



GeoConcepts, Inc.
Geology • Geotechnical Engineering

14428 Hamlin St., #200
Van Nuys, CA 91401
Office (818) 994-8895
Fax (818) 994-8599
www.GeoConceptsInc.com

December 6, 2010

Project 1680

Whole Foods
c/o Goldman Firth Rossi Architects
24955 Pacific Coast Highway
Malibu, California 90265

Subject: **SUPPLEMENTAL REPORT No. 4**
23401 Civic Center Way,
Malibu, California

References:

- 1) Geotechnical Review Sheet by Fugro West, Inc. for the City of Malibu, dated October 19, 2010.
- 2) Report of Geotechnical Investigation by Van Beveren & Butelo, Inc. covering the subject site and dated August 7, 2007.
- 3) Supplemental Report No. 1 by GeoConcepts, Inc. covering the subject site and dated March 30, 2010 (revised April 22, 2010).
- 4) Supplemental Report No. 2 by GeoConcepts, Inc. covering the subject site and dated September 27, 2010 (revised October 5, 2010) and November 5, 2010

Dear Gentlemen,

Pursuant to your request, presented herein is a response to Reference 1. A copy of the review letter is attached. Items contained in the review letter are responded to below. To facilitate the review, the following responses are provided per the review letter:

Review Comments:

Item #1: Regionally, the Malibu Coast Fault consists of high-angle north dipping fault. Within the study area, the fault juxtaposes two different geologic regimes. It has been estimated that the fault has accommodated as much as 1.5 miles of north-side up vertical displacement and up to 9 miles of left lateral horizontal slip, (Dibblee).

Previous seismic trenching performed on the site is depicted on the attached geologic map. On site seismic trenching is extremely limited by the very shallow depth to groundwater and the very young sediment above the groundwater. However, it is believed that adequate seismic trenching covers the proposed development for the following reasons; According to the report by the California Division of Mine and Geology Fault Evaluation Report FER-229 dated October 3, 1994 of the Malibu Coast Fault, "There is no known evidence of Holocene displacement on the main trace of the Malibu Coast fault."

One of the major purposes of a Leighton and Associates, Inc. report dated March 18, 1994 covering the Malibu Civic Center area was to investigate potential impacts of earthquakes, such as, but not limited to fault rupture and ground shaking. According to their report covering the Malibu Civic Center area, "No evidence of active faulting was found." Specifically, to the subject site and adjacent sites, numerous subsurface explorations were performed to provide the above conclusion by Leighton and Associates, Inc.

Leighton and Associates, Inc. subsurface investigation included backhoe trenching, borings and two lines of regularly spaced Cone Penetrometer (CPT) soundings totaling 60 locations, (see Plates 1 and 2). The subsurface exploration classified the sediments as Modern floodplain deposit from Malibu Creek to be generally less than 10 feet in thickness. Estuarine deposits with higher clay content and some organic were deposited beginning approximate between 2,000 and 15,000 years ago. It was interpreted by GeoSoils and Leighton and Associates, Inc. that gravels were deposited during the last low sea level between 15,000 and 20,000 years ago. According to the continues core Borings 1 and 2 logs, alluvial sediments were encountered to depths of 43.5 and 30 feet, logs attached. It was reported that water wells drilled in the vicinity of Malibu Creek indicate a minimum alluvial type of sediments thickness of 105 feet.

It was reported that GeoSoils (1989) obtained radiocarbon dates from charcoal fragments during exploration on the Knapp-Marlin property within Boring 9. Specifically, samples were collected from depths of 19-19.5 and 25-26.5 feet and yield ages of approximately 6,500 - 130 and 7,850 - 100 years before present, respectively.

The Cone Penetrometer soundings provide a continuous electronic signature of the subsurface sediments. Correlation between the CPTs provided the basis for the subsurface characterization. One of these units of characterization was the gravels as noted above. The CPT soundings indicate that the Civic Center gravel unit is about 15,000 to 20,000 years old and **were not displaced** by the mapped main trace of the Malibu Coast fault.

On August 16, 2007, the fault zone near the east side of Malibu Bluff Park was removed from the State of California Earthquake Fault Zone map by the California Geologic Survey. Clearly, the State of California and private consultants agree that no evidence of active faulting on the Malibu Coast fault within the Malibu Civic area is known. Because these very extensive investigations on the Malibu Coast Fault concluded that the Malibu Coast is inactive in the Malibu Civic Area, adequate seismic trenching covers the proposed development on the subject site.

Item #2: Acknowledged.

Building Plan Check Stage Review Comments:

Item #1-5: Acknowledged.

Should you have any questions regarding this report, please do not hesitate to contact the undersigned at your convenience.

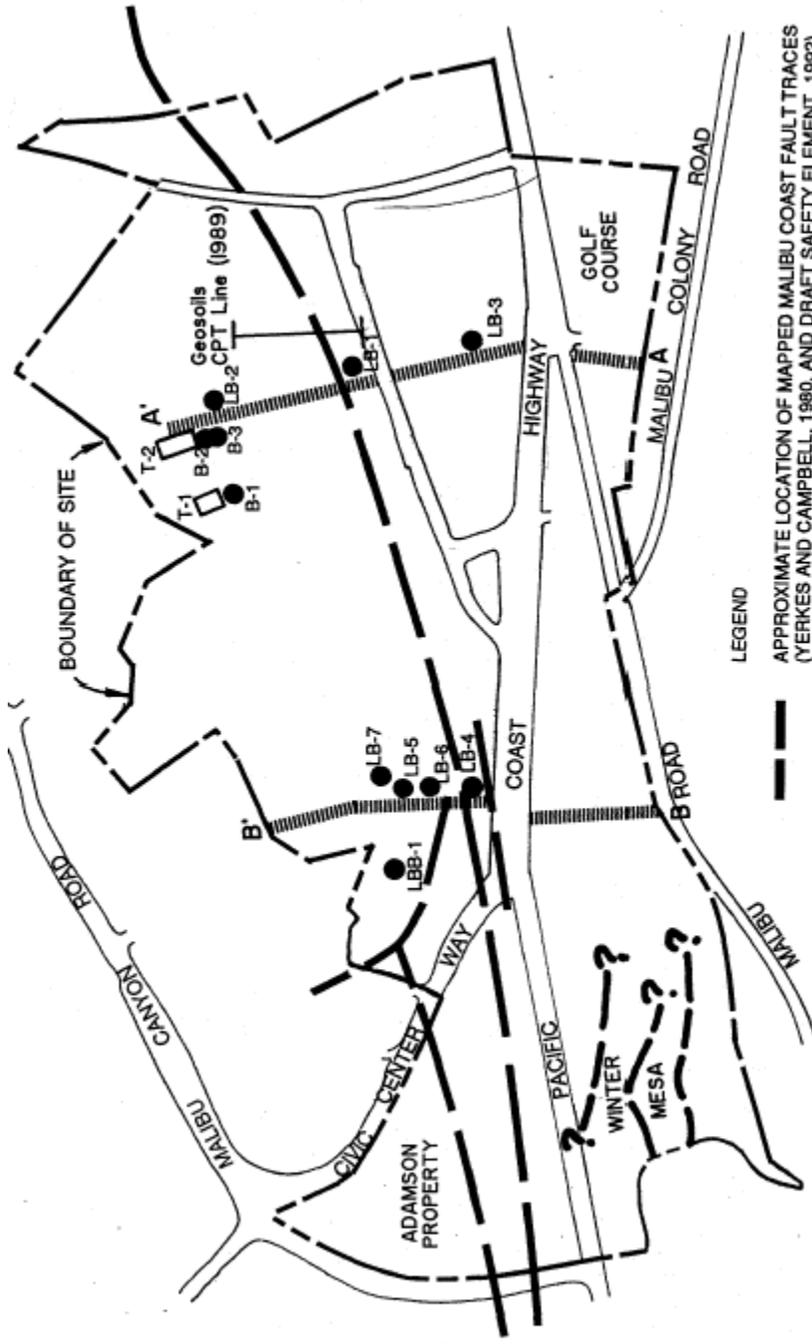
Respectfully submitted,
GeoConcepts, Inc.

Scott J. Walter
GE 2476
Exp: 9/30/12
RLS/SJW/RMH: 1680-10

Robert L. Sousa
CEG 1315
Exp: 5/31/11

Enclosures: Plot Maps, Plates 1 and 2
Boirng Logs 1-2
Review Letter by the City of Malibu
Geologic Map and Cross secitons

Distribution: (4) Addressee
(2) City of Malibu



- LEGEND**
- APPROXIMATE LOCATION OF MAPPED MALIBU COAST FAULT TRACES (YERKES AND CAMPBELL, 1980, AND DRAFT SAFETY ELEMENT, 1992)
 - B ||||| B' CONE PENETROMETER LINE (SEE TEXT)
 - T-2 □ APPROXIMATE LOCATION OF EXPLORATORY FAULT TRENCH (THIS STUDY)
 - LB-1 ● APPROXIMATE LOCATION OF EXPLORATORY BORING (THIS STUDY)

**EXPLORATION LOCATION PLAN
 MALIBU CIVIC CENTER AREA
 MALIBU VILLAGE CIVIC ASSOCIATION
 MALIBU, CALIFORNIA**

Project No.	2920647-01
Scale	NOT TO SCALE
Eng./Geol.	GEM/EMG
Drafted by	hnl_jah
Date	3/18/94

Figure No. 6

Plate 2

GEOTECHNICAL BORING LOG LB-1

Date 9-21-92 Sheet 1 of 2
 Project Kosmont/Malibu Project No. 2920647-01
 Drilling Co. A & R Drilling, Inc. Type of Rig CME 75
 Hole Diameter 8" Drive Weight _____ Drop _____
 Elevation Top of Hole +/- Location _____

Elevation Feet	Depth Feet	Graphic Log	Relative Compaction	Tube Sample No.	Blows Per Foot	Dry Density pct	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
									Logged By <u>DB/CY</u> Sampled By <u>CY</u>
	0								0'-2': SILTY SAND, very fine grained, light brown, slightly moist, loose to medium dense.
	2								2'-4': SANDY SILT, very fine grained sand, non-plastic, dark brown, slightly moist, medium dense
	5			1			20.9	CL	4'-6.5': SILTY CLAY, slightly plastic, dark brown, slightly moist, medium firm
	6.5								6.5'-10': CLAYEY SAND, fine grained, slightly plastic, brown, moist, medium dense
	10			2			27.7	CL	10'-11': SANDY SILT, fine grained, non-plastic, brown, very moist, firm
	11								11'-14': SILTY CLAY, some caliche, medium plastic, dark brown, very moist, firm
	15			3				SC	14'-17': CLAYEY SAND, with gravel, gravel sizes to 1-1/2 inch, fine to medium grained, brown, very moist, medium dense
	17								17'-19': SILTY CLAY, medium plastic, gray, very moist, very firm
	20			4				ML	19'-20': SANDY SILT, fine grained, slightly plastic, gray, very moist, stiff
	20								20'-23': SILTY SAND TO SAND, fine to coarse grained, gray, wet, medium dense to dense
	25			5			33.6	ML	23'-25': SANDY SILT, slightly plastic, gray, very wet, stiff
	25								25'-26': SAND, fine to coarse grained, gray and brown, wet, medium dense
	26								26'-27': SANDY SILT, fine grained, non-plastic, gray, wet, stiff
	27			6			29.3	SM	27'-30': SILTY SAND, fine grained, slightly micaceous, gray, wet, dense

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LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG LB-1

Date 9-21-92 Sheet 2 of 2of
 Project Kosmont/Malibu Project No. 2920647-01
 Drilling Co. A & R Drilling, Inc. Type of Rig CME 75
 Hole Diameter 8" Drive Weight _____ Drop _____
 Elevation Top of Hole +/- Location _____

Elevation Feet	Depth Feet	Graphic Log	Relative Compaction	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	Sampled By
									DB/CY	
									CY	
30										30'-33': SAND, fine to coarse grained, gray, wet, dense.
				7				SM		33'-34': SANDY SILT, fine grained, non-plastic, gray, wet, stiff 34'-37': SILTY SAND, fine to medium grained, gray, wet, dense.
35										37'-40': SANDY SILT, slightly micaceous, slightly plastic, gray, wet, stiff
				8				SP		40'-42.5': SAND, fine to coarse grained, grayish brown, wet, dense.
40										42.5'-43': SANDY SILT, fine grained, non-plastic, gray, wet, stiff 43'-43.5': SILTY SAND, with gravel, gravel sizes to 2 inch, fine grained, some coarse grained, gray, wet, dense.
				9			27.0	SM		
45										Total Depth = 43.5 feet. Refusal at 43.5 feet. Ground Water at 13 feet. Backfilled 9/21/92.
50										
55										
60										

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LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG LB-2

Date 9-21-92 Sheet 1 of 2
 Project Kosmont/Malibu Project No. 2920647-01
 Drilling Co. A & R Drilling, Inc. Type of Rig CME 75
 Hole Diameter 8" Drive Weight _____ Drop _____
 Elevation Top of Hole +/- Location _____

Elevation Feet	Depth Feet	Graphic Log	Relative Compaction	Tube Sample No.	Blows Per Foot	Dry Density Pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
									Logged By <u>CY</u> Sampled By <u>CY</u>
0				BAG-1				CL	0'-5': SILTY CLAY, slightly plastic, dark brown, slightly moist, moderately firm
	1							CL	
5								CL	5'-7': SANDY SILT, fine grained, slightly plastic, dark brown, slightly moist, moderately firm.
									7'-8': SILTY SAND, fine grained, dark brown, slightly moist, medium dense
				2				SP/SM	8'-9.5': SAND, cemented, fine to medium grained, yellow brown to brown, moist, medium dense
10									9.5'-11': SILTY SAND, fine grained, trace of gravel, brown, moist, medium dense.
									11'-13': CLAYEY SILT, slightly plastic, medium brown, moist, firm
									13'-17': SILTY CLAY, medium plastic, dark brown, moist, firm
15				3			26.8	CL	
									17'-18': SANDY SILT, fine grained, slightly plastic, gray, moist, very firm
									18'-19': CLAYEY SAND, fine grained, slightly plastic, gray, moist, medium dense
				4				CL	19'-20': SILTY CLAY, medium plastic, gray, wet, firm.
20									20'-23.5': CLAYEY SILT, slightly micaceous, medium plastic, gray, wet, stiff
									23.5'-24.5': SILTY SAND, fine grained, gray, wet, medium dense
25				5			22.8	SM	24.5'-28': SAND, fine to medium grained, brown, wet, dense
									28'-29': SILTY SAND, fine grained, grayish brown, wet, dense
									29'-30': SAND, fine to medium grained, brown, wet, dense
30				6			24.3	SM	

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LEIGHTON & ASSOCIATES



City of Malibu

23815 Stuart Ranch Road • Malibu, California 90265-4861
(310) 456-2489 • Fax (310) 456-7650 • www.ci.malibu.ca.us

PLANNING REVIEW

GEOTECHNICAL REVIEW SHEET

<u>Project Information</u>		Review Log #:	3142
Date:	November 24, 2010	Planning #:	CDP 10-022
Site Address:	23401 Civic Center Way	BPC/GPC #:	
Lot/Tract/PM #:	n/a	Planner:	Bonnie Blue
Applicant/Contact:	Marny Randall, marnyrandall@verizon.net		
Contact Phone #:	310-395-2615 Fax #: 310-395-2368		
Project Type:	Whole Foods Shopping Center		

<u>Submittal Information</u>	
Consultant(s) / Report Date(s):	GeoConcepts, Inc. (Walter, RGE 2476 ; Sousa, CEG 1315): 11-5-10, 9-27-10 (revised 10-5-10), 3-30-10 (revised 4-22-10)
(Current submittal(s) in <i>Bold.</i>)	Precise Grading Plan prepared by P.C.C.E. Inc., dated September 20, 2010, three sheets. Whole Foods in the Park plans prepared by Goldman Firth Rossi Architects, dated September 20, 2010. Landscape and Irrigation plans prepared by Valley Crest dated September 20, 2010. Ref: Van Beveren & Butelo, Inc.: 1-13-09, 8-7-07 Ref: GeoConcepts, Inc.: 3-27-03, 8-5-99, 6-21-99 Ref: Petra: 9-7-05 (PPC 99-003)
Previous Reviews:	10-19-10, 5-27-10, Geotechnical Review Referral Sheet dated 5-11-10; Ref: 5-19-09, 9-22-08, Geology Review Referral Sheet dated 10-11-07; Ref: Hydrogeologic Review Sheet dated 3-2-06 (PPC 99-003), 4-29-03, 9-2-99, 7-22-99 (PPC 99-004)

<u>Review Findings</u>	
<u>Coastal Development Permit Review</u>	
<input type="checkbox"/>	APPROVED from a geotechnical perspective.
<input checked="" type="checkbox"/>	NOT APPROVED from a geotechnical perspective. The listed 'Review Comments' shall be addressed prior to approval.
<u>Building Plan-Check Stage Review</u>	
<input checked="" type="checkbox"/>	Awaiting Building plan check submittal. Please respond to the listed 'Building Plan-Check Stage Review Comments' AND review and incorporate the attached 'Geotechnical Notes for Building Plan Check' into the plans.
<input type="checkbox"/>	APPROVED from a geotechnical perspective. Please review the attached 'Geotechnical Notes for Building Plan Check' and incorporate into Building Plan-Check submittals.
<input type="checkbox"/>	NOT APPROVED from a geotechnical perspective. The listed 'Building Plan-Check Stage Review Comments' shall be addressed prior to Building Plan-Check Stage approval.

Guidelines for geotechnical reports (dated February 2002) are available on the City of Malibu web site:
<http://www.ci.malibu.ca.us/index.cfm?fuseaction=nav&navid=30>
 Fugro Project #: 3399.001

Remarks

The geotechnical response report was reviewed by the City from a geotechnical perspective. The project comprises a new 38,425 square foot commercial development consisting of a 24,549 square foot Whole Foods Market building and four retail and food buildings totaling 13,876 square feet, parking lots, landscaping, decking, walls, and trellises.

Grading includes 7,612 yards of R & R; 4,429 yards of fill under structure (raising the elevations of the proposed development); 70 yards of cut and 5,321 yards of fill remedial; and 9,680 yards of import materials.

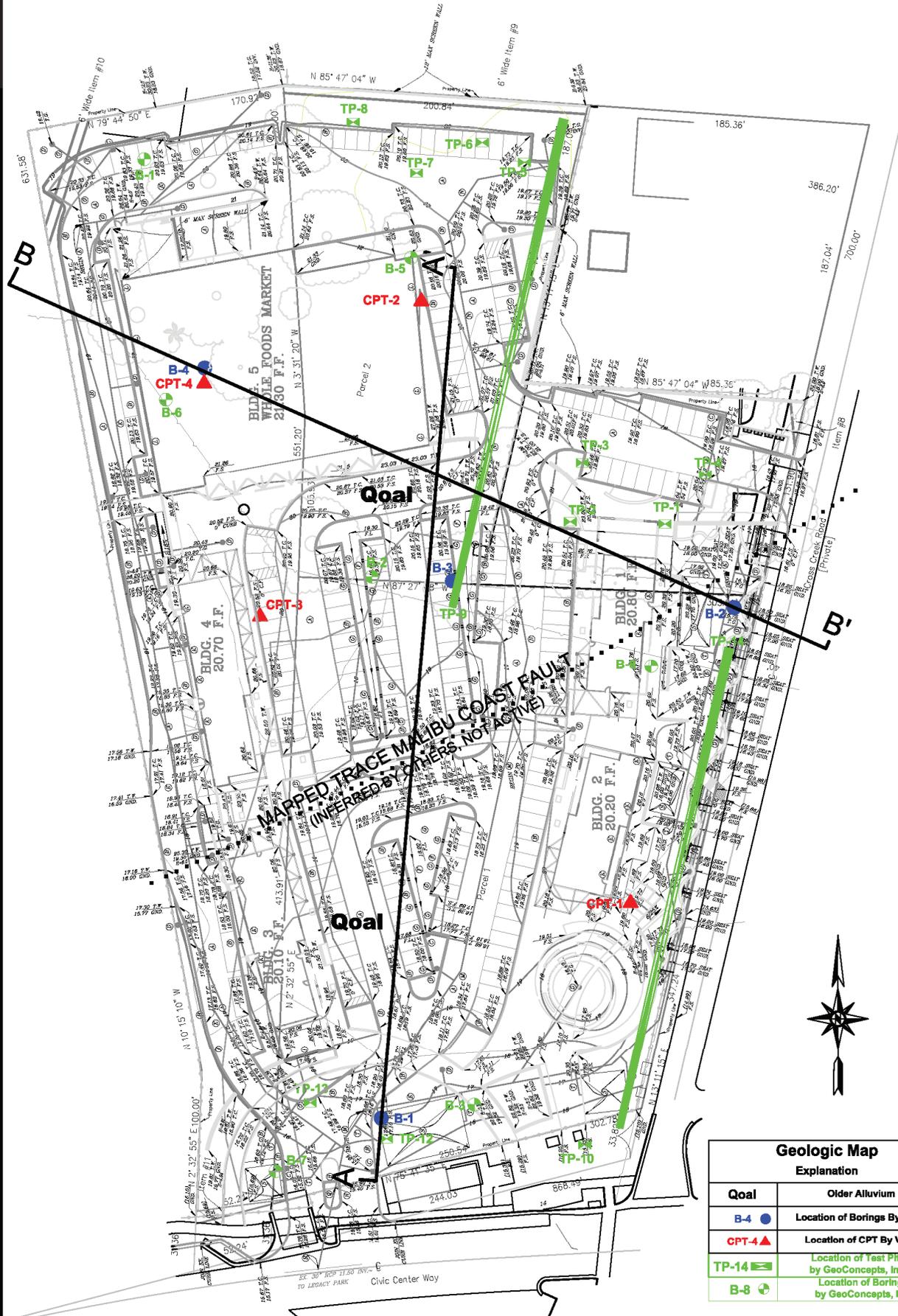
Based on a meeting with the applicant on February 8, 2010, the proposed development will be connected to the City's wastewater treatment plant. No onsite disposal of effluent is proposed with this development.

Review Comments:

1. The undersigned engineering geologic reviewer acknowledges that seismic trenching may not provide enough data to accurately determine the fault rupture potential across the site given the shallow groundwater levels and the relatively young ages of the near-surface stratigraphic units. However, discussions regarding continuity and age of lithologic units under the site, based on the boring data and pertinent reports on adjacent properties, have not been provided. When trenching is not practical, other methods of investigating fault rupture potential shall be utilized. Please evaluate the continuity of lithologic units across the site and the ages of these sediments. CPT data from the site and adjacent properties may be utilized in the evaluation. What additional evidence supports the Project Geotechnical Consultant's conclusion that, "...no known active fault is anticipated to daylight beneath the limits of the proposed structure."?
2. The Consultant provided a response to Comment 2 of the previous review letter regarding the water balance calculation between rainfall, irrigation, and evapotranspiration on the property to demonstrate that groundwater levels under the site or adjacent properties will not be adversely affected. The Geotechnical Consultant needs to wait until the EPD Consultants report is approved to see if any additional geotechnical response is needed.

Building/Grading Plan-Check Stage Review Comments:

1. Please provide an electronic copy of the referenced report by Van Beveren & Butelo, Inc. dated 1-13-09 for the City's files.
2. A letter should be provided by the Project Structural Engineer indicating that: 1) they are aware of the anticipated displacements due to liquefaction related hazards, as determined by the Project Geotechnical Engineer; 2) that they acknowledge the geotechnical recommendations made by the Project Geotechnical Engineer for mitigation of potential seismic and liquefaction hazards; and 3) given the potential displacements, the proposed foundation design is adequate to provide support within the seismic tolerances required by the CBC (e.g., safeguard against major structural failures and loss of life).
3. The following note must appear on the grading and foundation plans: "*Shear testing shall be performed on the compacted fill materials to confirm the recommended bearing pressures and lateral resistances.*"
4. Please depict limits and depths of over-excavation and structural fill to be placed on the grading plan, and cross sectional view of the proposed building area. Cut and fill yardages are to be indicated on the cover sheet of the plans.
5. Two sets of grading, retaining wall, and commercial development plans (**APPROVED BY BUILDING AND SAFETY**) incorporating the Project Geotechnical Consultant's recommendations and items in this review sheet must be reviewed and wet stamped and manually signed by the Project Engineering Geologist and Project Geotechnical Engineer. City geotechnical staff will review the plans for



Geologic Map	
Explanation	
Goal	Older Alluvium
B-4 ●	Location of Borings by VB&B
CPT-4 ▲	Location of CPT By VB&B
TP-14	Location of Test Pits by GeoConcepts, Inc.
B-8 ●	Location of Borings by GeoConcepts, Inc.

Date: November, 2010
 Scale: 1" = 60'
 Job No. 1680-9

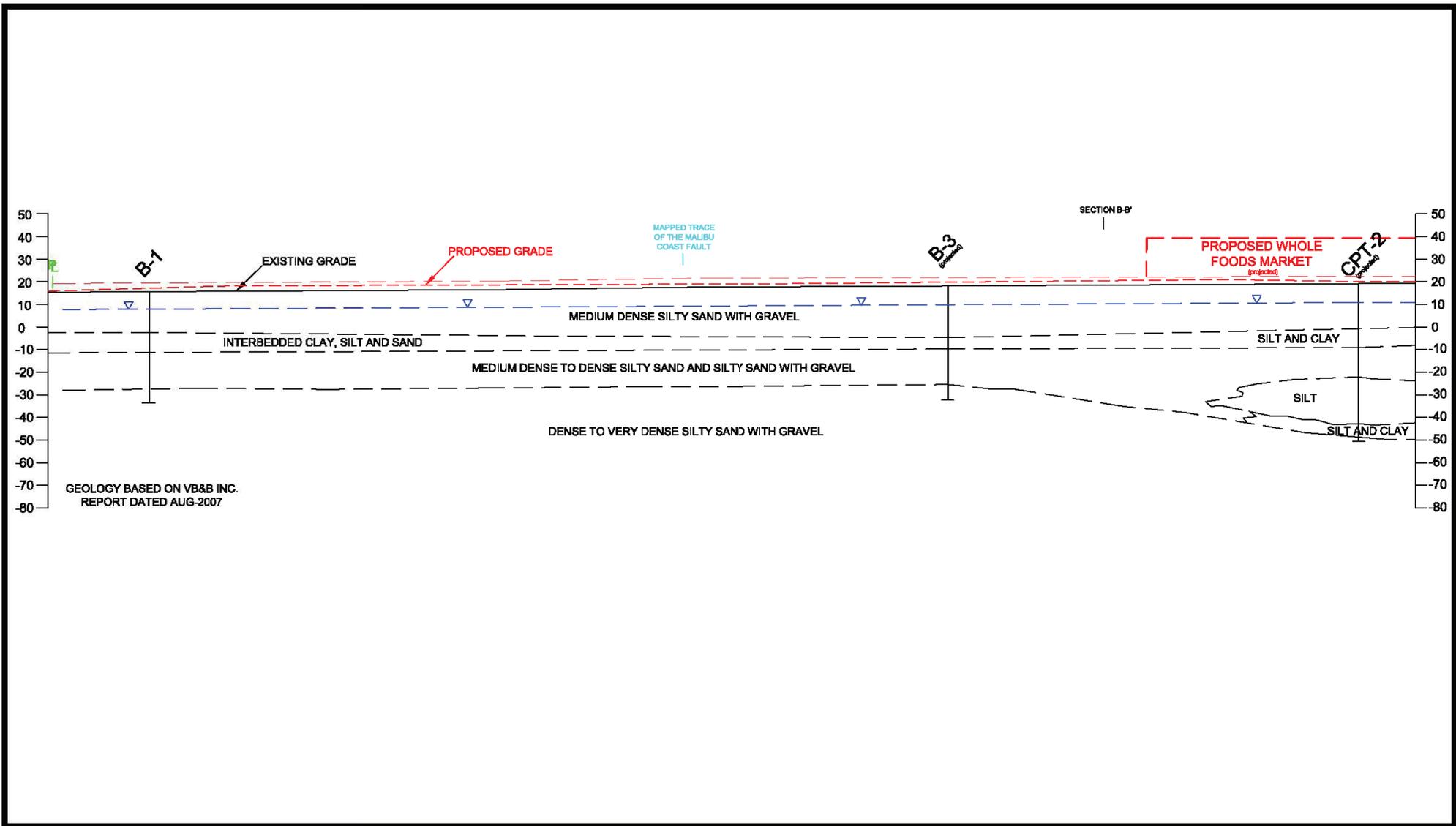
Project Address:
 23401 Civic Center Way
 Malibu, CA

Description:
 Geologic Map
 Issued For:
 Whole Foods

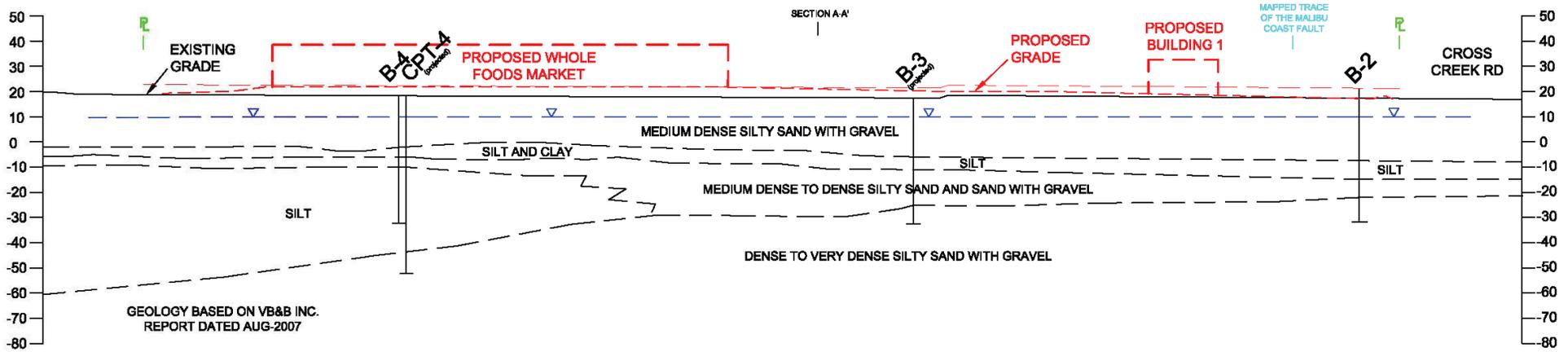
GeoConcepts, Inc.
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Issued By:  GeoConcepts, Inc. <i>Geology & Geotechnical Engineering</i> 14428 Hamlin Street, Suite 200 Office (818) 994-8895 Van Nuys, CA 91401 Fax (818) 994-8599 www.GeoConceptsinc.com	Description: SECTION A-A'	Project Address: 23401 Civic Center Way Malibu, CA	Date: Nov. 2010
	Issued For: Whole Foods		Scale: 1" = 40'
			Job No. 1680-9



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Geology & Geotechnical Engineering

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Description:

SECTION B-B'

Issued For:

Whole Foods

Project Address:

**23401 Civic Center Way
 Malibu, CA**

Date:

Nov. 2010

Scale:

1" = 40'

Job No.

1680-9