

HERZOG
GEOTECHNICAL
CONSULTING ENGINEERS

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JUN 12 2018

COUNTY OF MARIN
COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

May 1, 2018
Project Number 2147-02-15

Mr. Dan Weissman
455 Panoramic Highway
Mill Valley, California 94941

RE: Report Update
Preliminary Geotechnical Investigation
455 Panoramic Highway (AP# 46-161-11 & 46-221-07)
Mill Valley, California

Dear Mr. Weissman:

This presents our update of the *Preliminary Geotechnical Investigation* report in connection with the proposed residential development at 455 Panoramic Highway in Mill Valley, California. We previously performed a preliminary geotechnical investigation for a proposed thirteen lot residential development at the site, and summarized the results in our report dated November 3, 2015. The project has since been revised to three parcels, which the existing residence on one of the parcels. The project is shown on the *Tentative Map* by Malott Architects dated January 15, 2018. Our work is being provided in accordance with the terms and conditions outlined in our professional services agreement dated October 2, 2015.

GEOTECHNICAL REPORT UPDATE

We conclude that the preliminary conclusions and recommendations presented in our November 3, 2015 report are applicable to the proposed project with the following modifications:

Exploration Plan/Geologic Map

An updated *Exploration Plan/Geologic Map* for the project is attached.

Seismic Design Criteria

The following updated seismic design criteria were developed in accordance with the *California Building Code* (2016) and *ASCE 7-10* (July 2013 errata):

FILE

Site Class	C
Site Coefficient F_a	1.0
Site Coefficient F_v	1.3
0.2 sec Spectral Acceleration S_s	1.65
1.0 sec Spectral Acceleration S_1	0.76
0.2 sec Max Spectral Response S_{Ms}	1.65
1.0 sec Max Spectral Response S_{M1}	0.99
0.2 sec Design Spectral Response S_{Ds}	1.10
1.0 sec Design Spectral Response S_{D1}	0.66
Design Category	E

Driveway Fill Banks

Proposed fill banks steeper than 2:1 (horizontal:vertical) should be reinforced with geogrid to mitigate sloughing and instability. For planning purposes, reinforcing should be assumed to be required every 1 vertical foot and to consist of Tensar BX1200 biaxial geogrid, or an approved equivalent. The geogrid reinforcement should extend at least 4-1/2 feet back from the face of the bank. The first lift of primary geogrid reinforcement should be located 1 foot above the base of the fill. Fills should be placed on benches excavated into bedrock located below a 1:1 plane projected up from the base of existing cut banks. Overexcavation and fill placement should be performed in accordance with the recommendations presented in our November 3, 2015 report, and geogrid installation should conform to the manufacturer's specifications. The actual geogrid layout and specifications should be verified during construction based on strength testing of the proposed fill material.

SUPPLEMENTAL SERVICES

Prior to design of improvements at the site, Herzog Geotechnical should perform a design-level geotechnical investigation with additional subsurface exploration to evaluate subsurface conditions and to develop appropriate geotechnical recommendations for design and construction. In addition, we should be retained to review the project plans and specifications to evaluate if they are consistent with our recommendations, and to provide observation and testing during geotechnical-related construction. We cannot comment on the adequacy of items we are not notified to observe and test.

LIMITATIONS

Our services consist of professional opinions and conclusions developed in accordance with generally-accepted geotechnical engineering principles and practices. We provide no other

warranty, either expressed or implied. Our conclusions and recommendations are based on the information provided us regarding the proposed construction, the results of our field exploration and laboratory testing programs, and professional judgment. Verification of our conclusions and recommendations is subject to our review of the project plans and specifications, and our observation of construction.

Our work was limited to the proposed improvements, and did not address the existing residence. Our work did not include an environmental assessment or an investigation of the presence or absence of hazardous, toxic or corrosive materials in the soil, surface water, ground water or air, on or below, or around the site, nor did it include an evaluation or investigation of the presence or absence of wetlands. Our work also did not include an evaluation of any potential mold hazard at the site.

We appreciate the opportunity to be of service to you. If you have any questions, please call us at (415) 388-8355.





Sincerely,
HERZOG GEOTECHNICAL

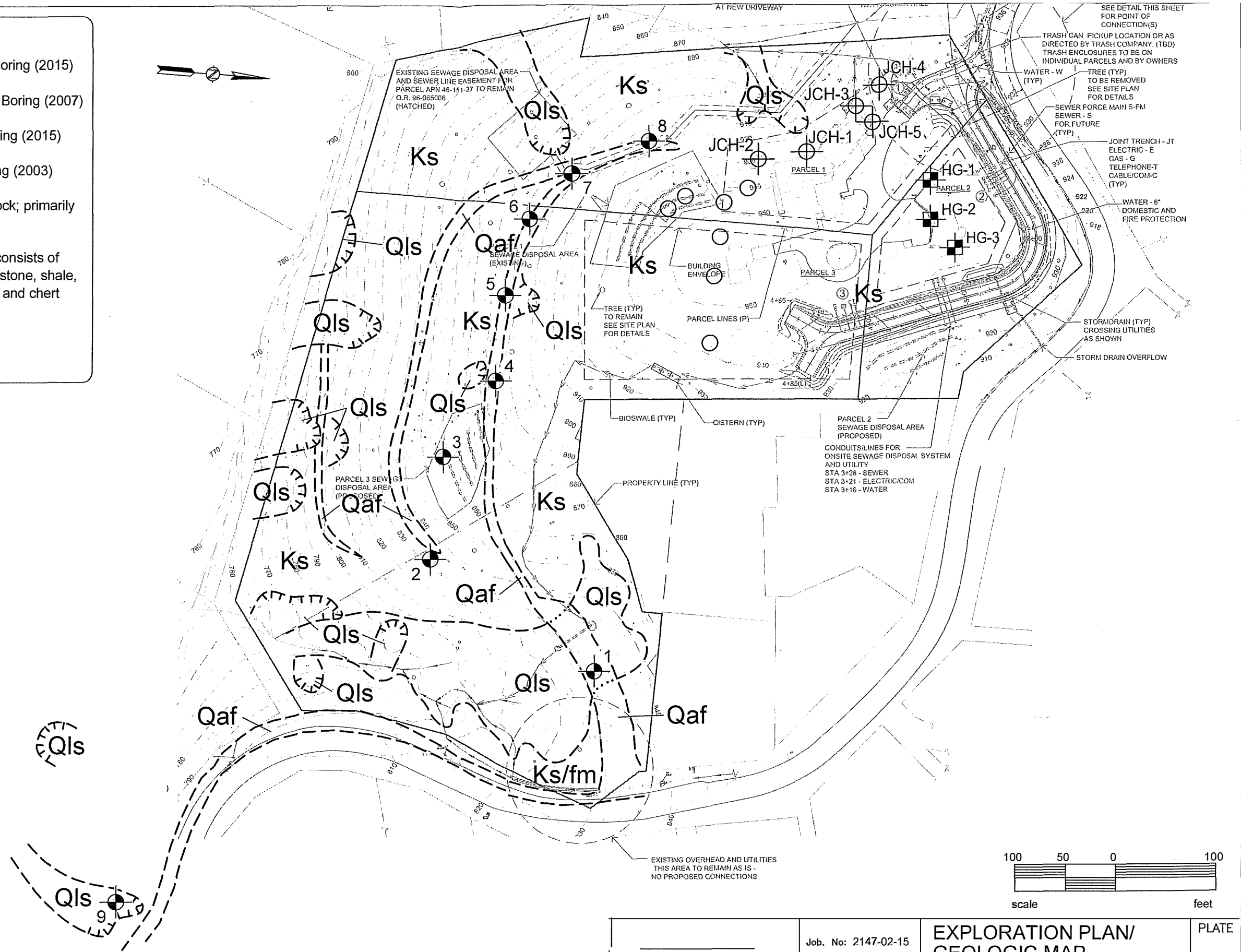
Craig Herzog, G.E. #2383
Principal Engineer



Attachments: *Exploration Plan/Geologic Map* (Plate 1)


LEGEND

-  Recent Herzog Geotechnical Boring (2015)
-  HG-1 Previous Herzog Geotechnical Boring (2007)
-  JCH-1 John C. Hom & Associates Boring (2015)
-  Salem Howes Associates Boring (2003)
- Ks** Cretaceous Sedimentary Bedrock; primarily sandstone and shale
- fm** Franciscan Melange; typically consists of heterogeneous mixture of sandstone, shale, metavolcanic rock, serpentinite and chert
- Qls** Landslide Deposits
- Qaf** Artificial Fill



Reference: Utility Plan by Ziegler Civil Engineering, dated 1/15/18.

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Job. No: 2147-02-15
 Appr: 
 Drwn: LPDD
 Date: OCT 2015

**EXPLORATION PLAN/
 GEOLOGIC MAP**
 455 Panoramic Highway
 Mill Valley, California

PLATE
1