April 20, 2022
CSA Project No: SMC6280A

TO: Sherry Liu
Geotechnical Section
San Mateo County Building and Planning Department
San Mateo, California 94403

SUBJECT: **Supplemental Engineering Geologic Peer Review**
RE: Mukaeda; New Residence on a Vacant Lot
PLN2020-00070
APN 037-221-020
"0" Cypress Avenue

At your request, we have completed a supplemental engineering geologic peer review of the subject planning permit application using:

- Third Response to Comments (letter) prepared by Sigma Prime Geosciences, Inc., (SPG) dated April 18, 2022.

In addition, we reviewed pertinent technical maps and reports from our office files.

DISCUSSION

We understand the applicant proposes to construct a new two-story main residence at the currently vacant property. The site is located in a State designated Alquist Priolo/ Earthquake Fault Rupture Hazard Zone associated with the active Seal Cove/San Gregorio Fault. In our previous engineering geologic peer review letter dated April 14, 2022, we noted that it appeared that referenced trenches were mislocated on Figure 6 of the report submitted by the Project Geologist (SPG). In addition, we noted that the locations of the faults found in previous trenching, as located by the Project Geologist, indicated a potential that an active trace of the Seal Cove Fault crossed the subject property at the location where a fault trace was logged by SPG. Consequently, we found that we were unable to accept the findings of the Project Geologist and noted that habitable structure setbacks on the order of 50 feet are the standard of practice from active traces as defined by the State. We also noted that the trenching referenced north of the site described a zone of active faulting 22 meters wide and recommended the applicant's

Consultant consider the likelihood that encountered faulting at the subject property brackets the edge of this fault zone. We refer to our prior letter for a description of the site conditions and prior geologic evaluations.

CONCLUSIONS AND RECOMMENDED ACTION

We concur with the Project Geologist that the original plotted location of the trench north of their site (Simpson, 1997) was incorrect. However, we find that the revised location provided by the applicant's Consultant lacks appropriate justification and is also likely mislocated. Typically, the appropriate trench logs, reports and details regarding how they were located for analysis are included in the materials provided for our peer review. Specifically, trench logs and reports for unpublished investigations south of the site should be provided. These materials should be provided in all future submittals as appendices to the subject report and response letters if they are to be relied on for extrapolations regarding locations of active faulting.

We also find that active faulting described in the trench north of the site has not been adequately considered in the supplemental analysis and discussion provided by the Project Geologist. Specifically, the approximately 0.5-foot to 1.5-foot-wide trace oriented N34W at station F34.5 of the Simpson (1997) trench which we understand was also encountered in an additional trench north of the Simpson study per Figure 3 of the 1997 report.

Consequently, we find that conclusions and analysis provided for our peer review are incomplete and we recommend the Project Geologist consider the likelihood that the fault trace logged on the western side of the subject property represents a through-going active fault zone associated with the Seal Cove Fault.

To further aide in the evaluation of surface fault rupture at the subject site we performed a limited analysis intended to better locate the Simpson 1997 trench for review by the Project Geologist (SPG). Utilizing the publicly available LiDAR data set "2016 USGS West Coast El-Nino LiDAR DEM" as a base map, we identified distinct topographic features (mounds) that appear on both the 2016 LiDAR and on Figure 3 of the Simpson report (see Figure 1). We plotted contour intervals (0.656 feet minor and 3.28 feet major) to match those included on Figure 3 of the Simpson report, which provides measurements and scales in meters and uses a 1-meter major contour interval and a 0.2-meter minor contour interval. To confirm whether our georeferencing of the 1997 trench location was reasonable we plotted a topographic profile utilizing the 2016 LiDAR data in relation to the trench log profile (see Figure 2). We note that based on our georeferencing of Figure 3 of the Simpson 1997 report we believe that north is slightly misoriented as published. We also include a straight line extending south from the trench and fault trace location identified in the Simpson report, and oriented N34W as measured in the Simpson report.

We continue to find that the fault trace identified by the Project Geologist at the subject property may represent a potential serious hazard to the proposed site development. We also find it unlikely for compelling evidence to be provided that will allow Cotton, Shires, and Associates to accept a finding that the fault trace identified at the subject property is not associated with significant through-going active fault rupture hazards. This is based on the repeated uncertainties in plotting trench locations, along with the observable continuity of identified active fault traces by multiple investigators north and south of the site. We refer to our prior letter for a description of standard of practice setbacks from active faults.

LIMITATIONS

This supplemental engineering geologic peer review has been performed to provide technical advice to assist the County with its discretionary permit decisions. Our services have been limited to review of the documents previously identified, and a visual review of the property. Our opinions and conclusions are made in accordance with generally accepted principles and practices of the geotechnical profession. This warranty is in lieu of all other warranties, either expressed or implied.

Respectfully submitted,

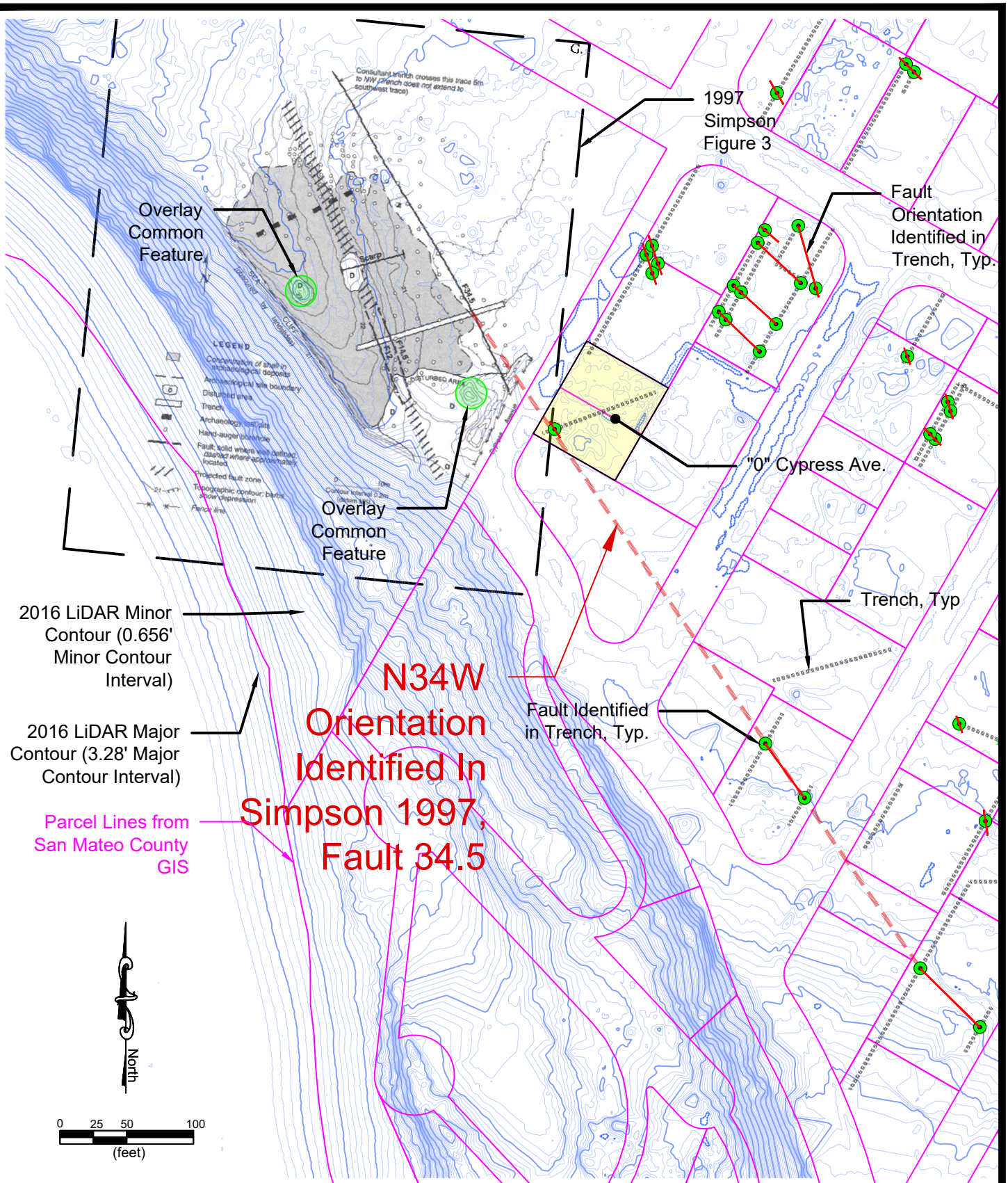
COTTON, SHIRES AND ASSOCIATES, INC.
COUNTY GEOLOGIC CONSULTANT

Craig Stewart
Senior Geologist
PG 9786

Andrew T. Mead
Principal Engineering Geologist
CEG 2560

CS:AM:DTS

Attached: Figure 1 "1997 Simpson Map/2016 LiDAR Overlay"
Figure 2 "2016 LiDAR Profile/1997 Simpson Overlay"



NOTE: With the exception of the Simpson 1997 overlay all fault trench locations, identified faults, and identified fault orientations from Sigma Prime 2000 "Figure 6" and have not been verified.

COTTON, SHIRES AND ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

1997 SIMPSON MAP/2016 LIDAR OVERLAY
"0" Cypress Avenue
SAN MATEO COUNTY, CALIFORNIA

GEO/ENG BY	SCALE	PROJECT NO.
CS/AM	1"=100'	SMC6280
APPROVED BY	DATE	FIGURE NO.
DTS	April 2022	1

Georeferenced Location Profile

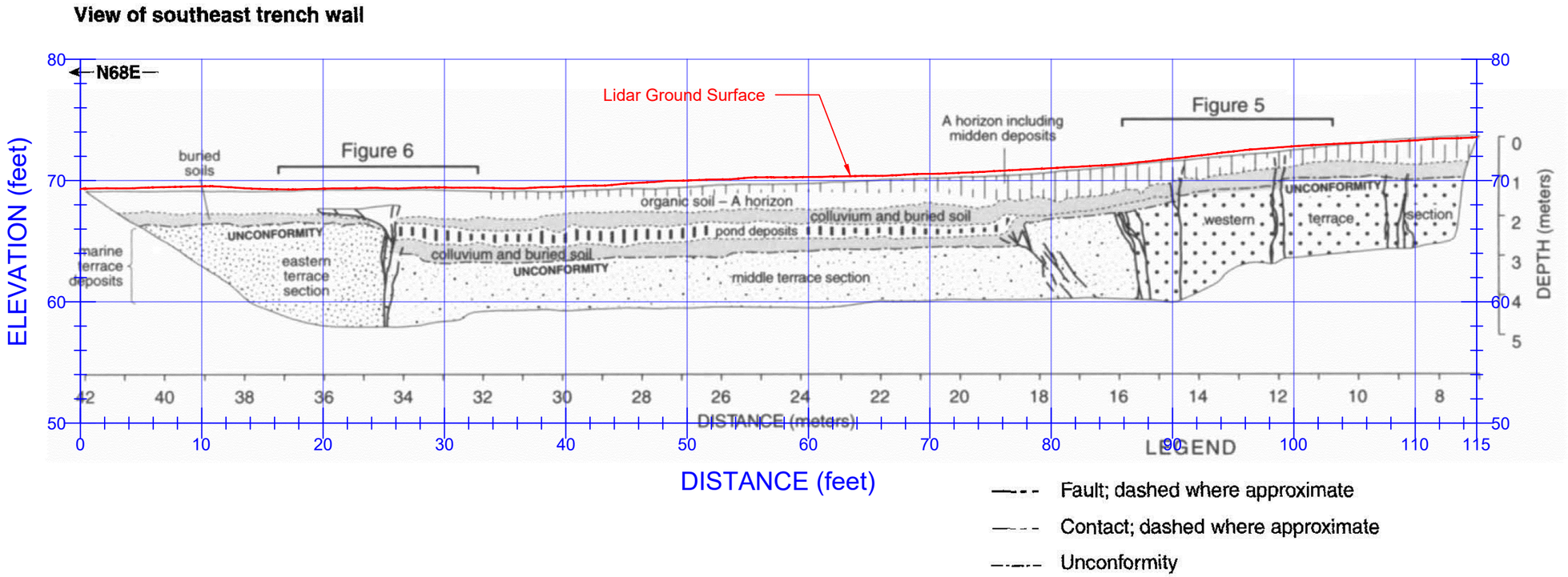


Figure 4. Schematic log of the Seal Cove trench, view to the southeast, showing principal stratigraphic groups and faults. Horizontal scale is tied to an arbitrary survey station 7 m southwest of the end of the trench.

COTTON, SHIRES AND ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

2016 LIDAR PROFILE/1997 SIMPSON OVERLAY
"0" Cypress Avenue
SAN MATEO COUNTY, CALIFORNIA

GEO/ENG BY	SCALE	PROJECT NO.
CS/AM	1"=10'	SMC6280
APPROVED BY	DATE	FIGURE NO.
DTS	April 2022	2