Appendix B:
Geotechnical Engineering Investigation

SoilWorks
Earth Sciences Group

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City Ventures
1900 Quail
Newport Beach, California 92660

April 10, 2013
SW PN 281-01

Attention: Ms. Kim Prijatel

Subject: Engineering & Geologic Due Diligence
2025 & 2027 Placentia Avenue
Costa Mesa, California

Dear Ms. Prijatel,

Pursuant to your request and authorization, SoilWorks, Inc. has performed a geotechnical / geologic due diligence investigation for the subject site. The subject site consists of 2025 and 2027 Placentia Avenue as shown on the Site Vicinity Map, Figure 1. Included herein is a summary of our findings and conclusions regarding engineering and geologic considerations for the proposed site development.

SCOPE OF WORK

The scope of our services for this due diligence investigation included the following:

- Site reconnaissance from a geotechnical / geologic aspect;
- Review of available government and private web sites relative to known geologic and engineering conditions;
- Review of proprietary files and published documents and reports;
- Field exploration consisting of excavating one fifty foot deep boring utilizing a truck mounted drilling equipment, logging of the boring, and obtaining SPT and California drive samples for laboratory testing;

- Field exploration consisting of excavating two (2) ten and one (1) five foot deep borings for classification, observation and percolation testing;
- Limited laboratory testing of selected samples to evaluate the engineering characteristics of the subsurface materials;
- Geotechnical engineering and geologic evaluation as appropriate of the field and laboratory test data;
- Desktop level assessment of foundation type, seismic considerations, geologic hazards, groundwater levels, presence of peat, corrosive conditions, expansive soils, undocumented fill, grading and earthwork considerations;
- Preparation of a written report presenting our preliminary findings, conclusions, and recommendations from a due diligence standpoint.

The scope of our services specifically does not include investigation and or evaluation of any hazardous materials that may be present on or under the site.

PROPOSED DEVELOPMENT

The proposed project currently being considered will consist of 32 Townhouse units and 6 Loft units as shown on the attached Conceptual Site Plan, Figure 2. This plan utilizes the conceptual site plan – option 3 prepared by KTGY Group, Inc. Architecture + planning. Other site improvements would include parking and street areas, plazas, sidewalks, dry and wet utility construction, storm water collection and discharge and perimeter wall construction. The existing improvements would be demolished and hauled off site.

SITE DESCRIPTION

The site is located at 2025 & 2027 Placentia Avenue, in the City of Costa Mesa, California, and is approximately 1,625 feet south of the intersection of Victoria Street and Placentia Avenue as shown on Figure 1. The 2027 Placentia Avenue property is

currently occupied / leased by Swift Slip Dock & Pier Brothers and is primarily used for the storage of vehicles and construction materials. The property also includes a small scale wood frame structure towards the southeast portion of the property. The 2025 Placentia Avenue property includes fenced in storage yards, as well as a single story wood frame structure located to the northwest of the property. Surrounding the site are commercial developments that are located on to the north and south side of the subject property and includes an existing off-site structure along the northerly property line. A short height wall retains the site along the westerly property line, with residential development beyond.

FIELD EXPLORATION

On March 20, 2013, site reconnaissance was conducted and four exploratory borings were completed. The approximate locations of the borings are shown on the attached Boring Location Map, Figure 3. The first boring B-1, was excavated to a depth of 50 feet utilizing an 8-inch diameter hollow stem auger. The second and third borings, B-2 and B-3, were excavated to a depth of 10 feet and prepared for the scheduled percolation test. A final boring B-2A was excavated adjacent to B-2 to a depth of 5 feet. Soil samples were obtained at selected depths and transported to the laboratory for testing. Logs of Geotechnical Borings for the locations are attached as Figures 4 through 8.

LABORATORY TEST PROGRAM

Laboratory tests were performed on representative soil samples obtained during the field exploration in order to determine selected engineering properties of the subsurface materials. These tests included moisture and density of the soil samples obtained during the field exploration phase, maximum density / optimum moisture content, soil expansion, consolidation, direct shear and soil sulfate. The results of the moisture density tests are posted to the Log of Borings, Figures 4 through 8. Remaining test results can be provided as part of subsequent geotechnical investigation report.

PERCOLATION TESTING

Following the drilling of the shallow 5 and 10 feet deep borings, (borings B-2, B-2A and B-3) pre-saturation for percolation testing was performed. A 4" diameter perforated pipe with pea gravel were placed in each of the 10 feet deep borings prior to filling with water to approximate existing grade elevations. Pre-saturation of the 5 feet deep boring was performed without the use of perforated pipe and gravel. The location of these tests are shown on Figure 3.

Following a 24 hour soak period, the water levels within the 10 foot deep borings had dropped approximately 1-3 feet and approximately 6 inches within the 5 foot deep boring. After an extended observation period of 24 hours, the water levels had dropped an additional 4-12 inches within the borings. The failure of the pre-soak water to infiltrate into the surrounding soils precluded performing the planned percolation testing, and testing was subsequently abandoned.

FINDINGS

Subsurface Soil Conditions

The geologic units encountered at the site include:

- Artificial Fill (Af) – Artificial fill materials were encountered to depths ranging from approximately 4 to 5 feet below existing ground surface and is generally comprised of dark brown to clayey silts and sandy silts with scattered 1/2" sub-round gravels.
- Very Old Marine Deposits (Qvom) – Marine deposits were found to underlie these fill materials and generally consisted of light olive brown to yellowish brown fine to medium sands and clayey silts with scattered 1" sub-rounded gravels extending to depths of on the order of 50 feet. The regional geologic materials are shown on the attached Geologic Map, Figure 9.

Groundwater

Static groundwater level was not encountered to the maximum 50 feet depth as part of this due diligence investigation. Generally, groundwater / seepage conditions can be affected due to seasonal fluctuations in rainfall, irrigation, pumping, or other factors. Therefore, deviation from those conditions observed may occur.

Based on review of "Seismic Hazard Zone Report for the Anaheim and Newport Beach 7.5-Minute Quadrangles, Orange County, CA", historic groundwater levels are on the order of 30 feet below existing ground surface as shown on Figure 10.

Percolation

A review of the "Technical Guidance Document for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans (WQMP's)" indicates that the site is within a infiltration constraint to include hydrologic Soil Group D which are typically sandy clays, silty clays, or clays that have low infiltration rates. The location of the subject site and summary of infiltration constraints are shown on Figure 11, Site D Map. Our percolation testing and findings are in agreement with this site designation and constraint.

Expansive Soils

The upper portions of the site subgrade are comprised of Sandy Silts and Silty Clays with occasional sandy lens deposits. The laboratory testing indicates medium expansion potential as identified by California Building Code

Peat Deposits

A review of "Environmental Geology of Orange County, CA, Plate 5-A" indicates the subject site is not in an area identified as being within an area as underlain by potential peat deposits.

Based on our soil boring excavations, presence of peat materials were not encountered in any of the subsurface borings excavated on the site.

Sulfate Exposure

Based on the laboratory test results sulfate exposure for concrete is considered not applicable (negligible).

Faulting, Seismicity and ground rupture

Literature review, site mapping, and aerial photo analysis indicate that active faults do not appear to be present across the subject property. The site is not a part of the California Geologic Survey's Alquist-Priolo Earthquake Fault Zone Mapping program. The nearest mapped active fault is the Newport Inglewood Rose Canyon Fault Zone, which lies about 1½ miles to the southwest. (See Figures 12 and 13)

It is very unlikely the subject site will experience fault related surface rupture. However, strong ground motion as a result of activity within this and other nearby fault zones, represent the main seismic hazard, and may experience strong ground motion as the result of regional seismic activity during the project life.

Liquefaction Potential

The site is not identified as being in a liquefaction hazard zone on the Newport Beach Quadrangle (California State Department of Conservation, 2001), Figure 13. When considering the shallow clayey and silty material, SPT blow counts recorded during drilling operations and relatively deep groundwater, the potential for soil liquefaction at the subject site under a major seismic event is considered to be low.

GEOTECHNICAL AND GEOLOGIC CONCLUSIONS AND CONSIDERATIONS

Based on our preliminary findings, it is our opinion that the construction of the conceptual development is feasible from a geologic / geotechnical standpoint. The

major geotechnical factors that should be considered in the design and construction for the tentatively planned development on this site include the following:

- Demolition and removal of existing structures present on site, including attendant foundations and associated underground utilities, pavement, debris and vegetation material. These materials are to be removed offsite and not reused as fill materials.
- Presence of existing fill soils to depths on the order of four to five feet below existing site grades, which will require removal and replacement with approved engineered fill to provide relatively uniform and acceptable support for new construction.
- Earthwork grading will be constrained along the property edges. In particular the western property line currently contains a small existing retaining wall that transitions the lower offsite residential grade. Since off site grading is likely not feasible, rebuilding this retaining wall will likely include special considerations for the foundation support. Also, the north property line includes two buildings that currently exist along the property line. Therefore grading setbacks and constraints will not fully remediate the soils for fence or wall construction. Refer to Figure 3 for a summary of these areas.
- Groundwater was not encountered in the boring excavations to depths of 51 ½ feet. Therefore, trench excavations should not be susceptible to static groundwater levels and resultant caving or piping. However, soil seepage and wet zones should be anticipated.
- The site soils to be utilized for support of the structures and flatwork are considered moderately expansive. Consideration for potential medium soil expansion should be incorporated in the design and construction, as appropriate.

- Based on the laboratory test results sulfate exposure for concrete is considered not applicable (negligible). However, it has been our experience that post-construction factors such as the use of fertilizers in lawn / landscape areas, near surface soil wetting and drying cycles, and other changes with time can increase the concentrations of soluble sulfate and other derogatory salts and these conditions predispose them to being highly corrosive to both concrete and buried metals. Higher strength concrete with lower water / cement ratio will improve overall slab performance, durability, and water and corrosivity resistant.
- Based on the close proximity to the ocean and the clayey nature of the upper site soils, consideration for protection of metal material should be considered.
- Earthquakes have occurred in Southern California and will, undoubtedly, occur in the future, and high ground accelerations during seismic shaking may be experienced at the site. Therefore, the proposed structures should be designed and constructed to the prevailing standards and seismic design requirements, as appropriate.
- Liquefaction of site soils is not considered likely
- Peat deposits were not encountered and are not anticipated.
- Known / likely presence of fill materials across the site, and preclusion of percolation testing due to failure of the pre-soak water to infiltrate into the surrounding soils make this a poor candidate for infiltration type BMPs.

LIMITATIONS

This report has been prepared for the exclusive use of City Ventures and their design consultants relative to their due diligence assessment of the subject property. This report is not intended for other parties, and it may not contain sufficient information for other purposes.

The findings contained in this report are based upon our evaluation and interpretation of the information obtained from the boring and the results of the laboratory testing and

engineering analysis. The opinions and considerations provided were based on the assumption that the geotechnical conditions, which exist across the site, are similar to those observed in the test excavations. The conditions and characteristics of the sub-surface materials at locations and depth other than those excavated and observed may be different and no representations are made as to their quality and engineering properties.

The findings and considerations presented herein were developed in accordance with currently accepted professional engineering principles and practice in the field of geologic and geotechnical engineering, and reflect our best professional judgment. We make no other warranty, either express or implied.

We trust that the information contained in this report is adequate for your needs at this time. Should you have any questions or need additional information, please contact the undersigned.

Respectfully submitted,

SoilWorks, Inc.

By: _____
Daniel J. Morikawa, P.E., G.E.
RGE 2726, Reg. expires 09/30/14

By: _____
Steven E. Strickler, P.E., G.E.
RGE 2265, Reg. expires 3/31/14

Attachments: List of Selected References
Figure 1 – Site Vicinity Map
Figure 2 – Conceptual Site Plan
Figure 3 – Boring Location Map
Figure 4 – Log of Boring B-1
Figure 5 – Log of Boring B-1 cont.
Figure 6 – Log of Boring B-2
Figure 7 – Log of Boring B-2A
Figure 8 – Log of Boring B-3
Figure 9 – Geologic Map
Figure 10 – Historic High Ground Water Map
Figure 11 – Soil D Map
Figure 12 – Fault Activity Map
Figure 13 – Seismic Hazard Map

LIST OF SELECTED REFERENCES

California Division of Mines and Geology, Seismic Hazard Zone Report for the Anaheim and Newport Beach 7.5-Minute Quadrangles, Orange County, California, Seismic Hazard Zone Report 03, 1997

California Division of Mines and Geology, Seismic Hazard Zones Map, Newport Beach Quadrangle, California, photorevised 1981, scale1:24,000, 7.5-Minute Series, 1997

United States Geological Survey, Newport Beach Quadrangle, California-Orange Co., photorevised 1978, scale 1:24,000, 7.5-Minute Series (Topographic), USGS, 1965

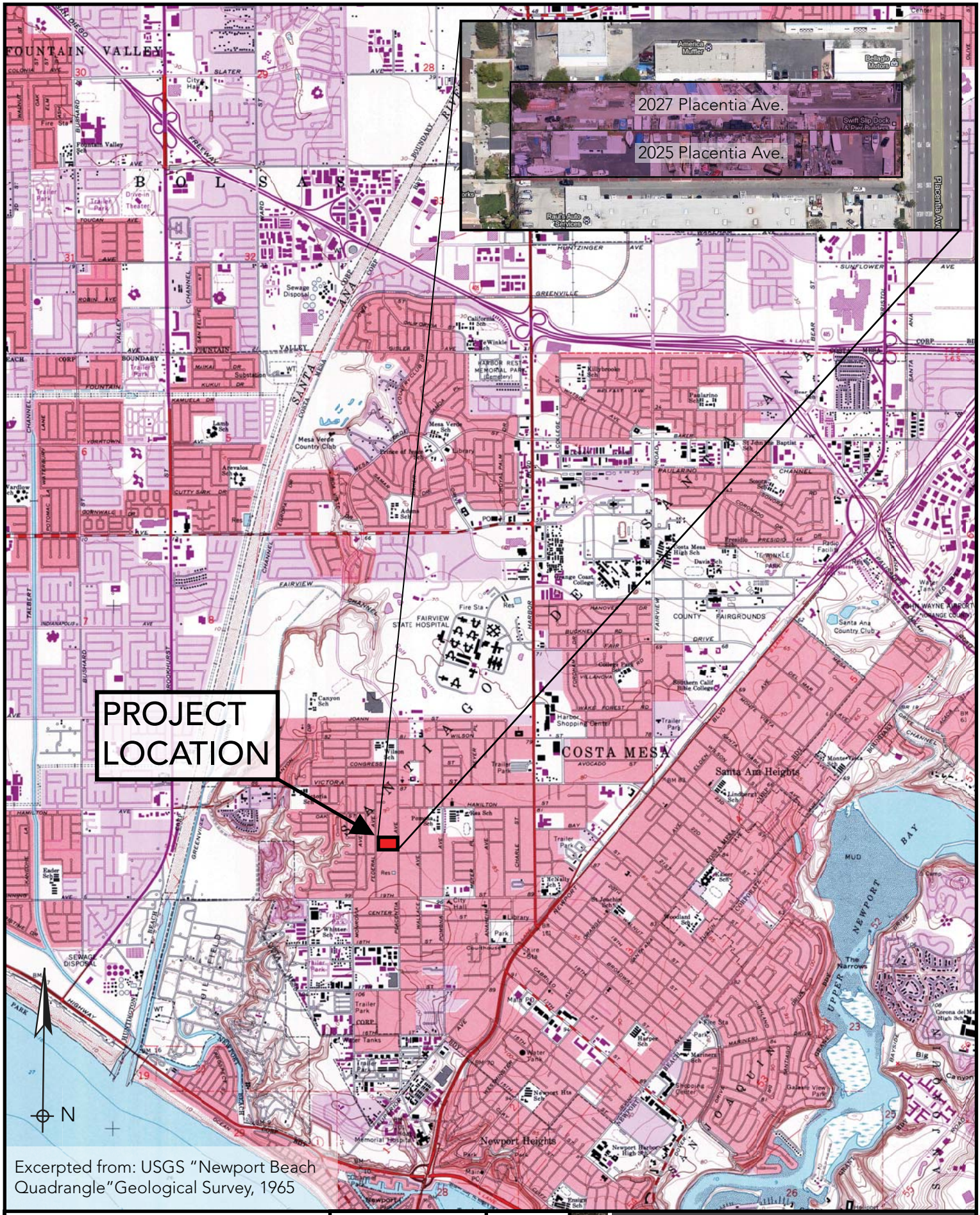
United States Geological Survey, Preliminary Digital Geologic Map of the Santa Ana 30' X 60' Quadrangle, Southern California, Version 1.0, Open-File Report 99-172, 1999

United States Geological Survey, Preliminary Digital Geologic Map of the Santa Ana 30' X 60' Quadrangle, Southern California, scale 1:100,000, Version 1.0, USGS, 1999

United States Geological Survey, Major Faults, Geologic Map of the San Bernardino and Santa Ana 30' X 60' Quadrangle, California, scale 1:100,000, Version 1.0, Open-File Report 2006-1217, USGS 2006

California Division of Mines and Geology, Environmental Geology of Orange County, CA, Plate 5-A, Open-File Report 79-8, 1976

California Environmental Protection Agency, Technical Guidance Document for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans (WQMP's), Exhibit 7.III, 2011



Site Vicinity Map	Job No. 281	April 2013
2025 & 2027 Placentia Ave.	Costa Mesa, CA	Fig. 1

SW

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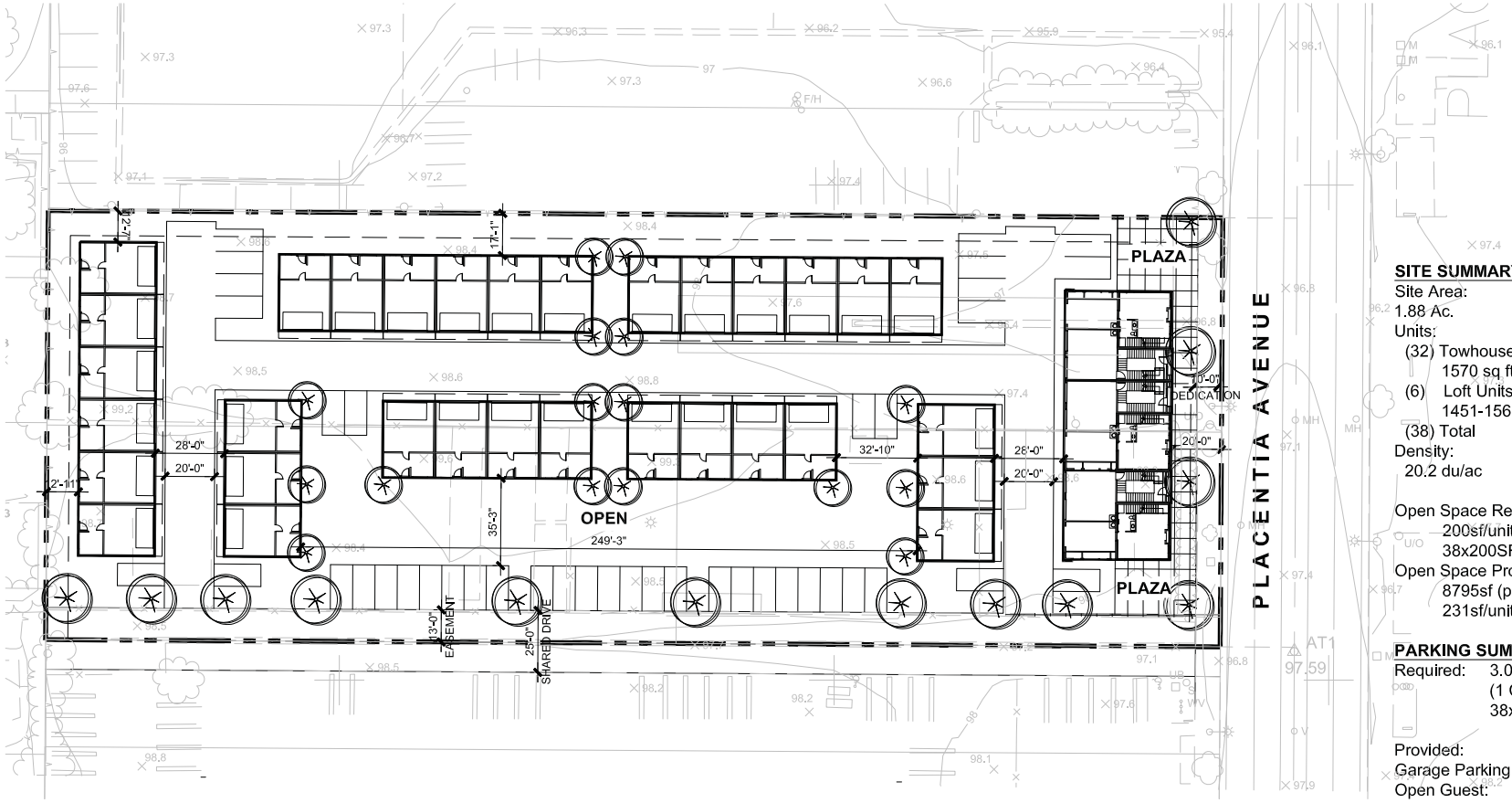

SITE SUMMARY

Site Area:
1.88 Ac.
Units:
(32) Towhouse Units
1570 sq ft (2bdr+flex/2.5ba)
(6) Loft Units
1451-1560sf (2bdr/2ba)
(38) Total
Density:
20.2 du/ac

Open Space Required :
200sf/unit
38x200SF = 7600sf/unit
Open Space Provided:
8795sf (primary courtyard only)
231sf/unit

PARKING SUMMARY

Required: 3.0 per unit
(1 Covered Spaces per unit)
38x3 = 114 Total Spaces

Provided:
Garage Parking: 73 Spaces
Open Guest: 41 Spaces

0 10 20 40

PLACENTIA & 20TH

CONCEPTUAL SITE PLAN - OPTION 3

A1.0

Costa Mesa, CA
KTGY # 2013-0211 04.10.2013

City Ventures

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1900 Quail Street
Newport Beach, Ca 92660
949.258.7555

KTGY Group, Inc.
Architecture+Planning
17922 Fitch
Irvine, CA 92614
949.851.2133
ktgy.com

Conceptual Site Plan	Job No. 281	April 2013
2025 & 2027 Placentia Ave.	Costa Mesa, CA	Fig. 2

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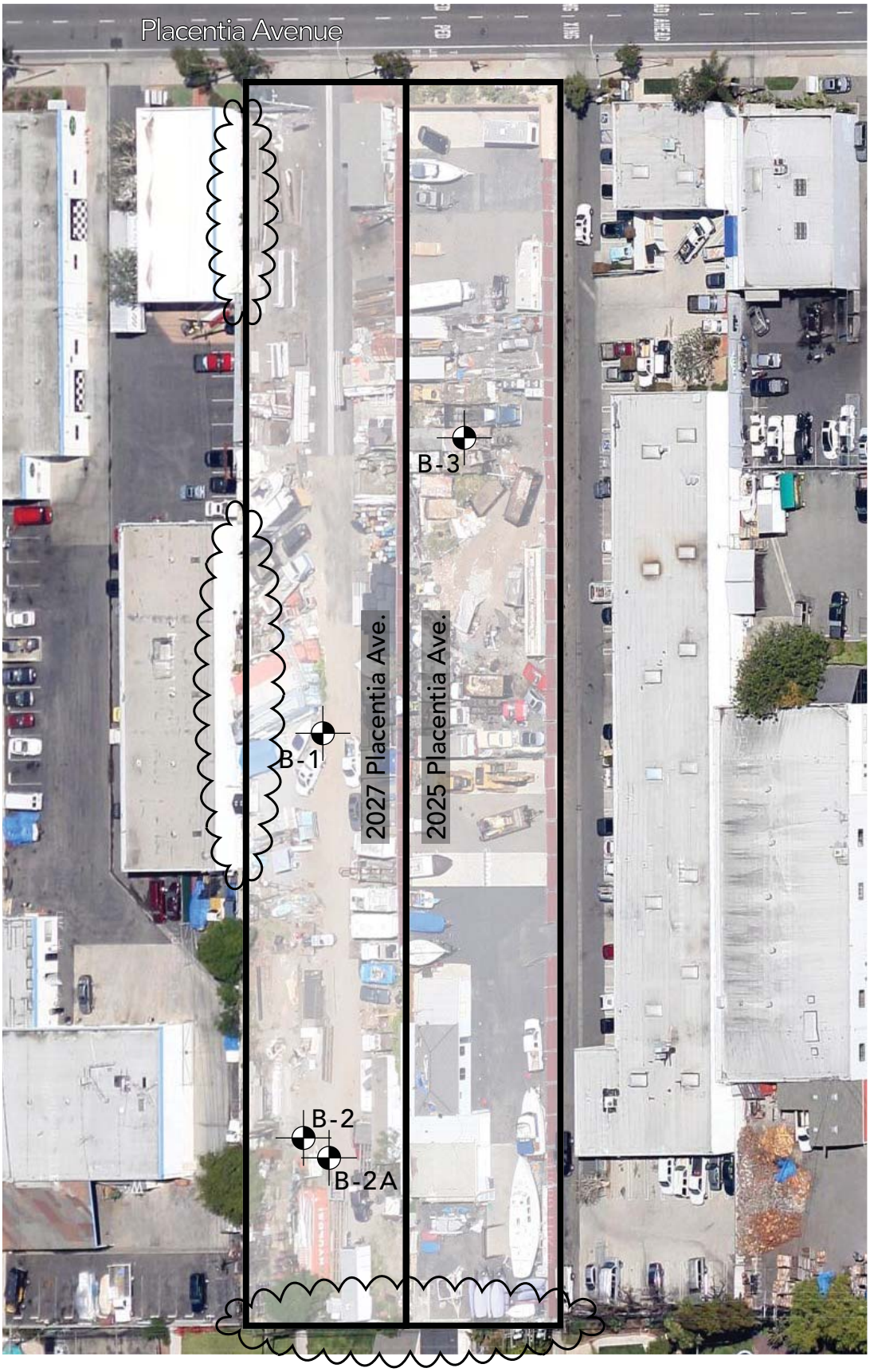

B-# BORING LOCATION IS ESTIMATED AND APPROXIMATED

SPECIAL FOUNDATION CONSIDERATIONS MAY BE REQUIRED FOR PERIMETER OR SCREEN WALLS DUE TO GRADING CONSTRAINTS

N

NOTE: THIS PLAN IS NOT TO SCALE AND IS INTENDED FOR ILLUSTRATIVE PURPOSES ONLY.

Boring Location Map	Job No. 281	April 2013	SW
2025 & 2027 Placentia Ave.	Costa Mesa, CA	Fig. 3	

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GEOTECHNICAL BORING LOG

PROJECT NO.	281-001-01	PROJECT NAME	City of Ventures-2025 & 2027 Placentia Ave		
DATE STARTED	3/20/13	GROUND ELEV.	98ft	BORING DESIG.	B-1
DATE FINISHED	3/20/13	GW DEPTH (FT)		LOGGED BY	ARS/DM
DRILLER	Martini's Drilling	DRIVE WT.	0-50ft, 140 lbs	NOTE	
TYPE OF DRILL RIG	Hollow Stem	DROP	30"		

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	98					@0' - **Artificial Fill (Af)**				
		SPT	26/10			@2.5' - SANDY SILT with a trace of CLAY, dark brown, scattered 1/2" diameter GRAVELS, dense, moist				
5	93	R	8/12			@5' - **Very Old Marine Deposits (Qvom)** Fine SANDY SILT, yellowish brown, scattered 1/4" diameter GRAVELS, medium dense, damp	8.3	121		
		SPT	6/7			@7.5' - SILTY CLAY with trace of fine SAND, yellowish brown, medium dense, damp to moist				
10	88	R	16/29			@10' - SANDY SILT, yellowish brown, zones of light olive brown SILTY CLAY, medium dense, moist	10.1	122		
		SPT	7/8			@12.5' - SILTY CLAY, light olive brown, yellowish red mottling, micaceous, dense, moist				
15	83	R	50			@15' - SILTY CLAY, light olive brown transitioned into fine SAND, yellowish brown, micaceous, very dense, moist	5.5	108		
		SPT	15/20			@17.5' - Fine SAND, light olive brown, dense, moist				
20	78	R	28/48			@20' - Fine SAND, light yellowish brown with yellowish red mottling, micaceous, very dense, moist	4.7	98		
		SPT	11/14			@22.5' - Fine to medium SAND, olive yellow, scattered 1" maximum GRAVELS, micaceous, dense, moist				
25	73	R	24/34			@25' - Fine to medium SAND, light olive brown, scattered 1-1/2" maximum GRAVELS, very dense, moist	4.5	110		
		SPT	12/22			@27.5' - Fine SAND, light yellowish brown, scattered 1" maximum GRAVELS, dense, moist				
30	68	R	37/55			@30' - Fine SAND, light yellowish brown, scattered 1" maximum GRAVELS, medium dense, moist	3.5	97		
		SPT	12/17			@32.5' - Fine SAND, light yellowish brown, scattered 1/2" maximum GRAVELS, medium dense, moist				
35	63	R	50			@35' - Fine to medium SAND, light olive brown and yellowish brown inclusion, 1" maximum GRAVELS, very dense, moist	5.8	111		
		SPT	31/50-4"			@37.5' - Fine to medium SAND, light yellowish brown transitioned into SILTY CLAY, olive yellow with yellowish red mottling, micaceous, very dense, moist				
	58									

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GEOTECHNICAL BORING LOG

PROJECT NO.	281-001-01	PROJECT NAME	City of Ventures-2025 & 2027 Placentia Ave		
DATE STARTED	3/20/13	GROUND ELEV.	98ft	BORING DESIG.	B-1
DATE FINISHED	3/20/13	GW DEPTH (FT)		LOGGED BY	ARS/DM
DRILLER	Martini's Drilling	DRIVE WT.	0-50ft, 140 lbs	NOTE	
TYPE OF DRILL RIG	Hollow Stem	DROP	30"		

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	58	R	50			@40' - Fine to medium SAND, light yellowish brown transitioned into fine SAND, light brownish gray, very dense, slightly moist	3.6	95		
		SPT	10/18			@42.5' - CLAYEY SILT with fine SAND, olive brown with yellowish calcareous inclusions, slightly micaceous, medium dense, moist				
45	53	R	50			@45' - Fine SAND, light olive brown with brownish yellow inclusions, slightly micaceous, very dense, moist	4.4	107		
		SPT	9/18			@47.5' - Fine SAND with CLAYEY SILT, olive brown with vary pale brown calcareous inclusions, dark red scattered blebs, medium dense, moist				
50	48	R	50			@50' - Fine SAND with a trace of SILTY CLAY, dark yellowish brown, slightly micaceous, olive yellow inclusions, dark red scattered blebs, very dense, moist	12.2	93		
55						Total Depth: 51'				
						No groundwater Backfilled with compacted cuttings on 3/20/2013				

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GEOTECHNICAL BORING LOG

PROJECT NO.	281-001-01	PROJECT NAME	City of Ventures-2025 & 2027 Placentia Ave		
DATE STARTED	3/20/13	GROUND ELEV.	98ft	BORING DESIG.	B-2
DATE FINISHED	3/20/13	GW DEPTH (FT)		LOGGED BY	ARS/DM
DRILLER	Martini's Drilling	DRIVE WT.	0-50ft, 140 lbs	NOTE	
TYPE OF DRILL RIG	Hollow Stem	DROP	30"		

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	98					@0' - **Artificial Fill (Af)**				
		SPT	8/6			@2.5' - CLAYEY SILT with fine SAND, dark brown with scattered 1/4" maximum GRAVELS, yellowish belbs, slightly micaceous, light olive brown inclusions, medium dense, moist				
						@4' - **Very Old Marine Deposits (Qvom)**				
5	93	R	12/12			@5' - CLAYEY SILT with a trace of fine SAND, dark brown, medium dense, moist	9.8	119		
		SPT	4/5			@ 7.5' - CLAYEY SILT with fine SAND, dark brown, micaceous, very pale brown scattered blebs, with zones of yellowish brown, medium dense, moist				
10	88	R	11/16			@10' - CLAYEY SILT with fine SAND, yellowish brown, micaceous, dark brown blebs, medium dense, moist	13.3	107		
						Total Depth: 11'				
						No groundwater Percolation test was initiated at 10:30am				
15										

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GEOTECHNICAL BORING LOG

PROJECT NO.	281-001-01	PROJECT NAME	City of Ventures-2025 & 2027 Placentia Ave		
DATE STARTED	3/20/13	GROUND ELEV.	98ft	BORING DESIG.	B-2A
DATE FINISHED	3/20/13	GW DEPTH (FT)		LOGGED BY	ARS/DM
DRILLER	Martini's Drilling	DRIVE WT.		NOTE	
TYPE OF DRILL RIG	Hollow Stem	DROP			

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	98					@0' - **Artificial Fill (Af)**				
						@2.5' - CLAYEY SILT with fine SAND, dark brown with scattered 1/4" maximum GRAVELS, yellowish belbs, slightly micaceous, light olive brown inclusions, medium dense, moist				
						@4' - **Very Old Marine Deposits (Qvom)**				
5	93					@5' - CLAYEY SILT with a trace of fine SAND, dark brown, medium dense, moist				
						Total Depth: 5'				
						No groundwater Percolation test was initiated at 10:40am				
10	88									

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GEOTECHNICAL BORING LOG

PROJECT NO.	281-001-01	PROJECT NAME	City of Ventures-2025 & 2027 Placentia Ave		
DATE STARTED	3/20/13	GROUND ELEV.	98	BORING DESIG.	B-3
DATE FINISHED	3/20/13	GW DEPTH (FT)		LOGGED BY	ARS/DM
DRILLER	Martini's Drilling	DRIVE WT.	0-50ft, 140 lbs	NOTE	
TYPE OF DRILL RIG	Hollow Stem	DROP	30"		

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	ATTITUDES	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	OTHER TESTS
	98					@ 0' - **Artificial Fill (Af)**				
		R	5/8			@2.5' - CLAYEY SILT with fine SAND, dark brown, scattered black blebs, medium dense, moist	14.4	116		
						@4' - **Very Old Marine Deposits (Qvom)**				
5	93	SPT	5/12			@5' - CLAYEY SILT with fine SAND, dark brown with inclusions of brownish yellow, very pale brown blebs, medium dense, moist				
		R	10/13			@7.5' - Fine SAND with a trace of SILT, dark yellowish brown, micaceous, medium dense, moist	7.4	109		
10	88	SPT	6/9			@10' - Fine SAND with a trace of SILTY CLAY, dark brown transitioned into CLAYEY SILT with fine SAND, olive brown with black veins and light yellowish brown inclusions, medium dense, moist				
						Total Depth: 11'6"				
						No groundwater Percolation test was initiated at 12:30am				
15										

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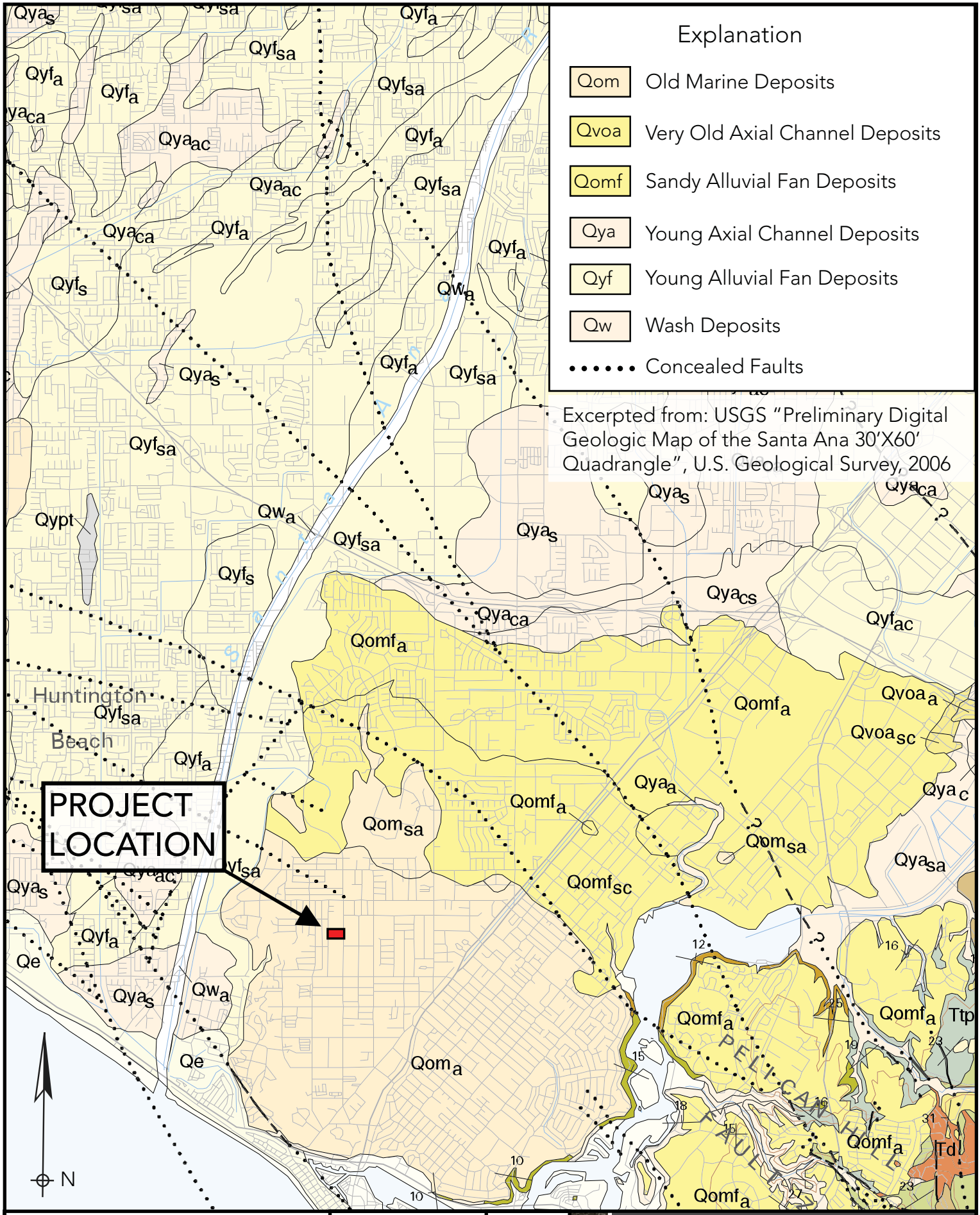

Geologic Map	Job No. 281	April 2013	SW
2025 & 2027 Placentia Ave.	Costa Mesa, CA	Fig. 9	

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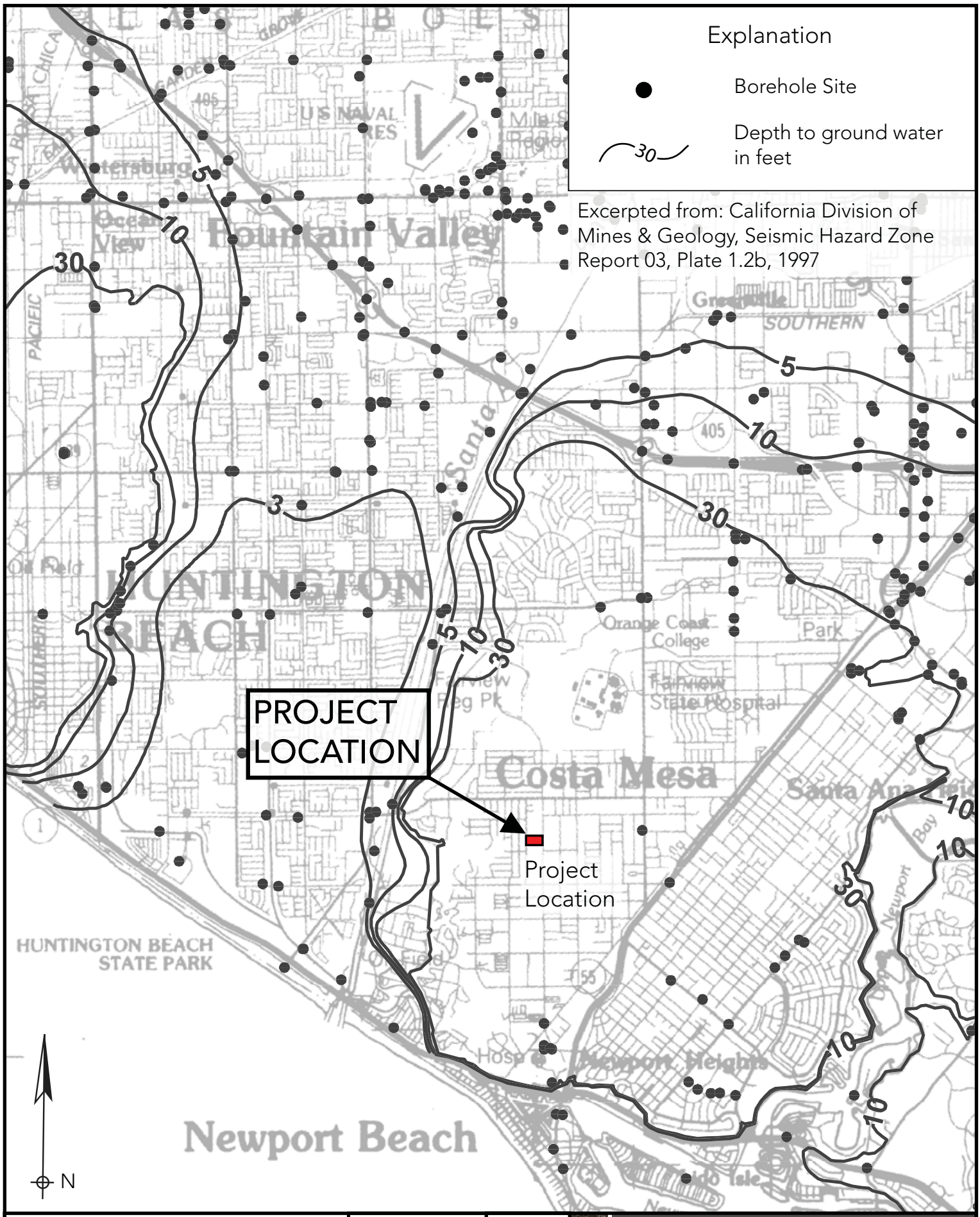

Historically High Ground Water Contour Map	Job No. 281	April 2013	SoilWorks Earth Sciences Group
2025 & 2027 Placentia Ave.	Costa Mesa, CA	Fig. 10	SW

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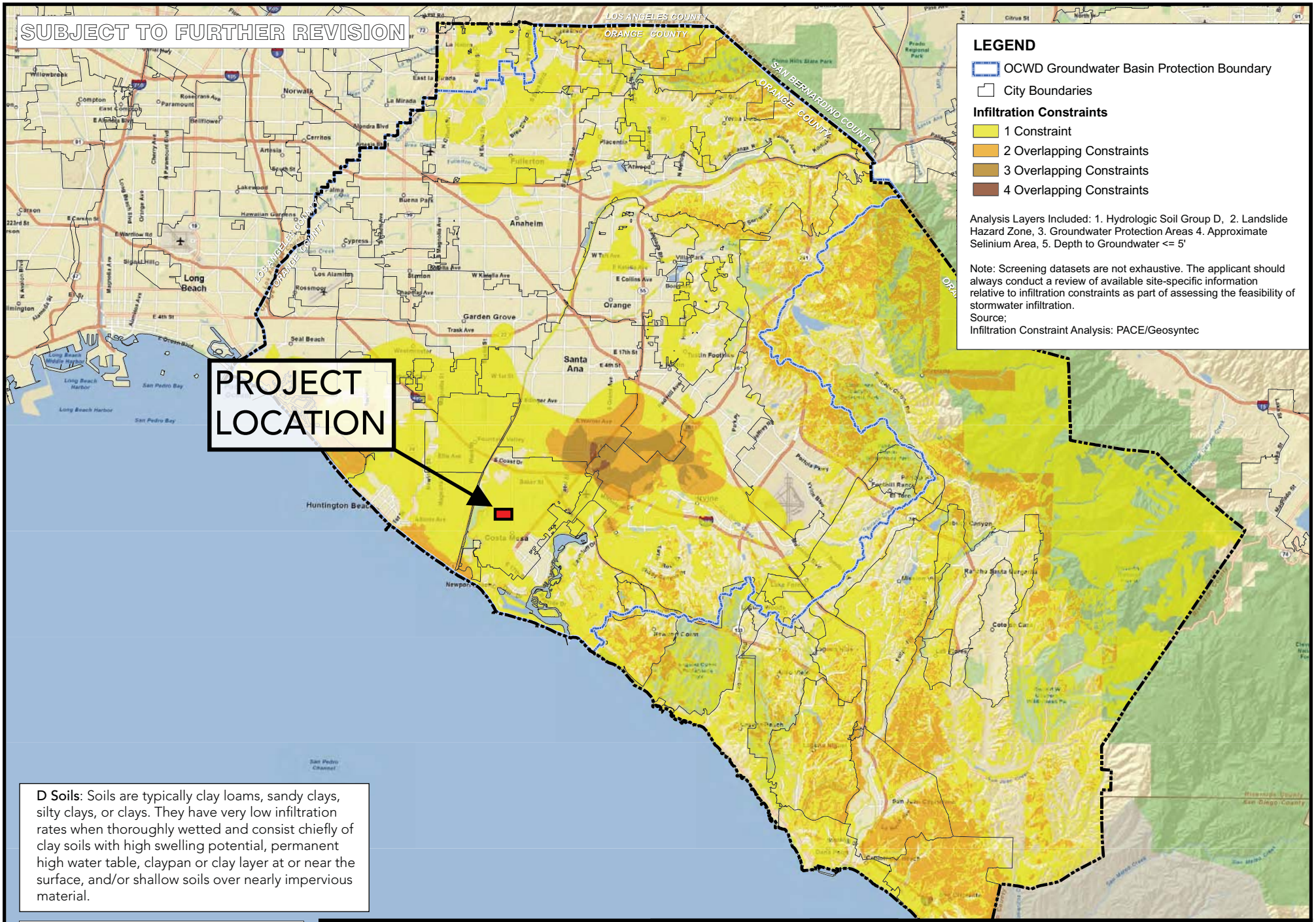

D Soils: Soils are typically clay loams, sandy clays, silty clays, or clays. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with high swelling potential, permanent high water table, claypan or clay layer at or near the surface, and/or shallow soils over nearly impervious material.

Hydrologic D Soil Map	Job No. 281	April 2013
2025 & 2027 Placentia Ave.	Costa Mesa, CA	Fig. 11

SW

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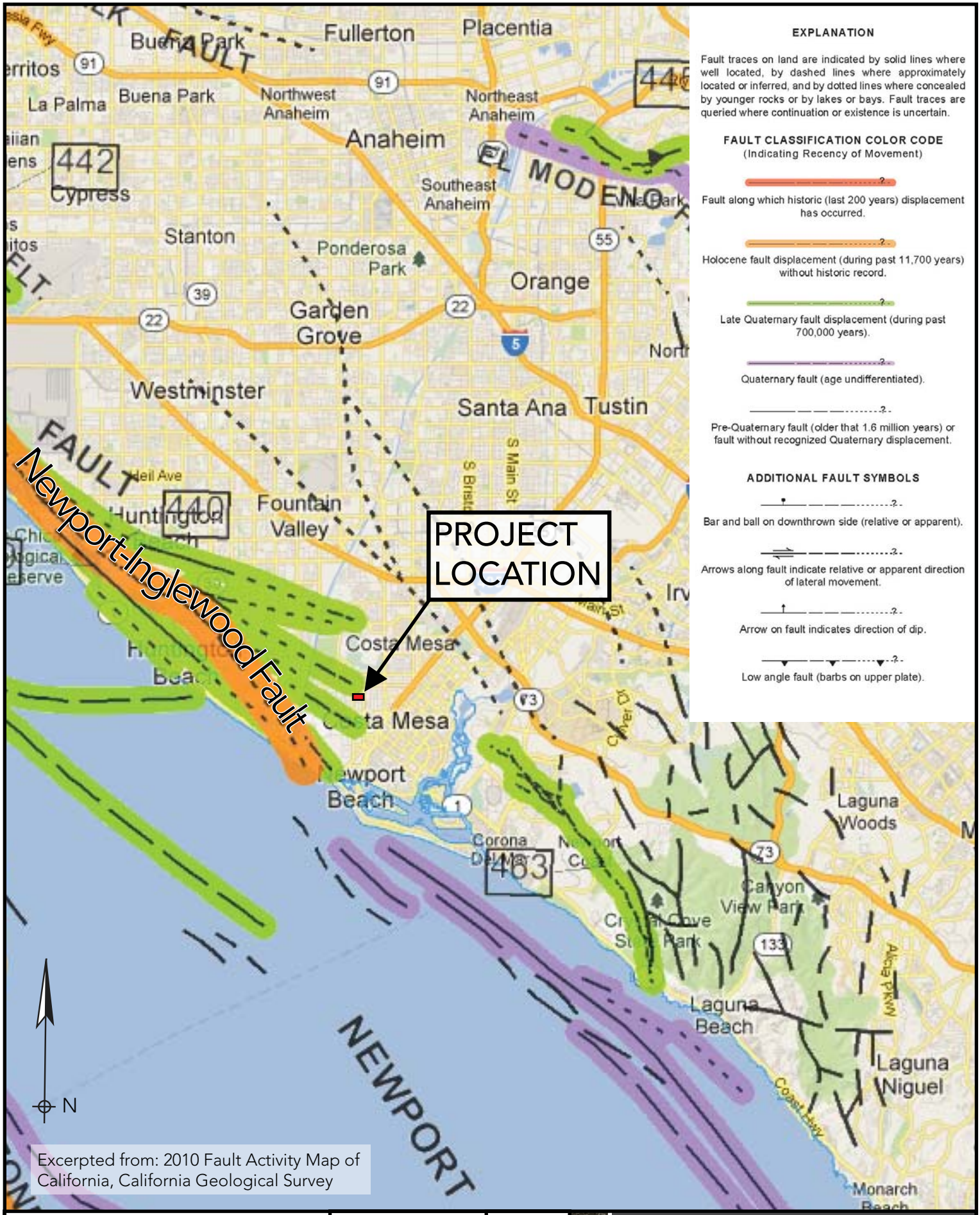

Fault Activity Map	Job No. 281	April 2013	SoilWorks Earth Sciences Group
2025 & 2027 Placentia Ave.	Costa Mesa, CA	Fig. 12	SW

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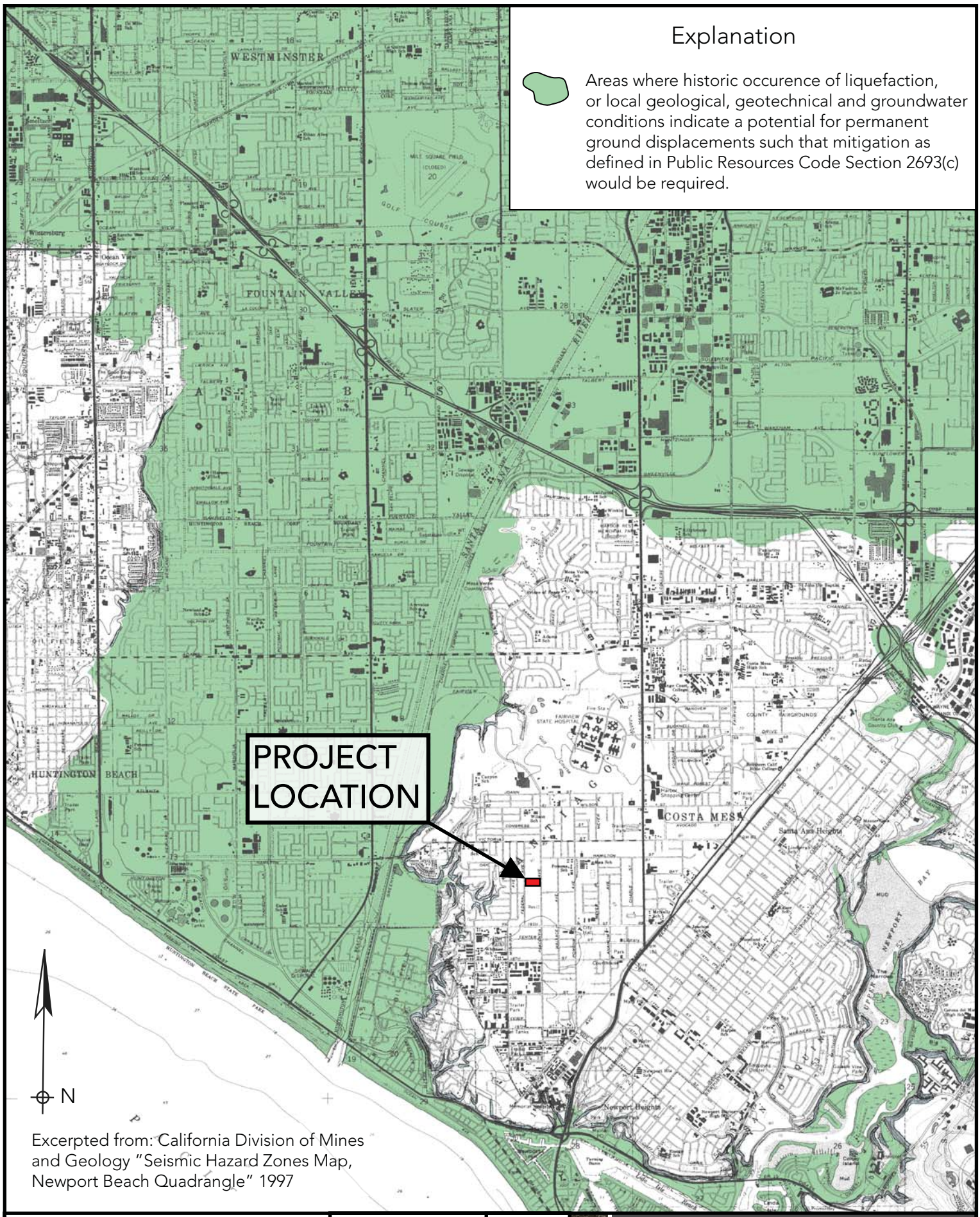

Excerpted from: California Division of Mines and Geology "Seismic Hazard Zones Map, Newport Beach Quadrangle" 1997

Seismic Hazard Map	Job No. 281	April 2013
2025 & 2027 Placentia Ave.	Costa Mesa, CA	Fig. 13

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