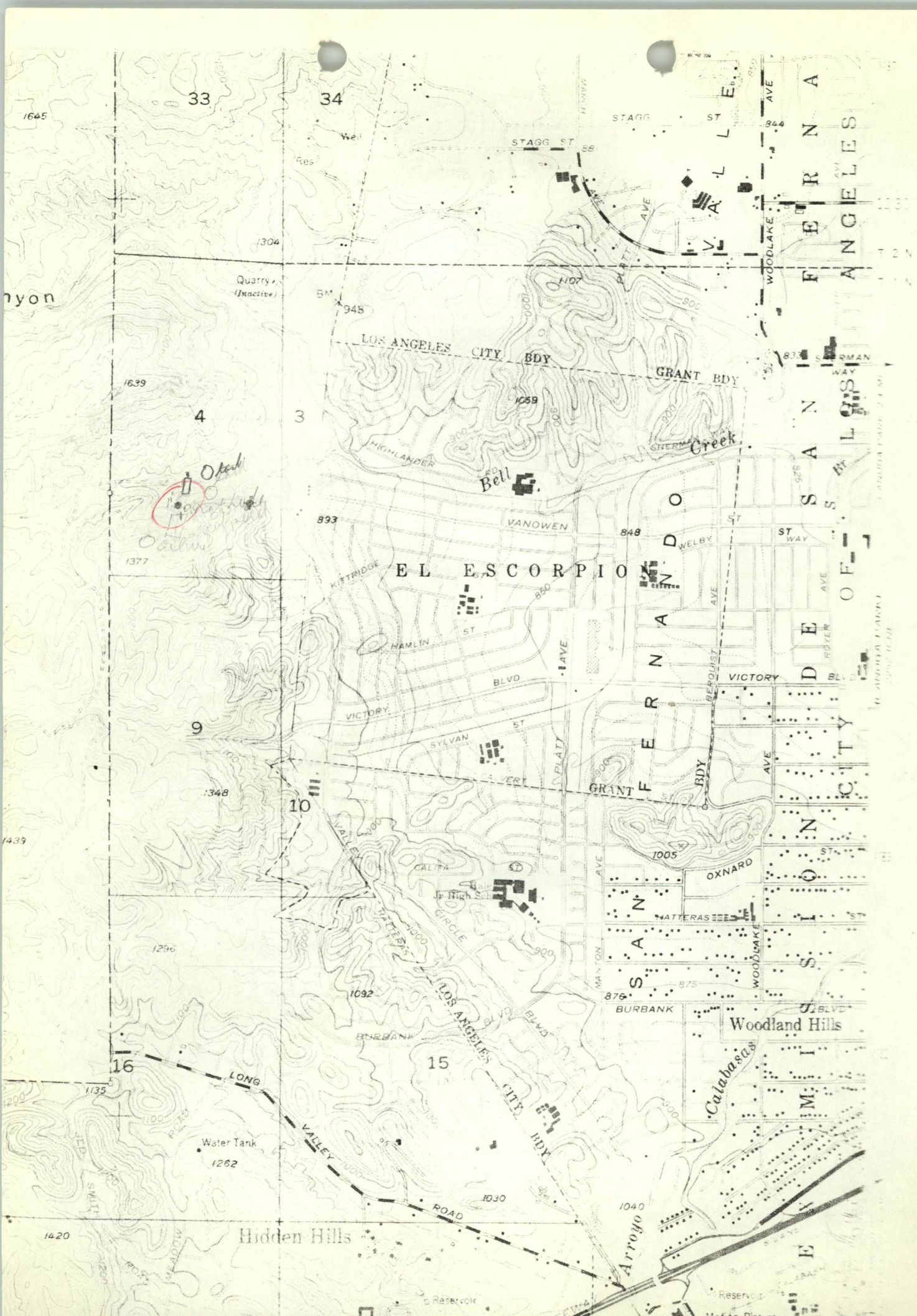
Warren S. Liu, Agent

Liu, Cheng, Lin
7500 Lilla Place
Canoga Park, CA. 91304

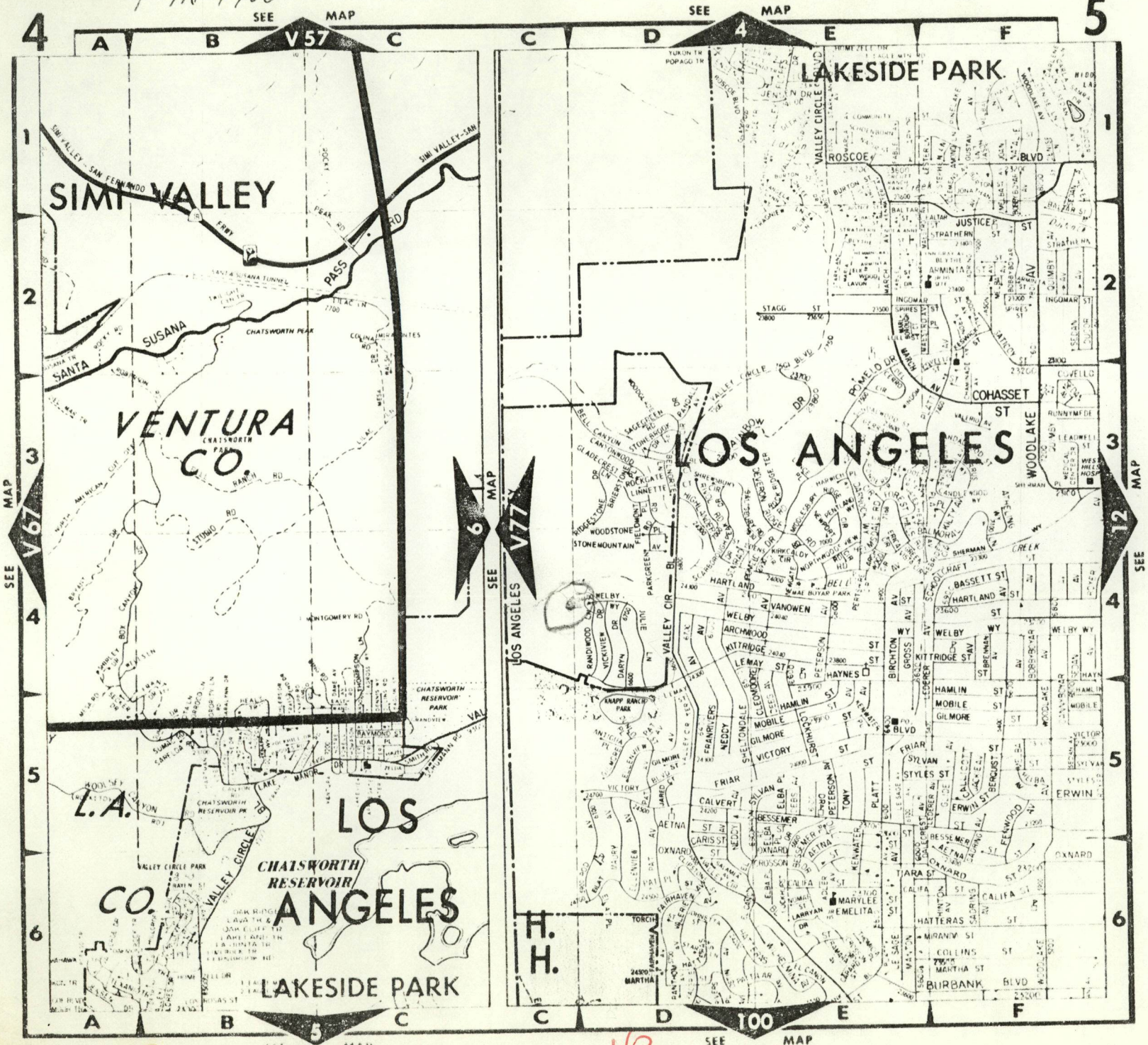
RECEIVED
JAN 22 2 04 PM '88
DIV. OF OIL AND GAS
LONG BEACH, CA.

OPERATOR	FIELD	LEASE NAME	WELL NUMBER	API NUMBER	SEC NO	TN NO	RG NO	PROPOSED USE OR ABANDONMENT- - - - - - -	APPROXIMATE START DATE
LIU, CHENG AND LIN	ANY FIELD	LUCKY STAR	1	03701167	04	01N	17W		

RECEIVED
JAN 22 2 04 PM '88
DIV. OF OIL AND GAS
LONG BEACH, CA.


33
34
4
3
9
10
16
15
STAGG ST
LOS ANGELES CITY BDY
GRANT BDY
Creek
Bell
VANOWEN
EL ESCORPION
VICTORY BLVD
HAMLIN ST
SYLVAN ST
OXNARD ST
HATTERAS ST
BURBANK BLVD
LOS ANGELES CITY BDY
LONG VALLEY ROAD
Water Tank
1262
Hidden Hills
Woodland Hills
Calabasas
Arroyo
Reservoir
SAN FERNANDO VALLEY
WOODLAKE AVE
PLATT AVE
BERQUIST AVE
Quarry
(Inactive)
Well
Res
BM
1645
1304
1107
948
1639
1659
893
848
1377
1348
1439
1296
1092
1135
1030
1040
1420
1005
876
844
833

4-1N-17W


SEE MAP V57
SEE MAP 4
SEE MAP 5
SEE MAP V67
SEE MAP 6
SEE MAP V77
SEE MAP 12
SEE MAP 5
SEE MAP 100
SIMI VALLEY
VENTURA CO.
LOS ANGELES
L.A. CO.
LAKESIDE PARK
CHATSWORTH RESERVOIR
SIMI VALLEY-SAN FERNANDO
SANTA SUSANA PASS RD
SANTA SUSANA TUNNEL
CHATSWORTH PEAK
LOS ANGELES
VALLEY CIRCLE
ROSCOE BLVD
COHASSET ST
WOODLAKE
HARTLAND
VANOWEN
WELBY
KITTRIDGE
LEMAY
HAYNES
HAMLIN
MOBILE
GILMORE
VICTORY
FRIAR
SYLVAN
STYLES ST
ERWIN
BESSEMER
OXNARD
CALIFA
HATTERAS
BURBANK BLVD
CHATSWORTH RESERVOIR PARK
KNAPP RANCH PARK
VALLEY CIRCLE PARK
LAKESIDE PARK

43

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

REPORT ON PROPOSED CHANGE OF WELL DESIGNATION

Long Beach, California

August 11, 1980

Liu, Cheng and Lin
Warren S. Liu
7500 Lilla Place
Canoga Park, CA 91304

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
8-11-80	8-11-80	8-11-80 EB			8-11-80 EB

Your request, dated August 6, 1980, proposing to change the designation of well(s) in Sec. 4, T. 1N, R. 17W, S.B. B. & M., Canoga Park field, Los Angeles County, District No. 1, has been received.

The proposed change in designation, in accordance with Section 3203, Public Resources Code, is authorized as follows:

Well No. "Frank Knapp" 1 will hereafter be known as well "Lucky Star" 1.

API 037-01167

eb
cc: EDP
Update Center
Conservation Committee

M. G. MEFFERD, State Oil and Gas Supervisor

By Richard F. Curtin
for R. A. Ybarra, *Deputy Supervisor*

42

OGD 157 (3-79-DWRR-1M)

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

REPORT OF PROPERTY AND WELL TRANSFER

Field or county	District
Canoga Park	1
Former owner	**Date**
Knapp Bros.	August 11, 1980

Name and location of well(s)

Sec. 4-1N-17W "Frank Knapp" 1 Canoga Park field API 037-01167

Description of the land upon which the well(s) is (are) located

--

Date of transfer, sale, assignment, conveyance, or exchange	New owner	Type of organization
10-19-78	Mr. Warren S. Liu * Mr. Spencer F. Cheng, Mr. & Mrs. Shing-Ching Lin Address: 1250 Wilshire Blvd., Suite 100 Los Angeles, CA 90017	Partnership Telephone No.

Reported by
Mary J. Knapp, letter of December 4, 1978

Confirmed by
Warren S. Liu, legal description & Form 134B received at District 1 on 8-6-80

New operator new status (status abbreviation)	Request designation of agent
NPI	Warren S. Liu, 7500 Lilla Place, Canoga Park, CA 91304
Old operator new status (status abbreviation)	**Remarks**
NPI	*Operator name is: Liu, Cheng and Lin

Deputy Supervisor
for Rudy A. Ybarra

Signature
Richard F. Bertini

OPERATOR STATUS ABBREVIATIONS

PA – Producing Active
NPA – No Potential, Active
PI – Potential Inactive
NPI – No Potential, Inactive
Ab – Abandoned or No More Wells

FORM AND RECORD CHECK LIST

Form or record	Initials	Date	Form or record	Initials	Date
Form OGD121	EB	8-11-80	Map and book	Reg	8-11-80
Form ODG148	EB	8-11-80	Notice to be cancelled		
New well cards (ofr)			Bond status		
Well records			EDP		
Electric logs	↓	↓	Update Center Conservation Committee		
Production reports			L.A. County Assessor /eb		

DEAR MR CROWDER.

Nice to talk WITH ON THE PHONE. THANK YOU!

1. NAME : LUCKY STAR, I

2. FORM : ATTACH :

3. LEGAL DSDCRIPTION .

SEE ATTACH .

RECEIVED
AUG 3 11 44 AM '80
DIV OF OIL AND GAS
LONG BEACH, CA.

RECEIVED
AUG 6 11 44 AM '80
DIV. OF OIL AND GAS
LONG BEACH, CA.

STATE OF CALIFORNIA—RESOURCES AGENCY

EDMUND G. BROWN JR., Governor

DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS
5199 E. PACIFIC COAST HWY., SUITE 309-N
LONG BEACH, CALIFORNIA 90804
(213) 590-5311

July 22, 1980

Mr. Warren S. Liu
Mr. Spencer F. Cheng
Mr. and Mrs. Shing-Ching Lin
1250 Wilshire Blvd., Suite 100
Los Angeles, CA 90017

Knapp Bros.
Well "Frank Knapp" 1
API 037-01167
Sec. 4-1N-17W
Canoga Park field

We need the following information before the subject well can be transferred:

1. We need your new operating name. Would Liu, Cheng and Lin be acceptable?

2. Designation of Agent form must be properly filled out. Form 134B is for individuals. If you have formed a corporation please fill out Form 134A. Return the properly filled out form to this office.

3. Please furnish this division with a legal description of the lease.

Thank you.

Robert E Crowder
Robert E. Crowder
Operations Engineer

REC:eb

Enclosures

LONG BEACH, CA
DIV OF OIL AND GAS
AUG 8 11 AM '80
RECEIVED

RECEIVED
AUG 6 11 44 AM '80
DIV. OF OIL AND GAS
LONG BEACH, CA.

Field ~~Canoga Park~~ County ~~L. A.~~

Operator ~~Knapp Bros.~~ Liu, Cheng & Lin Well name ~~Frank Knapp 1~~ "Lucky Star" 1

Sec. T. & R. 4-1N-17W API well No. 037-01167

Hazardous or damaging ☐ Yes ☑ No

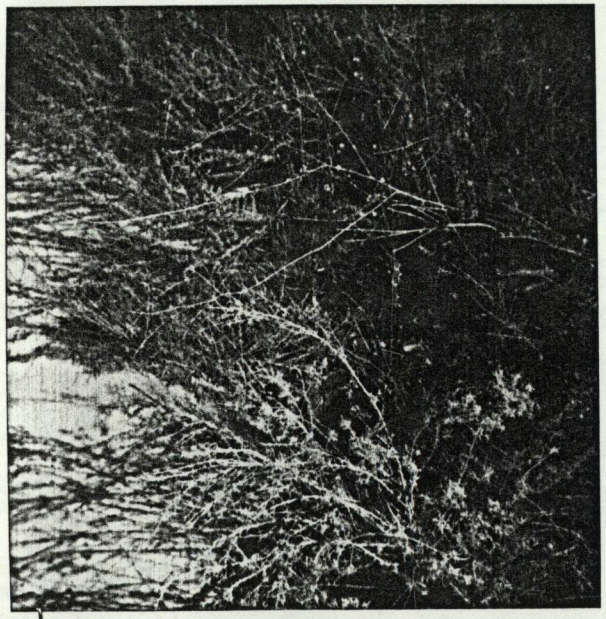
Bond ☐ Yes ☑ No

perf. 394-1100' (
-1106', TD 12

ticking

photos

ested 3/30





34

TITLE INSURANCE AND TRUST COMPANY

INSTRUMENT NO.: 78-1159959

SCHEDULE C

THE LAND REFERRED TO IN THIS POLICY IS SITUATED IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1:

LOT 4 OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 17 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

PARCEL 2:

THAT PORTION OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 17 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF AND THAT PORTION OF THE NORTH HALF OF THE NORTHEAST QUARTER OF SECTION 9 IN SAID TOWNSHIP 1 NORTH, RANGE 17 WEST, BOUNDED AS FOLLOWS:

BOUNDED WESTERLY AND NORTHERLY BY THE WESTERLY AND NORTHERLY LINE OF SAID SOUTH HALF.

BOUNDED SOUTHWESTERLY BY THE NORTHEASTERLY LINE OF THE LAND, DESCRIBED IN THE DESCRIPTION 1 OF THE DEED TO THE CITY OF LOS ANGELES, RECORDED JANUARY 12, 1962 AS INSTRUMENT NO. 1825 OF OFFICIAL RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

BOUNDED EASTERLY BY THE GENERAL WESTERLY BOUNDARY OF TRACT NO. 23762, AS PER MAP RECORDED IN BOOK 753 PAGES 60 TO 65 INCLUSIVE OF MAPS IN SAID COUNTY RECORDER.

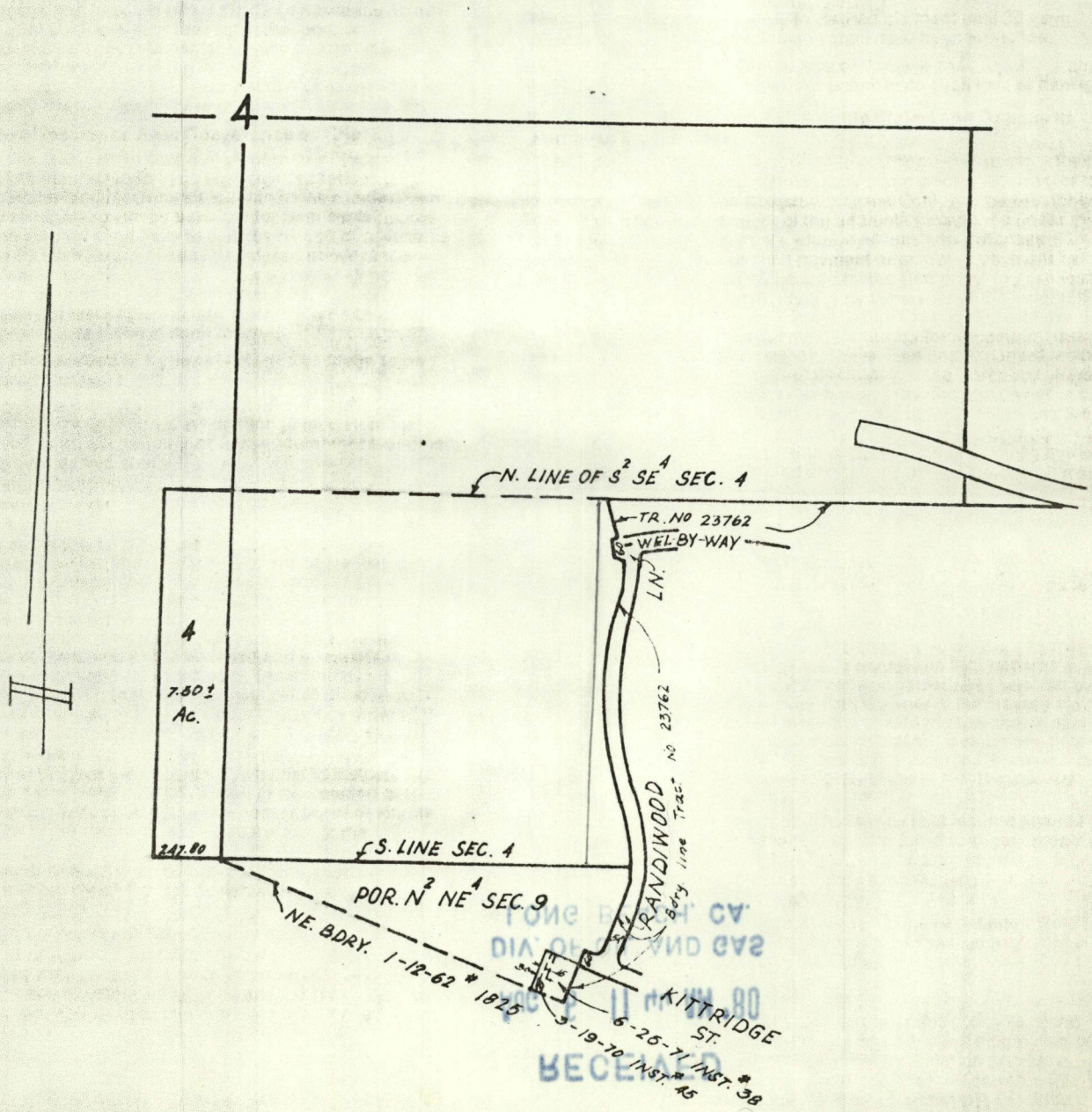
EXCEPT THEREFROM THAT PORTION OF THE ABOVE SAID LAND INCLUDED WITHIN THE LAND, FIRSTLY DESCRIBED IN THE DEED TO THE CITY OF LOS ANGELES, RECORDED ON MARCH 19, 1970 AS INSTRUMENT NO. 45 OF OFFICIAL RECORDS IN SAID COUNTY RECORDER.

ALSO EXCEPT THEREFROM THAT PORTION OF THE ABOVE SAID LAND, INCLUDED WITHIN THE LAND, FIRSTLY DESCRIBED IN THE DEED TO THE CITY OF LOS ANGELES, RECORDED JUNE 25, 1971 AS INSTRUMENT NO. 38 OF OFFICIAL RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

RECEIVED
AUG 8 11 44 AM '80
DIV. OF OIL AND GAS
LONG BEACH, CA

RECEIVED
AUG 6 11 44 AM '80
DIV. OF OIL AND GAS
LONG BEACH, CA.

LOT 4 AND POR. SE¼ OF SEC. 4 T 1N. R 17W. ALSO -
POR. OF N½ OF NE¼ SEC. 9 T 1N. R. 17W.



RECEIVED

RECEIVED
AUG 6 11 44 AM '80
DIV. OF OIL AND GAS
LONG BEACH, CA.

STATE OF CALIFORNIA—RESOURCES AGENCY
EDMUND G. BROWN JR., *Governor*

DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS
5199 E. PACIFIC COAST HWY., SUITE 309-N
LONG BEACH, CALIFORNIA 90804

July 22, 1980

Mr. Warren S. Liu
Mr. Spencer F. Cheng
Mr. and Mrs. Shing-Ching Lin
1250 Wilshire Blvd., Suite 100
Los Angeles, CA 90017

Knapp Bros.
Well "Frank Knapp" 1
API 037-01167
Sec. 4-1N-17W
Canoga Park field

We need the following information before the subject well can be transferred:

1. We need your new operating name. Would Liu, Cheng and Lin be acceptable?

2. Designation of Agent form must be properly filled out. Form 134B is for individuals. If you have formed a corporation please fill out Form 134A. Return the properly filled out form to this office.

3. Please furnish this division with a legal description of the lease.

Thank you.

Robt. E Crowder

Robert E. Crowder
Operations Engineer

REC:eb

Enclosures

Sent certified mail r/r req.
EB

RECEIPT FOR CERTIFIED MAIL—30¢ (plus postage)

POSTMARK OR DATE

Re: Knapp Bros. "Frank Knapp" 1 Canoga Park

SENT TO
Liu, Cheng, Lin

STREET AND NO.
1250 Wilshire Blvd., Suite 100

P.O., STATE AND ZIP CODE
Los Angeles, CA 90017

OPTIONAL SERVICES FOR ADDITIONAL FEES

RETURN RECEIPT SERVICES
1. Shows to whom and date delivered ..... 15¢
With delivery to addressee only ..... 65¢
2. Shows to whom, date and where delivered .. 35¢
With delivery to addressee only ..... 85¢

DELIVER TO ADDRESSEE ONLY ..... 50¢

SPECIAL DELIVERY (extra fee required) .....

PS Form 3800 Apr. 1971 — NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL (See other side)

☆ GPO : 1974 O - 551-454

No. 603744

UNITED STATES POSTAL SERVICE

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, $300

U.S.MAIL

SENDER INSTRUCTIONS

Print your name, address, and ZIP Code in the space below.

- Complete items 1, 2, and 3 on the reverse.
- Attach to front of article if space permits, otherwise affix to back of article.
- Endorse article "Return Receipt Requested" adjacent to number.

RETURN TO

DIVISION OF OIL AND GAS
5199 E. PACIFIC COAST HWY.
SUITE 309-N
LONG BEACH, CA 90804

(Name of Sender)

(Street or P.O. Box)

(City, State, and ZIP Code)

Knapp Bros. "Krank Knapp" 1 /eb

PS Form 3811, Jan. 1979

SENDER: Complete items 1, 2, and 3. Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
   - ■ Show to whom and date delivered..... ¢
   - ☐ Show to whom, date and address of delivery.... ¢
   - ☐ RESTRICTED DELIVERY
     Show to whom and date delivered..... ¢
   - ☐ RESTRICTED DELIVERY.
     Show to whom, date, and address of delivery.$

   (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
   Liu, Cheng, and/or Lin
   1250 Wilshire Blvd., Suite 100
   Los Angeles, CA 90017

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	603744	

(Always obtain signature of addressee or agent)

I have received the article described above.

SIGNATURE ☐Addressee ☐Authorized agent

Penny Lew

4. DATE OF DELIVERY 7/23/80

POSTMARK USPO LOS ANGELES CA JUL 23 1980

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE:

CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1979-288-848

30

STATE OF CALIFORNIA—RESOURCES AGENCY
EDMUND G. BROWN JR., Governor

DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS
5199 E. PACIFIC COAST HWY., SUITE 309-N
LONG BEACH, CALIFORNIA 90804

January 26, 1979

Knapp Bros.
Well "Frank Knapp" 1 (037-01167)
Sec. 4, T.1N, R.17W, S.B.B.&M.
Canoga Park Oil Field

Mr. Warren S. Liu
Mr. Spencer F. Cheng
1250 Wilshire Blvd., Suite 100
Los Angeles, CA 90017

Gentlemen:

This Division is in receipt of a letter from Mary Knapp and countersigned by Mr. Liu, Mr. Cheng, and Mr. and Mrs. Lin assuming ownership and responsibility for the above captioned well.

Enclosed is a supply of forms that are required by law to be filed with this Division. Mail one copy of each form to: Division of Oil and Gas, 5199 E. Pacific Coast Highway, Long Beach, CA 90804.

The bond, for the amount of $10,000, has to be obtained from a bonding company. It should be notarized and submitted with the enclosed forms.

The name appearing on the bond should be identical to the operating name appearing on the other forms.

This bond will be released after the well has completed six months of production or the well has been abandoned in conformance with this Division's requirements.

If you have questions, please feel free to contact me at 213/590-5311.

Sincerely,

Robert E Crowder

Robert E. Crowder
Associate Oil and Gas Engineer

REC:eb

Enclosures

No bond required yet Needed for Frank Knapp #3 "Knapp"

Bob - followup on this. yet

29

RECEIVED
JAN 24 10 54 AM '79
DIV. OF OIL AND GAS
LONG BEACH, CA.

File on record

December 4, 1978

Knapp Bros
Well "Frank Knapp" 1 (037-01167)
Sec 4, T. IN, R. 17W, S.B.B. & M.
Canoga Park Oil Field

Division of Oil and Gas
5199 E. Pacific Coast Hwy., Suite 309-N
Long Beach, California 90804

Attn: R. E. Crowder
Associate Oil & Gas Engineer

Dear Mr. Crowder:

This well was included in the sale of the property to Mr. Liu, Mr. Cheng and Mr. and Mrs. Lin. The date of the close of escrow was 10-19-78. The new owners have countersigned below, acknowledging acceptance of the well.

Thank you for your courtesy and patience in this matter.

Sincerely,

Mary J Knapp

Mary J. Knapp, Agent

COUNTERSIGNED:

* Warren S. Liu Date

7250 Wilshire Blvd Suite 100 LA Ca 90017

Spencer F. Cheng Date

Shing-Ching Lin Date

Fei Lan Lin Date

STATE OF CALIFORNIA—RESOURCES AGENCY
EDMUND G. BROWN JR., Governor

DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS
5199 E. PACIFIC COAST HWY., SUITE 309-N
LONG BEACH, CALIFORNIA 90804
213/590-5311

December 1, 1978

Knapp Bros
Well "Frank Knapp" 1 (037-01167)
Section 4, T.1N., R.17W. S.B.B.&M.
Canoga Park Oil Field

Mrs. Mary J. Knapp
Knapp Bros.
7443 Jordan Avenue
Canoga Park, CA 91304

Dear Mrs. Knapp:

The above captioned well is still your obligation to abandon unless it was transferred to the new surface owners, Warren Lui and Spencer Cheng.

If the well was included in the sale, then we would need a letter from you giving us the date of sale. Also, this letter must be countersigned by the new owners acknowledging acceptance of the well.

Sincerely,

R. E Crowder

R. E. Crowder
Associate Oil and Gas Engineer

REC:eb

STATE OF CALIFORNIA—RESOURCES AGENCY

EDMUND G. BROWN JR., Governor

DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS
5199 E. PACIFIC COAST HWY., SUITE 309-N
LONG BEACH, CALIFORNIA 90804
(213) 5905311

November 2, 1978

Mrs. Mary J. Knapp
Knapp Bros.
7443 Jordan Ave.
Canoga Park, CA 91304

Subj: Knapp Bros.
"Frank Knapp" 1 (037-01167)
Section 4, T. 1N., R. 17W.
Canoga Park Oil Field

Dear Ms. Knapp:

A recent check of our records shows that you have the above idle well in Canoga Park field. This well was idle on April 1, 1973, has remained idle since that time and may come under Sec. 3237 of the Public Resources Code.

Will you please inform us of your plans for this well and a timetable for its further use or abandonment.

Sincerely,

R. E Crowder

R. E. Crowder
Associate Oil and Gas Engineer

REC:sc

This property was recently sold; the new owners are: Warren Lui, Spencer Cheng
1250 Wilshire Blvd
L.A 90017

24

RECEIVED
Nov 31 12 15 PM '78
DIV. OF OIL AND GAS
LONG BEACH, CA.

Dec 7, 1976

Dev Oil & Gas
5199 E. Pacific Coast Hiway
Suite 309-N
Long Beach, Ca 90804
Attn: Mr. L. J. Olson

Re: 1) Frank Knapp
"Knapp" 3
(037-00494
Sec 4 - 1N - 17W
SBBEM

2) Knapp Bros.
"Frank Knapp",
(037-01169)
Same

Dear Mr Olson -

Mr. Knapp desires to keep these wells as they are for another year. He plans to re-evaluate the wells this coming year & will make a decision during that time.

Sincerely

Mary J Knapp

24

(213) 590-5311

December 1, 1976

Frank Knapp
"Knapp" 3 (037-00494)
Sec. 4-1N-17W SB B&M
Los Angeles County

Knapp Bros.
"Frank Knapp" 1 (037-01167)
Sec. 4-1N-17W SB B&M
Canoga Park Field

Mrs. Mary J. Knapp
7443 Jordan Avenue
Canoga Park, CA 91304

Dear Mrs. Knapp:

The above-listed wells have been idle since before April 1, 1973, and are subject to Sec. 3237 of the Public Resources Code pertaining to the abandonment of idle wells.

Please inform us if you have any plans to utilize these wells for any purpose. If we do not hear from you by December 15, 1976, we will assume that you have no plans for the wells and will order that they be abandoned.

Yours truly,

M. B. Albright
Deputy Supervisor

(Original signed by L. J. Olson)

L. J. Olson
Associate Oil and Gas Engineer

LJO:arg
Certified Mail

RECEIPT FOR CERTIFIED MAIL—30¢ (plus postage)

No. 708240

SENT TO
Mrs. Mary J. Knapp

POSTMARK OR DATE

STREET AND NO.
7443 Jordan Ave.

P.O., STATE AND ZIP CODE
Canoga Park, CA 91304

OPTIONAL SERVICES FOR ADDITIONAL FEES

RETURN RECEIPT SERVICES
1. Shows to whom and date delivered ..... 15¢
With delivery to addressee only ..... 65¢
2. Shows to whom, date and where delivered .. 35¢
With delivery to addressee only ..... 85¢

DELIVER TO ADDRESSEE ONLY ..... 50¢
SPECIAL DELIVERY (extra fee required) .....

PS Form 3800 Apr. 1971

NO INSURANCE COVERAGE PROVIDED—NOT FOR INTERNATIONAL MAIL

(See other side)

☆ GPO : 1972 O - 460-743

23

(213) 590-5311

November 4, 1976

Knapp Bros.
"Frank Knapp" 1 (037-01167)
Sec. 4-1N-17W SB B&M
Canoga Park Field

Mrs. Mary J. Knapp
Knapp Bros.
7443 Jordan Avenue
Canoga Park, California 91304

Dear Mrs. Knapp:

A recent check of our records shows that you have the above idle well in Canoga Park field. This well was idle on April 1, 1973, has remained idle since that time and may come under Sec. 3237 of the Public Resources Code. It is not the intent of this Division to order the abandonment of any well that may have future use in the efficient production of oil as a producer, injector or disposal well.

Will you please inform us of your plans for this well and, if possible, some type of timetable for its further use or abandonment. Thank you.

Sincerely,

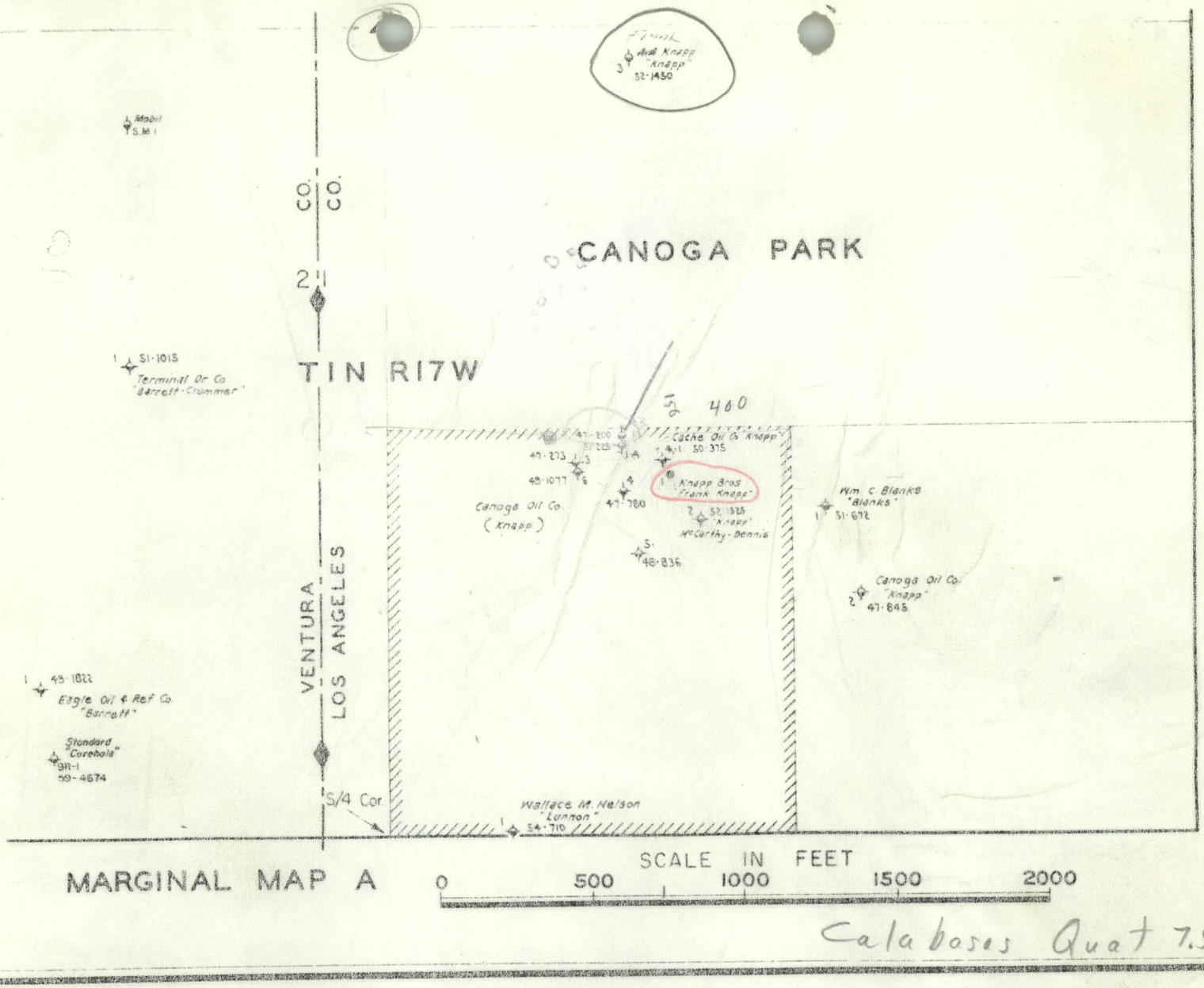
(Original signed by L. J. Olson)

L. J. Olson
Associate Oil and Gas Engineer

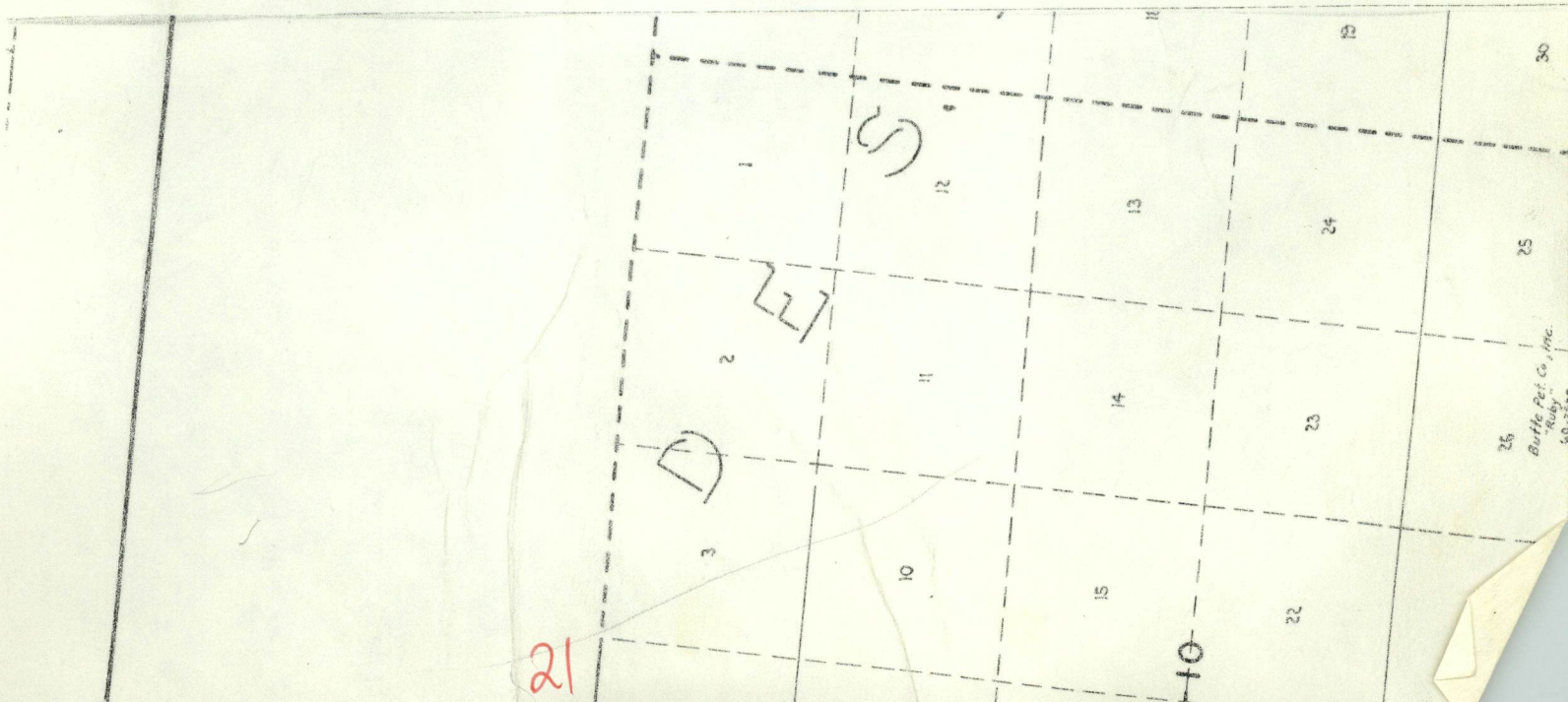
LJO:ag

Nov 3, 1976, R. Johnson inspected the well & noted Junk at 2' below the top of the 6.9" I.D. csg. collar (7"). See photo #(1). Location: see Calabasas 7.5 Quadrangle. Well is up the hill from the oil tank

22



Calabasas Quat 7.5'



Bond for "Knapp" 3

KNAPP BROTHERS "Frank Knapp" 1 Canoga Park
4-1N-17W

This well has been reported idle since August 1963. Please make surface inspection for possible NPI status.

N. Peterson 7-15-71

10-2-73
Inspected well site and found no pumping unit but a make shift x-mas tree was welded to casing. lines were not completed to any installation.

J. Colosi

operator active

DIVISION OF OIL AND GAS
RECEIVED
JUN 20 1955
LOS ANGELES, CALIFORNIA

BOND STATUS REPORT

TO: District 1

FROM: San Francisco

DATE: June 17, 1955

Surety is inquiring regarding the eligibility for release of the bond covering the following well. Please check the appropriate items.

Operator: W J McCARTHY

Well No.: "Frank Knapp" 1

Sec.: 4 1n 17w sb bm

Field or County:

A. BOND IS NOT ELIGIBLE FOR RELEASE BECAUSE:

☐ 1. Well has not been satisfactorily completed or abandoned.

☐ 2. Required records have not been filed.

☐ 3. Other: _____

_____

_____

☒ B. BOND IS ELIGIBLE FOR REPLEASE. Form 150b attached (or was submitted, dated). No T-Report on WSO. How come?

☐ C. REMARKS: _____

_____

_____

This report completed by J. E. Kashine

R. V. Walling
Deputy Supervisor

Form 44

FORM 156

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS

District 1

Date March 8 1954

REPORT OF PROPERTY AND WELL TRANSFER

Former Owner: W. J. McCarthy

Description and list of wells: "Frank Knapp" 1

Sec. 4, T. 1 N., R. 17 W., S.B. B. & M., Los Angeles County field,

New Owner: Knapp Bros.
Address: c/o A. A. Knapp, Box 55, Canoga Park, Calif.; date acquired: July 26, 1952

Request for designation of agent for Los Angeles County should be sent to:
Name: Knapp Bros.
Address: (See above)

Reported by: Knapp Bros. (Letter of Feb. 23, 1954)
Confirmed by: Filing of production reports for March 1953 by the new operator

Type of organization: Partnership
(Individual, partnership, corporation, etc.)

Our records are being changed accordingly.

Remarks: The bond filed by W. J. McCarthy on this well is not eligible for release as the required records have not been filed.

mt
CC- Mr R D Bush
Prod. Dept.
Conservation Committee

Deputy Supervisor

		INITIALS	DATE
Form 121	✓	MJ	3-4-54
New Well Cards	✓	✓	✓
Well Records	✓	✓	✓
Logs			
Production Reports	✓	3/8/54	3/8/54
Form 148	✓		
Field Maps	✓	WB	3-8-54
Map Book	✓	WB	✓
Notice to be Canceled? ✓ no 78K			

fa

18

75141 2-53 4150 ② SPO

February 23rd 1954

DIVISION OF OIL AND GAS
RECEIVED
FEB 26 1954
LOS ANGELES, CALIFORNIA

Division of oil & gas
1015 W. Olympic
Los Angeles 15 Calif

Attention:
Mr. F.E. Kasline

Please be advised that effective July 26th 1952, we acquired W.J. McCarthy well no "Frank Knapp 1", in Sec 4, T 1N R 17W SB B&M by quit claim deed.

Description of property is S1/2 SE1/4 Sec 4; N1/2 NE1/4 Sec 9, & lot 1 in Sec 10 T 1N R 17W SB B&M

One acre described as follows is not included:

E 208.71' of W 884.57' of N 208.71' of N1/2 SE1/4 of Sec 4. Well no "Knapp" 3 drilled by W.J. Dennis is on this acre.

Knapp Bros
E & A. A. Knapp Box 55

Partnerships (FEK-EB-3-3-54)

FORM 101
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAR 29 1954
LOS ANGELES, CALIFORNIA

(now Knapp Bros)

LOG AND CORE RECORD OF OIL OR GAS WELL

Operator W. J. Mc Carthy Field Canoga Park Area (L. A. County)

Well No. "Frank Knapp" 1 Sec. 4, T. 1 N, R. 17 W, S. B. B. & M.

FORMATIONS PENETRATED BY WELL

DEPTH TO Top of Formation	DEPTH TO Bottom of Formation	Thickness	Drilled or Cored	Recovery	DESCRIPTION
					CORE RECORD
417'	430'	13'	Cored	4'	Very hard sandstone, very fine to fine grain well cemented, poor sorting, gray color
452'	471'	19'	"	17'	5' same as above - 12' black shale.
860'	863'	3'	"	3"	Very hard well cemented silty sandstone (Calcareous Cement) Appears to be fault zone material due to secondary crystallizatio
1044'	1050'	6'	"	6'	Black shale with streaks of very fine to fine grained sand containing traces of oil.
1050'	1055'	5'	"	4-3/4'	4-1/2' - Black shale 1/4' - very fine to fine grained sand, well cemented, poor sorting, fair oil show.
1055'	1065'	10'	"	3"	Hard black shale
1065'	1075'	10'	"	8'	" " "
1075'	1085'	10'	"	2'	" " "
1085'	1094'	9'	"	2'	1' hard black shale 1' oil sand — 1085
1094'	1096'	2'	"	1'	Oil sand - good cut
1096'	1104'	8'	"	6'	" " " "
1104'	1110'	6'	"	2'	1' oil sand - good cut 1' hard sandstone
1110'	1120'	10'	"	4'	2-1/2' oil sand - good cut — 1120 1-1/2' very hard sandstone
1120'	1130'	10'	"	4'	1' " " " 3' black shale
1130'	1138'	8'	"	2'	Black shale
1138'	1145'	7'	"	7'	Wet oil sand - no cut.
1145'	1155'	10'	"	10'	6' wet oil sand - no cut. 4' black shale
1155'	1165'	10'	"	10'	" "
1165'	1175'	10'	"	10'	2' " " 8' water wet oil, gray
1175'	1185'	110'	"	10'	" " " "
1185'	1195'	10'	"	2'	" " " "
1195'	1203'	8'	"	2'	" " " "
1203'	1208'	5'	"	1'	Water wet sand, gray
1208'	1218'	10'	"	10'	" " " "
1218'	1226'	8'	"	3'?	" " " "
					DITCH CUTTINGS
430'	452'	22'	Drilled	—	Hard sandstone with softer break at 448'
471'	541'	70'	"	—	Hard sandstone with streaks of black shale interbedded

14

FORM 101
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAR 29 1954
LOS ANGELES, CALIFORNIA

(now Knapp Bros.) LOG AND CORE RECORD OF OIL OR GAS WELL

Operator W. J. Mc Carthy Field Canoga Park Area (L. A. County)

Well No. "Frank Knapp" 1 Sec. 4, T. 1 N, R. 17 W, S. B. B. & M.

FORMATIONS PENETRATED BY WELL

DEPTH TO Top of Formation	DEPTH TO Bottom of Formation	Thickness	Drilled or Cored	Recovery	DESCRIPTION
					DITCH CUTTINGS CONTINUED
563'	568'	5'	Drilled	—	Very hard sandstone with shale breaks
568'	578'	10'	"	—	Shale
578'	596'	18'	"	—	Shale with streaks of hard standstone
596'	652'	56'	"	—	Very hard sandstone
652'	727'	75'	"	—	Very hard sandstone with few shale breaks.
727'	740'	13'	"	—	Very hard sandstone, conglomeritic
740'	768'	28'	"	—	Shale with sandstone streaks
768'	795'	27'	"	—	Very hard sandstone with shale streaks
795'	960'	165'	"	—	Very Hard sandstone, conglomeritic
960'	1040'	80'	"	—	Formation change to fine, medium grained sandstone with shale breaks.

FORM 103.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAR 29 1954
LOS ANGELES, CALIFORNIA

History of Oil or Gas Well

(new Knapp Bros.)

OPERATOR W. J. Mc Carthy ~~XXXX~~ Canoga Park Area (L. A. County)

Well No. "Frank Knapp" 1, Sec. 4, T. 1 N, R. 17 W, S. B. B. & M.

Signed W. J. McCarthy

Date _____ Title _____
(President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. **Use this form in reporting the history of all important operations at the well, together with the dates thereof, prior to the first production.** Include in your report such information as size of hole drilled to cementing or landing depth of casings, number of sacks of cement used in the plugging, number of sacks or number of feet of cement drilled out of casing, depth at which cement plugs started, and depth at which hard cement encountered. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

Date	
2-21-51	Cemented 31' of conductor casing in 12-1/4" hole.
2-27-52 to 4-6-52	Drilled 11" hole 31' to 768', 10-5/8" hole 768' to 1119', and 7-5/8" hole 1119' to 1226' (T.D.) On April 4, 1952 ran electric log 100' to 1138'.
4-7-52	Plugged back to 1080' by B.J. Service - Drilled out to 1124'
4-9-52	Ran 7" -24 and 26 lb. casing and cemented at 1119' with 150 sacks filled back of casing to 780'. Cleaned out to shoe at 1119'.
4-10-52	Gun perforated casing 989'-993' - 4 shots/ft 1/2" shot. Packer set at 921' at 3:35p.m., pulled 4:10p.m. No. show. Gun perforated casing 1087' - 1091' - 4 shots/ft 1/2" shot. Packer set at 921' at 8:35p.m. Pulled at 9:10 p.m. No show. Oil Properties Consultants, Inc. were on well from February 26, 1952 to April 10, 1952.
	Zones perforated for production - - - 1106 - 1088 - 4 shots/ft. 1005 - 993 790 - 778 610 - 608 525 - 523 400 - 394 788 - 786 525 - 519 Perf's 394' - 400' cemented off w/150 sacks of cement due to gas flow in annulus.
4-20-52	Well completed on about April 20, 1952 - Producing through 2 1/2" tubing set at 1096'. Clean oil, no water - 38° gravity. Settled production on 4 hr./day. Pumping about 1 B/D oil and 3 B/D water.

NOTE: Records compiled from report prepared for W. J. Mc Carthy by Oil Properties Consultants, Inc., Pasadena, California.

10

100.
FORNIA STATE PRINTING OFFICE

SUBMIT LOG IN DUPLICATE
FILL THIS BLANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF PAPER ONLY

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAR 29 1954
LOS ANGELES, CALIFORNIA

WELL SUMMARY REPORT

(now Knapp Bros)

Operator W. J. Mc Carthy Canoga Park Area (L. A. County)

Well No. "Frank Knapp" 1 Sec. 4, T. 1 N, R. 17 W, S. B. B. & M.

Location 150' S, 1715' W. fr NE cor. S½ SE¼ of Sec. Elevation above sea level 1022 feet.
All depth measurements taken from top of KB, which is 4 feet above ground.

In compliance with the provisions of Chapter 93, Statutes of 1939, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date 3-28-54 Signed W. J. McCarthy

(Engineer or Geologist) (Superintendent) Title (President, Secretary or Agent)

Commenced drilling Feb. 21, 1952 Completed drilling Drilling tools ~~Cable~~ Rotary

Total depth 1226' Plugged depth 1119'

Junk

GEOLOGICAL MARKERS DEPTH

Commenced producing April 20, 1952 (date) ~~flowing/gas lift~~/pumping (cross out unnecessary words)

	Clean Oil bbl. per day	Gravity Clean Oil	Per Cent Water including emulsion	Gas Mcf. per day	Tubing Pressure	Casing Pressure
Initial production	* Est 1 B/D	38°	75	-	-	-
Production after 30 days	" "	"	"	-	-	-

CASING RECORD (Present Hole)

Size of Casing (A. P. I.)	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cementing if through perforations
31'	Conductor	casing							
7"	1119'	0	24 & 26	S. H.			10 5/8"	150	(394'-400' 150 sax)

PERFORATIONS

Size of Casing	From	To	Size of Perforations	Number of Rows	Distance Between Centers	Method of Perforations
7"	394 ft.	400 ft.	4 - 1/2 " holes/ft	-	-	Gun (Cemented off with 150 sax.)
"	519 ft.	525 ft.	" " "	-	-	"
"	608 ft.	610 ft.	" " "	-	-	"
"	778 ft.	790 ft.	" " "	-	-	"
"	993 ft.	1005 ft.	" " "	-	-	"
"	1088 ft.	1106 ft.	" " "	-	-	"

Electrical Log Depths 100' - 1138' 13 (Attach Copy of Log)

FORM 111 (1-49)

E

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS

Stanley 76 349 (phone)

No. P 152-244

Los Angeles 15 Calif. February 25 19 52

MR. Geo C Moss
1137 San Ysidro Drive
Beverly Hills Calif.

121

~~Agent~~ for W. J. McCARTHY

DEAR SIR:

Your proposal to drill (Canoga Park Area) Well No. "Frank Knapp" 1,
Section 4, T. 1 N, R. 17 W, S B B. & M., ~~Field~~, Los Angeles County,
dated Feb. 18 19 52, received Feb. 18 1952, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES

"From E Line of Sec 4, 1715 W along C/L of SE¼, thence 150' S at R angle.
Elevation of ground above sea level _____ feet _____ datum.
All depth measurements taken from top of _____ which is _____ feet above ground."

PROPOSAL

"PROPOSED CASING PROGRAM

Size of Casing Inches	A.P.I. Weight	Grade and Type	Top	Bottom	Cementing Depths
14 1/2		Conductor S	Ground	30 ft	30 ft
8 5/8	42	J-55	"	400 ft	C P 260±

Intended zone or zones of completion: 275 ft to 326 ft
It is understood that if changes in this plan become necessary we are to notify you before running casing."

DECISION

THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS a test of the effectiveness of the 8-5/8" shut-off.

ERMA:OH

cc Mr W J McCarthy

W

R. D. BUSH
State Oil and Gas Supervisor

Bond No. 5206070

12 By E. H. Messer Deputy

RM 105

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
FEB 18 1952

LOS ANGELES
037-01167

Notice of Intention to Drill New Well

This notice and surety bond must be filed before drilling begins

Knapp Bros.

Los Angeles Calif. Feb 18 1952

DIVISION OF OIL AND GAS

"Frank Knapp" 1

In compliance with Section 3203, Division III, Article 4, Public Resources Code, notice is hereby given that it is our intention to commence the work of drilling well No. "FRANK KNAPP" #1, Sec. 4, T. 1-N, JLW R. 17W-5 B. & M., Canoga Park area Field, L-A. County.

Legal description of lease (Attach map or plat to scale)

S½ of the SE¼ of Sec 4,
N½ of the NE¼ of Sec 9, + Lot 1 in Sec 10

Location of Well: feet (Direction) property along section line and feet (Direction)

at right angles to said line from the property corner of section

From E Line of Sec 4, 1715' W along
C/L of SE¼, thence 150' S. at Right angle

Elevation of ground above sea level feet datum.

All depth measurements taken from top of (Derrick Floor, Rotary Table or Kelly Bushing) which is feet above ground.

PROPOSED CASING PROGRAM

SIZE OF CASING INCHES A.P.I.	WEIGHT	GRADE AND TYPE	TOP	BOTTOM	CEMENTING DEPTHS
14½		Conductor	Ground	30 ft	30 ft
8 5/8	42	J-55	~~Ground~~	400 ft	C P 260 ±

Intended zone or zones of completion: 275 ft To 326 ft

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
Wo	Top 22 JLW	EB	5206070	SB	EB

Partnership -

It is understood that if changes in this plan become necessary we are to notify you before running casing.

Address 137 San Ysidro Drive
Beverly Hills, Calif

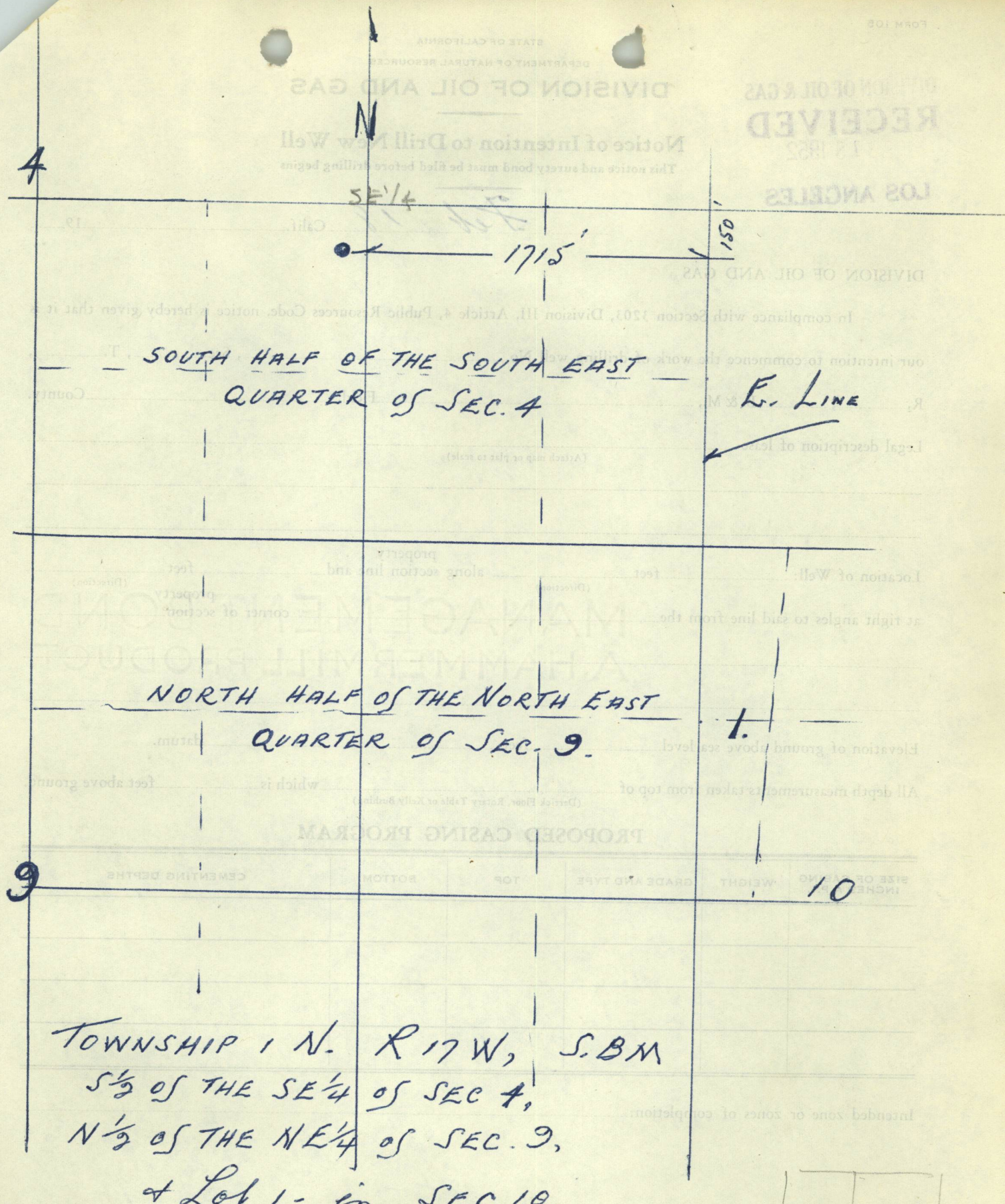
Telephone Number Cr-10874

W. J. McCarthy
(Name of Operator)

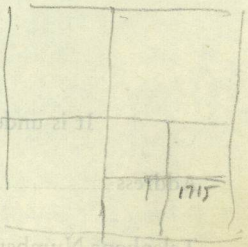
By Geo. Moe.

SEND ONE COPY OF NOTICE TO DIVISION OFFICE IN DISTRICT WHERE WELL IS LOCATED

46965 7-51 20M ① SPO



TOWNSHIP 1 N. R 17 W, S.BM
S½ OF THE SE¼ OF SEC 4,
N½ OF THE NE¼ OF SEC. 9,
& Lot 1 in SEC 10.



FORM 105

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
FEB 18 1952
LOS ANGELES

Notice of Intention to Drill New Well

This notice and surety bond must be filed before drilling begins

Feb 18, Calif., 19

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division III, Article 4, Public Resources Code, notice is hereby given that it is our intention to commence the work of drilling well No. ____, Sec. ____, T. ____, R. ____, B. & M., ____ Field, ____ County.

Legal description of lease ____
(Attach map or plat to scale)

Location of Well: ____ feet ____ (Direction) property along section line and ____ feet ____ (Direction) property at right angles to said line from the ____ corner of section ____

Elevation of ground above sea level ____ feet ____ datum.

All depth measurements taken from top of ____ (Derrick Floor, Rotary Table or Kelly Bushing) which is ____ feet above ground.

PROPOSED CASING PROGRAM

SIZE OF CASING INCHES A.P.I.	WEIGHT	GRADE AND TYPE	TOP	BOTTOM	CEMENTING DEPTHS

Intended zone or zones of completion: ____

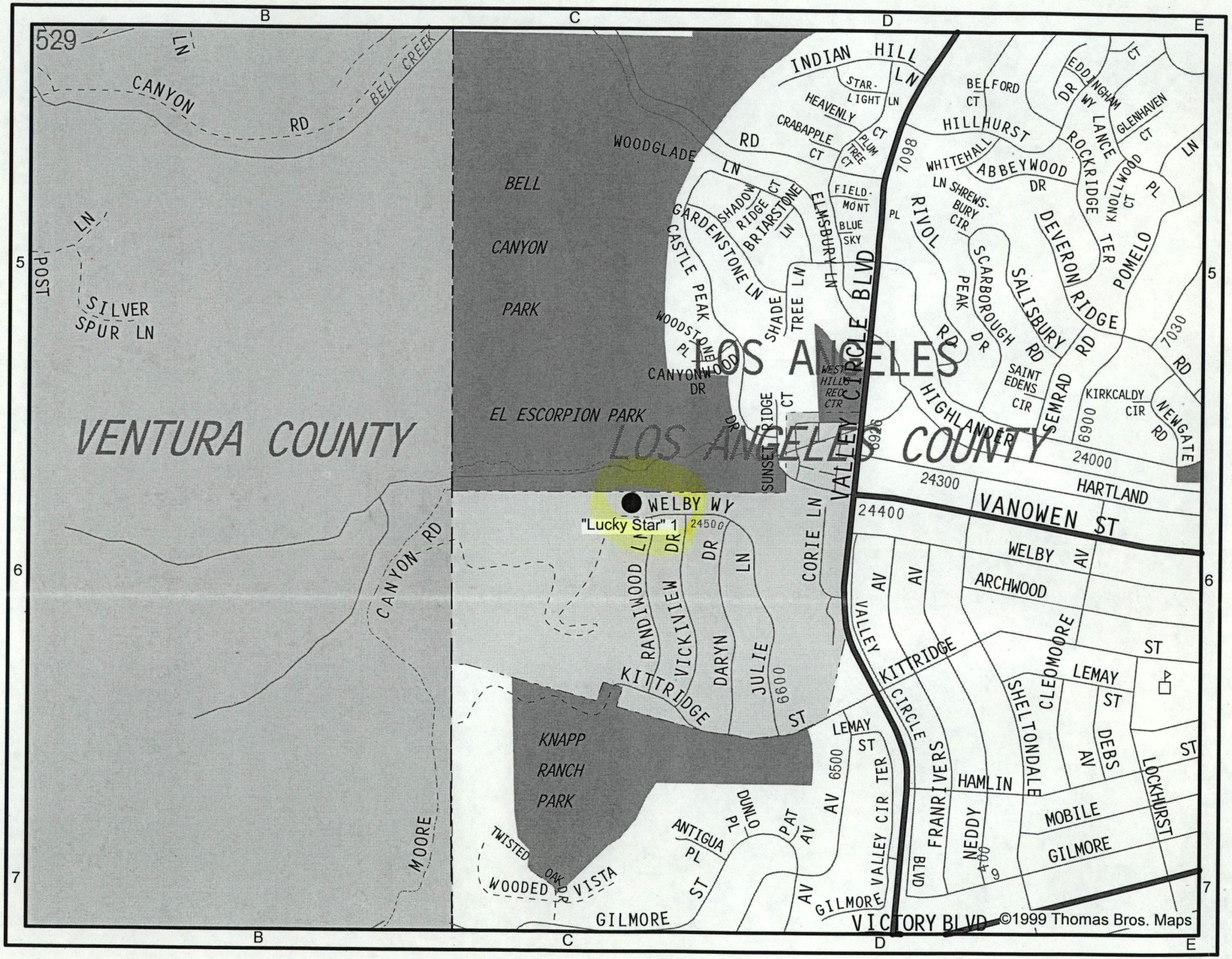
It is understood that if changes in this plan become necessary we are to notify you before running casing.

Address ____ ____ (Name of Operator)

Telephone Number ____ By ____

SEND ONE COPY OF NOTICE TO DIVISION OFFICE IN DISTRICT WHERE WELL IS LOCATED

46965 7-51 20M ① SPO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VENTURA COUNTY
LOS ANGELES COUNTY
LOS ANGELES
BELL CANYON PARK
EL ESCORPION PARK
KNAPP RANCH PARK
"Lucky Star" 1
WELBY WY
24500
CANYON RD
BELL CREEK
SILVER SPUR LN
POST LN
MOORE
WOODGLADE LN
INDIAN HILL LN
STAR-LIGHT LN
HEAVENLY CT
CRABAPPLE CT
PLUM TREE CT
RD CT
BELFORD CT
HILLHURST
WHITEHALL
ABBEYWOOD DR
EDDINGHAM WY
LANCE DR
GLENHAVEN CT
ROCKRIDGE TER
KNOLLWOOD CT
PL
LN
7098
FIELD-MONT
BLUE SKY
SHADOW RIDGE CT
BRIARSTONE LN
GARDENSTONE LN
CASTLE PEAK LN
ELMSBURY LN
RIVOL PL
LN SHREWS-BURY CIR
SCARBOROUGH PEAK DR
DEVERON RIDGE RD
SALISBURY RD
POMELO RD
7030
SHADE TREE LN
WOODSTONE PL
CANYONWOOD DR
WEST HILLS REC CTR
SUNSET RIDGE CT
DR
6926
SAINT EDENS CIR
SEMRAD RD
KIRKCALDY CIR
NEWGATE RD
6900
HIGHLANDER
24000
24300
HARTLAND
VANOWEN ST
24400
VALLEY CIRCLE BLVD
CORIE LN
RANDIWOOD LN
VICKIVIEW DR
DARYN DR
JULIE LN
6600
KITTRIDGE ST
WELBY AV
ARCHWOOD
VALLEY AV
KITTRIDGE CIRCLE
CLEOMOORE ST
LEMAY ST
SHELTONDALE AV
DEBS AV
LOCKHURST ST
HAMLIN
MOBILE
GILMORE
FRANRIVERS BLVD
NEDDY
6500
VALLEY CIR TER
ANTIGUA PL
DUNLO PL
PAT AV
TWISTED OAK RD
WOODED VISTA
GILMORE ST
VICTORY BLVD
©1999 Thomas Bros. Maps

FORM 105

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
FEB 18 1952
LOS ANGELES

Notice of Intention to Drill New Well

This notice and surety bond must be filed before drilling begins

037-01167

Knapp Bros. Los Angeles Calif. Feb 18 1952

DIVISION OF OIL AND GAS

"Frank Knapp" 1

In compliance with Section 3203, Division III, Article 4, Public Resources Code, notice is hereby given that it is our intention to commence the work of drilling well No. "FRANK KNAPP" #1, Sec. 4, T. 1-N, JLW R. 17W-SB. & M., Canoga Park area ~~Field~~, L-A. County.

Legal description of lease (Attach map or plat to scale)

C½ of the SE¼ of Sec 4,
N½ of the NE¼ of Sec 9, + Lot 1 in Sec 10

Location of Well: feet (Direction) property along section line and feet (Direction) property at right angles to said line from the corner of section

From E Line of Sec 4, 1715' W along C/L of SE¼, thence 150' N. at Rangle

Elevation of ground above sea level feet datum.

All depth measurements taken from top of (Derrick Floor, Rotary Table or Kelly Bushing) which is feet above ground.

PROPOSED CASING PROGRAM

SIZE OF CASING INCHES A.P.I.	WEIGHT	GRADE AND TYPE	TOP	BOTTOM	CEMENTING DEPTHS
14½		Conductor	Ground	30 ft	30 ft
8 5/8	42	J-55	~~Surface~~	400 ft	C P 260 ±

Intended zone or zones of completion: 275 ft To 326 ft

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
WB	TOP 0 122 JLW	EB	5206070	EB	EB

Partnership -

It is understood that if changes in this plan become necessary we are to notify you before running casing.

Address 1137 San Vicente Drive
Beverly Hills Calif

Telephone Number CR-10874

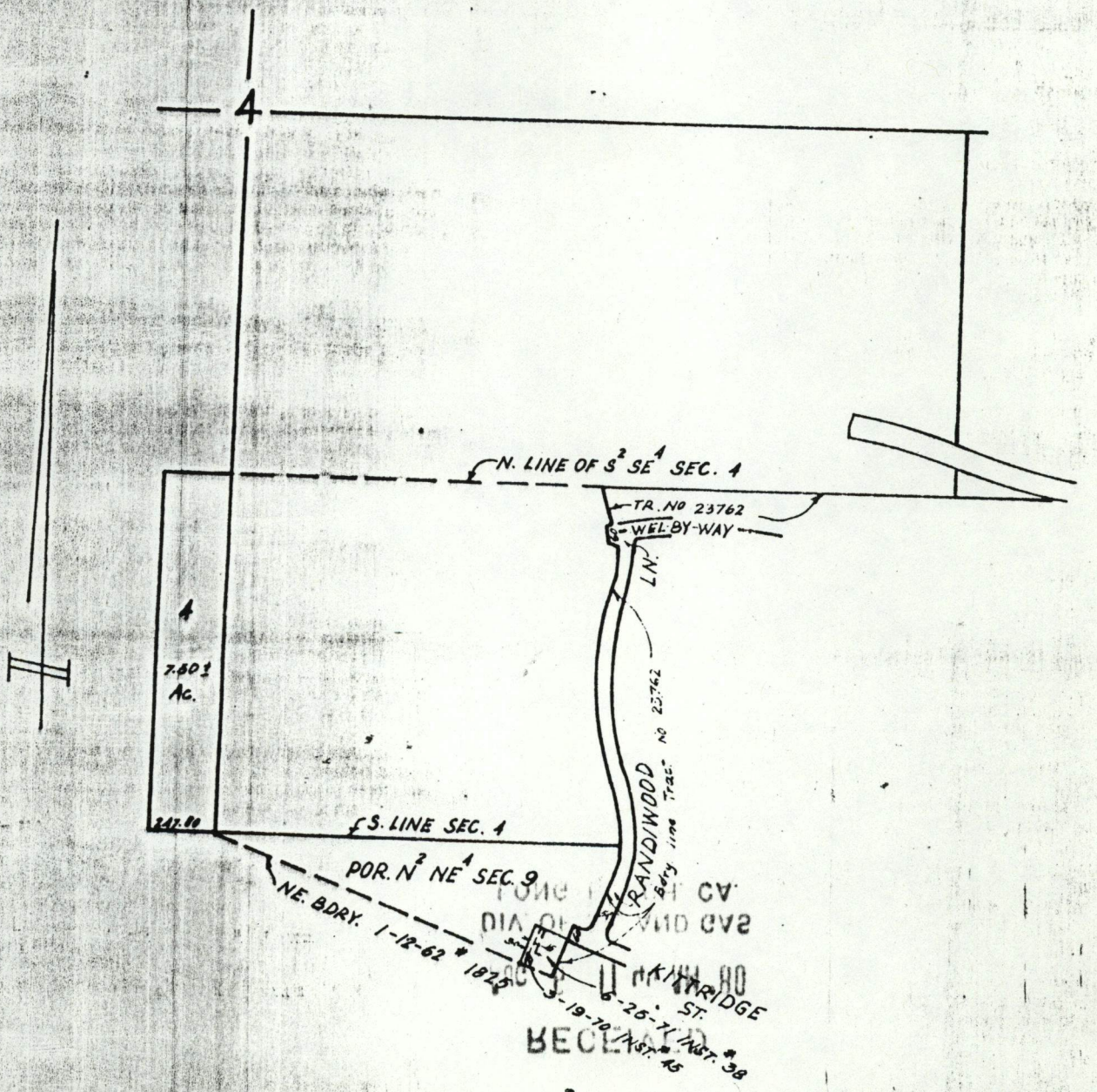
By W. J. McCarthy (Name of Operator)
Geo Moss

SEND ONE COPY OF NOTICE TO DIVISION OFFICE IN DISTRICT WHERE WELL IS LOCATED

46969 7-51 20M ① SPO

Geo Moss (Hemstead) 2776 -

LOT 4 AND POR. SE¼ OF SEC. 4 T 1N. R 17W. ALSO.
POR. OF N½ OF NE¼ SEC. 9 T 1N. R. 17W.



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Hidden Hills
Arroyo
Calabasas
Woodland Hills
EL ESCORPION
SAN FERNANDO
CITY OF SAN FERNANDO
SAN FERNANDO VALLEY
Los Angeles City Bdy
Grant Bdy
Bell
Oakridge
Water Tank
Quarry (Inactive)
Sherman Creek
Platt Ave
Woodlake Ave
Victory Blvd
Roscoe Blvd
Vanowen St
Burbank Blvd
Oxnard St
Sherman Way
Stagg St
Laurel Canyon Blvd
Valley Circle Blvd
Mason Ave
Haskell Ave
Matilija Ave
Beroulst Ave
Rover Ave
Kittridge St
Calera St
Sylvan St
Hayvenhurst Ave
Balboa Blvd
Los Angeles City Bdy
Reservoir
Motion Pictures
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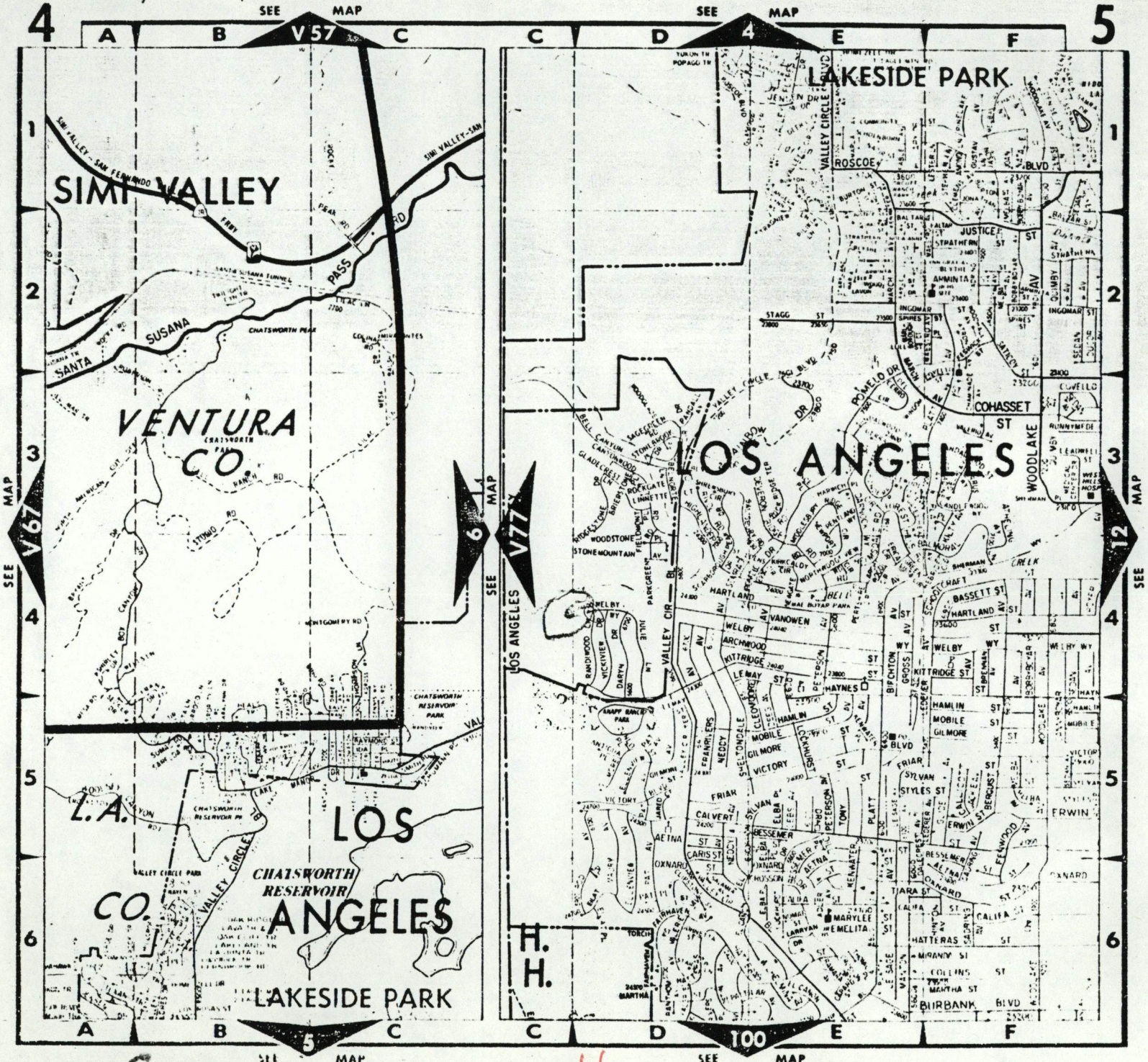
4-1N-17W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SIMI VALLEY
SIMI VALLEY-SAN FERNANDO
SANTA SUSANA PASS RD
SANTA SUSANA
CHATSWORTH PEAK
VENTURA CO.
CHATSWORTH PARK
MONTGOMERY RD
STINNETT RD
L.A. CO.
LOS ANGELES
CHATSWORTH RESERVOIR
CHATSWORTH RESERVOIR PARK
VALLEY CIRCLE
VALLEY CIRCLE BLVD
LAKESIDE PARK
LOS ANGELES
ROSCOE BLVD
JUSTICE ST
STRATHERN ST
AMMINTA ST
INGOMAR ST
STAGG ST
SPIRES ST
PLUMLEE DR
COHASSET ST
WOODLAKE AV
RUNNYMEDE ST
LEADWELL ST
RAINBOW DR
BELL CANYON
CANTERBURY
GLADECREST
WOODSTONE
STONEMOUNTAIN AV
ROCKGATE
LINNETTE
PARKGREEN
HARTLAND
VANOWEN
WELBY
ARCHWOOD
KITTRIDGE
LEMAY ST
HAYNES
HAMLIN
MOBILE
GILMORE
VICTORY
FRIAR
SYLVAN
STYLES ST
CALVERT
AETNA ST
OXNARD
CARIS ST
BESSEMER
TIARA ST
CALIFA
MARYLEE
EMELITA
HATTERAS
MIRANDY ST
COLLINS ST
MERTHA ST
BASSETT ST
BIRCHTON WY
GROSS
ERWIN ST
BERQUIST
FERNWOOD
PLATT
PETERSON AV
KENNAFER
BURBANK BLVD
KNAPP RANCH PARK
H.
H.

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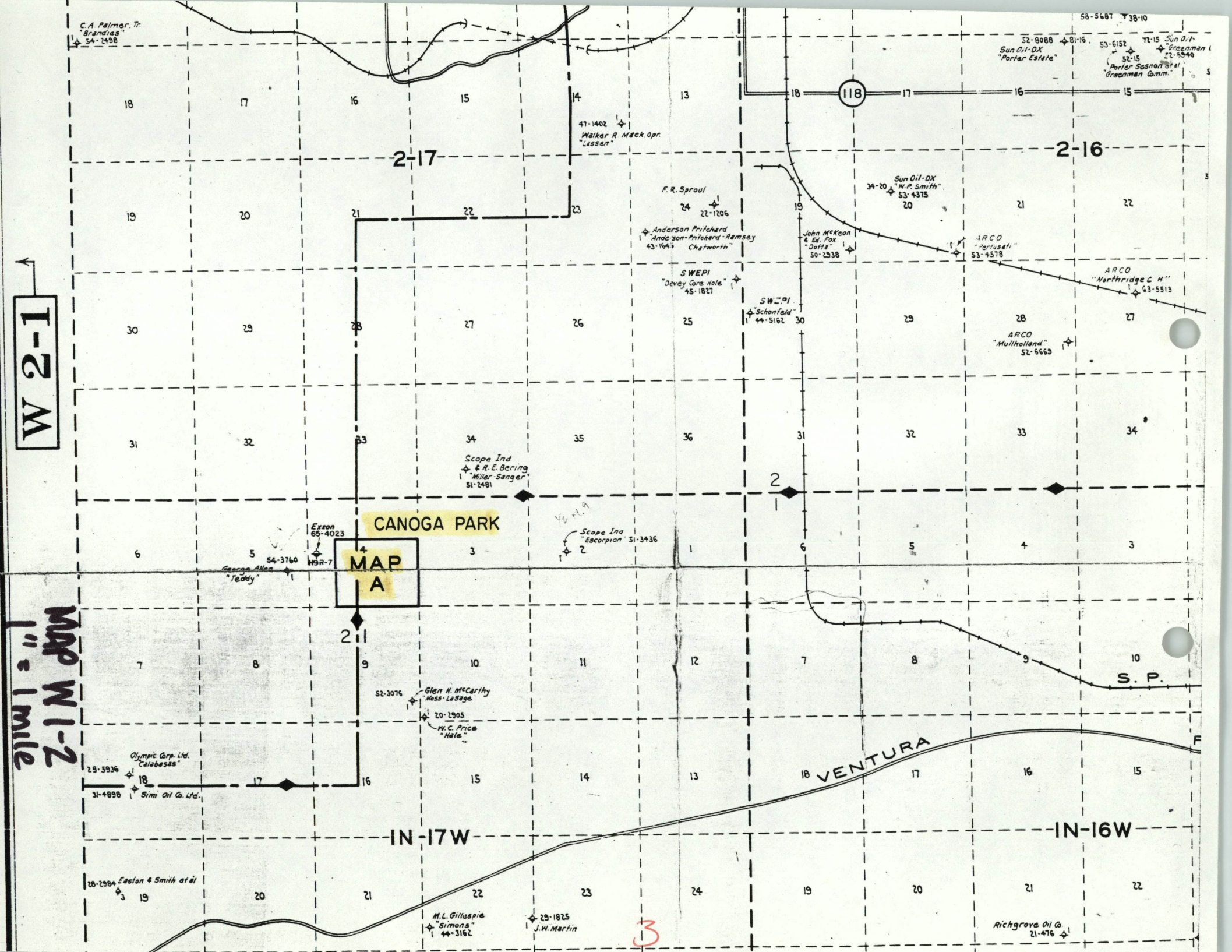
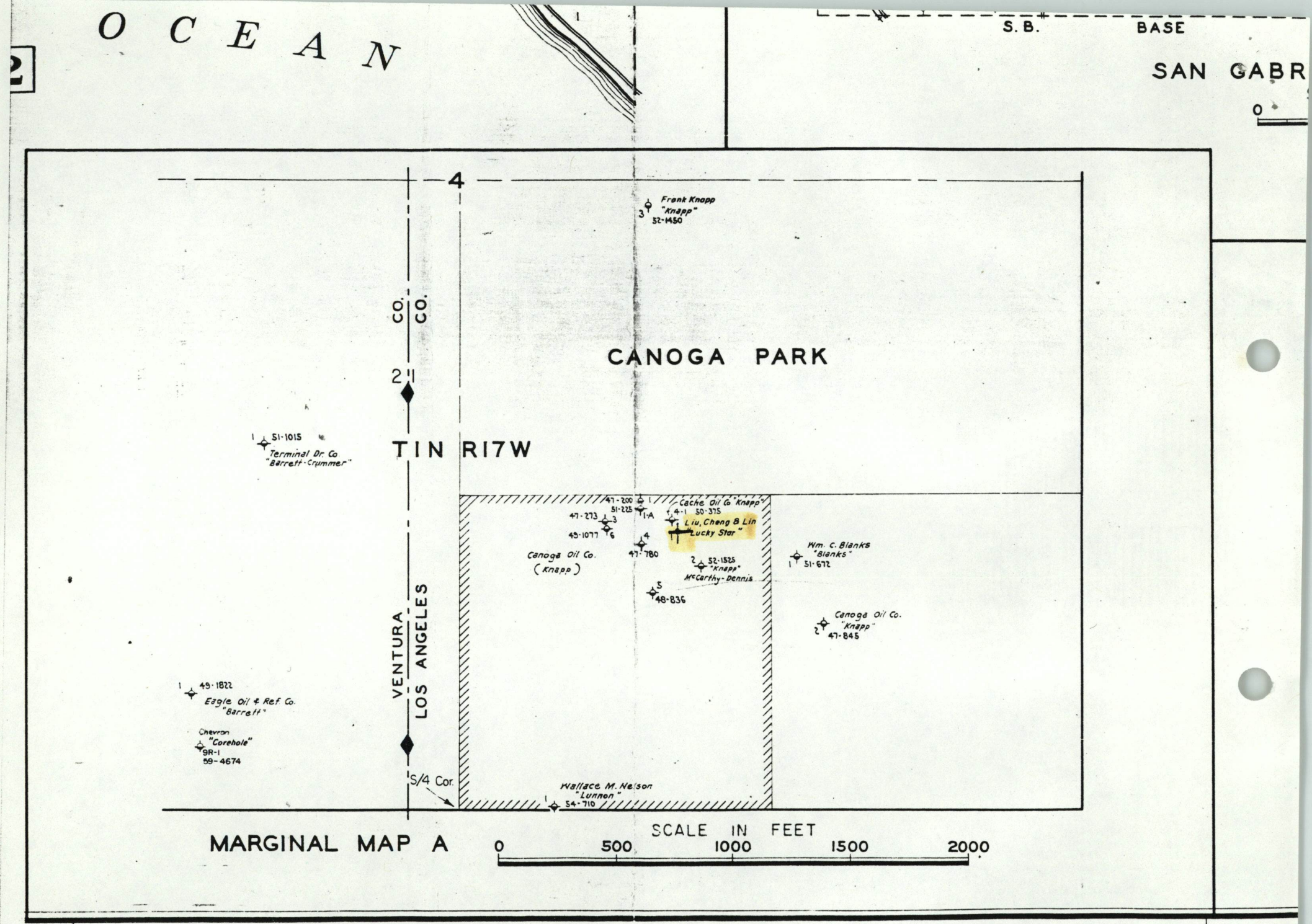

W 2-1
Map W 1-2
1" = 1 mile
C.A. Palmer, Tr. "Brandies" 54-2498
Sun Oil-DX "Porter Estate" 52-8088
Porter Sesnon et al "Greenman Comm." 52-15
Greenman 22-9540
118
2-17
2-16
41-1402 Walker R. Mack, Opr. "Lassen"
F.R. Sproul 24 22-1206
Anderson Pritchard Anderson-Pritchard-Ramsey Chatworth 43-1645
Sun Oil-DX "W.P. Smith" 34-20 53-4375
John McKeon & Ed. Fox "Dotta" 30-2938
ARCO "Portusatl" 53-4578
ARCO "Northridge C.H." 63-5513
SWEPI "Devey Core Hole" 45-1827
SWEPI "Schonfeld" 44-5162
ARCO "Mullholland" 52-6663
Scope Ind & R.E. Bering "Miller-Sanger" 51-2481
CANOGA PARK
Exxon 65-4023 HSR-7
George Allen "Teddy" 54-3760
Scope Ind "Escorpion" 51-3436
MAP A
Glen H. McCarthy "Moss-LaSage" 52-3076
20-2905 W.C. Price "Hale"
S.P.
Olympic Corp. Ltd. "Calabesas" 29-5936
Simi Oil Co. Ltd. 31-4898
VENTURA
1N-17W
1N-16W
Easton & Smith et al 28-2984
M.L. Gillaspie "Simons" 44-3162
29-1825 J.W. Martin
Richgrove Oil Co. 21-476
3

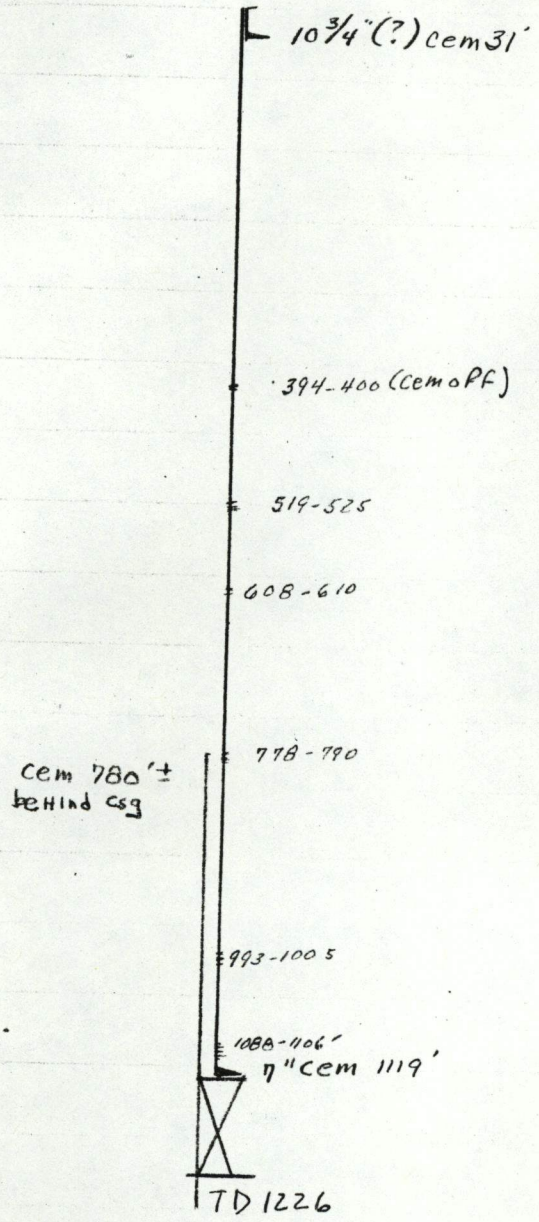

OCEAN
S. B. BASE
SAN GABR
4
CANOGA PARK
Frank Knapp "Knapp" 52-1450
CO.
CO.
2
1 51-1015 Terminal Dr. Co. "Barrett-Crummer"
T1N R17W
47-200 51-225 1 1-A
Cache Oil Co. "Knapp"
4-1 50-375
Liu, Cheng B. Lin "Lucky Star"
47-273 1 3 49-1077 6
4 47-780
Canoga Oil Co. (Knapp)
2 52-1525 "Knapp" McCarthy-Dennis
5 48-836
Wm. C. Blanks "Blanks" 1 51-672
Canoga Oil Co. "Knapp" 2 47-845
1 49-1822 Eagle Oil & Ref. Co. "Barrett"
Chevron "Corehole" 9R-1 59-4674
VENTURA
LOS ANGELES
S/4 Cor.
Wallace M. Nelson "Lunnon" 1 54-710
MARGINAL MAP A
SCALE IN FEET
0 500 1000 1500 2000

2

OPERATOR: Liu, Cheng And Lin. WELL: "Lucky Star" 1

Formerly: Knapp Bros "Frank Knapp" 1

Casing History: 10 3/4" (?) cem 31'; 7" cem 1119', perf 394'-400' (cem off), 519'-525', 608'-610', 778'-790', 993'-1005' & 1088'-1106'. TD 1226'. Plugged w/cem 1226'-1124'.



ABANDON PROGRAM:

1. Clean out to 1119'
2. Plug w/cem from 1119'-419'
3. Mud.
4. Cavity @ 270' ± (BFW)
5. Plug w/cem from 270' to 0' ~~downsqueeze~~
6. Clean-up.

RHL 3/30/82

Approximate cost $14,000 (does not include bulldozing roadway for rig)

KNAPP BROS. (037-01167)

"Frank Knapp" 1

Sec. 4-1N-17W CANOGA PARK

LANE Electrolog WELL

COMPANY

FILE NO. ( )

RECEIVED FEB 24 1953 LOS ANGELES, CALIF.

LIU, CHENG AND LIN
API 037-01167
Sec. 4-1N-17W
CANOGA PARK

Location of Well

COMPANY: SUNDOWN OIL & GAS CO.
WELL: KNAPP NO. 1
FIELD: CANOGA PARK (AREA)
COUNTY: LOS ANGELES STATE: CALIF.
LOCATION: SEC. 4-1N-17W

COMPANY SUNDOWN OIL & GAS CO.
WELL KNAPP No.1
FIELD CANOGA PARK AREA
COUNTY LOS ANGELES STATE CALIF.
LOCATION SEC. 4-1N-17W

LOG MEAS. FROM	DERRICK FLOOR	ELEV.			
DRLG. MEAS. FROM		ELEV.			
PERM. DATUM		ELEV.			
RUN NO.	1				
DATE	4-5-53				
FOOTAGE	1138				
TOTAL DEPTH—EL. LOG	1138				
TOTAL DEPTH—DRILLER	1144				
CSG. SHOE—EL. LOG	0				
CSG. SHOE—DRILLER	0				
BIT SIZE 10 5/8"	1094				
7 5/8"	1144				
MUD—KIND TREATMENT	CLAY BASE				
WEIGHT	85				
VISCOSITY	46				
PH	F	F	F	F	F
LOSS ML 30 MIN	F	F	F	F	F
LOSS ML MIN	F	F	F	F	F
RESISTIVITY	7.0@70 F	F	F	F	F
MAX RECORDED TEMP	125 F	F	F	F	F
ELECTRODE SPACING SYMMETRICAL AVERAGING	20'				
NON-SYMMETRICAL LATERAL	9'				
LATERAL	20'				
RECORDED BY	KENT				
WITNESSED BY	ALLEN				

REMARKS OR OTHER DATA

NATURAL POTENTIAL — 100 MILLIVOLTS — Depth — RESISTIVITY 0 — OHM-METERS — 120

DETAIL CURVE

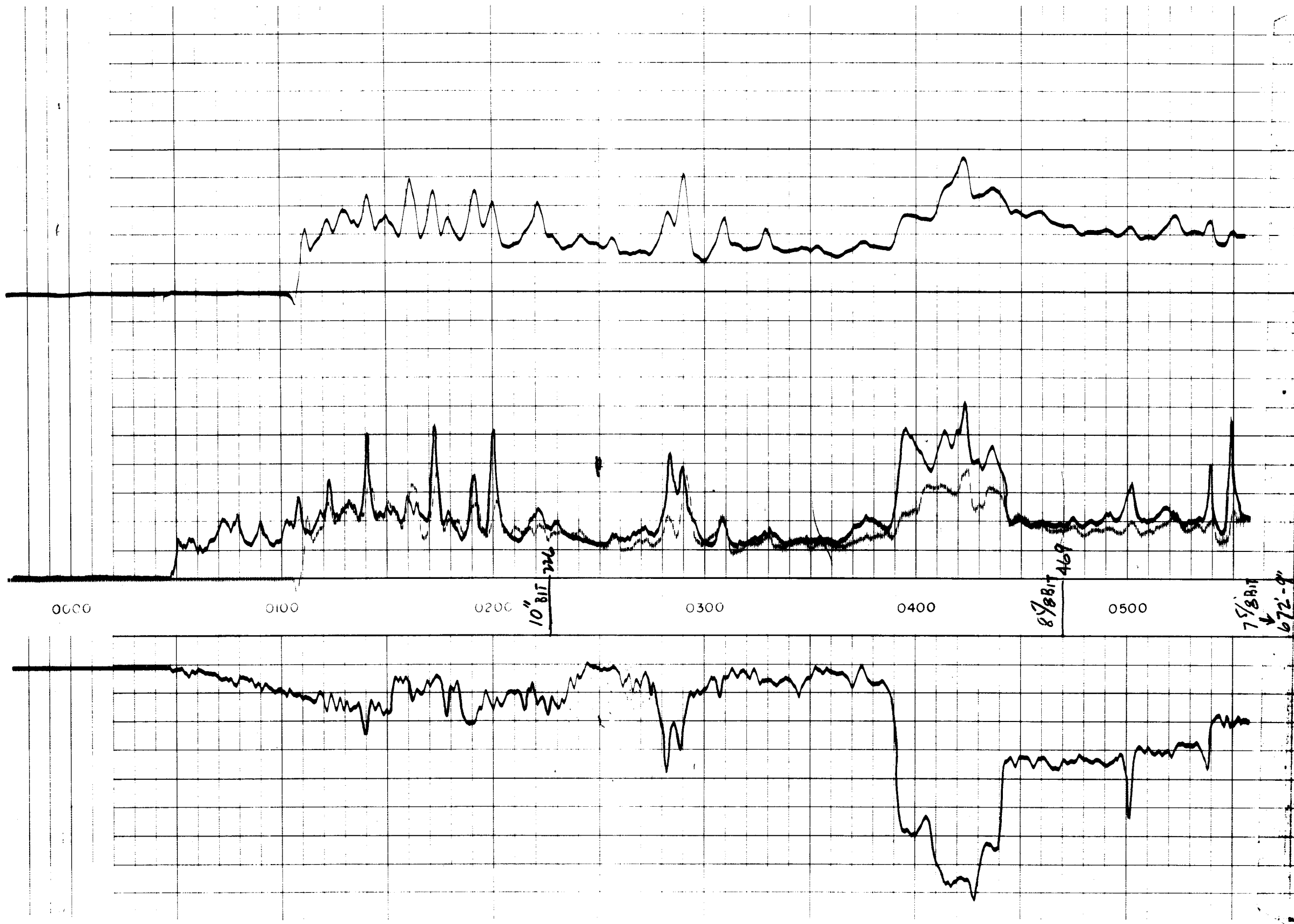
200
300
400
500
600
700
800
900
1000
1100

T.D. 1138'

100 MV

0 OHM-METERS 120 — AVERAGING 20' — 10 OHMS

SUNDOWN OIL & GAS CO
KNAPP -No.1
CANOGA PARK AREA



SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

SCHLUMBERGER

FIELD PRINT

COMPANY (Rocco & Blanks) William C Blanks

WELL Blanks #1

Sec 4-1N-17W

FIELD (Canoga Park)

LOCATION 435'E & 275'S of NW Corner of S½ of SE¼ Sec 4 T 1N R 17W

COUNTY Los Angeles

STATE Calif.

COUNTY
FIELD or LOCATION
WELL
COMPANY

Location of Well

DIVISION OF OIL & GAS
RECEIVED
NOV 14 1957
LOS ANGELES

Elevation: D.F.:
K.B.:
or G.L.:

FILING No.

RUN No.	1		
Date	9-13-57		
First Reading	554		
Last Reading	50		
Feet Measured	504		
Csg. Schlum.	—		
Csg. Driller	—		
Depth Reached	555		
Bottom Driller	554		
Depth Datum	TABLE		
Mud Nat.	QUICK. PYRO		
" Density	81		
" Viscosity	45		
" Resist.	80 @ 78 °F	@	°F
" Res. BHT	@ °F	@	°F
" pH	7.5 @ 78 °F	@	°F
" Wtr. Loss	CC 30 min.	CC 30 min.	
Max. Temp. °F	BELOW 100°F		
Bit Size	10¾, 8½, 7⅞		
Opr. Rig Time	0:45		
Truck No.	292		
Recorded By	SWICKE		
Witness By	MR. BLANKS		

REMARKS

WILLIAM C. BLANKS
"Blanks" 1 (037-05219)
Sec. 4-1N-17W

FORM 159 (9-49)

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS

REPORT OF WELL ABANDONMENT

Los Angeles, California, August 19, 1953

Mr William C Blanks
Route 5 Box 271E
Abilene Texas

Dear Sir

Your report of abandonment of Well No. "Blanks" 1,
Sec. 4, T. 1 N, R. 17 W, S B B. & M., (Canoga Park Area) ~~oil field~~,
Los Angeles County, dated August 7, 1953, has been examined in conjunction with records filed in this office.

A review of the reports and records shows that the requirements of this Division, which are based on all information filed with it, have been fulfilled.

MAP	MAP BOOK	CARDS	BOND	FORM 9	
				114	121
TOPO 22 ###	##		150 ℔ 8-14-53		EB

Yours truly

R. D. BUSH
State Oil and Gas Supervisor

no sheet (133A) made up Mrs

By E. H. Nussen
Deputy Supervisor

cc Mr R D Bush
Mr W C Blanks

es

57615 2-52 12M SPO

MA

STENOGRAPHER

Date Received 8-10-53 Form 100 ____ 101 ____ 103 ✓

Elec. Log. ____ Radio Log ____

Direct.Surv. ____ Other Data ____

Location ____

Elevation ____ Steno. Scott

ENGINEER

EB

BOND 5202527 Release ✓ Date Elig. 8/10/53 150b 8-19-53

End Prem.Yr. ____ Release Requested ____ Superseded ____ Aban. ✓

HOLD BOND ____ Reason ____

Data Needed ____

Final Letter ✓ Eng. ____

RECEIPT FOR

Well Summary ____

Drillers Log ____

Core Record ____

History ____

Elec.Log. ____

Radio Log ____

Direct.Surv. ____

Redrill ____

Deepen ____

Plug ____

Alter Csg. ____

Abandon ✓

FORM 103.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
AUG 10 1953
LOS ANGELES, CALIFORNIA

History of Oil or Gas Well

OPERATOR William C. Blanks FIELD (WC) Los Angeles C

Well No. (1) "Blanks" 1, Sec. 4, T. 1N, R. 7W, SB B. & M.

Signed William C Blanks

Date Aug 7, 1953

Title Partner
(President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. **Use this form in reporting the history of all important operations at the well, together with the dates thereof, prior to the first production.** Include in your report such information as size of hole drilled to cementing or landing depth of casings, number of sacks of cement used in the plugging, number of sacks or number of feet of cement drilled out of casing, depth at which cement plugs started, and depth at which hard cement encountered. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

Date

Spudded ~~Nov 20, 1953~~ 9/3/51

10¼ hole 0-226

6⅞ " 226-469

7⅝ " 469-672

No casing

No shows, no tests

Wood plug at 50' & filled to surface w/ Concrete

2½ yds of concrete used in open hole

Plugged June 11th, 1953

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

Special Report on Operations Witnessed

No. T 153-743

Los Angeles 15 Calif. June 19 1953

Mr William C Blanks
1710 North Fuller
LOS ANGELES 46 Calif.
Agent for WILLIAM C. BLANKS

121

DEAR SIR:

Operations at your well No. "Blanks" 1 Sec. 4, T. 1 N, R. 17 W, S B B. & M., (Canoga Park Area) Field, in Los Angeles County, were witnessed by J. F. Matthews, Inspector, representative of the supervisor, on June 11, 1953. There was also present W. C. Blanks, Operator

Casing Record	Junk
T. D. 672', plugged with concrete 50' to the surface.	None

The operations were performed for the purpose of witnessing the plugging operations in the process of abandonment.

The inspector arrived at the well at 12:15 p.m. and Mr. W. Blanks reported:

1. A 10-1/4" rotary hole was drilled from the surface to 226'; an 8-5/8" rotary hole, 226'-469'; and a 7-5/8" rotary hole, 469'-672'.
2. A Wooden plug was hung at 50'.

THE INSPECTOR NOTED THAT a cubic yard of concrete was poured into the hole, filling to the surface.

The operations were completed at 12:45 p.m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT THE SURFACE ARE APPROVED.

JFM:OH

CC Mr William C Blanks
Route 5 Box 271E
Abaline Texas

M/G

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Meussen Deputy

44226 8-51 14,250 ⓢ SPO

FORM 111 (1-49)

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS

No. P 1-50844

Los Angeles 15 Calif. November 20 19 51

Mr. William C Blanks
1710 North Fuller
LOS ANGELES 46 Calif.

(2)

Agent for WILLIAM C. BLANKS

Dear Sir:

Your proposal to abandon Well No. "Blanks" 1,
(Canoga Park
Section 4, T. 1 N., R. 17 W., S.B.B. & M., Area) Los Angeles County,

dated Nov. 15, 19 51, received Nov. 15, 19 51, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES
"The present condition of the well is as follows:
1. Total depth. 672

2. Complete casing record.
No casing

3. Last produced. No Production."

PROPOSAL
"The proposed work is as follows:
1. Fill hole from 672' to 50' with rotary mud.
2. Plug with cement 50' - surface.
3. Have plugging operations witnessed by D. O. G."

DECISION
THE PROPOSAL IS APPROVED.

NOTE: A complete report in duplicate on the enclosed forms should be filed with this division after the completion of the above work.

ERMA:OH

cc Mr William C Blanks

W

R. D. BUSH
State Oil and Gas Supervisor
By E R Mussen Deputy

43268 4-51 25M SPO
Bond No. 5202527

FORM 108. 36141 11-50 15M ⓢ SPO

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
NOV 15 1951
LOS ANGELES

Notice of Intention to Abandon Well

This notice must be given at least five days before work is to begin; one copy only

Los Angeles Calif. 15 Nov 19 51

DIVISION OF OIL AND GAS

Los Angeles Calif.

In compliance with Secs. 3228, 3229, 3230, 3231 and 3232, Ch. 93, Stat. 1939, notice is hereby given that it is our intention to abandon well No. Blanks No 1

Sec. 4, T. 1N, R. 17W, SB B. & M. Canoga Park Area Field, Los Angeles County, commencing work on the 16 day of November 19 51.

The present condition of the well is as follows:

1. Total depth. 672

2. Complete casing record.

No casing

3. Last produced. No Production

Date	Net oil	Gravity	Cut

The proposed work is as follows:

1. Fill hole from 672' to 50' with rotary mud
2. Plug with cement 50'-Surface.
3. Have plugging operations witnessed by D.O.G.
Approved

MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
		EB	SD02527	EB	EB

William C. Blanks
(Name of Operator)

By William C Blanks

ADDRESS ONE COPY OF NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

SUBMIT LOG IN DUPLICATE

FILL THE BLANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF PAPER ONLY

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

RECEIVED
NOV 15 1951
Los Angeles County

WELL SUMMARY REPORT

Operator ~~Lacco &~~ WILLIAM C. BLANKS Field (CANOGA PARK AREA) LOS ANGELES

Well No. BLANKS NO 1 Sec. 4, T. 1N, R. 17W, SB B. & M.

Location 1435' E & 245' S FROM N.W. COR. OF S. ½ OF SE ¼ OF SEC 4 T 1N R 17W Elevation above sea level 1200 feet.

All depth measurements taken from top of KELLY BUSHING, which is 9 feet above ground.

In compliance with the provisions of Chapter 93, Statutes of 1939, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date 15 NOV. 1951 Signed William C Blanks

William C Blanks (~~Engineer or~~ Geologist) (Superintendent) Title Partner (President, Secretary or Agent)

Commenced drilling SEPT. 3, 1951 Completed drilling SEPT. 25, 1951 Drilling tools ~~Cable~~ Rotary

Total depth 672' Plugged depth

Junk NONE

GEOLOGICAL MARKERS	DEPTH
UPPER MIOCENE	0-350 (?)
MIDDLE MIOCENE	350-672 (?)

Commenced producing _____ (date) Flowing/gas lift/pumping (cross out unnecessary words)

	Clean Oil bbl. per day	Gravity Clean Oil	Per Cent Water including emulsion	Gas Mcf. per day	Tubing Pressure	Casing Pressure
Initial production	NO PRODUCTION					
Production after 30 days						

CASING RECORD (Present Hole)

Size of Casing (A. P. I.)	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cementing if through perforations
		NO CASING							

PERFORATIONS

Size of Casing	From	To	Size of Perforations	Number of Rows	Distance Between Centers	Method of Perforations
	ft.	ft.				
	ft.	ft.				
	ft.	ft.				
	ft.	ft.				
	ft.	ft.				

Electrical Log Depths 555 (Attach Copy of Log)

RN 103
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
NOV 15 1951
LOS ANGELES

History of Oil or Gas Well

OPERATOR ~~Lessee~~ William C. E. BLANKS FIELD CONOGA (PARK AREA) Los Angeles Co.

Well No. BLANKS No 1, Sec. 4, T. 1N, R. 17W, SB B. & M.

Signed William C Blanks

Date 15 Nov. 1951 Title Partner
(President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. **Use this form in reporting the history of all important operations at the well, together with the dates thereof, prior to the first production.** Include in your report such information as size of hole drilled to cementing or landing depth of casings, number of sacks of cement used in the plugging, number of sacks or number of feet of cement drilled out of casing, depth at which cement plugs started, and depth at which hard cement encountered. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

Date	
11/3/51	10¼" bit from 0-226' 8⅝" bit from 226-469' 7⅝" bit from 469-672 no casing or cementing no oil or gas shows

FORM 111 (1-48)

E

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

REPORT ON PROPOSED OPERATIONS

No. P 1-50476

Los Angeles 15 Calif. September 6 19 51

MR. William C Blanks

Los Angeles 46 Calif.

Agent for WILLIAM C. BLANKS

121

DEAR SIR:

Your proposal to drill Well No. "Blanks" 1,

Section 4, T. 1 N, R. 17 W, S B B. & M., (Canoga Park Area) Field, Los Angeles County,

dated Aug. 30 19 51, received Aug. 30 19 51, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES

"Location of Well: 1435 ft. East & 245 ft. South from the N.W. cor. of the South 1/2 of the S.E. 1/4 of Sec. 4 T 1 N R 17 W
Elevation of ground above sea level 1200 feet.
All depth measurements taken from top of Kelly bushing which is 3 feet above ground."

PROPOSAL

"PROPOSED CASING PROGRAM

Size of Casing

Inches A.P.I.	Weight	Grade and Type	Top	Bottom	Cementing Depths
14 in	45	Seamless	Surface	550	550

Intended zone or zones of completion:

Name Perforated Interval

Wildcat.

It is understood that if changes in this plan become necessary we are to notify you before running casing."

DECISION

THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS a test of the effectiveness of the 14" shut-off.

ERMA:OH

cc Mr William C Blanks

W/

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Meesser Deputy

Bond No. 5202527

43268 4-51 25M BPC

FORM 105

037-05219

E

STATE OF CALIFORNIA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
AUG 30 1951
LOS ANGELES

Notice of Intention to Drill New Well

This notice and surety bond must be filed before drilling begins

Los Angeles Calif. 30 August 1951

DIVISION OF OIL AND GAS

"Blanks" 1

In compliance with Section 3203, Chapter 93, Statutes of 1939, notice is hereby given that it is our intention to commence the work of drilling well No. BLANKS No 1, Sec. 4, T. 1N, R. 17W, SB B. & M., Canoga Park area ~~Field~~, Los Angeles County. P.W.B.

Legal description of lease S.E. ¼ of the S.E. ¼ Sec 4 T 1N-R 17W. Los Angeles County S.B.B.M.

(Attach map or plat to scale)

Location of Well: 1435 ft. East & 245 ft. South from the N.W. Cor. of the South ½ of the SE. ¼ of Sec 4 T 1N R 17W

(Give exact footage from section corners or other legal subdivision or streets)

Elevation of ground above sea level 1200 feet. 700 W, 1000 N ft. SE. Cor. Sec. 4

All depth measurements taken from top of Kelly bushing which is 3 feet above ground.

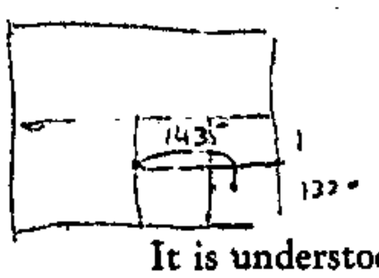
(Derrick Floor, Rotary Table or Kelly Bushing)

PROPOSED CASING PROGRAM

SIZE OF CASING INCHES A.P.I.	WEIGHT	GRADE AND TYPE	TOP	BOTTOM	CEMENTING DEPTHS
14 in	45	Seamless	Surface	550	550

Intended zone or zones of completion:

NAME Wildcat PERFORATED INTERVAL



MAP	MAP BOOK	CARDS	BOND	FORMS 114	FORMS 121
Mn Top 22	P.W.B.	EB	5202527	EB	EB

It is understood that if changes in this plan become necessary we are to notify you before running casing.

Address 1710 N. Fuller

Telephone Number He 4792

William C. Blanks
(Name of Operator)

By William C. Blanks

SEND ONE COPY OF NOTICE TO DIVISION OFFICE IN DISTRICT WHERE WELL IS LOCATED

APPENDIX H
County of LA Fire Dept. Support Letter

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294
(323) 890-4144

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

March 13, 2008

Department of Regional Planning
Subdivision Section
Attention: Susie Tae

Regarding: **Tr. 52652**
Kittridge

Dear Susie,

This letter is intended to clarify the Fire Department's entitlement requirements for the proposed Kittridge Development. The following findings indicate the Fire Department's reasons for supporting the proposed development on a single means of access:

- The Department finds that the street system to these proposed dwelling units does not traverse a wildland area which is subject to hazard from brush or forest fire. This is due to existing development adjacent to Kittridge Street.

- Since the street system does not traverse a wildland area, 150 dwelling units may be served, as per the Subdivision Code, Section 21.24.020. Additionally, Section 21.24.040 allows modifications to these requirements based on certain findings and where the public safety will not be adversely affected.

- The Department finds that the topographic conditions and the pattern of ownership of parcels in the immediate vicinity make the strict application of the provisions found in Section 21.24.020 impractical. City of Los Angeles Parks are located on both the north and south sides of the proposed project, neither of which would allow for a public street dedication from the project site to Valley Circle Boulevard

On the west side, the property line abuts California State Park Land in Ventura County. This location was investigated for a possible emergency access connection to Victory Boulevard. Upon field inspection, it was determined that this access would subject the public to unnecessary risk due to the travel route located within the Very High Fire Hazard Severity Zone (VHFHSZ).

The Department finds that other requirements will offset the hazards of proximity to wildland areas. These requirements include:

a. Interior fire sprinklers for all new construction within the proposed development. This would prevent the spread of an interior fire to additional homes in the area.

b. A new municipal water tank will be installed that will meet the pressure requirements and fire flow of 1250 GPM for the proposed development, and will improve the current flow and pressure in the existing Kittridge Tract

c. Compliance by the existing community with requirements for brush clearance within VHFHSZ.

d. An Extended Fuel Modification Plan at the tract boundaries will provide a new buffer zone for a large section of the existing Kittridge Tract.

In conclusion, pursuant to Section 21.24.040 of the County Code, the Fire Department recommends modification of the second means of access, as property limitations prohibit the strict application of the provisions. The Department has determined that the proposed improvements will not create a life safety concern and will in turn provide an improved buffer for the existing residential community.

Respectfully,

Phil Cocker

Phil Cocker
Battalion Chief, Fire Prevention Division
Los Angeles County Fire Department
pcocker@fire.lacounty.gov
(323) 890-4132

APPENDIX I
Conceptual Fire Protection Plan

Fire Protection Plan for West Hills Community
First Submittal: 6-24-16
Revised: 1-21-19

Signature Page

This Fire protection/Vegetation Management Plan (the Plan) is submitted in compliance with all applicable rules and regulations and all applicable requirements of the Fire Department of the County of Los Angeles.

Upon approval of this plan by the Fire Department, it will serve as the official fire protection related requirements for this development, including roads, fire flow, ignition resistant building construction, and vegetative fuel modification.

Prepared By:

_____ Date: _____
James Hunt, Hunt Research Corporation

Submitted By:

_____ Date: _____
Naim Associates, Michael Naim, President

Approved By:

_____ Date: _____
Mark Duvally, Fire Marshal, L.A. County

Table of Contents

Section		Page
1.	Introduction	1
2.	Project Description	1
3.	Site Specific Setting	1
4.	Fire Department Response	2
5.	Vegetation Fire Risk Assessment	2
6.	Vegetation Management (Fuel Modification) Zones	3
7.	General Requirements for Vegetation Management	6
8.	Undesirable	7
9.	Planting, Maintenance and Spacing Guidelines	7
10.	Annual and Ongoing Vegetation Management	8
11.	Construction Phase Vegetation Management and Fire Safety	9
12.	Infrastructure	10
13.	Ignition Resistant Construction and Extraordinary Mitigations	13
14.	Evacuation	15
15.	Emergency Planning	16
16.	Summary	16

Appendix

A. Dudek Fire Behavior Modeling Letter Report

B. Fuel Modification Zone Plan

C. Fuel Modification Zone Undesirable Plant List

1. Introduction

This is the Conceptual Fire Protection Plan for the "West Hills" development. This is TM 52652; a single family detached residential infill development consisting of 25 lots, at the west end of Kittridge Road, west of Randiwood, in the County of Los Angeles. This project, with the exception of portions of Knapp Ranch Park, is in an area mapped as a Very High Fire Hazard Severity Zone in a Wildland-Urban Interface (WUI) area per the Los Angeles County Fire Department (LACoFD).

This plan provides recommendations with the objectives of reasonable fire safety and is required by County Fire Code, Chapter 49 as a condition of approval of a modification to the Fire Department access/egress requirement. This plan is in substantial compliance with Chapter 49 of the 2013 Los Angeles County Fire Code and Chapter 7A of the 2013 California Building Code.

2. Project Description

This is a residential development of 25 single family detached homes on lots of varying sizes within a parcel of 58.3 gross acres.

3. Site Specific setting

The project is within a Very High Hazard Severity Zone as defined by and jointly determined by the State of California and the County of Los Angeles. The site contains Coastal Sage, Chaparral, and a variety of trees and grasses. Temperatures range from an average of 73 degrees in the winter to an average of 94 degrees in the summer and fall Santa Ana wind conditions.

4. Fire Department Response

LACoFD will serve the site from their Fire Station 68, at 24130 Calabasas Road, in Calabasas. The response travel time, according to the Station Captain contacted, is eight minutes. The distance is approximately four miles. This Station is staffed by a three person Engine company and a two person Paramedic Squad. The Aerial Ladder Truck comes from Station 125 on Los Virgenes, north of Highway 101. The total first alarm response to a vegetation fire at this location would be seven engine companies, plus air attack, hand crews, and a Battalion Chief. The total County response for a structure fire would be four engines, one ladder truck and a Battalion Chief. In addition, due to the proximity to the City of Los Angeles and the County of Ventura, automatic aid and mutual aid agreements are in place that would significantly increase total response to a complex fire event.

Fire service response to this site is very robust when considering the proposed construction safeguards, and active and passive mitigations including fire sprinklers, and fuel modification zones. In addition, as this is going to be an upscale development, the typical residents are not high consumers of fire department services. The potential residents of this development have resources to maintain their properties, homes and health. They tend not to get involved in civil situations that result in the need for fire and police response. The estimated emergency call volume, using a widely accepted per-capita annual call generation factor of .082 per person, is about one call per month based on an estimated population of 160 persons (four per residence) in this development. This should not create a significant impact on the fire department.

5. Vegetation Fire Risk Assessment

In support of this project, Dudek was retained to provide site-specific fire behavior modeling utilizing the FlamMap fire behavior modeling software package to analyze two different fire scenarios each for the existing condition and post-development condition on the West Hills Crest Project (project) site. Dudek's complete report is provided in Appendix A. The FlamMap software package is a publicly available

resource available through the Fire, Fuel, and Smoke Science Program of the United States Department of Agriculture, Forest Service[1]. FlamMap is a geographic information systems (GIS)-based software package that models potential fire behavior for constant environmental conditions (weather and fuel moisture) and generates map files of potential fire behavior characteristics (e.g., spread rate, flame length, crown fire activity). FlamMap outputs represent fire behavior calculated for each pixel within the analysis area independently and does not calculate fire spread across a landscape. The software requires a minimum of five input variables, including elevation, slope, aspect, fuel model, and canopy cover. Wind and weather data are also critical components to FlamMap modeling efforts. The following sections present a background on fire behavior modeling and present the methods and data sources used in performing the FlamMap fire behavior modeling analysis for the project site.

FlamMap was used to provide projections of fire behavior across the site and the results were used to augment fire history and experienced judgement regarding the appropriate fuel modification zones for the Project's perimeter. A map depicting flame length values for the 50th percentile weather scenario (summer) for existing and post-development conditions is included in Attachment 1. A map depicting flame length values for the 97th percentile weather scenario (fall) for existing and post-development conditions is included in Attachment 2. The fire behavior modeling results vary depending on topography and fuel type. As FlamMap utilizes site-specific digital terrain data (including slope, vegetation, aspect, and elevation data) slight variations in predicted flame length values can be observed based on fluctuations of these attributes across the landscape. As presented, the worst case weather conditions produced flame lengths of approximately 55 feet.

The modeling demonstrates the need for fuel modification zones on the property to protect structures. The State requirement is 100 feet. LACoD requires up to 200 feet. The fuel modification zones proposed for this development significantly exceed the State and County requirements.

[1] http://firelab.org/project/flammap

6. Vegetation Management (Fuel Modification) Zones

A. Size and location of zones

Fuel Modification (vegetation management and reduction) Zones (FMZs) shall be provided around all structures (Appendix B). The purpose of such action is to prevent spread of fire through vegetation to the structure. In addition to direct flame contact, vegetation fires spread due to airborne burning embers dropping on a private lot and igniting fuels. Therefore there shall be two zones; Zone 1 and 2. The most resistive zone is Zone 1; closest to the structure. Zone 2 is similar to Zone 1 but allows for slightly taller vegetation and is a non-irrigated, thinning zone. Zone 2 is located further from the structure. FMZs beyond private lots in the common area are less stringent. Based upon the results of fire modeling, fire history, topography, winds, and the opinions, experience and recommendations of the consultant, the size of such zones shall be as follows. Fuel Modifications Zones start at the structure with 200 foot zones on the north, west and south perimeters of the development. Fuel modification in riparian and similar sensitive ecological areas require permission of environmental resource agencies and/or adjustment in order to conform to resource protection values.

1. All internal lots and lots on east perimeter shall have the required 100 feet zones or to the property line if less than 100 foot from the structure. Fuel modifications shall be performed in sensitive areas only if permitted. This modification would consist of limbing and gradation thinning of brush and trees by 50% of fuel volume, including removal of down and dead and mowing of grasses with no soil disturbance.

2. Interior landscaped slopes, parks in the development, common areas, open spaces, and areas between private lots shall have the same requirements as the zones for private lots.

3. Fuel Modification will be provided in aboveground utility or power pole line easement.

A private lot, if less than 100 feet wide or deep, shall be fully a wet, irrigated zone. The basic concept of the FMZ is to have the private lot irrigated and with fire resistive landscaping and a non-irrigated thinning zone, beyond the private lot out to the edge of the zone where not constrained by sensitive habitat or other regulated areas. All zones outside of private lots, in common areas, shall be staked with permanent, weather resistant stakes indicating location of the zones. (Refer to the Fuel Modification Zone map in Appendix B of this Plan.)

B. General Requirements

At the time of construction, and prior to introduction of combustible materials on a lot, the developer or builder shall clear all vegetation other than fire resistive vegetation. In Zone 1 this means reducing vegetation to heights of approximately 6 inches or less leaving vegetation for slope stability and erosion control. The developer or builder will cut, prune or thin all flammable vegetation in Zone 2. All cut and dead vegetation shall be removed from the site forthwith. The zones shall be maintained in this condition until the developer installs irrigation and fire resistive landscaping as approved by the LACoFD.

Individual homeowners will ultimately be responsible for ongoing maintenance on their respective private lots consistent with this Plan. Home owner's associations (HOA) will be responsible for such maintenance in common areas, open space, roadsides and parks within the development. An annual inspection of the property, to determine compliance with this Plan, shall be performed by an approved fire protection specialist funded by the HOA.

C. Critical Habitat and Sensitive Areas

Modification or removal of particular vegetation in designated habitat or other wise sensitive areas such as riparian may be constrained by County planning and other resource agencies, including but not limited to; Fish and Game, Fish and Wildlife, Corp of Engineers, etc. Written permission will be required in advance of work in such areas.

D. Offsite Fuel Modification

Written permission is required from offsite landowners in order to do any fuel modification outside of this development. Absent such arrangement, the property will be subject to the LACoFD annual weed abatement and vegetation management requirements on contiguous properties to reduce encroaching fire threat to this property.

E. Roadside Clearance Vegetation

Vegetation, other than fire resistive vegetation, shall be cleared and managed in roadside zones of ten foot or greater per this Plan by the HOA. These zones may be part of the private lot lanscaping if irrigated lawn or otherwise in compliance with this Plan. The roadside vegetation along Randiwood and Welby Way, where they abut the development shall be maintained by the HOA or LACoFD consistent with D. Offsite Fuel Modification (above).

F. Fuel Modification Zones Detailed

Zone 1: Defensible Space; Irrigated wet zone on all sides of structures on all private lots:

This space is an irrigated wet zone of low fuel volume, high leaf moisture, drought tolerant, fire resistive, low profile vegetation. Grasses and ground cover shall be maintained to heights of less than approximately six inches. Hardscape such as concrete, asphalt, and rock pavers are encouraged. The first 12 inches from the structure in this zone shall be limited to non combustible material. Plants, other than grass and ground cover less than six inches tall are prohibited directly beneath attic vents. There shall be no vegetation or tree canopy within ten feet of a chimney opening nor within eight feet of a structure. Single specimens of approved trees shall be limbed and pruned up to 1/3 the height of the tree or six feet from the ground, whichever is less. New trees shall be spaced 20 feet between mature canopies on slopes less than 20% and 30 feet on slopes greater than 20%. Shrubs shall be 18 inch maximum height within ten feet of a structure and 24 inch maximum elsewhere.

Shrubs or plants under trees shall be limited to 24 inches in height. Vertical clearance between shrubs or plants shall be three times the height of understory from plant to lowest point of tree. Spacing between mature plants should be approximately the same distance as two times the plant height.

Dry grasses, acacia, eucalyptus, palm juniper, cypress, conifer, camphor, bottle brush, pampas grass, chaparral, sage brush, chamise, coyote bush, California buckwheat and manzanita are prohibited. Individual well maintained specimens may be an exception allowed by LACoFD. Combustible mulch, chipped biomass, wood chips, etc., are prohibited.

Zone 2: Non-irrigated thinning zone which transitions from Zone 1 (Defensible space) to native vegetation:

This zone is a non-irrigated thinning area of low fuel volume, high leaf moisture, drought tolerant, fire resistive, low profile vegetation with grass and ground covers limited to approximately eight inches. It includes properly managed native vegetation. The plant spacing and arrangement in this zone is generally the same as Zone 1 except that plants and shrubs height limitation is increased to approximately 30 inches. Vines from an approved plant palette may be used on walls located 30 feet or more from structures. Vines are not permitted on the structure side of private property line walls on the perimeter of the development.

7. General Requirements for Vegetation Management

The objective is to reduce and limit native and ornamental vegetation around structures and roadways. This eliminates continuous fuel beds and ignition sources. An added objective is to create a defensible space to assist firefighters in protecting structures.

Vegetation on private lots, parks, common areas, and open space within this development shall be maintained annually and more often as needed. This maintenance shall include removing undesirable native and ornamental vegetation and replacing problematic vegetation to the satisfaction of the LACoFD.

The developer, homeowners, and the HOA shall insure that vegetation management on private lots and in common areas is provided on an initial and ongoing basis consistent with this Plan. A qualified fire protection specialist, approved by LACoFD, shall be retained to inspect all zones and all lots annually for compliance with this Plan and submit a report to the Fire Marshal prior to June 15 each year.

8. Undesirable Plants:

All plants will burn under extreme fire weather conditions such as drought, or several days of hot dry weather and winds. However, plants burn at different intensities and rates of consumption. Fire resistive plants burn at a relatively low intensity with slower rates of spread and shorter flame lengths. The following are characteristics of fire resistive vegetation:

- Growth with little or no accumulation of dead vegetation
- Little or no resin or content
- Low mass
- High live fuel moisture (water retained compared to dry weight)
- High leaf moisture
- Low dead to live fuel ratio
- Drought tolerant (deeply rooted, thick leaves)
- Slow growing

Refer to the undesirable plant list in Appendix C for addition information

9. Planting, Spacing and Maintenance Guidelines

General Information:

- Make all measurements on the horizontal (Plan view)
- Maintenance includes irrigation and removal of dead material and weeds
- Maintain plant spacing and dimensions as plants mature
- Avoid plants producing shaggy bark
- Avoid plants producing large amounts of dead undergrowth
- Arrange plants to avoid ignition pathways to structures
- Avoid combustible mulches

- Avoid vegetation under eaves and near wall openings
- Maintain after storms, freezes, high winds, etc.
- Avoid over irrigating native vegetation
- Consider slope stability, erosion, etc., when irrigating
- Consult Sunset Garden Book for factors influencing selection

10. Annual and Ongoing Vegetation Management

Proper initial and ongoing vegetation management in compliance with this Plan is critical to fire safety in this development. Vegetation management shall be performed annually by June 1, and more often as needed. So long as the developer is the owner of the property, the developer shall be responsible for initial compliance with all aspects of the Plan. When the developer is no longer the owner, the compliance will be ensured by; (a) incorporation of all relevant common areas, including landscaped slopes, roadsides, etc., into an HOA with each private lot property owner, individually and collectively, responsible for the costs of maintenance and; (b) recording against the property, either by CC&R's or other deed restriction(s), the requirement that owners of each private lot comply with this Plan. The HOA shall ensure initial and ongoing compliance with this Plan on all private lots and common areas. The HOA, at their sole cost and expense, shall provide an annual report from a LACoFD approved fire protection specialist to the Fire Marshal, prior to June 15 each year, declaring the property is in compliance with this Plan.

All future transfers of, for a single lot or for the entire development, shall disclose to the transferee, at the time of purchase agreement and the close of escrow, the fire hazard and fire severity zone designation of the property. Further, that such property will be subject to the same requirements as found in this Plan. To ensure this disclosure, transferee shall sign an agreement in escrow to act and perform in accordance with this Fire Protection Plan.

11. Construction Phase Vegetation Management and Fire Safety

One of the most critical times for fire risk in the life of a development is during construction. This is due to unprotected construction, ignition sources, vehicles, workers, potential for arson and the absence of passive and active fire protection systems that are yet to be incorporated into the finished development. Therefore, the developer shall provide a written plan to the Fire Department for approval prior to beginning construction. Vegetation management in all common areas within the development shall be performed throughout the construction phase. Vegetation management shall be performed on private lots prior to work beginning on those lots and prior to combustible materials being delivered to the site. Adequate fuel breaks shall be created around all grading, site work and other construction activities in areas where there is flammable vegetation.

The following safety measures shall be implemented by all general contractors:

- There shall be a designated LACoFD approved Fire Watch person on site (A guard service may satisfy this requirement if approved by the Fire Marshal) with two tested methods to call 911 (land line and cell phone). In addition to the 911 number, an alternate seven digit emergency number shall be available. The Fire Watch shall have maps and be able to provide clear directions to the emergency location.
- All required emergency access/egress pathways shall be usable.
- Fire hydrants shall be installed and usable before combustible building materials are delivered. In lieu of fire hydrant installation during early construction, a 10,000 gallon elevated tank may be placed on site at an approved location with a four inch male fire department connection. Access roadway to the water source shall be a minimum 12 foot wide and have engineered base installed.
- Provide US Forest Service and California approved spark arrestors on all vehicles and machinery using internal combustion engines which may be used off road.

- Prohibit vehicles with catalytic converters off road.
- Provide designated parking which is cleared of flammable vegetation.
- Welders, grinders, plumbers using torches, etc., shall have Fire Department permit and an approved five gallon back pack pump type water fire extinguisher, shovel and adequate vegetation clearance around work area.
- Appropriate spark shields shall be used during welding.
- Welders and plumbers using torches shall have a fire watch during and 30 minutes after the hot work.
- Provide 10 foot clearance on each side of all roads.
- Provide a 30' cleared area and suitable ash containers for smoking if allowed.
- Approved fire extinguishers shall be on site and accessible. They shall include approved multipurpose dry chemical and water types. All construction vehicles shall have and approved 2-A, 10-BC extinguisher and a round point shovel.
- Provisions for refueling on site shall be approved by LACoFD.
- No open fires or warming fires are allowed.
- Safe egress routes shall be provided and presented.
- A means for sounding an emergency alarm shall be provided and demonstrated.
- The Fire Watch shall hold tailgate meetings so that all workers are aware of fire prevention and safety measures.

12. Infrastructure Standards

Road widths and circulation satisfy current codes, nationally recognized standards and industry good practice. There will be one paved ingress/egress road into the development. That is via Kittridge Road which is 36 feet wide, unobstructed to Randiwood which will be widened to 20 feet unobstructed. The access roads and all interior roads within the development shall not exceed 10% grade.

These roads do not traverse a hazardous wildland fire area. Kittridge is bordered by existing conventional residential development and a Park. Randiwood is bordered by an existing residential development and the proposed development. Interior roads within the planned development will be surrounded by extensive fuel modifications.

Local streets in the development shall have a minimum paved width of 36 feet if parking and sidewalks are allowed on both sides of the street. This allows for two eight foot parking lanes and a 20 foot wide unobstructed roadway. If parking is restricted to one side only, the roadway width may be reduced to 32 feet. Driveways to flag lots are required to be 28 feet wide with parking on one side or may be reduced to twenty feet wide and posted, "No Parking - Fire Lane".

There shall be no trees or other vegetation that would mature and potentially impede emergency apparatus access or visibility along roadways.

The longest cul-de-sac shall not exceed 800 feet. Cul-de-sacs shall provide 80 foot diameter bulbs with no parking. Alternatively, other LACoFD approved provisions to turn fire apparatus around shall be provided at the ends of all roads.

Emergency firefighter foot access, 36 inches wide, shall be provided to the native vegetation side of structures that are on the undeveloped perimeter of the development, providing foot access around entire exterior wall.

Driveways shall have grades of 15% or less. Driveway widths shall be at least 12 feet. No more than two homes may be served by a driveway. Lighted house numbers shall be posted at the entrance to each driveway if house numbers are not readily legible from the roadway. Gates shall comply with the California Fire Code and LACoFD Standards. Any driveway longer than 150 feet shall be 20 feet wide unobstructed and have an approved turnaround at the end. Driveways more than 30 feet in length shall have a minimum distance of 20 feet from the garage on a a maximum grade of five percent. Driveways less than 30 feet in length shall have a maximum grade of eight per cent for a minimum distance of 20 feet from the garage.

Fire hydrants shall be of a type approved by LACoFD and shall have one four inch outlet and one two and one-half inch outlet. Hydrants shall be installed at each corner and at 600 foot spacing along all roads on the anticipated response route side of the street. Cul-de-sac streets

shall have a hydrant located midblock. Spacing may be increased to 1,000 feet where no structures require protection (subject to Fire Marshal approval). Hydrants shall have a street valve in the lateral and a three foot by three foot concrete pad at the base for weed control. Hydrants shall have 15 feet of clear space on each side and must not be hidden or obstructed.

Fire flow shall be a minimum 1,250 gallons per minute with 20 pound residual. The new system will be a looped public water system provided by the existing water purveyor and shall be designed and installed to their standards. In addition, the development will install a new 400,000 gallon elevated tank that will provide valuable gravity feed to the area water main system enhancing both fire flow and domestic supply to the currently substandard water pressure in the contiguous community to the east.

Particular higher elevation lots may require a UL listed and FM approved fire pump to provide appropriate pressure for those hydrants and automatic fire sprinkler systems. Any pump systems shall be approved for fire service and be diesel or have emergency generators. Fire pumps shall comply with NFPA 20, and be housed in a fire resistive structure with adequate fuel modification around the pump house. The pump system shall be to the approval of LACoFD and shall be part of the public water system.

Street names and addresses for all structures shall be identified by noncombustible, internally illuminated street address numbers at the structure, and at the driveway entrance if the numbers on the structure are not legible from the street. Addressing shall meet LACoFD requirements. Numbers shall be four inches in height and legible for 100 feet from the street. If the structure is more than 100 feet from the street, the numbers shall be 12 inches in height and also be posted at the street. Numbers shall be located six to eight feet above grade.

The streets shall have street names posted on non-combustible street signposts. Letters and numbers shall be four inches high, reflective, on a six inch high backing. The signage shall be seven feet above grade. Letters and numbers shall be legible for 100 feet in each direction on the street.

13. Ignition Resistant Construction and Extraordinary Mitigations

Large loss fires resulting from fire encroaching into suburban communities are not without precedence. However, the attention focused on them during the late 1990's and early 2000's drove a number of improvements in codes and standards across the nation and particularly in the State of California. The Federal Emergency Management Agency (FEMA) provided grants to allow greater development of performance codes. The National Institute of Standards and Technology (NIST) put more resources into determining causes of structure loss in the WUI. The American Society for Testing and Materials (ASTM) created a new committee EO 5.14, to look at development of testing protocols for "External Exposure" of structures to WUI fires and building-to-building conflagration. California, having recently designated areas of fire hazard severity zones throughout the State, assembled a task force to create a new chapter in the building code to address the problem. The result was Chapter 7A.

Chapter 7A identified weaknesses in the existing regulatory scheme and dramatically changed the way we now build in the wildland-urban interface areas of California. The most significant products flowing from the original effort and the annual code changes in 7A, were the focus on ignition resistance rather than on fire rating, the adoption of the WUI Fire Protection Plan as an instrument for fire regulators, and the recognition of the role that embers play in structure loss and the value of a "hardened building envelope" that could allow a structure to survive when “Mother Nature made a large black spot on the ground”.

West Hills is a great case study, with respect to the value of improved fire protection through building codes and standards.

A. Exterior walls of all residences, garages and any significant ancillary and/or accessory buildings shall have ignition resistant or approved non-combustible walls. This shall extend from the foundation to the underside of the roof system as described in CBC Chapter 7A.
B. Exterior doors shall be ignition resistant, non-combustible or solid core wood designed and installed per CBC Chapter 7A. Garage doors

shall be ignition resistant or non-combustible materials and have a tight fitting gasket or edge overlap to resist ember penetration.
C. Eaves, roof eave soffits, exterior porch ceilings and floor projections shall comply with Chapter 7A.
D. Facias, patios, exterior trim and other exterior elements shall be approved ignition resistant construction.
E. Underfloor protection and underside of appendages shall be enclosed to grade or underside shall comply with Chapter 7A.
F. There shall be no use of paper or plastic faced insulation in the attic or other ventilated spaces.
G. There shall be no use of plastic, vinyl, or untreated wood on the exterior.
H. Roofs shall be Class "A" assemblies. The developer shall have a qualified roof inspector inspect the installation for compliance with Chapter 7A and provide written certification to the Building Official.
I. Vents for attic, or under floor shall comply with Chapter 7A and SFM approved baffle system or equivalent.
J. Roof top turbine vents are prohibited.
K. Automatic Fire Sprinklers shall be required in structures over 200 square feet.
L. Glazing, including windows, glazed doors, glazing in doors including garage doors and skylights shall comply with Chapter 7A. Additionally, both panes shall be tempered on the native vegetation facing walls of perimeter homes.
M. Decks, exterior balconies, exterior stairs, porches, unenclosed roofs and floors and similar architectural appendages and projections shall be ignition resistant, fire retardant wood or non combustible, satisfying Chapter 7A.
N. Fences shall be fire retardant treated wood, on-combustible material or composite materials that satisfy Chapter 7A.
O. Spark arrestors. All chimneys and vents from heat producing sources shall have 1/2 inch metal screens visible form the ground.
P. Solar systems shall be in conformance with California State Fire Marshal information bulletins and Chapter 7A.
Q. Shutters of ignition resistant or non-combustible materials or fire retardant treated wood shall be required on the native vegetation facing walls of perimeter homes.

14. Evacuation

New developments in the WUI should be designed so that occupants are not required to evacuate. The traditional mindset of people, especially if they reside in an older, less protected, development is to "run for your lives". What happens then is people are potentially exposed to a riskier situation than if they stayed in their well-protected home and in worst cases may die on the road. When we have major fires in the wildland-urban interface, it is most often because of high winds. Firefighters are fond of saying, "if the smoke is going strait up then we can handle it." What makes a fire uncontrollable is the high wind condition. So if you have those winds you have a good possibility that the smoke is going to be pushed down to the ground and make it impossible to see to drive even if you have several possible pathways for an evacuation. Compound that circumstance with the wind blowing trees and power lines down across roadways and the drivers that panic and get involved in what any other day might be just a fender bender. This situation could now exacerbate the problem of too many people trying to use the same road space and evacuation routes, regardless of the number, may now be unavailable. The other issue is the naive belief that you can just leave early. It is not at all uncommon during major fire events to have very short notice, with wildfire too close for safe evacuation. Fatalities and injuries occur to people that had no opportunity to leave early.

The new normal is homes that are dramatically superior to those built just a few years ago. The improvements in home design and construction over the years is evidenced by the statistical differential between the percentage of homes lost in a given large fire complex where the records show in what decade they were built. The more recent the construction, the lower percentage of homes lost to the same large fire. And that curve goes up sharply during the last few years as our technique and technology creates greater ignition resistance for new homes.

West Hills is a state of the art development. It has all the advantages of the better, safer homes along with application of our understanding of where to place homes on the property and what actions are needed

influence fire behavior with vegetation management. These and a host of other factors provided for the Project result in overall fire safety. These features not only provide greater safety for the future residents of West Hills, they provide a protective buffer between the existing older designed homes and the potential encroaching wildfire.

However, the present mindset is to evacuate and West Hills has provided for that process with notification of residents made more efficient and effective by today's technologies and what we have learned about moving large numbers of people out of harm's way during floods, hurricanes, shootings, hazardous material escapes and fires.

15. Emergency Planning

An Emergency Plan will be developed for West Hills once it is approved. Such plan will include alternative protective actions, including Ready, Set, Go, temporary refuge and evacuation procedures and will incorporate input from members of the surrounding community and guidance from the Los Angeles County Fire Department.

16. Summary

This conceptual Fire Protection Plan responds to the requirements of the LACoFD and draws from sources including but not limited to; The Los Angeles County Fire Code, The California Fire Code, Chapter 7A of the California Building Code, the National Fire Protection Association and recommendations from various nationally recognized standards and industry good practice. Proper ongoing implementation of this Plan will reduce the current community threat from a wildland-urban interface fire event by improving the existing fire hydrant pressures, providing a buffer (of sprinklered homes with dramatically improved vegetation management) for the homes that are now on the native vegetation perimeter and providing the community fire protection delivery system a platform from which to safely combat an encroaching wildfire.

This is a conceptual Fire Protection Plan. This Plan reflects the recommendations and opinions of the author as well as the requirements of the Los Angeles County Fire Department. Engineering,

architectural services, landscape design, etc., are outside of the scope of this Plan. The developer, contractors, and future homeowners where applicable will implement the concepts, recommendations and requirements set forth in the Plan which, when adopted by the Fire Department, become requirements unless modified by that authority.

The developer will be responsible for initial fuel modification and shall also comply with constraints imposed by the various resource agencies with respect to areas within their respective jurisdictions. Private lot owners will be responsible for ongoing fuel modification on their private property. The HOA will be responsible for ongoing fuel modification in compliance with this Plan and also comply with constraints of the County and other resource agencies concerning fuel modification in areas within their respective jurisdictions.

Subsequent purchasers, in perpetuity, shall be required to sign an acknowledgment that they have read and agree to implement and maintain the requirements contained in this Plan. A deed encumbrance shall put such purchasers on actual and constructive notice of same.

Developer, Builder, designer, contractor, landscape architect , homeowner, HOA, etc., may submit alternative methods to LACoFD for review if there is a practical difficulty in complying with recommendations contained herein, as long as equivalent fire safety is provided to the satisfaction of Los Angeles Fire and Building officials.

Appendix A - Dudek Fire Behavior Modeling Report

DUDEK

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MEMORANDUM

To: M. Michael Naim
From: Michael Huff, Principal
Subject: FlamMap Fire Behavior Modeling, West Hills Crest Project
Date: July 7, 2017
cc: Don Oaks, Viking Research
Scott Eckardt, Dudek
Attachment(s):
1. Map: Flame Length – Summer Fire, Existing and Post-Development Condition
2. Map: Flame Length – Fall Fire, Existing and Post-Development Condition

In support of this project, Dudek utilized the FlamMap fire behavior modeling software package to analyze two different fire scenarios each for the existing condition and post-development condition on the West Hills Crest Project (project) site. The FlamMap software package is a publicly available resource available through the Fire, Fuel, and Smoke Science Program of the United States Department of Agriculture, Forest Service[1]. FlamMap is a geographic information systems (GIS)-based software package that models potential fire behavior for constant environmental conditions (weather and fuel moisture) and generates map files of potential fire behavior characteristics (e.g., spread rate, flame length, crown fire activity). FlamMap outputs represent fire behavior calculated for each pixel within the analysis area independently and does not calculate fire spread across a landscape. The software requires a minimum of five input variables, including elevation, slope, aspect, fuel model, and canopy cover. Wind and weather data are also critical components to FlamMap modeling efforts. The following sections present a background on fire behavior modeling and present the methods and data sources used in performing the FlamMap fire behavior modeling analysis for the project site.

FLAMMAP FIRE BEHAVIOR MODELING

Predicting wildland fire behavior is not an exact science due to the many variables that must be considered. As such, the movement of a fire will likely never be fully predictable, especially considering the variations in weather and the limits of weather forecasting and the weather that is often "created" by firestorms. Nevertheless, practiced and experienced judgment, coupled with a

[1] http://firelab.org/project/flammap

validated fire behavior modeling system, results in useful and accurate fire information[2]. To be used effectively, the basic assumptions and limitations of fire behavior modeling applications must be understood.

- First, it must be realized that the fire model describes fire behavior only in the flaming front. The primary driving force in the predictive calculations is the dead fuels less than 0.25 inches in diameter. These are the fine fuels that carry fire. Fuels greater than 1 inch have little effect, while fuels greater than 3 inches have no effect on fire behavior.
- Second, the model bases calculations and descriptions on a wildfire spreading through surface fuels that are within 6 feet of the ground and contiguous to the ground. Surface fuels are often classified as grass, brush, litter, or slash.
- Third, the software assumes that weather and topography are uniform. However, because wildfires almost always burn under non-uniform conditions, creating their own weather, length of projection period and choice of fuel model must be carefully considered to obtain useful predictions.
- Fourth, fire behavior computer modeling systems are not intended for determining sufficient fuel modification zone/defensible space widths. However, it does provide the average length of the flames, which is a key element for determining defensible space distances for minimizing structure ignition.

Although FlamMap has limitations, it can still provide valuable fire behavior predictions, which can be used as a tool in the decision-making process. In order to make reliable estimates of fire behavior, one must understand the relationship of fuels to the fire environment and be able to recognize the variations in these fuels. Natural fuels are made up of the various components of vegetation, both live and dead, that occur in a particular landscape. The type and quantity will depend upon soil, climate, geographic features, and fire history. The major fuel groups of grass, shrub, trees, and slash are defined by their constituent types and quantities of litter and duff layers, dead woody material, grasses and forbs, shrubs, regeneration, and trees. Fire behavior can be predicted largely by analyzing the characteristics of these fuels. Fire behavior is affected by seven principal fuel characteristics: fuel loading, size and shape, compactness, horizontal continuity, vertical arrangement, moisture content, and chemical properties.

The seven fuel characteristics help define the 13 standard fire behavior fuel models[3] and the more recent custom fuel models developed for Southern California[4]. According to the model

[2] Rothermel, Richard C. 1983. How to Predict the Spread and Intensity of Forest and Range Fires. USDA Forest Service Gen. Tech. Report INT-143. Intermountain Forest and Range Experiment, Ogden, Utah. http://www.treesearch.fs.fed.us/pubs/24635

classifications, fuel models used for fire behavior modeling (BehavePlus, FlamMap, FARSITE) have been classified into four groups, based upon fuel loading (tons/acre), fuel height, and surface-to-volume ratio. Observation of the fuels in the field (on site) determines which fuel models should be applied in modeling efforts. The following describes the distribution of fuel models among general vegetation types for the standard 13 original fuel models and the custom Southern California fuel models:

- Grasses – Fuel Models 1 through 3
- Brush – Fuel Models 4 through 7, SCAL 14 through 18
- Timber – Fuel Models 8 through 10
- Logging slash – Fuel Models 11 through 13.

In addition, the aforementioned fuel characteristics were utilized in the recent development of 40 newer fire behavior fuel models[5] developed for use in the BehavePlus, FlamMap, and FARSITE modeling systems. These newer models attempt to improve the accuracy of the 13 standard fuel models outside of severe fire season conditions, and to allow for the simulation of fuel treatment prescriptions. The following describes the distribution of fuel models among general vegetation types for the 40 newer fuel models:

- Non-burnable – Models NB1, NB2, NB3, NB8, NB9
- Grass – Models GR1 through GR9
- Grass shrub – Models GS1 through GS4
- Shrub – Models SH1 through SH9
- Timber understory – Models TU1 through TU5
- Timber litter – Models TL1 through TL9
- Slash blowdown – Models SB1 through SB4.

Table 1 provides a description of 9 fuel models (including one non-burnable model) coded for the site that were subsequently used in the on-site FlamMap analysis for this project.

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[3] Anderson, Hal E. 1982. Aids to Determining Fuel Models for Estimating Fire Behavior. USDA Forest Service Gen. Tech. Report INT-122. Intermountain Forest and Range Experiment Station, Ogden, Utah. http://www.fs.fed.us/rm/pubs_int/int_gtr122.pdf

[4] Weise, D.R. and J. Regelbrugge. 1997. Recent chaparral fuel modeling efforts. Prescribed Fire and Effects Research Unit, Riverside Fire Laboratory, Pacific Southwest Research Station. 5p.

[5] Scott, Joe H. and Robert E. Burgan. 2005. Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model. Gen. Tech. Rep. RMRS-GTR-153. Fort Collins, Colorado: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 72 p.

Table 1
On-Site Fuel Model Characteristics

Fuel Model	Description	Land Cover Classification	Canopy Cover Value
0	Non-burnable	Barren or Sparsely Vegetated	0
2	Timber with Grass and Understory	Coast Live Oak Woodland/Purple Sage – California Sagebrush; California Walnut Groves/California Sagebrush; Native/Non-Native Grasses/Forbs + Sawtooth Goldenbush Scrub; Sawtooth Goldenbush Scrub; Individual California Black Walnut Trees with Grass/Scrub Understory	0 (scrub); 2 (woodland); 3 (individual tree overstory)
GR1	Short, Sparse Dry Climate Grass	Fuel Reduction Area (disked)	0
GR2	Low Load, Dry Climate Grass	California Walnut Groves/Annual Grass-Herb	2
GR4	Moderate Load, Dry Climate Grass	Native and Non-Native Grasses and Forbs; Individual Valley Oak, California Black Walnut, and Coast Live Oak Trees with Grass Understory	0 (grass); 3 (individual tree overstory)
SCAL 18	Coastal Sage Scrub	California Sagebrush – California Buckwheat - Black Sage Scrub; California Sagebrush – California Buckwheat Scrub; Narrowleaf Stillingia; California Sagebrush Scrub; California Buckwheat Scrub; Individual California Black Walnut and Coast Live Oak Trees with Scrub Understory	0 (scrub); 3 (individual tree overstory)
SH2	Moderate Load Dry Climate Shrub	Coyote Brush – California Sagebrush Scrub; Coastal Goldenbush Scrub; California Encelia Scrub; Individual California Black Walnut Trees with Shrub Understory	0 (shrub); 3 (individual tree overstory)
SH5	High Load, Dry Climate Shrub	Purple Sage Scrub; Bush Mallow – Laurel Sumac Scrub; Laurel Sumac – California Sagebrush Scrub; Laurel Sumac Scrub; Purple Sage – California Sagebrush Scrub; Laurel Sumac Scrub; Bush Mallow – Purple Sage Scrub; Bush Mallow – Black Sage Scrub; Individual California Black Walnut and Coast Live Oak Trees with Shrub Understory	0 (shrub); 3 (individual tree overstory)
TL6	Moderate Load Broadleaf Litter	Coast Live Oak – California Walnut Woodland; Coast Live Oak Woodland	2 (oak/walnut woodland), 3 (oak woodland)

FlamMap Analysis

FlamMap software was utilized to graphically depict potential fire behavior for the project site. FlamMap utilizes the same fire spread equations built into the BehavePlus software package, but allows for a geographical presentation of fire behavior outputs as it applies the calculations to

each pixel in the associated GIS landscape[6]. Both summer weather conditions (on-shore flow) and more extreme fall weather conditions (off-shore, Santa Ana conditions) were modeled for both the existing site condition and the proposed post-development site condition.

FlamMap software requires a minimum of five (5) separate input files that represent field conditions in the analysis area, including elevation, slope, aspect, fuel model, and canopy cover. Each of these files was created as a raster GIS file using ArcGIS 10.3.1 software, exported as an ASCII grid file, then utilized in creating a FARSITE Landscape file that served as the base for the FlamMap runs. The resolution of each grid file and associated ASCII file that was used in the models described herein is 3 meters, based on available digital terrain data (described below). In addition to the Landscape file, wind and weather data are incorporated into the model inputs. The output fire behavior variable chosen for each of the modeling runs was flame length, measured in feet.

The following paragraphs provide descriptions of the input and output variables used in processing the FlamMap models. In addition, data sources are cited and any assumptions made during the modeling process are described.

Elevation

Elevation data were derived from a 3 meter resolution Interferometric Synthetic Aperture Radar (IfSAR) measurement for coastal Southern California, acquired from the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center and projected in the NAD 1983, California State Plane, Zone 5 coordinate system, with units in feet. Elevation values on the property range from approximately 975 to 1,350 feet above mean sea level (AMSL). This data were utilized to create an elevation grid file, using units of feet above mean sea level. The elevation data are a required input file for FlamMap runs and are necessary for adiabatic adjustment of temperature and humidity and for conversion of fire spread between horizontal and slope distances.

Slope

Using ArcGIS Spatial Analyst tools, a slope grid file was generated from the elevation grid file described above. Slope measurements utilized values in percent of inclination from horizontal. Slope values in the analysis area range from 0–115%. The slope input file is necessary for computing slope effects on fire spread and solar radiance.

[6] Finney, M.A. 1998. FARSITE: Fire Area Simulator—model development and evaluation. Res. Pap. RMRS-RP-4, Ogden, Utah: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 47 p.

Aspect

Using ArcGIS Spatial Analyst tools, an aspect grid file was generated from the elevation grid file described above. The aspect values utilized were azimuth degrees. Aspect values are important in determining the solar exposure of grid cells.

Fuel Model

Vegetation coverage data in the form of a GIS shapefile[7] were used in this analysis to create a fuel model file for existing conditions, which was derived from vegetative cover data mapped for the project site. Vegetation mapping data was utilized to classify vegetation cover type with an appropriate fuel model. Fuel model assignments for existing vegetation are presented in Table 1.

To analyze post-development fire behavior, a separate fuel model shapefile was created using the existing vegetation coverage and reclassifying fuels based on location within the proposed development. All fuels within areas proposed for conversion to non-fuel types (e.g., roads, driveways, structures, water tank) were reclassified as Fuel Model "0" to represent developed, non-vegetated land uses. Table 2 provides a description of 11 fuel models (including one non-burnable model) coded for the post-development site condition (including developed and non-developed areas) that were subsequently used in the on-site, post-development FlamMap analysis for this project.

Table 2
On-Site Fuel Model Characteristics for Post-Development Condition

Fuel Model	Description	Land Cover Classification	Canopy Cover Value
0	Non-burnable	Roads, Driveways, Structures, Water Tank, Barren or Sparsely Vegetated	0
2	Timber with Grass and Understory	Coast Live Oak Woodland/Purple Sage – California Sagebrush; California Walnut Groves/California Sagebrush; Native/Non-Native Grasses/Forbs + Sawtooth Goldenbush Scrub; Sawtooth Goldenbush Scrub; Individual California Black Walnut Trees with Grass/Scrub Understory	0 (scrub); 2 (woodland); 3 (individual tree overstory)
8	Closed Timber Litter	Fuel Modification Zone 1 (Irrigated), Irrigated Landscape Areas	0
GR1	Short, Sparse Dry Climate Grass	Fuel Reduction Area (disked)	0
GR2	Low Load, Dry Climate Grass	California Walnut Groves/Annual Grass-Herb	2

[7] Envicom 2015

Fuel Model	Description	Land Cover Classification	Canopy Cover Value
GR4	Moderate Load, Dry Climate Grass	Water Detention Basin, Native and Non-Native Grasses and Forbs; Individual California Black Walnut, and Coast Live Oak Trees with Grass Understory	0 (grass and basin); 3 (individual tree overstory)
GS1	Low Load, Dry Climate Grass-Shrub	Fuel Modification Zone 2 (Thinned), Landscape Areas Surrounding Recreation Area	0
GS2	Moderate Load, Dry Climate Grass-Shrub	Manufactured/Graded Slopes Outside Fuel Modification Areas	0
SCAL18	Coastal Sage Scrub	California Sagebrush Scrub; California Buckwheat Scrub; Individual California Black Walnut and Coast Live Oak Trees with Scrub Understory	0 (scrub); 3 (individual tree overstory)
SH5	High Load, Dry Climate Shrub	Purple Sage Scrub; Bush Mallow – Laurel Sumac Scrub; Laurel Sumac – California Sagebrush Scrub; Laurel Sumac Scrub; Purple Sage – California Sagebrush Scrub; Laurel Sumac Scrub; Bush Mallow – Purple Sage Scrub; Bush Mallow – Black Sage Scrub; Individual California Black Walnut and Coast Live Oak Trees with Shrub Understory	0 (shrub); 3 (individual tree overstory)
TL6	Moderate Load Broadleaf Litter	Coast Live Oak – California Walnut Woodland; Coast Live Oak Woodland	2 (oak/walnut woodland), 3 (oak woodland)

Once fuel model values were assigned to vegetation or land cover types, the vector-based vegetation data files (existing and proposed) were converted to grid files for inclusion in FlamMap modeling.

Canopy Cover

Canopy Cover is a required raster file for FlamMap operations. It is necessary for computing shading and wind reduction factors for all fuel models. Canopy cover is measured as the horizontal fraction of the ground that is covered directly overhead by tree canopy. Crown closure refers to the ecological condition of relative tree crown density. Stands can be said to be "closed" to recruitment of canopy trees but still only have 40% or 50% canopy cover. Coverage units can be categories (0–4) or percentage values (0–100).

For the purposes of the FlamMap analysis, Dudek utilized vegetation type classifications to determine canopy cover assignments. Canopy cover assignments are presented in Tables 1 and 2, by fuel model.

Weather

In order to utilize weather and fuel moisture variables for the project site, data from the Cheseboro Remote Automated Weather Station (RAWS) was analyzed. Utilization of RAWS data is necessary for fire behavior modeling as it includes data for fuel moisture conditions, and, as of the date of this memorandum, no RAWS are located on the project site. The Cheseboro RAWS is located approximately 3 miles to the west of the West Hills Crest property. The following summarizes the location and available data ranges for the Cheseboro RAWS:

- Latitude: 34.18639
- Longitude: -118.71944
- Elevation: 1,707 feet
- Data years: 1995–2014.

Wind and weather data are a required component to fire behavior modeling efforts. The Cheseboro RAWS data was processed with the FireFamily Plus v. 4.1.0 (FireFamily Plus 2007) software package to determine summer (50th percentile) and fall (97th percentile) weather conditions to be incorporated into the Initial Fuel Moisture file used as an input in FlamMap. Wind direction and wind speed values for the FlamMap runs were manually entered during the data input phase. Table 3 summarizes weather and fuel moisture data inputs used for both summer and fall weather conditions.

Table 3
FlamMap Weather Input Variables

Model Variable	50th Percentile Weather (June 1 – August 31)	97th Percentile Weather (September 1 – November 30)
1 h fuel moisture	5%	2%
10 h fuel moisture	6%	3%
100 h fuel moisture	11%	4%
Live herbaceous moisture	60%	30%
Live woody moisture	92%	59%
20 ft. wind speed (mph)	7 mph	39 mph (maximum value)
Wind direction	uphill	30 degrees
Slope steepness	Variable by location	Variable by location

mph = miles per hour

FlamMap Fuel Model Outputs

One output grid file was generated for each of the FlamMap runs and represents flame length (feet) values in existing and proposed site conditions during summer and peak weather scenarios. Flame length, the length of the flame of a spreading surface fire within the flaming front, is measured from midway in the active flaming combustion zone to the average tip of the flames[8]. It is a somewhat subjective and non-scientific measure of fire behavior, but is extremely important to fireline personnel in evaluating fireline intensity and is worth considering as an important fire variable[9]. The information in Table 4 presents an interpretation of flame length and its relationship to fireline intensity.

Table 4
Fire Suppression Interpretation

Flame Length (feet)	Fireline Intensity (Btu/ft/s)	Interpretations
Under 4	Under 100	Fires can generally be attacked at the head or flanks by persons using hand tools. Hand line should hold the fire.
4–8	100–500	Fires are too intense for direct attack on the head by persons using hand tools. Hand line cannot be relied on to hold the fire. Equipment such as dozers, pumpers, and retardant aircraft can be effective.
8–11	500–1,000	Fires may present serious control problems—torching out, crowning, and spotting. Control efforts at the fire head will probably be ineffective.
Over 11	Over 1,000	Crowning, spotting, and major fire runs are probable. Control efforts at head of fire are ineffective.

Source: BehavePlus 5.0.5 Online Documentation, March 16, 2010. BehavePlus Fire Modeling System: Version 4.0 User's Guide (Andrews, Bevins, and Seli 2008)

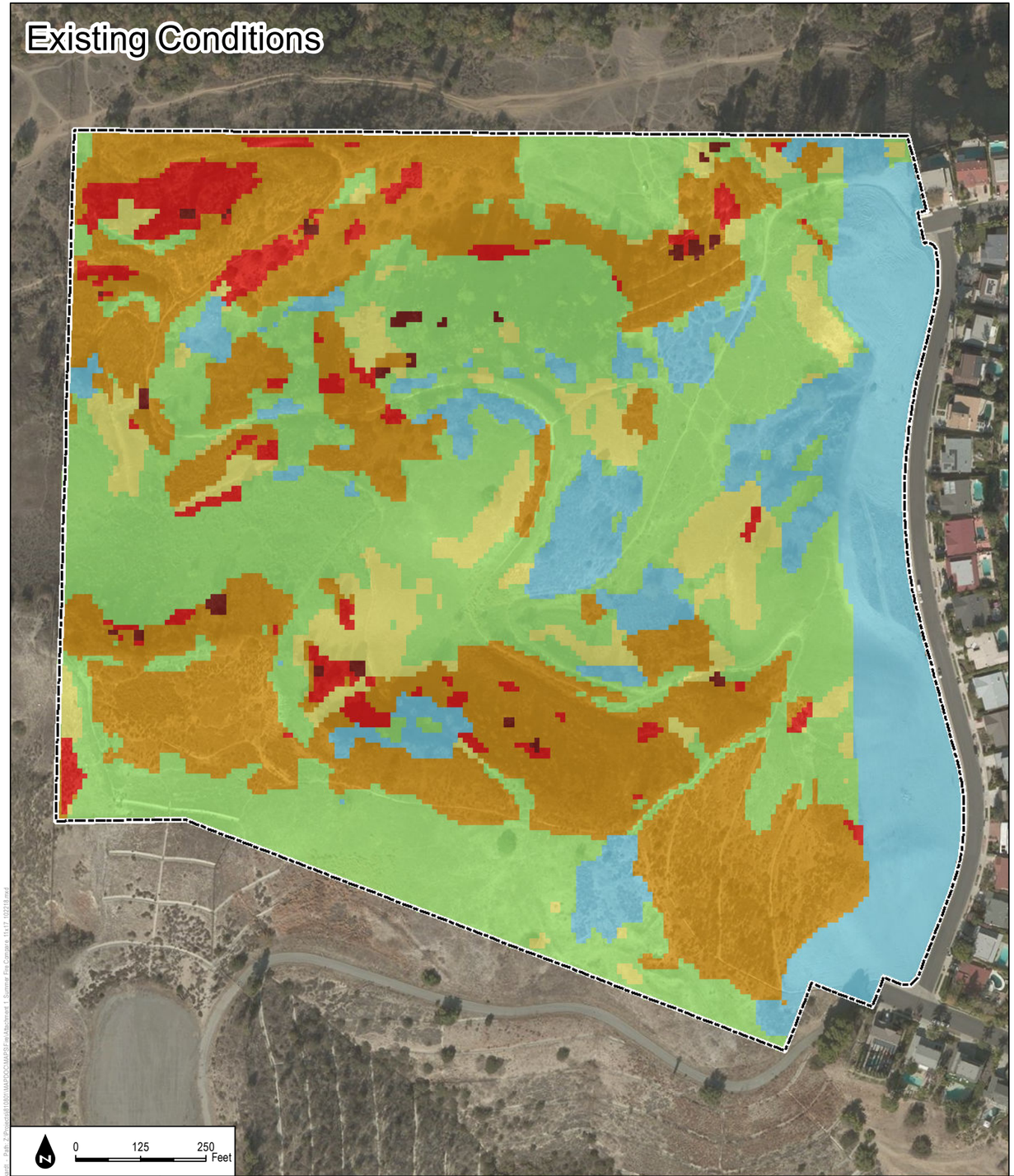
A map depicting flame length values for the 50th percentile weather scenario (summer) for existing and post-development conditions is included in Attachment 1. A map depicting flame length values for the 97th percentile weather scenario (fall) for existing and post-development conditions is included in Attachment 2. The fire behavior modeling results vary depending on topography and fuel type. As FlamMap utilizes site-specific digital terrain data (including slope, vegetation, aspect, and elevation data) slight variations in predicted flame length values can be observed based on fluctuations of these attributes across the landscape.

[8] Andrews, Patricia L.; Bevins, Collin D.; Seli, Robert C. 2008. BehavePlus fire modeling system, version 4.0: User's Guide Revised. Gen. Tech. Rep. RMRS-GTR-106WWW Revised. Ogden, Utah: Department of Agriculture, Forest Service, Rocky Mountain Research Station. 123p.
[9] Rothermel, Richard C. 1983. How to Predict the Spread and Intensity of Forest and Range Fires. USDA Forest Service Gen. Tech. Report INT-143. Intermountain Forest and Range Experiment, Ogden, Utah. http://www.treesearch.fs.fed.us/pubs/24635

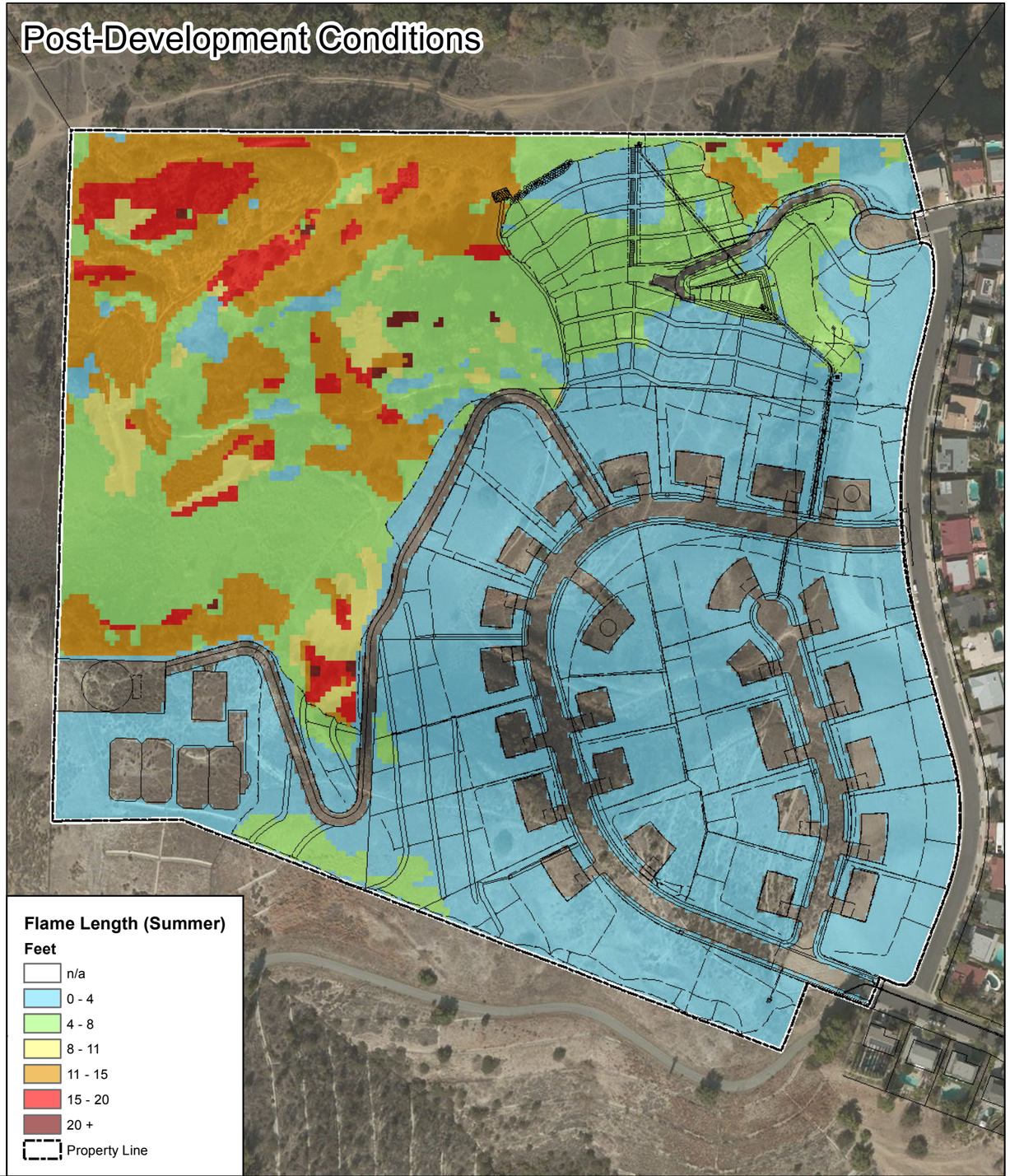
As presented, wildfire behavior in each of the fuel types varies depending on weather conditions.

When classifying vegetation types into fuel models, efforts were made to most accurately represent the fuel type observed. However, the scale at which the vegetation mapping was conducted did not allow for small-scale fuel mapping within a larger vegetation type classification. For example, small pockets of tall grass within a larger area classified as scrub were not separated for this analysis. Second, the fuel models selected to represent post-developed conditions were selected based on expected fire behavior in these fuel types, as no available fuel models exist for managed and/or irrigated landscape vegetation.

Existing Conditions



Post-Development Conditions



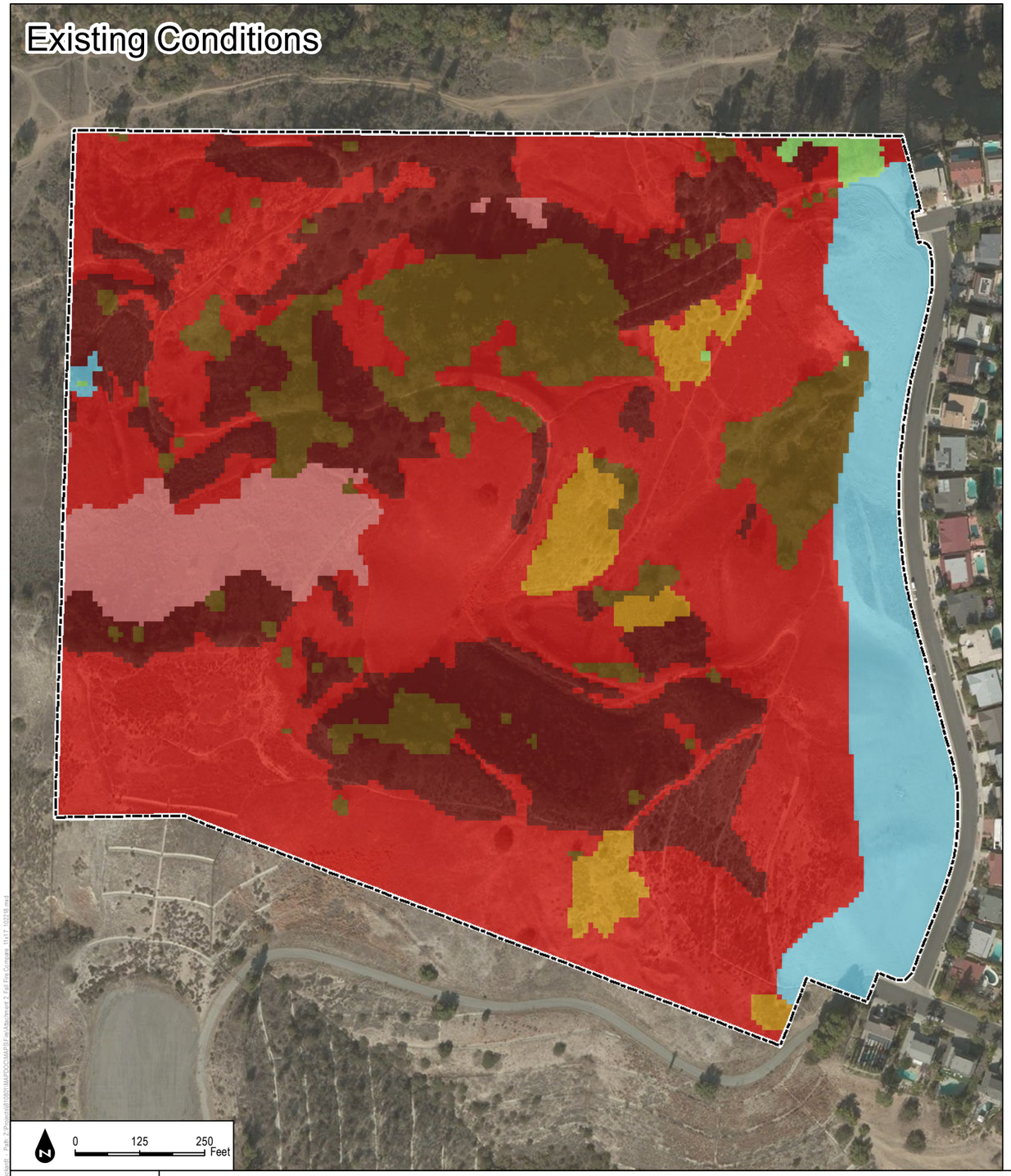
DUDEK

West Hills Crest

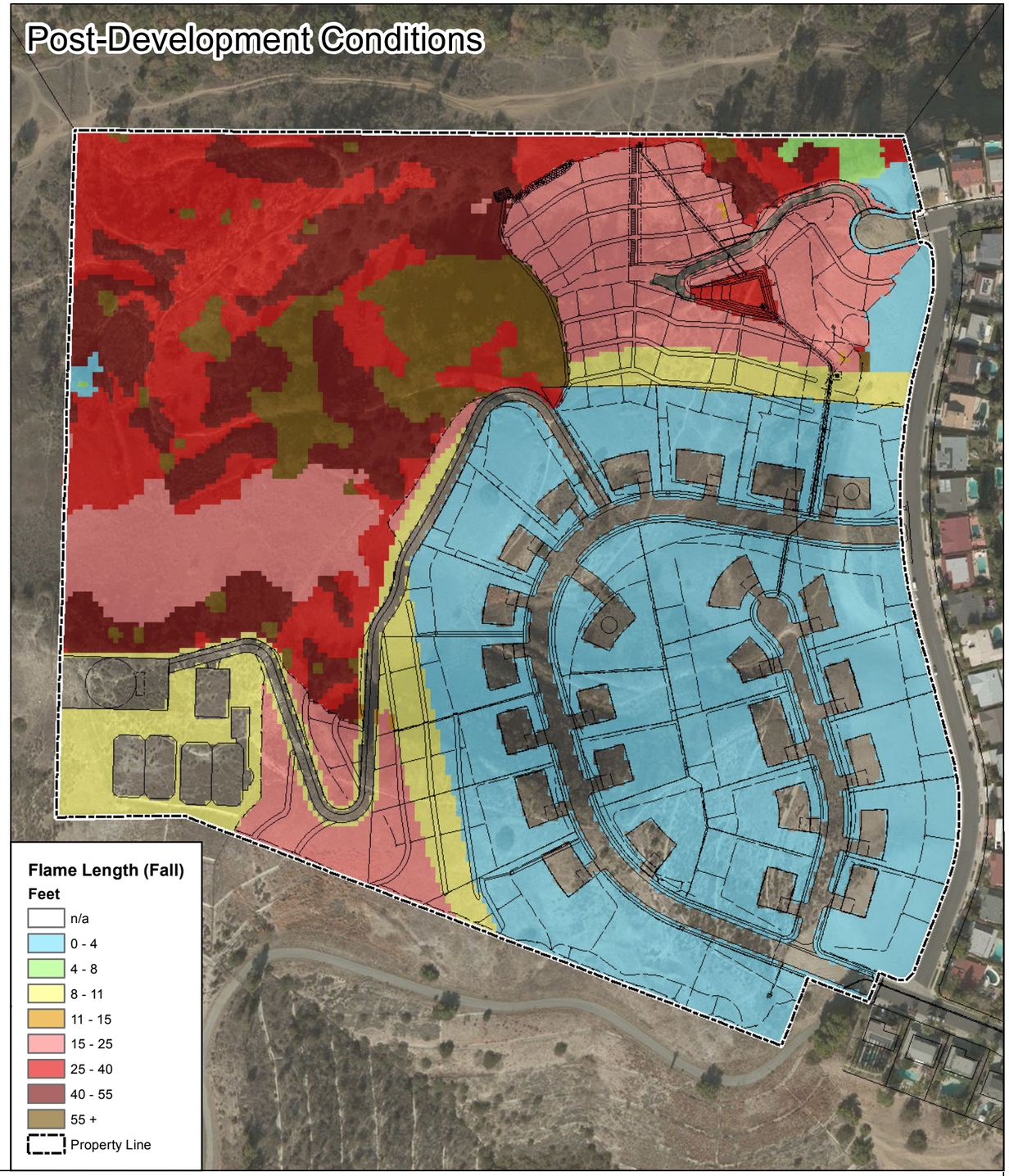
ATTACHMENT 1

Fire Behavior Analysis - Summer Fire

Existing Conditions



Post-Development Conditions



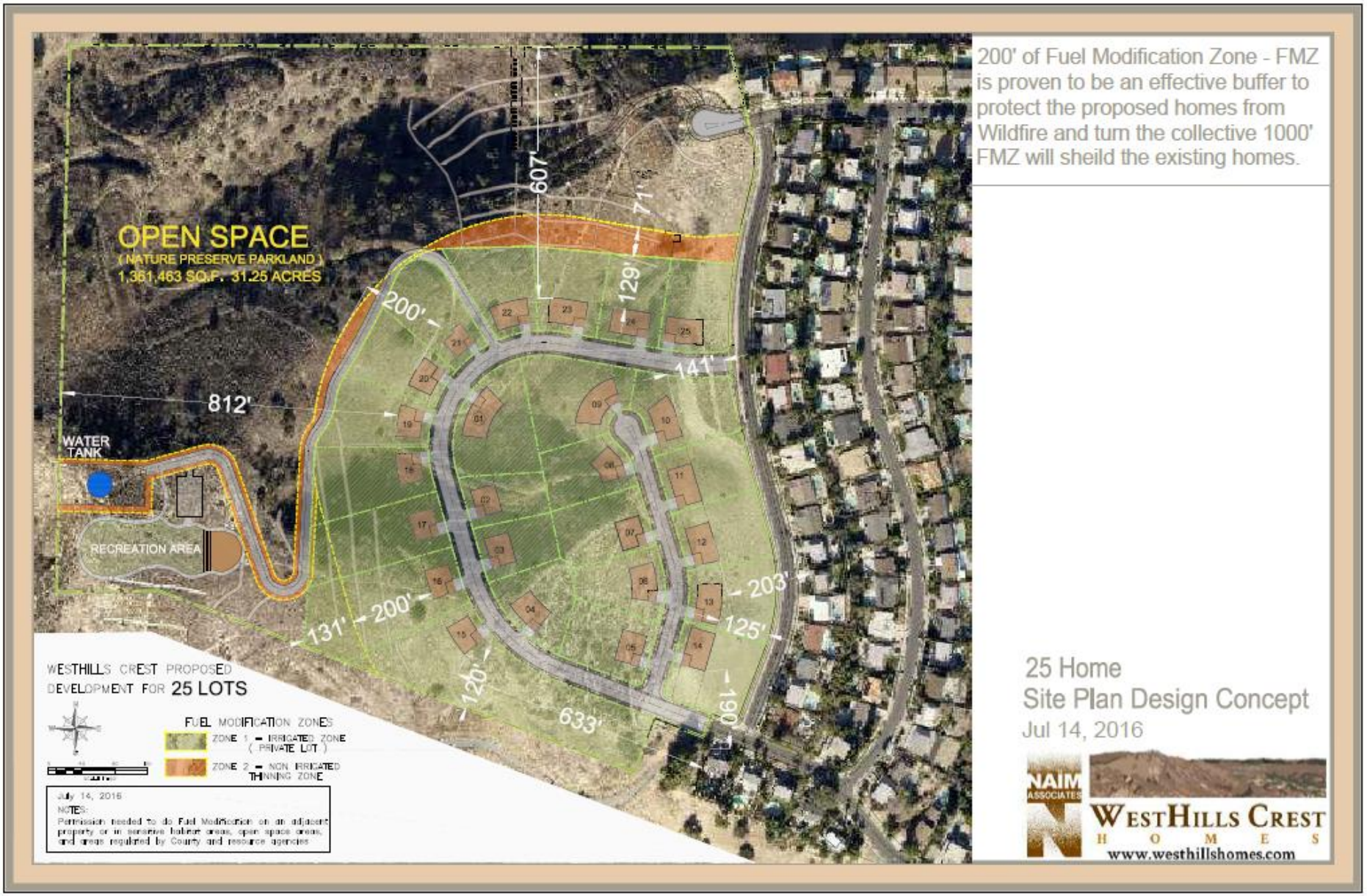
DUDEK

West Hills Crest

ATTACHMENT 2

Fire Behavior Analysis - Fall Fire

Appendix B: Fuel Modification Zone - 200 feet wide



Appendix C –Undesirable Plant List

UNDESIRABLE and INVASIVE PLANT SPECIES

Certain plants are considered to be undesirable and invasive due to their characteristics. These characteristics can be either physical or chemical. Physical properties that would contribute to high flammability include large amounts of dead material retained within the plant, rough or peeling bark, and the production of copious amounts of litter. Chemical properties include the presence of volatile substances such as oils, resins, wax, and pitch. Certain native plants are notorious for containing these volatile substances.

Plants with these characteristics shall not be planted in any fuel modification zones or anywhere with Alternate Methods & Materials agreements (See Section 4). Should these species already exist within these areas, they shall be removed because of their invasiveness or potential threat they pose to any structures.

PLANT SPECIES (MANDATORY REMOVAL)

Botanical Name	Common Name
Cynara Cardunculus	Artichoke Thistle
Ricinus Communis	Castor Bean Plant
Cirsium Vulgare	Wild Artichoke
Brassica Nigra	Black Mustard
Silybum Marianum	Milk Thistle
Sacsola Austails	Russian Thistle/Tumblewood
Nicotiana Bigelevil	Indian Tobacco
Nicotiana Glauca	Tree Tobacco
Lactuca Serriola	Prickly Lettuce
Conyza Canadensis	Horseweed
Heterothaca Grandiflora	Telegraph Plant
Anthemix Cotula	Mayweed
Urtica Urens	Burning Nettle
Cardaria Draba	Noary Cress, Perennial Peppergrass
Brassica Rapa	Wild Turnip, Yellow Mustard, Field Mustard
Adenostoma Fasciculatum	Chamise
Adenostoma Sparsifolium	Red Shanks
Cortaderia Selloana	Pampas Grass
Artemisia Californica	California Sagebrush
Eriogonum Fasciculatum	Common Buckwheat
Salvia Mellifera	Black Sage
Nassella/Stipa tenuissima	Mexican Feathergrass
Ornamental:	
Cortaderia	Pampas Grass
Cupressus sp	Cypress
Eucalyptus sp	Eucalyptus
Juniperus sp	Juniper
Pinus sp	Pine
Arecaceae (all palm species)	Palms

APPENDIX J
Trip Generation Technical Memorandum

transpogroup
WHAT TRANSPORTATION CAN BE.

TECHNICAL MEMORANDUM

Date:	September 19, 2017	**TG:**	17296.01
To:	Mr. Michael Naim (Naim Associates) Mr. Daniel Freedman (Jeffer Mangels Butler & Mitchell LLP) Mr. Primo Tapia (Envicom Corporation)		
From:	Rawad Hani, PE, TE (Transpo Group)		
cc:			
Subject:	Trip Generation Memorandum Westhills Crest Development, County of Los Angeles		

The following Technical Memorandum presents the trip generation analysis for the Westhills Crest Development Project to be developed in the unincorporated territory of the County of Los Angeles. According to the *Los Angeles County Department of Public Works Traffic Impact Analysis Report Guidelines,* a project generating less than 500 daily trips does not generally require a Traffic Impact Analysis.

Project Description

On January 16, 2008, the Regional Planning Commission of Los Angeles County approved Vesting Tentative Tract Map No. 52652, Conditional Use Permit Case No. 98-123-(3), and Oak Tree Permit Case No. 98-123-(3) (collectively, "Project"). The Project authorized the subdivision of the 58.03 acre property into 25 single family lots, one recreation lot, one water tank lot, one public facilities lot, and one open space lot. The main access for the project is via Kittridge Street west of Randiwood Ln.

Trip Generation

The recreational lot is intended for the use of the Westhills Community who would walk or bike to these spaces rather than drive. The water tank and public facilities lot are assumed as supporting facilities that are not expected to generate daily traffic.

Table 1 presents the trip generation estimates of the Approved Project. The trip rates for the proposed project were obtained (as per the Los Angeles County Department of Public Works Traffic Impact Analysis Report Guidelines) from the *Trip Generation, 9th Edition* published by the *Institute of Transportation Engineers (ITE), 2012*. The ITE trip rates for the Single-Family Detached Housing (ITE Land Use Code 210) was assumed for this analysis.

As shown in the table, the proposed project, would generate approximately 238 daily trips, 19 AM peak hour trips (5 inbound and 14 outbound), and 25 PM peak hour trips (16 inbound and 9 outbound).

Table 1 – Project Trip Generation

Land Use	Size/Units	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
TRIP RATES								
Single-Family Detached Housing	per Dwelling Unit	9.52	0.19	0.56	0.75	0.63	0.37	1.00
TRIP GENERATION								
PROPOSED PROJECT								
25 Dwelling Units	25 Dwelling Units	238	5	14	19	16	9	25

Note: Trip rates are based in *Trip Generation, 9th Edition, Institute of Transportation Engineers (ITE), 2012.* If regression equations rather than trip rates are used from the ITE reference then the total number of daily trips is around 294 trips.

Conclusion

The development project of 25 single family homes would generate approximately 238 daily trips. This is below the LA County threshold of 500 daily trips for conducting a Traffic Impact Analysis. Attached to this memorandum is an email with the County's determination that no Traffic Impact Analysis is required for this project.