Town of Los Gatos
Community Development Department

14915 Shannon Road Subdivision Project

Initial Study/Mitigated Negative Declaration

January 2024

Prepared by

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INITIAL STUDY

January 2024

A. BACKGROUND

1.	Project Title:	14915 Shannon Road Subdivision Project
2.	Lead Agency Name and Address:	Town of Los Gatos Community Development Department 110 E. Main Street Los Gatos, CA 95030
3.	Contact Person and Phone Number:	Sean Mullin, AICP Senior Planner (408) 354-6823
4.	Project Location:	14915 Shannon Road Los Gatos, CA 95030 APNs: 537-27-047
5.	Project Sponsor's Name and Address:	Terence J. Szewczyk TS/Civil Engineering, Inc. 1776 Technology Drive San Jose, CA 95110
6.	Existing General Plan Designation:	Agriculture
7.	Existing Zoning Designation:	Resource Conservation (RC)
8.	Proposed General Plan Designation:	Hillside Residential
9.	Proposed Zoning Designation:	Hillside Residential (HR-2 ½)
10.	Required Approvals from Other Public Agencies:	None

11. Surrounding Land Uses and Setting:

The approximately 27-acre project site, identified by Assessor's Parcel Number (APN) 537-27-047), is located on the southern slope of a hillside at 14915 Shannon Road in the Town of Los Gatos, California. The site was formerly used as a walnut orchard and equestrian boarding facility, and is currently developed with one single-family residence, known as the Elam Residence, as well as two barns, a corral, and horse arena on the lower southern slope of the hillside. The project site is surrounded by hillside residences to the north, east, and south; undeveloped land to the west; and the Heintz Open Space preserve to the north, beyond the hillside residences. The project site is within Sub-Area 1 (Blossom Hill Road) of the Town's 1978 Hillside Specific Plan. The Town of Los Gatos General Plan designates the project site as Agriculture and the site is zoned Resource Conservation (RC).

12. Project Description Summary:

    The 14915 Shannon Road Subdivision Project (proposed project) would subdivide the project site into nine residential lots, ranging in size from 1.538 acres to 10.414 acres. While development is not proposed at this time, it is anticipated that a total of nine single-family residences would be constructed in the future, as well as associated utilities and access roadways. Access to the project site would be provided by way of the existing Sky Lane (Lots 1 through 3) roadway, located in the western portion of the project site; Shannon Road (Lots 4 through 7) roadway, located along the project site frontage to the south; and an extension of Sierra Azule Drive (Lots 8 and 9), located near the northeast corner of the project site.

13. Status of Native American Consultation Pursuant to Public Resources Code Section 21080.3.1:

    In compliance with Assembly Bill (AB) 52 (Public Resources Code [PRC] Section 21080.3.1), project notification letters were distributed to the Amah Mutsun Tribal Band, Amah Mutsun Tribal Band of Mission San Juan Bautista, Indian Canyon Mutsun Band of Costanoan, Muwekma Ohlone Indian Tribe of the San Francisco Bay Area, North Valley Yokuts Tribe, Tamien Nation, the Ohlone Indian Tribe, and the Wuksachi Indian Tribe/Eshom Valley Band on November 16, 2023.

B. SOURCES

The following documents are referenced information sources used for the purpose of this Initial Study:

1. Archeological Resource Management. *Cultural Resource Evaluation of the Proposed Project at 14915 Shannon Road in Los Gatos.* December 7, 2020.
2. BAGG Engineers. *Supplemental Geotechnical Evaluation and Recommendations Report – Proposed 9-Lot Residential Subdivision, 14915 Shannon Road, Los Gatos, California.* September 2023.
3. Bay Area Air Quality Management District. *2022 California Environmental Quality Act Guidelines*. April 2023.
4. CalEPA. *Cortese List Data Resources*. Available at: https://calepa.ca.gov/sitecleanup/corteselist/. Accessed October 2023.
5. California Building Standards Commission. *2022 California Green Building Standards Code*. 2023.
6. California Department of Conservation. *California Important Farmland Finder*. Available at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed October 2023.
7. California Department of Forestry and Fire Protection. *Fire Hazard Severity Zone Viewer*. Available at: https://egis.fire.ca.gov/FHSZ/. Accessed October 2023.
8. California Department of Resources Recycling and Recovery. *Estimated Solid Waste Generation Rates*. Available at: https://www2.calrecycle.ca.gov/WasteCharacterization/General/Rates. Accessed October 2023.
9. California Department of Transportation. *California Scenic Highway Mapping System*. Available at: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed October 2023.

10. City of San Jose. *San Jose-Santa Clara Regional Wastewater Facility.* Available at: https://www.sanjoseca.gov/your-government/departments-offices/environmental-services/water-utilities/regional-wastewater-facility. Accessed October 2023.
11. Cotton, Shires, and Associates, Inc. *Supplemental Geologic and Geotechnical Peer Review RE: 9-Lot Subdivision M-22-003, FY23071, 14915 Shannon Road.* October 18, 2023.
12. Department of Resources Recycling and Recovery. *SWIS Facility/Site Activity Details – Guadalupe Sanitary Landfill (43-AN-0015).* Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1376?siteID=3399. Accessed October 2023.
13. Department of Toxic Substances Control. *Hazardous Waste and Substances Site List (Cortese).* Available at: https://www.envirostor.dtsc.ca.gov/public/. Accessed October 2023.
14. Federal Emergency Management Agency. *Flood Insurance Rate Map 06085C0376H.* Available at: https://msc.fema.gov/portal/home. Accessed October 2023.
15. Geocon Consultants, Inc. *Phase I Environmental Site Assessment Report – 14915 Shannon Road, Los Gatos, California*. March 2023.
16. Geocon Consultants, Inc. *Phase II Environmental Site Assessment Report – 14915 Shannon Road, Los Gatos, California*. March 9, 2023.
17. Governor's Office of Planning and Research. *Technical Advisory on Evaluation Transportation Impacts in CEQA*. December 2018.
18. Hexagon Transportation Consultants, Inc. *Traffic Operations Analysis for the Proposed Residential Development Located at 14915 Shannon Road in Los Gatos, California.* November 13, 2020.
19. Live Oak Associates, Inc. *Preliminary Biological Evaluation of the approximately 28.61-acre 14195 Shannon Road (Elam Subdivision) project (APN 537-27-047), Town of Los Gatos, Santa Clara County, California (PN 2518-01).* December 9, 2020.
20. Sadek Deggera. *Engineering Geologic Assessment and Subsurface Fault Investigation – Proposed 9-Lot Subdivision, 14915 Shannon Road, Los Gatos, California.* August 31, 2023.
21. San Jose Water Company. *2020 Urban Water Management Plan*. June 2021.
22. Santa Clara Valley Transportation Authority. *2021 Congestion Management Plan.* December 2021.
23. Santa Clara Valley Water District. *Local Dams and Reservoirs.* Available at: https://www.valleywater.org/your-water/local-dams-and-reservoirs. Accessed October 2023.
24. State Water Resources Control Board. *GeoTracker Public Site.* Available at: https://geotracker.waterboards.ca.gov/map/. Accessed October 2023.
25. Town of Los Gatos. *2040 General Plan EIR.* June 2022.
26. Town of Los Gatos. *Emergency Operation Plan*. 2015
27. Town of Los Gatos*. Town of Los Gatos 2020 General Plan*. January 7, 2011.
28. Town of Los Gatos*. Town of Los Gatos 2040 General Plan*. June 30, 2022.
29. Town of Los Gatos. *Weekday Traffic Volumes 2010-2014.* Available at: https://www.losgatosca.gov/972/Traffic-Data. Accessed October 2023.
30. Town of Los Gatos. *What is a Historic Resource?* Available at: https://www.losgatosca.gov/1718/Introduction-to-Historic-Preservation. Accessed October 2023.
31. U.S. Census Bureau. *QuickFacts: Los Gatos town, California.* Available at: https://www.census.gov/quickfacts/fact/table/losgatostowncalifornia/PST045222. Accessed October 2023.

32. U.S. Occupational Safety and Health Administration. *OSHA Technical Manual (OTM) Section III: Chapter 5.* Available at: https://www.osha.gov/otm/section-3-health-hazards/chapter-5#measurements. Accessed October 2023.

C. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is "Less-Than-Significant with Mitigation Incorporated" as indicated by the checklist on the following pages.

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

D. DETERMINATION

On the basis of this initial study:

☐ 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 applicant. 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" 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 pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Sean Mullin, AICP, Senior Planner	Town of Los Gatos
Printed Name	For

E. BACKGROUND AND INTRODUCTION

This Initial Study/Mitigated Negative Declaration (IS/MND) identifies and analyzes the potential environmental impacts of the proposed project. The information and analysis presented in this document are organized in accordance with the order of the California Environmental Quality Act (CEQA) checklist in Appendix G of the CEQA Guidelines. Where the analysis provided in this document identifies potentially significant environmental effects of the project, mitigation measures sufficient to reduce the impacts to less-than-significant levels are prescribed. The mitigation measures prescribed for environmental effects described in this IS/MND would be implemented in conjunction with the proposed project, as required by CEQA. The mitigation measures would be incorporated into the proposed project through project conditions of approval. The Town would adopt findings and a Mitigation Monitoring/Reporting Program for the proposed project in conjunction with project approval.

On June 30, 2022, the Town of Los Gatos adopted the Town's 2040 General Plan Update,[1] and the associated General Plan EIR[2] was certified. However, on August 16, 2022, signatures were submitted to the Town in support of a referendum on the Land Use and Community Design Elements of the approved 2040 General Plan. The referendum proposed that the Land Use and Community Design Elements of the 2040 General Plan be repealed. Once the referendum signatures were verified by the County Registrar, the 2040 General Plan Land Use and Community Design Elements were suspended in accordance with Elections Code Section 9237. Until a decision is made regarding the referendum, based on Resolution 2022-064, which was adopted by the Town Council on October 4, 2022, the 2020 General Plan[3] Land Use and Community Design Elements will govern during the period of suspension.

Given that the 2040 General Plan was adopted by the Town and the associated General Plan EIR was certified, the 2040 General Plan and General Plan EIR are considered the relevant documents for the purposes of the analysis included in this IS/MND. However, as stated above, the 2020 General Plan is considered the relevant document with regard to the Land Use and Community Design Elements.

Applicable portions of the General Plan and General Plan EIR are incorporated by reference, as necessary, as part of this IS/MND. The General Plan EIR is a program EIR, prepared pursuant to Section 15168 of the CEQA Guidelines (Title 14, California Code of Regulations [CCR], Sections 15000 et seq.). The General Plan EIR analyzed full implementation of the General Plan and identified measures to mitigate the significant adverse impacts associated with the General Plan.

Project-specific technical reports have been prepared for the proposed project and form the basis of several technical sections of this IS/MND. All technical reports used in the preparation of this IS/MND are attached as appendices.

F. PROJECT DESCRIPTION

The following provides a description of the project site's current location and setting, as well as the proposed project components and the discretionary actions required for the project.

1 Town of Los Gatos. *Town of Los Gatos 2040 General Plan*. June 30, 2022.
2 Town of Los Gatos. *2040 General Plan EIR*. June 2022.
3 Town of Los Gatos. *Town of Los Gatos 2020 General Plan*. January 7, 2011.

Project Location and Setting

The approximately 27-acre project site, identified by Assessor's Parcel Number (APN) 537-27-047, is located on the southern slope of a hillside at 14915 Shannon Road in the Town of Los Gatos, California (see Figure 1 and Figure 2).

The majority of the project site fronts Shannon Road, which will provide access to the proposed residential lots either directly or indirectly. The property underlying the paved surface of the roadway is owned by the property owner of the project site to approximately the centerline of the roadway. A public easement allows use of the roadway. Portions of the roadway directly adjacent to the project site have a long history of failure, with the roadway slowly collapsing down the northern slopes. Numerous repairs were conducted over the years to no avail. Shannon Road was annexed from the County of Santa Clara into the Town in 2018. Prior to annexation, the County of Santa Clara conducted their final repair by injecting an epoxy foam into the roadbed in order to stabilize the roadway. After annexation into the Town, this repair failed, and the roadway continued to deteriorate to a point where the Town determined it was necessary to close a portion of the westbound lane adjacent to the project site out of concerns for public safety. A Capital Improvement Project (CIP) coordinated by the Los Gatos Parks & Public Works Department is currently shovel-ready. The CIP roadway project would increase the pavement width to 23 feet, as well as add guardrails and retaining walls to the north side of the road. The improvements proposed by the Town require additional land outside of the existing dedicated roadway easement, necessitating coordination with the property owner for dedication of the land, consistent with Mobility Element of the 2040 General Plan. The Town attempted to complete the CIP roadway project in advance of the proposed subdivision for reasons of public safety. The applicant and property owner have declined to provide the necessary right-of-way (ROW) consistent with the Town's General Plan. As such, the Town is implementing a temporary repair. The Town is continuing to work with the applicant and property owner on this issue.

The site was formerly used as a walnut orchard and equestrian boarding facility, and is currently developed with one single-family residence, known as the Elam Residence, as well as two barns, a corral, and horse arena on the lower southern slope of the hillside. The project site is surrounded by hillside residences to the north, east, and south; undeveloped land to the west; and the Heintz Open Space preserve to the north, beyond the hillside residences. The project site is within Sub-Area 1 (Blossom Hill Road) of the Town's 1978 Hillside Specific Plan. The Town of Los Gatos 2020 General Plan designates the project site as Agriculture and the site is zoned Resource Conservation (RC).

Project Components

The proposed project would subdivide the project site into nine residential lots, ranging in size from 1.538 acres to 10.414 acres (see Figure 3). As discussed above, the project site consists of approximately 27 total acres; however, due to the site being located on a hillside, only approximately 11.7 acres of the project site would be suitable for development.

While development is not proposed at this time, CEQA requires that the project description for an environmental document include later phases or activities of a project that will foreseeably result from project approval (Section 15126). In *Laurel Heights Improvement Ass'n v Regents of Univ. of Cal.* (1988) 47 C3d 376, the court determined that CEQA review must include analysis of the environmental effects of future actions if 1) it is a reasonably foreseeable consequence of the initial project, and 2) the future action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects.

Figure 1
Regional Project Location

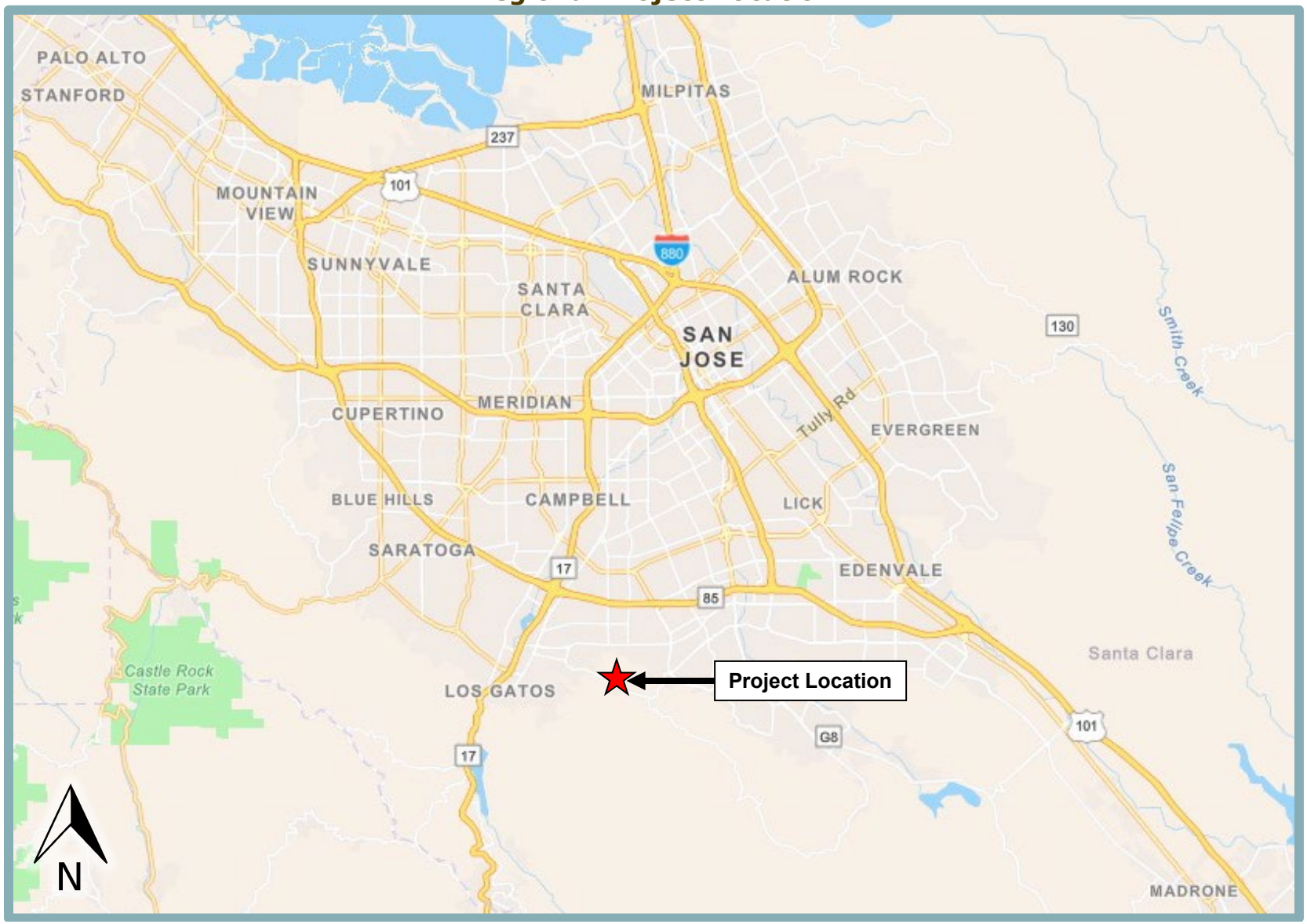
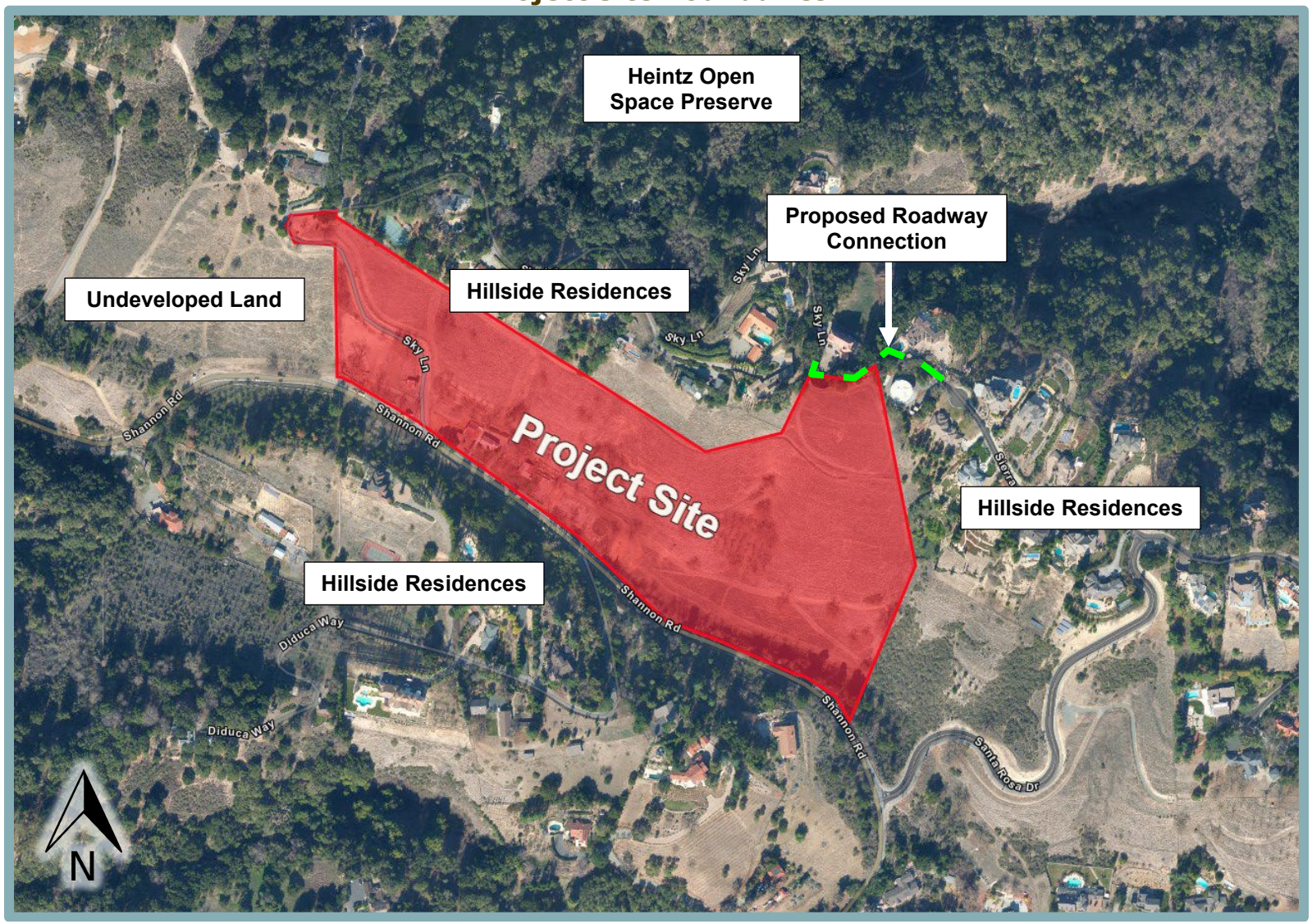


Figure 2
Project Site Boundaries



It is reasonable to assume that on-site home development and utility installation will occur if the Tentative Map is approved by the Town, and the construction of homes will require additional earthwork that will change the scope of environmental effects. Thus, this environmental document will evaluate both the proposed subdivision of the 27-acre project site into nine lots and construction of on-site driveways, as well as subsequent potential construction of nine single-family homes and associated utilities.

Figure 3 shows the least restrictive development area of the project site, which coincides with the areas of the site that are located on slopes less than 30 percent. Consistent with the Town's Hillside Development Standards and Guidelines, all homes to be constructed within the project site would be required to be built within the least restrictive development area.

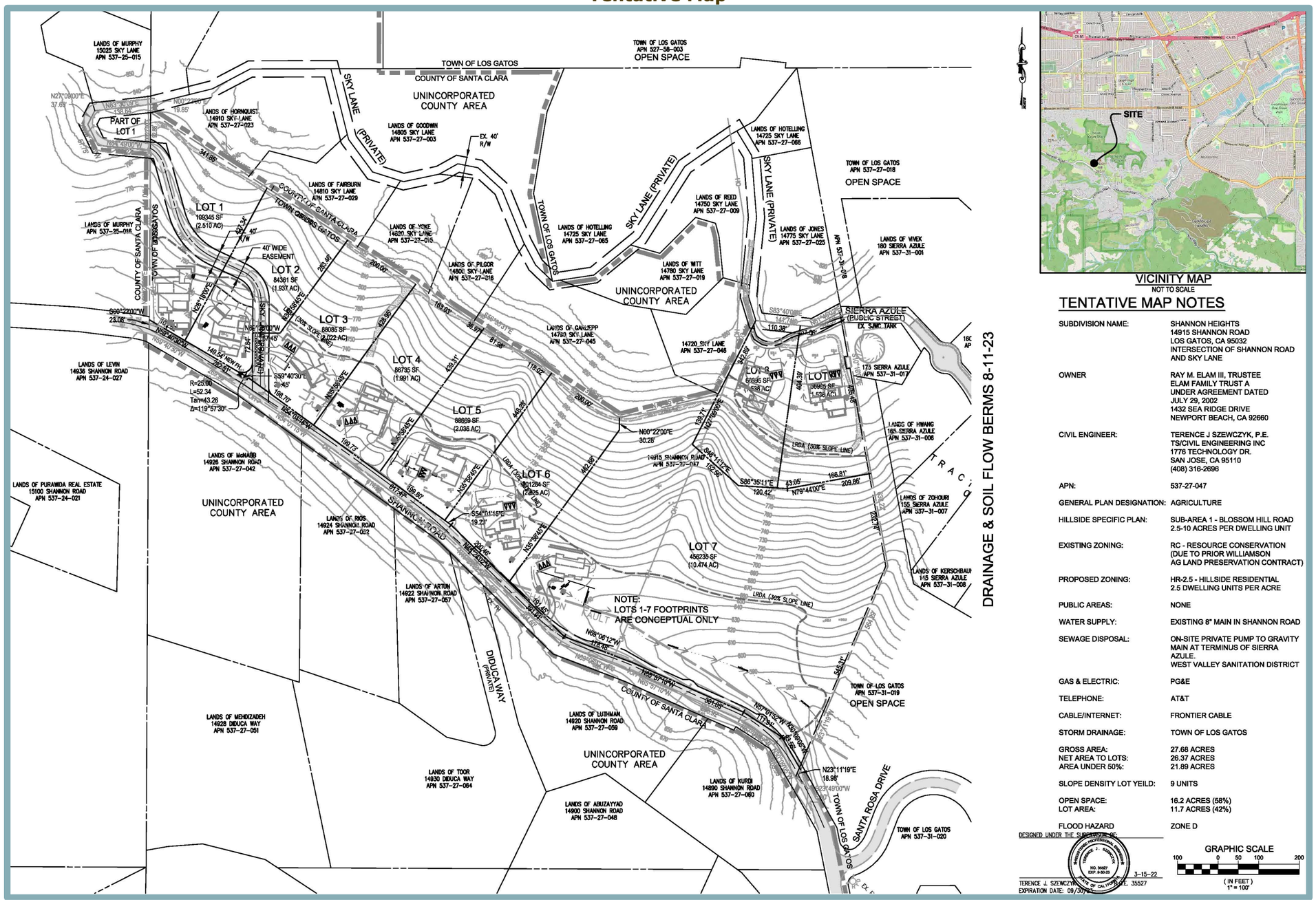
Access to the project site would be provided by way of the existing Sky Lane roadway, located in the western portion of the project site; the Shannon Road roadway, located along the project site frontage to the south; and an extension of Sierra Azule Drive, located near the northeast corner of the project site. Specifically, a shared driveway for Lots 1 and 2, and a driveway to Lot 3, would take access from Sky Lane, an existing private roadway located on the north side of Shannon Road. Two new driveways, consisting of a shared driveway connecting to Lots 4, 5, 6, and an additional private driveway connecting to Lot 7, would take access from Shannon Road.

Lots 8 and 9 would be served from Sierra Azule Drive, near the northeast corner of the project site. Sierra Azule Road is accessed from Santa Rosa Drive, which connects with Shannon Road approximately 240 feet southeast of the project site. The proposed project would include a westward extension of Sierra Azule Drive within an existing right-of-way to the property line of the project site. A new shared driveway from the extension of Sierra Azule Drive would provide access to Lots 8 and 9, and would incorporate an on-site standard fire department turn around. The shared driveway would extend northwest from Lot 8 to provide a secondary emergency egress connection to the current terminus of Sky Lane (see Figure 4). From its current terminus, Sky Lane travels in an east/west direction north of the project site before turning south and connecting with Shannon Road. The proposed project would also require the construction of approximately 170 feet of new 18-foot-wide pavement on-site.

It should be noted that the proposed secondary access along Sky Lane/Sierra Azule has been depicted on the Town's Hillside Specific Plan since 1978, and is consistent with Goal MOB-12 included in the Mobility Element of the 2040 General Plan. The project includes extending Sierra Azule Drive westerly within an existing right-of-way to the property line of the project site adjacent to the existing San Jose Water Company (SJW) 300,000-gallon tank. A new shared driveway from the extension of Sierra Azule Drive would provide access to Lots 8 and 9, and would incorporate an on-site standard fire department turn around. The shared driveway would extend northwest from Lot 8 to provide a secondary emergency egress connection to the current terminus of Sky Lane (see Figure 4). The connection would enhance the safety of the 14 residences on Sky Lane, located north of the project site, by providing a second means of access that is consistent with PRC 4290. However, the roadway width west of the proposed fire turnaround would be a maximum width of 12 feet, and, thus, the secondary access is not intended for through traffic.

Shannon Road was annexed from the County of Santa Clara into the Town in 2018. As noted above, portions of Shannon Road adjacent to the project site have failed and are closed due to public safety concerns. A CIP coordinated by the Los Gatos Parks & Public Works Department is currently shovel-ready. The improvements proposed by the Town require additional land outside of the existing dedicated roadway easement, necessitating coordination with the property owner for dedication of the land, consistent with Mobility Element of the 2040 General Plan.

Figure 3
Tentative Map



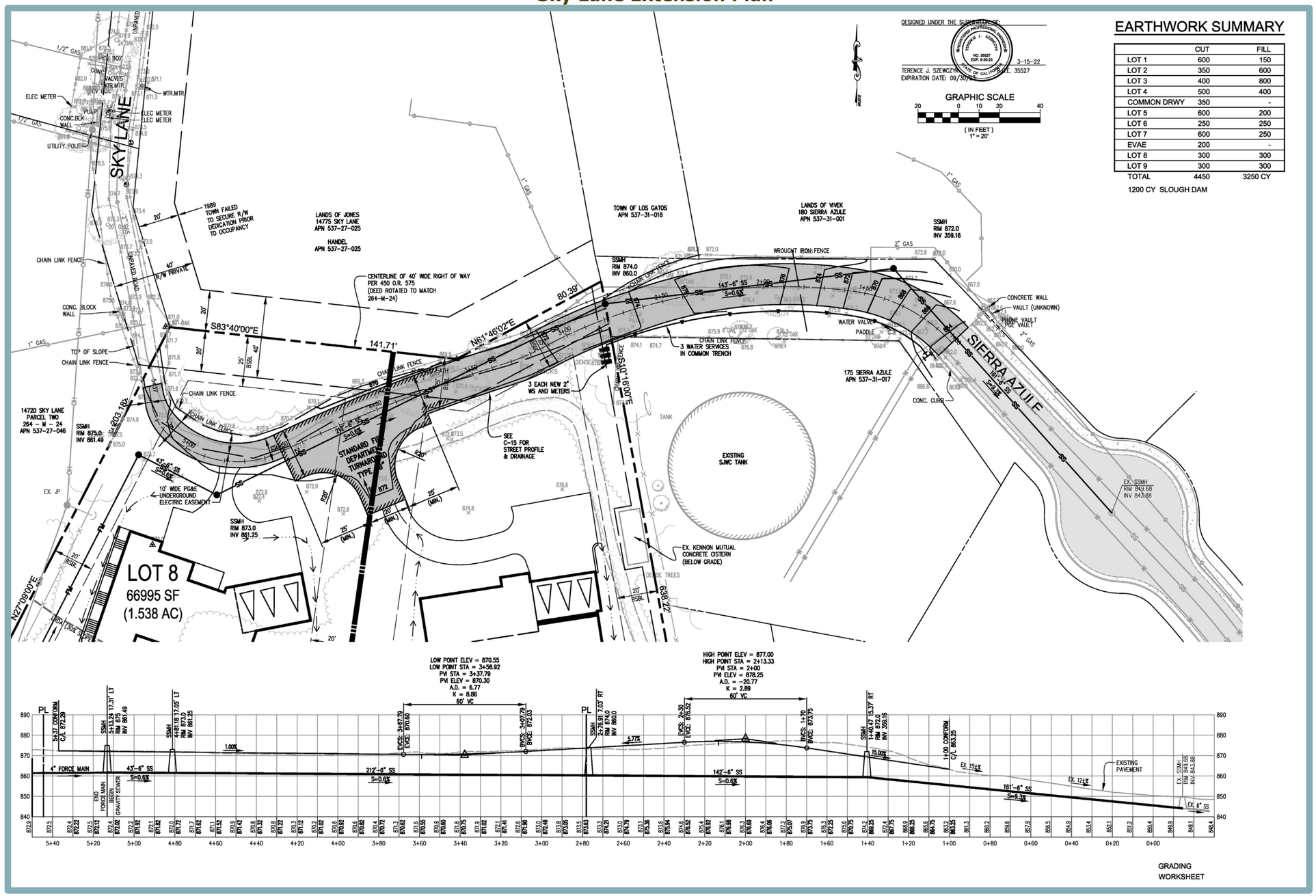
TENTATIVE MAP NOTES

SUBDIVISION NAME:	SHANNON HEIGHTS 14915 SHANNON ROAD LOS GATOS, CA 95032 INTERSECTION OF SHANNON ROAD AND SKY LANE
OWNER	RAY M. ELAM III, TRUSTEE ELAM FAMILY TRUST A UNDER AGREEMENT DATED JULY 29, 2002 1432 SEA RIDGE DRIVE NEWPORT BEACH, CA 92660
CIVIL ENGINEER:	TERENCE J SZEWCZYK, P.E. TS/CIVIL ENGINEERING INC 1776 TECHNOLOGY DR. SAN JOSE, CA 95110 (408) 316-2696
APN:	537-27-047
GENERAL PLAN DESIGNATION:	AGRICULTURE
HILLSIDE SPECIFIC PLAN:	SUB-AREA 1 - BLOSSOM HILL ROAD 2.5-10 ACRES PER DWELLING UNIT
EXISTING ZONING:	RC - RESOURCE CONSERVATION (DUE TO PRIOR WILLIAMSON AG LAND PRESERVATION CONTRACT)
PROPOSED ZONING:	HR-2.5 - HILLSIDE RESIDENTIAL 2.5 DWELLING UNITS PER ACRE
PUBLIC AREAS:	NONE
WATER SUPPLY:	EXISTING 8" MAIN IN SHANNON ROAD
SEWAGE DISPOSAL:	ON-SITE PRIVATE PUMP TO GRAVITY MAIN AT TERMINUS OF SIERRA AZULE. WEST VALLEY SANITATION DISTRICT
GAS & ELECTRIC:	PG&E
TELEPHONE:	AT&T
CABLE/INTERNET:	FRONTIER CABLE
STORM DRAINAGE:	TOWN OF LOS GATOS
GROSS AREA: NET AREA TO LOTS: AREA UNDER 50%:	27.68 ACRES 26.37 ACRES 21.89 ACRES
SLOPE DENSITY LOT YEILD:	9 UNITS
OPEN SPACE: LOT AREA:	16.2 ACRES (58%) 11.7 ACRES (42%)
FLOOD HAZARD	ZONE D

DESIGNED UNDER THE SUPERVISION OF:
TERENCE J. SZEWCZYK
NO. 35527
EXP. 9-30-23
STATE OF CALIFORNIA
3-15-22
TERENCE J. SZEWCZYK, P.E. NO. 35527
EXPIRATION DATE: 09/30/23

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1" = 100'

Figure 4
Sky Lane Extension Plan



The Town attempted to complete the CIP roadway project in advance of the proposed subdivision for reasons of public safety. The applicant and property owner have declined to dedicate the necessary ROW consistent with the Town's General Plan. As such, the Town is implementing a temporary repair to the roadway. The Town is continuing to work with the applicant and property owner on this issue.

Water and sewer utilities would be provided through new connections to existing utility lines within the project vicinity, including a 10-inch water main located within Shannon Road, and a six-inch sewer main located along Sierra Azule Drive. The existing 10-inch water main would be extended west along the project frontage within Shannon Road from the Shannon Road/Diduca Way intersection to the southwestern corner of the project site, where the line would be stubbed. The new gravity flow sewer line would be constructed east along Shannon Road beginning between Lots 1 and 2 and would end at the proposed on-site pump station located between Lots 6 and 7, where a new force main would then be constructed running north within the project site before turning east along the proposed Sky Lane/Sierra Azule Drive roadway connection and ending at an existing sanitary sewer manhole located within Sierra Azule Drive. The new sewer system would result in an approximately 2,100-foot extension; however, the majority of the force main would be constructed within the project site boundaries, and the remaining portions of the pipeline would be constructed within the project frontage. Water would be provided to the project site by SJW, and sewer service would be provided by West Valley Sanitation District.

Each of the nine proposed lots would include an associated gravel stormwater drainage basin on-site. Stormwater runoff from each lot would be directed into the associated on-site gravel stormwater basin located within the lot, which would allow for stormwater runoff to infiltrate into the on-site soils. The gravel stormwater drainage basins associated with Lots 1 through 6, 8, and 9 would be sized to meet the Town's C3 design criteria, such that stormwater runoff from the lots would not need to be routed to a public storm drain. With regard to Lot 7, stormwater runoff would flow from the on-site gravel stormwater basin to an existing broad swale toward the east. The swale extends off-site, and drains into a culvert system located under Santa Rosa Drive. The culvert system ultimately extends under Arroyo del Rancho through a large arch culvert located parallel to Shannon Road.

General Plan Amendment/Rezone

The project site is currently designated as Agriculture by the Town of Los Gatos 2020 General Plan, and the site is zoned RC. The proposed project would include a General Plan Amendment to redesignate the site as Hillside Residential, and a Rezone of the site to HR-2½ in order to accommodate the proposed project.

Tentative Map

As discussed above, the proposed project would include the subdivision of the project site into nine residential lots ranging in size from 1.538 acres to 10.414 acres, as well as the construction of associated utilities and access roadways. Therefore, the proposed project would require approval of a Tentative Map.

Approval of the Tentative Map would allow for construction of the aforementioned access and utility improvements to the project site; however, the Tentative Map would not allow for construction of the nine single-family homes that could be developed on-site in the future. A separate application would need to be submitted to the Town for each home, and each future application would be subject to Architectural and Site Application review by either the Town's Planning Commission or Development Review Committee.

Discretionary Actions

The proposed project would require the following discretionary approvals from the Town of Los Gatos:

- Adoption of the IS/MND;
- Adoption of a Mitigation Monitoring/Reporting Program;
- General Plan Amendment from Agriculture to Hillside Residential;
- Rezone from RC to HR-2½; and
- Tentative Map.

G. ENVIRONMENTAL CHECKLIST

The following checklist contains the environmental checklist form presented in Appendix G of the CEQA Guidelines. The checklist form is used to describe the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist. For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which no sufficient mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared.

Less Than Significant with Mitigation Incorporated: An impact that requires mitigation to reduce the impact to a less-than-significant level.

Less-Than-Significant Impact: Any impact that would not be considered significant under CEQA relative to existing standards.

No Impact: The project would not have any impact.

I. AESTHETICS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	☐	☐	✖	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	✖	☐
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	✖	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	✖	☐

Discussion

a,b. Examples of typical scenic vistas include mountain ranges, ridgelines, or bodies of water as viewed from a highway, public space, or other area designated for the express purpose of viewing and sightseeing. In general, a project's impact to a scenic vista would occur if development of the project would substantially change or remove a scenic vista. The General Plan EIR identifies southward views of the Santa Cruz Mountains and ridgelines as the primary protected scenic vistas within the Town. Due to the heavily-wooded nature of the Town, scenic views are most prominent from the southbound lanes of the Town's major north-south running streets. Shannon Road runs east-west and is located in an area of the Town that is heavily obscured from view due to intervening topography and vegetation. Limited distant views of the Santa Cruz Mountains can be seen looking eastward from Shannon Road; however, the project site is located along the northern boundary of Shannon Road and, thus, views of the Santa Cruz Mountains would not be obstructed by project development. In addition, due to the intervening topography and vegetation described above, views of any other potential ridgelines beyond the project site are not visible from Shannon Road.

At a local level, the Town does not identify any roadways as scenic routes. In addition, while State Route (SR) 17 is designated as eligible for listing as a State Scenic Highway, State Scenic Highways are not located within the Town of Los Gatos.[4] In addition, the project site is located approximately 2.5 miles east of SR 17, and is obscured from view through various natural features and existing development. Therefore, the proposed project would not have the potential to damage scenic resources within the vicinity of a State Scenic Highway.

Based on the above, development of the proposed project would not have a substantial adverse effect on a scenic vista and would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway, and a ***less-than-significant*** impact would occur.

[4] California Department of Transportation. *California Scenic Highway Mapping System.* Available at: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed October 2023.

c. The project site is currently developed with one single-family residence, two barns, a corral, and horse arena on the lower southern slope of the hillside. The project site is surrounded by hillside residences to the north, east, and south; undeveloped land to the west; and the Heintz Open Space preserve to the north, beyond the hillside residences. Therefore, the project site is generally located in a non-urbanized area of the Town. Pursuant to Appendix G of the CEQA guidelines, because the project site is in a non-urbanized area, the relevant threshold is whether the project would substantially degrade the existing visual character or quality of public views of the site and its surroundings.

Distinguishing between public and private views is important when evaluating changes to visual character or quality, because private views are views seen from privately-owned land and are typically associated with individual viewers, including views from private residences. Public views are experienced by the collective public and include views of significant landscape features and along scenic roads. According to CEQA (PRC, Section 21000 et seq.) case law, only public views, not private views, are protected under CEQA. For example, in *Association for Protection etc. Values v. City of Ukiah* (1991) 2 Cal.App.4th 720 [3 Cal. Rptr.2d 488], the court determined that "we must differentiate between adverse impacts upon particular persons and adverse impacts upon the environment of persons in general. As recognized by the court in *Topanga Beach Renters Assn. v. Department of General Services* (1976) 58 Cal.App.3d 188 [129 Cal.Rptr. 739]: '[A]ll government activity has some direct or indirect adverse effect on some persons. The issue is not whether [the project] will adversely affect particular persons but whether [the project] will adversely affect the environment of persons in general.'" Therefore, it is appropriate to focus the aesthetic impact analysis on potential impacts to public views.

Public views of the project site can be seen from Shannon Road, which is located adjacent to the site's southern boundary. Changes to the existing public views towards the site due to development of the proposed project are discussed below. For the purpose of this analysis, public views consist of views towards the site from motorists and/or bicyclists traveling along Shannon Road. It should be noted that Sky Lane is a private roadway, and, therefore, views from Sky Lane are not evaluated further herein.

Currently, the existing view of the site from Shannon Road consists of several screening trees and split-rail fencing associated with the single-family residence, barns, corral, and horse arena in the immediate foreground, as well as views of the existing project site driveway. The midground features views of the existing structures, as well as additional corral and arena fencing, and open, grassy areas. As the midground transitions to the background, several existing trees are within the viewshed, and the topography transitions to a sloped, grassy hillside. The background consists of the ridge of the hillside, on the top of which an existing hillside residence can be seen against the backdrop of the sky.

As discussed above, the proposed project currently includes subdivision of the 27-acre project site into nine lots, the reasonably foreseeable consequence of which would result in future development of the site with nine single-family residences. Such residences could alter the visual character or quality of the site. However, future homes on Lot 1 through Lot 7 would be constructed on the lower portions of the site, and future homes on Lot 8 and Lot 9 would be constructed at the ridge of the hillside, such that the existing slopes on-site would remain. In addition, a separate application would need to be submitted to the Town for each future home, and each future application would be subject to Architectural and Site Application review by either the Town's Planning Commission or Development Review Committee. Architectural and Site Application review would ensure

that each single-family residence constructed within the project site would meet the development standards of the Hillside Residential General Plan land use designation and HR-2½ zoning designation, as well as all development standards included in the Town's 1978 Hillside Specific Plan. Development standards include, but are not limited to, minimum setbacks, building height, and lot coverage requirements. In addition, because the project site is within the Town designated Hillside Area, the proposed project would be subject to the Town's Hillside Development Standards and Guidelines, which include requirements related to hillside grading, development intensity, architectural design, landscape design, and other site elements such as fences, walls, and driveway entries. Compliance with such standards would reduce potential impacts to the visual character of the project area due to future development of the project site.

Based on the above, the proposed project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings, and a ***less-than-significant*** impact would occur.

d. The project site is currently developed with one single-family residence, two barns, a corral, and horse arena on the lower southern slope of the hillside. In addition, hillside residences are currently located to the north, east, and south of the project site. Therefore, existing sources of light and glare including, but not limited to, headlights on cars and trucks travelling along Shannon Road and private driveways, exterior light fixtures, and interior light spilling through windows, are present within the project site and vicinity. Therefore, while potential future development of the project site with nine hillside residences would add new sources of light and glare to the site, such sources would be similar in nature to existing conditions and would not adversely affect day or nighttime views in the project area.

In addition, the Community Design Element of the 2020 General Plan contains policies and goals for light and glare, implementation of which would reduce potential impacts from new development. Policy CD-3.2 states that street and structural lighting shall be required to achieve minimal visual impact by preventing glare, limiting light on neighboring properties, and avoiding light pollution of the night sky. Policy CD-17.3 requires design standards that include a review of project lighting to be considered for every project. The Town's 1978 Hillside Specific Plan also notes that lighting design for new development within the Specific Plan area should be controlled to screen excessive light sources in the hillside areas from neighboring residential areas and the valley floor. To reduce the potential for disturbance due to nighttime lighting, the project would comply with Town Code Section Sec. 29.10.09015, which requires all permanent exterior light fixtures to utilize shields so that no bulb is visible and to ensure that light is directed to the ground surface and does not spill light onto neighboring parcels or produce glare when seen from nearby homes, as well as the outdoor lighting requirements included in the Town's Hillside Development Standards and Guidelines. In addition, it should be noted that Town Code Section 29.10.09035 prohibits the production of direct or reflected glare.

The implementation of the Town's programs, policies, and code requirements would reduce the light and glare related impacts from the proposed project. Thus, implementation of the project would result in a ***less-than-significant*** impact with respect to creating a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

II. AGRICULTURE AND FOREST RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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?	☐	☐	☐	✖
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	✖	☐
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	✖
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	✖
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?	☐	☐	☐	✖

Discussion

a,e. While the project site was formerly used as an orchard, the project site is not currently used for agricultural production. Additionally, according to the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP), the project site is primarily characterized as "Other Land," and a small portion of the site is characterized as "Urban and Built-Up Land".[5]

Urban and Built-Up Land is defined as land occupied with structures with a building density of at least one unit to one-half acre. Uses may include but are not limited to, residential, industrial, commercial, construction, institutional, public administration purposes, railroad yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures, and other development purposes. Highways, railroads, and other transportation facilities are mapped as part of this unit, if they are part of a surrounding urban area.

Other Land is defined as land that is not included in any other mapping categories. The following uses are generally included: rural development, brush timber, government land, strip mines, borrow pits, and a variety of other rural land uses.

The project site does not contain, and is not located adjacent to, Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Given the designation of the site as Other Land and Urban and Built-Up Land, development of the proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use, or otherwise result in the loss of Farmland to non-agricultural use. Therefore, ***no impact*** would occur as a result of the proposed project.

[5] California Department of Conservation. *California Important Farmland Finder*. Available at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed October 2023.

b. The project site is not under a Williamson Act contract. In addition, while the Town of Los Gatos 2020 General Plan designates the project site as Agriculture and the site is zoned RC, the project site is not currently used for agricultural production, and a rezone is being requested to change the site's zoning designation from RC to HR-2 ½. Therefore, buildout of the proposed project would not conflict with an agricultural use or a Williamson Act contract, and a ***less-than-significant*** impact would occur.

c,d. The project site is not considered forest land (as defined in PRC Section 12220[g]), timberland (as defined by PRC Section 4526), and is not zoned Timberland Production (as defined by Government Code Section 51104[g]). Therefore, the proposed project would have ***no impact*** with regard to conversion of forest land or any potential conflict with forest land, timberland, or Timberland Production zoning.

III. AIR QUALITY. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with or obstruct 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?	☐	☐	✖	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	✖	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	✖	☐

Discussion

a,b. The Town of Los Gatos is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The SFBAAB area is currently designated as a nonattainment area for the State and federal ozone, State and federal fine particulate matter 2.5 microns in diameter ($PM_{2.5}$), and State respirable particulate matter 10 microns in diameter (PM_{10}) ambient air quality standards (AAQS). The SFBAAB is designated attainment or unclassified for all other AAQS. It should be noted that on January 9, 2013, the U.S. Environmental Protection Agency (USEPA) issued a final rule to determine that the Bay Area has attained the 24-hour $PM_{2.5}$ federal AAQS. Nonetheless, the Bay Area must continue to be designated as nonattainment for the federal $PM_{2.5}$ AAQS until such time as the BAAQMD submits a redesignation request and a maintenance plan to the USEPA, and the USEPA approves the proposed redesignation. The USEPA has not yet approved a request for redesignation of the SFBAAB; therefore, the SFBAAB remains in nonattainment for 24-hour $PM_{2.5}$.

In compliance with regulations, due to the nonattainment designations of the area, the BAAQMD periodically prepares and updates air quality plans that provide emission reduction strategies to achieve attainment of the AAQS, including control strategies to reduce air pollutant emissions through regulations, incentive programs, public education, and partnerships with other agencies. The current air quality plans are prepared in cooperation with the Metropolitan Transportation Commission and the Association of Bay Area Governments (ABAG).

The most recent federal ozone plan is the 2001 Ozone Attainment Plan, which was adopted on October 24, 2001 and approved by the California Air Resources Board (CARB) on November 1, 2001. The plan was submitted to the USEPA on November 30, 2001, for review and approval. The most recent State ozone plan is the 2017 Clean Air Plan, adopted on April 19, 2017. The 2017 Clean Air Plan was developed as a multi-pollutant plan that provides an integrated control strategy to reduce ozone, PM, toxic air contaminants (TACs), and greenhouse gases (GHGs). Although a plan for achieving the State PM_{10} standard is not required, the BAAQMD has prioritized measures to reduce PM in developing the control strategy for the 2017 Clean Air Plan. The control strategy serves as the backbone of the BAAQMD's current PM control program.

The aforementioned air quality plans contain mobile source controls, stationary source controls, and transportation control measures to be implemented in the region to attain the

State and federal AAQS within the SFBAAB. Adopted BAAQMD rules and regulations, as well as the thresholds of significance, have been developed with the intent to ensure continued attainment of AAQS, or to work towards attainment of AAQS for which the area is currently designated nonattainment, consistent with applicable air quality plans. The BAAQMD's established significance thresholds associated with development projects for emissions of the ozone precursors reactive organic gases (ROG) and oxides of nitrogen (NO_X), as well as for PM_{10} and $PM_{2.5}$, expressed in pounds per day (lbs/day) and tons per year (tons/yr), are listed in Table 1. By exceeding the BAAQMD's mass emission thresholds for ROG, NO_X, PM_{10}, or $PM_{2.5}$, a project would be considered to conflict with or obstruct implementation of the BAAQMD's air quality planning efforts.

Table 1
BAAQMD Thresholds of Significance

	Construction	Operational	
Pollutant	**Average Daily Emissions (lbs/day)**	**Average Daily Emissions (lbs/day)**	**Maximum Annual Emissions (tons/year)**
ROG	54	54	10
NO_x	54	54	10
PM_{10} (exhaust)	82	82	15
$PM_{2.5}$ (exhaust)	54	54	10

Source: BAAQMD, CEQA Guidelines, April 2023.

Particulate matter can be split into two categories: fugitive and exhaust. The BAAQMD thresholds of significance for exhaust are presented in Table 1. BAAQMD does not maintain quantitative thresholds for fugitive emissions of PM_{10} or $PM_{2.5}$, rather, BAAQMD requires all projects within the district's jurisdiction to implement Basic Construction Mitigation Measures (BCMMs) related to dust suppression.

The proposed project's construction and operational emissions were quantified using the California Emissions Estimator Model (CalEEMod) web-based software version 2022 – a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions, including GHG emissions, from land use projects. The model applies inherent default values for various land uses, including construction data, trip generation rates, vehicle mix, trip length, average speed, etc. Where project-specific information is available, such information should be applied in the model.

In order to provide a conservative analysis, the modeling assumed buildout of the project site with nine single-family residences. The proposed project's modeling assumed the following:

- Construction would commence in March 2025 and take place over approximately 3.75 years;
- During demolition, a total of 6,000 square feet (sf) of building materials would be removed from the site;
- The proposed project would include construction of nine single-family residences, as well as the proposed Sky Lane/Sierra Azule Drive roadway connection; and

- The proposed project would result in 9.44 vehicle trips per residence.[6]
- ; and

The proposed project's estimated emissions associated with construction and operations are provided below. All CalEEMod results are included as Appendix A to this IS/MND.

Construction Emissions

According to the CalEEMod results, the proposed project, including future development of the site with nine single-family residences, would result in maximum unmitigated construction criteria air pollutant emissions as shown in Table 2. As shown in the table, the proposed project's construction emissions would be below the applicable thresholds of significance for ROG, NO_x, PM_{10}, and $PM_{2.5}$.

Table 2
Maximum Unmitigated Construction Emissions (lbs/day)

Pollutant	Proposed Project Emissions	Threshold of Significance	Exceeds Threshold?
ROG	5.66	54	**NO**
NO_X	49.8	54	**NO**
PM_{10}*	2.13	82	**NO**
$PM_{2.5}$*	1.96	54	**NO**

* Emissions from exhaust only. BAAQMD has not yet adopted thresholds for fugitive PM emissions.

Source: CalEEMod, December 2023 (see Appendix A).

All projects under the jurisdiction of the BAAQMD are required to implement all of the BAAQMD's BCMMs, which include the following:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.

[6] Hexagon Transportation Consultants, Inc. *Traffic Operations Analysis for the Proposed Residential Development Located at 14915 Shannon Road in Los Gatos, California.* November 13, 2020.

8. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

The proposed project's required implementation of the BAAQMD's BCMMs listed above would help to further minimize construction-related emissions. In particular, implementation of the foregoing measures would reduce fugitive dust emissions resulting from project construction. Even without consideration of BAAQMD's BCMMs, as shown in Table 2, construction of the proposed project would result in emissions of criteria air pollutants below BAAQMD's thresholds of significance. Consequently, the proposed project would not conflict with or obstruct implementation of the applicable air quality plans during project construction.

Operational Emissions

According to the CalEEMod results, future development of the site with nine single-family residences would result in maximum unmitigated operational criteria air pollutant emissions as shown in Table 3. As shown in the table, the proposed project's operational emissions of ROG, NO_x, PM_{10}, and $PM_{2.5}$ would be below the applicable thresholds. Consequently, the proposed project would not conflict with or obstruct implementation of the applicable air quality plans during project operation.

Table 3
Unmitigated Maximum Operational Emissions

Pollutant	Proposed Project Emissions		Threshold of Significance		Exceeds Threshold?
	lbs/day	tons/yr	lbs/day	tons/yr	
ROG	0.74	0.13	54	10	**NO**
NO_X	0.31	0.05	54	10	**NO**
PM_{10}*	0.01	<0.005	82	15	**NO**
$PM_{2.5}$*	0.01	<0.005	54	10	**NO**

* Emissions from exhaust only. BAAQMD has not yet adopted thresholds for fugitive PM emissions.

Source: CalEEMod, December 2023 (see Appendix A).

Conclusion

As stated previously, the applicable regional air quality plans include the 2001 Ozone Attainment Plan and the 2017 Clean Air Plan. Because the proposed project would not result in operational emissions of criteria pollutants in excess of BAAQMD's applicable threshold of significance, conflicts with or obstruction of implementation of the applicable regional air quality plans would not occur. Thus, a ***less-than-significant*** impact would result.

c. Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and/or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Sensitive receptors are typically defined as facilities where sensitive receptor population groups (i.e., children, the elderly, the acutely ill, and the chronically ill) are likely to be located. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools,

playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. The nearest existing sensitive receptors to the project site are the hillside residences to the north of the project site, the nearest of which is located approximately 85 feet from the nearest on-site disturbance areas.

The major pollutant concentrations of concern are localized carbon monoxide (CO) emissions and TAC emissions, which are addressed in further detail below.

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. High levels of localized CO concentrations are only expected where background levels are high, and traffic volumes and congestion levels are high. Emissions of CO are of potential concern, as the pollutant is a toxic gas that results from the incomplete combustion of carbon-containing fuels such as gasoline or wood.

In order to provide a conservative indication of whether a project would result in localized CO emissions that would exceed the applicable threshold of significance, the BAAQMD has established screening criteria for localized CO emissions. According to BAAQMD, a project would result in a less-than-significant impact related to localized CO emission concentrations if all of the following conditions are true for the project:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans;
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; and
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, underpass, etc.).

Future development of the site with nine single-family residences is anticipated to generate a total of approximately 85 daily trips, including 7 AM peak hour trips and 9 PM peak hour trips.[7] Given the relatively small number of trips that would be generated by the proposed project, the proposed project would not conflict with the Santa Clara Valley Transportation Authority (VTA) Congestion Management Program (CMP).[8] In addition, according to the most recent traffic data provided by the Town of Los Gatos, the roadways in the project vicinity experience between 2,615 and 2,027 average daily trips.[9] Therefore, the project would not increase traffic volumes at any nearby intersections to more than 44,000 vehicles per hour. Furthermore, areas where vertical and/or horizontal mixing do not occur, as underpasses, or similar features do not exist in the project area. Therefore, based on the BAAQMD's screening criteria for localized CO emissions, the proposed project would not be expected to result in substantial levels of localized CO at surrounding intersections or generate localized concentrations of CO that would exceed standards or cause health hazards.

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7 Hexagon Transportation Consultants, Inc. *Traffic Operations Analysis for the Proposed Residential Development Located at 14915 Shannon Road in Los Gatos, California.* November 13, 2020.

8 Santa Clara Valley Transportation Authority. *2021 Congestion Management Plan.* December 2021.

9 Town of Los Gatos. *Weekday Traffic Volumes 2010-2014.* Available at: https://www.losgatosca.gov/972/Traffic-Data. Accessed October 2023.

TAC Emissions

Another category of environmental concern is TACs. The CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (Handbook) provides recommended setback distances for sensitive land uses from major sources of TACs, including, but not limited to, freeways and high traffic roads, distribution centers, and rail yards. The CARB has identified diesel particulate matter (DPM) from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Health risks associated with TACs are a function of both the concentration of emissions and the duration of exposure, where the higher the concentration and/or the longer the period of time that a sensitive receptor is exposed to pollutant concentrations would correlate to a higher health risk.

The proposed project would not involve any land uses or operations that would be considered major sources of TACs, including DPM. As such, the project would not generate any substantial pollutant concentrations during operations.

Short-term, construction-related activities could result in the generation of TACs, specifically DPM, from on-road haul trucks and off-road equipment exhaust emissions. However, construction is temporary and occurs over a relatively short duration in comparison to the operational lifetime of the proposed project. Health risks are typically associated with exposure to high concentrations of TACs over extended periods of time (e.g., 30 years or greater), whereas the construction period associated with the proposed project would likely be limited to approximately 3.75 years.

All construction equipment and operation thereof would be regulated per the CARB In-Use Off-Road Diesel Vehicle Regulation, which is intended to help reduce emissions associated with off-road diesel vehicles and equipment, including DPM. Project construction would also be required to comply with all applicable BAAQMD rules and regulations, particularly associated with permitting of air pollutant sources. In addition, construction equipment would operate intermittently throughout the day and only on portions of the site at a time.

Because construction equipment on-site would not operate for long periods of time and would be used at varying locations within the site, associated emissions of DPM would not occur at the same location (or be evenly spread throughout the entire project site) for long periods of time. Due to the temporary nature of construction and the relatively short duration of potential exposure to associated emissions, the potential for any one sensitive receptor in the area to be exposed to concentrations of pollutants for a substantially extended period of time would be low. Therefore, construction associated with the proposed project would not be expected to expose any sensitive receptors to substantial pollutant concentrations.

Conclusion

Based on the above, the proposed project would not expose any sensitive receptors to substantial concentrations of localized CO or TACs during construction or operation. Therefore, the proposed project would result in a ***less-than-significant*** impact related to the exposure of sensitive receptors to substantial pollutant concentrations.

d. Emissions of concern include those leading to odors, emission of dust, or emissions considered to constitute air pollutants. Air pollutants have been discussed in sections "a" through "c" above. Therefore, the following discussion focuses on emissions of odors and dust.

Per the BAAQMD CEQA Guidelines, odors are generally regarded as an annoyance rather than a health hazard.[10] Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The presence of an odor impact is dependent on a number of variables including: the nature of the odor source; the frequency of odor generation; the intensity of odor; the distance of odor source to sensitive receptors; wind direction; and sensitivity of the receptor.

Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative analysis to determine the presence of a significant odor impact is difficult. Typical odor-generating land uses include, but are not limited to, wastewater treatment plants, landfills, and composting facilities. The proposed project would not introduce any such land uses.

Construction activities often include diesel-fueled equipment and heavy-duty trucks, which could create odors associated with diesel fumes that may be considered objectionable. However, the construction phase is temporary in nature and would only occur over approximately 3.75 years. In addition, hours of operation for construction equipment would be restricted per Section 16.20.035 of the Town's Municipal Code. Project construction would also be required to comply with all applicable BAAQMD rules and regulations, particularly associated with permitting of air pollutant sources. The aforementioned regulations would help to minimize emissions, including emissions leading to odors. Accordingly, substantial objectionable odors would not be expected to occur during construction activities.

As noted previously, all projects under the jurisdiction of BAAQMD are required to implement the BAAQMD's BCMMs. The BCMMs would act to reduce construction-related dust by ensuring that haul trucks with loose material are covered, reducing vehicle dirt track-out, and limiting vehicle speeds within the improvement area, among other methods, which would ensure that construction of the proposed project does not result in substantial emissions of dust. Following construction, the entire improvement area would be either paved or landscaped. Thus, project operations would not generate significant amounts of dust that would adversely affect a substantial number of people.

For the aforementioned reasons, construction and operation of the proposed project would not result in emissions (such as those leading to odors) adversely affecting a substantial number of people, and a ***less-than-significant*** impact would result.

[10] Bay Area Air Quality Management District. *2022 California Environmental Quality Act Guidelines.* April 2023.

IV. BIOLOGICAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 or U.S. Fish and Wildlife Service?	☐	✖	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	✖	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	✖	☐
d. Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☐	☐	✖	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	✖	☐	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	✖

Discussion

a. The following discussion is based primarily on the findings of a Biological Evaluation prepared for the project by Live Oak Associates, Inc (see Appendix B).[11]

Several species of plants and animals within the State of California have low populations, limited distributions, or both. Such species may be considered “rare” and are vulnerable to extirpation as the state’s human population grows and the habitats the species occupy are converted to agricultural and urban uses. State and federal laws have provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as threatened or endangered under state and federal endangered species legislation. Others have been designated as “candidates” for such listing. Still others have been designated as “species of special concern” by CDFW. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened, or endangered. Collectively, these plants and animals are referred to as “special-status species.” Although CDFW Species of Special Concern generally do not have special legal status, they are given special consideration under CEQA. Special-status species include the following:

[11] Live Oak Associates, Inc. *Preliminary Biological Evaluation of the approximately 28.61-acre 14195 Shannon Road (Elam Subdivision) project (APN 537-27-047), Town of Los Gatos, Santa Clara County, California (PN 2518-01).* December 9, 2020.

- Plant and wildlife species that have been formally listed as threatened or endangered, or are candidates for such listing by the USFWS or National Marine Fisheries (NMFS);
- Plant and wildlife species that have been listed as threatened or endangered or are candidates for such listing by the CDFW;
- CDFW Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue;
- CDFW Fully Protected Species; and
- Species on CNPS Lists 1 and 2, which are considered to be rare, threatened, or endangered in California by the CNPS and CDFW.

In addition to regulations for special-status species, most birds in the U.S., including non-status species, are protected by the Migratory Bird Treaty Act (MBTA) of 1918. Under the MBTA, destroying active nests, eggs, and young is illegal.

In order to identify potential biological resource constraints and assess the suitability of habitats on the project site to potentially support State- and federally-protected species, Live Oak Associates conducted a literature review of the following databases:

- California Natural Diversity Database (CNDDB);
- Special-status species lists prepared by the CDFW, USFWS, and CNPS;
- USFWS National Wetlands Inventory website;
- US Natural Resources Conservation Service Web Soil Survey website; and
- Manuals and references related to plants and animals found in and around Santa Clara County.

Live Oak Associates also conducted two reconnaissance-level surveys of the project site on October 13, 2020 and November 10, 2020 to identify on-site habitats, which could potentially support special-status species, and to determine the likelihood of any occurrences of special-status species.

Based on the results of the database review and field surveys, on-site habitats were determined to include California annual grassland, fallow walnut orchard, mixed woodland, and ruderal/developed habitats (see Figure 5). It should also be noted that a large, wide upland grassy swale traverses the southern, lower portion of the project site near Shannon Road. The swale does not include a defined bed and bank and supported upland vegetation that was mostly undifferentiated from the adjacent annual grasslands (i.e., hydrophytic vegetation was not observed within the feature). However, just on the other side of the fence along the eastern boundary of the project site, the swale appeared to connect to an off-site wetland and channel with a defined bed and bank, which contained associated riparian and scrub vegetation.

The results of the database review and field survey conducted as part of the Biological Evaluation are discussed in further detail below.

Special-Status Plants

Based on the literature review conducted as part of the Biological Evaluation, a total of 54 special-status plant species have been identified within the project region.

Figure 5
On-Site Habitats

However, 14 special-status plant species were eliminated from consideration as the species are endemic on serpentine or alkaline soils, which do not occur within the project site. Of the remaining 40 species, 38 were considered absent from or unlikely to occur on the site as a result of a lack of suitable habitat, either because the species is a perennial that would have been identifiable if present during the October site visit, or because habitat on the site is marginal for the species and the species has not been documented in the project vicinity (i.e., within three miles of the site).

Live Oak Associates determined that the remaining two special-status plant species (Santa Clara red ribbons and bent-flowered fiddleneck) identified within the project vicinity could have the potential to occur on-site, as the woodlands occurring in the northeast corner of the site and along both sides of Shannon Road provide potentially suitable habitat for both of the species, and the on-site grasslands provide potentially suitable habitat for bent-flowered fiddleneck. In addition, the site visits conducted by Live Oak Associates occurred outside of the blooming period for the two species, and, therefore, the species would not have been observable if present. As such, if Santa Clara red ribbons and bent-flowered fiddleneck are present on-site during future construction activities, the proposed project could result in adverse effects to special-status plant species.

Special-Status Wildlife

According to the Biological Evaluation, a total of 29 special-status wildlife species have been identified within the project region. However, 22 special-status wildlife species were eliminated from consideration as the project site does not contain suitable habitat, the site is located outside of the species' known range, and/or known occurrences have not been identified within the vicinity of the site.

The remaining seven species with potential to occur on-site include Santa Cruz black salamander, white-tailed kite, golden eagle, pallid bat, Townsend's big-eared bat, San Francisco dusky-footed woodrat, and American badger.

Of the aforementioned species, the Biological Evaluation noted that due to site conditions, golden eagle breeding habitat is absent from the site, and, therefore, the only potential use of the site by golden eagle would be for foraging. As such, the proposed project would not result in impacts to nesting golden eagle, and further discussion of the species is not included herein.

The proposed project's potential to result in adverse effects to the remaining six special-status wildlife species identified above, as well as any additional nesting raptors and migratory birds protected by the MBTA, is discussed in further detail below.

Santa Cruz Black Salamander

Santa Cruz black salamander is a California "species of special concern." The species occurs in deciduous woodland, coniferous forests, and coastal grasslands around the Santa Cruz Mountains and foothills. The species is also known to occur on the developed flats in pockets within older developments. Santa Cruz black salamander can be found under rocks near streams, in talus, under damp logs, rotting wood, and other objects. The closest recorded location of Santa Cruz black salamander is generally mapped approximately two miles southwest of the site.

The project site supports suitable habitat for Santa Cruz black salamander within the woodland habitat along the frontage of Shannon Road, which is adjacent to contiguous off-site woodland habitat. In addition, due to the age of the existing on-site structures, the species has the potential to occur under foundations and within rotting wood of the structures themselves.

Given the potential for Santa Cruz black salamander to be present within the site, on-site construction activities could result in an adverse impact to Santa Cruz black salamanders. As such, a potentially significant impact could occur.

White-Tailed Kite/Other Nesting Raptors and Migratory Birds

White-tailed kite is a California Fully Protected species. The species is found within rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. The species prefers open grasslands, meadows, or marshes for foraging located close to isolated, dense-topped trees for nesting and perching. According to the Biological Evaluation, the project site contains suitable foraging and nesting habitat for while-tailed kite.

In addition, the project site contains existing trees, shrubs, and structures that could provide nesting habitat for raptors and migratory birds protected by the MBTA. Such trees, shrubs, and structures could be removed as part of the proposed project. Construction activities that adversely affect the nesting success of raptors and migratory birds (i.e., lead to the abandonment of active nests) or result in mortality of individual birds constitute a violation of State and federal laws. Thus, in the event that such species occur on-site during the breeding season, project construction activities could result in an adverse effect to species protected under the MBTA.

Pallid Bat and Townsend's Big-Eared Bat

Both the pallid bat and the Townsend's big-eared bat are California "species of special concern." The pallid bat typically occurs in grasslands, chaparral, woodlands, and forests; and is most common in dry rocky open areas providing roosting opportunities. Roost sites include caves, mines, rock crevices, and large cavities of trees. The Townsend's big-eared bat is primarily a cave-dwelling species, but may also roost in buildings, bridges, rock crevices, and hollow trees. The closest recorded locations of pallid bat and Townsend's big-eared bat are approximately 1.5 miles and three miles from the site, respectively.

Suitable habitat is present on-site for both species. Specifically, both species have the potential to occur within the on-site barn and garage/outbuilding, as well as several on-site trees which contain cavities potentially suitable for roosting bats. Tree removal and demolition of the existing structures during on-site construction activities could result in harm to individual roosting bats. Thus, the proposed project could result in adverse impacts to pallid bat and the Townsend's big-eared bat, and a potentially significant impact could occur.

San Francisco Dusky-Footed Woodrat

San Francisco dusky-footed woodrat is a California "species of special concern," and is typically found in hardwood forests, oak riparian, and shrub habitats.

During the field survey conducted as part of the Biological Evaluation, San Francisco dusky-footed woodrat nests were observed on-site, within the woodland habitat along the

frontage of Shannon Road. As such, if construction activities are to occur within the on-site San Francisco dusky-footed woodrat habitat, the proposed project could result in adverse impacts to San Francisco dusky-footed woodrat, and a potentially significant impact could occur.

American Badger

American badger is a California "species of special concern." The species is found in a variety of habitats, especially in open habitats such as oak-savannah and grasslands where the species' presence is typically identified by distinctive, large underground dens (burrows) excavated in friable (loose) soils. The nocturnal mammal is rarely observed during field surveys.

According to the Biological Evaluation, the grasslands and orchard habitat on-site could provide suitable habitat for the American badger. Therefore, on-site construction activities could result in an adverse impact to American badgers, and a potentially significant impact could occur.

Conclusion

Based on the above, construction activities associated with the proposed project could have an adverse effect, either directly or through habitat modifications, on plant and/or wildlife species identified as special-status species in local or regional plans, policies, or regulations, or by the CDFW or the USFWS. Therefore, a ***potentially significant*** impact could result.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impacts to a *less-than-significant* level.

Special-Status Plants

IV-1 *Prior to any ground disturbing activities, focused botanical surveys shall be conducted in areas of the site providing potential habitat for Santa Clara red ribbons (woodlands) and bent-flowered fiddleneck (woodlands and grasslands) that could be potentially impacted by the project. Surveys shall be conducted to conform to the CNPS survey protocol (CNPS 1983, revised 2001) and the CDFW-recommended protocols for botanical resource surveys (CDFW 2018). Such protocols include surveying areas providing potential habitat on foot in such a way as to provide 100 percent visual coverage of the area. Two surveys, one conducted in April and one in June, shall be conducted to confirm the presence or absence of such species on the site. Survey results shall be submitted to the Town of Los Gatos Community Development Department.*

Should populations of special status plant species be found present on the site, a qualified botanist or plant ecologist shall determine whether the populations would be impacted by the project. If the proposed project improvements would not impact special status plants, further mitigation is not required. However, if impacts to special status plants are determined to represent a significant impact of the project, the applicant shall implement Mitigation Measures IV-2 and/or IV-3.

IV-2 *If special-status plant species are detected on-site during the focused botanical surveys, and a qualified botanist or plant ecologist determines that populations would be impacted by the project, the project applicant shall implement avoidance measures as determined by a qualified botanist or plant ecologist. Avoidance measures include revising the project to avoid a special status plant population with an appropriate buffer to allow for expansion of the population. If full avoidance is not feasible, the compensatory measures included in Mitigation Measure IV-3 shall be required.*

Proof of compliance with this mitigation measure shall be provided to the Town of Los Gatos Community Development Department prior to any ground disturbing activities.

IV-3 *If special status plant populations cannot be avoided, the project applicant shall implement compensatory measures, which would take the form of establishing new populations on the site or at an off-site location through a Resource Management Plan (RMP) developed by a qualified biologist. At a minimum, an RMP would include the following:*

- *Location of suitable on-site or off-site areas to establish new populations;*
- *Means by which established populations will be conserved in-perpetuity;*
- *Methods of site preparation, seed/plant procurement, and plant establishment; and*
- *A monitoring plan that includes the length of monitoring (typically at least five years) and monitoring interval (typically annually), as well as a requirement to meet the following criteria:*
    - *Metrics of successful establishment, which would include a minimum of 80 percent survival of the transplants after two years of transplanting the species.*

      If the 80 percent survival is not established after two years, transplants of individuals grown from seed shall be planted at a location with similar soil, hydrologic, vegetation type and aspect as the portion of the site where they are found. Transplantation shall occur in the season deemed to have the greatest potential for success, generally the fall, after rains have commenced. Transplants shall be monitored every month for the first six months, then every two months for a minimum of two years. After two summer seasons of monitoring identifies successful establishment of 50 percent of the initial transplants, transplant seedlings will be deemed successful.

Proof of compliance with this mitigation measure shall be provided to the Town of Los Gatos Community Development Department prior to any ground disturbing activities.

Santa Cruz Black Salamander

IV-4 *Prior to any ground disturbing activities within the on-site woodland habitat or demolition of on-site buildings, a pre-construction survey for Santa Cruz black salamander shall be conducted by a qualified biologist. Survey results shall be submitted to the Town of Los Gatos Community Development Department. In addition, construction personnel working in the woodland habitat or demolishing buildings on-site shall attend a "tailgate" training that includes a description of the species, a brief summary of the species' biology, and minimization measures and instructions on what to do if a Santa Cruz black salamander is observed. Demolition of structures and work in the on-site woodland habitat shall be monitored by a qualified biologist. Proof of compliance with this mitigation measure shall be provided to the Town of Los Gatos Community Development Department.*

White-Tailed Kite/Other Nesting Raptors and Migratory Birds

IV-5 *If tree removal or ground disturbing activities are scheduled to commence during the breeding season (February 1st through August 31st), a pre-construction nesting bird survey shall be conducted by a qualified biologist within 15 days prior to such activities to identify possible nesting activity. Survey results shall be submitted to the Town of Los Gatos Community Development Department. If no active nests are found further mitigation is not required. If one or more active nests are found, construction-free buffer of suitable dimensions (i.e., 500 feet for raptors and 100 feet for other migratory birds) shall be established around any active raptor or migratory bird nest for the duration of the project, or until it has been determined that the chicks have fledged and are foraging independently from their parents. Proof of compliance with this mitigation measure shall be provided to the Town of Los Gatos Community Development Department.*

Pallid Bat and Townsend's Big-Eared Bat

IV-6 *Prior to the commencement of construction activities, a qualified biologist shall conduct a bat habitat assessment of all potential roosting habitat features, including trees and structures within the proposed impact footprint within the project vicinity. The habitat assessment shall identify all potentially suitable roosting habitat and may be conducted up to one year prior to the start of construction. The results of the assessment shall be submitted to the Town of Los Gatos Community Development Department.*

- *If potential roosting habitat is identified (cavities in trees or potential roosts within structures) within the areas proposed for impact, the biologist shall survey the potential roosting habitat during the active season (generally April through October or from January through March on days with temperatures in excess of 50 degrees Fahrenheit) to determine the presence of roosting bats. The surveys are recommended to be conducted utilizing methods that are considered acceptable by CDFW and bat experts. Methods may include evening emergence surveys, acoustic surveys, inspecting potential roosting habitat with fiberoptic cameras, or a combination thereof.*

- *If roosting bats are identified within any of the trees planned for removal, or if presence is assumed, the trees shall be removed outside of pup season, only on days with temperatures in excess of 50 degrees Fahrenheit. Pup season is generally during the months of May through August. Two-step tree removal shall be utilized under the supervision of the qualified biologist. Two-step tree removal involves removal of all branches of the tree that do not provide roosting habitat on the first day, and then the next day cutting down the remaining portion of the tree.*
- *Additionally, it is recommended that all other tree removal shall be conducted from January through March on days with temperatures in excess of 50 degrees Fahrenheit to avoid potential impacts to foliage-roosting bat species.*
- *If roosting bats are identified within any structures planned for removal, a bat exclusion plan shall be prepared by a qualified bat biologist describing the methods to be used to humanely exclude bats prior to disturbance. The plan shall be approved by the Town of Los Gatos Community Development Department and CDFW and shall be implemented prior to the start of construction.*

San Francisco Dusky-Footed Woodrat

IV-7 *A qualified biologist shall conduct a pre-construction survey for San Francisco dusky-footed woodrat nests no more than 30 days prior to the onset of construction activities. The survey shall encompass all construction zones within the woodland habitat and developed areas, and surrounding lands within 50 feet. Results of the assessment shall be submitted to the Town of Los Gatos Community Development Department. Identified nests shall be avoided, where possible. If avoidance is not possible, the nest(s) shall be manually deconstructed by a qualified biologist when helpless young are not present, typically during the non-breeding season (October through January). If it is determined that young may be present during the pre-construction survey, a suitable buffer of 50 feet shall be established around the nest until a qualified biologist determines that the young are independent enough to successfully move from the deconstructed nest.*

American Badger

IV-8 *During the course of the pre-construction surveys for other species, a qualified biologist shall also determine the presence or absence of badgers prior to the start of construction. If badgers are found to be absent, no other mitigations for the protection of badgers shall be warranted.*

If an active badger den is identified during pre-construction surveys within or immediately adjacent to an area subject to construction, a construction-free buffer of up to 300 feet shall be established around the den. Once a qualified biologist has determined that badger has vacated the burrow, the burrow can be collapsed or excavated, and ground disturbance can proceed. Should the burrow be determined to be a natal or reproductive den, and because badgers are known to use multiple

burrows in a breeding burrow complex, a biological monitor shall be present on-site during construction activities in the vicinity of the burrows to ensure the buffer is adequate to avoid direct impacts to individuals or natal/reproductive den abandonment. The monitor shall be present until it is determined that young are of an independent age and construction activities would not harm individual badgers.

Additionally, all workers shall attend a "tailgate" training that includes a description of the species, a brief summary of the species' biology, and minimization measures and instructions on what to do if American badger is observed.

Proof of compliance with this Mitigation Measure shall be provided to the Town of Los Gatos Community Development Department.

b,c. As discussed above, a large, wide upland grassy swale traverses the southern, lower portion of the project site near Shannon Road. The swale does not include a defined bed and bank and supported upland vegetation that was mostly undifferentiated from the adjacent annual grasslands (i.e., hydrophytic vegetation was not observed within the feature). However, just on the other side of the fence along the eastern boundary of the project site, the swale appeared to connect to an off-site wetland and channel with a defined bed and bank, which contained associated riparian and scrub vegetation. Stormwater runoff from Lot 7 would flow from the on-site gravel stormwater basin to the existing grassy swale and into the off-site wetland. However, the on-site gravel stormwater basin would provide initial capture of the runoff form Lot 7 in order to prevent erosion and provide for energy dissipation, as well as treat the stormwater. Treated stormwater from the on-site gravel stormwater basin would then sheet flow downslope, as stormwater currently does under existing conditions. Therefore, physical changes to the site would not involve filling, removal, degradation, or hydrological interruption of federally protected wetlands, riparian habitats, or sensitive communities. In addition, according to the Biological Evaluation, jurisdictional waters of the U.S. and State are absent from the project site. Therefore, the Biological Evaluation determined that a ***less-than-significant*** impact would occur.

d. According to the Biological Evaluation, the project site is not within an identified regional movement corridor or landscape linkage and does not support any nursery sites. Additionally, the project includes the preservation of land for a movement corridor in the northern portion of the site, and, as a result, local animals currently moving through the site are expected to continue to do so after the site is built out. Therefore, the proposed project would not interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites. Thus, a ***less-than-significant*** impact would occur.

e. Chapter 29.10 of the Town's Municipal Code comprises the Town's Tree Protection Ordinance. The applicable portion of the Town's Tree Protection Ordinance protects trees that meet the following criteria:

- All trees which have a four-inch or greater diameter (twelve and one half-inch circumference) of any trunk, when removal relates to any review for which zoning approval or subdivision approval is required.

- Any tree that existed at the time of a zoning approval or subdivision approval and was a specific subject of such approval or otherwise covered by landscape or site plans.
- Any tree that was required by the Town to be planted or retained by the terms and conditions of a development application, building permit or subdivision approval in all zoning districts, tree removal permit or code enforcement action.
- All trees, which have a four-inch or greater diameter (twelve and one half-inch circumference) of any trunk and are located on property other than developed residential property.
- All publicly owned trees growing on Town lands, public places or in a public right-of-way easement, which have a four-inch or greater diameter (twelve and one-half-inch circumference) of any trunk.
- A protected tree shall also include a stand of trees, the nature of which makes each dependent upon the other for the survival of the stand.
- The following trees shall also be considered protected trees and shall be subject to the pruning permit requirements set forth in section 29.10.0982 and the public noticing procedures set forth in section 20.10.0994:
    - Heritage trees;
    - Large protected trees.

According to the Biological Evaluation, most of the trees that have the potential to be impacted or removed on the site are walnut trees that are part of the now fallow walnut orchards. Walnut trees would not be considered a protected tree under the Town's ordinance unless the trees have a trunk diameter of 18 inches or more. Given the size of the on-site walnut trees, some walnut trees that occur on the site may meet the definition of a protected tree.

Other on-site trees considered protected trees under the Town's ordinance include oak trees and other native and non-native trees, with the exception of any fruit or nut trees that have a trunk diameter of less than 18 inches, occurring within the mixed woodland habitat of proposed Lots 1 and 2, and within the mixed woodland habitat along the southern boundary of the project site on Shannon Road. Because the proposed project includes a rezone, native and non-native trees which have a trunk diameter of at least four inches and are not species specifically excluded under the ordinance may be considered protected trees under the Town's ordinance.

Given that the proposed project could result in the removal of on-site trees considered protected under the Town's tree protection ordinance, a ***potentially significant*** impact could occur related to conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

IV-9 *Prior to the start of construction activities, the applicant shall retain a certified arborist to assess the protected trees on-site and determine if any trees would require removal due to project construction activities. The report shall be submitted to the Town of Los Gatos Parks and Public Works Department.*

The applicant shall comply with the Town of Los Gatos Tree Protection Ordinance and a tree removal permit shall be obtained from the Town for the removal of any on-site trees that qualify as a protected tree. If the trees proposed for removal are found to be in good condition, and the tree removal permit is granted primarily for the convenience of the applicant, then the full cost and responsibility of such removal shall be borne by the applicant including planting of replacement trees.

Where replanting is impractical or infeasible, the property owner may pay an in-lieu fee in an amount approved by the Town Council. New trees planted on site shall have a trunk diameter of more than 1.5 inches. The above noted requirements shall be completed to the satisfaction of the Town of Los Gatos Parks and Public Works Department.

f. The project site is not located in an area that has an approved Habitat Conservation Plan, Natural Community Conservation Plan, or local, regional, or state habitat conservation plan. Therefore, the proposed project would not conflict with a Habitat Conservation Plan, Natural Conservation Community Plan, and ***no impact*** would occur.

V. CULTURAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	☐	✖
b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	☐	✖	☐	☐
c. Disturb any human remains, including those interred outside of dedicated cemeteries.	☐	✖	☐	☐

Discussion

The following is based on a Cultural Resource Evaluation prepared for the proposed project by Archeological Resource Management.[12]

a. Historical resources are features that are associated with the lives of historically-important persons and/or historically-significant events, that embody the distinctive characteristics of a type, period, region or method of construction, or that have yielded, or may be likely to yield, information important to the pre-history or history of the local area, California, or the nation. Examples of typical historical resources include, but are not limited to, buildings, farmsteads, rail lines, bridges, and trash scatters containing objects such as colored glass and ceramics.

The Town of Los Gatos recognizes any structure or site as historic if it is located within a historic district, historically designated within the Landmark Historic Preservation (LHP) overlay, or is a primary structure constructed prior to 1941, unless the Town has specifically determined the structure has no historic significance or architectural merit.[13] The proposed project would result in demolition of the existing on-site structures, two of which (the residence and the eastern barn) were constructed prior to 1941. However, the project site is not located within a historic district, or within the LHP overlay. In addition, based on a historical evaluation conducted by Archeological Resource Management, the project site is not currently listed on the California Register of Historic Resources (CRHR), or the National Register of Historic Places (NRHP), and the site does not appear to be potentially eligible for listing in such registers. For example, the property is not associated with significant historic events and is not closely associated with persons of historic significance; thus the site does not appear to be eligible for listing under Criterion 1/A or Criterion 2/B. In addition, while the residence and associated outbuildings are examples of vernacular architecture, such buildings are not a notable examples of the style. Furthermore, based upon visual evaluation and available documentation, major repairs and modifications were made to the on-site residence and the eastern barn. Modifications to the residence that have occurred after 1945 include an addition to the front of the building and replacement of the roof and all windows. Thus, the project site does not appear to be eligible for listing under Criterion 3/C. Finally, the project site does not appear likely to yield important historical information, and, thus does not appear eligible for listing under Criterion 4/D.

[12] Archeological Resource Management. *Cultural Resource Evaluation of the Proposed Project at 14915 Shannon Road in Los Gatos.* December 7, 2020.

[13] Town of Los Gatos. *What is a Historic Resource?* Available at: https://www.losgatosca.gov/1718/Introduction-to-Historic-Preservation. Accessed October 2023.

Archeological Resource Management also noted that the on-site structures do not appear to have historic significance or architectural merit, thus are not considered to have historical or architectural value. Thus, the historical evaluation determined that the property is not historically significant, and further recommendations were not made.

Therefore, the proposed project would not have the potential to cause a substantial adverse change in the significance of a historic resource pursuant to CEQA Guidelines Section 15064.5, and ***no impact*** would occur.

b,c. In order to determine whether archeological resources are located on the project site, an archival review was conducted as part of the Cultural Resource Evaluation prepared for the proposed project. The archival review included a records search of the California Historic Resources Information System (CHRIS) performed by the Northwest Information Center (NWIC). The CHRIS records search included review of archaeological resource records, historic properties records, official records and maps of archaeological sites and surveys in Santa Clara County, the NRHP, and the CRHR. According to the CHRIS records search, archaeological or historic resources have not been recorded within the project boundaries or within 0.25-mile of the site.

In addition, a site reconnaissance was conducted by Archeological Resource Management. The reconnaissance included a general surface reconnaissance of all visible open land surfaces in the project area, including places where burrowing animals, exposed banks and inclines, and other activities had revealed subsurface stratigraphy and soil contents. The site reconnaissance did not identify any traces of significant prehistoric or historic cultural material.

Based on the results of the archival review and site reconnaissance, the Cultural Resource Evaluation concluded that the proposed project would not result in any impact to known cultural resources. However, the potential exists for unknown archaeological resources, including human remains, to be uncovered during ground-disturbing activities for the proposed project. Therefore, if previously unknown resources are encountered during construction activities, the proposed project could cause a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA Guidelines Section 15064.5 and/or disturb human remains, including those interred outside of dedicated cemeteries, during construction.

General Plan policy OSP-9.4 requires that if cultural resources, including archaeological resources are discovered during grading or other on-site excavation activities, construction shall stop until appropriate mitigation is implemented. Policy OSP-9.1 requires evaluation of archaeological and/or cultural resources early in the development review process through consultation with interested parties and the use of contemporary professional techniques in archaeology, ethnography, and architectural history. Policy OSP-9.2 requires that the Town ensure the preservation, restoration, and appropriate use of archaeological and/or culturally significant structures and sites. Additionally, General Plan policy OSP-9.3 requires that any human remains discovered during implementation of public and private projects within the Town be treated with respect and dignity and fully comply with California laws that address the identification and treatment of human remains.

Compliance with 2040 General Plan policies OSP-1 through OSP-4 would generally help ensure that work would stop if archeological resources or human remains are identified

during construction, but do not specify the appropriate course of action if such resources are discovered. As a result, without mitigation, the proposed project could cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines Section 15064.5, or disturb human remains, including those interred outside of dedicated cemeteries, and a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

V-1 *If historic or archeological resources are encountered during subsurface excavation activities, all construction activities within a 100-foot radius of the resource shall cease until a qualified archaeologist determines whether the resource requires further study. The Town shall require that the applicant include a standard inadvertent discovery clause in every construction contract to inform contractors of this requirement. Any previously undiscovered resources found during construction shall be recorded on appropriate California Department of Parks and Recreation forms and evaluated for significance in terms of California Environmental Quality Act (CEQA) criteria by a qualified archaeologist. Potentially significant cultural resources consist of, but are not limited to, stone, bone, fossils, wood, or shell artifacts or features, including hearths, structural remains, or historic dumpsites.*

If the resource is determined to be significant under CEQA, the Town and a qualified archaeologist shall determine whether preservation in place is feasible. Such preservation in place is the preferred mitigation. If such preservation is infeasible, the qualified archaeologist shall prepare and implement a research design and archaeological data recovery plan for the resource. The archaeologist shall also conduct appropriate technical analyses, prepare a comprehensive written report and file it with the appropriate information center (California Historical Resources Information System), and provide for the permanent curation of the recovered materials.

V-2 *If human remains, or remains that are potentially human, are found during construction, all work shall be halted immediately within 100 feet, and a professional archeologist shall ensure reasonable protection measures are taken to protect the discovery from disturbance. The archaeologist shall notify the Santa Clara County Coroner (per §7050.5 of the State Health and Safety Code). The provisions of §7050.5 of the California Health and Safety Code, §5097.98 of the California Public Resources Code, and Assembly Bill 2641 will be implemented. If the Coroner determines the remains are Native American and not the result of a crime scene, then the Coroner will notify the Native American Heritage Commission (NAHC), which then will designate a Native American Most Likely Descendant (MLD) for the project (§5097.98 of the Public Resources Code). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the applicant does not agree with the recommendations of the MLD, the NAHC can*

mediate (§5097.94 of the Public Resources Code). If an agreement is not reached, the qualified archaeologist or MLD must rebury the remains where they will not be further disturbed (§5097.98 of the Public Resources Code). This will also include either recording the site with the NAHC or the appropriate Information Center, using an open space or conservation zoning designation or easement, or recording a reinternment document with the county in which the property is located (AB 2641). Work cannot resume within the no-work radius until the lead agency, through consultation as appropriate, determines that the treatment measures have been completed to the Town's satisfaction.

VI. ENERGY. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	✖	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	✖	☐

Discussion

a,b. The main forms of available energy supply are electricity, natural gas, and oil. A description of the 2022 California Green Building Standards Code, the Building Energy Efficiency Standards, and the Town's Reach Codes, with which the proposed project would be required to comply, as well as discussions regarding the proposed project's potential effects related to energy demand during construction and operations, are provided below.

California Green Building Standards Code

The 2022 California Green Building Standards Code, otherwise known as the CALGreen Code (CCR Title 24, Part 11), is a portion of the California Building Standards Code (CBSC), which became effective with the rest of the CBSC on January 1, 2023.[14] The purpose of the CALGreen Code is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices. The provisions of the code apply to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure throughout California. Requirements of the CALGreen Code include, but are not limited to, the following measures:

- Compliance with relevant regulations related to future installation of electric vehicle (EV) charging infrastructure in residential and non-residential structures;
- Indoor water use consumption is reduced through the establishment of maximum fixture water use rates;
- Outdoor landscaping must comply with the California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), or a local ordinance, whichever is more stringent, to reduce outdoor water use;
- Diversion of 65 percent of construction and demolition waste from landfills;
- Incentives for installation of electric heat pumps, which use less energy than traditional heating, ventilation, and air conditioning (HVAC) systems and water heaters;
- Required solar PV system and battery storage standards for certain buildings; and
- Mandatory use of low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particle board.

Building Energy Efficiency Standards

The 2022 Building Energy Efficiency Standards is a portion of the CBSC, which expands upon energy-efficiency measures from the 2019 Building Energy Efficiency Standards,

[14] California Building Standards Commission. *2022 California Green Building Standards Code*. 2023.

went into effect starting January 1, 2023. The 2022 standards provide for additional efficiency improvements beyond the 2019 standards. The proposed project would be subject to all relevant provisions of the most recent update of the CBSC, including the Building Energy Efficiency Standards. Adherence to the most recent CALGreen Code and Building Energy Efficiency Standards would ensure that the future residential structures would consume energy efficiently.

Los Gatos Reach Code

Local governments may adopt "reach codes," which are more restrictive local amendments to the Building Energy Efficiency Standards or the CALGreen Code. In December 2019, the Town of Los Gatos adopted an amended Electrification Reach code which requires the following:

1. All new single-family residential buildings, low-rise multifamily buildings, and Accessory Dwelling Units (ADUs) shall use electricity as the source of energy for its space heating, water heating (including pools and spas), cooking appliances, clothes drying appliances, and other features for both interior and exterior applications.
2. All single-family residential buildings, low-rise multifamily buildings, and ADUs shall be prewired for the installation of battery storage. The prewiring shall be in accordance with California Building, Residential, and Electrical Codes and be adequately sized by a licensed professional to accommodate the back-up loads installed in the critical load panel with a minimum of 5 kilowatt hours (kwh).
3. All single-family residential buildings, low-rise multifamily buildings with private garages, and ADUs, shall provide two wired National Electrical Manufacturers Association (NEMA) outlets, each supplied by a separate 40-ampere minimum dedicated branch circuit, and shall be installed specifically for supplying electrical power to an Electric Vehicle Charger. One outlet shall be installed inside the garage and the other outlet shall be installed outside the garage.

Future residential development on the project site would be required to comply with all applicable provisions of the Town's Reach code. Compliance with the Town's Reach code would further ensure that the project would not result in any substantially adverse effects related to energy.

Construction Energy Use

Construction of the proposed project would involve on-site energy demand and consumption related to use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, hauling and materials delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary on-site lighting, welding, and for supplying energy to areas of the site where energy supply cannot be met through a hookup to the existing electricity grid. Even during the most intense period of construction, due to the different types of construction activities (e.g., site preparation, grading, building construction), only portions of the project site and off-site improvement areas would be disturbed at a time, with operation of construction equipment occurring at different locations on the project site, rather than a single location. Project construction would not involve the use of natural gas appliances or equipment.

All construction equipment and operation thereof would be regulated by the CARB's In-Use Off-Road Diesel Vehicle Regulation. The In-Use Off-Road Diesel Vehicle Regulation is intended to reduce emissions from in-use, off-road, heavy-duty diesel vehicles in California by imposing limits on idling, requiring all vehicles to be reported to CARB, restricting the addition of older vehicles into fleets, and requiring fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. In addition, as a means of reducing emissions, construction vehicles are required to become cleaner through the use of renewable energy resources. The In-Use Off-Road Diesel Vehicle Regulation would therefore help to improve fuel efficiency for equipment used in construction of the proposed project. Technological innovations and more stringent standards are being researched, such as multi-function equipment, hybrid equipment, or other design changes, which could help to further reduce demand on oil and limit emissions associated with construction.

Based on the above, the temporary increase in energy use occurring during construction of the proposed project would not result in a significant increase in peak or base demands or require additional capacity from local or regional energy supplies. In addition, construction activities would be required to comply with all applicable regulations related to energy conservation and fuel efficiency, which would help to reduce the temporary increase in demand.

Operational Energy Use

Following implementation of the proposed project, PG&E would provide electricity to the project site. Energy use associated with operation of the future on-site residences would be typical of residential uses, requiring electricity for interior and exterior building lighting, HVAC, electronic equipment, refrigeration, appliances, and more. Maintenance activities during operations, such as landscape maintenance, would involve the use of electric or gas-powered equipment. In addition to on-site energy use, operation of the future on-site residences would result in transportation energy use associated with vehicle trips generated by future residents and visitors.

All future residences on-site would be subject to all relevant provisions of the most recent update of the CBSC, including the Building Energy Efficiency Standards and CARB standards, as well as the Town's Reach Code, which would ensure that the future residences would be designed to be energy efficient to the maximum extent practicable. Adherence to the most recent CAL Green Code, the Building Energy Efficiency Standards, and the Town's Reach Code would ensure that all development on-site would consume energy efficiently through the incorporation of such features as efficient water heating systems, high performance attics and walls, and high efficacy lighting. In addition, State regulations promote the generation of renewable energy and encourage energy efficiency through requirements placed on utility providers and strict development standards. For instance, the Renewables Portfolio Standard (RPS) requires utilities, including PG&E, to procure an increasing proportion of electricity from renewable sources. Ultimately the RPS requirements mandate that all electricity produced within the State be renewably sourced by the year 2045.

With regard to transportation energy use, California leads the nation in registered alternatively-fueled and hybrid vehicles. In fact, under Senate Bill (SB) 500, the State has required that, starting in the year 2030, all cars sold shall be zero-emission/electric vehicles. In addition, State-specific regulations encourage fuel efficiency and reduction of dependence on oil. Improvements in vehicle efficiency and fuel economy standards help

to reduce consumption of gasoline and reduce the State's dependence on petroleum products. In addition, the CBSC requires new developments to include the necessary electrical infrastructure for EV charging stations. The proposed project would comply with all applicable regulations associated with vehicle efficiency and fuel economy. In addition, as discussed in Section XVII, Transportation, of this IS/MND, future on-site development is not anticipated to substantially increase Vehicle Miles Traveled (VMT) within the project area. Furthermore, as discussed above, the Town's Reach Code requires that all single-family residential buildings, low-rise multifamily buildings with private garages, and ADUs provide two wired NEMA outlets, each supplied by a separate 40-ampere minimum dedicated branch circuit, which are required to be installed specifically for supplying electrical power to an Electric Vehicle Charger. Compliance with the provisions of the Town's Reach code would further ensure that the project would not result in any substantially adverse effects related to transportation energy use.

Conclusion

Based on the above, construction and operation of the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Thus, a ***less-than-significant*** impact would occur.

VII. GEOLOGY AND SOILS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	✖	☐	☐
ii. Strong seismic ground shaking?	☐	✖	☐	☐
iii. Seismic-related ground failure, including liquefaction?	☐	✖	☐	☐
iv. Landslides?	☐	✖	☐	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	✖	☐
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?	☐	✖	☐	☐
d. Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	✖	☐	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	✖
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	✖	☐

Discussion

The following discussion is based primarily on an Engineering Geologic Assessment and Subsurface Fault Investigation prepared by Sadek Derrega,[15] a Supplemental Geotechnical Evaluation and Recommendations Report prepared by BAGG Engineers,[16] and Supplemental Geologic and Geotechnical Peer Review of such reports, prepared by Cotton, Shires, and Associates, Inc.[17] (see Appendix C).

a,c,d. The proposed project's potential effects related to seismic hazards, liquefaction, landslides, lateral spreading, subsidence/settlement, and expansive soils are discussed in detail below.

Seismic Hazards

The project site is not located within the boundaries of an Alquist-Priolo Earthquake Fault Zone. However, the site is within a Santa Clara County Fault Hazard Zone associated with the Monte Vista-Shannon fault, a trace of which has been mapped to extend through the

[15] Sadek Deggera. *Engineering Geologic Assessment and Subsurface Fault Investigation – Proposed 9-Lot Subdivision, 14915 Shannon Road, Los Gatos, California.* August 31, 2023.

[16] BAGG Engineers. *Supplemental Geotechnical Evaluation and Recommendations Report – Proposed 9-Lot Residential Subdivision, 14915 Shannon Road, Los Gatos, California.* September 2023.

[17] Cotton, Shires, and Associates, Inc. *Supplemental Geologic and Geotechnical Peer Review RE: 9-Lot Subdivision M-22-003, FY23071, 14915 Shannon Road.* October 18, 2023.

southeastern corner of the site. In addition, the San Andreas Fault system, exists within the Santa Cruz Mountains and the Hayward and Calaveras Fault systems exist within the Diablo Range. While seismologists cannot predict earthquake events, geologists have estimated the probability of a magnitude (M_W) 6.7 or greater earthquake to occur at the aforementioned fault zones within the next 30 years. Table 4 below presents the State-considered active faults within the nearest proximity of the project site, as well as the probability of a magnitude 6.7 or greater earthquake to occur within such fault zones.

Table 4
Project Area Seismicity

Fault Name	Distance from Project Site (Miles)	Probability of $M_W \geq 6.7$ Earthquake within 30 Years
Monte Vista-Shannon	0.0	1%
San Andreas (Entire)	5.0	33%
San Andreas (Santa Cruz Mountains Section)	5.0	17%
Hayward	11.0	32%
Hayward (Southeast Extension)	11.0	8%
Calaveras	13.5	25%
Calaveras (Central Section)	13.5	21%

Source: Sadek Deggera, 2023.

As shown above, while the Monte Vista-Shannon fault has been mapped to extend through the southeastern corner of the site, the probability of a magnitude 6.7 or greater earthquake to occur within the Monte Vista-Shannon fault is one percent. In addition, the Monte Vista-Shannon fault is not zoned by the State as an active fault. However, based on the proximity of the project site to local and regional faulting, as well as historical seismic activity, the project site is considered subject to severe ground shaking risk and related effects.

As part of the Engineering Geologic Assessment and Subsurface Fault Investigation prepared for the proposed project, four geologic trenches averaging about 12 feet in depth and totaling roughly 270 lineal feet in length were excavated on-site to assess the presence of fault-related features. As noted in the Engineering Geologic Assessment and Subsurface Fault Investigation, Sadek Derrega did not observe any field features that are indicative of faulting to cross the site surface or distressed cultural features near the site where the fault is mapped.

However, Sadek Derrega encountered a persistent shear swarm in all of the four on-site geologic trenches, coincident with the mapped trace of the Shannon fault in the project area. Sadek Derrega determined that the shear swarm is fault-related, and represents a fault zone rather than a single planar trace. The shear swarm was most likely created along the upper part of the fault zone as a result of thrusting, which caused doming to occur and subsequent cracking. The noted fracture/shear propagation upward into soil versus rock is also anticipated to generate a wider band/swarm rather than a single fault plane. As such, Sadek Derrega concluded that the potential for fault-related ground surface rupture to occur along the encountered shear swarm zone is considered high. Accordingly, the Engineering Geologic Assessment and Subsurface Fault Investigation includes a recommendation for the establishment of a 50-foot-wide fault setback zone that

excludes the construction of structures intended for human habitation and occupancy beyond the lateral limits of the shear swarm on both sides.

The setback zone primarily impacts Lot 7 (the largest of the proposed on-site lots), and encroaches slightly into the southeastern corner of Lot 6 (see Plate 2 of the Engineering Geologic Assessment and Subsurface Fault Investigation). As such, structures intended for human habitation and occupancy would not be allowed within the southern portion of Lot 7, adjacent to Shannon Road. However, the conceptual footprints of the future residences shown in Figure 3 are currently located outside the fault setback zone. In addition, a separate application would need to be submitted to the Town for the construction of a future residence on Lot 6 and Lot 7, which would be reviewed by the Town to ensure that all residences are constructed outside of the fault setback zone.

Additionally, all nine single-family residences that could be developed on-site as a reasonably foreseeable consequence of the proposed project would be required to be built in accordance with the CBSC, which provides minimum standards to ensure that structures are designed using sound engineering practices and appropriate engineering standards for the seismic area in which the project site is located. Projects designed in accordance with the CBSC should be able to: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage, but with some non-structural damage; and 3) resist major earthquakes without collapse, but with some structural, as well as non-structural, damage. Although conformance with the CBSC does not guarantee that substantial structural damage would not occur in the event of a maximum magnitude earthquake, conformance with the CBSC can reasonably be assumed to ensure that the proposed structure would be survivable, allowing occupants to safely evacuate in the event of a major earthquake. Overall, compliance with the CBSC would generally help ensure that seismic-related effects would not cause adverse impacts; however, proper implementation of the CBSC standards cannot be ensured at this time.

In addition, given the generally steep conditions at the site, the presence of deep colluvium, and the potential for seismically induced ground shaking during the lifetime of the project, the Supplemental Geotechnical Evaluation and Recommendations Report prepared by BAGG Engineers recommends that residences be supported on drilled pier foundations with interconnecting grade beams and crawl space. Therefore, if future on-site structures are not built in accordance with the recommendations included in the Engineering Geologic Assessment and Subsurface Fault Investigation prepared by Sadek Derrega for the proposed project, the project's construction activities and operations could result in adverse impacts related to seismic rupture of a known earthquake fault or strong seismic ground shaking.

Liquefaction

Soil liquefaction results from loss of strength during cyclic loading, especially as a result of cyclic loadings induced by earthquakes or ground shaking. Soils most susceptible to liquefaction are clean, loose, saturated, uniformly graded fine sands. Based on the Engineering Geologic Assessment and Subsurface Fault Investigation prepared for the proposed project, the site is not located within County- or State-designated liquefaction hazard zones. In addition, given that the site is underlain by Miocene age bedrock and Pleistocene age soils where soil is relatively thick, the potential for liquefaction to impact the site is considered to be low. Furthermore, groundwater in the project area is relatively deep and Holocene age loose clean submerged sediment is not present at the site. Thus, the proposed project would not directly or indirectly cause potential substantial adverse

effects, including the risk of loss, injury, or death associated with seismic-related ground failure, including liquefaction.

Landslides and Debris Flow

Seismically-induced landslides are triggered by earthquake ground shaking. The risk of landslide hazard is greatest in areas with steep, unstable slopes. According to the Engineering Geologic Assessment and Subsurface Fault Investigation, based on site reconnaissance conducted by Sadek Deggera, nine topographic hollows/swales are located within and adjacent to the project site (Swale 1 through Swale 9). Of the nine swales, six (Swale 3 through Swale 8) are situated within the site boundaries. Swale 2 and Swale 9 border the property to the northwest and southeast, respectively, and while Swale 1 is located off-site beyond Swale 2 to the northwest, Swale 1 abuts the hairpin turn in Sky Lane, which is located along the northwestern corner of the site and extends down to near Shannon Road. It should be noted that the nine identified topographic swales do not include markers of wetland features or any additional aquatic/riparian characteristics that would be subject to the jurisdiction of resource agencies.

The nine topographic swales direct seasonal runoff towards the project site, and potentially pose landslide and debris flow hazards to the site. Based on a review of historic mapping and aerial imagery, as well as on-site reconnaissance activities, landslides or debris flows have not been mapped outside the boundaries of the nine topographic swales. However, relatively thick unconsolidated soil deposits that either have the potential to mobilize downslope or have already experienced down slope movement and flow are present within the boundaries of the nine topographic swales. In addition, the project site is located within a California Geological Survey (CGS) earthquake-induced landslide hazard zone. Further detail of each topographic swale is provided below.

Swale 1 and Swale 2

Swale 1 is located off-site, but abuts the western side of the hairpin bend in Sky Lane along the northwestern corner of the site, and extends down to near Shannon Road. The majority of Swale 2, including the Swale's axis, is situated outside the site limits, albeit the eastern margin of the swale slightly encroaches onto Lot 1. Swale 2 is approximately 350 feet in length, 60 feet in width, has a topographic relief of approximately 70 feet, and an overall slope gradient of 5H:1V.

According to the Engineering Geologic Assessment and Subsurface Fault Investigation, the potential for landslides and debris flows to occur within Swale 1 or Swale 2 is low, as the swales lack vacated source areas, steep gradients, and high side slope and headscarp areas. In addition, the Sky Lane hairpin turn is underlain by bedrock and both swales point away from the site and any interior failures/flows within the swales would be directed to flow away from the proposed Lot 1.

However, prominent erosional scarring was observed along the outer pavement edge of Sky Lane. If left unchecked, the scars/rills could enlarge and convey larger volumes of water, which in turn, could create additional erosion, which could undermine the edge of pavement. As such, the Engineering Geologic Assessment and Subsurface Fault Investigation recommends placing crushed angular gravel in the noted erosion rills to absorb the runoff energy of the runoff flows and to help reduce the effects of erosion.

Swale 3

Swale 3 is situated between the upslope side of Sky Lane and the northern property line of the site, and it is situated fully within proposed Lot 2. Swale 3 contains more than 10 feet of colluvial soils, and as Sky Lane was previously extended uphill across the swale, an approximately six-foot-high cut was made exposing sloughing soils. As such, the Engineering Geologic Assessment and Subsurface Fault Investigation recommends that a pier-supported retaining wall be constructed to support the road cut made across the width of Swale 3. The retaining wall should have a minimum of three feet of freeboard, and periodic maintenance would be required to clean sediment and debris collected behind the raised portion of the wall.

It should be noted that further investigation of Swale 3 was conducted as part of the Supplemental Geotechnical Evaluation and Recommendations Report. As noted therein, a slope stability analysis was performed on Swale 3, which found that cross-sections associated with Swale 3 achieved safety factors of greater than 1, thereby passing the screening procedure set forth in CGS Special Publication 117A. Nonetheless, the Supplemental Geotechnical Evaluation and Recommendations Report noted that the recommendations included in the Engineering Geologic Assessment and Subsurface Fault Investigation, as discussed above, should still be implemented during project design, and included further recommendations regarding site grading and retaining wall construction.

Swale 4, Swale 5, and Swale 6

Swale 4 is situated between the existing on-site residence and the northern property line, and is mostly positioned within proposed Lot 4, with the exception of the swale's western margin, which encroaches onto Lot 3.

Swale 5 extends from near the northern property line down to the existing animal corral, where minor cuts appear to have been made along the toe area. The axis of Swale 5 is covered by long green grass and shrubbery while scattered mature oak trees occupy the lower mouth area of the swale.

Swale 6 is located within Lot 6, and is the least prominent of all the nine swales. The swale appeared to have been caused by focused erosion of the blanketing soils and the underlying bedrock. The swale has a rounded off shape and even internal slopes although a small apron of surficial debris is present near the swale's mouth.

To help ensure potential future slope failures and debris flows do not occur in Swale 4 through Swale 6, the Engineering Geologic Assessment and Subsurface Fault Investigation recommends that six-foot high compacted debris detention berms be constructed across the mouth (toe) areas of the swales. Sadek Deggera also recommends that the berms be equipped with either overflow structures or properly designed spillways, and include a pier-supported chain link fence along the top of the berms. Periodic maintenance would be required to remove vegetation and silt, clean inlets and outlets and to check for signs of overtopping and erosion.

Further investigation of Swale 4 and Swale 5 was conducted as part of the Supplemental Geotechnical Evaluation and Recommendations Report. As noted therein, Swale 6 is relatively minor as compared to the other swales, and, therefore, was not included in the slope stability analyses. Based on the slope stability analysis, cross-sections associated

with Swale 4 and Swale 5 achieved safety factors of greater than 1, thereby passing the screening procedure. Nonetheless, the Supplemental Geotechnical Evaluation and Recommendations Report noted that the recommendations included in the Engineering Geologic Assessment and Subsurface Fault Investigation, as discussed above, should still be implemented during project design, and included further recommendations regarding site grading and retaining wall construction.

Swale 7

Swale 7 is the largest of the nine swales, and has a long and linear channel with an upper portion steeper than the middle and lower sections. The axis of the swale is blanketed with fresh grass while the lower portion of the swale is occupied by remnants of an orchard and a moderate growth of mature oak trees. The swale is located within Lot 7; however, it extends between the northern property line at Lot 8 and along the linear trough bordering Shannon Road.

Swale 7 has indications of potential significant previous slope failures and older debris flow episodes. However, the buildable envelope at proposed Lot 7 would be situated to the west up gradient and beyond the western margin of the swale. As such, any slope failures or debris flows originating within the swale are expected to flow into the linear trough, which slopes to the southeast away from the buildable envelope.

To ensure that flows are directed southeastward away from any residential structures within Lot 7, Engineering Geologic Assessment and Subsurface Fault Investigation recommends that a seven-foot-high curvy soil deflection berm be built to physically isolate the swale from the buildable envelope at Lot 7 and to deflect any future potential flows away from the buildable area at Lot 7.

In addition, the slope stability analysis performed to evaluate the upper portion of Swale 7 (lower portion of Lot 8) as part of the Supplemental Geotechnical Evaluation and Recommendations Report found that cross-sections associated with Swale 7 did not pass the screening procedure. As such, a row of 25-foot-deep, two-foot diameter stitch piers across Lot 8 roughly midway between the downhill side of the future residential foundation and the existing trail downslope would be required to ensure safety factors meet the screening procedure. The Supplemental Geotechnical Evaluation and Recommendations Report also noted that the recommendations included in the Engineering Geologic Assessment and Subsurface Fault Investigation, as discussed above, should still be implemented during project design.

Swale 8 and Swale 9

Swale 8 is the southernmost on-site swale and it is located fully within Lot 7. The majority of Swale 9 is situated off-site; however, the swale's western margin encroaches onto the southeast portion of Lot 7. In addition, it should be noted that the upper part of the swale previously extended upslope near Lot 9; however, the swale was previously altered through grading activities associated with the properties adjacent to the east.

According to the Engineering Geologic Assessment and Subsurface Fault Investigation, Swale 8 is not well pronounced, and the swale is high, steep, and has a linear channel. A test pit excavated in 2021 near the lower part of the swale encountered approximately 10 feet of soil. However, the swale is situated approximately 500 feet down gradient to the southeast from the buildable envelope at Lot 7. As such, any future slope failures or debris

flows occurring at Swale 8 would tend to flow downslope into the linear trough, and away from any on-site development.

Swale 9 abuts the project site's eastern and southeastern boundaries, and the upper part of the Swale abuts the lower southeast corner of Lot 9. Fresh erosion scars/rills were viewed on recent aerial imagery along a fence line behind a residence located immediately upslope of the swale. However, the erosional scarring is situated lower than proposed Lot 9 along the swale. In addition, the current head of Swale 9 does not reach Lot 9, and any potential future erosion or mass wasting is not anticipated to impact Lot 9 or the buildable area at Lot 7.

Therefore, the Engineering Geologic Assessment and Subsurface Fault Investigation does not anticipate landslide or debris flow impacts associated with Swale 8 or Swale 9, and recommendations regarding such swales were not included in the report.

Lateral Spreading

Lateral spreading is horizontal/lateral ground movement of relatively flat-lying soil deposits towards a free face such as an excavation, channel, or open body of water; typically, lateral spreading is associated with liquefaction of one or more subsurface layers near the bottom of the exposed slope. The amount of movement depends on the soil strength, duration and intensity of seismic shaking, topography, and free face geometry. Given that the project site does not contain any free faces, and liquefaction is not expected to occur on-site, the potential for lateral spreading to pose a risk to the proposed development is negligible.

Subsidence/Settlement

Subsidence is the settlement of soils of very low density, generally from either oxidation of organic material, desiccation and shrinkage, or both, following drainage. Subsidence takes place gradually, usually over a period of several years, and is a common consequence of liquefaction. During a field exploration of the project site conducted by Sadek Derrega, two small areas of undocumented fill were mapped at proposed Lots 4 and 6 in addition to a wedge of fill that was placed along the downslope side of Sky Lane. The fill sections at Lots 4 and 6 are anticipated to be approximately five feet thick. Non-engineered fill can undergo settlement, especially under new fill or building loads. As such, Sadek Derrega provides the recommendation that the undocumented fill areas should be over excavated and reworked or cut and incorporated in new fills, if deemed necessary based on the final layout of any future on-site residential structures, the grading scheme of the project site, and any associated improvements. Without removal of the non-engineered fill, the proposed project could be subject to subsidence/settlement.

Collapse

As discussed above, the project site is not located within an Alquist-Priolo Fault Zone. However, the site is underlain by a portion of the Monte Vista-Shannon fault. All structures constructed as a reasonably foreseeable consequence of the proposed project would be required to adhere to the provisions of the most recent version of the CBSC in effect at the time of building permit issuance. Structures built according to the seismic design provisions of current building codes would be able to resist major earthquakes without collapse. However, proper implementation of the CBSC standards cannot be ensured at this time. In addition, given the seismicity of the project area, if future on-site structures are not built in accordance with the recommendations included in the Engineering

Geologic Assessment and Subsurface Fault Investigation prepared for the proposed project, the proposed project could result in potential hazards or risks related to collapse.

Expansive Soils

Expansive soils are soils which undergo significant volume change with changes in moisture content. Specifically, such soils shrink and harden when dried and expand and soften when wetted, potentially resulting in damage to building foundations.

As part of the Supplemental Geotechnical Evaluation and Recommendations Report, soil samples from the project site were analyzed to determine the shrink-swell potential of the soils. Based on the results of the analysis, the overall shrink-swell data indicates an average swell of about 0.8 percent in samples between zero and five feet below the ground surface (bgs), 0.2 percent between five and 10 feet bgs and less than 0.1 percent between 10 and 15 feet bgs. However, a localized exception indicated a significantly high swell potential in the upper four feet at Boring B-5, located within Lot 7. As such, the Supplemental Geotechnical Evaluation and Recommendations Report recommends using at least 15-foot-deep drilled pier foundations to negate potential shrink-swell effects. Without proper implementation of the recommendations included in the Supplemental Geotechnical Evaluation and Recommendations Report prepared for the proposed project, the proposed project could result in potential hazards or risks related to expansive soils.

Conclusion

Based on the above discussion, without proper implementation of the recommendations included in the Engineering Geologic Assessment and Subsurface Fault Investigation and Supplemental Geotechnical Evaluation and Recommendations Report prepared for the proposed project, the proposed project could result in potential hazards or risks related to seismicity, liquefaction, landslides, lateral spreading, subsidence, collapse, and/or soil expansion, and a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

VII-1 *Prior to approval of Improvement Plans, the plans shall include all relevant 2022 CBSC standards, as recommended by the Supplemental Geotechnical Evaluation and Recommendations Report prepared by BAGG Engineers (2023), as well as all recommendations included in the Engineering Geologic Assessment and Subsurface Fault Investigation prepared by Sadek Derrega (2023) to ensure that the recommended standards for development of foundations, subsurface improvements, fault setback zones, etc. are incorporated into the project design and construction. All project improvement plans shall be reviewed by a licensed engineer and approved by the Town of Los Gatos Community Development Department and the Town's Engineer.*

b. Issues related to erosion are discussed in Section X, Hydrology and Water Quality, of this IS/MND. As noted therein, with implementation of Mitigation Measure X-1, the proposed project would not result in substantial soil erosion or the loss of topsoil. Thus, a ***less-than-significant*** impact would occur.

e. Town sewer infrastructure currently exists on site and the proposed project would connect to the existing on-site Town sewer lines. Thus, the construction or operation of septic tanks or other alternative wastewater disposal systems is not included as part of the project. Therefore, ***no impact*** regarding the capability of soil to adequately support the use of septic tanks or alternative wastewater disposal systems would occur.

f. According to the Town's General Plan EIR, based on the Society of Vertebrate Paleontology's system for assessing paleontological sensitivity, the Town soils within the Town have a high potential to yield paleontological resources. However, the site has undergone previous ground disturbance associated with past agricultural activities, as well as development of the existing structures on-site. In addition, implementation of General Plan policy ENV-12.5, which requires that construction stop until appropriate mitigation is implemented if paleontological resources are uncovered during grading or other on-site excavation activities, would help ensure the protection of uncovered paleontological resources. In addition, the proposed project would be required to implement Mitigation Measure V-1, which would further reduce any potential impacts to unknown paleontological resources that are uncovered during project construction. Therefore, the proposed project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, and a ***less-than-significant*** impact would occur.

VIII. GREENHOUSE GAS EMISSIONS. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	✖	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gasses?	☐	☐	✖	☐

Discussion

a,b. Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on Earth. An individual project's GHG emissions are at a micro-scale level relative to global emissions and effects to global climate change; however, an individual project could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. As such, impacts related to emissions of GHG are inherently considered cumulative impacts.

Implementation of the proposed project would cumulatively contribute to increases of GHG emissions. Estimated GHG emissions attributable to future development would be primarily associated with increases of carbon dioxide (CO_2) and, to a lesser extent, other GHG pollutants, such as methane (CH_4) and nitrous oxide (N_2O) associated with area sources, mobile sources or vehicles, utilities (electricity and natural gas), water usage, wastewater generation, and the generation of solid waste. The primary source of GHG emissions for the project would be mobile source emissions. The common unit of measurement for GHG is expressed in terms of annual metric tons of CO_2 equivalents ($MTCO_2e$/yr).

The proposed project is located within the jurisdictional boundaries of BAAQMD. The most recent BAAQMD Air Quality Guidelines were released in April 2023.[18] The updated GHG thresholds address more recent climate change legislation, including Senate Bill (SB) 32, and provide qualitative thresholds related to Buildings and Transportation.

Construction GHG emissions are a one-time release and are, therefore, not typically expected to generate a significant contribution to global climate change. Neither the Town nor BAAQMD has an adopted threshold of significance for construction-related GHG emissions and does not require quantification. Nonetheless, the proposed project's construction GHG emissions, as well as operational emissions, have been estimated using CalEEMod under the same assumptions discussed in Section III, Air Quality, of this IS (see Appendix A). The emissions estimates prepared for the proposed project determined that unmitigated construction of the project, including future development of the site with nine single-family residences, would result in total GHG emissions of 552 $MTCO_2e$ over the entire construction period.

In addition, operational GHG emissions are presented in Table 5. However, as noted previously, the BAAQMD's applicable threshold of significance for GHG emissions are

[18] Bay Area Air Quality Management District. *2022 California Environmental Quality Act Guidelines*. April 2023.

qualitative, and the foregoing information is provided for disclosure purposes only. Potential impacts related to GHG emissions resulting from implementation of the proposed project are considered in comparison with BAAQMD's adopted thresholds of significance below.

Table 5
Unmitigated Operational GHG Emissions

Source	GHG Emissions ($MTCO_2e$/yr)
Mobile	89.1
Area	0.11
Energy	27.3
Water	1.28[1]
Waste	2.20
Refrigerants	0.02
Total Operational GHG Emissions	**120**

[1] It should be noted that while not included in the modeling due to an inability to verify such information at this time, the project applicant has indicated that future residences would reduce water consumption beyond current standards through the use of drought tolerant native landscaping species and MWELO compliant irrigation, which would further reduce emissions beyond what has been presented herein.

Source: CalEEMod, December 2023 (see Appendix A).

BAAQMD Thresholds of Significance

According to the BAAQMD thresholds of significance, a project must either include specific project design elements (e.g., exclude use of natural gas, achieve a specific reduction in project-generated VMT below the regional average) or be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).[19]

In October 2012, the Town of Los Gatos adopted a Sustainability Plan to ensure the Town's compliance with statewide GHG reduction goals. The Sustainability Plan includes emissions reduction targets for the Town, as well as reduction strategies. However, given that the Sustainability Plan was adopted prior to the passing of SB 32, the following analysis focuses on the new BAAQMD GHG thresholds related to specific project design elements.

Compliance with BAAQMD Thresholds of Significance

According to the BAAQMD's new requirements, in order to find a less-than-significant GHG impact, projects must include, at a minimum, the following project design elements:

- The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development);
- The project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines;
- The project will achieve a reduction in project-generated VMT below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA; and

[19] Bay Area Air Quality Management District. *2022 California Environmental Quality Act Guidelines.* April 2023.

- The project will achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

In order to be consistent with the first criterion, the proposed project is required to include all electric appliances and plumbing. As discussed in Section VI, Energy, of this IS/MND, the Town's Reach Code requires that all new single-family residential buildings, low-rise multifamily buildings, and ADUs use electricity as the source of energy for space heating, water heating (including pools and spas), cooking appliances, clothes drying appliances, and other features for both interior and exterior applications, meaning that natural gas use is prohibited for such uses. Therefore, compliance with the Town's Reach Code would ensure that natural gas appliances and natural gas plumbing would be prohibited within all future residential structures proposed within the project site.

Regarding the second criterion, as discussed in Section VI, Energy, of this Initial Study, the proposed project would comply with all applicable federal, State, and local regulations regarding energy use during both project construction and project operations. Required compliance with applicable standards and regulations ensure that the building energy use associated with the proposed project would not be wasteful, inefficient, or unnecessary.

With respect to the third criterion, as discussed in Section XVII, Transportation, of this IS/MND, because the future on-site single-family residences are expected to generate fewer than 110 trips per day, the proposed project would result in a less-than-significant VMT impact, consistent with the screening criteria provided by the Governor's Office of Planning and Research (OPR).

With respect to the fourth criterion, the future on-site residences would be subject to the single-family residential off-street electric vehicle requirements included in the most recently adopted version of CALGreen Tier 2 available at the time of construction. For example, pursuant to the 2022 CALGreen Code, which is the most recently adopted version of CALGreen Code currently available, single-family residential projects are required to install a listed raceway to accommodate a dedicated 208/240-volt branch circuit for each unit, which would be suitable for EV charging. As discussed in Section VI, Energy, of this IS/MND, the Town's Reach Code requires that all single-family residential buildings, low-rise multifamily buildings with private garages, and ADUs provide two wired NEMA outlets, each supplied by a separate 40-ampere minimum dedicated branch circuit, which are required to be installed specifically for supplying electrical power to an Electric Vehicle Charger. Compliance with the provisions of the Town's Reach code would ensure that all future residential structures proposed within the project site would comply with the most current Tier 2 CALGreen standards, as required by BAAQMD.

Conclusion

Based on the above, the proposed project would not be considered to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Therefore, a ***less-than-significant*** impact would occur.

IX. HAZARDS AND HAZARDOUS MATERIALS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	✖	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	☐	✖	☐	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	✖
d. Be 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 it create a significant hazard to the public or the environment?	☐	☐	☐	✖
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?	☐	☐	☐	✖
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	✖
g. Expose people or structures, either directly or indirectly, to the risk of loss, injury or death involving wildland fires?	☐	☐	✖	☐

Discussion

a. Residential uses are not typically associated with the routine transport, use, disposal, or generation of substantial amounts of hazardous materials. Maintenance and operation of the future on-site residences may use common household cleaning products, fertilizers, and herbicides on-site, any of which could contain potentially hazardous chemicals; however, such products would be expected to be used in accordance with label instructions. Due to the regulations governing use of such products and the limited amount anticipated to be used on the site, routine use of such products would not represent a substantial risk to public health or the environment. Therefore, the project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, and a ***less-than-significant*** impact would occur.

b. The proposed project's potential effects related to the likely release of hazardous materials through existing site conditions and/or construction activities are discussed in detail below.

Construction Activities

Construction activities associated with the proposed project would involve the use of heavy equipment, which would contain fuels and oils, and various other products such as concrete, paints, and adhesives. Small quantities of potentially toxic substances (e.g., petroleum and other chemicals used to operate and maintain construction equipment) would be used at the project site and transported to and from the site during construction. However, the project contractor would be required to comply with all California Health and Safety Codes regulating the handling, storage, and transportation of hazardous and toxic

materials. Pursuant to California Health and Safety Code Section 25510(a), except as provided in subdivision (b), the handler or an employee, authorized representative, agent, or designee of a handler, shall, upon discovery, immediately report any release or threatened release of a hazardous material to the unified program agency (in the case of the proposed project, the Santa Clara County Department of Environmental Health) in accordance with the regulations adopted pursuant to Section 25510(a). The handler or an employee, authorized representative, agent, or designee of the handler shall provide all State, city, or county fire or public health or safety personnel and emergency response personnel with access to the handler's facilities. In the case of the proposed project, the contractors are required to notify the Santa Clara County Department of Environmental Health in the event of an accidental release of a hazardous material, who would then monitor the conditions and recommend appropriate remediation measures.

Existing Project Site Conditions

The following discussion is based primarily on a Phase I Environmental Site Assessment (ESA) and Phase II ESA prepared for the proposed project by Geocon Consultants, Inc. (Geocon) (see Appendix D).[20, 21]

As noted previously, the project site was formerly used as a walnut orchard and equestrian boarding facility, and is currently developed with one single-family residence, known as the Elam Residence, as well as two barns, a corral, and horse arena on the lower southern slope of the hillside.

The objective of the Phase I ESA prepared for the proposed project was to provide an evaluation of the historical uses of the project site to assess whether such uses have, or are expected to, result in environmental degradation of the site, or if Recognized Environmental Conditions (RECs), as defined by the American Society for Testing and Materials (ASTM), are present on-site. The ASTM Standard E1527-05 defines an REC as the presence or likely presence of hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The Phase I ESA included a survey of the site and a review of historical documentation, aerial photography, regulatory agency files, and environmental site radius reports.

Potential RECs identified within the project site included contaminated soils within the site, as well as an existing unused groundwater well, and potential hazardous building materials, which are discussed in further detail below.

Contaminated Soils

According to Phase I ESA prepared by Geocon, organochlorine pesticides (OCPs) and metals, such as arsenic and lead, may be present within the soils located in former orchard areas of the project site. In addition, during a site reconnaissance, Geocon observed gasoline-powered vehicles, equipment, and hand tools in the firewood area in the southwestern portion of the project site, the presence of which suggests the potential for small-quantity petroleum product releases to have affected on-site soils. Such releases

[20] Geocon Consultants, Inc. *Phase I Environmental Site Assessment Report – 14915 Shannon Road, Los Gatos, California*. March 2023.

[21] Geocon Consultants, Inc. *Phase II Environmental Site Assessment Report – 14915 Shannon Road, Los Gatos, California*. March 9, 2023.

are a potential environmental concern for the project site. Furthermore, potentially undocumented fill material was observed in the corral area east of the existing on-site residence in the southern-central portion of the site. Geocon could not determine if the fill material had been imported from off-site or had been generated from soil on the site, and, therefore, determined that metals may be present within the fill material.

As such, Geocon conducted a Phase II ESA to assess surficial soils on the project site for the potential presence of contaminants of concern (COC), identified within the Phase I ESA including OCPs, metals, and petroleum hydrocarbons. Soil samples were collected throughout the project site, including the former orchard areas, the firewood area, and the area of undocumented fill, on February 13, 2023 (see Figure 6), in accordance with Department of Toxic Substances Control (DTSC) guidance, and were sent to California Laboratory Services (CLS) for testing in accordance with USEPA testing methods. The COC concentrations detected in the soil samples were then compared to the applicable regulatory health risk-based screening levels including the DTSC Human Health Risk Assessment Note 3 screening levels (DTSC-SL) and the USEPA's Regional Screening Level (RSL). Based on the Phase II ESA, COCs were not identified within the soil samples at concentrations exceeding their respective DTSC-SLs or RSLs. As such, the Phase II ESA concluded that additional environmental investigation is not warranted, and the site is appropriate for residential use.

Existing Groundwater Well

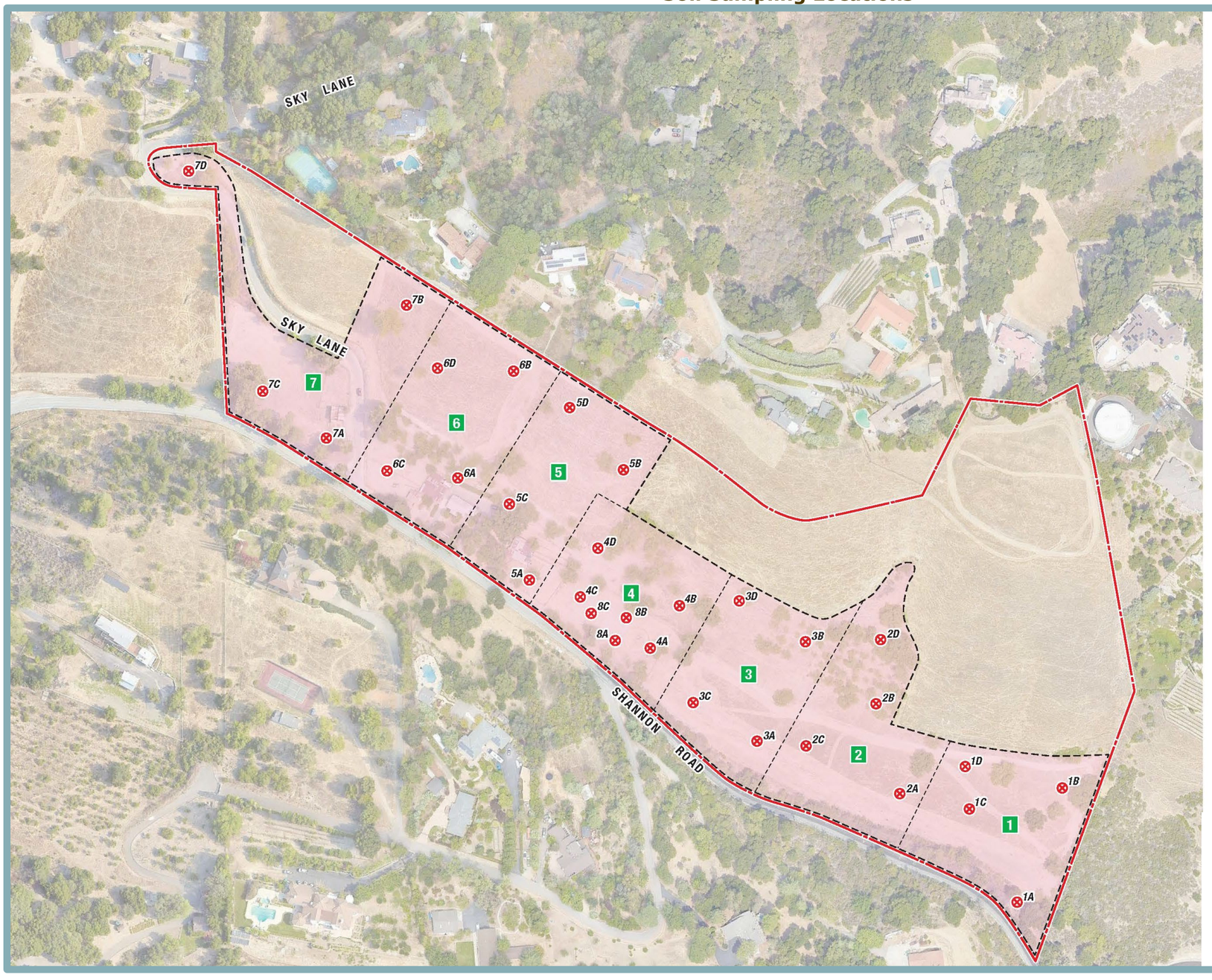
As noted in the Phase I ESA prepared for the proposed project, the previous Phase I ESA conducted by AWR summarized an interview with the property owner, who indicated that a well had been installed near the existing residence on the project site, but that the well did not produce quality water and, therefore, was never used. The well was reportedly capped in place. However, both AWR and Geocon were unable to locate the well during their respective site reconnaissance. In addition, information pertaining to the well, such as a Well Completion Report, was not available. As such, the Phase I ESA recommended that the on-site groundwater well be located, unearthed, and abandoned in accordance with Santa Clara Valley Water District (SCVWD) requirements. However, if the groundwater well is not abandoned in accordance with SCVWD requirements, the well could present a potential hazard.

Hazardous Building Materials

Asbestos is the name for a group of naturally occurring silicate minerals that are considered to be "fibrous" and, through processing, can be separated into smaller and smaller fibers. The fibers are strong, durable, chemical resistant, and resistant to heat and fire. They are also long, thin, and flexible, such that they can be woven into cloth. Because of the above qualities, asbestos was considered an ideal product and has been used in thousands of consumer, industrial, maritime, automotive, scientific, and building products. However, later discoveries found that when inhaled, the material caused serious illness.

For buildings constructed prior to 1980, the Code of Federal Regulations (29 CFR 1926.1101) states that all thermal system insulation (boiler insulation, pipe lagging, and related materials) and surface materials must be designated as "presumed asbestos-containing material" unless proven otherwise through sampling in accordance with the standards of the Asbestos Hazard Emergency Response Act. According to the Phase I ESA, the single-family residence and one barn were present on-site prior to 1939, and the second shed was constructed between 1968 and 1974.

Figure 6
Soil Sampling Locations



Therefore, the potential exists that asbestos-containing materials were used in the construction of such structures. Construction and demolition projects that have the potential to disturb asbestos (from soil or building material) are required to comply with all the requirements of the CARB's airborne toxic control measures (ATCMs) for construction, grading, quarrying, and surface mining operations. However, if proper precautions are not taken prior to demolishing the existing structures, demolition of the on-site structures could present a potential hazard risk related to asbestos.

Federal guidelines define lead-based paint (LBP) as any paint, varnish, stain, or other applied coating that has one milligram of lead per square centimeter or greater. Lead is a highly toxic material that may cause a range of serious illnesses, and in some cases death. In buildings constructed after 1978, the presence of LBP is unlikely. Structures built prior to 1978, and especially prior to the 1960s, are expected to contain LBP. Given that the existing on-site structures were constructed prior to 1978, the proposed project could potentially expose construction workers to LBP during demolition of the structures. Title 8, CCR Section 1532.1 establishes guidelines related to construction work and demolition of structures that may include lead. As required therein, the contractor must conduct a lead exposure assessment prior to the initiation of any work, and ensure that no employee is exposed to lead at a concentration greater than 50 micrograms per cubic meter of air. However, if proper precautions are not taken prior to demolishing the existing structures, demolition of the on-site structures could present a potential hazard risk related to LBP.

Furthermore, caulk containing polychlorinated biphenyls (PCBs) was commonly used in building construction practices between 1950 and 1970 and, thus, may be present in the existing buildings. Finally, the existing structures may include items that contain mercury, such as gas pressure regulators or thermostats. As such, demolition of the on-site structures could present a potential hazard risk related to PCB containing caulk, and/or mercury.

Conclusion

Based on the above, the proposed project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment, and a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impacts to a *less-than-significant* level.

IX-1 *Prior to any ground-disturbing activities, the project applicant shall hire a licensed contractor to locate, unearth, and abandon the on-site groundwater well in accordance with Santa Clara Valley Water District (SCVWD) requirements. Proof of compliance shall be submitted to the Town of Los Gatos Community Development Department.*

IX-2 *Prior to issuance of a demolition permit for on-site structures, the project applicant shall consult with certified Asbestos and/or Lead Risk Assessors to complete an asbestos and lead survey. The completed asbestos and lead survey shall be submitted to the Town of Los Gatos Building Department for review and approval. If asbestos-containing materials or lead-containing materials are not discovered during the survey, further*

mitigation related to asbestos-containing materials or lead-containing materials shall not be required. If asbestos-containing materials and/or lead-containing materials are discovered by the survey, the project applicant shall prepare a work plan to demonstrate how the on-site asbestos-containing materials and/or lead-containing materials shall be removed in accordance with current California Occupational Health and Safety (Cal-OSHA) Administration regulations and disposed of in accordance with all CalEPA regulations, prior to the demolition and/or removal of the on-site structures. The plan shall include the requirement that work shall be conducted by a Cal-OSHA registered asbestos and lead abatement contractor in accordance with Title 8 CCR 1529 and Title 8 CCR 1532.1 regarding asbestos and lead training, engineering controls, and certifications. The applicant shall submit the work plan to the Town for review and approval. The Town has the right to defer the work plan to the SCCDEH for additional review. Materials containing more than one (1) percent asbestos that is friable are also subject to BAAQMD regulations. Removal of materials containing more than one (1) percent friable asbestos shall be completed in accordance with BAAQMD Section 11-2-303.

c. The nearest school is Mulberry Elementary School, located approximately 0.82-mile northeast of the site. Therefore, schools are not located within one-quarter mile of the project site, and the proposed project would result in ***no impact*** related to hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

d. Government Code Section 65962.5 requires the California Environmental Protection Agency to annually develop an updated Cortese List. The components of the Cortese List include the DTSC Hazardous Waste and Substances Site List, the list of leaking underground storage tank (UST) sites from the State Water Resources Control Board's (SWRCB) GeoTracker database, the list of solid waste disposal sites identified by the SWRCB, and the list of active Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO) from the SWRCB. The project site is not included on the DTSC Hazardous Waste and Substances Site List,[22] or the list of solid waste disposal sites.[23] Additionally, the SWRCB's GeoTracker database does not identify the project site as containing any Leaking Underground Storage Tanks (LUSTs), which is another portion of the Cortese List.[24] Finally, the project site is not on the list of active CDO and CAO from the SWRCB. Thus, the proposed project would not create a significant hazard to the public or the environment, and ***no impact*** would occur.

e. The project site is not within an airport land use plan, within two miles of a public airport, or near a private landing strip. The nearest airport to the project site is the San Jose International Airport, located approximately seven miles north of the site. Therefore, ***no impact*** related to a safety hazard for people residing or working in the project area related to such would occur.

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[22] Department of Toxic Substances Control. *Hazardous Waste and Substances Site List (Cortese).* Available at: https://www.envirostor.dtsc.ca.gov/public/. Accessed October 2023.

[23] CalEPA. *Cortese List Data Resources*. Available at: https://calepa.ca.gov/sitecleanup/corteselist/. Accessed October 2023.

[24] State Water Resources Control Board. *GeoTracker Public Site.* Available at: https://geotracker.waterboards.ca.gov/map/. Accessed October 2023.

f. The Town's Emergency Operation Plan (EOP) identifies potential threats and outlines response protocols and procedures.[25] According to the EOP, evacuations are considered most likely in response to a dam failure or wildfire. In general, during emergencies, major roads, highways, hospitals, and fire stations are important to the initial response of the Town. Additionally, schools, churches, and community centers are frequently used as assembly points for persons displaced from homes, or for distribution of emergency supplies.

Implementation of the proposed project would not result in any substantial modifications to the existing roadway system and, thus, would not physically interfere with the EOP, particularly with any emergency evacuation routes. In fact, the standard fire department turn around proposed to be constructed as part of the new shared driveway taking access from the extension of Sierra Azule Drive and the proposed secondary emergency access connection to Sky Lane would enhance the safety of the 14 residences on Sky Lane, located north of the project site, by providing a second means of access that is consistent with PRC 4290. Furthermore, the proposed project would not include land uses or operations that could impair implementation of the plan. Therefore, the proposed project would not interfere with an emergency evacuation or response plan, and ***no impact*** would occur.

g. Issues related to wildfire hazards are discussed in Section XX, Wildfire, of this IS/MND. As noted therein, the project site is not located within a State Responsibility Area (SRA). However, the site is located within a Very High Fire Hazard Severity Zone (VHFHSZ).[26] Nonetheless, the proposed project would be required to comply with all applicable requirements of the CFC through the installation of fire sprinkler systems, fire hydrants, and other applicable requirements. For example, as discussed above, the standard fire department turn around proposed to be constructed as part of the new shared driveway taking access from the extension of Sierra Azule Drive and the proposed secondary emergency access connection to Sky Lane would enhance the safety of the 14 residences on Sky Lane, located north of the project site, by providing a second means of access that is consistent with PRC 4290. The proposed project would also be situated near existing roads, water lines, and other utilities, which would reduce risks related to wildfire. Thus, the potential for wildland fires to reach the project site would be limited. Based on the above, the proposed project would not expose people or structures to the risk of loss, injury or death involving wildland fires, and a ***less-than-significant*** impact would occur.

[25] Town of Los Gatos. *Emergency Operation Plan*. 2015
[26] California Department of Forestry and Fire Protection. *Fire Hazard Severity Zone Viewer*. Available at: https://egis.fire.ca.gov/FHSZ/. Accessed October 2023.

X. HYDROLOGY AND WATER QUALITY. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	✖	☐	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	✖	☐
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;	☐	✖	☐	☐
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	✖	☐	☐
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; or	☐	✖	☐	☐
iv. Impede or redirect flood flows?	☐	☐	✖	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	✖	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	✖	☐

Discussion

a. The following discussion provides a summary of the proposed project's potential to violate water quality standards/waste discharge requirements or otherwise degrade water quality during construction and operation.

Construction

During the early stages of construction activities, topsoil would be exposed during ground-disturbance. Prior to overlaying the ground surface with impervious surfaces and structures, the potential exists for wind and water erosion to discharge sediment and/or urban pollutants into stormwater runoff, which could adversely affect water quality downstream.

The SWRCB regulates stormwater discharges associated with construction activities where clearing, grading, or excavation results in a land disturbance of one or more acres. The Town's National Pollutant Discharge Elimination System (NPDES) permit requires applicants to show proof of coverage under the State's General Construction Permit prior to receipt of any construction permits. The State's General Construction Permit requires a Storm Water Pollution Prevention Plan (SWPPP) to be prepared for the site. A SWPPP describes Best Management Practices (BMPs) to control or minimize pollutants from entering stormwater and must address both grading/erosion impacts and non-point source pollution impacts of the development project. Because the proposed project would disturb

greater than one acre of land, the proposed project would be subject to the requirements of the State's General Construction Permit.

In addition, the project would be required to comply with Chapter 12, Grading, Erosion, and Sediment Control, of the Town's Municipal Code, which includes standards for managing stormwater runoff during construction and operation. Pursuant to Section 12.20.050, approval of an erosion and sediment control plan by the Town Engineer is required for new development projects within Los Gatos. The erosion and sediment control plan would include measures such as an effective revegetation program to stabilize all disturbed areas which would not be otherwise protected, and would comply with the recommendations of the civil engineer, geotechnical engineer, engineering geologist, or landscape architect involved in preparation of the grading plans, as well as any and all standards and specifications adopted by the Town Engineer for the control of erosion and sedimentation on grading sites. However, because an erosion and sediment control plan has not yet been prepared for the proposed project, proper compliance with the aforementioned regulations cannot be ensured at this time, and the proposed project could discharge sediment or urban pollutants through soil erosion, violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality during construction.

Operation

Following buildout of the proposed driveways, as well as construction of the future on-site residences, disturbed areas of the site would be largely covered with impervious surfaces and topsoil would no longer be exposed. While the proposed project would increase the amount of impervious surfaces on-site as compared to existing conditions, the proposed project would install an on-site stormwater drainage system to collect and treat the on-site runoff. Additionally, all municipalities within Santa Clara County (and the County itself) are required to develop more restrictive surface water control standards for new development projects as part of the renewal of the Countywide NPDES permit. Thus, typical operations on the project site associated with the future on-site residences would not violate any water quality standards or waste discharge requirements, nor degrade water quality.

The Town of Los Gatos has adopted the County C.3 Stormwater Standards, which require new development and redevelopment projects that create or alter 10,000 or more sf of impervious area to contain and treat all stormwater runoff from the project site. The proposed project is anticipated to create or alter 10,000 or more sf. Thus, the project would be subject to the requirements of the C.3 Stormwater Standards related to stormwater treatment, which are included in the Town's NPDES General Permit. Additionally, Town Code Section 22.30.035 requires permanent stormwater pollution prevention measures for development projects to reduce water quality impacts of stormwater runoff from the site in accordance with the Town's current NPDES water discharge permit and the Town's policy for stormwater management.

Each of the nine proposed lots would include an associated gravel stormwater drainage basin on-site. Stormwater runoff from each lot would be directed into the associated on-site gravel stormwater basin located within the lot, which would allow for stormwater runoff to infiltrate into the on-site soils. The gravel stormwater drainage basins associated with Lots 1 through 6, 8, and 9 would be sized to meet the Town's C3 design criteria, such that stormwater runoff from the lots would not need to be routed to a public storm drain. With regard to Lot 7, stormwater runoff would flow from the on-site gravel stormwater basin to an existing broad swale toward the east. The swale extends off-site, and drains into a

culvert system located under Santa Rosa Drive. The culvert system ultimately extends under Arroyo del Rancho through a large arch culvert located parallel to Shannon Road. In addition, the project would include various other landscaping elements that would allow for stormwater infiltration. Overall, the proposed project would comply with the requirements of the SWRCB and the Regional Water Quality Control Board (RWQCB), and would meet C.3 Standards related to stormwater treatment. Therefore, during operation, the project would comply with all relevant water quality standards and waste discharge requirements, and would not degrade water quality.

Conclusion

Based on the above, because an erosion and sediment control plan has not yet been prepared for the proposed project, the proposed project could result in the violation of water quality standards or degradation of water quality during construction, and a ***potentially significant*** impact would occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impacts to a *less-than-significant* level.

X-1 *Prior to any ground-disturbing activities, the project applicant shall prepare and submit an erosion and sediment control plan for review and approval by the Town of Los Gatos Engineering Division of the Parks and Public Works Department. A Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) shall be submitted to the San Francisco Bay Regional Water Quality Control Board for projects disturbing more than one (1) acre. A maximum of two (2) weeks is allowed between clearing of an area and stabilizing/building on an area if grading is allowed during the rainy season. Interim erosion control measures, to be carried out during construction and before installation of the final landscaping, shall be included. Interim erosion control method shall include, but are not limited to: silt fences, fiber rolls (with locations and details), erosion control blankets, Town standard seeding specification, filter berms, check dams, retention basins, etc. The project contractor shall provide erosion control measures as needed to protect downstream water quality during winter months. The grading, drainage, erosion control plan and SWPPP shall be prepared in compliance with applicable measures contained in the amended provisions C.3 and C.14 of most current Santa Clara County National Pollutant Discharge Elimination System (NPDES) Municipal Regional Permit (MRP). Monitoring for erosion and sediment control is required and shall be performed by the Qualified SWPPP Developer (QSD) or Qualified SWPPP Practitioner (QSP) as required by the Construction General Permit. Stormwater samples are required for all discharge locations and projects may not exceed limits set forth by the Construction General Permit Numeric Action Levels and/or Numeric Effluent Levels. A Rain Event Action Plan (REAP) shall be developed forty-eight (48) hours prior to any likely precipitation event, defined by a fifty (50) percent or greater probability as determined by the National Oceanic and Atmospheric Administration (NOAA), and/or whenever rain is imminent. The QSD or QSP must print and save records of the precipitation forecast for the project location area from (https://www.cpc.ncep.noaa.gov/) which shall*

accompany monitoring reports and sampling test data. A rain gauge is required on-site. The Town of Los Gatos Engineering Division of the Parks and Public Works Department and the Building Department shall conduct periodic NPDES inspections of the site throughout the recognized storm season to verify compliance with the Construction General Permit and Stormwater ordinances and regulations.

b,e. Water supplies in the Town of Los Gatos are provided by the SJW. Groundwater currently accounts for approximately 30 to 40 percent of the SJW's water supplies, while the remaining water supply is sourced from surface water of the Los Gatos Creek watershed.[27] Groundwater is drawn from the Santa Clara Subbasin, which is part of the larger Santa Clara Valley Basin. The Santa Clara Subbasin is an unadjudicated groundwater basin and is maintained by the SCVWD.

California's Groundwater (Bulletin 118) is the State's official publication on the occurrence and nature of groundwater in California. The publication defines the groundwater basin boundaries and summarizes groundwater information for each of the State's 10 hydrologic regions. Bulletin 118 – Interim Update 2016 defines 517 groundwater basins and subbasins in California. Per the Sustainable Groundwater Management Act (SGMA), the Department of Water Resources (DWR) is required to prioritize the 517 groundwater basins and subbasins as either High, Medium, Low, or Very Low. Prioritization is based on the following considerations:

- The population overlying the basin or subbasin;
- The rate of current and projected growth of the population overlying the basin or subbasin;
- The number of public supply wells that draw from the basin or subbasin;
- The total number of wells that draw from the basin or subbasin;
- The irrigated acreage overlying the basin or subbasin;
- The degree to which persons overlying the basin or subbasin rely on groundwater as their primary source of water;
- Any documented impacts on the groundwater within the basin or subbasin, including overdraft, subsidence, saline intrusion, and other water quality degradation; and
- Any other information determined to be relevant by the department, including adverse impacts on local habitat and local streamflows.

Each basin's priority determines which provisions of California Statewide Groundwater Elevation Monitoring (CASGEM) and SGMA apply. SGMA requires Medium and High priority basins to develop groundwater sustainability agencies (GSAs), develop groundwater sustainability plans (GSPs) and manage groundwater for long-term sustainability. The Santa Clara Subbasin is considered High Priority per the DWR due to the overlying population, projected growth, number of wells, irrigation acreage, groundwater reliance, and groundwater impacts of the area; however, the subbasin has not been identified by DWR as being critically overdrafted. [28]

Between 2016 and 2020, the volume of water pumped from the Santa Clara Subbasin increased from 10,637 acre-feet (AF) to 17,360 AF; however, the groundwater basin has

[27] San Jose Water Company. *2020 Urban Water Management Plan*. June 2021.
[28] San Jose Water Company. *2020 Urban Water Management Plan* [pg. 6-4]. June 2021.

an operational storage capacity of approximately 350,000 AF.[29] While the nine future single-family residences on-site would increase water usage beyond the current on-site water demand generated from the existing single-family residence, given the relatively minor increase in water usage that would result from a net increase in eight residences, the proposed project would not substantially increase groundwater usage as compared to current aquifer withdrawals. As such, the proposed project would not result in a substantial increase in groundwater use beyond what has been generally anticipated for the site by the Town and accounted for in the Urban Water Management Plan (UWMP). Per the 2020 UWMP, water supplies are projected to meet expected demand for normal year, single-dry year, and multiple-dry year scenarios through 2045.[30]

Additionally, the proposed project would include the development of a new stormwater drainage system to capture and treat on-site runoff. As such, even with development of the proposed project, groundwater recharge would still occur through the gravel stormwater drainage basins and the substantial amount of other pervious surfaces proposed on-site. Thus, the proposed project would not interfere substantially with groundwater recharge in the area because the proposed on-site stormwater drainage system would capture and treat on-site runoff from new impervious surfaces.

Therefore, the proposed project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the Santa Clara Subbasin. In addition, the project would not conflict with or obstruct implementation of a water quality control plan. Thus, a ***less-than-significant*** impact would occur.

c.i-iii. While portions of the project site are currently developed and contain existing impervious surfaces, the proposed project would result in an increase in impervious surfaces on the project site. However, the proposed project would include installation of a new stormwater drainage system to capture and treat on-site runoff from new impervious surfaces.

As discussed above, each of the nine proposed lots would include an associated gravel stormwater drainage basin on-site. Stormwater runoff from each lot would be directed into the associated on-site gravel stormwater basin located within the lot, which would allow for stormwater runoff to infiltrate into the on-site soils. The gravel stormwater drainage basins associated with Lots 1 through 6, 8, and 9 would be sized to meet the Town's C3 design criteria, such that stormwater runoff from the lots would not need to be routed to a public storm drain. With regard to Lot 7, stormwater runoff would flow from the on-site gravel stormwater basin to an existing broad swale toward the east. The swale extends off-site, and drains into a culvert system located under Santa Rosa Drive. The culvert system ultimately extends under Arroyo del Rancho through a large arch culvert located parallel to Shannon Road.

Nonetheless, given the steep slopes located within the project site, the Supplemental Geotechnical Evaluation and Recommendations Report included recommendations for various drainage structures associated with the on-site berms, retailing walls, etc. Therefore, without proper implementation of the recommendations included in the Supplemental Geotechnical Evaluation and Recommendations Report prepared for the proposed project, the proposed project could substantially alter the existing drainage

[29] San Jose Water Company. *2020 Urban Water Management Plan* [pg. 6-4]. June 2021.
[30] San Jose Water Company. *2020 Urban Water Management Plan* [pg. 7-1]. June 2021.

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 result in substantial erosion, siltation, or flooding on- or off-site, 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. Therefore, a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impacts to a *less-than-significant* level.

X-2 *Prior to the issuance of any grading or building permits, the project contractor shall submit a Stormwater Control Plan to the Town's Engineering Division of the Parks and Public Works Department for review and approval demonstrating the project's compliance with all State stormwater standards and requirements. The Stormwater Control Plan shall include all pertinent details of any and all proposed stormwater management facilities, including, but not limited to, ditches, swales, pipes, bubble-ups, dry wells, outfalls, infiltration trenches, detention basins and energy dissipaters. The Stormwater Control Plan shall also include all applicable recommendations for on-site drainage structures (i.e., berms, retailing walls, etc.) included in the Supplemental Geotechnical Evaluation and Recommendations Report prepared by BAGG Engineers (2023).*

c.iv. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 06085C0381H, the project site is located within an area classified as Zone D, which is not considered a special flood hazard area (SFHA).[31] In addition, according to Figure 4.10-1 of the General Plan EIR, the project site is not located within a 100-year or 500-year flood zone. Therefore, development of the proposed project would not impede or redirect flood flows and a ***less-than-significant*** impact would result.

d. As discussed under question 'c.iv' above, the proposed project would not be subject to substantial flooding risks. The nearest reservoir is the Vasona Reservoir located approximately 2.5 miles northwest of the site. In addition, the Lexington Reservoir and Lenihan Dam are located approximately 3.5 miles southwest of the site. However, the project site is not located within a dam failure inundation area.[32] Tsunamis are defined as sea waves created by undersea fault movement, whereas a seiche is a long-wavelength, large-scale wave action set up in a closed body of water such as a lake or reservoir. Due to the project site's substantial distance from the coast, the proposed project would not be exposed to flooding risks associated with tsunamis. Seiches do not pose a risk to the proposed project, as the project site is not located adjacent to any closed body of water. Therefore, the proposed project would not pose a risk related to the release of pollutants due to project inundation due to flooding, tsunami, or seiche, and a ***less-than-significant*** impact would occur.

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[31] Federal Emergency Management Agency. *Flood Insurance Rate Map 06085C0376H.* Available at: https://msc.fema.gov/portal/home. Accessed October 2023.

[32] Santa Clara Valley Water District. *Local Dams and Reservoirs.* Available at: https://www.valleywater.org/your-water/local-dams-and-reservoirs. Accessed October 2023.

XI. LAND USE AND PLANNING. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Physically divide an established community?	☐	☐	☐	✖
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	✖	☐

Discussion

a. A project risks dividing an established community if the project would introduce infrastructure or alter land uses so as to change the land use conditions in the surrounding community, or isolate an existing land use. Currently, a portion of the project site is developed with a single-family residence, as well as two barns, a corral, and horse arena on the lower southern slope of the hillside. The project site is surrounded by hillside residences to the north, east, and south; undeveloped land to the west; and the Heintz Open Space preserve to the north, beyond the hillside residences. The proposed project currently includes subdivision of the 27-acre project site into nine lots and construction of on-site driveways and utility improvements, as well as the reasonably foreseeable future development of the site with nine single-family residences. The proposed project would be compatible with the existing surrounding land uses in the project area and would not alter the existing general development trends in the area or isolate an existing land use. Therefore, the proposed project would not physically divide an established community, and ***no impact*** would occur.

b. The project site is currently designated Agriculture by the Town's 2020 General Plan, and is zoned RC. The proposed project would require approval of a General Plan Amendment to change the land use designation of the site to Hillside Residential, and a rezone of the site to HR-2 ½.

As discussed throughout this IS/MND, the proposed project would not result in any significant environmental effects that cannot be mitigated to a less-than-significant level by the mitigation measures provided herein. In addition, the proposed project would not conflict with Town policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect, including, but not limited to, the Town's noise standards, applicable SWRCB regulations related to stormwater, the Town's tree protection ordinance, and the development standards included in the Town's General Plan, zoning code, and 1987 Hillside Specific Plan. Therefore, the proposed project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental impact. Thus, a ***less-than-significant*** impact would occur.

XII. MINERAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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?	☐	☐	☐	✖
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?	☐	☐	☐	✖

Discussion

a,b. The General Plan EIR determined that mineral resources are not significant in the Town. Several limestone quarries operated south of Los Gatos in the late 1800s and early 1900s. The nearest active quarries are the Lexington Quarry, east of Lexington Reservoir, and the Lehigh Permanente and Stevens Creek quarries west of Cupertino. However, active mining operations do not exist within the Town of Los Gatos and known mineral resources do not exist in the vicinity of the project site. Thus, the proposed project would not result in any impacts associated with loss of locally or regionally important mineral resources, and ***no impact*** would occur.

XIII. NOISE. *Would the project result in:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	✖	☐
b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	✖	☐
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?	☐	☐	☐	✖

Discussion

a. The discussion below presents information regarding sensitive noise receptors in proximity to the project site, applicable noise standards, and the potential for the proposed project to result in noise impacts during project construction and operation. The following terms are referenced in the sections below:

- Decibel (dB): A unit of sound energy intensity. An A-weighted decibel (dBA) is a decibel corrected for the variation in frequency response to the typical human ear at commonly encountered noise levels. All references to dB in this report will be A-weighted unless noted otherwise.
- Day-Night Average Level (L_{dn}): The average sound level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours.
- Median Sound Level (L_{50}): The sound level exceeded 50 percent of the time over a given time-period.
- Average (Equivalent) Sound Level (L_{eq}): The steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour).
- Community Noise Equivalent Level (CNEL): The 24-hour average noise level with noise occurring during evening (7:00 PM to 10:00 PM) hours weighted by a factor of three and nighttime hours weighted by a factor of ten prior to averaging.

Sensitive Noise Receptors

Some land uses are considered more sensitive to noise than others, and, thus, are referred to as sensitive noise receptors. Land uses often associated with sensitive noise receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise. The nearest existing sensitive receptors to the project site are the hillside residences to the north of the project site, the nearest of which is located approximately 85 feet from the nearest on-site disturbance areas.

Town Noise Standards

Both the Town's Municipal Code and General Plan include regulations related to the generation of noise.

Section 16.20.035 of the Town's Municipal Code states the following regarding construction noise:

> Notwithstanding any other provision of this chapter, between the hours of 8:00 a.m. to 6:00 p.m. weekdays, and 9:00 a.m. to 4:00 p.m. Saturdays, construction, alteration or repair activities which are authorized by a valid Town permit or as otherwise allowed by Town permit, shall be allowed if they meet at least one of the following noise limitations:
>
> (1) No individual piece of equipment shall produce a noise level exceeding eighty-five (85) dBA at twenty-five (25) feet. If the device is located within a structure on the property, the measurement shall be made at distances as close to twenty-five (25) feet from the device as possible.
> (2) The noise level at any point outside of the property plane shall not exceed eighty-five (85) dBA.

Table NOI-2 of the Town's General Plan establishes a maximum outdoor noise limit of 55 dBA L_{dn} for residential land uses within the Town. The Noise Element of the Town's General Plan also specifies a limit of 45 dBA L_{dn} for residential interiors.

The Town of Los Gatos has not established a threshold for significant increases in traffic noise. However, the Federal Interagency Committee on Noise (FICON) has developed guidance for determining increases in traffic noise. Therefore, increases in the ambient noise environment due to the proposed project were evaluated using the criteria developed by FICON. Although the FICON guidelines were originally developed for aircraft noise impacts, the noise increase thresholds are generally considered appropriate for evaluation of noise increases at noise sensitive uses such as single-family residences. The significance criteria are provided in Table 6, below.

Table 6
FICON Noise Exposure Increases for Determining Level of Significance

Noise Exposure without Project	Potential Significant Impact
< 60 dB CNEL	5 dB or more
60-65 dB CNEL	3 dB or more
>65 dB CNEL	1.5 dB or more
Source: Federal Interagency Committee on Noise, 1992.	

As shown in the table, according to the FICON, an increase in the traffic noise level of 5 dB or more would be significant where the pre-project noise levels are less than 60 dB L_{dn}. In areas where the pre-project noise levels range from 60 to 65 dBA, a 3 dBA barely perceptible noise level increase appears to be appropriate for most people. When the pre-project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact, given that the noise increase likely contributes to an existing noise exposure exceedance.

Project Construction Noise

During construction activities associated with the proposed project, including potential future construction of on-site single-family residences, heavy equipment would be used, which would temporarily increase ambient noise levels within the project vicinity. Noise levels would vary depending on the type of equipment used, how the equipment is

operated, and how well the equipment is maintained. In addition, noise exposure at any single point outside the project site would vary depending on the proximity of construction activities to that point. Standard construction equipment, such as backhoes, loaders, and dump trucks, would be used on-site.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. Truck traffic would involve transport of heavy materials and equipment to and from the construction site. Noise increases from truck traffic related to the movement of material would be of short duration, and would likely occur primarily during daytime hours.

Table 7 shows the predicted construction noise levels for typical construction equipment, which may be used during construction activities associated with the proposed project.

Table 7
Construction Equipment Noise

Type of Equipment	Maximum Level, dB at 25 feet
Air Compressor	86
Backhoe	86
Concrete Mixer	91
Dozer	91
Grader	91
Jack Hammer	94
Loader	86
Paver	91
Pile-Drier (Impact)	107
Pile-Driver (Sonic)	101
Roller	91
Saw	82
Scarified	89
Scraper	91
Truck	90

Source: Town of Los Gatos, 2040 General Plan EIR [Table 4.12-5], 2022.

Based on the table, while activities involved in typical construction would generate maximum noise levels up to 107 dB at a distance of 25 feet, the proposed project would not require the use of a pile-driver during construction activities. Therefore, construction of the proposed project would generate maximum noise levels up to 94 dB at a distance of 25 feet. As a result, the proposed project would not meet the first noise limitation included in Section 16.20.035 of the Town's Municipal Code, which states that individual pieces of equipment shall not produce a noise level exceeding 85 dBA at 25 feet.

Nonetheless, Section 16.20.035 of the Town's Municipal Code also states that construction activities shall be allowed if the noise level at any point outside of the property plane does not exceed 85 dBA. As one increases the distance between equipment, or increases separation of areas with simultaneous construction activity, dispersion and distance attenuation reduce the effects of combining separate noise sources. The noise levels from a source decrease at a rate of approximately 6 dB per every doubling of

distance from the noise source.[33] As discussed above, the nearest existing sensitive receptor to the project site is a hillside residence located approximately 85 feet to the north of the project site. As such, construction noise levels associated with the proposed project would be approximately 83.37 dB at the nearest sensitive receptor to the project site, which would be below the noise standards established in the Town's Municipal Code.

Therefore, the proposed project would not result in the generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local noise ordinance.

Project Operational Noise

Residences are not typically associated with the generation of substantial noise. Operation of the potential on-site future residences would include typical residential noise, which would be compatible with the adjacent existing hillside residential uses. The proposed project is not anticipated to contribute a measurable operational noise level increase to the existing ambient noise environment at any sensitive receptor locations. Therefore, a less-than-significant impact would occur with regard to on-site operational noise.

According to the General Plan EIR, the predominant source of noise in the Town is vehicular traffic. Roadways in the Town with the highest traffic volumes include State Route (SR) 9, SR 17 and SR 85. Additional sources include major arterial roadways, such as Blossom Hill Road, Lark Avenue, Los Gatos-Saratoga Road (SR 9), Los Gatos Boulevard, and Winchester Boulevard, none of which are located in the project vicinity.

Generally, a doubling in traffic volumes is required to increase traffic noise levels by 3.0 dB. As discussed in Section XVII, Transportation, of this Initial Study, future development of the site with nine single-family residences is anticipated to generate a total of approximately 85 trips per day.[34] In addition, according to the most recent traffic data provided by the Town of Los Gatos, the roadways in the project vicinity experience between 2,615 and 2,027 average daily trips.[35] Accordingly, the proposed project would not double traffic volumes on local roadways and, thus, would not substantially increase traffic noise in the project vicinity.

Based on the above, the proposed project would not result in operational noise increases that would result in significant effects on sensitive receptors in the project vicinity.

Conclusion

Based on the above, neither construction, nor operation of the proposed project would result in the generation of a substantial increase in ambient noise levels in the vicinity of the project in excess of standards established in the Town's Municipal Code. Thus, a ***less-than-significant*** impact would occur.

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[33] U.S. Occupational Safety and Health Administration. *OSHA Technical Manual (OTM) Section III: Chapter 5.* Available at: https://www.osha.gov/otm/section-3-health-hazards/chapter-5#measurements. Accessed October 2023.

[34] Hexagon Transportation Consultants, Inc. *Traffic Operations Analysis for the Proposed Residential Development Located at 14915 Shannon Road in Los Gatos, California.* November 13, 2020.

[35] Town of Los Gatos. *Weekday Traffic Volumes 2010-2014.* Available at: https://www.losgatosca.gov/972/Traffic-Data. Accessed October 2023.

b. Similar to noise, vibration involves a source, a transmission path, and a receiver. However, noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration depends on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration is measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of peak particle velocities (PPV) in inches per second (in/sec). Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of PPV. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 8, which was developed by Caltrans, shows that the vibration levels that would normally be required to result in damage to structures range from 0.2 to 0.6 in/sec PPV.

Table 8
Effects of Vibration on People and Buildings

PPV		Human Reaction	Effect on Buildings
mm/sec	in/sec		
0.15 to 0.30	0.006 to 0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10 to 15	0.4 to 0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Caltrans. Transportation Related Earthborne Vibrations. TAV-02-01-R9601. February 20, 2002.

The proposed project would only cause elevated vibration levels during construction, as the proposed project would not involve any uses or operations that would generate substantial groundborne vibration.

The primary vibration-generating activities associated with the proposed project would occur during grading, placement of underground utilities, and construction of foundations. Although noise and vibration associated with the construction of the project would add to the noise and vibration environment in the immediate project vicinity, construction

activities would be temporary in nature and are anticipated to occur during normal daytime working hours.

Table 9 shows the typical vibration levels produced by construction equipment at various distances. The most substantial source of groundborne vibrations associated with project construction would be the use of vibratory compactors. Use of vibratory compactors/rollers could be required during construction of the proposed on-site drive aisles and parking areas. However, at a distance of 26 feet or greater, vibration levels from such equipment would be below the 0.20 in/sec threshold recommended by Caltrans.

Table 9
Vibration Levels for Various Construction Equipment

Type of Equipment	PPV at 25 feet (in/sec)	PPV at 50 feet (in/sec)	PPV at 100 feet (in/sec)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210	0.074	0.026

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006.

The proposed construction activities would occur at a distance of approximately 85 feet from the nearest existing hillside residence to the north. Based on the vibration levels shown in Table 9, groundborne vibration at the nearest receptor would be below the 0.20 in/sec PPV threshold established by Caltrans for architectural damage to buildings. Therefore, the proposed project would not expose people to or generate excessive groundborne vibration or groundborne noise levels, and a ***less-than-significant*** impact would occur.

c. The project site is not within an airport land use plan, within two miles of a public airport, or near a private landing strip. The nearest airport to the project site is the San Jose International Airport, located approximately seven miles north of the site. Given that the project site is not located within two miles of a public airport or public use airport, the proposed project would not expose people residing or working in the project area to excessive noise levels associated with such. Thus, ***no impact*** would occur.

XIV. POPULATION AND HOUSING. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)?	☐	☐	✖	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	✖	☐

Discussion

a. The proposed project would include the subdivision of the project site into nine single-family residential lots. The reasonably foreseeable consequence of approval of the proposed project is future development of the site with nine single-family residences. According to the U.S. Census Bureau, as of 2021, the average household size in Los Gatos was estimated at 2.53 persons per household.[36] Using this average household size, the proposed project would result in a maximum increase of 23 residents within the Town. According to the U.S. Census Bureau, the entire Town has an estimated total population of 32,402. The estimated increase in 23 residents would equate to approximately 0.07 percent of the entire Town's population.

The project site is currently designated Agriculture by the Town's 2020 General Plan, and is zoned RC. The proposed project would require approval of a General Plan Amendment to change the land use designation of the site to Hillside Residential, and a rezone of the site to HR-2 ½. However, given the relatively small increase in population that could result as a reasonably foreseeable consequence of the proposed project, the proposed project would not result in substantial unplanned population growth within the Town. In addition, as discussed in Section XIX, Utilities and Services Systems, of this IS/MND, adequate utility infrastructure and services exist to meet the additional demand that would be created by the project. Similarly, as discussed in Section XV, Public Services, public service providers, such as local police and fire departments, would be capable of accommodating the demands of the proposed project. Therefore, the proposed project would not induce substantial unplanned population growth either directly or indirectly, and a ***less-than-significant*** impact would occur.

b. The project site is currently developed with one single-family residence, as well as two barns, a corral, and horse arena on the lower southern slope of the hillside. The proposed project would include the demolition of the existing on-site residence. However, the one on-site single-family residence represents a very small fraction of the existing housing market in the Town and surrounding area, and new housing could be found within the existing supply. In addition, the reasonably foreseeable consequence of approval of the proposed project is future development of the site with nine single-family residences. As such, the proposed project would result in a net increase in eight on-site residences, which would add to the housing stock within the Town. As such, the proposed project would not displace a substantial amount of existing housing or people and would not necessitate the

[36] U.S. Census Bureau. *QuickFacts: Los Gatos town, California.* Available at: https://www.census.gov/quickfacts/fact/table/losgatostowncalifornia/PST045222. Accessed October 2023.

construction of replacement housing elsewhere. Therefore, a ***less-than-significant*** impact would occur.

XV. PUBLIC SERVICES.

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Fire protection?	☐	☐	✖	☐
b. Police protection?	☐	☐	✖	☐
c. Schools?	☐	☐	✖	☐
d. Parks?	☐	☐	✖	☐
e. Other Public Facilities?	☐	☐	✖	☐

Discussion

a,b,e. Fire protection services are currently provided to the site by the Santa Clara County Fire Department (SCCFD). The SCCFD maintains 17 fire stations and is staffed by approximately 300 fire prevention, suppression, investigation, administration, and maintenance personnel. The nearest fire station to the project site is the Shannon Fire Station, located at 16565 Shannon Road, approximately 2.2 miles from the project site. The SCCFD has the following service standards:

- First unit shall arrive on scene in less than 7 minutes from dispatch of alarm, at least 90 percent of the time.
- Second unit shall arrive on scene in less than 9 minutes from dispatch of alarm, at least 90 percent of the time.
- Remaining units shall arrive on scene in less than 15 minutes from dispatch of alarm, at least 90 percent of the time.
- A fire company with at least one paramedic shall arrive on scene in less than 7 minutes from dispatch of alarm, no less than 90 percent of the time.

The Los Gatos-Monte Sereno Police Department provides police protection services to the project site. The Police Department has a total of 64 staff members, consisting of 42 sworn personnel, including one chief and two captains, 22 non-sworn personnel, and a large number of volunteers and interns. Officers provide police assistance seven days per week, 24 hours per day. The Town's Police Department headquarters is located at 110 East Main Street, approximately 3.9 miles from the project site. The Police Department does not have quantified service standards. However, the Police Department does have the performance objective of "providing a safe environment through timely response and police assistance." The department categorizes all calls as Priority One, Priority Two, or Priority Three. Priority One calls involve either a serious emergency or public safety hazard. Priority Two calls are those that require immediate response, but are not an emergency. Priority Three calls are all non-emergency calls.

Given the proximity of the nearest fire station to the project site, the aforementioned response times goals would be met at the site. In addition, as discussed in Section XIV, Population and Housing, above, the proposed project would result in an estimated population of 23 residents, which would equate to approximately 0.07 percent of the entire Town's population. Therefore, due to the relatively small increase in population, the

increase in demand for fire and police services at the project site would not be considered substantial and could be met by current service providers, without the need for expanding existing fire or police protection facilities or constructing new facilities, the construction of which could cause significant environmental effects. The project would comply with all applicable State and local requirements related to fire safety and security, including installation of fire sprinklers. Compliance with such standards would minimize fire and police protection demands associated with the project. It should also be noted that issues related to wildfire hazards are discussed in Section XX, Wildfire, of this IS/MND.

Therefore, the proposed project would have a ***less-than-significant*** impact related to the need for new or physically altered fire or police protection facilities, the construction of which could cause significant environmental impacts.

c. The Town of Los Gatos is currently served by six different school districts: the Los Gatos Union School District, the Los Gatos-Saratoga Joint Union High School District, the Campbell Union School District, the Campbell Union High School District, the Cambrian Union Elementary District, and Union Elementary School District.

As discussed throughout this IS/MND, the reasonably foreseeable consequence of approval of the proposed project is future development of the site with nine single-family residences. According to the Town's General Plan EIR, single-family residences are anticipated to generate an increase in 0.7 students per residence. Therefore, the proposed project could increase the amount of school age children in the Town by approximately six students. Given the relatively small increase in student population that could occur as a reasonably foreseeable consequence of the proposed project, the increase in demand for school facilities would not be considered substantial and could be met by current district facilities, without the need for expanding existing schools or constructing new facilities, the construction of which could cause significant environmental effects.

In addition, the project would be subject to payment of School Impact Mitigation Development Fees to fund local school services. Proposition 1A/SB 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "[…] legislative or adjudicative act…involving …the planning, use, or development of real property" (Government Code 65996(b)). Satisfaction of the Proposition 1A/SB 50 statutory requirements by a developer is deemed to be "full and complete mitigation."

Therefore, the proposed project would have a ***less-than-significant*** impact related to the need for new or physically altered schools, the construction of which could cause significant environmental impacts.

d,e. Further discussion on parks and recreation facilities within the Town is provided in Section XVI, Recreation, below. As discussed therein, the Town currently provides 8.4 acres of parkland per 1,000 residents. The nearest park or recreational facility to the project site is Blossom Hill Park, located approximately 2.1 miles northwest of the site. In addition, a trailhead to the Heintz Open Space is located at the Santa Rosa Drive/Sierra Azule Drive intersection, approximately 800 feet from the project site, and Belgatos Park, which is located north of Heintz Open Space, can be accessed through trails within the open space area.

The Town of Los Gatos also includes one public library located within the Town's Civic Center complex approximately 3.8 miles from the site, as well as a Health Library and Resource Center within the El Camino Hospital, located approximately 5.1 miles from the site. The Town library was upgraded in 2012 and resulted in an increase of approximately 16,000 sf of space.

As discussed above, the reasonably foreseeable consequence of approval of the proposed project is future development of the site with nine single-family residences, which would result in an increase in approximately 23 residents. Given the relatively small increase in population that could occur as a reasonably foreseeable consequence of the proposed project, the increase in demand for parks and recreational facilities, or other public facilities such as libraries would not be considered substantial and could be met by current Town facilities, without the need for the expansion or construction of such new facilities, the construction of which could cause significant environmental effects.

In addition, as discussed below, in compliance with the Quimby Act, because the proposed project does not currently provide any dedicated parkland, the proposed project would be required to pay in-lieu fees to be used for the provision of parks and recreational services within the Town.

Therefore, the proposed project would have a ***less-than-significant*** impact related to the need for new or physically altered parks or other public facilities, the construction of which could cause significant environmental impacts.

XVI. RECREATION. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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?	☐	☐	✖	☐
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	✖	☐

Discussion

a,b. The Town contains approximately 254 acres of parkland, nearly seven miles of multi-use trails and over 65 acres of lawn area. Of 37 total public and private parks and recreation facilities in the Town of Los Gatos, 18 are publicly owned and operated parks. In addition, 15 recreational facilities with one or more sports fields exist within the Town of Los Gatos; 11 contain baseball fields, and 10 contain multi-use field areas for organized scheduled events. Such facilities provide a total of approximately 507,700 sf of multi-use field space within Los Gatos. Overall, the Town currently provides 8.4 acres of parkland per 1,000 residents. The nearest park or recreational facility to the project site is Blossom Hill Park, located approximately 2.1 miles northwest of the site. In addition, a trailhead to the Heintz Open Space is located at the Santa Rosa Drive/Sierra Azule Drive intersection, approximately 800 feet from the project site, and Belgatos Park, which is located north of Heintz Open Space, can be accessed through trails within the open space area.

Pursuant to the California Quimby Act, as a condition of approval of the proposed project's Tentative Map, the Town would require the project to dedicate parkland at a rate of five acres per 1,000 residents, pay in-lieu fees, or a provide combination of both land and fees to be used for the provision of parks and recreational services. Given that the reasonably foreseeable increase in population that could occur as a consequence of the proposed project would result in approximately 23 new residents within the Town, the proposed project would be required to dedicate approximately 0.115-acre of parkland, or pay an equivalent amount of in-lieu fees. The proposed project does not currently include the dedication of any parkland on-site. As such, the payment of in-lieu fees would be required.

Given the relatively small number of residences that would be developed as a reasonably foreseeable consequence of the proposed project, the abundance of parkland, recreation facilities, and open space located within the Town, and the proposed project's required in-lieu fee payment, the proposed project would not result in population growth that could result in increased demand on existing recreational facilities or cause the construction or expansion of recreational facilities. Thus, a ***less-than-significant*** impact would occur.

XVII. TRANSPORTATION. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	✖	☐	☐
b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	✖	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	✖	☐
d. Result in inadequate emergency access?	☐	☐	✖	☐

Discussion

The following discussion is based primarily on a Traffic Operations Analysis prepared by Hexagon Transportation Consultants, Inc (Hexagon) for the proposed project (Appendix E).[37]

a. The law has changed with respect to how transportation-related impacts may be addressed under CEQA. Traditionally, lead agencies used level of service (LOS) to assess the significance of such impacts. LOS represents a qualitative description of the traffic operations experienced by the driver at an intersection or along a roadway segment and ranges from LOS A, which represents the absence of congestion and little delay, to LOS F, which signifies excessive congestion and delays. Greater levels of congestion are considered to be more significant than lesser levels. Mitigation measures typically took the form of capacity-increasing improvements, which often had their own environmental impacts (e.g., to biological resources). Depending on circumstances, and an agency's tolerance for congestion (e.g., as reflected in its general plan), LOS D, E, or F often represented significant environmental effects. In 2013, however, the State Legislature passed legislation with the intention of ultimately doing away with LOS in most instances as a basis for environmental analysis under CEQA. Enacted as part of SB 743 (2013), PRC Section 21099, subdivision (b)(1), directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the Secretary of the Natural Resources Agency for certification and adoption proposed CEQA Guidelines addressing "criteria for determining the significance of transportation impacts of projects within transit priority areas. Those criteria shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. In developing the criteria, [OPR] shall recommend potential metrics to measure transportation impacts that may include, but are not limited to, vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated. The office may also establish criteria for models used to analyze transportation impacts to ensure the models are accurate, reliable, and consistent with the intent of this section."

Subdivision (b)(2) of Section 21099 further provides that "[u]pon certification of the guidelines by the Secretary of the Natural Resources Agency pursuant to this section, automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion *shall not be considered a significant impact on the*

[37] Hexagon Transportation Consultants, Inc. *Traffic Operations Analysis for the Proposed Residential Development Located at 14915 Shannon Road in Los Gatos, California.* November 13, 2020.

environment pursuant to [CEQA], except in locations specifically identified in the guidelines, if any." (Italics added.)

Pursuant to SB 743, the Natural Resources Agency promulgated CEQA Guidelines Section 15064.3 in late 2018, which became effective in early 2019. Subdivision (a) of that section provides that "[g]enerally, vehicle miles traveled is the most appropriate measure of transportation impacts. For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in subdivision (b)(2) below (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact."[38]

Please refer to Question 'b' for a discussion of VMT.

Roadways

Access to the project site would be provided by way of a portion of the existing Sky Lane roadway, located in the western portion of the project site; the Shannon Road roadway, located along the project site frontage to the south; and an extension of Sierra Azule Drive, located near the northeast corner of the project site. Specifically, a shared driveway for Lots 1 and 2, and a driveway to Lot 3, would take access from an approximately 215-foot section of Sky Lane, an existing private roadway located on the north side of Shannon Road. The project includes widening this portion of Sky Lane, located between Shannon Road and the driveway to Lots 1 and 2 to the north, to 24 feet.

Shannon Road would provide direct access to Lots 4 through 7 by way of two new driveways, consisting of a shared driveway connecting to Lots 4, 5, 6, and an additional private driveway connecting to Lot 7, would take access from Shannon Road.

Lots 8 and 9 would be served from an extension of Sierra Azule Drive near the northeast corner of the project site. Sierra Azule Road is accessed from Santa Rosa Drive, which connects with Shannon Road approximately 240 feet southeast of the project site. The proposed project includes a westward extension of Sierra Azule Drive within an existing right-of-way to the property line of the project site. A new shared driveway from the extension of Sierra Azule Drive would provide access to Lots 8 and 9.

Shannon Road would provide access to all of the proposed lots either directly or through connecting streets. The property underlying the paved surface of the roadway is owned by the property owner of the project site to approximately the centerline of the road. A public easement allows use of the roadway. Portions of the roadway directly adjacent to the project site have a long history of failure, with the roadway slowly collapsing down the northern slopes. Numerous repairs were conducted over the years to no avail. Shannon Road was annexed from the County of Santa Clara into the Town in 2018. Prior to annexation, the County of Santa Clara conducted their final repair by injecting an epoxy foam into the roadbed in order to stabilize the roadway. After annexation into the Town,

[38] Subdivision (b)(2) of Section 15064.3 ("transportation projects") provides that "[t]ransportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

this repair failed, and the roadway continued to deteriorate to a point where the Town determined it was necessary to close a portion of the westbound lane adjacent to the project site out of concerns for public safety. A CIP coordinated by the Los Gatos Parks & Public Works Department is currently shovel-ready. The CIP roadway project would increase the pavement width to 23 feet, as well as add guardrails and retaining walls to the north side of the road. The improvements proposed by the Town require additional land outside of the current dedicated roadway easement, necessitating coordination with the property owner for dedication of the land, consistent with Mobility Element of the 2040 General Plan. The Town attempted to complete the CIP roadway project in advance of the proposed subdivision for reasons of public safety. The applicant and property owner have declined to dedicate the necessary ROW consistent with the Town's General Plan. As such, the Town is implementing a temporary repair. The Town is continuing to work with the with the applicant and property owner on this issue.

Future development of the site with nine single-family residences is anticipated to generate a total of approximately 85 daily trips, all of which must use Shannon Road to gain access to the proposed lots. The CIP roadway project to improve Shannon Road requires additional land outside of the current dedicated roadway easement. The applicant and property owner have declined to dedicated the necessary ROW. The following Mitigation Measure (XVII-1) requires contribution of the project's fair share of the Town's property acquisition costs incurred in acquiring the ROW needed to facilitate the CIP roadway project on Shannon Road and to offset the impacts of the increased trips along Shannon Road from project build out, consistent with Policy MOB-8.2 of the 2040 General Plan and Section 23.10.005; Chapter 23, Article V; and Section 29.20.160 of the Town Code.

Pedestrian, Bicycle, and Transit Facilities

The following provides a discussion of the proposed project's potential impacts to pedestrian, bicycle, and transit facilities.

Pedestrian and Bicycle Facilities

Pedestrian facilities are comprised of crosswalks, sidewalks, pedestrian signals, and off-street paths, which provide safe and convenient routes for pedestrians to access the destinations such as institutions, businesses, public transportation, and recreation facilities.

Bicycle paths, lanes and routes are typical examples of bicycle transportation facilities, which are defined as being in one of the following four classes:

1. **Class I Multiuse Trail –** a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
2. **Class II Bike Lane –** a designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.
3. **Class III Bike Route –** a route designated by signs or pavement markings and shared with pedestrians and motorists.
4. **Class IV Separated Bikeway –** an on-street facility reserved for use by bicyclists, with physical separation between the bikeway and travel lanes. Physical separation consists of vertical elements that may include curbs, landscaping, bollards, or parking lanes.

Sidewalks, bicycle paths, or other pedestrian and bicycle facilities are not currently present on the roadways within the project vicinity (e.g., Shannon Road). Implementation of the missing sidewalk and bicycle lane segments along Shannon Road would require work within, and possibly acquisition of, right-of-way that is not controlled by the project applicant. Additionally, given the rural nature of roadway in the vicinity of the project site, bike lanes and sidewalks are not desirable.

Public Transit Impacts

Existing transit service to the Town is provided by VTA. VTA provides bus, light rail, and paratransit service throughout Santa Clara County, including Los Gatos. Buses are generally equipped with front-loading racks that can hold up to two bicycles. VTA transit routes are not located in the immediate vicinity of the proposed project. The nearest bus route is Route #27, which provides connection to the nearest light rail station. The nearest bus stops to the project site are located at the Leigh Drive/Blossom Hill Road intersection, approximately 3.8 miles north of the site.

A project is considered to have a significant impact on transit if the project conflicts with existing transit facilities, or is expected to generate additional transit trips beyond the capacity of the existing transit system. The transit service within the Town operates within capacity, and the relatively minor increase in additional trips that could occur as a reasonably foreseeable consequence of the proposed project could be accommodated by existing bus services. In addition, the proposed project would not include any off-site roadway improvements that would affect existing transit facilities. Therefore, the proposed project would not result in any significant impacts to the nearby transit network.

Conclusion

Based on the above, the proposed project would not conflict with an applicable plan, ordinance, or policy addressing transit, bicycle, and pedestrian facilities. However, without contribution to the Town's property acquisition costs for improvements to Shannon Road, the proposed project could conflict with an applicable plan, ordinance, or policy addressing roadway facilities. As such, a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impacts to a *less-than-significant* level.

XVII-1 *The property owner(s) shall contribute the project's fair share of the Town's property acquisition costs for improvements to Shannon Road to the Town in fee title.*

b. Section 15064.3 of the CEQA Guidelines provides specific considerations for evaluating a project's transportation impacts. Pursuant to Section 15064.3, analysis of VMT attributable to a project is the most appropriate measure of transportation impacts. Other relevant considerations may include the effects of the project on transit and non-motorized travel.

Pursuant to Section 15064.3(b)(3), a lead agency may analyze a project's VMT qualitatively based on the availability of transit, proximity to destinations, etc. The Town of Los Gatos has not yet formally adopted a VMT analysis policy. In the absence of an adopted Town policy with numeric thresholds, the VMT assessment relies on the

Technical Advisory on Evaluating Transportation Impacts in CEQA published by the Governor's OPR.[39] The OPR recommendations include the screening thresholds criteria listed below:

- Office or residential projects not exceeding a level of 15 percent below existing VMT per capita may indicate a less-than-significant impact on VMT;
- Projects (including office, residential, retail, and mixed-use developments) proposed within half a mile of an existing major transit stop or within a quarter of an existing stop along a high-quality transit corridor may be presumed to have a less-than-significant impact;
- 100 percent affordable residential development in infill locations be presumed to have a less-than-significant impact on VMT; and
- Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant impact.

As presented above, according to the Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA, small projects expected to generate fewer than 110 daily vehicle trips may be presumed to have a less-than-significant impact. Based on the project-specific Traffic Operations Analysis prepared by Hexagon, the nine future on-site single-family residences that could result as a reasonably foreseeable consequence of the proposed project are anticipated to generate approximately 85 average daily trips; a net increase in approximately 76 trips as compared to existing site conditions. Thus, the proposed project meets the screening criteria for small projects, and further VMT analysis for the proposed project is not required.

Based on the above, the proposed project is presumed to have a less-than-significant impact on VMT, and the proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3(b). Therefore, a ***less-than-significant*** impact would occur.

c,d. Access to the project site would be provided by way of the existing Sky Lane roadway, located in the western portion of the project site; the Shannon Road roadway, located along the project site frontage to the south; and an extension of Sierra Azule Drive, located near the northeast corner of the project site. Specifically, a shared driveway for Lots 1 and 2, and a driveway to Lot 3, would take access from Sky Lane, an existing private roadway located on the north side of Shannon Road. Two new driveways, consisting of a shared driveway connecting to Lots 4, 5, 6, and an additional private driveway connecting to Lot 7, would take access from Shannon Road.

Lots 8 and 9 would be served from Sierra Azule Drive near the northeast corner of the project site. Sierra Azule Road is accessed from Santa Rosa Drive, which connects with Shannon Road approximately 240 feet southeast of the project site. The proposed project would include a westward extension of Sierra Azule Drive within an existing right-of-way to the property line of the project site. A new shared driveway from the extension of Sierra Azule Drive would provide access to Lots 8 and 9, and would incorporate an on-site standard fire department turn around. The shared driveway would extend northwest from Lot 8 to provide a secondary emergency egress connection to the current terminus of Sky Lane (see Figure 4). From its current terminus, Sky Lane travels in an east/west direction north of the project site before turning south and connecting with Shannon Road. The

[39] Governor's Office of Planning and Research. *Technical Advisory on Evaluation Transportation Impacts in CEQA*. December 2018.

proposed emergency access connection would enhance the safety of the 14 residences on Sky Lane, located north of the project site, by providing a second means of access that is consistent with PRC 4290. As such, the proposed project provides adequate emergency access to the site and the surrounding project area.

Additionally, according to the Traffic Operations Analysis prepared for the proposed project, for the driveways on Shannon Road, which has a posted speed limit of 30 mph, the Caltrans stopping sight distance is 250 feet (i.e., a driver must be able to see 250 feet down Shannon Road to locate a sufficient gap to turn out of the project driveway). Roadway curves or physical obstructions are not present within 250 feet in either direction of the driveway locations on Shannon Road that would obstruct the vision of exiting drivers. Therefore, Hexagon concluded that adequate intersection sight distance is provided for the proposed shared driveway on Shannon Road.

It should also be noted that Shannon Road was recently annexed to the Town in 2018 and a CIP project is currently under design by Los Gatos Parks & Public Works. The CIP roadway project would increase the pavement width to 23 feet, as well as add guardrails and retaining walls to the north side of the road. The applicant and property owner have declined to dedicate the necessary ROW consistent with the Town's General Plan. As such, the Town is implementing a temporary repair. The Town is continuing to work with the with the applicant and property owner on this issue and Mitigation Measure XVII-1 requires the property owner(s) to contribute the project's fair share of the Town's property acquisition costs for improvements to Shannon Road to the Town in fee title.

Based on the above, the proposed project would not substantially increase hazards due to design features or incompatible uses, or result in inadequate emergency access, and a ***less-than-significant*** impact would occur.

XVIII. TRIBAL CULTURAL RESOURCES.

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 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:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. 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 section 5020.1(k).	☐	✖	☐	☐
b. 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	✖	☐	☐

Discussion

a,b. In compliance with AB 52 and SB 18, the Town of Los Gatos sent project notification letters to theAmah Mutsun Tribal Band, Amah Mutsun Tribal Band of Mission San Juan Bautista, Indian Canyon Mutsun Band of Costanoan, Muwekma Ohlone Indian Tribe of the Sna Francisco Bay Area, North Valley Yokuts Tribe, Tamien Nation, the Ohlone Indian Tribe, and the Wuksachi Indian Tribe/Eshom Valley Band on November 16, 2023. Requests for consultation were not received during the required consultation period.

As discussed in Section V, Cultural Resources, based on a Cultural Resource Evaluation prepared for the proposed project by Archeological Resource Management,[40] known archeological resources, including Tribal Cultural Resources (TCRs) or human remains, have not been previously documented at the project site.

In addition, compliance with General Plan policies OSP-1 through OSP-4 would generally help ensure that work would stop if archeological resources (including TCRs) or human remains are identified during construction, but do not specify the appropriate course of action if such resources are discovered. While it is reasonable to anticipate that project development would not impact TCRs, the potential cannot be dismissed for unknown TCRs to be uncovered during ground-disturbing activities for the proposed project. Therefore, if previously unknown resources are encountered during construction activities, the proposed project could cause a substantial adverse change in the significance of a TCR, defined in PRC section 21074, during construction. As a result, without mitigation, a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

XVIII-1 Implement Mitigation Measures V-1 and V-2.

[40] Archeological Resource Management. *Cultural Resource Evaluation of the Proposed Project at 14915 Shannon Road in Los Gatos.* December 7, 2020.

XIX. UTILITIES AND SERVICE SYSTEMS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	✖	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	✖	☐
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?	☐	☐	✖	☐
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?	☐	☐	✖	☐
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	✖	☐

Discussion

a-c. Water, sanitary sewer, stormwater, electricity, natural gas, and telecommunications, services would be provided by way of new connections to existing infrastructure in the project area. Brief discussions of each are included below.

Water

Water utilities would be provided through new connections to existing utility lines within the project vicinity, including a 10-inch water main located within Shannon Road. The existing 10-inch water main would be extended west along the project frontage within Shannon Road from the Shannon Road/Diduca Way intersection to the southwestern corner of the project site, where the line would be stubbed.

Water supplies in the Town of Los Gatos are provided by SJW. Water supply is currently provided to SJW through a number of sources including purchased water from Valley Water, groundwater from the Santa Clara Subbasin, surface water, and recycled water. However, the majority of water supplied to SJW is through a treated water contract with Valley Water. Thus, SJW used information received from Valley Water to inform SJW's Water Supply Reliability Analysis. Based on the Valley Water 2020 UWMP, Valley Water will have sufficient supplies to meet SJW's and other retailers' demands through 2045 under average year, single dry year, and five consecutive dry year conditions, and under a Drought Risk Assessment (DRA) condition for a drought that lasts five consecutive years.[41] In addition, according to the SJW 2020 UWMP, water supplies are projected to

[41] San Jose Water Company. *2020 Urban Water Management Plan*. June 2021.

meet expected demand for normal year, single-dry year, and multiple-dry year scenarios through 2045.[42]

As discussed in Section X, Hydrology and Water Quality, of this IS/MND, while the nine future single-family residences on-site would increase water usage beyond the current on-site water demand generated from the existing single-family residence, given the relatively minor increase in water usage that would result from a net increase in eight residences, such an increase in demand would not be considered substantial as the Santa Clara Subbasin has an operational storage capacity of approximately 350,000 AF per year, and both Valley Water and SJW have sufficient water supplies through 2045. The project would also comply with Chapter 26.40 of the Town's Municipal Code, which contains the Town's Water Efficient Landscape Ordinance.

Based on the above, SJW would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.

Sewer Service

Sewer utilities would be provided through new connections to existing utility lines within the project vicinity, including a six-inch sewer main located along Sierra Azule Drive. The new gravity flow sewer line would be constructed east along Shannon Road beginning between Lots 1 and 2 and would end at the proposed on-site pump station located between Lots 6 and 7, where a new force main would then be constructed north within the project site before turning east along the proposed Sky Lane/Sierra Azule Drive roadway connection and ending at an existing sanitary sewer manhole located within Sierra Azule Drive. The new sewer system would result in an approximately 2,100-foot extension; however, the majority of the force main would be constructed within the project site boundaries, and the remaining portions of the pipeline would be constructed within the project frontage.

Within the Town of Los Gatos, sewer service is provided by the West Valley Sanitation District. Wastewater treatment for the project site would occur at the San Jose/Santa Clara Water Pollution Control Plant (WPCP) located in Alviso. The WPCP has a licensed capacity of 167 million gallons per day (MGD), and treats an average of 110 MGD.[43]

While the nine future single-family residences on-site would increase wastewater generation beyond the current on-site wastewater generated from the existing single-family residence, given the relatively minor increase in wastewater that would result from a net increase in eight residences, such an increase would not be considered substantial as the WPCP has a remaining capacity of 57 MGD. In addition, 2040 General Plan Policy PFS-2.1 ensures that the Town supports the West Valley Sanitation District's efforts to maintain wastewater conveyance, treatment, and disposal infrastructure in good working condition in order to supply municipal sewer service to the Town's residents and businesses. Thus, the West Valley Sanitation District would have adequate capacity to serve the wastewater demand projected for the proposed project in addition to the Town's existing commitments.

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42 San Jose Water Company. *2020 Urban Water Management Plan*. June 2021.

43 City of San Jose. *San Jose-Santa Clara Regional Wastewater Facility.* Available at: https://www.sanjoseca.gov/your-government/departments-offices/environmental-services/water-utilities/regional-wastewater-facility. Accessed October 2023.

Stormwater Systems

Each of the nine proposed lots would include an associated gravel stormwater drainage basin on-site. Stormwater runoff from each lot would be directed into the associated on-site gravel stormwater basin located within the lot, which would allow for stormwater runoff to infiltrate into the on-site soils. The gravel stormwater drainage basins associated with Lots 1 through 6, 8, and 9 would be sized to meet the Town's C3 design criteria, such that stormwater runoff from the lots would not need to be routed to a public storm drain. With regard to Lot 7, stormwater runoff would flow from the on-site gravel stormwater basin to an existing broad swale toward the east. The swale extends off-site, and drains into a culvert system located under Santa Rosa Drive. The culvert system ultimately extends under Arroyo del Rancho through a large arch culvert located parallel to Shannon Road. As such, the proposed project would not require major relocation or expansion of any stormwater infrastructure as adequate stormwater facilities would be provided to serve the project.

Other Utilities

Electric and telecommunications utilities would be provided by way of connections to existing infrastructure located within the immediate project vicinity. The proposed project would not require major upgrades to, or extension of, existing infrastructure. Thus, impacts to electricity and telecommunications infrastructure would be less than significant.

Conclusion

Based on the above, the utility infrastructure within the project vicinity has been designed with adequate capacity to accommodate demand from the proposed project. Therefore, the project would result in a ***less-than-significant*** impact related to the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.

d,e. Solid waste, recyclable materials, and compostable material collection within the Town of Los Gatos is provided through West Valley Collection and Recycling. Solid waste from the Town is ultimately disposed of at the Guadalupe Sanitary Landfill, located at 15999 Guadalupe Mines Road in San Jose. As of 2011, the landfill had approximately 11,055,000 cubic yards (CY) of remaining capacity, or 38.7 percent of the total permitted capacity of the landfill (28,600,000 CY).[44]

During operation of the future on-site residences, the residents would produce solid waste that would be collected by West Valley Collection and Recycling and transferred to the Guadalupe Sanitary Landfill. Operational solid waste generation from the nine single-family residences has been estimated based on an average waste generation rate for single-family residential development of 10.2 pounds per unit per day.[45] As such, at maximum buildout conditions approximately 91.8 pounds of solid waste per day would be generated by the future residential development on-site. This small contribution to the facility's total permitted capacity would not be considered a substantial amount of waste, and the facility has adequate capacity to accept such waste.

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[44] Department of Resources Recycling and Recovery. *SWIS Facility/Site Activity Details – Guadalupe Sanitary Landfill (43-AN-0015).* Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1376?siteID=3399. Accessed October 2023.

[45] California Department of Resources Recycling and Recovery. *Estimated Solid Waste Generation Rates*. Available at: https://www2.calrecycle.ca.gov/WasteCharacterization/General/Rates. Accessed October 2023.

In addition, the project would be required to comply with all federal, State, and local statutes and regulations related to solid waste and recycling. Although the proposed project would require demolition during construction activities, pursuant to the CALGreen Code, at least 65 percent diversion of construction waste is required.

Based on the above, the proposed project would not 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 and would comply with federal, State, and local management and reduction statutes and regulations related to solid waste. Thus, a ***less-than-significant*** impact related to solid waste would occur as a result of the proposed project.

XX. WILDFIRE. *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	✖	☐
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?	☐	☐	✖	☐
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?	☐	☐	✖	☐
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?	☐	☐	✖	☐

Discussion

a-d. According to the California Department of Forestry and Fire Protection (CAL FIRE) Fire and Resource Assessment Program, the project site is not located within an SRA; however, the site is located within a VHFHSZ.[46]

The project site is currently developed with one single-family residence, as well as two barns, a corral, and horse arena. The introduction of the proposed project is not anticipated to increase wildfire risks at the site relative to the uses already operating at the project site. Additionally, the proposed project would be required to comply with all applicable requirements of the CFC through the installation of fire sprinkler systems, fire hydrants, and other applicable requirements. For example, the standard fire department turn around proposed to be constructed with the shared driveway for Lots 8 and 9 taking access from the proposed extension of Sierra Azule Drive, along with the proposed emergency access connection to Sky Lane, would enhance the safety of the 14 residences on Sky Lane, located north of the project site, by providing a second means of access that is consistent with PRC 4290. In addition, the proposed project would be subject to the requirements of Chapter 7A of the CBC which include, but are not limited to, use of ignition-resistant materials, fire-intrusion design of roofing and vents, and use of glazed exterior windows and doors. The proposed project would also be situated near existing roads, water lines, and other utilities, which would reduce risks related to wildfire.

Although slopes are located within the central portion of the project site, in accordance with State standards and Chapter 9 of the Town Code the proposed project would be required to maintain a 100-foot defensible space to provide a fire break that would prevent the spread of ground fires and protect on-site structures. Development of the site for residential uses would help to reduce the risk of wildland fire in the area due to site improvements, such as roadways, driveways, and irrigated landscaping, which would reduce readily combustible vegetation. Additionally, the proposed project would include all recommendations required by the Engineering Geologic Assessment and Subsurface

[46] California Department of Forestry and Fire Protection. *Fire Hazard Severity Zone Viewer*. Available at: https://egis.fire.ca.gov/FHSZ/. Accessed October 2023.

Fault Investigation; Supplemental Geotechnical Evaluation and Recommendations Report; and Supplemental Geologic and Geotechnical Peer Review prepared for the proposed project to ensure slope stability at the project site.

As discussed in Section IX, Hazards and Hazardous Materials, of this IS/MND implementation of the proposed project would not result in any substantial modifications to the existing roadway system and, thus, would not physically interfere with the Town's EOP, particularly with any emergency evacuation routes. Furthermore, the proposed project would not include land uses or operations that could impair implementation of the plan. Additionally, the Santa Clara County Fire Department has also adopted Genasys Protect (formerly known as Zonehaven) to provide specific, timely and accurate information regarding evacuations within the County. Genasys Protect divides geographic regions into smaller zones to help simplify evacuations. In the event of a wildfire or public safety emergency, fire department and law enforcement agencies will issue evacuation orders and other protective actions for impacted areas. Genasys Protect is a web-based platform that provides real-time evacuation updates. The project site is Zone LGA-011, which includes the area north of Shannon Road, south of Ridge Trail, east of Rock Ridge Rd, Shannon Road, and Vista Trail, and west of Harwood Road and Hicks Road.

Therefore, the proposed project would not be expected to be subject to or result in substantial adverse effects related to wildfires, and a ***less-than-significant*** impact would occur.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less-Than-Significant 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?	☐	☐	✖	☐
b. 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)?	☐	☐	✖	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	✖	☐

Discussion

a. As discussed in Section IV, Biological Resources, of this IS/MND, while the potential exists for several special-status species to occur on-site, Mitigation Measures IV-1 through IV-8 would ensure that impacts to such species would be less than significant. The project site does not contain any known historic or prehistoric resources. Thus, implementation of the proposed project is not anticipated to have the potential to result in impacts related to historic or prehistoric resources. Nevertheless, Mitigation Measures V-1 and V-2 would ensure that in the event that archeological resources are discovered within the project site during construction activities, such resources are protected in compliance with the requirements of CEQA.

Considering the above, the proposed project would not: 1) degrade the quality of the environment; 2) substantially reduce or impact the habitat of fish or wildlife species; 3) cause fish or wildlife populations to drop below self-sustaining levels; 4) threaten to eliminate a plant or animal community; 5) reduce the number or restrict the range of a rare or endangered plant or animal; or 6) eliminate important examples of the major periods of California history or prehistory. Therefore, a ***less-than-significant*** impact would occur.

b. The proposed project in conjunction with other development within the Town of Los Gatos could incrementally contribute to cumulative impacts in the area. However, as demonstrated in this IS/MND, all potential environmental impacts that could occur as a result of project implementation would be reduced to a less-than-significant level through compliance with the mitigation measures included in this IS/MND, as well as applicable General Plan policies, Municipal Code standards, 1978 Hillside Specific Plan regulations, and other applicable local and State regulations.

Therefore, when viewed in conjunction with other closely related past, present, or reasonably foreseeable future projects, development of the proposed project would not result in a cumulatively considerable contribution to cumulative impacts in the Town of Los

Gatos, and the project's incremental contribution to cumulative impacts would be ***less than significant***.

c. As described in this IS/MND, the proposed project would comply with all applicable General Plan policies, Municipal Code standards, 1978 Hillside Specific Plan regulations, other applicable local and State regulations, and mitigation measures included herein. In addition, as discussed in the Air Quality, Geology and Soils, Hazards and Hazardous Materials, Greenhouse Gas Emissions, and Noise sections of this IS/MND, the proposed project would not cause substantial effects to human beings, which cannot be mitigated to less-than-significant levels, including effects related to exposure to air pollutants, geologic hazards, GHG emissions, hazardous materials, and excessive noise. As such, the proposed project would not result in direct or indirect impacts to human beings and, thus, the project's impact would be ***less-than-significant***.

APPENDIX A

AIR QUALITY AND GREENHOUSE GAS MODELING RESULTS

14915 Shannon Road Subdivision Project Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	14915 Shannon Road Subdivision Project
Construction Start Date	3/4/2025
Operational Year	2029
Lead Agency	Town of Los Gatos
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.00
Precipitation (days)	12.8
Location	14915 Shannon Rd, Los Gatos, CA 95032, USA
County	Santa Clara
City	Los Gatos
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1946
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.20

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Single Family Housing	9.00	Dwelling Unit	11.7	17,550	105,416	—	27.0	—
Road Construction	0.04	Mile	0.06	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.00	3.37	31.7	30.9	0.06	1.37	19.8	21.2	1.26	10.1	11.4	—	6,770	6,770	0.27	0.06	0.69	6,796
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.72	5.66	49.8	51.0	0.09	2.13	9.37	10.6	1.96	3.69	4.83	—	10,387	10,387	0.42	0.11	0.05	10,431
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.25	1.90	17.5	16.9	0.03	0.74	6.70	7.44	0.68	3.19	3.87	—	3,319	3,319	0.13	0.03	0.18	3,332
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.41	0.35	3.20	3.09	0.01	0.13	1.22	1.36	0.12	0.58	0.71	—	550	550	0.02	0.01	0.03	552

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.00	3.37	31.7	30.9	0.06	1.37	19.8	21.2	1.26	10.1	11.4	—	6,770	6,770	0.27	0.06	0.69	6,796
2026	1.44	1.55	10.8	14.3	0.03	0.40	0.04	0.44	0.37	0.01	0.38	—	2,589	2,589	0.10	0.03	0.18	2,599
2027	1.38	1.50	10.3	14.2	0.03	0.36	0.04	0.39	0.33	0.01	0.34	—	2,588	2,588	0.10	0.03	0.16	2,598
2028	1.33	1.45	9.77	14.2	0.03	0.32	0.04	0.35	0.29	0.01	0.30	—	2,587	2,587	0.10	0.02	0.15	2,597
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	6.72	5.66	49.8	51.0	0.09	2.13	9.37	10.6	1.96	3.69	4.83	—	10,387	10,387	0.42	0.11	0.05	10,431
2026	3.69	3.10	27.3	28.2	0.06	1.12	9.37	10.5	1.03	3.69	4.72	—	6,754	6,754	0.27	0.06	0.02	6,779
2027	1.38	1.50	10.3	14.2	0.03	0.36	0.04	0.39	0.33	0.01	0.34	—	2,585	2,585	0.10	0.03	< 0.005	2,596
2028	1.33	1.45	9.77	14.2	0.03	0.32	0.04	0.35	0.29	0.01	0.30	—	2,585	2,585	0.10	0.03	< 0.005	2,595
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	2.25	1.90	17.5	16.9	0.03	0.74	6.70	7.44	0.68	3.19	3.87	—	3,319	3,319	0.13	0.03	0.18	3,332
2026	1.16	1.17	8.63	10.9	0.02	0.33	0.63	0.96	0.30	0.24	0.55	—	2,087	2,087	0.08	0.02	0.07	2,095
2027	0.99	1.07	7.33	10.1	0.02	0.25	0.03	0.28	0.23	0.01	0.24	—	1,847	1,847	0.07	0.02	0.05	1,854
2028	0.85	0.94	6.24	9.05	0.02	0.20	0.02	0.23	0.19	0.01	0.19	—	1,648	1,648	0.07	0.02	0.04	1,654
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.41	0.35	3.20	3.09	0.01	0.13	1.22	1.36	0.12	0.58	0.71	—	550	550	0.02	0.01	0.03	552
2026	0.21	0.21	1.57	2.00	< 0.005	0.06	0.12	0.18	0.06	0.04	0.10	—	346	346	0.01	< 0.005	0.01	347
2027	0.18	0.20	1.34	1.85	< 0.005	0.05	0.01	0.05	0.04	< 0.005	0.04	—	306	306	0.01	< 0.005	0.01	307
2028	0.15	0.17	1.14	1.65	< 0.005	0.04	< 0.005	0.04	0.03	< 0.005	0.03	—	273	273	0.01	< 0.005	0.01	274

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.32	0.74	0.28	2.65	0.01	0.01	0.55	0.56	0.01	0.14	0.15	4.43	730	735	0.48	0.02	1.59	755
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.27	0.68	0.31	1.98	0.01	0.01	0.55	0.56	0.01	0.14	0.15	4.43	695	700	0.48	0.03	0.16	720
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.29	0.70	0.30	2.19	0.01	0.01	0.54	0.55	0.01	0.14	0.15	4.43	701	705	0.48	0.02	0.76	725
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.05	0.13	0.05	0.40	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	0.73	116	117	0.08	< 0.005	0.13	120

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.26	0.24	0.17	2.09	0.01	< 0.005	0.55	0.55	< 0.005	0.14	0.14	—	559	559	0.02	0.02	1.46	568
Area	0.05	0.49	< 0.005	0.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	1.37	1.37	< 0.005	< 0.005	—	1.37
Energy	0.01	0.01	0.11	0.04	< 0.005	0.01	—	0.01	0.01	—	0.01	—	164	164	0.02	< 0.005	—	165
Water	—	—	—	—	—	—	—	—	—	—	—	0.63	4.98	5.60	0.06	< 0.005	—	7.71
Waste	—	—	—	—	—	—	—	—	—	—	—	3.80	0.00	3.80	0.38	0.00	—	13.3
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13	0.13
Total	0.32	0.74	0.28	2.65	0.01	0.01	0.55	0.56	0.01	0.14	0.15	4.43	730	735	0.48	0.02	1.59	755

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.25	0.23	0.20	1.94	0.01	< 0.005	0.55	0.55	< 0.005	0.14	0.14	—	526	526	0.02	0.02	0.04	533
Area	0.00	0.44	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
Energy	0.01	0.01	0.11	0.04	< 0.005	0.01	—	0.01	0.01	—	0.01	—	164	164	0.02	< 0.005	—	165
Water	—	—	—	—	—	—	—	—	—	—	—	0.63	4.98	5.60	0.06	< 0.005	—	7.71
Waste	—	—	—	—	—	—	—	—	—	—	—	3.80	0.00	3.80	0.38	0.00	—	13.3
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13	0.13
Total	0.27	0.68	0.31	1.98	0.01	0.01	0.55	0.56	0.01	0.14	0.15	4.43	695	700	0.48	0.03	0.16	720
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.25	0.23	0.19	1.89	0.01	< 0.005	0.54	0.55	< 0.005	0.14	0.14	—	531	531	0.02	0.02	0.63	538
Area	0.02	0.47	< 0.005	0.25	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.67	0.67	< 0.005	< 0.005	—	0.68
Energy	0.01	0.01	0.11	0.04	< 0.005	0.01	—	0.01	0.01	—	0.01	—	164	164	0.02	< 0.005	—	165
Water	—	—	—	—	—	—	—	—	—	—	—	0.63	4.98	5.60	0.06	< 0.005	—	7.71
Waste	—	—	—	—	—	—	—	—	—	—	—	3.80	0.00	3.80	0.38	0.00	—	13.3
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13	0.13
Total	0.29	0.70	0.30	2.19	0.01	0.01	0.54	0.55	0.01	0.14	0.15	4.43	701	705	0.48	0.02	0.76	725
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.05	0.04	0.03	0.35	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	87.9	87.9	< 0.005	< 0.005	0.10	89.1
Area	< 0.005	0.08	< 0.005	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.11	0.11	< 0.005	< 0.005	—	0.11
Energy	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	27.2	27.2	< 0.005	< 0.005	—	27.3
Water	—	—	—	—	—	—	—	—	—	—	—	0.10	0.82	0.93	0.01	< 0.005	—	1.28
Waste	—	—	—	—	—	—	—	—	—	—	—	0.63	0.00	0.63	0.06	0.00	—	2.20
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Total	0.05	0.13	0.05	0.40	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	0.73	116	117	0.08	< 0.005	0.13	120

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.10	0.10	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.10	0.10	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.39	3.65	3.28	0.01	0.15	—	0.15	0.14	—	0.14	—	563	563	0.02	< 0.005	—	565
Demolition	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.67	0.60	< 0.005	0.03	—	0.03	0.03	—	0.03	—	93.2	93.2	< 0.005	< 0.005	—	93.5
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.61	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	129	129	< 0.005	< 0.005	0.51	131
Vendor	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	0.00
Hauling	0.01	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	82.4	82.4	0.01	0.01	0.18	86.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.05	0.53	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	119	119	< 0.005	0.01	0.01	121
Vendor	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	0.00
Hauling	0.01	< 0.005	0.11	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	82.4	82.4	0.01	0.01	< 0.005	86.5
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	19.8	19.8	< 0.005	< 0.005	0.04	20.1
Vendor	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	0.00
Hauling	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.5	13.5	< 0.005	< 0.005	0.01	14.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.28	3.28	< 0.005	< 0.005	0.01	3.32
Vendor	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	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.24	2.24	< 0.005	< 0.005	< 0.005	2.35

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.94	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.97	0.82	7.80	7.44	0.01	0.34	—	0.34	0.31	—	0.31	—	1,306	1,306	0.05	0.01	—	1,310
Dust From Material Movement	—	—	—	—	—	—	4.85	4.85	—	2.49	2.49	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.42	1.36	< 0.005	0.06	—	0.06	0.06	—	0.06	—	216	216	0.01	< 0.005	—	217

Dust From Material Movement	—	—	—	—	—	—	0.88	0.88	—	0.45	0.45	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.04	0.72	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	150	150	< 0.005	0.01	0.59	152
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.15	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	34.6	34.6	< 0.005	< 0.005	0.06	35.1
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.73	5.73	< 0.005	< 0.005	0.01	5.82
Vendor	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	0.00
Hauling	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	0.00

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.69	0.58	5.40	5.15	0.01	0.22	—	0.22	0.21	—	0.21	—	1,201	1,201	0.05	0.01	—	1,205
Dust From Material Movement	—	—	—	—	—	—	1.68	1.68	—	0.66	0.66	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.99	0.94	< 0.005	0.04	—	0.04	0.04	—	0.04	—	199	199	0.01	< 0.005	—	200

Dust From Material Movement	—	—	—	—	—	—	0.31	0.31	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.05	0.82	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	171	171	< 0.005	0.01	0.68	174
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.06	0.70	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	159	159	< 0.005	0.01	0.02	161
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	29.2	29.2	< 0.005	< 0.005	0.05	29.6
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.84	4.84	< 0.005	< 0.005	0.01	4.91
Vendor	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	0.00
Hauling	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	0.00

3.7. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.62	3.04	27.2	27.6	0.06	1.12	—	1.12	1.03	—	1.03	—	6,599	6,599	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	0.20	1.76	1.78	< 0.005	0.07	—	0.07	0.07	—	0.07	—	426	426	0.02	< 0.005	—	428
Dust From Material Movement	—	—	—	—	—	—	0.59	0.59	—	0.24	0.24	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.32	0.32	< 0.005	0.01	—	0.01	0.01	—	0.01	—	70.6	70.6	< 0.005	< 0.005	—	70.8
Dust From Material Movement	—	—	—	—	—	—	0.11	0.11	—	0.04	0.04	—	—	—	—	—	—	—

Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.06	0.65	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	156	156	< 0.005	0.01	0.02	158
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.2	10.2	< 0.005	< 0.005	0.02	10.3
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.68	1.68	< 0.005	< 0.005	< 0.005	1.71
Vendor	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	0.00
Hauling	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	0.00

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.80	0.67	6.13	8.07	0.01	0.24	—	0.24	0.22	—	0.22	—	1,492	1,492	0.06	0.01	—	1,497
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	1.12	1.47	< 0.005	0.04	—	0.04	0.04	—	0.04	—	247	247	0.01	< 0.005	—	248
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	27.2	27.2	< 0.005	< 0.005	0.10	27.7
Vendor	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.5	25.5	< 0.005	< 0.005	0.06	26.7
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	25.2	25.2	< 0.005	< 0.005	< 0.005	25.6

Vendor	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.5	25.5	< 0.005	< 0.005	< 0.005	26.7
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.9	15.9	< 0.005	< 0.005	0.03	16.1
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.9	15.9	< 0.005	< 0.005	0.02	16.6
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.63	2.63	< 0.005	< 0.005	< 0.005	2.67
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.63	2.63	< 0.005	< 0.005	< 0.005	2.75
Hauling	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	0.00

3.11. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.88	0.74	6.71	9.24	0.02	0.24	—	0.24	0.22	—	0.22	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.22	1.69	< 0.005	0.04	—	0.04	0.04	—	0.04	—	283	283	0.01	< 0.005	—	284
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.7	26.7	< 0.005	< 0.005	0.09	27.2
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.0	25.0	< 0.005	< 0.005	0.06	26.2
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	24.8	24.8	< 0.005	< 0.005	< 0.005	25.1
Vendor	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.0	25.0	< 0.005	< 0.005	< 0.005	26.2
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17.9	17.9	< 0.005	< 0.005	0.03	18.2
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	17.9	17.9	< 0.005	< 0.005	0.02	18.7
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.96	2.96	< 0.005	< 0.005	< 0.005	3.01

Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.96	2.96	< 0.005	< 0.005	< 0.005	3.09
Hauling	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	0.00

3.13. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.75	0.63	5.68	8.23	0.01	0.19	—	0.19	0.18	—	0.18	—	1,525	1,525	0.06	0.01	—	1,530
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.12	1.04	1.50	< 0.005	0.03	—	0.03	0.03	—	0.03	—	252	252	0.01	< 0.005	—	253
Onsite truck	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	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.3	26.3	< 0.005	< 0.005	0.08	26.4
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	24.4	24.4	< 0.005	< 0.005	0.05	25.5
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	24.3	24.3	< 0.005	< 0.005	< 0.005	24.7
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	24.4	24.4	< 0.005	< 0.005	< 0.005	25.5
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.7	15.7	< 0.005	< 0.005	0.02	15.9
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.5	15.5	< 0.005	< 0.005	0.01	16.2
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.59	2.59	< 0.005	< 0.005	< 0.005	2.63
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.57	2.57	< 0.005	< 0.005	< 0.005	2.68
Hauling	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	0.00

3.15. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.20	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	41.4	41.4	< 0.005	< 0.005	—	41.5
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.85	6.85	< 0.005	< 0.005	—	6.88
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.04	0.49	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	117	117	< 0.005	0.01	0.01	118
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.24	3.24	< 0.005	< 0.005	0.01	3.28
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.54	0.54	< 0.005	< 0.005	< 0.005	0.54
Vendor	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	0.00
Hauling	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	0.00

3.17. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.51	0.67	< 0.005	0.01	—	0.01	0.01	—	0.01	—	79.4	79.4	< 0.005	< 0.005	—	79.7
Architectural Coatings	—	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.09	0.12	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.1	13.1	< 0.005	< 0.005	—	13.2
Architectural Coatings	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.45	5.45	< 0.005	< 0.005	0.02	5.53
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.05	5.05	< 0.005	< 0.005	< 0.005	5.12
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.04	3.04	< 0.005	< 0.005	0.01	3.08

Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.50	0.50	< 0.005	< 0.005	< 0.005	0.51
Vendor	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	0.00
Hauling	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	0.00

3.19. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.59	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.4	95.4	< 0.005	< 0.005	—	95.7
Architectural Coatings	—	0.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.8
Architectural Coatings	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.35	5.35	< 0.005	< 0.005	0.02	5.43
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.96	4.96	< 0.005	< 0.005	< 0.005	5.02
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.58	3.58	< 0.005	< 0.005	0.01	3.63

Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.59	0.59	< 0.005	< 0.005	< 0.005	0.60
Vendor	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	0.00
Hauling	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	0.00

3.21. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	0.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.54	0.74	< 0.005	0.01	—	0.01	0.01	—	0.01	—	88.6	88.6	< 0.005	< 0.005	—	88.9
Architectural Coatings	—	0.23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.10	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.7	14.7	< 0.005	< 0.005	—	14.7
Architectural Coatings	—	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.26	5.26	< 0.005	< 0.005	0.02	5.29
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.87	4.87	< 0.005	< 0.005	< 0.005	4.94
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.27	3.27	< 0.005	< 0.005	< 0.005	3.31

Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.54	0.54	< 0.005	< 0.005	< 0.005	0.55
Vendor	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	0.00
Hauling	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	0.00

3.23. Linear, Grubbing & Land Clearing (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.46	0.39	3.39	3.49	< 0.005	0.21	—	0.21	0.19	—	0.19	—	490	490	0.02	< 0.005	—	492
Dust From Material Movement	—	—	—	—	—	—	0.53	0.53	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.34	1.34	< 0.005	< 0.005	—	1.35

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.22	0.22	< 0.005	< 0.005	—	0.22
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.18	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	39.7	39.7	< 0.005	< 0.005	< 0.005	40.2
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.11	0.11	< 0.005	< 0.005	< 0.005	0.11
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.02	0.02	< 0.005	< 0.005	< 0.005	0.02
Vendor	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	0.00

Hauling	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	0.00

3.25. Linear, Grading & Excavation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.71	3.11	27.3	29.4	0.06	1.21	—	1.21	1.11	—	1.11	—	6,496	6,496	0.26	0.05	—	6,518
Dust From Material Movement	—	—	—	—	—	—	3.18	3.18	—	0.34	0.34	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.37	0.40	< 0.005	0.02	—	0.02	0.02	—	0.02	—	89.0	89.0	< 0.005	< 0.005	—	89.3
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.7	14.7	< 0.005	< 0.005	—	14.8

Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.10	0.09	1.05	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	238	238	0.01	0.01	0.03	241
Vendor	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.0	27.0	< 0.005	< 0.005	< 0.005	28.2
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.30	3.30	< 0.005	< 0.005	0.01	3.35
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.37	0.37	< 0.005	< 0.005	< 0.005	0.39
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.55	0.55	< 0.005	< 0.005	< 0.005	0.55
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Hauling	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	0.00

3.27. Linear, Drainage, Utilities, & Sub-Grade (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.99	2.51	22.9	23.6	0.05	0.91	—	0.91	0.84	—	0.84	—	5,694	5,694	0.23	0.05	—	5,713
Dust From Material Movement	—	—	—	—	—	—	2.65	2.65	—	0.29	0.29	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.19	0.19	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.8	46.8	< 0.005	< 0.005	—	47.0
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.75	7.75	< 0.005	< 0.005	—	7.77
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.08	0.88	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	198	198	< 0.005	0.01	0.02	201
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.65	1.65	< 0.005	< 0.005	< 0.005	1.67
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.27	0.27	< 0.005	< 0.005	< 0.005	0.28
Vendor	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	0.00
Hauling	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	0.00

3.29. Linear, Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.06	0.89	7.71	10.8	0.01	0.34	—	0.34	0.31	—	0.31	—	1,620	1,620	0.07	0.01	—	1,625

Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	< 0.005	0.04	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.88	8.88	< 0.005	< 0.005	—	8.91
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.47	1.47	< 0.005	< 0.005	—	1.47
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.05	0.61	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	139	139	< 0.005	0.01	0.02	141
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.77	0.77	< 0.005	< 0.005	< 0.005	0.78
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.13	0.13	< 0.005	< 0.005	< 0.005	0.13
Vendor	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	0.00
Hauling	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	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.26	0.24	0.17	2.09	0.01	< 0.005	0.55	0.55	< 0.005	0.14	0.14	—	559	559	0.02	0.02	1.46	568
Total	0.26	0.24	0.17	2.09	0.01	< 0.005	0.55	0.55	< 0.005	0.14	0.14	—	559	559	0.02	0.02	1.46	568
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.25	0.23	0.20	1.94	0.01	< 0.005	0.55	0.55	< 0.005	0.14	0.14	—	526	526	0.02	0.02	0.04	533
Total	0.25	0.23	0.20	1.94	0.01	< 0.005	0.55	0.55	< 0.005	0.14	0.14	—	526	526	0.02	0.02	0.04	533
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.05	0.04	0.03	0.35	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	87.9	87.9	< 0.005	< 0.005	0.10	89.1
Total	0.05	0.04	0.03	0.35	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	87.9	87.9	< 0.005	< 0.005	0.10	89.1

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	31.1	31.1	0.01	< 0.005	—	31.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	31.1	31.1	0.01	< 0.005	—	31.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	31.1	31.1	0.01	< 0.005	—	31.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	31.1	31.1	0.01	< 0.005	—	31.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	5.15	5.15	< 0.005	< 0.005	—	5.20
Total	—	—	—	—	—	—	—	—	—	—	—	—	5.15	5.15	< 0.005	< 0.005	—	5.20

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.01	0.01	0.11	0.04	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134

Total	0.01	0.01	0.11	0.04	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.01	0.01	0.11	0.04	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134
Total	0.01	0.01	0.11	0.04	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	—	134
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	22.1	22.1	< 0.005	< 0.005	—	22.1
Total	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	22.1	22.1	< 0.005	< 0.005	—	22.1

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	—	0.38	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.05	0.04	< 0.005	0.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.37	1.37	< 0.005	< 0.005	—	1.37

Total	0.05	0.49	< 0.005	0.51	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	1.37	1.37	< 0.005	< 0.005	—	1.37
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	—	0.38	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.00	0.44	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	—	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	< 0.005	< 0.005	< 0.005	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.11	0.11	< 0.005	< 0.005	—	0.11
Total	< 0.005	0.08	< 0.005	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.11	0.11	< 0.005	< 0.005	—	0.11

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.63	4.98	5.60	0.06	< 0.005	—	7.71
Total	—	—	—	—	—	—	—	—	—	—	—	0.63	4.98	5.60	0.06	< 0.005	—	7.71
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.63	4.98	5.60	0.06	< 0.005	—	7.71
Total	—	—	—	—	—	—	—	—	—	—	—	0.63	4.98	5.60	0.06	< 0.005	—	7.71
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.10	0.82	0.93	0.01	< 0.005	—	1.28
Total	—	—	—	—	—	—	—	—	—	—	—	0.10	0.82	0.93	0.01	< 0.005	—	1.28

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	3.80	0.00	3.80	0.38	0.00	—	13.3
Total	—	—	—	—	—	—	—	—	—	—	—	3.80	0.00	3.80	0.38	0.00	—	13.3

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	3.80	0.00	3.80	0.38	0.00	—	13.3
Total	—	—	—	—	—	—	—	—	—	—	—	3.80	0.00	3.80	0.38	0.00	—	13.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.63	0.00	0.63	0.06	0.00	—	2.20
Total	—	—	—	—	—	—	—	—	—	—	—	0.63	0.00	0.63	0.06	0.00	—	2.20

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13	0.13
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13	0.13
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13	0.13
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13	0.13

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	3/4/2025	5/26/2025	5.00	60.0	—
Site Preparation	Site Preparation	5/27/2025	9/29/2025	5.00	90.0	—
Grading	Grading	9/30/2025	2/2/2026	5.00	90.0	—
Building Construction	Building Construction	2/17/2026	11/20/2028	5.00	720	—
Paving	Paving	2/3/2026	2/16/2026	5.00	10.0	—
Architectural Coating	Architectural Coating	3/3/2026	12/4/2028	5.00	720	—
Linear, Grubbing & Land Clearing	Linear, Grubbing & Land Clearing	3/4/2025	3/5/2025	5.00	1.00	—
Linear, Grading & Excavation	Linear, Grading & Excavation	3/6/2025	3/13/2025	5.00	5.00	—
Linear, Drainage, Utilities, & Sub-Grade	Linear, Drainage, Utilities, & Sub-Grade	3/14/2025	3/18/2025	5.00	3.00	—
Linear, Paving	Linear, Paving	3/19/2025	3/21/2025	5.00	2.00	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
Linear, Grubbing & Land Clearing	Crawler Tractors	Diesel	Average	1.00	8.00	87.0	0.43
Linear, Grubbing & Land Clearing	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Linear, Grubbing & Land Clearing	Signal Boards	Electric	Average	0.00	8.00	6.00	0.82

Linear, Grading & Excavation	Crawler Tractors	Diesel	Average	1.00	8.00	87.0	0.43
Linear, Grading & Excavation	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Linear, Grading & Excavation	Graders	Diesel	Average	1.00	8.00	148	0.41
Linear, Grading & Excavation	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Linear, Grading & Excavation	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Linear, Grading & Excavation	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Linear, Grading & Excavation	Signal Boards	Electric	Average	0.00	8.00	6.00	0.82
Linear, Grading & Excavation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Linear, Drainage, Utilities, & Sub-Grade	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48
Linear, Drainage, Utilities, & Sub-Grade	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Linear, Drainage, Utilities, & Sub-Grade	Graders	Diesel	Average	1.00	8.00	148	0.41
Linear, Drainage, Utilities, & Sub-Grade	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43
Linear, Drainage, Utilities, & Sub-Grade	Pumps	Diesel	Average	1.00	8.00	11.0	0.74
Linear, Drainage, Utilities, & Sub-Grade	Rough Terrain Forklifts	Diesel	Average	1.00	8.00	96.0	0.40
Linear, Drainage, Utilities, & Sub-Grade	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Linear, Drainage, Utilities, & Sub-Grade	Signal Boards	Electric	Average	0.00	8.00	6.00	0.82
Linear, Drainage, Utilities, & Sub-Grade	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37

Linear, Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Linear, Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Linear, Paving	Rollers	Diesel	Average	3.00	8.00	36.0	0.38
Linear, Paving	Signal Boards	Electric	Average	0.00	8.00	6.00	0.82
Linear, Paving	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	11.7	LDA,LDT1,LDT2
Demolition	Vendor	—	8.40	HHDT,MHDT
Demolition	Hauling	1.15	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	3.24	11.7	LDA,LDT1,LDT2

Building Construction	Vendor	0.96	8.40	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.65	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT
Linear, Grubbing & Land Clearing	—	—	—	—
Linear, Grubbing & Land Clearing	Worker	5.00	11.7	LDA,LDT1,LDT2
Linear, Grubbing & Land Clearing	Vendor	0.00	8.40	HHDT,MHDT
Linear, Grubbing & Land Clearing	Hauling	0.00	20.0	HHDT
Linear, Grubbing & Land Clearing	Onsite truck	—	—	HHDT
Linear, Grading & Excavation	—	—	—	—
Linear, Grading & Excavation	Worker	30.0	11.7	LDA,LDT1,LDT2
Linear, Grading & Excavation	Vendor	1.00	8.40	HHDT,MHDT
Linear, Grading & Excavation	Hauling	0.00	20.0	HHDT
Linear, Grading & Excavation	Onsite truck	—	—	HHDT
Linear, Drainage, Utilities, & Sub-Grade	—	—	—	—
Linear, Drainage, Utilities, & Sub-Grade	Worker	25.0	11.7	LDA,LDT1,LDT2
Linear, Drainage, Utilities, & Sub-Grade	Vendor	0.00	8.40	HHDT,MHDT
Linear, Drainage, Utilities, & Sub-Grade	Hauling	0.00	20.0	HHDT

Linear, Drainage, Utilities, & Sub-Grade	Onsite truck	—	—	HHDT
Linear, Paving	—	—	—	—
Linear, Paving	Worker	17.5	11.7	LDA,LDT1,LDT2
Linear, Paving	Vendor	0.00	8.40	HHDT,MHDT
Linear, Paving	Hauling	0.00	20.0	HHDT
Linear, Paving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	35,539	11,846	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	6,000	—
Site Preparation	—	—	135	0.00	—
Grading	—	—	270	0.00	—
Paving	0.00	0.00	0.00	0.00	0.16
Linear, Grubbing & Land Clearing	—	—	0.06	0.00	—
Linear, Grading & Excavation	—	—	0.06	0.00	—

Linear, Drainage, Utilities, & Sub-Grade	—	—	0.06	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	0.10	0%
Road Construction	0.06	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	85.0	85.0	85.0	31,010	775	775	775	282,891

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	9
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
35538.75	11,846	0.00	0.00	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	55,664	204	0.0330	0.0040	415,997

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	326,398	1,377,374

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	7.05	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Land Use	Lot acreage adjusted to represent the total net acreage of the site that is suitable for development.
Construction: Construction Phases	Construction phase timing adjusted based on applicant provided information. Based on typical construction practices, architectural coating assumed to start two weeks after the start of building construction and last for the same number of days.
Operations: Vehicle Data	Trip rates adjusted to be consistent with Traffic Operations Analysis prepared by Hexagon.
Operations: Hearths	Based on BAAQMD Rules/Town reach code.

APPENDIX B

BIOLOGICAL EVALUATION REPORT

LIVE OAK ASSOCIATES, INC.
an Ecological Consulting Firm

December 9, 2020

Mr. Bud Elam
Elam Family Trust-A
14195 Shannon Road
Los Gatos, CA 95032

RE: Biological Evaluation of the approximately 28.61-acre 14195 Shannon Road (Elam Subdivision) project (APN 537-27-047), Town of Los Gatos, Santa Clara County, California (PN 2518-01).

Dear Mr. Elam,

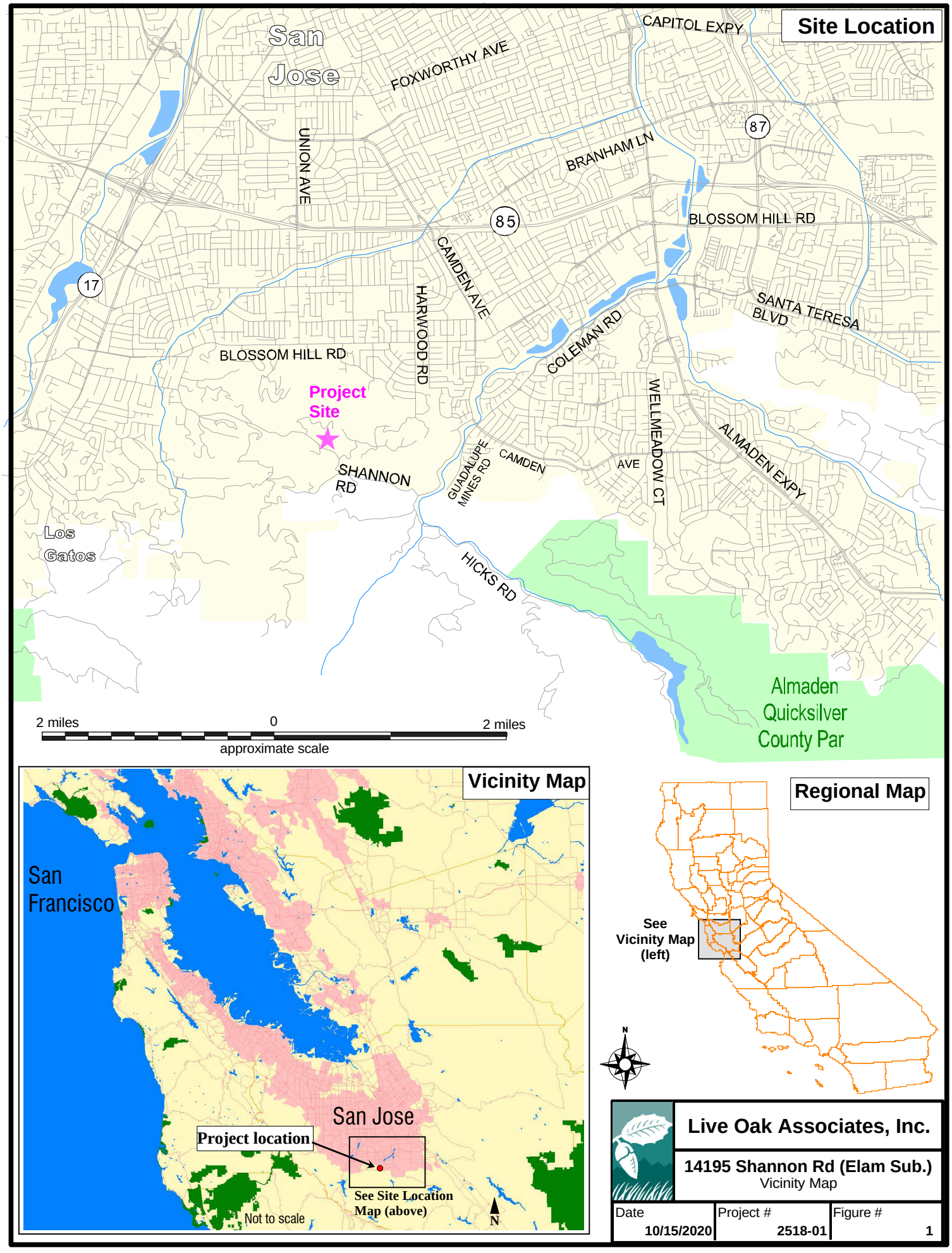
At your request, Live Oak Associates, Inc. (LOA) completed a biological evaluation for the approximately 28.61-acre Elam Subdivision project site, most of which occurs to the northeast of the intersection of Sky Lane and Shannon Road in the Town of Los Gatos. As we understand it, the project includes the rezoning of the site to Hillside Residential (HR) and the subdivision of the single parcel into nine single family home parcels with a visual open space easement to be preserved including wildlife corridors.

LOA plant and wetland ecologist Pamela Peterson and wildlife ecologist Katrina Krakow conducted a reconnaissance-level survey on October 13, 2020, and Ms. Peterson made a secondary site visit on November 10, 2020. The primary objectives of these site visits was to 1) identify the constituent species and habitats of the site and 2) assess the potential of the site to support sensitive habitats (e.g., wetland and riparian habitats) or suitable habitat for special status plant or animal species. Background sources of information reviewed in the preparation of this analysis included the Natural Resource Conservation Service's (NRCS) websoil survey (accessed on-line on October 7, 2020), the on-line National Wetlands Inventory (accessed on-line on October 7, 2020), the *California Natural Diversity Data Base* (accessed on-line on October 7, 2020), special status species lists prepared by the California Department of Fish and Wildlife (CDFW 2020), U.S. Fish and Wildlife Service (USFWS 2020), and California Native Plant Society (CNPS 2020), and manuals and references related to plants and animals found in and around Santa Clara County.

EXISTING CONDITIONS

Regional Setting

The project site occurs on the north side of Shannon Road, approximately one-mile east of the more developed environs of the Town of Los Gatos and approximately 0.5-mile south of the



Live Oak Associates, Inc.		
14195 Shannon Rd (Elam Sub.) Vicinity Map		
Date 10/15/2020	Project # 2518-01	Figure # 1

developed environs of the City of San Jose, in the Los Gatos 7.5" U.S. Geological Survey (USGS) quadrangle (Figure 1). The site occurs on a generally southerly-facing slope with elevations ranging from a high of approximately 875 feet (267 meters) National Geodetic Vertical Datum (NGVD) in the northeastern portion of the site to a low of approximately 570 feet (174 meters) NGVD near the southeastern corner of the site near Shannon Road. The surrounding land uses include primarily rural homes on large acreages to the north, west and south, and open space to the east.

The southwestern portion of the site is developed with a single-family home, and various outbuildings and horse facilities including, but not limited to, a workshop, stalls, corrals, paddocks, arena, and round pen.

Soils

Three soil types occur on the site (NRCS 2020; accessed on-line on October 5, 2020). Most of the site is underlain by Zeppelin-Alumrock Complex, 30 to 50 percent slopes (well drained; residuum weathered from sandstone). Alo-Altamont Complex, 15 to 30 percent slopes (well-drained; residuum weathered from calcareous shale) occurs in the southeast portion of the site and a small area of Alumrock Fine Sandy Loam, 15 to 30 percent slopes (well drained; residuum weathered from sandstone) occurs along the site boundary in the northeastern portion of the site.

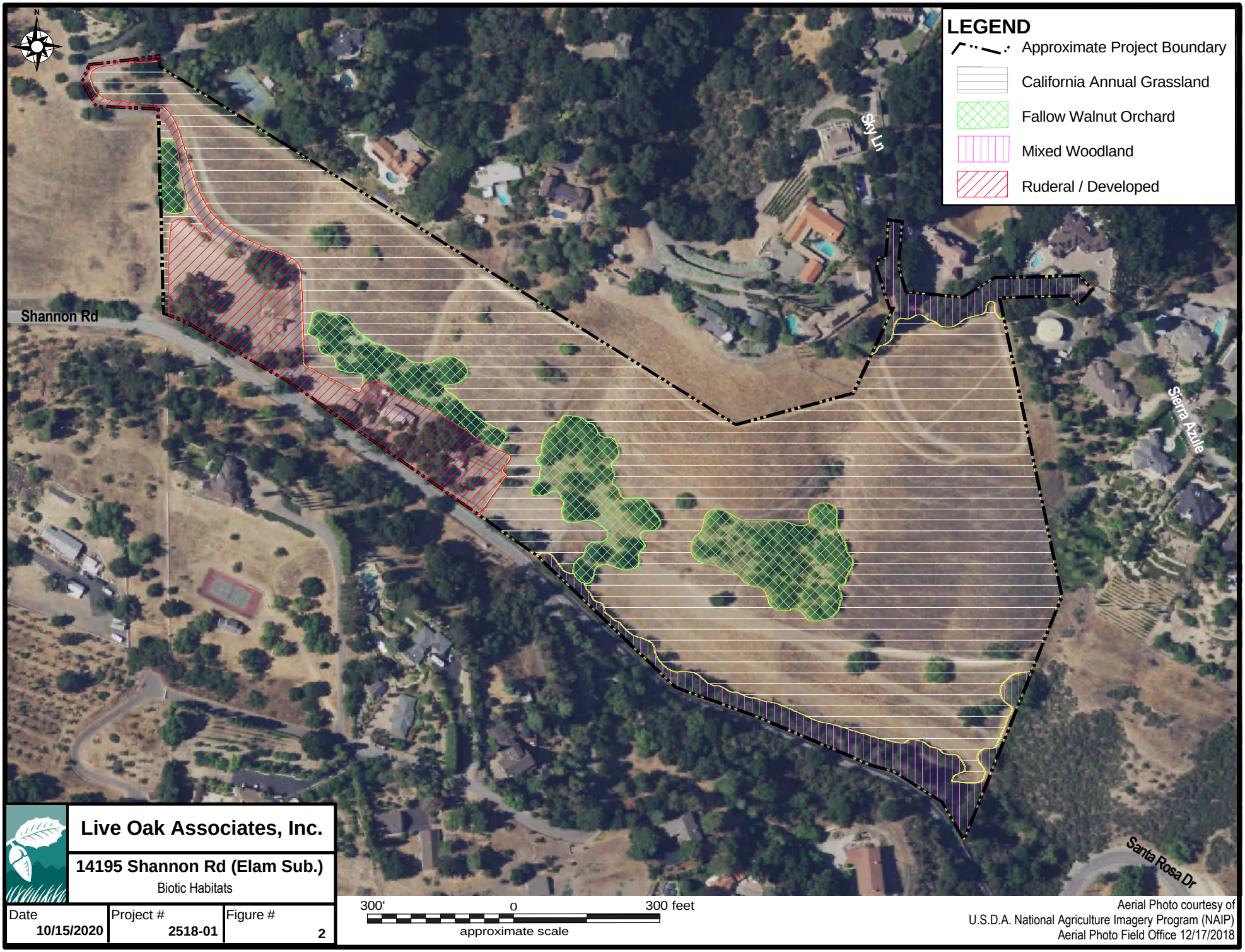
None of the soils of the site are considered to be hydric soils. A hydric soil is a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part, and which may support hydrophytic (wetland) vegetation. While none of the soils of the site are considered to be hydric, hydric inclusions may occur.

None of the soils of the site are considered to be serpentine or alkaline soils, therefore, special status plant species that only occur on serpentine or alkaline soils are considered absent from the site.

Habitats

The site supports developed land uses, as well as three habitat types. These are described in greater detail below and depicted in Figure 2. Representative photos of these habitats are provided in Appendix B.

Developed/Ruderal. As indicated above, the southwestern portion of the site is developed with a home and various outbuildings including horse facilities (stalls, corrals, paddocks, arena, and round pen), as well as the paved Sky Lane roadway that bisects the western portion of the site. Currently, no horses are being kept on the site. Areas within the paddocks and corrals were heavily impacted and mostly barren of vegetation, although ruderal species adapted to disturbance were present in small numbers, including stinkwort (*Dittrichia graveolens*) and horehound (*Marrubium vulgare*). In the vicinity of the home, some landscape plants and shrubs were observed including juniper shrubs (*Juniper* sp.), privet (*Ligustrum* sp.) and cotoneaster (*Cotoneaster* sp.).


N
LEGEND
Approximate Project Boundary
California Annual Grassland
Fallow Walnut Orchard
Mixed Woodland
Ruderal / Developed
Shannon Rd
Sky Ln
Sierra Azule
Santa Rosa Dr
Live Oak Associates, Inc.
14195 Shannon Rd (Elam Sub.)
Biotic Habitats
Date 10/15/2020
Project # 2518-01
Figure # 2
300' 0 300 feet
approximate scale
Aerial Photo courtesy of
U.S.D.A. National Agriculture Imagery Program (NAIP)
Aerial Photo Field Office 12/17/2018

Wildlife observed in the developed/ruderal habitat during the October 13, 2020 site visit include the western fence lizard (*Sceloporus occidentalis*), California scrub jay (*Aphelocomacalifornica*), mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), barn swallow (*Hirundo rustica*) nest, Botta's pocket gopher (*Thomomys bottae*) sign, California ground squirrel (*Otospermophilus beecheyi*), and domestic cat (*Felis catus*). Other migratory bird species are likely to occur and nest in this habitat, and animals such as bats, raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), and domestic dogs (*Canis lupus familiaris*), and species occurring in adjacent habitats are also expected to occur in this habitat.

California Annual Grassland. The most prevalent land cover type on the site is California annual grassland, which, at the time of the October site visit, was densely vegetated/matted with primarily senesced wild oats (*Avena* sp.) and yellow star thistle (*Centaurea solstitialis*). Other herbaceous species observed within these grasslands included mostly non-native forbs such as wild radish (*Raphanus sativa*), and field bindweed (*Convolvolus arvensis*). A significant native plant component was absent from this habitat, likely due to the dense cover by annual grasses, and the almost complete dominance by annual grasses would tend to make this habitat unsuitable for most rare plant species that occur in the project vicinity. Northern California black walnut trees (*Juglans hindsii*) that appeared to have recruited from the fallow orchards on the site were widely scattered within the annual grassland habitat.

A large, wide upland grassy swale traverses the southern, lower portion of the project site near Shannon Road. This feature has no defined bed and bank and supported upland vegetation that was mostly undifferentiated from the adjacent annual grasslands, i.e. no hydrophytic vegetation was observed within this feature. Just on the other side of the fence along the eastern boundary of the property, this feature appeared to connect to an off-site wetland and channel with a defined bed and bank and some associated riparian and scrub vegetation. We understand from the project's civil engineer that the swale may have occurred along the Shannon Fault.

Wildlife observed in the California annual grassland habitat during the October 13, 2020 site visit include the western fence lizard, turkey vulture (*Cathartes aura*), wild turkey (*Meleagris gallopavo*) feathers, California scrub jay, California towhee (*Melozone crissalis*), mourning dove, Anna's hummingbird, Botta's pocket gopher sign, California ground squirrel, domestic cat, black-tailed deer (*Odocoileus hemionus columbianus*). Other migratory bird species are likely to occur and nest in this habitat, and animals such as raccoon, opossum, and domestic cats and dogs; species occurring in adjacent habitats are also expected to occur in this habitat.

Fallow Walnut Orchard. Fallow walnut orchards are present on the site to the north of the developed and ruderal environs of the site. These orchards had been fallow for at least several decades and the Northern California black walnut root stocks had taken over the non-native black walnuts (*Juglans nigra*) that were once grafted to them.

Wildlife observed in the fallow walnut orchard habitat during the October 13, 2020 site visit include the western fence lizard, California scrub jay, California towhee, Nuttall's woodpecker (*Picoides nuttallii*), acorn woodpecker (*Melanerpes formicivorus*), northern flicker (*Colaptes auratus*), Anna's hummingbird, Botta's pocket gopher sign, California ground squirrel, and black-tailed deer. Other migratory bird species are likely to occur and nest in this habitat, and

animals such as bats, raccoon, opossum, and domestic dogs, and species occurring in adjacent habitats are also expected to occur in this habitat.

Mixed Woodland. A narrow strip of mixed woodland habitat occurs along the southeastern boundary of the property along Shannon Road, as well as occurs in the very northeast corner of the site within the driveway right-of-ways for two of the proposed lots. The dominant trees observed within this habitat included coast live oak (*Quercus agrifolia*) and Northern California black walnut. The shrub layer was mostly dominated by species such as coyote brush (*Baccharis pilularis*), blue elderberry (*Sambucus nigra ssp. cerulea*), and common snowberry (*Symphorocarpus albus*). Plant species observed in the herbaceous understory of this habitat included non-native forbs such as fennel (*Foeniculum vulgare*) and serrated lettuce (*Lactuca serriola*). This habitat type also occurs on the other side of Shannon Road from the project site, in areas that may be impacted by road widening as a result of the project.

Wildlife observed in the mixed woodland habitat during the October 13, 2020 site visit included the California scrub jay, California towhee, Nuttall's woodpecker (*Picoides nuttallii*), acorn woodpecker (*Melanerpes formicivorus*), northern flicker (*Colaptes auratus*), Anna's hummingbird, dark-eyed junco (*Junco hyemalis*), chestnut-backed chickadee (*Poecile rufescens*), and San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) nests. Other migratory bird species are likely to occur and nest in this habitat, and animals such as bats, raccoon and opossum and species occurring in adjacent habitats are also expected to occur in this habitat.

Jurisdictional Waters

Jurisdictional waters include rivers, creeks, and drainages that have a defined bed and bank and which, at the very least, carry ephemeral flows. Jurisdictional waters also include lakes, ponds, reservoirs, and wetlands. Such waters may be subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Wildlife (CDFW), and the California Regional Water Quality Control Board (RWQCB).

The National Wetland Inventory identifies two areas on the site that they classify as "Freshwater Emergent Wetland". One of the latter areas is at the very eastern boundary of the site at the lowest point of the large upland swale described previously. This area was surveyed during the October site survey and was not observed to support wetland vegetation, although off-site it appears that there may be a wetland channel with associated riparian and scrub vegetation. This area was observed from the site's fence line and vegetation in that area was extremely dense, so it was difficult to determine the extent of this potential off-site wetland and channel. The other area identified by the NWI is at the top of a small upland swale in the eastern portion of the site. The location of the NWI-mapped wetland is on a steep slope above the swale and above a grouping of Northern California black walnut trees. This area supported upland vegetation including poison oak (*Toxicodendron diversilobum*), coyote brush, and a dense patch of Italian thistle (*Carduus pycnocephalus*). No evidence of hydrology or hydrophytic vegetation was observed in this location and, again, the area in question occurs on steep slope.

There were no other areas of the site that were observed to support wetlands or other jurisdictional waters, therefore, jurisdictional waters are confirmed absent from the site.

Special Status Species

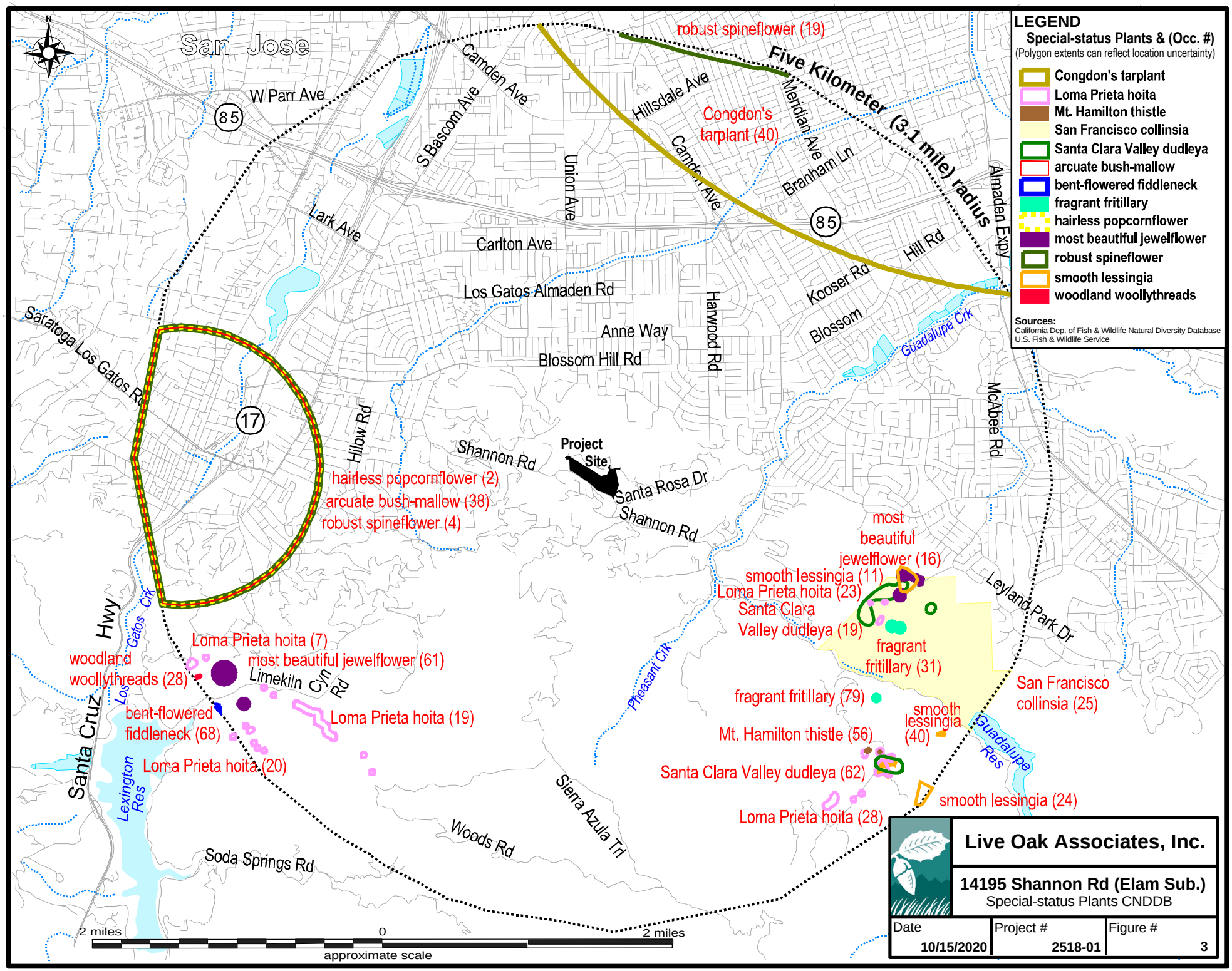
Special status species include plants and animals that are listed as threatened or endangered under the state and federal Endangered Species Acts (ESA); other plant and animal species considered to be species of concern or fully protected species in California; and plants maintained on lists compiled by CDFW and the California Native Plant Society (CNPS).

A search of published accounts for all relevant special status plant and animal species was conducted for the Los Gatos USGS 7.5" quadrangle in which the project site occurs and for the eight surrounding quadrangles (Cupertino, San Jose West, San Jose East, Santa Teresa Hills, Castle Rock Ridge, Loma Prieta, Laurel, and Felton) using the California Natural Diversity Data Base (CNDDB) Rarefind (CDFW 2020; accessed on-line on October 5, 2020). Special status species documented as occurring, or historically occurring, within a five-kilometer (approximately three-mile) radius of the project site are depicted in Figure 3 (plants) and Figure 4 (animals).

Special status plants and animals known to occur, or to once have occurred, in the project vicinity, and their likelihood of occurrence on the site, are included in Table 1A and 1B, respectively.

Certain special status plant species have been eliminated from consideration in Table 1A as these species are endemic on serpentine or alkaline soils and the soils of the site are not serpentine or alkaline. Serpentine species eliminated from consideration include: Coyote ceanothus (*Ceanothus ferrisiae*), Mt. Hamilton fountain thistle (*Cirsium fontinale var. campylon*), San Francisco collinsia (*Collinsia multicolor*), Santa Clara Valley dudleya (*Dudleya abramsii ssp. setchellii*), Loma Prieta hoita (Hoita strobilina), smooth lessingia (*Lessingia micradenia var. glabrata*), woodland woollythreads (*Monolopia gracilens*), white-rayed pentachaeta (*Pentachaeta bellidiflora*), Metcalf Canyon jewelflower (*Streptanthus albidus ssp. albidus*), and most beautiful jewelflower (*Streptanthus albidus ssp. peremoenus*). Special status plants adapted to alkaline soils which have been eliminated from consideration include: Congdon's tarplant (*Centromadia parryi ssp. congdonii*), hairless popcorn flower (*Plagiobothrys glaber*), chaparral ragwort (*Senecio aphanactis*), and saline clover (*Trifolium hydrophilum*).

Animals with a range that occurs outside of the site's immediate vicinity or in habitats not present on the site (e.g., serpentine, redwoods, marshes, coastal scrub, etc.) are considered absent from the site, and these species and are also eliminated from consideration in Table 1B. These species include Ohlone tiger beetle (*Cicindela ohlone*), Mount Hermon June beetle (*Polyphylla barbata*), Zayante band-winged grasshopper (*Trimerotropis infantilis*), Smith's blue butterfly (*Euphilotes enoptes smithi*), Bay checkerspot butterfly (*Euphydryas editha bayensis*), coho salmon (*Oncorhynchus kisutch*), steelhead (*Oncorhynchus mykiss*), marbled murrelet (*Brachyramphus marmoratus*), and black swift (*Cypseloides niger*).


LEGEND
Special-status Plants & (Occ. #)
(Polygon extents can reflect location uncertainty)
Congdon's tarplant
Loma Prieta hoita
Mt. Hamilton thistle
San Francisco collinsia
Santa Clara Valley dudleya
arcuate bush-mallow
bent-flowered fiddleneck
fragrant fritillary
hairless popcornflower
most beautiful jewelflower
robust spineflower
smooth lessingia
woodland woollythreads
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service
Five Kilometer (3.1 mile) radius
Project Site
San Jose
W Parr Ave
Camden Ave
S Bascom Ave
Union Ave
Hillsdale Ave
Meridian Ave
Branham Ln
Almaden Expy
Hill Rd
Kooser Rd
Blossom
Lark Ave
Carlton Ave
Los Gatos Almaden Rd
Harwood Rd
Anne Way
Blossom Hill Rd
Saratoga Los Gatos Rd
Hillow Rd
Shannon Rd
Santa Rosa Dr
McAbee Rd
Guadalupe Crk
Leyland Park Dr
Hwy 17
Santa Cruz
Los Gatos Crk
Limekiln Cyn Rd
Pheasant Crk
Lexington Res
Guadalupe Res
Sierra Azula Trl
Woods Rd
Soda Springs Rd
robust spineflower (19)
Congdon's tarplant (40)
hairless popcornflower (2)
arcuate bush-mallow (38)
robust spineflower (4)
most beautiful jewelflower (16)
smooth lessingia (11)
Loma Prieta hoita (23)
Santa Clara Valley dudleya (19)
fragrant fritillary (31)
San Francisco collinsia (25)
fragrant fritillary (79)
smooth lessingia (40)
Mt. Hamilton thistle (56)
Santa Clara Valley dudleya (62)
smooth lessingia (24)
Loma Prieta hoita (28)
Loma Prieta hoita (7)
most beautiful jewelflower (61)
woodland woollythreads (28)
bent-flowered fiddleneck (68)
Loma Prieta hoita (19)
Loma Prieta hoita (20)
2 miles
0
2 miles
approximate scale
Live Oak Associates, Inc.
14195 Shannon Rd (Elam Sub.)
Special-status Plants CNDDB
Date
10/15/2020
Project #
2518-01
Figure #
3

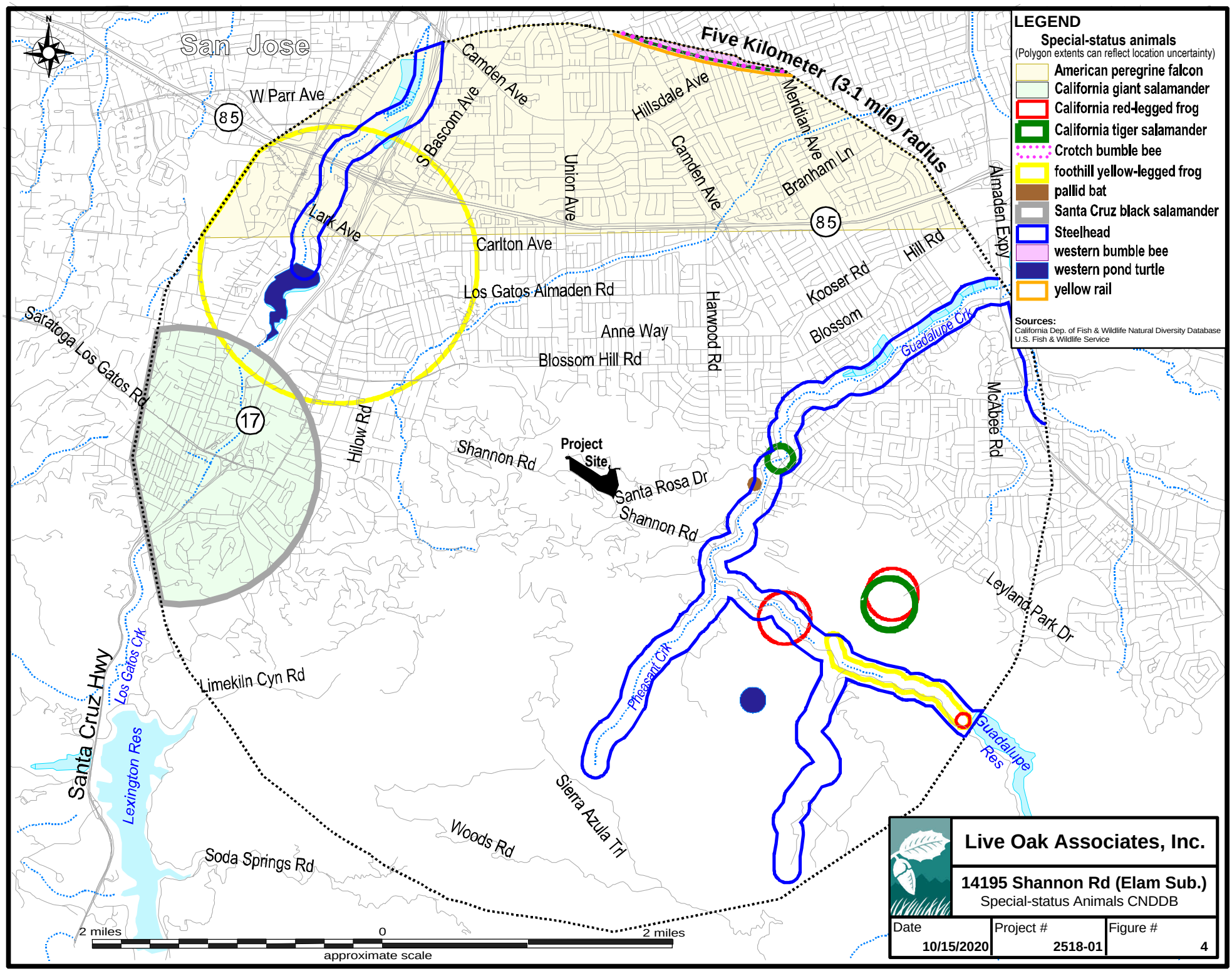

San Jose
Five Kilometer (3.1 mile) radius
W Parr Ave
Camden Ave
S Bascom Ave
Hillsdale Ave
Meridian Ave
Branham Ln
Union Ave
Lark Ave
Carlton Ave
Los Gatos Almaden Rd
Harwood Rd
Kooser Rd
Hill Rd
Almaden Expy
Blossom
Anne Way
Blossom Hill Rd
Saratoga Los Gatos Rd
Hilow Rd
Shannon Rd
Project Site
Santa Rosa Dr
Guadalupe Crk
McAbee Rd
Leyland Park Dr
Pheasant Crk
Guadalupe Res
Santa Cruz Hwy
Los Gatos Crk
Limekiln Cyn Rd
Lexington Res
Sierra Azula Trl
Woods Rd
Soda Springs Rd
85
17
2 miles
0
2 miles
approximate scale
LEGEND
Special-status animals
(Polygon extents can reflect location uncertainty)
American peregrine falcon
California giant salamander
California red-legged frog
California tiger salamander
Crotch bumble bee
foothill yellow-legged frog
pallid bat
Santa Cruz black salamander
Steelhead
western bumble bee
western pond turtle
yellow rail
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service
Live Oak Associates, Inc.
14195 Shannon Rd (Elam Sub.)
Special-status Animals CNDDB
Date
10/15/2020
Project #
2518-01
Figure #
4

TABLE 1A: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS (adapted from CDFW 2020 and CNPS 2020)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Marsh Sandwort (*Arenaria paludicola*)	FE, CE, CRPR 1B	Habitat: Freshwater wetlands. Elevation: 3-170 m. Blooms: Perennial herb; May-August.	**Absent.** Habitat is absent from the site for this species.
Ben Lomond Spineflower (*Chorizanthe pungens var. hartwegiana*)	FE, CRPR 1B	Habitat: Maritime ponderosa pine sandhills. Elevation: 90-610 m. Blooms: Annual herb; April-July.	**Absent.** Habitat is absent from the site for this species. Not known from Santa Clara County.
Monterey Spineflower (*Chorizanthe pungens* var. *pungens*)	FT, CRPR 1B	Habitat: Sandy soils within chaparral, cismontane woodland, coastal dunes, coastal scrub and valley and foothill grassland. Elevation: 3-450 m. Blooms: Annual herb; April-June.	**Absent.** Habitat is absent from the site for this species. Not known from Santa Clara County.
Scott's Valley Spineflower (*Chorizanthe robusta var. hartwegii*)	FE, CRPR 1B	Habitat: Sandy soils in meadows and seeps; mudstone and Purisima outcrops in valley and foothill grassland. Elevation: 230-245 m. Blooms: Annual herb; April–July.	**Absent.** Habitat is absent from the site for this species. This species is not known to occur in Santa Clara County and there are no observations of this species within a three-mile radius of the site.
Robust spineflower (*Chorizanthe robusta* var. *robusta*)	FE, CRPR 1B	Habitat: Occurs in sandy or gravelly soils within cismontane woodland, coastal dunes, and coastal scrub. Elevation: 3-300 m. Blooms: Annual herb; April-September.	**Unlikely.** Soils appropriate for this species are limited to some barren gravelly soils in the very northwestern corner of the site adjacent to Sky Lane near its terminus. Although the site visit occurred just outside the latter part of the blooming season for this species, senescent skeletons of this species would likely have been still observable and it was not observed. Additionally, there are only two documented observances of this species in the project vicinity: Occurrence #19 is approximately 2.5 to 3 miles west on the Sierra Azul Open Space Preserve; and Occurrence #4 was last observed in 1888 approximately 3 miles north and is likely extirpated.
Santa Cruz wallflower (*Erysimum teretifolium*)	FE, CE, CRPR 1B	Habitat: Inland marine sands within chaparral and lower montane coniferous forest. Elevation: 120-610 m. Blooms: Perennial herb; March-July	**Absent.** Habitat is absent from the site for this species. This species is not known to occur in Santa Clara County and there are no observations of this species within a three-mile radius of the site.

TABLE 1A: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS (adapted from CDFW 2020 and CNPS 2020)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Santa Cruz cypress (*Hesperocyparis abramsiana var. abramsiana*)	FE, CE, CRPR 1B	Habitat: Sandstone or granitic soils in chaparral or coniferous forest. Elevation: 280-800 m. Blooms: Evergreen tree.	**Absent.** Habitat is absent from the site for this species. This species is not known to occur in Santa Clara County and there are no observations of this species within a three-mile radius of the site. nty.
Santa Cruz tarplant (*Holocarpha macradenia*)	FT, CE, CRPR 1B	Habitat: Often clay and sandy soils in coastal prairie and scrub, and valley and foothill grassland. Elevation: 10-220 m. Blooms: Annual herb; June-October.	**Absent.** Habitat is absent from the site for this species.
Contra Costa Goldfields (*Lasthenia conjugens*)	FE, CRPR 1B	Habitat: Vernal pools and mesic areas within cismontane woodland, alkaline playas, and valley and foothill grasslands. Elevation: 0-470 m. Blooms: Annual herb; March-June.	**Absent.** Habitat is absent from the site for this species.
San Francisco popcornflower (*Plagiobothrys diffusus*)	CE, CRPR 1B	Habitat: Coastal prairie and valley and foothill grasslands. Elevation: 60-360 m. Blooms: Annual herb; March-June.	**Unlikely.** Habitat is extremely marginal on the site for this species as a result of tall, dense annual grasses and the closest known populations are more than 10 miles west of the site in Santa Cruz County.
Scott's Valley polygonum (*Polygonum hickmanii*)	FE, CE, CRPR 1B	Habitat: Mudstone and sandstone soils in valley and foothill grassland. Elevation: 210-250 m. Blooms: Annual herb; May-October.	**Absent.** Habitat is absent from the site for this species.

TABLE 1B: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

PLANTS (adapted from CDFW 2020 and CNPS 2020)

Other special status plants listed by the CDFW and CNPS

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Bent-flowered fiddleneck (*Amsinckia lunaris*)	CRPR 1B	Habitat: Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation: 3-500 m. Blooms: Annual herb; March-June.	**Possible.** This species has been documented in the Sierra Azul Open Space Preserve approximately three miles west of the site and woodlands and grasslands of the site provide potential habitat for this species.
Slender silver moss (*Anomobryum julaceum*)	CRPR 4	Habitat: Damp rocks and soil in broadleaved upland forest, lower montane coniferous forest, North Coast coniferous forest. Elevation: 100-1000 m. Blooms: Moss.	**Absent.** Habitat is absent from the site for this species. Not known from Santa Clara County.

TABLE 1B: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

PLANTS (adapted from CDFW 2020 and CNPS 2020)
Other special status plants listed by the CDFW and CNPS

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Anderson's manzanita (*Arctostaphylos andersonii*)	CRPR 1B	Habitat: Occurs in openings and at edges of broadleaved upland forest, chaparral, and North Coast coniferous forest. Elevation: 60-730 meters. Blooms: Evergreen shrub; November–May.	**Absent.** Manzanita species are absent from the project site.
Bonny Doon manzanita (*Arctostaphylos silvicola*)	CRPR 1B	Habitat: Inland marine sands within chaparral and coniferous forest. Elevation: 120-600 m. Blooms: Evergreen shrub; February-March.	**Absent.** Manzanita species are absent from the project site. Species is not known from Santa Clara County.
Big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*)	CRPR 1B	Habitat: Chaparral, cismontane woodlands, and valley and foothill grasslands (sometimes on serpentine) Elevation: 90-1400 m. Blooms: Perennial herb; March-June	**Absent**. Although marginally suitable habitat occurs on the site for this species, this perennial plant would have been observable during the October survey if present and it was not observed.
Round-leaved filaree (*California macrophylla*)	CRPR 1B	Habitat: Occurs on clay soils within cismontane woodlands and valley and foothill grasslands. Elevation: 15-1200 meters. Blooms: Annual herb; March-May.	**Absent.** Clay soils are absent from the site.
Santa Cruz Mountains pussypaws (*Calyptridium parryi var. hesseae*)	CRPR 1B	Habitat: Chaparral and cismontane woodland in sandy or gravelly, openings. Elevation: 305-1105 m. Blooms: Annual herb; May-July.	**Absent.** Habitat is absent from the site for this species.
Swamp harebell (*Campanula californica*)	CRPR 1B	Habitat: Wetlands and mesic areas within coniferous forest and coastal prairie. Elevation: 1-405 m. Blooms: Perennial herb; June-October.	**Absent.** Habitat is absent from the site for this species.
Bristly sedge (*Carex comosa*)	CRPR 2	Habitat: Mesic areas, including lake margins, within coastal prairie and valley and foothill grassland. Elevation: 0-425 m. Blooms: Perennial herb; May-September.	**Absent.** Habitat is absent from the site for this species.

TABLE 1B: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

PLANTS (adapted from CDFW 2020 and CNPS 2020)
Other special status plants listed by the CDFW and CNPS

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Deceiving sedge (*Carex saliniformis*)	CRPR 1B	Habitat: Mesic areas in coastal prairie, coastal scrub, meadows and seeps, and marshes and swamps (coastal salt). Elevation: 3-230 m. Blooms: Perennial herb; May-September.	**Absent.** Habitat is absent from the site for this species.
Santa Clara red ribbons (*Clarkia concinna ssp. automixa*)	CRPR 4	Habitat: Chaparral and cismontane woodland, on slopes and near drainages. Elevation: 90-1500 m. Blooms: Annual herb; April-July.	**Possible.** Woodlands of the site provide potentially suitable habitat for this species. There are several recorded observations of this species within two to three miles southwest of the site recorded in CNDDB or by CalFlora.
Tear drop moss (*Dacryophyllum falcifolium*)	CRPR 1B	Habitat: Carbonate soils in North Coast coniferous forest. Elevation: 50-275 Blooms: Moss.	**Absent.** Habitat is absent from the site for this species.
Western leatherwood (*Dirca occidentalis*)	CRPR 1B	Habitat: Broadleaved upland forest, coniferous forest, riparian habitats and chaparral. Elevation: 50-395 m. Blooms: Deciduous shrub; January-April.	**Absent.** Habitat is marginal on the site for this species, limited to the small areas of mixed woodland along Shannon Road and in the northwestern corner of the site; and, this shrub species would have been observed during the October site visit in this habitat if present and it was not observed. Additionally, the closest known occurrence of this species is in the vicinity of Lexington Reservoir more than three miles southwest of the site (information from Midpeninsula Regional Open Space and not documented in the CNDDB).
Ben Lomond buckwheat (*Eriogonum nudum var. decurrens*)	CRPR 1B	Habitat: Sand hill soils of Santa Cruz County within chaparral, cismontane woodland and coniferous forest. Elevation: 50-800 m. Blooms: Perennial herb; June-October.	**Absent.** Habitat is absent from the site for this species.
Minute pocket moss (*Fissidens pauperculus*)	CRPR 1B	Habitat: Damp soils within North Coast coniferous forest. Elevation: 10-100 m. Blooms: Moss.	**Absent.** Habitat is absent from the site for this species.

TABLE 1B: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

PLANTS (adapted from CDFW 2020 and CNPS 2020)
Other special status plants listed by the CDFW and CNPS

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Fragrant fritillary (*Fritillaria liliacea*)	CRPR 1B	Habitat: Occurs on clay soils within coastal prairie, and scrub, and valley and foothill grasslands, often on serpentine. Elevation: 3-410 m. Blooms: Bulbiferous; February-April	**Absent.** Habitat is absent from the site for this species.
Kellogg's horkelia (*Horkelia cuneata var. sericea*)	CRPR 1B	Habitat: Sandy or gravelly openings in coniferous forest, chaparral, and coastal scrub. Elevation: 10-200 m. Blooms: Perennial herb; April-September.	**Absent.** Habitat is absent from the site for this species. Species is not known from Santa Clara County.
Point Reyes horkelia (*Horkelia marinensis*)	CRPR 1B	Habitat: Coastal prairie, dune and scrub habitats. Elevation: 5-350 m. Blooms: Perennial herb; May-September.	**Absent.** Habitat is absent from the site for this species. Species is not known from Santa Clara County.
Arcuate bush mallow (*Malacothamnus arcuatus*)	CRPR 1B	Habitat: Occurs on gravelly soils within chaparral. Elevation: 15-355 meters. Blooms: Evergreen shrub; April-September.	**Absent.** Habitat is absent from the site for this species.
Hall's bush mallow (*Malacothamnus hallii*)	CRPR 1B	Habitat: Occurs within chaparral and coastal scrub. Elevation: 10-760 meters. Blooms: Evergreen shrub; May-October.	**Absent.** Habitat is absent from the site for this species.
Marsh microseris (*Microseris paludosa*)	CRPR 1B	Habitat: Coniferous forest, cismontane woodland, coastal scrub and valley and foothill grassland. Elevation: 5-300 m. Blooms: Perennial herb; April-June.	**Unlikely.** Although potentially suitable habitat occurs on the site, this species is not known in Santa Clara County and there are no documented occurrences in the CNDDB within a three-mile radius of the site. The closest documented occurrences are along the coast in Santa Cruz County.
Northern curly-leaved monardella (*Monardella sinuata ssp. nigrescens*)	CRPR 1B	Habitat: Sandy soils within ponderosa pine sandhills, coastal scrub, dunes, and chaparral. Elevation: 0-300 m. Blooms: Annual herb; April-September.	**Absent.** Habitat is absent from the site for this species.
Dudly's lousewort (*Pedicularis dudleyi*)	CRPR 1B	Habitat: Maritime chaparral, North Coast coniferous forest, and valley and foothill grassland. Elevation: 60-900 m. Blooms: Perennial herb; April-June.	**Absent.** Habitat is absent from the site for this species.

TABLE 1B: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

PLANTS (adapted from CDFW 2020 and CNPS 2020)
Other special status plants listed by the CDFW and CNPS

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Santa Cruz Mountains beardtongue (*Penstemon rattanii* var. *kleei*)	CRPR 1B	Habitat: Occurs in chaparral, lower montane coniferous forest, and north coast coniferous forest. Elevation: 400-1100 meters. Blooms: Perennial herb; May-June.	**Absent.** Habitat is absent from the site for this species.
White-flowered rein orchid (*Piperia candida*)	CRPR 1B	Habitat: Broadleaved upland forest and coniferous forests, sometimes on serpentine. Elevation: 30-1310 m. Blooms: Perennial herb; May-September.	**Absent.** Habitat is absent from the site for this species
Choris' popcorn-flower (*Plagiobothrys chorisianus var. chorisianus*)	CRPR 1B	Habitat: Mesic soils in chaparral, coastal prairie, and coastal scrub. Elevation: 15-100 m. Blooms: March-June.	**Absent.** Habitat is absent from the site for this species.
Santa Cruz microseris (*Stebbinsoseris decipiens*)	CRPR 1B	Habitat: Open areas within broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland. Sometimes on serpentine. Elevation: 10-500 m. Blooms: Annual herb; April-May.	**Unlikely.** Habitat is extremely marginal on the site for this species, serpentine soils are absent, and there are no known occurrences within three miles of the site.
Santa Cruz clover (*Trifolium buckwestiorum*)	CRPR 1B	Habitat: Moist grasslands and gravelly margins of broadleaved upland forest, cismontane woodland, coastal prairie. Elevation: 105-610 m. Blooms: Annual herb; April-October.	**Absent.** Habitat is absent from the site for this species.
Pacific Grove clover (*Trifolium polyodon*)	CRPR 1B	Habitat: Mesic and sometimes granitic areas within closed cone coniferous forest, coastal prairie, and valley and foothill grassland. Elevation: 5-425 m. Blooms: Annual herb; April-June (July).	**Absent.** Habitat is absent from the site for this species.

TABLE 2A: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

ANIMALS (adapted from CDFW 2020 and USFWS 2020)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Acts

Common and scientific names	Status	General habitat description	*Occurrence in the study area
California tiger salamander (*Ambystoma californiense*)	FT, CT	Breeds in stagnant pools with continuous inundation for a minimum of three months, which may include vernal pools and stock ponds of central California; adults aestivate in grassland habitats adjacent to the breeding sites.	**Absent.** Habitat is absent from the site for this species. The closest recorded location of this species is just over one mile to the east of the site (CDFW 2020).
Foothill yellow-legged frog (*Rana boylii*)	CE	Occurs in swiftly flowing streams and rivers with rocky substrate with open, sunny banks in forest, chaparral, and woodland habitats, and can sometimes be found in isolated pools and ponds.	**Absent.** This species needs perennial water which does not occur onsite. The closest recorded location of this species is approximately two miles to the south of the site near Guadalupe Reservoir in Guadalupe Creek and a proximity polygon to the northwest of the site centered near Vasona Reservoir (CDFW 2020).
California red-legged frog (*Rana draytonii*)	FT, CSC	Dense, shrubby riparian vegetation such as arroyo willow, cattails, and bulrushes with still or slow-moving water. Perennial streams or ponds are preferred, and a salinity of no more than 4.5‰.	**Absent.** Suitable habitat for this species is absent from the site. The closest recorded location of this species is approximately 1.5 miles to the southeast of the site (CDFW 2020).
Swainson's hawk (*Buteo swainsonii*)	CT	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Unlikely.** Habitat for foraging and nesting is present onsite, however, the only known pair breeding in Santa Clara County breeds annually near the intersection of Bailey Avenue and Highway 101, which is more than 12 miles to the southeast of the site. Therefore, it is unlikely this pair would fly over the site and is also unlikely they would breed onsite.
Tricolored blackbird (*Agelaius tricolor*)	CT, CSC	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in grassland and cropland habitats.	**Absent.** Breeding habitat is absent from the site for this species.

TABLE 2B: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

ANIMALS (adapted from CDFW 2020 and USFWS 2020)

California Species of Special Concern and Protected Species

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Santa Cruz black salamander (*Aneides niger*)	CSC	Occurs in deciduous woodland, coniferous forests, and coastal grasslands around the Santa Cruz Mountains and foothills. This species is also known to occur on the developed flats in pockets within older developments. They can be found under rocks near streams, in talus, under damp logs, rotting wood, and other objects.	**Possible.** The site supports suitable habitat for this species within the woodland habitat along the frontage of Shannon Road which is adjacent to contiguous woodland habitat off-site. The onsite structures are old and may support this species under foundations and within rotting wood of the structures themselves. The closest recorded location of this species is a proximity buffer which was generally mapped to the Town of Los Gatos approximately two miles to the southwest of the site (CDFW 2020).
California giant salamander (*Dicamptodon ensatus*)	CSC	Wet coastal forests near streams and lakes. Larvae occur in cold, clear streams or occasionally in ponds and lakes. Adults found under rocks and logs in wet forests near streams and lakes.	**Absent.** Suitable habitat is absent from the site and its immediate vicinity. The closest recorded location of this species is a proximity buffer which was generally mapped to the Town of Los Gatos approximately two miles to the southwest of the site (CDFW 2020).
Northern California legless lizard (*Anniella pulchra*)	CSC	The NCLL (previously called silvery legless lizard) occurs mostly underground in warm moist areas with loose soil and substrate. The NCLL occurs in habitats including sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks.	**Absent.** The site is not within the range of the Northern California legless lizard.
Coast horned lizard (*Phrynosoma blainvillii*)	CSC	Occur in grasslands, scrublands, oak woodlands, etc. of central California. Common in sandy washes with scattered shrubs. Prefers open areas for sunning, bushes for cover, patches of loose soil for burial, and an abundant supply of ants and other insects.	**Absent.** Habitat is absent from the site and surrounding areas for this species.
Western pond turtle (*Actinemys marmorata*)	CSC	Intermittent and permanent waterways including streams, marshes, rivers, ponds and lakes. Open slow-moving water of rivers and creeks of central California with rocks and logs for basking.	**Absent.** Habitat for the western pond turtle is not available on the site. The closest recorded locations of this species are approximately two miles from the site (CDFW 2020).

TABLE 2B: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

ANIMALS (adapted from CDFW 2020 and USFWS 2020)

California Species of Special Concern and Protected Species

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Yellow rail (*Coturnicops noveboracensis*)	CSC	Frequents grassy meadows and sedge marshes with dense cover; breeds in marshes.	**Absent.** Suitable habitat for the yellow rail is absent from the site. The closest recorded location of this species is a proximity polygon approximately three miles from the site which was generally mapped to San Jose (CDFW).
White-tailed kite (*Elanus leucurus*)	CP	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland. Prefers open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Possible.** Suitable foraging and breeding habitat are present onsite.
American peregrine falcon (*Falco peregrinus anatum*)	CP	Individuals breed on cliffs in the Sierra or in coastal habitats or in humanmade structures; occurs in many habitats of the state during migration and winter.	**Absent.** Suitable habitat for nesting and foraging is absent from the site and surrounding areas for this species, however this species may pass through the area during migration, as it is known to nest in tall buildings of downtown San Jose and is mapped to the quadrangle in which San Jose sits (CDFW 2020).
Golden eagle (*Aquila chrysaetos*)	CP	Rolling foothills, mountain areas, sage-juniper flats, and deserts. Prefers cliff-walled canyons or large trees for provide nesting and forages in open areas.	**Possible.** Although breeding habitat is absent from the site, foraging habitat is present onsite.
Burrowing owl (*Athene cunicularia*)	CSC	Frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	**Absent.** Burrowing owls are not known to occur in these foothills or in the vicinity of the site, as they are known to occur near the San Francisco Bay and within grasslands of the valleys of Santa Clara County.
Purple martin (*Progne subis*)	CSC	Inhabits woodlands, low elevation coniferous forest of Douglas fir, ponderosa pine, and Monterey pine. Nests in old woodpecker cavities, also in human-made structures and nests widely in human-made birdhouses. Nests often located in tall, isolated trees or snags.	**Unlikely.** Tree cavities occur onsite, so potential nesting habitat occurs onsite, however, there have been no records in the vicinity of the site and the majority of nesting for this species largely occurs within human-made birdhouses which are absent from the site, therefore, it is not likely that nesting would take place in the project area.

TABLE 2B: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

ANIMALS (adapted from CDFW 2020 and USFWS 2020)

California Species of Special Concern and Protected Species

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Pallid bat (*Antrozous pallidus*)	CSC	Occurs in grasslands, chaparral, woodlands, and forests; most common in dry rocky open areas providing roosting opportunities. Roost sites include caves, mines, rock crevices, and large cavities of trees.	**Possible.** Suitable habitat is present for the pallid bat within the barn and outbuilding next to the residence onsite. The closest recorded location of this species is approximately 1.5 miles to the east of the site (CDFW 2020).
Townsend's big-eared bat (*Corynorhinus townsendii*)	CSC	Primarily a cave-dwelling bat that may also roost in buildings, bridges, rock crevices, and hollow trees. Occurs in a variety of habitats.	**Possible.** Suitable habitat is present for the Townsend's big-eared bat within the barn and outbuilding next to the residence onsite. The closest recorded location of this species more than three miles from the site (CDFW 2020).
San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)	CSC	Found in hardwood forests, oak riparian and shrub habitats.	**Present.** Woodrat nests were observed in the mixed woodland habitat along Shannon Road.
American badger (*Taxidea taxus*)	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils, specifically grassland environments. Natal dens occur on slopes.	**Possible.** Suitable habitat is present onsite in the form of grasslands which is connected with other grasslands which provide suitable habitat for this species.

Explanation of Occurrence Designations and Status Codes

Present: Species observed on the sites at time of field surveys or during recent past.
Likely: Species not observed on the site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the sites, but it could occur there from time to time.
Unlikely: Species not observed on the sites, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed on the sites, and precluded from occurring there because habitat requirements not met.

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CR	California Rare
FC	Federal Candidate	CP	California Protected
CSC	California Species of Special Concern		
CNPS	California Native Plant Society Listing		
1A	Plants Presumed Extinct in California	3	Plants about which we need more information – a review list
1B	Plants Rare, Threatened, or Endangered in California and elsewhere	4	Plants of limited distribution – a watch list
2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere		

BIOLOGICAL IMPACTS AND MITIGATIONS

The following analysis of biological impacts is based on the proposed project, as described previously. CEQA significance criteria, as well as an explanation of the legal framework, including the local, state, and federal laws for biological resources is included in Appendix A.

Jurisdictional Waters

Potential Impact. Jurisdictional waters of the U.S. and state are absent from the project site. Therefore, the project will have no impact on jurisdictional waters.

Mitigation. None required.

Special Status Plants

Potential Impact. Most special status plants known to occur, or to have once occurred, in the project vicinity are considered absent from or unlikely to occur on the site as a result of a lack of suitable habitat, because the species is a perennial that would have been identifiable if present during the October site visit, or because habitat on the site is marginal for the species and it has not been documented in the project vicinity (i.e. within three miles of the site). However, there are two special status species that could not be ruled out as occurring on the site as the site provides potential habitat for these species, the species is known to occur in the vicinity of the site, and the October site visit occurred outside of the blooming period for these two annual species and therefore they would not have been observable if present. These latter two species include Santa Clara red ribbons (CRPR 4; blooms April – July) and bent-flowered fiddleneck (CRPR 1B; blooms March – June). Woodlands of the site occurring in the northeast corner where two lots are proposed as well as along both sides of Shannon Road that could be impacted by the development including the widening of the road provide potentially suitable habitat for both of these species, while grasslands of the site provide potentially suitable habitat for bent-flowered fiddleneck.

Neither of these species that have potential to occur on the site are listed as threatened or endangered under the federal or state ESA; however, they both are listed as rare and protected by CDFW and impacts to these species could be considered significant under CEQA.

Mitigation. The following mitigation when implemented would reduce impacts to special status plants to a less-than-significant level.

Focused Botanical Surveys. Focused botanical surveys should be conducted in areas of the site providing potential habitat for Santa Clara red ribbons (woodlands) and bent-flowered fiddleneck (woodlands and grasslands) that will be potentially impacted by the project. Surveys should be conducted to conform to the CNPS survey protocol (CNPS 1983, revised 2001) and the CDFW-recommended protocols for botanical resource surveys (CDFW 2018). These protocols include surveying areas providing potential habitat on foot in such a way as to provide 100% visual coverage of the area. Two surveys, one conducted in April and one in June, would be sufficient to confirm the presence or absence of these species on the site.

Should populations of special status plant species be found present on the site, a qualified botanist or plant ecologist will determine whether impacts to these populations would be considered a significant impact of the project. If project impacts to special status plants is determined to be less-than-significant, then no mitigation would be required. However, if impacts to special status plants is determined to represent a significant impact of the project, the following mitigation measures will be implemented.

Avoidance and Minimization. Avoidance of a sensitive resource is considered the preferred strategy. Avoidance measures would include revising the project to avoid a special status plant population with an appropriate buffer to allow for expansion of the population, as determined by a qualified botanist or plant ecologist. Minimization measures would include revising the project to minimize impacts to a less-than-significant level. If significant impacts to a special status plant population cannot be reduced to a less-than-significant level, the compensatory measures, as described below, may be required to reduce impacts to a less-than-significant level.

Compensation. Compensation for impacts to special status plants would take the form of establishing new populations on the site or at an off-site location via a Resource Management Plan (RMP) developed by a qualified biologist.

At a minimum, an RMP would include the following:

- Location of suitable on-site or off-site areas to establish new populations.
- Means by which established populations will be conserved in-perpetuity.
- Methods of site preparation, seed/plant procurement, and plant establishment.
- A monitoring plan that includes the length of monitoring (typically at least five years), monitoring interval (typically annually), interim and final success criteria, and an adaptive management plan to describe measures that will be taken in the case that interim or final success criteria goals are not met.

The implementation of the above Avoidance, Minimization and Compensation measures would reduce impacts to special status plants to a less-than-significant level.

Special Status Wildlife

Most special status animal species would not occur on the site, or would be unlikely to occur on the site, because habitats on the site are not suitable for them, the site is located outside of the species' known range, and/or there are no known occurrences in the vicinity of the site. However, some special status species may occur onsite, including Santa Cruz black salamander, white-tailed kite, golden eagle, pallid bat, Townsend's big-eared bat, San Francisco dusky-footed woodrat, and American badger. Of these species, the golden eagle would only be expected to forage over the site. The remaining species which have potential to occur on the site and any potential project impacts to these species are discussed further below.

Santa Cruz Black Salamander

Potential Impact. Due to presence of woodland habitat along the frontage of Shannon Road and the proximity of the site to contiguous woodland habitat and the age of the structures onsite, the

site may support suitable refugia for this species in rotting wood and under foundations. Construction activities could result in harm to individual Santa Cruz black salamanders. This would be considered a significant impact under CEQA.

Mitigation. Project-related activities that occur within the woodland habitat and during demolition of buildings onsite may impact Santa Cruz black salamanders, therefore, the following mitigation measures shall be followed.

- Preconstruction surveys shall occur within the woodland habitat and prior to any work within this habitat and shall occur prior to demolition of onsite buildings.

- Workers working in the woodland habitat and workers demolishing buildings onsite shall attend a tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a Santa Cruz black salamander is observed.

- Demolition of structures and work in the woodland will be monitored by a qualified biologist.

Nesting Raptors and Other Nesting Migratory Birds

Potential Impact. Suitable nesting habitat exists throughout the project site, including on the ground, in shrubs and trees, and on buildings. These suitable nesting areas, as well as those adjacent to the site, could be used by nesting raptors and other migratory birds for breeding. Construction activities (i.e., grading, building demolition, and tree/vegetation removal) could result in harm to individual nesting raptors and migratory birds. This would be considered a significant impact under CEQA.

Mitigation. Project-related activities that occur during the breeding season could be constrained in the vicinity of any active nests. If tree removal or ground disturbance activities are scheduled to commence during the breeding season (February 1st through August 31st), pre-construction nesting bird surveys should be conducted by a qualified biologist to identify possible nesting activity within 15 days prior to such activities. A construction-free buffer of suitable dimensions as determined by a qualified biologist must be established around any active raptor or migratory bird nest for the duration of the project, or until it has been determined that the chicks have fledged and are foraging independently from their parents.

Bat Species

Potential Impact. The pallid bat, Townsends big-eared bat, and other bat species have the potential to occur onsite within the barn, garage/outbuilding, as well as several trees onsite such as walnut trees and elderberry trees that support cavities potentially suitable for roosting bats. Tree removal and demolition activities could result in harm to individual roosting bat. This would be considered a significant impact under CEQA.

Mitigation. The project applicant will implement the following measures to ensure that bat mortality from project construction is avoided.

- A detailed bat habitat assessment should be conducted prior to removal of onsite trees and the garage and barn. If a non-breeding bat colony is found, the individuals should be

humanely evicted via two-step removal under the direction of a qualified biologist to ensure that no harm or "take" would occur to any bats as a result of tree removal or structure demolition activities. Two-step removal can only occur during March 1-April 15 and September 1-October 15 in order to avoid harm to maternity and overwintering colonies.

- If a maternity colony is detected, then a construction-free buffer should be established around the tree and remain in place until it has been that the nursery is no longer active. Tree removal should preferably be done between March 1 and April 15 or August 15 and October 15 to avoid interfering with an active nursery. Mitigation would not be required for the loss of roosting or foraging habitat for bats, as such habitat is abundantly available regionally.

San Francisco Dusky-Footed Woodrat

Potential Impact. San Francisco dusky-footed woodrat nests were observed within the woodland habitat onsite along the frontage of Shannon Road. Should work occur in this habitat, construction activities could result in harm to individual woodrats while in their nests. This would be considered a significant impact under CEQA.

Mitigation. Implementation of the following mitigation measures would reduce impacts to the San Francisco dusky-footed woodrat to a less-than-significant level.

- A qualified biologist should conduct a pre-construction survey for San Francisco dusky-footed woodrat nests no more than 30 days prior to the onset of construction activities. The survey should encompass all construction zones within the riparian habitat and developed areas, and surrounding lands within 50 feet.
- Identified nests should be avoided, where possible. If avoidance is not possible, the nest(s) should be manually deconstructed when helpless young are not present, typically during the non-breeding season (October through January).
- If it is determined that young may be present during the pre-construction survey, a suitable buffer should be established around the nest until the young are independent enough to successfully move from the deconstructed nest.

American Badger

Potential Impact. Suitable habitat for the American badger exists onsite in the form of the grassland and orchard habitats. Construction activities could result in harm to individual badgers. This would be considered a significant impact under CEQA.

Mitigation. Implementation of the following measures prior to construction activities will reduce impacts to American badgers from direct mortality to a less-than-significant level.

- During the course of the preconstruction surveys for other species, a qualified biologist shall also determine the presence or absence of badgers prior to the start of construction. If badgers are found to be absent, no other mitigations for the protection of badgers shall be warranted.
- If an active badger den is identified during pre-construction surveys within or immediately adjacent to an area subject to construction, a construction-free buffer of up

to 300 feet shall be established around the den. Once the biologist has determined that badger has vacated the burrow, the burrow can be collapsed or excavated, and ground disturbance can proceed. Should the burrow be determined to be a natal or reproductive den, and because badgers are known to use multiple burrows in a breeding burrow complex, a biological monitor shall be present onsite during construction activities in the vicinity of the burrows to ensure the buffer is adequate to avoid direct impact to individuals or natal/reproductive den abandonment. The monitor will be required to be present until it is determined that young are of an independent age and construction activities would not harm individual badgers.

- All workers shall attend a tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if an American badger is observed.

Impacts to Movement Corridors or Nursery Sites

Potential Impact. The site is not within an identified regional movement corridor or landscape linkage and does not support any nursery sites, aside from the potential to support breeding birds as previously discussed. Additionally, the project includes the preservation of land for a movement corridor in the northern portion of the site; therefore, local animals moving through this site currently are expected to continue to move through this site after it is built out utilizing the preserved hillside corridor.

Mitigation. None required.

Loss of Protected Trees

Potential Impact. The Town of Los Gatos has a tree protection ordinance (see Appendix A for a description).

Most of the trees that will be impacted or removed on the site are walnut trees that are part of the now fallow walnut orchards. Walnut trees would not be considered a protected tree under the Town's ordinance unless they have a trunk diameter of 18 inches or more. Some walnut trees do occur on the site that may meet the definition of a protected tree.

Other trees potentially being considered protected trees under the Town's ordinance includes oak trees and other native and non-native trees, with the exception of any fruit or nut trees that have a trunk diameter of less than 18 inches, occurring within the mixed woodland habitat of proposed Lots 1 and 2, and within the mixed woodland habitat along the southern boundary of the project site on both sides of Shannon Road. Because the project seeks a re-zoning of the site, native and non-native trees which have a trunk diameter of at least four inches and are not species specifically excluded under the ordinance, may be considered protected trees under the Town's ordinance.

We understand that a tree survey will be conducted on the site to determine the number of protected trees that will be removed or otherwise impacted by the project.

Mitigation. Should the tree survey determine that protected trees occur on the site and will be impacted by the project, then the applicant will obtain a tree removal permit and comply with the Town's tree replacement requirements (see table in Appendix A) and other tree removal permit requirements.

Compliance with the Town's tree protection ordinance and permit requirements will reduce impacts on protected trees to a less-than-significant level.

Degradation of Water Quality in Downstream Waters

Impact. Proposed construction activities may result in soils left barren in the development footprint. Additionally, extensive grading often leaves the soils of construction zones barren of vegetation and, therefore, vulnerable to sheet, rill, or gully erosion. Furthermore, runoff is often polluted with grease, oil, pesticide and herbicide residues, heavy metals, etc. These pollutants may eventually be carried to sensitive riparian and wetland habitats used by a diversity of native wildlife species.

The applicant is expected to comply with the provisions of a grading permit, including standard erosion control measures that employ best management practices (BMPs). Projects involving the grading of large tracts of land must also be in compliance with provisions of a General Construction permit (a type of NPDES permit) available from the California Regional Water Quality Control Board. Compliance with the above permit(s) should result in no impact to water quality in seasonal creeks, reservoirs, and downstream waters from the proposed project and should not result in the deposition of pollutants and sediments in sensitive riparian and wetland habitats.

Mitigation. None required.

CONCLUSIONS

In summary, the proposed project could result in significant impacts to special status plants, including Santa Clara red ribbons and bent-flowered fiddleneck (if present), as well as to special status wildlife species including the Santa Cruz black salamander, white-tailed kite, San Francisco dusky-footed woodrat, pallid bat, Townsend's big-eared bat, and American badger. The project could also result in significant impacts to active bird nests or to non-special status bats. In all cases, mitigations are provided that would reduce these potential impacts to a less-than-significant level.

Additionally, the project is likely to result in the removal of trees considered protected trees under the Town's tree protection ordinance, including walnut trees with a trunk diameter of 18 inches or greater, and other native and non-native trees having a trunk diameter of four inches or more. Therefore, the project would be required to obtain a tree removal permit from the Town and comply with permit conditions.

The project is not expected to have an impact on wildlife movement corridors, wildlife nursery sites (with the exception of nesting birds), or on any waters of the U.S. or state.

Should you wish to discuss our report or any of our conclusions, please feel free to reach out to me at ppeterson@loainc.com or Rick Hopkins at rhopkins@loainc.com.

Sincerely,

Pamela E. Peterson
Senior Project Manager
Plant and Wetland Ecologist

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APPENDIX A:

SIGNIFICANCE CRITERIA AND RELEVANT GOALS, POLICIES, AND LAWS

Significance Criteria

General plans, area plans, and specific projects are subject to the provisions of the California Environmental Quality Act. The purpose of CEQA is to assess the impacts of proposed projects on the environment before they are constructed. For example, site development may require the removal of some or all existing vegetation. Animals associated with this vegetation could be destroyed or displaced. Animals adapted to humans, roads, buildings, pets, etc., may replace those species formerly occurring on a site. Plants and animals that are state and/or federally listed as threatened or endangered may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed. These impacts may be considered significant. According to *2019 CEQA Status and Guidelines* (2019), "Significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest. Specific project impacts to biological resources may be considered "significant" if they will:

- 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 or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- 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;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

Relevant Goals, Policies, and Laws

Town of Los Gatos Tree Protection Ordinance. The Town of Los Gatos has a tree protection ordinance (Section Sec. 29.10.0950) that requires a permit for the removal of protected trees. The trees protected by this ordinance include:

(1) All trees which have a twelve-inch or greater diameter (thirty-seven and one-half-inch circumference) of any trunk or in the case of multi-trunk trees, a total of eighteen inches or greater diameter (fifty-six and one-half inch circumference) of the sum of all trunks, where such trees are located on developed residential property.

(2) All trees which have an eight-inch or greater diameter (twenty-five-inch circumference) of any trunk or in the case of multi-trunk trees, a total of eight inches or greater diameter (twenty-five inch circumference) of the sum of all trunks, where such trees are located on developed Hillside residential property.

(3) All trees of the following species which have an eight-inch or greater diameter (twenty-five-inch circumference) located on developed residential property:

a. Blue Oak (*Quercus douglasii*)

b. Black Oak (*Quercus kellogii*)

c. California Buckeye (*Aesculus californica*)

d. Pacific Madrone (*Arbutus menziesii*)

(4) All trees which have a four-inch or greater diameter (twelve and one half-inch circumference) of any trunk, when removal relates to any review for which zoning approval or subdivision approval is required.

Exceptions. Section 29.10.0970 of the Town's tree ordinance includes the following exceptions:

(1) A fruit or nut tree that is less than eighteen (18) inches in diameter (fifty-seven-inch circumference).

(2) Any of the following trees that are less than 24 inches in diameter (75 inches in circumference):

a. Black Acacia (*Acacia melanoxylon*)

b. Tulip Tree (*Liriodendron tulipifera*)

c. Tree of Heaven (*Ailanthus altissima*)

d. Blue Gum Eucalyptus (*E. globulus*)

e. Red Gum Eucalyptus (*E. camaldulensis*)

f. Other Eucalyptus (*E. spp.*)—Hillsides only

g. Palm (except *Phoenix canariensis*)

h. Privet (*Ligustrum lucidum*)

Replacement Trees. According to the Town of Los Gatos's tree ordinance Section 29.10.0985, if the tree removal permit is approved, the following replacement standards shall be followed with approved tree species:

CANOPY REMOVAL TO REPLACEMENT TREE RATIOS	
Canopy Size of Removed Tree	**Replacement Requirement**
10 feet or less	Two 24-inch box trees
More than 10 feet to 25 feet	Three 24-inch box trees
More than 25 feet to 40 feet	Four 24-inch box trees; or Two 36-inch box trees
More than 40 feet to 55 feet	Six 24-inch box trees; or Three 36-inch box trees

Town of Los Gatos Riparian Setbacks and Native Plant Removal within the Riparian Setback. The Town of Los Gatos has adopted a set of Standards and Guidelines for Land Use Near Streams developed by Valley Water (Santa Clara Valley Water Resources Protection Collaborative 2005). The Standards and Guidelines indicate that development of single residences should provide a minimum Slope Stability Protection Area based on the type of stream (i.e. ephemeral or perennial) and based on the steepness of the stream banks. However, the guidelines also indicate that an exception to the minimum setbacks may be granted if the applicant is able to provide a site-specific technical report that confirms that a lesser setback will not result in either compromised slope stability or in potential damage to the structure.

According to the Standards and Guidelines for Land Use Near Streams, native riparian vegetation is not allowed to be removed unless there is a threat to public health and safety including an imminent danger of induced flooding and/or a biologist/arborist confirms that it will improve the stream ecology or habitat. If vegetation is proposed for removal in conjunction with a development project, mitigation will be provided as defined through the CEQA process and as agreed to by the local agencies and appropriate regulatory agencies.

As no riparian areas occur on the project site, the above standards and guidelines do not apply to the project.

Habitat Conservation Plans. The Santa Clara Valley HCP/NCCP Study Area does not cover the Town of Los Gatos, and there are no other HCPs or NCCPs known to cover the area.

Threatened and Endangered Species. State and federal “endangered species” legislation has provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Species listed as threatened or endangered under provisions of the state and federal endangered species acts, candidate species

for such listing, state species of special concern, and some plants listed as endangered by the California Native Plant Society are collectively referred to as "species of special status." Permits may be required from both the CDFW and USFWS if activities associated with a proposed project will result in the "take" of a listed species. "Take" is defined by the state of California as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86). "Take" is more broadly defined by the federal Endangered Species Act to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, the CDFW and the USFWS are responding agencies under the California Environmental Quality Act (CEQA). Both agencies review CEQA documents in order to determine the adequacy of their treatment of endangered species issues and to make project-specific recommendations for their conservation.

Migratory Birds. The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703-712) prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it actually covers almost all birds native to the United States, even those that are non-migratory. The FMBTA encompasses whole birds, parts of birds, and bird nests and eggs.

Native birds are also protected under California state law. The California Fish and Game Code makes it unlawful to take or possess any non-game bird covered by the FMBTA (Section 3513), as well as any other native non-game bird (Section 3800), even if incidental to lawful activities. Moreover, the California Migratory Bird Protection Act, enacted in September 2019, clarifies native bird protection and increases protections where California law previously deferred to federal law.

Birds of Prey. Birds of prey are protected in California under provisions of the State Fish and Game Code, Section 3503.5, which states that it is "unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFW.

Additionally, the Bald and Golden Eagle Protection Act (16 U.S.C., scc. 668-668c) prohibits anyone from taking bald or golden eagles, including their parts, nests, or eggs, unless authorized under a federal permit. The act prohibits any disturbance that directly affects an eagle or an active eagle nest as well as any disturbance caused by humans around a previously used nest site during a time when eagles are not present such that it agitates or bothers an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

Bats. Section 2000 and 4150 of the California Fish and Game Code states that it is unlawful to take or possess a number of species, including bats, without a license or permit, as required by Section 3007. Additionally, Title 14 of the California Code of Regulations states it is unlawful to harass, herd, or drive a number of species, including bats. To harass is defined as "an intentional

act which disrupts an animal's normal behavior patterns, which includes, but is not limited to, breeding, feeding or sheltering." For these reasons, bat colonies in particular are considered to be sensitive and therefore, disturbances that cause harm to bat colonies are unlawful.

Wetlands and Other Jurisdictional Waters

Jurisdictional waters include waters of the United States subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE) and waters of the State of California subject to the regulatory authority of the California Department of Fish and Wildlife (CDFW) and the California Regional Water Quality Control Board (RWQCB).

Clean Water Act, Section 404. The USACE regulates the filling or grading of Waters of the U.S. under the authority of Section 404 of the Clean Water Act. Drainage channels and adjacent wetlands may be considered "waters of the United States" or "jurisdictional waters" subject to the jurisdiction of the USACE. The extent of jurisdiction has been defined in the Code of Federal Regulations and clarified in federal courts.

The definition of waters of the U.S. have changed several times in recent years. In January 2020, the Environmental Protection Agency (EPA) and USACE jointly issued the Navigable Waters Protection Rule. The new rule was published in the Federal Register on April 21, 2020, and took effect on June 22, 2020.

The Navigable Waters Protection Rule (33 CFR §328.3(a)) defines waters of the U.S. as:

Territorial Seas and Traditional Navigable Waters (TNWs)

- The territorial seas and traditional navigable waters include large rivers and lakes and tidally influenced waterbodies used in interstate or foreign commerce.

Tributaries

- Tributaries include perennial and intermittent rivers and streams that contribute surface flow to traditional navigable waters in a typical year. These naturally occurring surface water channels must flow more often than just after a single precipitation event—that is, tributaries must be perennial or intermittent.
- Tributaries can connect to a traditional navigable water or territorial sea in a typical year either directly or through other "waters of the United States," through channelized non-jurisdictional surface waters, through artificial features (including culverts and spillways), or through natural features (including debris piles and boulder fields).
- Ditches are to be considered tributaries only where they satisfy the flow conditions of the perennial and intermittent tributary definition and either were constructed in or relocate a tributary or were constructed in an adjacent wetland and contribute perennial or intermittent flow to a traditional navigable water in a typical year.

Lakes, Ponds, and Impoundments of Jurisdictional Waters

- Lakes, ponds, and impoundments of jurisdictional waters are jurisdictional where they contribute surface water flow to a traditional navigable water or territorial sea in a typical year either directly or through other waters of the United States, through channelized non-jurisdictional surface waters, through artificial features (including culverts and spillways), or through natural features (including debris piles and boulder fields).

- Lakes, ponds, and impoundments of jurisdictional waters are also jurisdictional where they are flooded by a water of the United States in a typical year, such as certain oxbow lakes that lie along the Mississippi River.

Adjacent Wetlands

- Wetlands that physically touch other jurisdictional waters are "adjacent wetlands."
- Wetlands separated from a water of the United States by only a natural berm, bank or dune are also "adjacent."
- Wetlands inundated by flooding from a water of the United States in a typical year are "adjacent."
- Wetlands that are physically separated from a jurisdictional water by an artificial dike, barrier, or similar artificial structure are "adjacent" so long as that structure allows for a direct hydrologic surface connection between the wetlands and the jurisdictional water in a typical year, such as through a culvert, flood or tide gate, pump, or similar artificial feature.
- An adjacent wetland is jurisdictional in its entirety when a road or similar artificial structure divides the wetland, as long as the structure allows for a direct hydrologic surface connection through or over that structure in a typical year.

The Navigable Waters Protection Rule also outlines what do not constitute waters of the United States. The following waters/features are not jurisdictional under the rule:

- Waterbodies that are not included in the four categories of waters of the United States listed above.
- Groundwater, including groundwater drained through subsurface drainage systems, such as drains in agricultural lands.
- Ephemeral features, including ephemeral streams, swales, gullies, rills, and pools.
- Diffuse stormwater run-off and directional sheet flow over upland.
- Many farm and roadside ditches.
- Prior converted cropland retains its longstanding exclusion, but is defined for the first time in the final rule. The agencies are clarifying that this exclusion will cease to apply when cropland is abandoned (i.e., not used for, or in support of, agricultural purposes in the immediately preceding five years) and has reverted to wetlands.
- Artificially irrigated areas, including fields flooded for agricultural production, that would revert to upland should application of irrigation water to that area cease.
- Artificial lakes and ponds, including water storage reservoirs and farm, irrigation, stock watering, and log cleaning ponds, constructed or excavated in upland or in non-jurisdictional waters.
- Water-filled depressions constructed or excavated in upland or in non-jurisdictional waters incidental to mining or construction activity, and pits excavated in upland or in non-jurisdictional waters for the purpose of obtaining fill, sand, or gravel.

- Stormwater control features excavated or constructed in upland or in non-jurisdictional waters to convey, treat, infiltrate, or store stormwater run-off.
- Groundwater recharge, water reuse, and wastewater recycling structures, including detention, retention and infiltration basins and ponds, that are constructed in upland or in non-jurisdictional waters.
- Waste treatment systems have been excluded from the definition of waters of the United States since 1979 and will continue to be excluded under the final rule. Waste treatment systems include all components, including lagoons and treatment ponds (such as settling or cooling ponds), designed to either convey or retain, concentrate, settle, reduce, or remove pollutants, either actively or passively, from wastewater or stormwater prior to discharge (or eliminating any such discharge).

All activities that involve the discharge of dredge or fill material into waters of the U.S. are subject to the permit requirements of the USACE under Section 404 of the Clean Water Act. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued without a CWA Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards (Section 3.6.2).

Porter-Cologne Water Quality Act/Clean Water Act, Section 401. There are nine Regional Water Quality Control Boards statewide; collectively, they oversee regional and local water quality in California. The RWQCB administers Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. The RWQCB for a given region regulates discharges of fill or pollutants into waters of the State through the issuance of various permits and orders. Pursuant to Section 401 of the Clean Water Act, the RWQCB regulates waters of the State that are also waters of the U.S. Discharges into such waters require a Section 401 Water Quality Certification from the RWQCB as a condition to obtaining certain federal permits, such as a Clean Water Act Section 404 permit (Section 3.6.1). Discharges into all Waters of the State, even those that are not also Waters of the U.S., require Waste Discharge Requirements (WDRs), or a waiver of WDRs, from the RWQCB.

The Porter-Cologne Water Quality Control Act, Water Code Section 13260, requires that "any person discharging waste, or proposing to discharge waste, within any region that could affect the 'waters of the State' to file a report of discharge" with the RWQCB. Waters of the State as defined in the Porter-Cologne Act (Water Code Section 13050[e]) are "any surface water or groundwater, including saline waters, within the boundaries of the state." This gives the RWQCB authority to regulate a broader set of waters than the Clean Water Act alone; specifically, in addition to regulating waters of the U.S. through the Section 401 Water Quality Certification process, the RWQCB also claims jurisdiction and exercises discretionary authority over "isolated waters," or waters that are not themselves waters of the U.S. and are not hydrologically connected to waters of the U.S.

The RWQCB also administers the Construction Stormwater Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one or more acres of soil must obtain a Construction General Permit under the Construction Stormwater Program. A prerequisite for this permit is the development of a Stormwater Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, stormwater, or other pollutants into a Water of the U.S. may require a NPDES permit.

California Department of Fish and Game Code, Section 1602. The CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a Notification of Lake or Streambed Alteration. If the CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

APPENDIX B:

PHOTOS OF THE PROJECT SITE

Photo 1. Horse facilities, including stalls and paddocks, in the developed/ruderal areas of the site.

Photo 2. Horse facilities, including stalls and paddocks, in the developed/ruderal areas of the site.

Photo 3. Fallow walnut orchards on the site.

Photo 4. California annual grassland habitat and large, upland swale, looking east.

Photo 5. California annual grassland habitat of the site at the top of the slope (Proposed Lots 1 and 2).

Photo 6. Mixed woodland habitat along the southern boundary of the site near Shannon Road.

Photo 7. Taken above an area that is defined as a wetland in the National Wetlands Inventory. This area is on a steep southerly-facing hillside and supports California annual grassland habitat. No wetland is present.

APPENDIX C

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION; SUPPLEMENTAL GEOTECHNICAL EVALUATION AND RECOMMENDATIONS REPORT; AND SUPPLEMENTAL GEOLOGIC AND GEOTECHNICAL PEER REVIEW

Sadek Derrega
Consulting Engineering Geologist
3285 Autumn Chase Circle
Stockton, California 95219

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION PROPOSED 9–LOT SUBDIVISION 14915 SHANNON ROAD LOS GATOS, CALIFORNIA

PREPARED FOR BUD ELAM TRUST

AUGUST 31, 2023
Job No.: SHANNON-01

ENGINERING GEOLOGIC ASSESSMENT
AND SUBSURFACE FAULT INVESTIGATION
PROPOSED 9–LOT SUBDIVISION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

AUGUST 31, 2023
Job No.: Shannon-01

Bud Elam Trust
Mr. Bud Elam
14915 Shannon Road
Los Gatos, California

SUBJECT: Engineering Geologic Assessment and Subsurface Fault Investigation for the 9–Lot Subdivision Proposed at 14915 Shannon Road in Los Gatos, California

Dear Mr. Elam:

In response to your request and authorization, Sadek Derrega Consultation is pleased to present you with the results of our engineering geologic assessment and subsurface fault investigation performed for the proposed 9–lot subdivision planned at 14915 Shannon Road in Los Gatos, California. Transmitted herewith are descriptions of our investigative procedures and the results of our investigation in addition to our professional conclusions and recommendations pertaining to fault-related ground surface rupture and other potential geologic and seismic hazards that could adversely impact the planned development at the subject site.

The main emphasis of this study was to evaluate, via geologic/seismic literature review and subsurface trenching techniques, the presence of the Shannon fault mapped by several mappers to extend across the southern portion of the property. The purpose of the trenching is to locate the fault trace/zone in order to delineate fault setback zones excluding the construction of structures intended for human occupancy and habitation based on the results of our subsurface fault investigation. In addition, this investigation also evaluates landslide- and debris flow-related concerns raised by the Town of Los Gatos (Town) geotechnical reviewer, Cotton, Shires and Associates (CSA) in their review letter dated November 15, 2022, which pertained to two previous site-specific geologic and geotechnical studies, which were completed in 2021 by Steven Connelly (Connelly) and Millstone Geotechnical (Millstone).

Besides including descriptions of our investigative procedures and methodology, this report also discusses the encountered subsurface soil/rock and groundwater conditions. In addition, this report also includes an assessment of potential for geologic and seismic

hazards that can potentially impact the planned structures and recommends mitigation measures to address the identified hazards. The conclusions and recommendations of this report were based on review of published geologic and seismic literature, historic aerial imagery interpretation, available unpublished consultants' reports, several site reconnaissance/mapping visits by our Certified Engineering Geologist (CEG), a subsurface fault investigation, review of soil/rock samples obtained by Bay Area Geotechnical Group (BAGG Engineers) as part of their concurrent geotechnical investigation for the project an consultation with the project Civil Engineer (CE) Terry Szewczyk of TS/Civil Engineering and Geotechnical Engineer (GE), Michael Matusich of BAGG Engineers. This report is not intended to provide current seismic design parameters or geotechnical engineering recommendations relating to grading, foundations and drainage. Such recommendations will be presented in the concurrent geotechnical engineering report to be prepared and issued by BAGG Engineers.

A total of four (4) geologic trenches averaging about 12 feet in depth and totaling roughly 270 lineal feet in length were excavated as part of this study. The trenches were extended in a northeastern/southwestern trend across the mapped northwestern strike of the Shannon fault. Our trenches were laid out, closely observed and logged by our CEG who also observed the trench backfill and compaction process. The trenches were laid out in the field based on the location of the mapped Shannon fault trace in this area and it was intended to provide complete "shadowing" of the pad area at proposed Lot 7. A shear swarm associated with the Shannon fault was encountered in all 4 trenches excavated along the southeastern portion of the property, generally where the fault has been mapped by the U.S. Geological Survey (USGS) and Nolan (1999). Instead of a single planar trace, the fault was represented by a relatively wide zone/swarm of shear planes that were heavily lined with dull white carbonate staining and bright gypsum filaments.

We invited Mr. Andrew Mead of CSA to review our trench exposures, on behalf of the Town, after the trenches were shored for safety and the trench walls picked clean of backhoe bucket smear. Mr. Mead observed Trenches T-1 through T-3 and we excavated Trench T-4 after his field visit, which was performed on June 15, 2023. Trenches T-3 and T-4 were excavated to help "tie" the fault's extension across the property and at the conclusion of the logging, the trenches were backfilled with the generated soil cuttings in 8-12 inch loose lifts and compacted mechanically with a cleated compaction wheel mounted on the tire-mounted backhoe.

In accordance with the current standard of practice in the San Francisco Bay Area, a 50-foot wide fault setback zone excluding the construction of habitable structures (2,000 collective person hours of occupancy per year) has been established beyond the edges/limits of the encountered fault-related shear swarm band. The setback zone

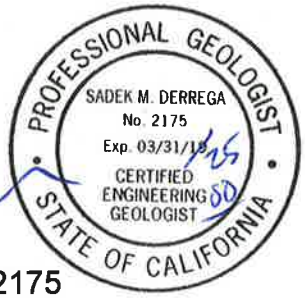
chiefly impacts proposed Lot 7 although it encroaches slightly on the southeastern corner of the adjacent Lot 6. The noted habitable structure setback zone is discussed further in upcoming sections and graphically depicted on some of the attached report plates.

As part of this investigation, we also assessed the following geologic and seismic hazards: faulting and fault-related ground surface rupture, seismic shaking, landslides and debris flows, liquefaction, bedrock rippability, expansive soils, soil corrosion, undocumented fill, flooding (from tsunami, seasonal storm events and dam failure), naturally occurring asbestos and radon gas. Our CEG mapped landslides and debris flows (source areas, potential chutes and travel paths) and based on the results of the fault trenching and landslide mapping, we have provided input to the project CE as it pertains to structure setback zones and siting the proposed residential structures. Based on the information discussed above, it is our professional opinion that the proposed 9-lot subdivision and associated improvements are considered feasible, from an engineering geologic viewpoint, provided that the conclusions and recommendations of this report and the forth coming BAGG Engineers geotechnical report for the project are incorporated in the design and construction of the planned project.

It has been our pleasure to be of service to you. If you have any questions or require additional information regarding this report, please contact our office.

Sincerely,

SADEK DERREGA CONSULTATION



Sadek M. Derrega
Professional Geologist PG #6874
Certified Engineering Geologist CEG #2175

cc: Terry Szewczyk, CE, TS/Civil Engineering
Michael Matusich, GE, BAGG Engineers

ENGINERING GEOLOGIC ASSESSMENT
AND SUBSURFACE FAULT INVESTIGATION
PROPOSED 9–LOT SUBDIVISION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

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ENGINERING GEOLOGIC ASSESSMENT
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PLATES

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ENGINERING GEOLOGIC ASSESSMENT
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14915 SHANNON ROAD
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APPENDIX

Logs for Borings B–1 through B–13 Cal Engineering & Geology (CE&G, 2020)

Logs for Test Pits TP–1 through TP–11 (Connelly, 2021)

Logs for Borings B–1 through B–19 (Millstone, 2021)

Geotechnical Peer Review Letter (CSA, 2022)

Logs for Borings B–1 through B–5 (BAGG Engineers, 2023)

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION PROPOSED 9–LOT SUBDIVISION 14915 SHANNON ROAD LOS GATOS, CALIFORNIA

1. INTRODUCTION

This report presents the results of our engineering geologic assessment and subsurface fault investigation performed for the proposed 9–lot subdivision planned at 14915 Shannon Road in Los Gatos, California. A Site Vicinity Map showing the approximate location of the site is included as Plate 1. The L-shaped site extends for about 2,000 feet along the southwest-facing flank of Blossom Hill and it extends from near the ridge top down to Shannon Road. The northeast corner of the site extends up onto the ridge top and based on preliminary lot layout plans, seven of the lots (Lot 1 through 7) will occupy the southwest-facing hillside and extend to Shannon Road while the two remaining lots (Lots 8 and 9) will be located along the ridge top to the northeast. The 7 lower lots will be accessed from Shannon Road while the remaining 2 elevated lots will be accessed from the private section of Sky Lane.

The site is located within a Santa Clara County landslide hazard zone and a fault hazard zone that is associated with the Shannon fault. And although the Shannon fault is not zoned as active by the CGS, local governments such as the County of Santa Clara (County), the City of San Jose and Towns of Los Gatos, Saratoga, Los Altos and Los altos Hills consider the fault as active based on recorded coseismic deformation and damage to infrastructure (road pavements, sidewalks, buried pipe and storm drain inlets), documented coincident with the mapped fault trace after the 1989 Loma Prieta earthquake that occurred to the south of the site on the San Andreas fault.

The main emphasis of this investigation was to locate the mapped Shannon fault via trenching techniques and to address peer review comments prepared by CSA and pertaining to slope failures and debris flow potential. This investigation is not intended to provide current seismic design parameters or geotechnical recommendations pertaining to grading, foundations and drainage. Such recommendations will be presented in a site-specific geotechnical investigation report to be prepared by BAGG Engineers and issued under a separate cover.

1.1 SITE LOCATION AND DESCRIPTION

The site is located near the southwest margin of the Santa Clara Valley generally along the northeast foothills of the Santa Cruz Mountains. The site consists of a northwest-trending ridgeline and a long soil-filled linear trough that is present between the ridgeline and the north side of Shannon Road. As noted above, 9 residential lots are planned with Lots 1 through 7 extending between the ridge top and Shannon Road while the remaining two lots are proposed along the ridge top near the elevated northeast corner of the property. Access to the lower lots will be gained through Sky Lane and Shannon Road and through the private section of Sky Lane for the upper 2 lots.

Several structures that include a residence, barn and corrals exist along the linear trough immediately south of the intersection of Sky Lane and Shannon Road. A corrugated metal pipe with a storm drain inlet situated along the north side of Shannon Road discharges the collected seasonal flow onto the site near the southeast corner of the site. A set of overhead power lines crosses over Lot 7 as it extend between Shannon Road and the ridge top to the north.

Nine topographic hollows/swales descend the southwest-facing ridge flank in the general area of the site and drain into the linear trough separating the ridgeline from Shannon Road. The noted swales are labeled as Swales 1 through 9 and their lateral limits are approximately delineated on Plate 2 Site Plan and Geologic Map and on Plate 3, Aerial Site Map and Plate 4, Hillshade Map, along with the approximate location of the linear trough. Swale 1 is situated beyond the site limits to the west and is not shown on Plate 2. However, the swale's uppermost portion abuts the northwestern side of the hairpin turn in Sky Lane, which will provide owner and emergency vehicular access to proposed Lots 1, 2, 8 and 9. Swales 2 and 9 abut the site limits to the northwest and southeast and their adjacent margins partially encroach on Lots 1 and 7, respectively. The remaining Swales 3 through 8 are onsite features and all the swales are described along with their potential adverse impact on the planned development is discussed in upcoming sections of this report.

Based on a site topographic map prepared by Ruth and Going, Inc. dated January 31, 2023, the site elevations vary from about 580 feet above mean seal level at the southeast portion, about 820 feet along the north side, 870 at the northeast end and about 720 near the west end. The coordinates at the center of the site are approximately: Latitude: 37.2246° N Longitude: 121.9282° W.

1.2 PROJECT DESCRIPTION

As noted prior, the project consists of 9 residential lots with 7 of the lots planned along the linear trough present between the Blossom Hill ridge top and the north side of Shannon Road and the 2 remaining lots are planned along the ridge top near the northeast corner of the property. The lower 7 lots will be accessed from Shannon Road while the 2 higher lots will be accessed via the private extension of Sky Lane. The approximate layout of the 9 residential lots, the linear trough, southwest-facing ridge flank, Shannon Road and Sky Lane are all shown on Plate 2, Site Plan and Geologic Map, which also depicts other mapped features, which will be discussed in upcoming report sections.

1.3 PURPOSE AND SCOPE OF WORK

The main purpose of our study was to establish the location of the mapped Shannon fault trace/zone by the USGS and local governments to extend across the southeastern part of the site and then establish proper setback zones that exclude the construction of structures intended for human habitation and occupancy. As noted prior, a structure is generally considered habitable if it is occupied 2,000 collective person hours or more per year and accordingly it does not have to be residential only. In addition, the purpose of the study also included providing responses to the engineering geologic items of concern raised by the Town's geotechnical peer reviewer, CSA. We have also cooperated with BAGG Engineers and provided input in order for them to perform slope stability analysis along areas of concern.

Our scope of services consisted of the following items:

- Review of pertinent published, regional and local geologic and seismic maps and reports prepared by the USGS, CGS and local governments that cover the site area;
- Review of unpublished site-specific studies done by other consultants for this and adjacent sites;
- Review of available unpublished fault reports done by various consultants on nearby parcels on file with the CGS;
- Review of historical topographic and aerial imagery covering the site area;
- Laid out, excavated, shored for safety and logged fault trenches totaling about 270 lineal feet where approximately delineated on Plate 2, Site Plan and Geologic Map, in order to evaluate the geologic subsurface conditions and locate the fault trace/zone. Once the fault zone was identified, a 50-foot wide fault

setback zone excluding the construction of habitable structures was then established.

- Performed several site reconnaissance mapping visits, by our CEG, to assess the presence of fault-related features such as crack patterns or distressed pavements near the site with emphasis on areas where the fault is mapped to cross. Geomorphic features associated with landslides and debris flows including source areas and potential travel paths were also mapped.
- Reviewed soil samples collected by BAGG Engineers, geotechnical boring logs, the results of their geotechnical laboratory testing and slope stability analysis plots;
- Generated several geologic cross sections depicting our interpretation of the subsurface conditions across swale areas, some of which were then utilized by BAGG Engineers to perform slope stability analysis;
- Interacted and consulted with the project CE and GE as it pertains to structure siting and alternative mitigation measure selection;
- Performed analyses of the collected data; and
- Prepared this summarizing report that responds to fault- and landslide/debris flow-related peer review comments by CSA with supporting plates that include a vicinity map, regional and area geologic maps, regional and area fault maps, lineaments and coseismic deformation maps, geologic cross sections, trench logs in addition to descriptions of our investigative techniques and our conclusions and recommendations.

1.4 PREVIOUS SITE-SPECIFIC INVESTIGATIONS

As part of our investigation, we reviewed the following documents and utilized pertinent subsurface information in our modeling and analysis, where deemed applicable:

1. *Engineering Geologic Investigation, Proposed Subdivision, APN 537-27-047, 14915 Shannon Road, Los Gatos, California,* prepared by Steven F. Connelly (Connelly) and dated February 5, 2021. The investigation included geologic mapping and the excavation and logging of eleven (11) exploratory test pits but it did not include the excavation of fault trenches to locate the mapped Shannon fault extension across the southeastern corner of the site.
2. *Geotechnical Investigation, Proposed 10-Lot Subdivision, 14915 Shannon Road, Los Gatos, California,* prepared by Millstone Geotechnical (Millstone) and dated May 17, 2021. This feasibility-level investigation included the drilling of 19

borings, geotechnical laboratory testing and several cross sections but it lacked design-level geotechnical recommendations.

3. The above Connelly (2021) and Millstone (2021) reports were reviewed by the Town of Los Gatos geotechnical peer reviewer (CSA) and their review comments were presented in a letter titled *Geotechnical Peer Review, 10-Lot Subdivision M-22-003, FY23071, 14915 Shannon* Road, dated November 15, 2022.
4. In addition, Cal Engineering and Geology (CE&G) prepared a geotechnical study titled *Revised Geotechnical Alternatives Report, Shannon Road Embankment Stabilization Project* dated December 7, 2020, for the Town of Los Gatos. This study included geologic mapping, the drilling of 13 soil borings, laboratory testing and it provided alternative retaining wall recommendations to address the long-term pavement cracking and embankment settlement along the northern downslope side of Shannon Road for an approximate distance of about 1,300 feet stretching between Santa Rosa Drive and Diduca Way after the County transferred its ownership to the Town in 2017.

Logs of borings and test pits performed by CE&G, Connelly, Millstone and BAGG Engineers in addition to a copy of the CSA peer review letter are included in the Appendix.

2. FIELD EXPLORATION

2.1 GEOLOGIC FAULT TRENCHES

As mentioned above, our study included the excavation and logging of four (4) fault trenches at the approximate locations shown on Plate 2, Site Plan and Geologic Map. The trenches measured about 36 inches in width, averaged about 12 feet in depth and totaled about 270 lineal feet in length. A summary of the investigative methodology, the encountered subsurface conditions and our conclusions and recommendations are provided in report sections below.

Trench T-1 measured about 139 feet in length and up to about 14 feet in depth. It was excavated immediately northwest of the prominent topographic hollow labeled as Swale 7 on Plates 2 through 4. The trench extended southwestward from the toe of the southwest-facing hillside to near Shannon Road crossing the axis of southeast-dipping linear trough, which separates the hillside from Shannon Road and where the fault was roughly mapped by the USGS (McLaughlin et al., 1991; 2001; 2004) and local governments (Nolan, 1999). Trench T-1 was not extended southwestward all the way across the linear trough to the toe of the Shannon Road sloping embankment in order to maintain trenching and drilling equipment access to the southeast. The southwestern end of Trench T-1 was situated about 45 feet short of reaching the barbed fence line marking the toe of the Shannon Road embankment.

Trench T-2 measured about 54 feet in length and up to about 10 feet in depth and it was excavated about 15 feet to the northwest of the southwestern end of Trench T-1. The northeastern end of Trench T-2 overlapped by about 10 feet with the southwestern end of Trench T-1 and the southwestern end of Trench T-2 was extended southwestward to within about 5 feet of the toe of Shannon Road embankment slope in order to provide complete coverage across the linear trough, where the fault was mapped.

Trench T-3 was excavated approximately 420 feet to the southeast of Trench T-2 and it measured about 46 feet in length and up to about 11 feet in depth. It was excavated across the axis of the southeast-dipping linear trough where the fault has been mapped to extend. Trench T-3 was intended to "tie" the fault trace extension to the south when coupled with the fault locations encountered in Trenches T-1 and T-2 to the northwest.

Trench T-4 was excavated about 45 feet to the northwest of Trench T-2 and it measured about 30 feet in length and up to about 10 feet in depth. The southwestern end of Trench T-4 was initiated at the barbed fence line marking the toe of the slope supporting the north side of Shannon Road and it was intended to "tie" the fault trace extension northwestward when coupled with the fault locations encountered in Trenches T-1 through T-2 to the southeast.

All 4 trenches were excavated and backfilled utilizing a 4-wheel drive backhoe operated by Erik's Excavating & Drilling of Livermore. About 70 hydraulic shores with 7-foot long railings were rented from National Trench Safety of Newark and placed along the entire length of the excavated trenches for safety in order to secure the trench walls, permit access and to reduce the possibility of trench wall cave-ins. The southern trench walls (facing north) were cleaned of "bucket smear" utilizing soil picks, a level reference string line was extended across the cleaned trench walls and the exposed geology was interpreted and logged at a scale of one inch equals 5 feet by our CEG, Sadek Derrega.

The Town's peer reviewing engineering geologist, Andrew Mead, of CSA was invited to observe the trench walls at Trenches T-1 through T-3 in the company of our CEG and we discussed our initial findings with him in the field. The logs for our 4 geologic trenches provide profiles and descriptions of the encountered geologic units and indicate where the Shannon fault zone was encountered. The exploratory trench excavations were backfilled in loose 8-12 inch thick lifts and mechanically compacted utilizing a cleated compaction wheel mounted on the backhoe. All the excavated soil/rock cuttings were placed back into the excavations as described above and compacted mechanically. No soil stockpiles were left behind at the conclusion of the backfill operation and no generated soil cuttings were hauled off site.

3. GEOLOGY AND SEISMICITY

3.1 REGULATORY SETTING

The site is not situated within the limits of a State-mandated, Alquist-Priolo Earthquake Fault Zone established around faults that meet the State's Division of Mines and Geology (DMG, 1991) active zonation criteria. However, the site is within a Santa Clara County (County, 2002) Fault Hazard Zones associated with the Monte Vista-Shannon fault, a trace of which has been mapped to extend through the southeastern corner of the site. The site is also located within a State- and County-designated Seismic Hazard Zones associated with earthquake-induced landslides. However, the site is not within any State or County liquefaction zones. Plate 5, Santa Clara County Regulatory Geologic Hazard Zones, shows the site area to be within a County fault and landslide hazard zones except for a small portion at proposed Lot 2 and the elevated gentle plateau area at proposed Lots 8 and 9.

3.2 REGIONAL GEOLOGY

The site is located near the southwest margin of the Santa Clara Valley along the northeast foothills of the Santa Cruz Mountains approximately 16.5 miles to the south of the San Francisco Bay and about 17 miles to the north of the Pacific Ocean shoreline in Santa Clara County. The site is located within the Coast Ranges geomorphic province of Northern California, which is generally characterized by northwest-trending mountain ranges and intervening valleys that are a reflection of the dominant northwest structural trend of the bedrock formations and earthquake faults in the region. The regional geologic setting of the general area has been mapped by several mappers including Lawson (1908), Jennings and Burnett (1961), Goldman (1969), Schlocker (1970), Nielsen et al. (1979), Wagner et al. (1990), Ellen and Wentworth (1995), Knudsen et al. (1997), Witter et al. (2006), and Graymer (2006).

The San Francisco Bay Area is located on or near the boundary between two of the earth's prominent tectonic plates, the North American and Pacific Plates. This plate boundary is represented by a transform fault where the tectonic plates are sliding past each other, the San Andreas fault zone. In the San Francisco Bay Area, the current mountains of the California Coast Ranges, the Santa Cruz Mountains and the Diablo Range, started to uplift only about 3 to 4 million years ago, when pressure increased across the plate boundary due to slight shift in relative plate motions. The Santa Cruz Mountains formed where the San Andreas fault makes a slight westward bend. This bend produces compression, folding and thrust faulting along the Santa Cruz Mountains range front, as the Pacific Plate tries to slide northward past the North American Plate.

In contrast, Valleys between the ranges, such as the San Francisco Bay and Santa Clara Valley, lie in stable or slowly down-dropping extensional areas formed between major faults, in this case, the San Andreas, Hayward and Calaveras faults.

In the Bay Area, rocks of the Franciscan Complex form the basement for the Coast Ranges east of the San Andreas fault. The Franciscan Complex primarily consists of greywacke sandstone, shale and argillite, but also contains lesser amounts of greenstone (altered submarine basalt), radiolarian chert, limestone, serpentinite (altered ultrabasic mantle rocks), and a variety of high-grade metamorphic rocks such as blue schist and eclogite (high pressure and high temperature rocks, respectively). These rocks are typically highly fractured and disrupted and may be mixed together on a local scale to create what is called a mélange (mixture or blend).

Middle Jurassic to late Cretaceous Franciscan Complex rocks in the Bay Area range in age from about 200 to 80 million years. They represent an accretionary wedge, a complex body of semi-coherent blocks, called tectonostratigraphic terranes, which were episodically scraped from the subducting oceanic plate, thrust eastward, and shingled against the western margin of North America. This process formed a stacking sequence in which the structurally highest rocks (on the east) are the oldest, and in which each major thrust wedge to the west becomes younger (Elder, 2000). However, within each of the individual terrane blocks, the rocks become younger up-section.

Basement rocks west of the San Andreas fault are generally granitic. Overlying the Franciscan Complex and granitic basement rocks are Cretaceous (about 145 to 66 million years old) marine, as well as Tertiary (about 66 to 2.6 million years old) marine and non-marine sedimentary rocks with some continental volcanic rock. These Cretaceous and Tertiary rocks have been extensively folded and faulted as a result of late Tertiary and Quaternary regional compressional forces. In addition, the Franciscan Complex and Tertiary bedrock have been blanketed with younger continental surficial deposits such as alluvium, colluvium, and landslide deposits, which generally consist of unconsolidated to semi-consolidated sand, silt, clay, and gravel. The inland valleys, as well as the structural depression within which the San Francisco Bay is located, are filled with unconsolidated to semi-consolidated continental deposits of Quaternary age (about the last 2.6 million years [USGS, 2010]) while the Bay deposits typically consist of very soft organic-rich silt and clay (Bay mud). Plate 6, presents a Regional Geologic Map that was prepared by Gutierrez et al. (2010) of the CGS.

3.3 AREA GEOLOGY AND SEISMICITY

The site area has been mapped by several mappers including Bailey and Everhart (1964), Rogers and Williams (1974), Dibblee and Brabb (1978), McLaughlin et al. (1991), Helley et al. (1994), Nolan Associates (Nolan, 1999), Wentworth et al. (1999), McLaughlin et al. (2001), CGS (2002) McLaughlin et al. (2004) and Dibblee and Minch (2005) among others.

The majority of reviewed geologic maps show the site area to be occupied by marine, late Oligocene to mid Miocene age (about 28-11.5 million years) Temblor Sandstone bedrock except for the northwestern, northeastern and southeastern corners of the site, which were mapped as marine, mid to lower Miocene age (about 23 to 11.5) Monterey Shale bedrock. The mapped lithologic contact between the two mapped bedrock types along the southeastern part of the linear trough also represented a faulted contact marking the approximate location of the Shannon fault. The fault is mapped to separate the older Temblor Sandstone bedrock to the north of the fault from the Monterey Shale bedrock mapped to the south of the fault trace.

Ellen and Wentworth (1995) identified the Temblor Sandstone and Monterey Shale as Map Units 342 and 501 in their publication titled *Hillside Materials and Slopes of the San Francisco Bay Region.* They described the Temblor Sandstone as largely soft, moderately permeable clean arkosic sandstone with some to much siltstone and clayey sandstone and the Monterey Shale as largely closely-parted, firm porcelaneous shale and siltstone with some soft calcite-cemented sandstone interbeds.

McLaughlin et al. (2001) described the Temblor Sandstone as pebbly, lithic arkosic sandstone, fossiliferous conglomerate and bioclastic grit. The Temblor Sandstone locally contains dacitic volcanic flows and intrusive rocks in addition to serpentinized ultramafic rocks such as harzburgite, dunite and peridotite. In addition, McLaughlin et al. (2001) indicated that the Monterey Shale bedrock of the New Almaden block is separate from the partly equivalent Monterey Formation of the Santa Cruz block. They described the Monterey Shale as predominantly siliceous mudstone and porcellanite with siliceous mudstone/diatomite containing foraminifera of middle Miocene from exposures near Los Gatos and New Almaden.

Furthermore, subsequent work by Stanley et al. (2002) which was based on age-diagnostic taxa, ages and paleo-bathymetry of benthic foraminifera sampled from outcrops of Miocene marine sedimentary strata in the southwestern Santa Clara Valley and vicinity, indicated that some areas that were mapped as Temblor Sandstone by Bailey and Everhart (1964) are in fact underlain by Monterey Formation. Connelly (2021) described Stanley's work and his field findings and concluded that a single formation, the Monterey Shale, probably underlies the entire site and he depicted that on his mapping of the site area. Based on the above information, our field

observations/mapping, bedrock exposures in our trenches to the south of the fault zone, the notable light density (diatomaceous) and the knowledge that the same formation that underlies the hilly portion of the site is also exposed on cuts made along the south side of Shannon Road (south of the Shannon fault trace), we concur with Connelly (2021) that it is most likely a single formation that underlies the site, the Monterey Shale, and we depict it as such on our geologic map of the site (Plate 2).

In the southeastern corner of the site, the Shannon fault is mapped by the various mappers as a single trace that separates the older Temblor Sandstone bedrock to the north of the mapped fault trace from the younger Monterey Shale bedrock to the south as is seen on the two geologic maps prepared by McLaughlin et al. (2001; 2004) and which we include on Plate 7, Area Geologic Maps. A gentle, southeast-sloping and draining linear trough parallels the north side of Shannon Road and it separates the roadway from the southwest-facing ridge flank to the north. The Shannon fault is also shown by Nolan (1999) to extend across the southeastern part of the site along the noted linear trough in a northwestern trend before it makes a slight bend and crosses Shannon Road. Nolan's geologic map is included as Plate 8, Town of Los Gatos Geologic Map.

Most of the available reviewed geologic references that cover the site area are bedrock maps that show the site lithology to consist of Oligocene/Miocene bedrock. Quaternary surficial geologic mapping differentiating the Quaternary into Holocene and Pleistocene and indicating type of surficial deposit (younger soil deposits that usually blanket bedrock such as fluvial, alluvial, colluvial and landslide deposits) such as those prepared by Helley et al. (1994), Knudsen et al. (2000), Witter et al. (2006) and the CGS (2002) in their Seismic hazard Zone Report (SHZR 068) for the Los Gatos Quadrangle simply did not map Quaternary surficial deposits along interior elevated intervening valleys, swales and low troughs similar to those present at the site.

McLaughlin et al. (2001), however, showed an arm of Pleistocene age alluvial fan deposits extending up the southeastern portion of the linear trough but it terminated prior to encroaching onto the site limits although later mapping by McLaughlin et al. (2004) terminates the Pleistocene deposit farther to the southeast (see Plate 7, Area Geologic Maps). We raise the Quaternary surficial geologic mapping issue because, as we will discuss in upcoming report sections, we encountered relatively thick surficial soil deposits in our fault trenches excavated across the linear trough, as did Connelly and Millstone in 2021 and BAGG Engineers in 2023 in their test pits and borings excavated/drilled along the axis of topographic swales and portions of the linear trough. However, no geologic maps reviewed indicated the presence of surficial deposits at or near the site and based on the collected information from our investigation, we mapped the surficial geology (Plate 2, Site Plan and Geologic Map) at the site sans the

uppermost Holocene veneer which measures up to about 5 feet and masks the older underlying Pleistocene surficial deposits occupying the linear trough area.

3.4 SITE RECONNAISSANCE OBSERVATIONS

Our CEG performed several reconnaissance/mapping visits to the site after inspecting historic topographic and aerial imagery covering the site area and reviewing site-specific studies performed by Connelly and Millstone in 2021 and geotechnical data by BAGG Engineers in 2023. The geologic mapping and the described geomorphic features in this Section are shown on Plates 2 through 4 while our observations are summarized below.

1. There are nine (9) topographic hollows/swales within and adjacent to the property that we have labeled Swales 1 through Swale 9, starting from the northwest end. See Site Photos, Plates 9 through 11, Photos 1 through 8. Six of the 9 swales (Swales 3 through 8) are situated within the site boundaries, Swales 2 and 9 border the property along its northwestern and southeastern sides, respectively, while Swale 1 is located offsite beyond Swale 2 to the northwest and we discuss it here because it abuts the hairpin turn in Sky Lane, which will provide vehicular access to the two proposed upper lots. The 9 swales descend the southwest-facing ridgeline/hillside and discharge runoff along various parts of the linear trough, which Shannon Road along its northern side. We have placed special emphasis on evaluating these prominent topographic swales because they direct seasonal runoff towards the development and potentially pose landslide and debris flow hazards on the planned structures. Some of the swales have steep and high side slope and headscarp areas that can potentially fail and possibly generate landslides and debris flows. The swales also house relatively thick colluvial soil packages and organic/rock debris and they could serve as linear landslide/debris flow and drainage travel paths. Aprons of sediment were observed near the mouths of Swales 4 through 8 as we show on Plate 2 (Site Plan and Geologic Map). However, no recent headscarps, fresh scarring, slip scars, open extensional soil cracks, down-dropped landslide margins, back-tilted benches, or recent flows were observed within any of the 9 swales during our reconnaissance which was performed after an above-normal rainfall recorded during the last 2022/2023 rainy season. Likewise, after the 1982/1983 and 1997/1998 heavy rainfall seasons, no debris flows were documented at the site and the owner of the property who has been associated with it for nearly half a century reported that no significant slope failures or debris flows have occurred at the site and that orchards were grown along the mouths of some of the swales and some still remain at Swales 5 and 7. These identified swales are described further at the end of this Section.

2. The ridge flank forming the southwest-facing hillside occupying the central and northern parts of the overall site is underlain by Monterey Shale bedrock, which appeared to consist of yellowish brown laminated, porcelainous, light density diatomaceous sandy siltstone that is interbedded with fine-grained silty sandstone. The bedrock appeared gritty (possibly rich in silica), highly and closely fractured and heavily stained with whitish carbonate that lined the fractures and bedding planes coupled with abundant localized reddish oxide (hematite) and bright yellowish oxide-hydroxide (limonite) staining.

3. Several bedrock outcrops were observed on the dirt trails carved along the upper (northern) property line, near mid-slope and roadway cuts along Sky Lane (see Plate 11, Photos 9 and 10). The bedrock displayed a general northeastern strike with an associated northwest dips (favorable into the hillside) averaging about 40 to 45 degrees into the hillside with the dip increasing to near vertical along the northern portions of the site to form the mapped synclinal fold limb mapped along the ridgeline by several mappers (see Plate 7 Area Geologic Maps and Plate 8, Town of Los Gatos Geologic Map).

4. Light density, diatomaceous Monterey Shale bedrock was also observed in cuts along the southern upslope side of Shannon Road (south of the mapped Shannon fault) and along Santa Rosa Road cuts that appeared similar to bedrock observed outcropping at the site

5. The axis of the gentle southeast-sloping linear trough occupying the southernmost part of the site appeared to separate light brown, low-medium expansion soils to the north from highly expansive very dark gray/black soils to the south of the noted trough's axis. Site Photos 11 and 12 on Plate 12 show the southern portion of the linear trough and the two types of surficial soil with differing colors.

6. Side slopes and headscarp areas at Swales 1, 2, 3, 6 and 8 appeared smooth and rounded off with somewhat shallower gradients and the ground surface looked even lacking any significant fresh scarring or incision (see Plate 4, Hillshade Map). No substantial voids or hollows which could signal a source for past significant landslide and debris flow activities were observed within these swales nor did we observe any linear slip scars that could represent flow travel paths. These swales were most likely originated as drainage courses rather than voids and scars left by past slope failures and/or debris flows. Increased moisture within these swales most likely led to accelerated bedrock decay into soil rendering these swales colluvial collections basins. Subsequent concentrated

seasonal runoff along the axes of Swales 1, 2, 3, 6 and 8 resulted in washing sediment and debris down the slope where relatively thin and small slope wash aprons have formed.

7. Sky Lane was constructed by cutting into the hillside as it extended uphill and the generated soil/rock cuttings were cast along the outboard side of the roadway where it formed a wedge of fill. The inboard portion of the roadway is most likely founded in cut while the outboard part of the roadway appeared to be underlain by fill soils. It is common that such fill wedges settle, especially if the fill was not engineered, and pavement cracks develop as a result. However, no significant pavement cracks were observed along the roadway even where it crosses topographic Swale 3. This could be attributed to having the outer edge of pavement setback about 3 feet from the top of the fill wedge or it could indicate that the fill wedge was engineered and the fill properly placed and compacted. See Photo 13, Plate 13.

8. Swales 4, 5 and 7 are the most prominent and they have significantly higher and over-steepened side slopes and headscarps with visible topographic breaks marking the upper portions of the surficial deposits that occupy their central sections and mouth areas. Swale 7 has a well-pronounced debris apron that has encroached onto the linear trough area, which could be indicative of past significant slope wash and debris flow deposits (see Site Photo 14 on Plate 13). The high and steep condition of the side slopes and headscarp areas appeared to have been caused by past landslide and debris flow activities and their debris aprons appeared more pronounced as is shown on Plate 2, Site Plan and Geologic Map. No open extensional soil cracks or down-dropped blocks were observed upslope of the relatively high and steep side slopes and headscarp areas at Swales 4, 5 and 7 and no significant fresh slip scars were observed. However, a semi-linear debris flow travel path was noted at Swale 4 the Hillshade Map (Plate 4) and future slope failure and debris flow activities at these 3 swales cannot be ruled out, especially along the elevated side slope and headscarp areas. No structures are planned near the mouth or down gradient of Swale 7 and the planned structure at Lot 7 will be positioned up gradient beyond the lateral western limit of Swale 7. Any future drainage or debris flows generated within Swale 7 will proceed southeastward away from the planned structure. However, the relatively high and steep headscarp area at Swale 7 potentially adversely impacts the stability of Lot 8 located near the ridge top. Based on the above, we have recommended preliminary mitigation measures for Swales 4, 5 and 7, which are presented in the Conclusions and Recommendations Section.

9. Swale 9 is mostly situated offsite although its western margin encroaches slightly onto the far southeastern corner of Lot 7. The swale slopes/points away from the site and its upper most portion does not impact Lot 9 planned along the elevated northeastern corner of the property. The swale appeared to have been modified by past grading of the abutting parcels to the east and the upper portion of the swale abutting Lot 9 lacks any signs of slope movement or erosion. Some erosion rills and scarring were observed along the swale's mid section, however no structures are planned as part of the planned development adjacent to this swale.

10. Several cut slopes exist and they are generally associated with dirt trail extension and the construction of Sky Lane. The locations of these existing cut slopes are approximately shown on Plate 2, Site Plan and Geologic Map and Plate 4, Hillshade Map.

11. A minor undocumented fill wedge was mapped at Lot 4 and another at Lot 6 where approximately delineated on Plate 2, Site Plan and Geologic map.

12. The approximately 6-foot high cut slope resulting from extending Sky Lane upslope across the limits of Swale 3, exposes a sloughing soil matrix supporting whitish and angular siltstone rock fragments and not in-place bedrock. Connelly (2021) logged about 10 feet of soil in TP-2 advanced near the upper portion of Swale 3 and Millstone (2021) encountered 10-14 feet of soil within the swale immediately upslope of the roadway. However, immediately downslope of Sky Lane, opposite the swale, Connelly (2021) encountered bedrock about 2.5 feet below ground surface (bgs) in Test Pit TP-1 and in Boring B-16, Millstone (2021) encountered bedrock at the ground surface.

13. The residual soil blanketing the bedrock, developed in-place primarily through the chemical decomposition of the bedrock constituents, appeared somewhat gritty and powdery with low dry strength and did not seem to be highly plastic.

14. The southwest-facing ridge/slope areas beyond and between the 9 identified topographic swales are generally underlain by bedrock that is commonly blanketed by a thin veneer of residual soil. The residual soils are impacted by localized erosion where sandy and by soil creep where the soils are clayey. The base of the soil section grades into the uppermost weathered portion of the bedrock.

15. No signs indicative of recent slope failures were observed outside the outlines of the 9 topographic swales and this is most likely due to the gritty texture and somewhat blocky nature of the bedrock coupled with the favorable bedding into the hillside.

16. The Shannon fault is mapped to cross the southeastern section of the site before it extends onto and crosses Shannon Road in a northwestern trend. The fault is projected to pass just to the east of the intersection of Shannon Road with Diduca Way. No fault-related crack patterns were noted on the pavement near the intersection of the two roadways and no significant down-drop/thrust areas coincident with the mapped fault trace were observed in that area during our reconnaissance.

3.4.1 Swale Descriptions

Swale 1: This swale is located offsite but it abuts the western side of the hairpin bend in Sky Lane along the northwestern corner of the site and it extends down to near Shannon Road. This swale has a topographic relief of about 145 feet, measures about 580 feet in length up the ridgeline and up to about 150 feet in width with associated overall slope gradient on the order of 4H:1V (Horizontal to Vertical). Erosion scarring was observed along the outer Sky Lane pavement edge opposite the swale as a result of concentrated runoff. No pavement cracks or settlement were observed along the outboard lane of Sky Lane since it is underlain by intact bedrock and not fill at the hairpin turn. No active landslide deposits, fresh extensional soil cracks, down-dropped margins, hummocky and angular terrain or significant erosional scarring were observed within the outline of the swale. The axis of the swale points away from the site and any associated runoff or future slope failures/debris flows originating within the swale are not anticipated to impact the site since the swale points westward and any flows would be directed to the southwestward away from the site. It is our opinion that the potential for landslides/debris flows to occur at this swale is considered low and that this swale is not anticipated to adversely impact the planned development. No mitigation is deemed needed at this location and none is presented in this report.

- **Swale 2:** The majority of the swale, including its axis, is situated outside the site limits albeit the eastern margin of the swale slightly encroaches onto Lot 1. This swale's length is about 350 feet, its width is about 60 feet, its topographic relief is about 70 feet and it has an overall slope gradient of

about 5H:1V. Sky Lane which appeared to have been constructed by making cuts along the upslope side of the roadway and then casting the generated earth material as a wedge of fill (embankment) to support the downslope side of the roadway. No signs of recent slope movement or instabilities were observed within the swale and no significant distress or settlement was observed along the roadway's pavement as it crosses the uppermost section of the swale. The cut along the upslope part of the roadway appeared relatively steep measuring up to about 8 feet in height and it exposed well-bedded Monterey Shale siltstone that is weathered and heavily stained with white carbonate. The swale's axis points away from the site and any runoff or landslide/debris flow activities occurring within the swale limits would be contained within the swale and directed to flow away from the site. Based on the observed conditions and the discussion above, it is our opinion that the potential for slope failures/debris flows to occur at this swale and impact the planned development is considered low and no mitigation is deemed needed at this swale.

- **Swale 3:** Swale 3 is positioned between the upslope side of Sky Lane and the northern property line within proposed Lot 2. It measures about 150 feet in length, about 100 feet in width with a topographic relief of about 55 feet and an overall approximate slope gradient of about 3H:1V. A fill buttress intended to support upslope parcels is present immediately upslope of the property line, which marks where the slope steepens uphill. The lower portion of the swale opposite Sky Lane has been cut to construct Sky Lane and the cut slope exposes a sloughing sandy lean clay matrix with siltstone/sandstone fragments and not in-place undisturbed bedrock. However, no signs indicative of recent slope failures or erosional scars were observed within the swale limits. Connelly (2021) excavated a test pit within the swale's central section and it encountered bedrock at about 10 feet below the ground surface (bgs) while Millstone advanced two borings and recorded bedrock at about 10 to 14 feet bgs of colluvial soils immediately upslope of Sky Lane. Millstone (2021) drilled a boring immediately downslope of Sky Lane opposite the swale and encountered bedrock at the ground surface and Connelly (2021) encountered it at about 2.5 bgs. We prepared a geologic cross section along the swale's axis, which was utilized by BAGG Engineers to perform stability analysis under static and seismic loading and although the results indicate satisfactory factors of safety, we are recommending that the cut slope

across the swale is retained by a pier-supported retaining wall with a 3 feet of freeboard.

- **Swale 4:** This swale is situated between the existing residence and the northern property line and it is mostly positioned within proposed Lot 4 although its western margin encroaches onto Lot 3. The swale measures about 225 feet in length up the slope, about 100 feet in width, has a topographic relief of about 60 feet and an overall approximate slope gradient of about 3.75H:1V. No active/fresh slope failures were observed within the swale and Connelly (2021) excavated a test pit within the swale and bedrock was encountered at about 7 feet bgs while Millstone (2021) advanced borings near the lower part of the swale and encountered bedrock at about 10 feet bgs. Near the mouth of the swale, we observed a raised apron of surficial deposits consisting mostly of slope wash and colluvial deposits. The swale has relatively moderately steep side slope and headscarp areas and we believe it houses Holocene and Pleistocene colluvium, slope wash and possibly older debris flows since Plate 4, Hillshade Map, shows a linear travel path along the axis of the swale. We prepared a geologic cross section along the swale's axis, which was utilized by BAGG Engineers to perform stability analysis under static and seismic loading and although the results indicate satisfactory factors of safety, the potential for future debris flows cannot be ruled out fully, we are recommending mitigation for this swale in the Conclusions and Recommendations Section.

- **Swale 5:** The axis of the swale is covered by long green grass and shrubbery while scattered mature oak trees occupy the lower mouth area of the swale. The swale impacts proposed Lots 5 and 6 and it extends from near the northern property line down to the existing animal corral where minor cuts appear to have been made along the toe area. The swale has steep side slopes, it measures about 250 feet in length, up to about 60 feet in width, has a topographic relief of about 100 feet and a rough gradient of about 2H:1V. The lower half of the swale has a gentler gradient of about 3.5H:1V. Whitish Monterey Shale bedrock debris was observed near the upper reaches of the hollow and near mid-height. A test pit advanced by Connelly (2021) along the axis encountered bedrock at about 8 feet bgs while a boring by Millstone (2021) advanced near the lower part of the swale encountered bedrock at about 10 feet bgs. Near the mouth of the swale, we observed a raised (somewhat convex) lobate apron of surficial deposits consisting mostly of colluvial, slope wash and

possibly older debris flow deposits of Holocene to Pleistocene age. For these reasons and since the potential for future debris flow activities to occur cannot be ruled out, We recommend mitigation at this swale in the Conclusions and Recommendations Section even though we prepared a geologic cross section along the swale's axis, which was utilized by BAGG Engineers to perform stability analysis under static and seismic loading and although the results indicate satisfactory factors of safety.

- **Swale 6:** This swale measures about 180 feet in length and about 40 feet in width with an approximate slope gradient of about 2.75H:1V and is the least prominent of all the 9 swales. The swale appeared to have been caused by focused erosion of the blanketing soils and the underlying bedrock. The swale has a rounded off shape and even internal slopes although a small apron of surficial debris is present near the swale's mouth. No slope stability analysis was performed for this swale and we do recommend mitigation measures for this swale, due to its close proximity to the planned structure at proposed Lot 6, in the Conclusions and Recommendations Section.

- **Swale 7:** This is the largest of the 9 swales discussed herein. It has a long and linear channel with its upper portion steeper than the middle and lower sections. The axis of the swale appeared blanketed with fresh grass while its lower part is occupied by remnants of an orchard and a moderate growth of mature oak trees. Its side slope and headscarp areas are relatively high and steep and it measured about 600 feet in length and up to 200 feet in width. The swale extends between the northern property line at proposed Lot 8 above and the linear trough bordering Shannon Road. The upper steep half has an approximate gradient of about 2H:1V while the lower section of the swale is gentler at about 3H:1V. Miocene Monterey Shale bedrock outcrops were observed near the upper parts of the swale and bedrock bedding was recorded at the cut dirt trail to strike northeastward and dip near vertical. Connelly (2021) excavated an approximately 10-foot deep test pit near the mouth of the swale and it revealed soil its entire depth. We observed a prominent raised (somewhat convex) lobate apron of surficial deposits consisting mostly of slope wash, colluvial deposits and possibly old debris flows of Holocene to Pleistocene age near the lower mouth portion of the swale. This swale impacts proposed Lots 7 and 8, however the potential for future landslide and debris flows to impact the planned residential structure at Lot 7 is considered low since the structure will be located up gradient to the west

beyond the limits of the swale. We prepared a geologic cross section along the swale's axis, the upper part of which was utilized by BAGG Engineers to perform stability analysis under static and seismic loading and we understand that the obtained results under seismic loading were not satisfactory. Based on BAGG Engineers' slope stability results and that the potential for future slope failure/debris flow activities cannot be ruled out, we have provided recommendations that pertain to Lots 7 and 8 in the Conclusions and Recommendations Section.

- **Swale 8:** This is the southernmost onsite swale and it is located fully within Lot 7. It measured about 360 feet in length and about 80 feet in width with approximate overall gradient of about 2H:1V. The swale appeared rounded off and its surface smooth lacking any features indicative of recent slope movement. Connelly (2021) excavated a test pit within this swale and he encountered bedrock at about 9 feet bgs. The swale appeared blanketed with wild grass growth but lacked mature tree growth and it has a linear channel that extends downslope to the linear trough occupying the lower southern part of the site. No structures are planned down slope of this swale and any potential future landslide or debris flows are not expected to impact the residential structure planned at Lot 7. Based on the above description and discussion, we are not providing mitigation recommendations for this swale in this report.

- **Swale 9:** The majority of this swale, which measured about 600 feet in length up the slope and about 100 feet wide, is situated offsite although its western margin encroaches onto the southeast portion of Lot 7. The upper part of the swale extended up the slope to near proposed Lot 9 and it appeared to have been altered by previous grading of the adjacent properties to the east. The lower unaltered section of the swale's axis coincides with the parcel's property and it appeared to be occupied by long grasses and shrubbery with some erosional scarring noted along the swale's middle section. Surficial runoff originating at this swale flows downslope and merges with the linear trough and the combined water then flows through a culvert beneath Santa Rosa Drive and into the Santa Rosa Bypass. This swale is not anticipated to impact proposed Lots 7 and 9 and no mitigation will be recommended for this swale in this report.

3.5 FAULTING AND SEISMICITY

This region has one of the highest rates of seismic moment release per square mile of any urban area in the United States. It is emerging from the stress shadow of the 1906 San Francisco Earthquake and future large earthquakes are considered a certainty.

Three of the northwest-trending major earthquake faults within in the San Andreas fault system, which extends through the Bay Area, include the San Andreas fault, the Hayward fault and the Calaveras fault. These three faults are respectively located about 5 miles southwest, 11 miles northeast, and 13.5 miles northeast of the site. Even though the Shannon fault crosses the southeastern corner of the subject site, the San Andreas and Hayward faults are believed to be the principal seismic hazards in this area because of their higher probability of occurrence and recurrence intervals. The Working Group on California Earthquake Probabilities (2014) has estimated that the probability for a major earthquake with a moment magnitude (M_W) 6.7 or greater within 30 years on the nearby Santa Cruz Mountains section of the San Andreas fault is about 17 percent and about 33 percent for a similar earthquake located anywhere on the Northern San Andreas Fault. There is also an 8 percent chance a M_W 6.7 or greater will be located on the southern extension of the Hayward fault and about 32 percent for a similar earthquake located anywhere on the Hayward-Rodgers Creek fault. The central segment of the Calaveras fault reportedly has a 21 percent probability of producing a magnitude 6.7 or greater earthquake within 30 years and there is about a 25 percent chance that a similar earthquake may be located anywhere on the Calaveras fault. The Monte Vista-Shannon fault encroaches onto the site and reportedly has a 1 percent chance of producing a magnitude 6.7 or greater earthquake within the next 30 years.

The predominant seismic hazard at this site, besides surface fault rupture, will be from shaking caused by a large earthquake. ABAG (Association of Bay Area Governments) has published earthquake intensity maps that indicate the scenario earthquake listed for the entire San Andreas fault (1906-size earthquake) would produce a "very strong" shaking intensity at the site. The shaking resulting from a scenario earthquake on the Hayward fault or Calaveras fault will be "moderate" in nature. The distances to the major active faults from the project site and the estimated probability of a $M_W \geq 6.7$ within 30 years for each fault are listed in Table 1 below.

Table 1

Significant Earthquake Scenarios

Fault	Approximate Distance from Site (Miles)[1]	Location with Respect to Site	Probability of M_W ≥6.7 within 30 Years[2]
Monte Vista-Shannon	0.0		1%
San Andreas (Entire)	5.0	SW	33%
San Andreas (Santa Cruz Mts. Section)	5.0	SW	17%
Hayward	11.0	ENE	32%
Hayward (Southeast Extension)	11.0	ENE	8%
Calaveras	13.5	NE	25%
Calaveras (Central Section)	13.5	NE	21%

[1]USGS fault files - Google Earth.
[2]Working Group on California Earthquake Probabilities (2014).

All the faults listed in Table 1 above, except the Monte Vista-Shannon, have State-designated Alquist-Priolo Earthquake Fault Zones delineated around their traces/zones on official State regulatory maps (Hart and Bryant, 1997) and (DMG 1991 and 2000). However as noted prior, the Monte Vista-Shannon fault is not zoned by the State as active even though the fault has caused damage to civil improvements after the 1989 Loma Prieta earthquake and local governments (Santa Clara County and Towns of Los Gatos, Saratoga and San Jose) consider the fault potentially active and have established fault hazard zones along the mapped traces/zones. The attached Plate 14, Regional Fault Map, shows the major active fault locations with respect to the subject site.

The San Andreas fault has a regional trend of approximately N34W; however, the segment of the fault crossing the central Santa Cruz Mountains to the southwest of the site strikes approximately N44W, forming a restraining bend, which has led to the formation of a contractional compression zone and the development of the frontal thrust fault system along the Santa Cruz Mountains northeastern foothills. Faults along the range front have been mapped by several mappers including Bailey and Everhart (1964), Dibblee (1966), Rogers and Williams (1974), McLaughlin (1974), Department of Water Resources (DWR, 1975), Sorg and McLaughlin (1975), Dibblee and Brabb (1980), Rogers and Armstrong (1973), McClaughlin et al. (1991), Hitchcock and Kelson (1994), Wentworth et al. (1999), Nolan and Associates (1999), Bryant (2000),

McLaughlin et al. (2001) and Rubin et al. (2004). This frontal thrust fault system, which was identified by McLaughlin et al. (2001) as the Southwest Santa Clara Valley Thrust Belt, is comprised of reverse/right-reverse faults that include the Berrocal, Monte Vista-Shannon, Blossom Hill, Stanford, San Jose and Cascade. The band of faults is shown on Plate 15, Area Fault Map, in relation to the site area while Plate 16, Faults in Town of Los Gatos, shows the mapped faults that extend through the Town's jurisdiction.

3.6 MONTE VISTA – SHANNON FAULT

The Monte Vista-Shannon fault extends northwestward along the northeastern foothills of the Santa Cruz Mountains through the southwestern section of the City of San Jose and then through the Towns of Los Gatos, Monte Sereno, Saratoga and Los Altos Hills. South of the City of Saratoga, the fault is known as the Shannon fault while north of Saratoga, the fault is identified as the Monte Vista. The Shannon fault generally consists of many fault strands that dip steeply southwestward to merge with the San Andreas fault at depth (Sorg and McLaughlin, 1975) and is considered active by the International Conference of Building Officials (ICBO, 1998), that is, having evidence of displacement within the last 11,700 years (Holocene Epoch). The Monte Vista fault to the north of Los Gatos has been reported to have an estimated slip rate of 0.4 mm/year and is capable of generating a Maximum Moment Magnitude of 6.5 earthquake (ICBO, 1998). The slip rate is poorly constrained and estimates are based on vertical separation of late Pleistocene terrace deposits. The 2008 USGS/CGS model assigns slip rates of 0.4 ±0.3 mm/year to the Monte Vista-Shannon fault (Field et al., 2008).

These range front fault traces are mostly concealed beneath the alluvium and they were generally mapped based on the presence of lineaments, groundwater aquitards in DWR wells, geophysical surveys (gravity, magnetic, refraction and reflection) and observed signs of contractional compression (cracked pavement/concrete and broken pipes) after the 1989 Loma Prieta Earthquake. This zone of frontal thrust faulting coincides with a broad zone of discontinuous lineaments that extends between the Towns of Los Gatos and Los Altos Hills.

3.6.1 Lineaments

Vegetation, tonal, linear depressions and buckling lineation interpreted from aerial photography or mapped in the field, is generally indicative of faulting. A study, to assess and compile a map of the surface lineaments and geomorphic features observed where the range front thrust fault system extends between Los Gatos and Los Altos Hills, was performed by Hitchcock et al. in 1994. Nolan Associates (Nolan, 1999) prepared a map for the Town of Los Gatos where fault traces, lineation zones and areas impacted by coseismic deformation were shown. Nolan (1999) mapped several lineaments across

Los Gatos that mirrored the mapped traces of the Monte Vista-Shannon fault. However, he did not show lineaments that appear to extend coincident with the mapped trace of the Shannon fault strand that extends through the general area of the site. The portion of Nolan's map that covers the site is presented as Plate 17, Faults, Lineaments and Coseismic Deformation Map.

3.6.2 Coseismic Deformation

Coseismic deformation was documented in the general area of the site after the Loma Prieta 1989 earthquake, which was centered approximately 15 miles to the south of the site on the San Andreas fault. The noted earthquake caused contractional deformation on some of the range front thrust faults along the northeastern foothills of the Santa Cruz Mountains. Haugerud and Ellen (1990) of the USGS performed a survey to document the damage and they detected linear damage/buckling patterns to manmade features such as concrete curbs and sidewalks, pavement cracking, buried pipe breaks and distorted storm drain inlet boxes/grates coincident with the range front faults. The coseismic deformation patterns in the general area resulted from crustal compression and shortening due to uplift along the frontal fault traces. Nolan's 1999 map (Plate 17) did not map any coseismic deformation in the immediate vicinity of the site, however.

Likewise, Schmidt et al. (1995) did not map/show any features indicative of coseismic damage at the site and the closest reported coseismic damage (cracked and buckled concrete suggestive of contractional deformation) to the site is shown by them to be situated beyond the site limits to the southeast. Plate 18, Coseismic Deformation Map, shows the portion of Schmidt et al. (1995) map that covers the site area.

3.7 LANDSLIDES AND DEBRIS FLOWS

The site's topography is depicted on Plate 2 (Site Plan and Geologic Map), Plate 3 (Site Hillshade Map) and Plate 4 (Hillshade Map). The site is occupied by a moderately high southwest-facing ridge flank (Blossom Hill) and a low and gently sloping (toward the southeast) linear trough is present along the toe of the hillside. The linear trough separates the hillside areas to the north from Shannon Road to the south. The hillside drains southwestward towards the linear trough and several of the onsite topographic swales/hollows descend the southwest-facing hillside and daylight in the direction of the proposed residential Lots 1 through 7. The linear trough ascends northwestward and its high point is situated near the intersection of Shannon Road with Sky Lane. Beyond that point to the west, the linear trough along with Swales 1 and 2 dip and drain away from the site towards the west/southwest.

No landslide deposits were mapped within the site limits by any of the various mappers referenced in this report including the State (CGS, 2002) on their Landslide Inventory Map, which we include as Plate 19, except for two relatively small landslides that

originate offsite to the south of Shannon Road and extend northeast across the roadway as is depicted on the noted plate and also on the Site Plan and Geologic Map, Plate 2. In addition, we observed no fresh classic rotational/translational landslide deposits along the southwest-facing hillside beyond the lateral margins/limits of the nine (9) identified topographic swales. The hillside slope face beyond the topographic swale limits is generally even and underlain mostly by the silica-rich, blocky and gritty Monterey Shale bedrock (comprised chiefly of sandy siltstone and minor beds of silty sandstone) that is favorably bedded and blanketed with a thin veneer of residual soil.

Connelly (2021) mapped debris flow source areas at Swales 3, 4, 5, 7 and 8 with arrows indicating direction of flow that point downslope towards portions of the site and the proposed lots. Debris flows pose a serious geologic hazard since they tend to travel with marked velocity from high areas and "bulk up" with sediment and debris as they flow and descend down the slope. Debris flows typically initiate during intense rainfall when loose colluvial soils positioned on steep hill slopes liquefy upon collapse and travel rapidly downslope (Campbell, 1975). They have historically been a significant life-threatening hazard in the San Francisco Bay Area and 3 children died in their home located on Oddstad Boulevard in Pacifica after it was destroyed by a debris flow landslide triggered during a 1982 rainstorm (Shlemon and others, 1987).

We did not observe freshly disturbed debris flow source areas nor did we observe fresh debris flow chutes, soil slip scars, incised gullies or fresh tracks/travel paths except at Swale 4, where a linear chute was observed on the Hillshade Map attached hereto as Plate 4. We also observed Swales 4, 5, and 7 to have relatively high and steep side slope and headscarp areas and we suspect that past significant landslide and/or debris flow activities to have occurred at Swales 4, 5 and 7 due to the vacated source areas and noted steep interior where the occurrence of future failures/flows cannot be ruled out. Furthermore, we observed Swales 4 through 8 to have raised lobate soil aprons near their mouths (lowermost portions). These apron surficial deposits most likely originated as colluvial soils, localized internal side slope failures and possibly old debris flows within the noted swales. Currently, these surficial deposits lack driving forces and steep gradients and some appear to be buttressed by the relatively thick soil deposits occupying the linear trough. Based on our observations, no significant debris flow activities have occurred within the swales after the 1982, 1998 or the 2023 above-average heavy rainfall.

To help arrest and mitigate potential future landslide/debris flows from cascading down the swales' axes and adversely impacting the proposed residential lots and street areas, we have provided input as it pertains to siting the structures to the project CE and

recommended mitigation measures for Swales 3 through 7, which we will discuss in the Conclusions and Recommendations Section. We selected to provide mitigation for Swale 3 because an approximately 6 to 8 feet high cut has been made across the lower part of the swale during the construction of Sky Lane revealing loose soil/slough and previous subsurface exploration by Connelly and Millstone in 2021 indicated the presence of more than 10 feet of soil upslope of the roadway.

The swale mitigation recommendations were developed based on our review of available literature, previous site-specific studies, field mapping and the results of the slope stability analysis performed by BAGG Engineers as part of their concurrent geotechnical scope. The recommendations were only developed for onsite swales (Swales 3 through 7) that descend towards the planned residential structures and they generally consisted of structure siting and avoidance, the construction of pier-supported retaining walls, keyed and compacted debris detention berms and deflection berms, which are discussed further in the Conclusions and Recommendations Section.

4. SUBSURFACE CONDITIONS

4.1 GEOLOGIC FAULT TRENCHES

Our interpretation of the subsurface conditions underlying the site is based on the review of previous subsurface exploration logs prepared by other consultants and the exposures observed in our fault Trenches T–1 through T–4 excavated and logged as part of this study. Our CEG visited BAGG Engineers office during August 2023 and reviewed the soil/bedrock samples they collected in Borings B-1 through B-5 drilled as part of their concurrent geotechnical study.

In general, the southwest-facing hillside beyond/between the boundaries of Swales 1 through 9, are underlain by Miocene Monterey Shale that is comprised primarily of sandy, diatomaceous siltstone that is interbedded with silt sandstone. Poorly consolidated surficial soil deposits that measure more than 10 feet deep occupy the central portions of all identified swales that descend the hillside. These surficial deposits range in age from Holocene to late Pleistocene and are made up of loose unconsolidated colluvial and slope wash deposits with possible older debris flows at some swales (Swales 4, 5, and 7).

Swales 4 through 8 have soil/debris aprons at their mouths that encroach onto the lower linear trough, which parallels the north side of Shannon Road (see Plates 2 through 4). The linear trough is occupied chiefly by older and relatively deep (exceeding 30 feet) colluvial and slope wash deposits that were shed into the trough during the Pleistocene from the southwest-facing hillside and also from elevated slope areas to the south of Shannon Road. These Pleistocene surficial deposits present within the linear trough are capped by a younger layer that is comprised of Holocene colluvium and slope wash that measures about 5 feet thick, which we elected not to map/display on Plate 2, Site Plan and Geologic Map, to avoid concealing the underlying geology.

4.1.1 Trench T–1

Trench T-1 revealed a 5-foot thick capping Holocene colluvial and slope wash layer that occupied the ground surface from Station 0+00 to near Station 1+10 (marked as 0 to 110 feet on the trench log). This upper Holocene layer was comprised of pale brown silty lean clay with sand- to gravel-sized fragments (siltstone and sandstone). Marked as Unit 1 on Trench T-1, the unit appeared moist, stiff, powdery/dusty when dry with low

dry strength and low to medium plasticity. However, beyond Station 1+10 this pale Holocene layer (Unit 1) gives way to another Holocene age layer that is comprised of very dark gray to black fat clay with siltstone and sandstone fragments, which we identify as Unit 4 on the trench log. Unit 4 appeared moist, hard, plastic, high dry strength and it extended from about Station 1+10 to the southwestern end of the trench. Based on our observations, Unit 1 appears to have developed from the chemical decay and mechanical weathering of the Monterey Shale bedrock to the north. However, the very dark gray/black layer (Unit 4) appeared to have been generated from a differing type of parent bedrock underlying the hills south of Shannon Road and then shed off northward to occupy the axis of the linear trough. Units 1 and 4 grade into each other along a gradational contact which has resulted in exposing the two varying soil colors at the ground surface near the linear trough axis in the area of Trench T-1.

Between Trench T–1 Stations 0+00 and 0+25 the Holocene colluvium and slope wash layer (Unit 1) is underlain directly by favorably bedded Monterey Shale bedrock. However, beyond Station 0+25 to the southwest, a Pleistocene colluvial and slope wash layer (Unit 3) is sandwiched between the bedrock and the upper capping Holocene layer and the top of the bedrock sloped southwestward towards the linear trough becoming fully obscured near Station 0+64. Unit 3 consisted of dark yellowish brown silty lean clay with bedrock fragments that appeared moist, hard, medium plastic, prismatic with abundant gypsum filaments and carbonate nodules/staining. Unit 3 extends southwestward to near Station 1+20 where, like Unit 1 above, gives way along a gradational contact to another opposing Pleistocene unit (Unit 5) for the balance of the trench. Unit 5 is markedly different than Unit 3 and it appeared to be comprised of light olive brown silty lean clay with bedrock fragments throughout. The unit appeared moist, very stiff to hard, contained rolled-up gravel seams and heavily sheared beyond Station 1+21 to the southwestern end of Trench T–1. The shears observed beyond Station 1+21 represent a fault-related shear swarm with two patterns of primary shearing, which trended between N75–85E with 75-80° SE dips to N20–40W with 80° to 85° SW dips. Unit 5 appeared to also originate offsite from the hills to the south of Shannon Road and then shed northward where it rested against and blended with the opposite Unit 3 shed from the northern hillside.

4.1.2 Trench T–2

This trench was excavated to gain about 10 feet of lateral overlap with the southwestern end of Trench T–1 and it was extended southwestward to provide trench coverage across the entire linear trough when supplementing Trench T–1.

Unit 4 carried over from Trench T–1 and consisting of very dark gray to black Holocene colluvial and slope wash deposit blanketed the entire ground surface along Trench T-2. Between Stations 0+00 and 0+11 feet, Unit 4 is underlain by Unit 3 (the dark yellowish brown Pleistocene colluvial/slope wash), which is also carried over from Trench T-1. Beyond Station 0+11 to the southwest toward Shannon Road, Unit 3 ceases along a gradational contact and fades into Unit 5, the light olive brown colluvium and slope wash shed off a different parent rock to the south. A thin unit (Unit 6) is sandwiched between Unit 4 and 5 from around Station 0+32 to the southwestern trench end. Unit 6 is another Holocene soil unit that may be contemporaneous with Unit 4 or slightly older.

The fault-related shear swarm observed in Trench T-1 prior persisted and it is fully contained within this trench measuring approximately 24 feet in width and extending between Trench T-2 Stations 0+11 and 0+35. The sheared clays appeared prismatic and possibly slightly dilated and the majority of planar shear faces/surfaces were awash in dull whitish carbonate staining.

4.1.3 Trench T–3

Trench T–3 was excavated about 400 feet to the southeast of Trenches T–1 and T–2 across the axis of the linear trough, where the fault has been mapped by the various referenced mappers, to locate (tie) the fault's extension to the south. The linear trough in this area is steeper and the swale axis is more pronounced than at Trench T-1. The trench exposes Unit 3 (dark yellowish brown Pleistocene unit originating from the hills to the north) grading into Unit 5 (light olive brown Pleistocene unit originating to the south of Shannon Road from a different parent rock than Unit 3) at near Station 0+10. Near the southwestern end of the trench, Monterey Shale bedrock (Unit 2) was encountered along the base of the trench beneath Unit 5.

The Holocene Layer (Unit 4) logged in Trenches T–1 and T–2 blanketing the older Pleistocene Units 3 and 5 was not detected at Trench T-3, which could be attributed to removal (exhumation) of Unit 4 via the increased rates of erosion along the linear trough

axis since it is steeper in the area of Trench T–3 at the area of Trench T-1 through T-4. As in Trench T-2, the shear swarm persisted in Trench T-3 and it appeared fully contained within this trench, extending between Stations 0+09 and 0+25. The shears were also heavily stained with dull carbonate and rolled up gravel seams were also observed within the shear swarm.

4.1.4 Trench T–4

This trench was excavated to locate (tie) the fault-related shear swarm extension across the site to the northwest. The trench revealed Pleistocene Unit 3 shed from onsite areas to the north grading into Unit 5, which is the Pleistocene surficial deposit shed from offsite source areas to the south (different parent rock also). Bedrock (Unit 2) was also observed along the base of the trench beneath Unit 5. Units 3 and 5 are blanketed/capped by the Holocene fat clay layer (Unit 4) that originated from offsite source areas located to the south, beyond Shannon Road.

The shear swarm was also observed in this trench between Stations 0+13 and 0+26. The overall shear swarm appeared contained in all trenches except Trench T–1 and based on the trench layout, the shear band/swarm appeared to be widest in the middle near Trenches T–1 and T–2 thinning out along the ends near Trenches T–3 and T–4, as is approximately depicted on Plate 2, Site Plan and Geologic Map. The shear swarm appeared to make a slight bend northwestward in the area of Trenches T–1 and T–2.

Our interpretations of the subsurface conditions along pertinent Swales 3 through 5 and 7 and also along a portion of the linear trough are presented on Plates 20 through 24 (Cross Sections A–A' through E–E'–E") while the logs for our Trenches T-1 through T-4 are included as Plates 25 through 28.

4.2 GROUNDWATER

Groundwater was not encountered in any of the previous borings advanced at this site by the various referenced consultants. In addition, no springs or seepages were observed on the hillside or within the accessible portions of the 9 swales. The lowest part of the site is the linear trough and a boring advanced by BAGG Engineers in 2023 near the central part of the trough was drilled to an approximate depth of 40 feet bgs but it did not encounter groundwater.

Groundwater should be expected to fluctuate depending on seasonal changes and magnitude of irrigation.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 FAULT-RELATED GROUND SURFACE RUPTURE

The majority of the site is located to the north and northwest of the Shannon fault zone and the fault is recognized as a reverse thrust fault. The fault dips southwestward to merge with the San Andreas fault at depth, Which implies that the block to the south of the fault zone is the hanging wall block that is being pushed upward and that the fault plane underlies the hanging wall at depth. However, all the planned structures will be located to the north of the fault trace on the foot wall and will not be underlain at depth by the fault plane as it extends into the subsurface.

We did not observe any field features that are indicative of faulting to cross the site surface or nor did we observe distressed cultural features near the site where the fault is mapped. We encountered a persistent shear swarm in all of our 4 trenches coincident with the mapped trace of the Shannon fault in this area. It is our opinion that the shear swarm is fault-related and it represents a fault zone rather than a single planar trace. The shear swarm was most likely created along the upper part of the fault zone as a result of thrusting, which caused doming to occur and subsequent cracking. The noted fracture/shear propagation upward into soil versus rock is also anticipated to generate a wider band/swarm rather than a single fault plane. Based on the above, it is our opinion that the potential for fault-related ground surface rupture to occur along the encountered shear swarm zone is considered high. For this reason we established a fault setback zone as discussed below.

5.2 FAULT SETBACK AND STRUCTURE EXCLUSION ZONE

Our trenches encountered a relatively wide fault zone represented by the shear swarm and not a single planar trace. Accordingly, we recommend the establishment of a 50-foot wide fault setback zone that excludes the construction of structures intended for human habitation and occupancy beyond the lateral limits of the shear swarm on both sides. The setback zone was established beyond the leading edge of the shear swarm band regardless of its width and the noted fault-related structure exclusion zone is delineated on Plate 2, Site Plan and Geologic Map. No future habitable structures or additions should be constructed within the shear swarm band or the 50-foot wide fault setback zone limits

5.3 SEISMIC SHAKING

The site area is expected to experience severe ground shaking during the design life of the project as a result of future earthquakes on one of the nearby faults. The proposed residential structures and associated improvements should be designed and constructed in accordance with current seismic design parameters, to be provided by BAGG Engineers in their concurrent geotechnical report for the project.

5.4 LANDSLIDES AND DEBRIS FLOWS

As noted prior, no landslides or debris flows were mapped outside the boundaries of the 9 topographic swales identified in this report by the various referenced mappers and none were observed during our site reconnaissance visits. However, relatively thick unconsolidated soil deposits that either have the potential to mobilize downslope or have already experienced down slope movement and flow are present within the boundaries of the 9 topographic swales. Two small landslides were mapped by the CGS (2002) that originate to the south of Shannon Road and then extend to cross it. However, these two landslides are not anticipated to impact the planned project, especially if the Town implements the planned retention of the outer downslope embankment of Shannon Road in accordance with recommendations prepared by CE&G in 2020.

5.4.1 Swales 1 and 2

We do not recommend any mitigation measures for Swales 1 and 2 because we consider the potential for landslides and debris flows to occur within these two swales to be low since they lack vacated source areas, steep gradients and high side slope and headscarp areas. In addition, the Sky Lane hairpin turn is underlain by bedrock and both swales point away form the site and any interior failures/flows within the swales will be directed to flow away from the proposed Lot 1. Prominent erosional scarring was observed along the outer pavement edge of Sky Lane. If left unchecked, these scars/rills will enlarge and covey larger volumes of water, which in turn, will create more erosion, which could undermine the edge of pavement. Crushed angular gravel should be placed in the noted erosion rills to absorb the runoff energy of the runoff flows and to help reduce the effects of erosion.

5.4.2 Swale 3

This swale is situated between the upslope side of Sky Lane and the northern property line and it is situated fully within proposed Lot 2. The swale houses more then 10 feet of colluvial soils and as the roadway was extended uphill across the swale, an approximately 6–foot high cut was made exposing sloughing soils. We prepared a cross section line along the axis of the swale that extended down to Shannon Road, a portion of which was utilized by BAGG Engineers to perform slope stability analysis of the swale area. Although BAGG Engineers obtained satisfactory factors of safety under static and pseudostatic conditions, we are recommending that a pier-supported retaining wall is constructed to support the road cut made across the width of Swale 3. The retaining wall should have a minimum of 3 feet of freeboard and periodic maintenance should be anticipated to clean sediment and debris collected behind the raised portion of the wall.

5.4.3 Swales 4, 5 and 6

To help arrest potential future slope failures and debris flows that could occur in Swales 4 through 6, we recommend that 6–foot high compacted debris detention berms are constructed across the mouth (toe) areas of these swales to fully contain Swales 4 through 6. The berms should fully enclose the swales areas and should be constructed 6 feet wide at the top with 2H:1V side slopes constructed on excavated keyways that penetrate the base of any colluvial, slope wash or older debris flow deposits. We estimate the base keyway excavations to measure between 10 and 12 feet bgs in depth and be about 15 feet wide. The interior and exterior berms slopes should be over-built and then cut back to expose tight even slope faces. The need for subdrains will be determined by the project CEG during construction.

Water runoff from the swales should be designed for and accommodated across the berms by the project CE. The berms should also be equipped with either overflow structures or properly designed spillways. The locations of the base keyways should be selected by the project CEG who should also observe the keyway excavation and construction. A pier-supported chain link fence should be constructed along the top of the berms. Periodic maintenance should be anticipated to remove vegetation and silt, clean inlets and outlets and to check for signs of overtopping and erosion.

5.4.4 Swale 7

Swale 7 is located primarily within planned Lot 7 although its uppermost headscarp area encroaches on proposed Lot 8 upslope to the northeast on the ridge. This swale is the most prominent and it has significantly high and steep side slopes and headscarp areas. In addition, the swale forms a large hollow (source area) and has a prominent lobate soil apron near its mouth, which could indicate potential significant previous slope failures and older debris flow episodes at this swale. However, the buildable envelope at proposed Lot 7 will be situated to the west up gradient and beyond the western margin of the swale and any slope failures or debris flows originating within the swale are expected to flow into the linear trough, which slopes to the southeast away from the buildable envelope. However, to ascertain that flows are directed southeastward away from the residential structure, a 7–foot high curvy soil deflection berm should be built to physically isolate the swale from the buildable envelope at Lot 7 and to deflect any future potential flows away from the buildable area at Lot 7. The berm should be underlain by a 5–foot deep base keyway excavation, measure 6 feet wide at the top and have 2H:1V side slopes. The location of the deflection berm should be established by the project CEG and we anticipate that length of the deflection berm to be about 60 feet.

We prepared a geologic cross section (D–D') that extended through planned Lot 8 and then down through the axis of Swale 7, across the linear trough and on to Shannon Road. A part of cross section was utilized by BAGG Engineers to analyze the stability of the high and steep headscarp that encroaches onto the lower part of proposed Lot 8. We understand that BAGG Engineers did not obtain satisfactory factors of safety under seismic loading conditions for the high and steep headscarp slope present along the lower part of proposed Lot 8. Accordingly, BAGG Engineers is recommending that a "stitch" pier line is constructed downslope of the buildable envelope to stabilize the lower part of Lot 8. The stitch pier line is planned along contour line 860 feet and we understand that the piers will be about 25 feet deep with 24-inch diameters. Soil parameters to design the piers will be provided by BAGG Engineers in their concurrent geotechnical report while the steel reinforcement should be specified by the project Structural Engineer.

5.4.5 Swales 8 and 9

Swale 8 is not well pronounced but it is high, steep and its channel linear. A test pit excavated by Connelly in 2021 near the lower part of the swale encountered about 10 feet of soil. The swale is situated about 500 feet down gradient to the southeast form the buildable envelope at Lot 7. Any future slope failures or debris flows occurring at this swale would tend to flow downslope into the linear trough, flow away to the southeast and will not impact the planned development. Based on this information, we are not recommending any mitigation measures for Swale 8.

Swale 9 abuts the property along its eastern/southeastern sides and its upper part abuts the lower southeast corner of proposed Lot 9. Residential development to the east appears to have encroached onto the swale and some grading may have been done along the upper part of the swale. Fresh erosion scars/rills were viewed on recent aerial imagery along a fence line behind a residence located immediately upslope of the swale. However, the erosional scarring is situated lower than proposed Lot 9 along the swale. The current head of this swale does not reach the immediate area of proposed Lot 9 and any potential future erosion or mass wasting is not anticipated to impact proposed Lot 9 or the buildable area at proposed Lot 7 below. Based on this information, we are not providing any mitigation recommendations for Swale 9.

5.5 LIQUEFACTION

The site is not located within County- or State-designated liquefaction hazard zones and the potential for liquefaction to impact the site and planned development is considered to be low since the site is underlain by Miocene age bedrock and Pleistocene age soils where soil is relatively thick. Furthermore, the groundwater is relatively deep and no Holocene age loose clean submerged sediment is present at the site. According to Youd and Hoose (1978), the closest location of ground failure due to historic earthquakes is located to the southeast near the trace of the San Andreas fault. Based on the above information and the knowledge that the site's earth materials are not considered conducive to liquefaction, it is our opinion that the potential for liquefaction to impact the site and development is considered low.

5.6 SOIL CREEP

Based on preliminary residential structure layouts, the northern sides of the residential structures planned at Lots 1 through 7 and the southern sides of structures proposed at the two elevated Lots 8 and 9 may be constructed on sloping ground that is veneered with soils that could experience creep. Furthermore, the planned structures will be supported on pier-and-grade beam foundations, which will penetrate any creeping surficial soil profiles encountered and we understand that BAGG Engineers has accounted for creep forces as part of their geotechnical pier recommendations.

5.7 BEDROCK RIPPABILTY

The bedrock occupying the site area is fractured and is considered rippable with conventional heavy grading equipment. However, pier drilling may encounter zones of strongly cemented zones (with carbonate) and specialized drill rigs equipped with a locking Kelly bar may be required, especially along the bedrock knob where proposed Lots 8 and 9 are planned.

5.8 EXPANSIVE SOILS

The area of the site to be developed is positioned to the north and northwest of the fault zone where the soils have developed through the breakdown of the Monterey Shale bedrock underlying the northern hillside. These soils seem to be less expansive than soils located to the south of the linear trough axis, which seem to have originated offsite to the south of Shannon Road from another parent rock. We understand that BAGG Engineers will be providing recommendations to help address soil expansion potential in their concurrent geotechnical report for the project.

5.9 CORROSIVE SOILS

The soil corrosion potential was evaluated by BAGG Engineers as part of their concurrent geotechnical study for the site and we understand that the obtained results indicate that the surficial site soils are highly corrosive and that BAGG Engineers will be providing measures to address the high soil corrosion potential in their concurrent geotechnical report.

5.10 UNDOCUMENTED FILL

Two small areas of undocumented fill were mapped at proposed Lots 4 and 6 in addition to a wedge of fill that was placed along the downslope side of Sky Lane. The fill sections at Lots 4 and 6 are anticipated to be less about 5 feet thick. These undocumented fill areas should be overexcavated and reworked or cut and incorporated in new fills, if deemed needed based on the final layout of the residential structures, grading scheme and associated improvements.

5.11 FLOODING

Flood hazards are generally considered from three sources:

- Seismically-induced waves (tsunami or seiche);
- Dam failure inundation; and
- Long-cycle storm events.

The site is not located in close proximity to the Pacific Ocean or San Francisco Bay Shorelines. In addition, the site is more than 500 feet higher than sea level. Based on this information, the potential for tsunamis to impact the site is considered low.

Division of Safety of Dams (DOSD, 2023) shows the site area to be outside the inundations wave that would be generated by the Guadalupe Dam (No. 72-5) to the southeast of the site and by the James J. Lenihan (No. 72-8) located to the southwest of the site, if the noted dams were to fail. Based on the above, the potential for the site to become inundated as a result of dam failure is considered low.

According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 06085C0381H, effective May 18, 2009, the site is located within Zone D, which is identified as *Areas with Flood Hazard Potential due to Levee*. The FEMA maps do not specify a location of the noted levee but we suspect that it could be associated with the Santa Rosa Bypass.

5.12 NATURALLY OCCURRING ASBESTOS (NOA)

The site is underlain by the Monterey Shale bedrock and no serpentinite or ultrabasic bedrock that contains asbestos minerals is mapped at the site or immediate vicinity. Accordingly, it is our opinion that the potential to encounter NOA during grading or construction is considered low.

5.13 RADON GAS

Radon gas is a naturally occurring colorless, tasteless, and odorless radioactive gas that forms in soils from the decay of trace amounts of uranium that are naturally present in soils. Radon enters buildings from the surrounding soil through cracks or other openings in foundations, floors over crawlspaces, or basement walls. Once inside a building, radon can become trapped and concentrate to become a health hazard unless the building is properly ventilated to remove radon. Long-term exposure to elevated levels of radon increases one's risk of developing lung cancer (Churchill, 1991).

The U.S. Environmental Protection Agency (EPA) recommends that all homes (or structures intended for human occupancy) be tested for radon whatever their geographic location. The U.S. EPA recommends that action be taken to reduce radon in structures with an average annual level higher than four picocuries per liter (4.0pCi/L).

The California Department of Health services (2010) performed 54 tests within Zip Code 95032, where the site is located. Of the 54 tests, only 3 tests indicated 4pCi/L or higher and the highest result obtained was 5.5pCi/L.

The noted testing is not intended to represent the entire zip code area for determining which buildings have excessive indoor radon levels. In addition to geology, indoor radon levels can be influenced by local variability in factors such as soil permeability and climatic conditions, and by factors such as building design, construction, condition, and usage. Consequently, building specific radon levels can only be determined by indoor radon testing. No warranty as to actual radon levels at specific sites in American Canyon is expressed or implied by the noted test results. Based on the above information, consideration should be given to consulting a radon specialist to provide appropriate tests and recommendations to review this concern.

Additional information about radon gas can be found at the following websites:

California Department of Health Services:

http://www.cdph.ca.gov/healthinfo/environhealth/Documents/Radon/CaliforniaRadonDatabase.pdf

California Department of Public Health, Radon Program:
http://www.cdph.ca.gov/healthinfo/environhealth/Pages/Radon.aspx

California Geological Survey-Mineral Resources Program:

http://www.conservation.ca.gov/cgs/minerals/hazardous_minerals/radon/Pages/Index.aspx

U.S. EPA: http://www.epa.gov/radon/index.html

6. LIMITATIONS

This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of our profession practicing in the same locality, under similar conditions and at the date the services were provided. Our opinions, conclusions, and recommendations are based on a limited number of observations and information collected during this study. It is possible that conditions could vary between or beyond the subsurface exploration points. We make no other representation, guarantee or warranty, express or implied, regarding the services, communication, report, or opinion.

This report may be used only by Mr. Bud Elam and other design team members who are associated with this project during design and construction and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than three (3) years from the date of the report.

Land use, site conditions (both on site and off site) or other factors may change over time and additional work may be needed with the passage of time. Any other party other than Bud Elam Trust who wishes to use this report shall notify us of such intended use. Based on the intended use of the report, we may require that additional work be performed and that an update report be prepared. Non-compliance with any of these requirements by any entity will release us from any liability resulting from the use of this report by any unauthorized party.

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APPENDIX

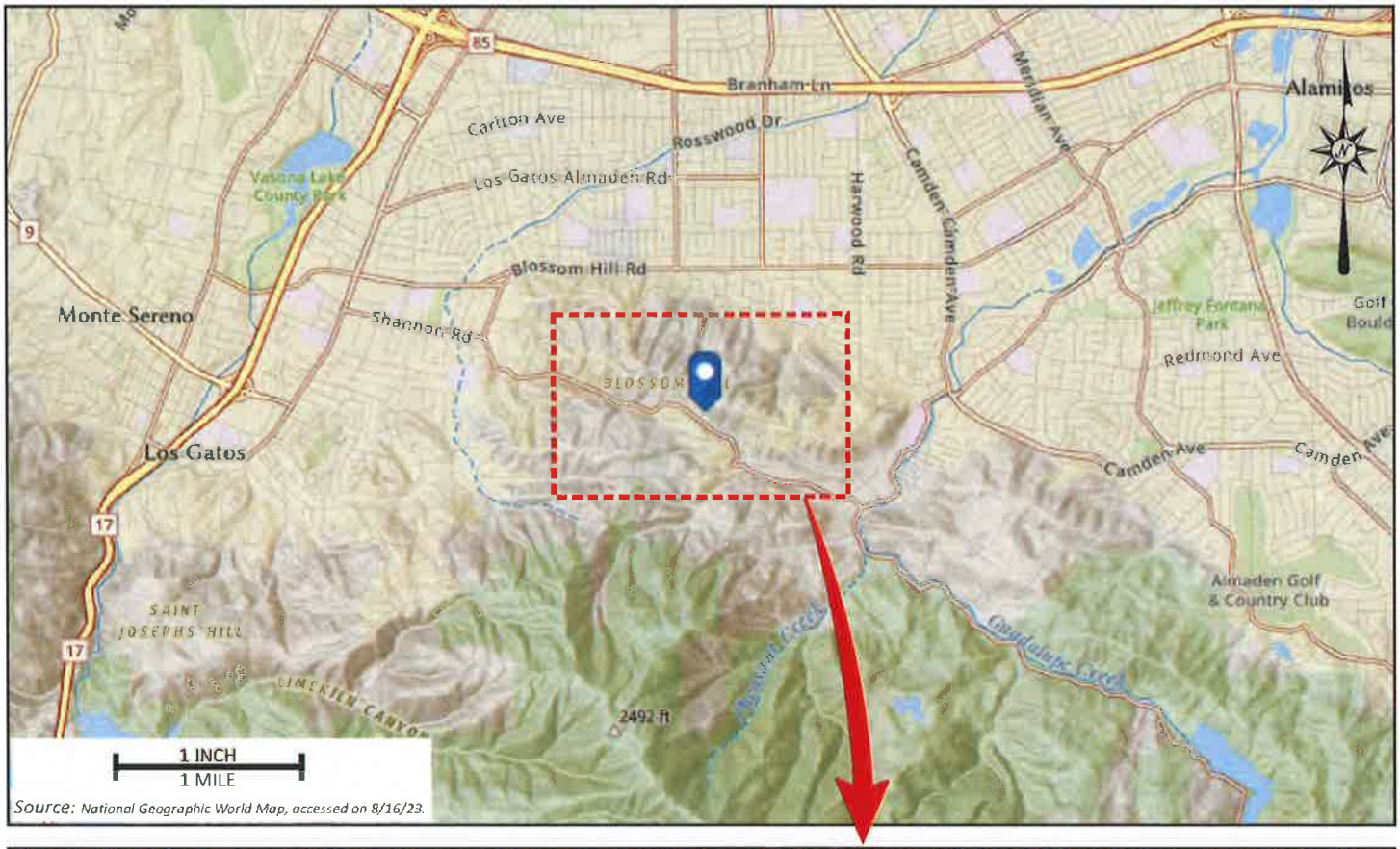
Logs for Borings B–1 through B–13 Cal Engineering & Geology (CE&G, 2020)

Logs for Test Pits TP–1 through TP–11 (Connelly, 2021)

Logs for Borings B–1 through B–19 (Millstone, 2021)

Geotechnical Peer Review Letter (CSA, 2022)

Logs for Borings B–1 through B–5 (BAGG Engineers, 2023)



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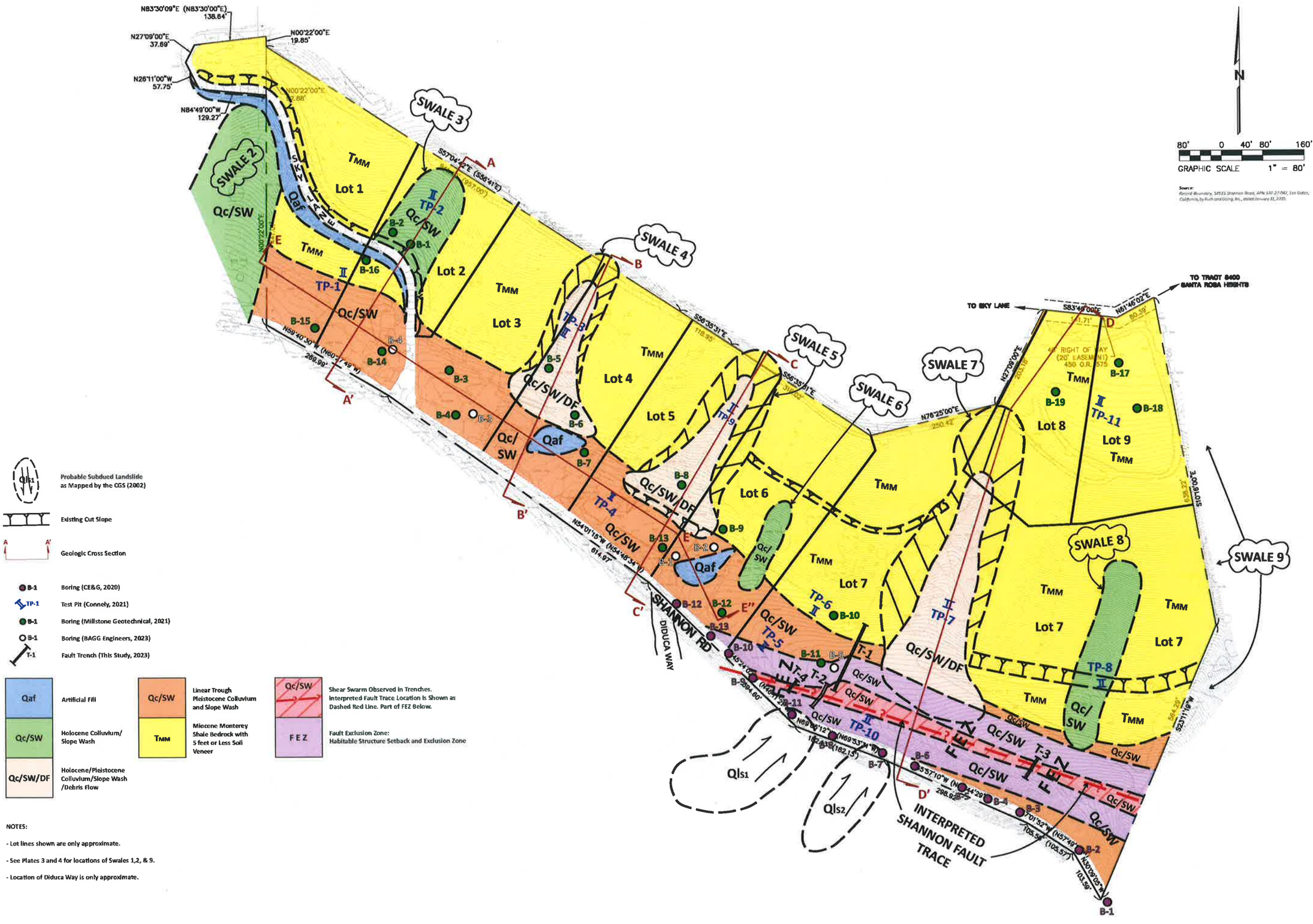
SITE VICINITY MAP

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

1



NOTES:

- Lot lines shown are only approximate.
- See Plates 3 and 4 for locations of Swales 1,2, & 9.
- Location of Diduca Way is only approximate.

August 2023

PLATE 2

SITE PLAN AND GEOLOGIC MAP

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

LEGEND

Swale 1 — **Approximate Swale Limits**

Site Limit

200' 100' 0' 200'

APPROXIMATE SCALE: 1"=200'

Source:
USGS, USDA | SGS National Map 3D Elevation Program (3DEP). July 18, 2023. | USGS The National Map: 3D Elevation Program. Data Refreshed July, 2023.

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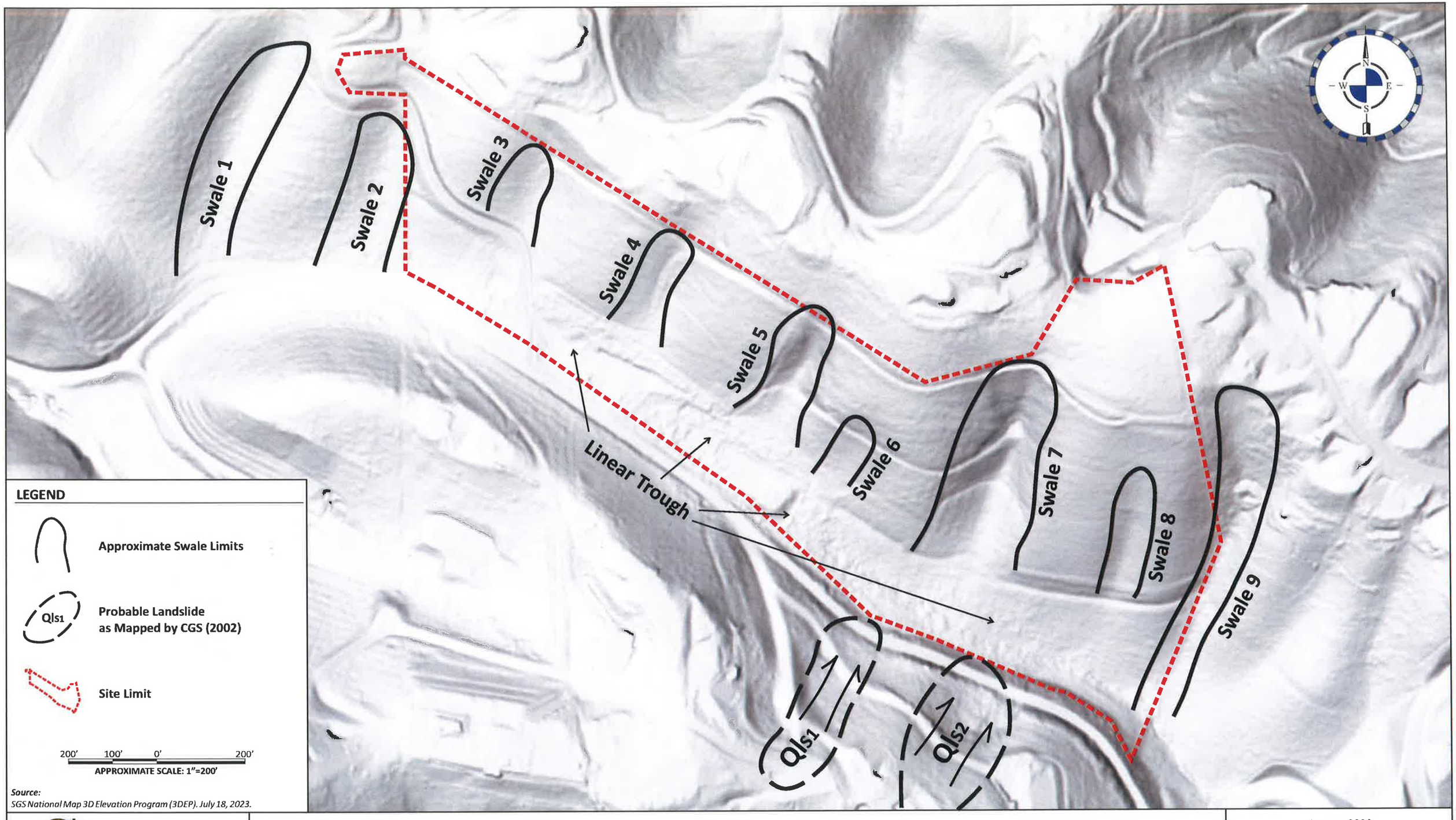
AERIAL SITE PLAN

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

3



LEGEND

Approximate Swale Limits

Qls1 — Probable Landslide as Mapped by CGS (2002)

Site Limit

200′ 100′ 0′ 200′

APPROXIMATE SCALE: 1″=200′

Source:
SGS National Map 3D Elevation Program (3DEP). July 18, 2023.

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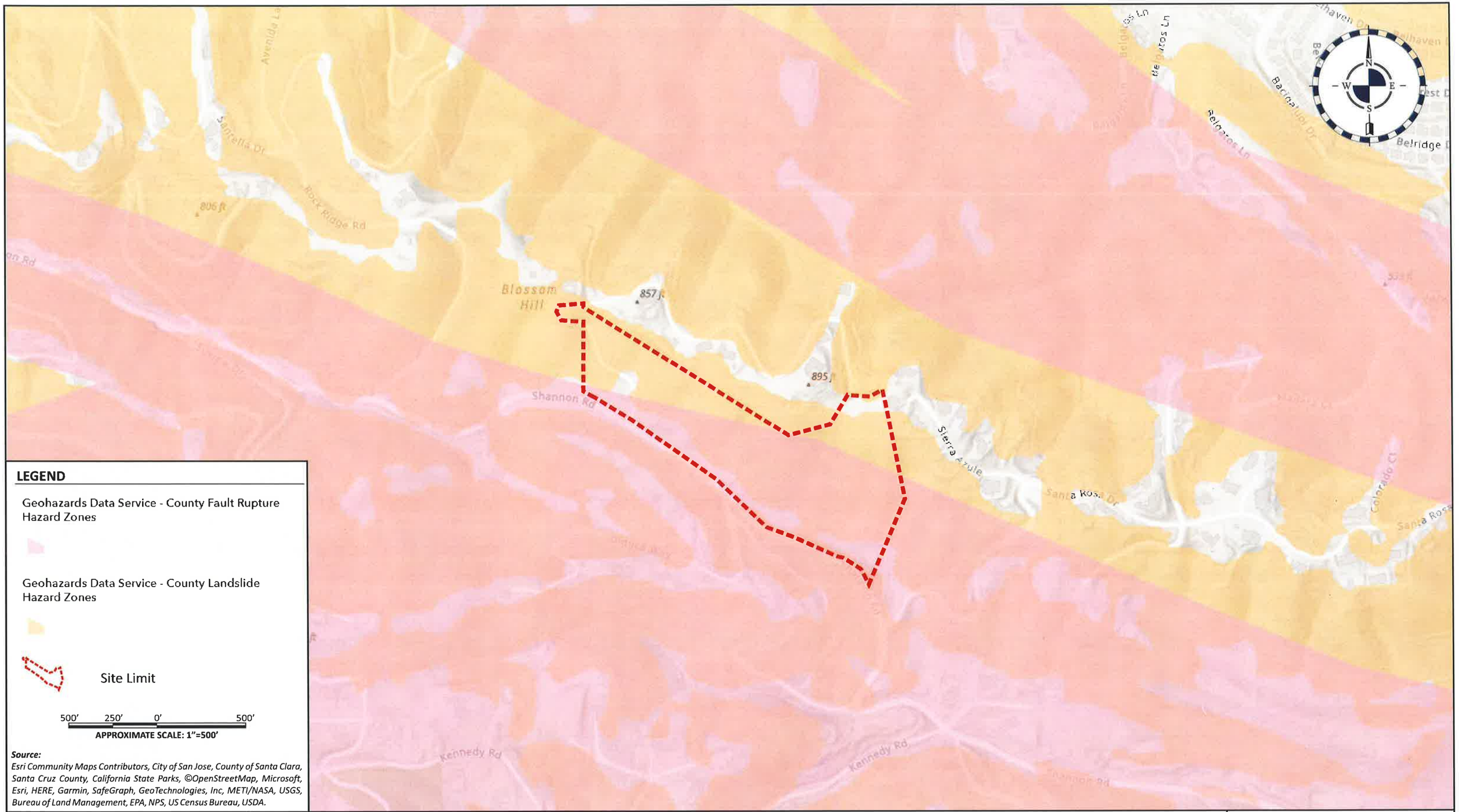
HILLSHADE MAP

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

4



LEGEND

Geohazards Data Service - County Fault Rupture Hazard Zones

Geohazards Data Service - County Landslide Hazard Zones

Site Limit

500′ 250′ 0′ 500′

APPROXIMATE SCALE: 1"=500′

Source:
Esri Community Maps Contributors, City of San Jose, County of Santa Clara, Santa Cruz County, California State Parks, ©OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA.

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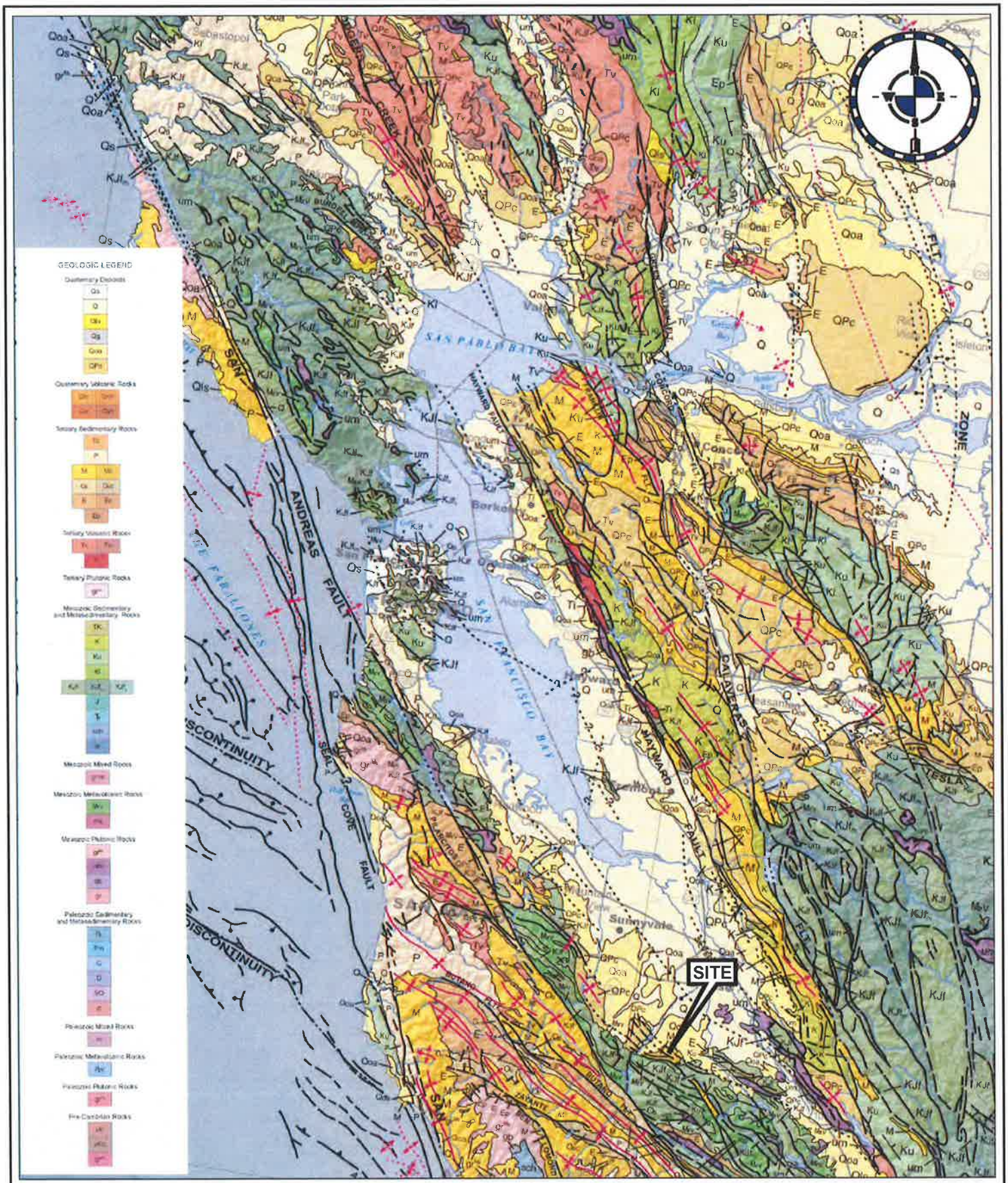
SANTA CLARA COUNTY REGULATORY GEOLOGIC HAZARD ZONES

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

5



Reference: *Geologic Map of California*, California Geological Survey, State of California Department of Conservation, 2010

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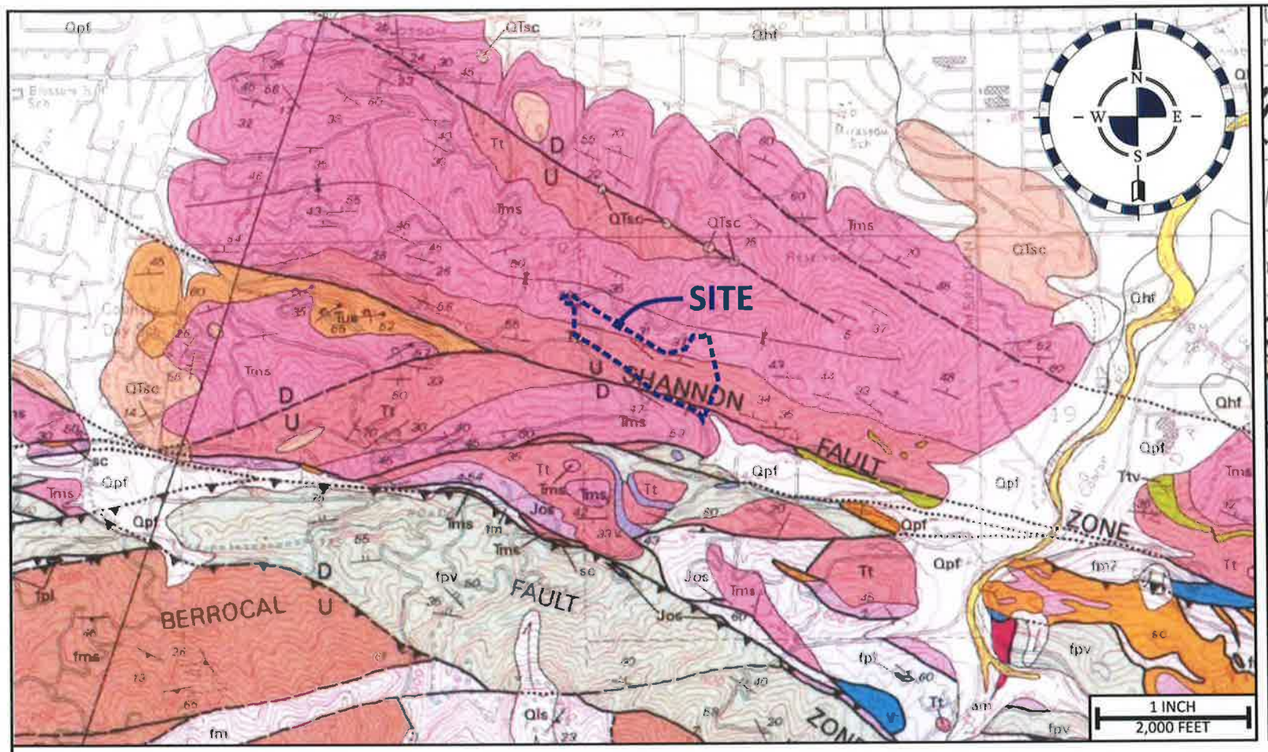
REGIONAL GEOLOGIC MAP

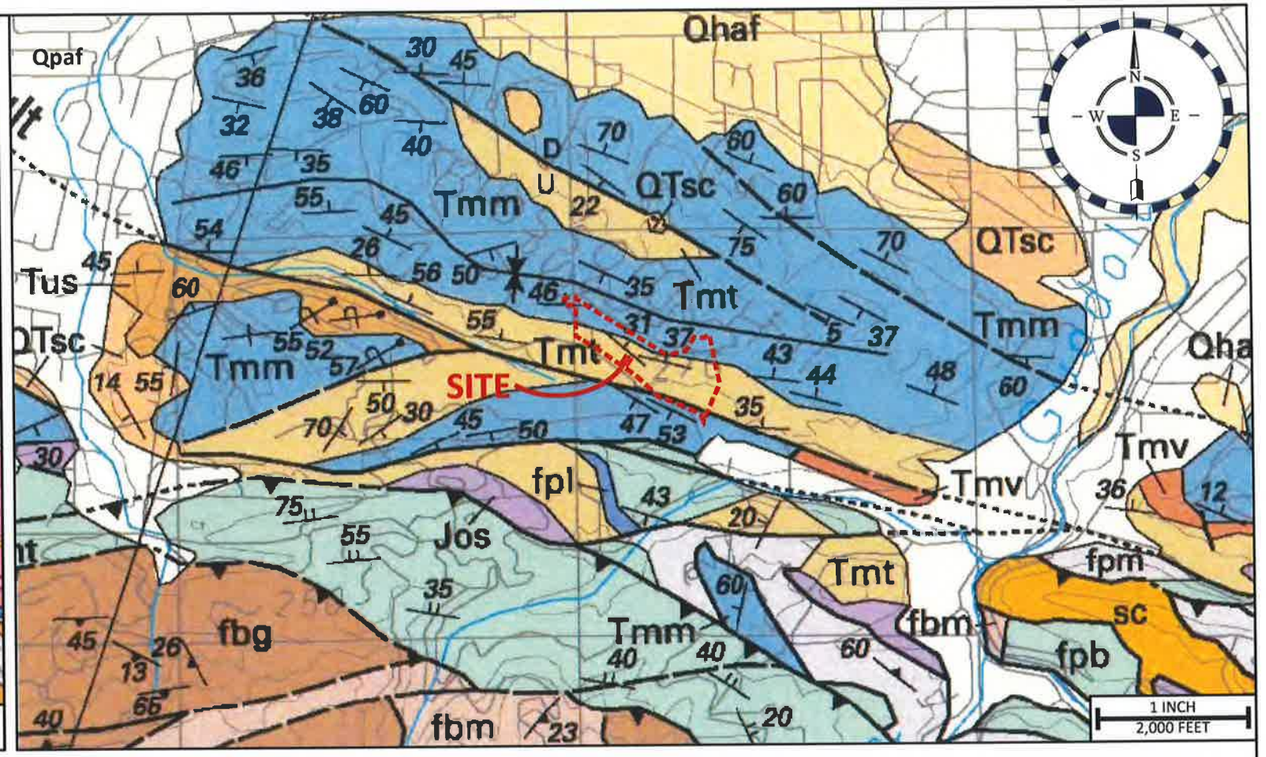
ENGINEERING GEOLOGIC ASSESSMENT AND
SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

6





EXPLANATION

Qhf Alluvial fan deposits (Holocene)

Qpf Alluvial fan deposits (Pleistocene)

QTsc Santa Clara Formation (Pleistocene and Pliocene)

TERTIARY AND OLDER ROCK UNITS
Northeast of San Andreas fault
New Almaden Block

sc Silica-carbonate rock (Miocene?)

Tus Unnamed sandstone (middle Miocene or younger)

Tmv **Monterey Shale (middle and lower Miocene)**

Tt **Temblor Sandstone (middle Miocene to Oligocene?)**—Locally includes:

Tv Volcanic and intrusive rocks (middle Miocene)

ss Serpentinized ultramafic rocks (Jurassic)

Franciscan Complex (Cretaceous and Jurassic)—Consists of

fm Melange of the Central belt (Upper Cretaceous)—Includes:

Basaltic volcanic rock blocks

Permanente terrane (Cretaceous)—Divided into:

fpl Foraminiferal limestone (Upper and Lower Cretaceous)

fpv Volcanic rocks (Lower Cretaceous)

Marin Headlands terrane (Cretaceous and Jurassic)—Divided into:

fms Sandstone (Upper and (or) Lower Cretaceous)

Contact—Dashed where approximate, dotted where concealed, queried where uncertain

U D **Fault**—Dashed where approximate, dotted where concealed, queried where uncertain. U and D denote upthrown and downthrown blocks. Arrows with (without) numbers denote fault dip (or dip direction). Bar and ball locally denote downthrown block. Horizontal arrows denote relative horizontal movement. Double barb denotes vertical fault

Attenuation fault—Fault at low angle to bedding, interpreted as low-angle normal fault; double hachures on down-dropped (upper plate) side. Dashed where approximate, dotted where concealed, queried where uncertain

Thrust fault—Barbs on upper plate. Dashed where approximate, dotted where concealed, queried where uncertain

Principal trace of the San Andreas fault—Dashed where approximate, dotted where concealed

Crack, 10/17/89—Surface crack that occurred during the Loma Prieta earthquake of October 17, 1989. U and D denote upthrown and downthrown blocks. Arrow and number denote dip. Bar and ball locally denote downthrown block

Glauconitic marker

Conglomeratic marker

Glaucophane marker

Conglomeratic marker

Photo lineament

Marker bed

Strike and dip of bedding

Inclined—Ball denotes that facing direction is known from sedimentary structures; no dip means dip unknown

Vertical—Ball denotes that facing direction is known from sedimentary structures

Horizontal

Overturned—Ball denotes that facing direction is known from sedimentary structures

Approximate—Based on photo interpretation or estimated dip in field

In trench—Measured from exposures at geotechnical or construction trench site

Strike and dip of volcanic flow or of dikes and sills—Ball denotes that facing direction of flow is known from sedimentary or volcanic structures

Inclined

Vertical

Shear foliation or cleavage

Inclined

Vertical

Joint

Lineation direction—Showing rake

Source: *Geologic Maps and Structure Sections of the Southwestern Santa Clara Valley and Southern Santa Cruz Mountains, Santa Clara and Santa Cruz Counties, California,* McLaughlin, R.J., Clark, **J.C., Brabb,** E.E., **Helley,** E.J., and Colon, C.J, 2001.

EXPLANATION

Qhaf **Younger alluvial-fan deposits (Holocene)**

Qpaf **Older alluvial-fan deposits (Pleistocene)**

QTsc **Santa Clara Formation (Pleistocene and Pliocene)**

Tertiary section northeast of San Andreas fault

Pre-Pliocene sequence northeast of El Sombroso and Sierra Azul blocks

Tus **Unnamed sandstone (Miocene)**—Lithic arkose and quartzofeldspathic sandstone, locally present overlying Monterey Shale. Unit is recognized only south of Kennedy Road in Los Gatos quadrangle

Tmm **Monterey Shale (middle Miocene)**

Tmt **Temblor Sandstone (middle Miocene to Oligocene)**—Includes:

Tmv **Volcanic and intrusive rocks (middle Miocene)**—Dacitic tuff, breccia, and intrusive rocks in upper part of formation

Permanente terrane (Cretaceous)—Consists of:

fpm **Melange and broken formation (Upper Cretaceous and younger)**—May contain high-grade blueschist and amphibolite blocks. Age of penetrative deformation is considered to be Late Cretaceous and younger

fpl **Limestone (Upper Cretaceous and mid-Cretaceous)**

fpb **Basaltic flows, breccia, and tuff (mid-Cretaceous)**

Bald Mountain-El Sombroso terrane (Cretaceous and Jurassic)—Consists of:

ftm **Melange and broken formation (Upper Cretaceous and younger)**—May contain high-grade blueschist and amphibolite blocks. Age of penetrative deformation is Late Cretaceous and younger

fbg **Lithic graywacke (mid-Cretaceous and Lower Cretaceous)**

sc **Silica carbonate rock (Miocene?)**—Hydrothermally altered ultramafic rocks

Contact—Dashed where approximate, dotted where concealed, queried where uncertain

U D **Fault**—Dashed where approximate, dotted where concealed, queried where uncertain. U, upthrown block; D, downthrown block. Bar and ball on down-thrown block. Arrows show relative motion

Low-angle normal fault—Hachures on upper plate

Thrust fault—Sawteeth on upper plate

Principal trace of the San Andreas fault

Strike and dip of bedding—Ball indicates top of beds known from sedimentary or volcanic structures

Inclined

Vertical

Horizontal

Overturned

Volcanic flow

Shear foliation or cleavage

Inclined

Vertical

Source: *Geologic Map of the Loma Prieta Region, California,* McLaughlin, R.J., Clark, J.C., Brabb, E.E., Helley, E.J., and Wentworth, C.M, 2004

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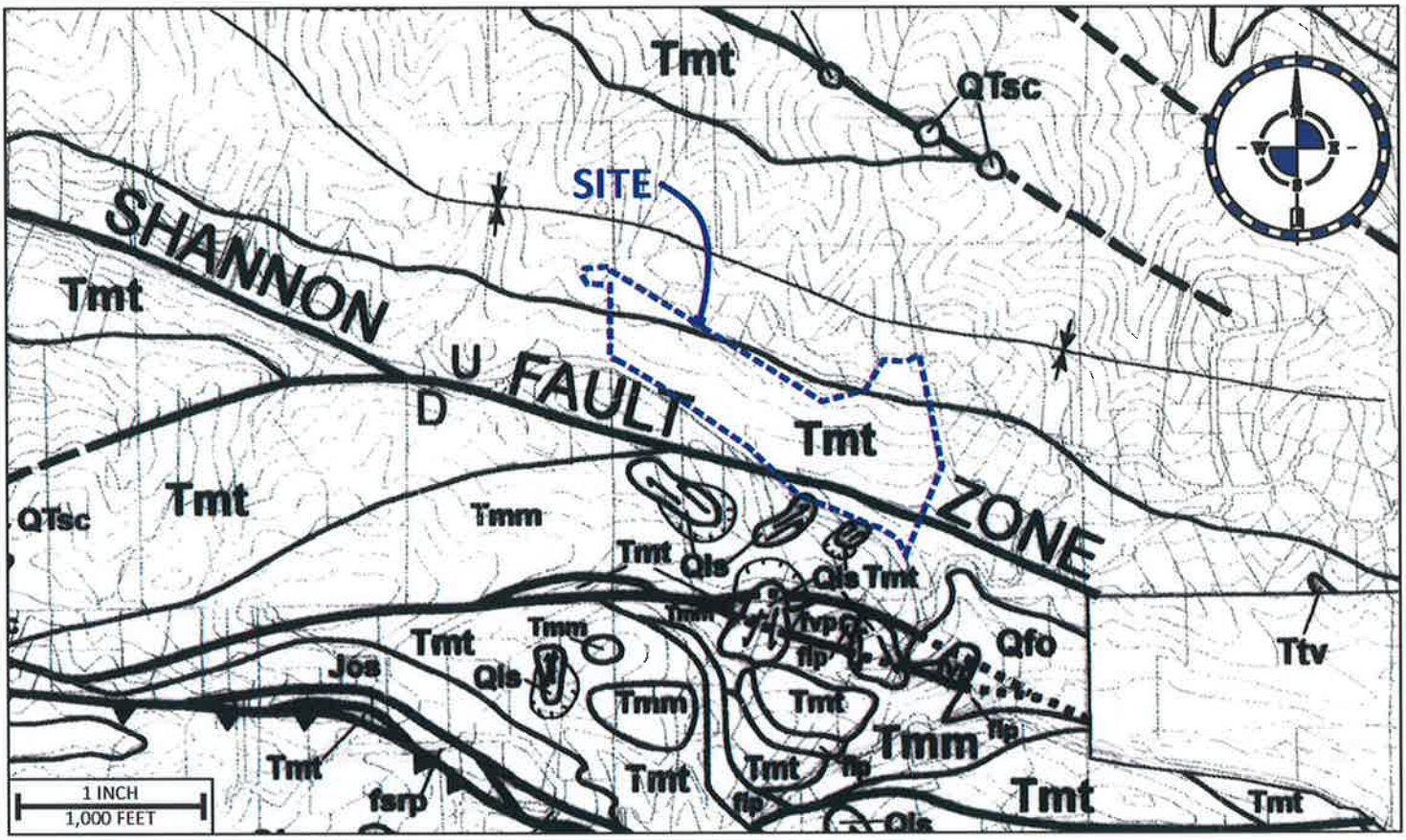
AREA GEOLOGIC MAPS

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

7



EXPLANATION

Qfl — MODERN FLUVIAL DEPOSITS (HOLOCENE) - Poorly- to well-sorted sandy silt, silty sand, and sand or sandy gravel with minor cobbles.

Qls — LANDSLIDE DEPOSITS (HOLOCENE AND PLEISTOCENE) -Unconsolidated rock debris, colluvium, and intact masses of rock, displaced downslope by gravity.

Qal — UNDIFFERENTIATED ALLUVIUM (HOLOCENE AND LATE PLEISTOCENE) - Unconsolidated gravel, sand, and silt deposited by streams.

Qt — YOUNGEST FLUVIAL TERRACE DEPOSITS (HOLOCENE) - Unconsolidated to weakly consolidated, fluvial, bouldery to pebbly gravel, sand, and silt.

Qf — YOUNGEST ALLUVIAL FAN DEPOSITS (HOLOCENE) - Poorly sorted, dense, sandy or gravelly clay.

Qto — OLDER FLUVIAL TERRACE DEPOSITS (PLEISTOCENE) - Unconsolidated to weakly consolidated, fluvial, bouldery to pebbly gravel, sand and silt, dissected and elevated above present base level.

Qfo — OLDER ALLUVIAL FAN DEPOSITS (PLEISTOCENE) - Dense, gravelly and clayey sand or clayey gravel.

QTsc — SANTA CLARA FORMATION (PLIOCENE AND PLEISTOCENE) - Unsorted to poorly sorted coarse fluvial gravel and conglomerate.

Contact, dashed where approximate, dotted where concealed

U / D — Fault, dashed where approximate, dotted where concealed, queried where uncertain. U and D denote up and down-thrown blocks.

Thrust fault, barbs on upper plate

Synclinal axis

Landslide headscarp

Qls — Landslide mass, arrows indicate direction of movement.

Tmm — MONTEREY SHALE (MIDDLE MIOCENE) - Mudstone, porcelanite, and cherty porcelanite.

Tmt — TEMBLOR SANDSTONE (OLIGOCENE TO MIDDLE MIOCENE) - Massive to thick bedded sandstone, with minor mudstone, conglomerate, and dacitic tuff.

Tmv — Dacitic tuff, tuff breccia, and intrusive rocks.

COAST RANGE OPHIOLITE (UPPER TO MIDDLE(?) JURASSIC)

Jos — Serpentinite. Undifferentiated partially to highly serpentinized ultramafic rocks.

sc — Siliceous, mercury bearing carbonates.

CENTRAL BELT OF THE FRANCISCAN COMPLEX (LOWER EOCENE (?) TO UPPER CRETACEOUS)

PERMANENTE TERRANE (UPPER AND LOWER CRETACEOUS)

flp — Limestone.

fcp — Chert.

fvp — Basalt.

fsrp — Melange.

BALD MOUNTAIN-EL SOMBROSO TERRANE (LOWER JURASSIC TO UPPER CRETACEOUS)

fsm — Metasandstone

fcm — Radiolarian chert.

fvm — Basalt.

fsrm — Melange.

Source:
Plate #1, Geologic Map for the Town of Los Gatos General Plan Update, by Nolan Associates, dated January 17, 1999.

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TOWN OF LOS GATOS GEOLOGIC MAP

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE
8

PHOTO 1 Swale 1

PHOTO 2 Swale 2

PHOTO 3 Swale 3

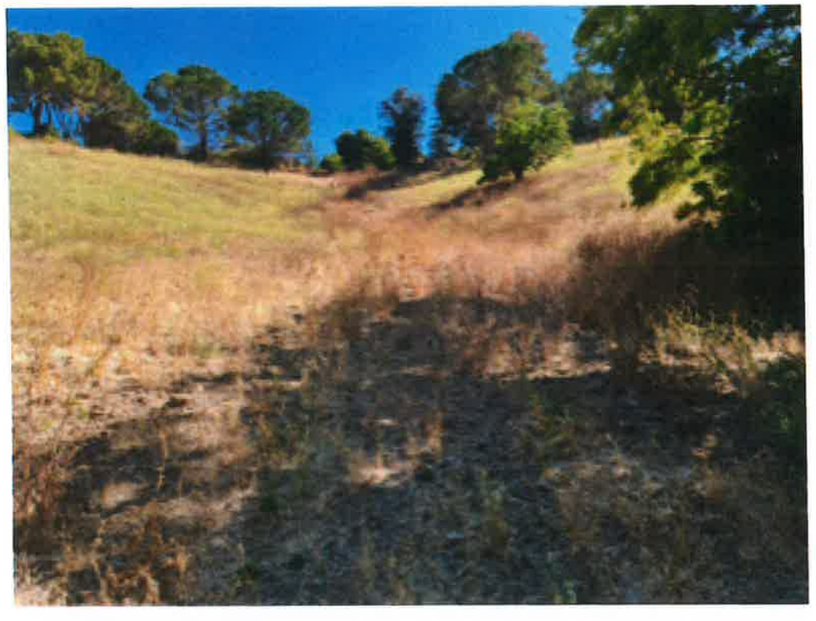

PHOTO 4 Swale 4

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SITE PHOTOS 1 THROUGH 4

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

9

PHOTO 5 Swale 5

PHOTO 6 Swale 7

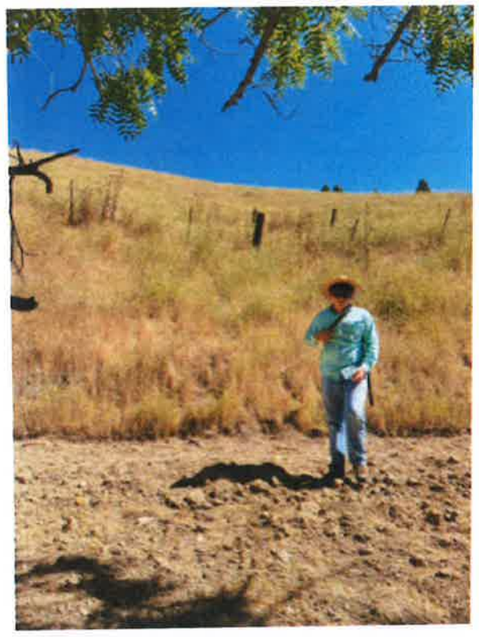

PHOTO 7 Swale 8

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SITE PHOTOS 5 THROUGH 7

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

10

PHOTO 8 Swale 9

PHOTO 9

Monterey shale outcrop
along hairpin at Sky Lane

Bedrock outcrops
along Sky Lane

PHOTO 10

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SITE PHOTOS 8 THROUGH 10

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

11

PHOTO 11

PHOTO 12

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SITE PHOTOS 11 AND 12

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

12

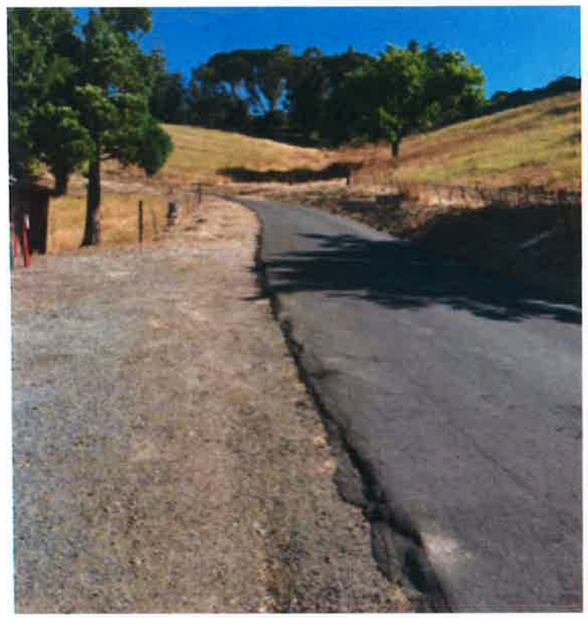

PHOTO 13 Sky Lane

PHOTO 14

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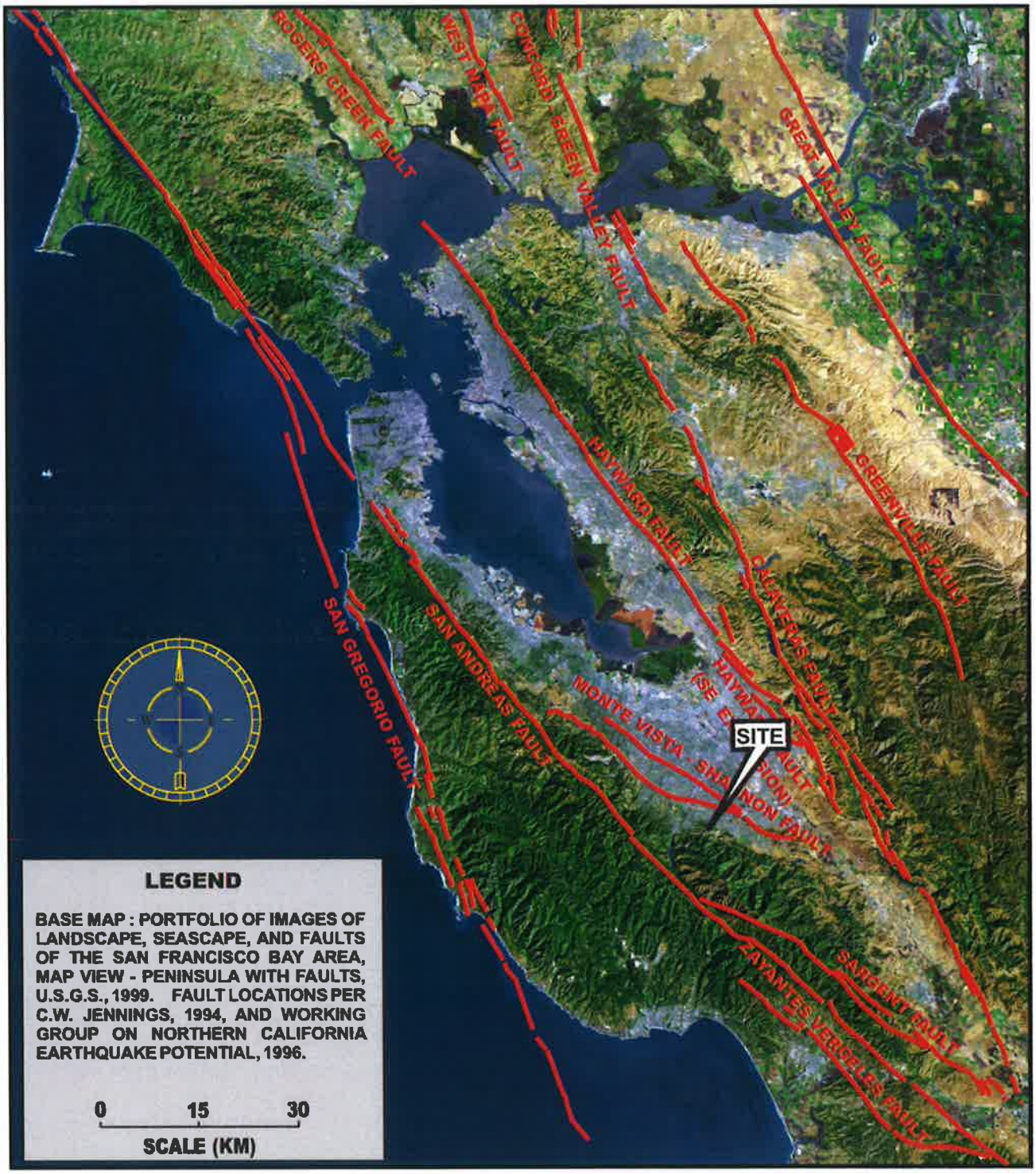
SITE PHOTOS 13 AND 14

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

13



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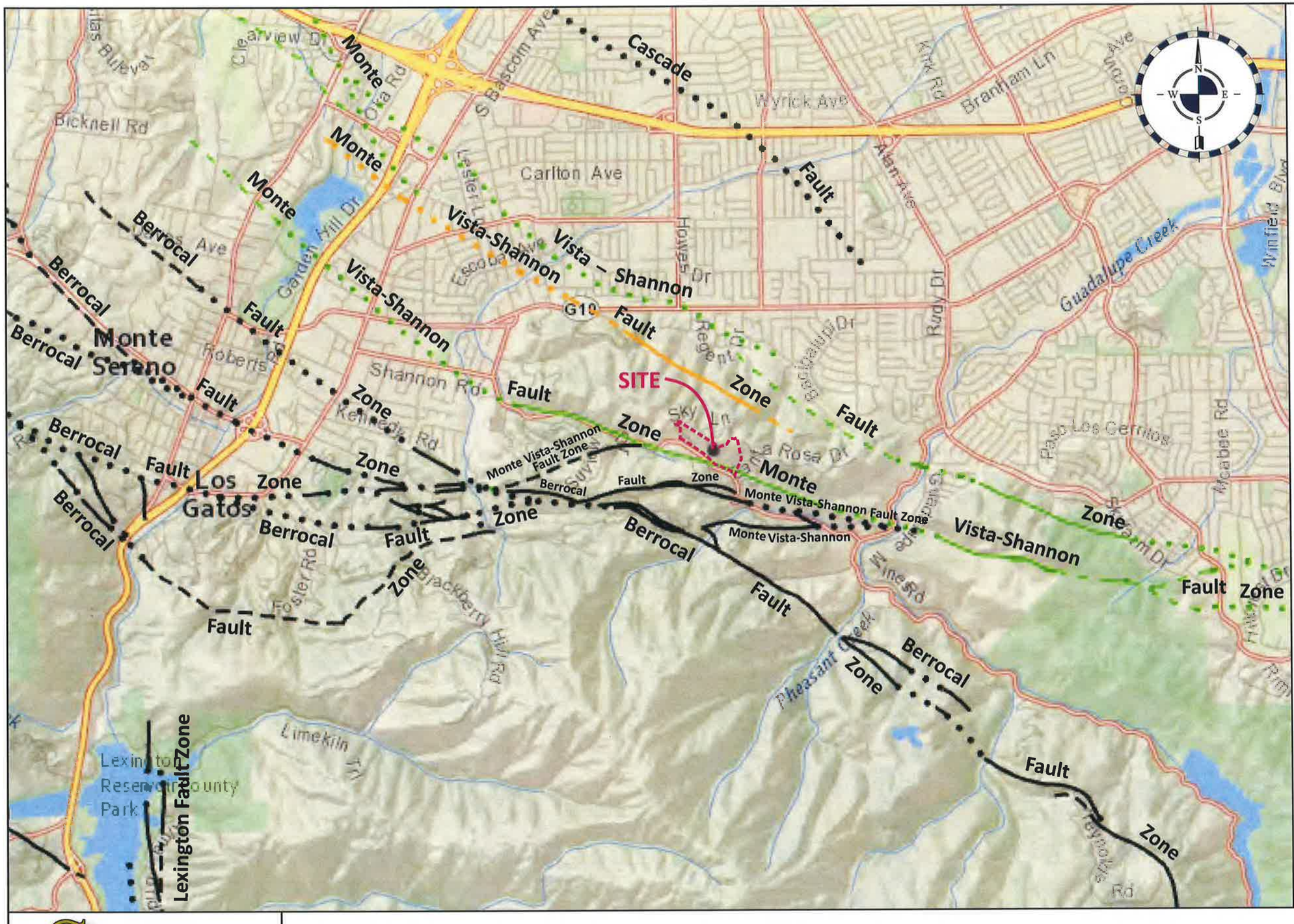
REGIONAL FAULT MAP

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

14



Qfaults

National Database

- Historic (< 150 years), well constrained location
- Historic (< 150 years), moderately constrained location
- Historic (< 150 years), inferred location
- Latest Quaternary (<15,000 years), well constrained location
- Latest Quaternary (<15,000 years), moderately constrained location
- Latest Quaternary (<15,000 years), inferred location
- Late Quaternary (< 130,000 years), well constrained location
- Late Quaternary (< 130,000 years), moderately constrained location
- Late Quaternary (< 130,000 years), inferred location
- Middle and late Quaternary (< 750,000 years), well constrained location
- Middle and late Quaternary (< 750,000 years), moderately constrained location
- Middle and late Quaternary (< 750,000 years), inferred location
- Undifferentiated Quaternary (< 1.6 million years), well constrained location
- Undifferentiated Quaternary (< 1.6 million years), moderately constrained location
- Undifferentiated Quaternary (< 1.6 million years), inferred location
- Unspecified age, well constrained location
- Unspecified age, moderately constrained location
- Unspecified age, inferred location
- Class B (various age), well constrained location
- Class B (various age), moderately constrained location
- Class B (various age), inferred location

3000′ 1500′ 0′ 3000′

APPROXIMATE SCALE: 1″=3,000′

Source:
USGS Geologic Hazards Science Center Golden, CO; and National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

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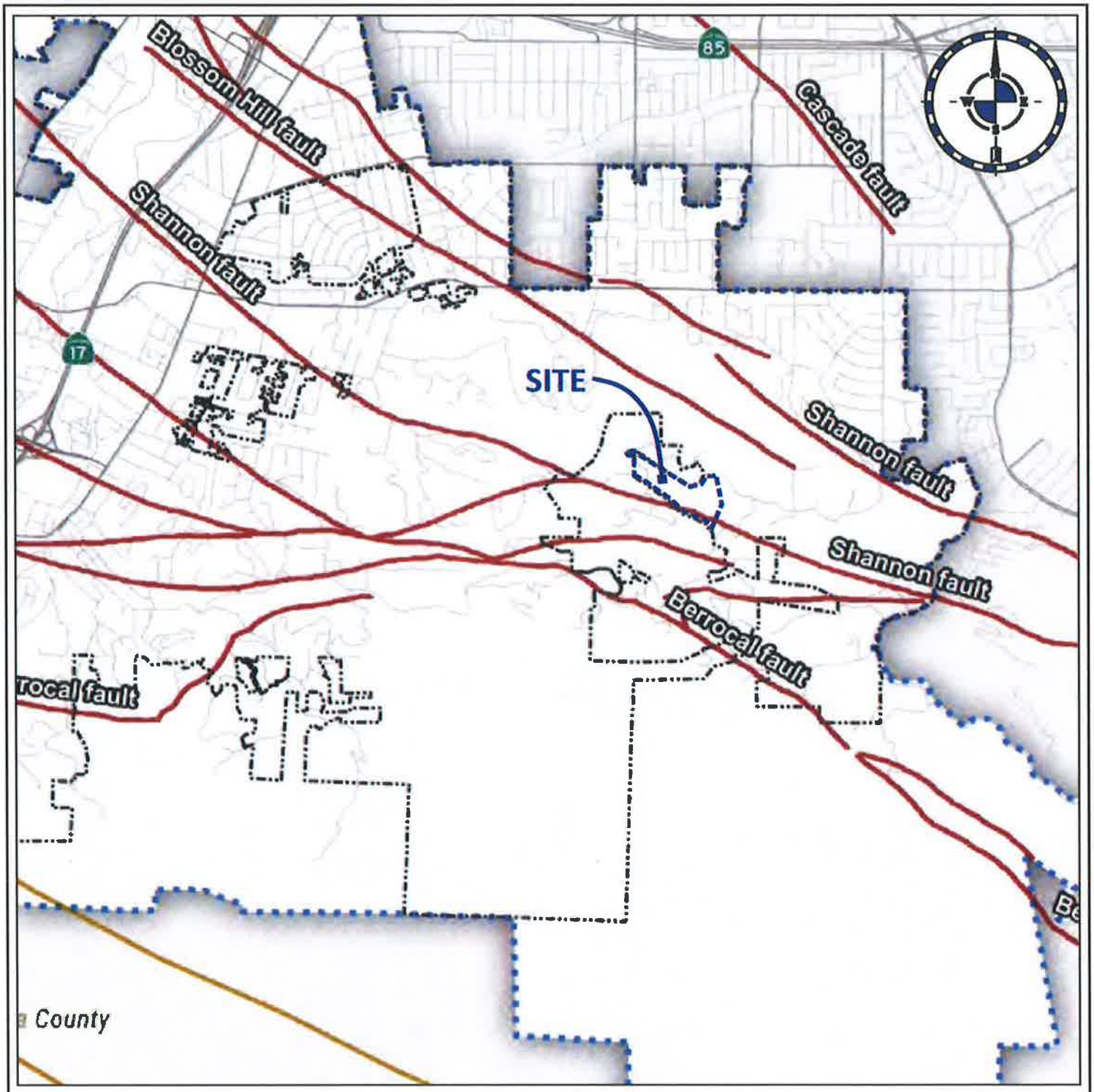
AREA FAULT MAP

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

15



Source:
Figure 9-2, Faults in Town Limits, Los Gatos 2040 General Plan adopted June 2022.

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FAULTS IN TOWN OF LOS GATOS

ENGINEERING GEOLOGIC ASSESSMENT AND
SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

16

EXPLANATION

Town of Los Gatos Sphere of Influence

Fault trace, dashed where uncertain, dotted where concealed.

Lineation indicative of faulting. Interpreted from aerial photograph analysis[2] (v=vegetation; t=tonal; ld=Linear depression; lf=linear front; s=saddle)

Concentration of coseismic ground deformation[3]

REFERENCES

1. McLaughlin, R.J., et. al, 1991, Geologic Map of the Los Gatos 7.5' Quadrangle, Santa Clara and Santa Cruz Counties: U.S. Geological Survey Open File Report 91-593

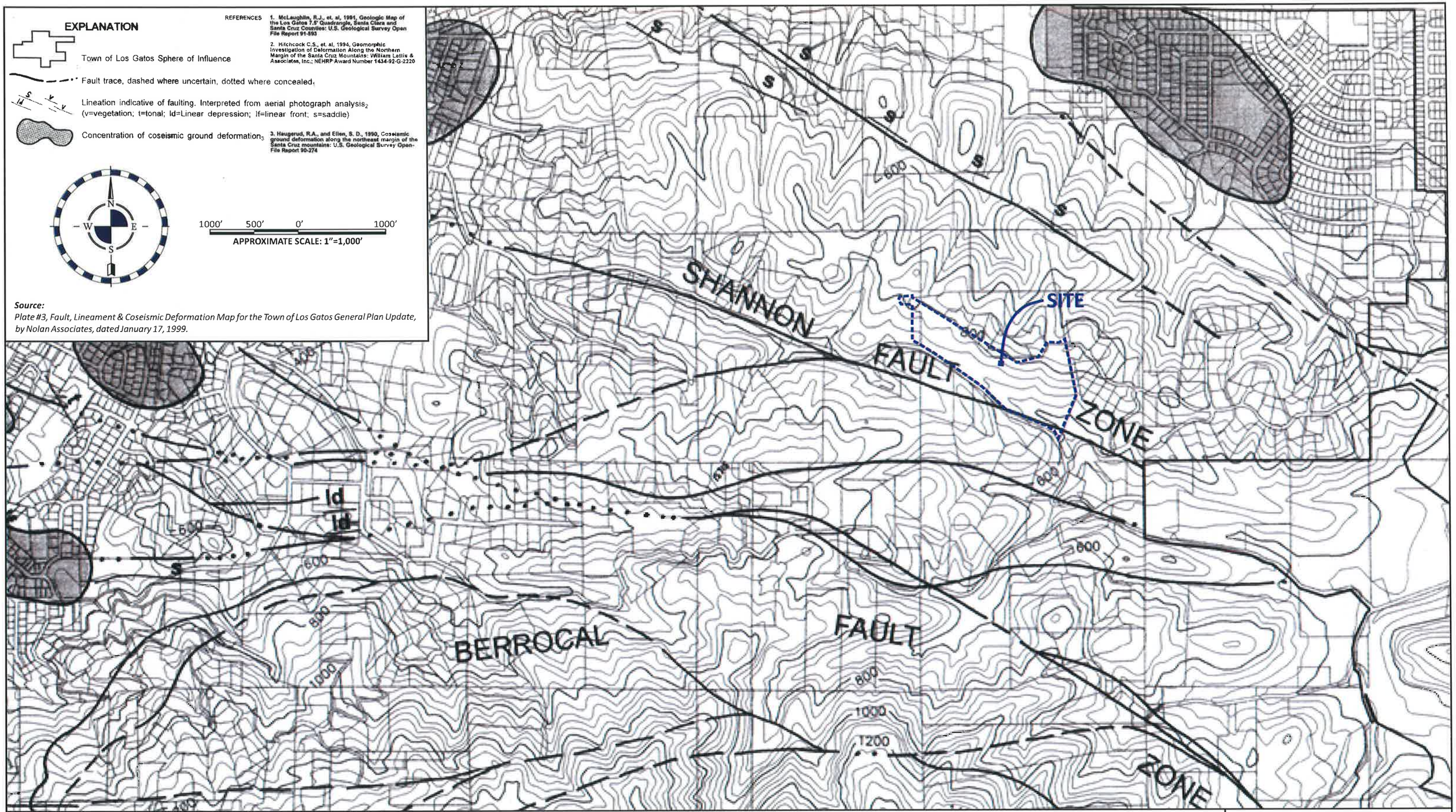
2. Hitchcock C.S., et. al, 1994, Geomorphic Investigation of Deformation Along the Northern Margin of the Santa Cruz Mountains: William Lettis & Associates, Inc.; NEHRP Award Number 1434-92-G-2220

3. Haugerud, R.A., and Ellen, S. D., 1990, Coseismic ground deformation along the northeast margin of the Santa Cruz mountains: U.S. Geological Survey Open-File Report 90-274

1000′ 500′ 0′ 1000′

APPROXIMATE SCALE: 1″=1,000′

Source:
Plate #3, Fault, Lineament & Coseismic Deformation Map for the Town of Los Gatos General Plan Update, by Nolan Associates, dated January 17, 1999.



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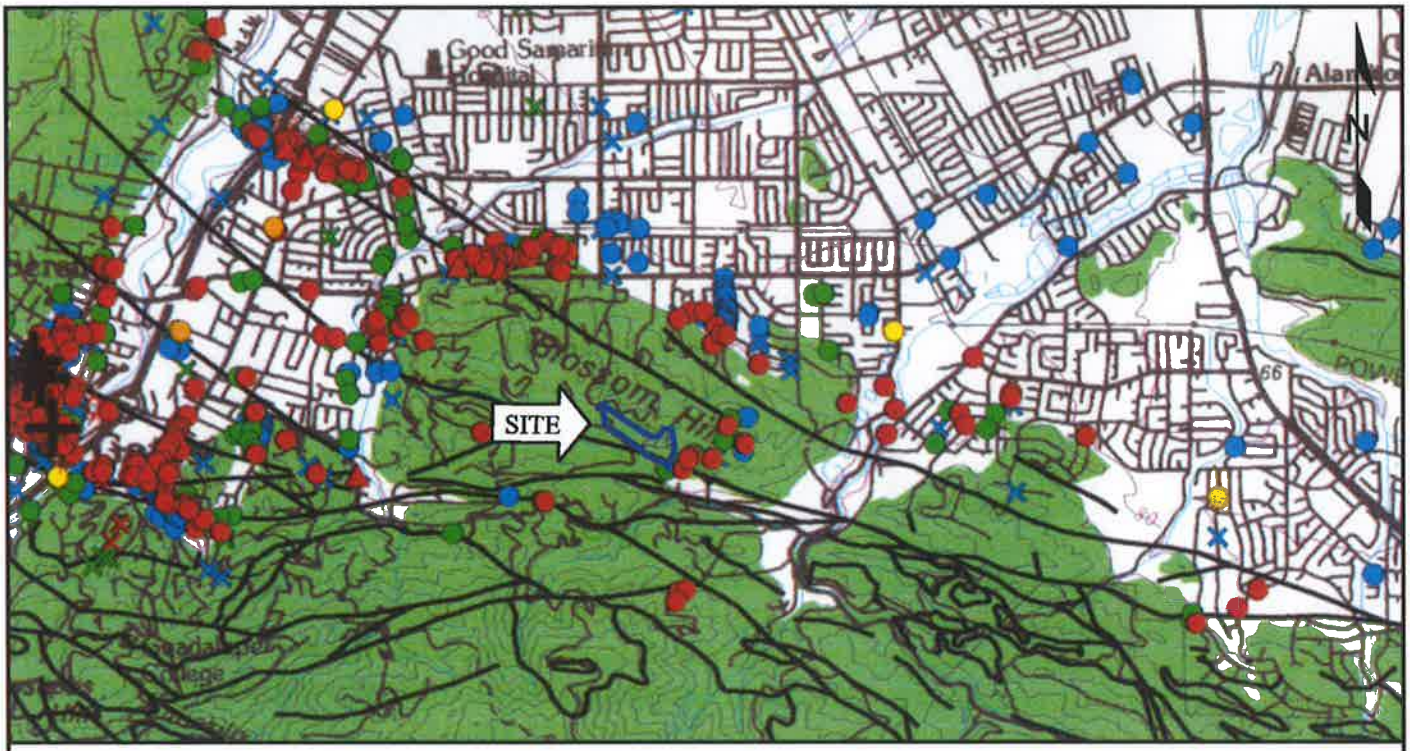
FAULTS, LINEAMENTS AND COSEISMIC DEFORMATION MAP

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE
17



Categories of Damage

COSEISMIC PAVEMENT BREAKS

IN ASPHALT

- Linear zone of complex rupture; denotes area of severe damage
- Fresh break or buckle suggestive of contractional deformation
- Fresh break with unspecified sense of deformation

IN CONCRETE

- Fresh contractional break in channel lining of Los Gatos Creek
- Fresh break or buckle suggestive of contractional deformation
- Apparently fresh break with unspecified sense of deformation
- Break with unspecified sense of deformation

IN BOTH ASPHALT AND CONCRETE

EXTENSIONAL RUPTURE IN BOTH PAVEMENT AND SOIL

COSEISMIC PIPE BREAKS

- Underground water line
- Underground natural-gas distribution line
- Above-ground natural-gas distribution line
- More than one type of pipe

OTHER BREAKS

- In both pipe and pavement
- Pavement break that pre-dates the earthquake
- Combination of pre-earthquake and coseismic break in pavement
- Contractional deformation that post-dates the earthquake

OTHER SYMBOLS

- Fault

Source:

Figure 6, Map of 1989 Coseismic Deformation based on Schmidt and others (1995), by Steven F. Connelly, dated February, 2022.

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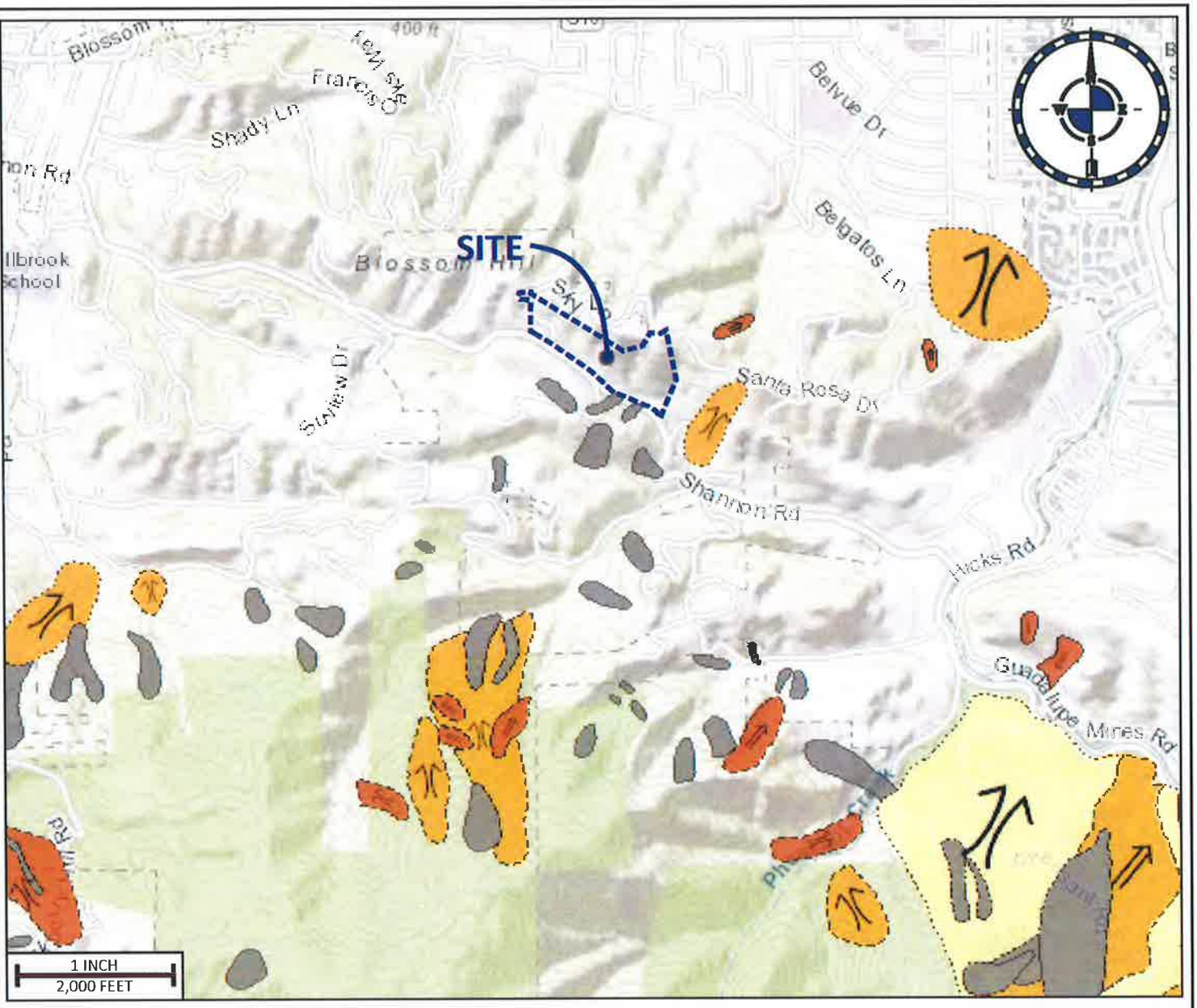
COSEISMIC DEFORMATION MAP

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE

18



EXPLANATION

- Active/Historic
- Dormant Young
- Dormant Mature
- Dormant Old/Relict
- Dormant Age Not Specified

- Definite
- Probable
- ? Questionable

- Debris Slide, Soil Slide, or Soil Topple
- Rock Slide

CGS Mapped, Needs Review

Applies to CGS Mapped, Needs Review Single Feature, Deposit, and Source Features

Features with an interpretation confidence of questionable are marked with a "?" at high zoom levels.

- Landslide Source or Scarp
- Landslide Deposit
- Linear Landslide
- Small Landslide

Source:

Landslide Inventory (Beta); City of San Jose, County of Santa Clara, County of Santa Cruz, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA | California Geological Survey, USGS, Cooper-Clark Associates | California Geological Survey.

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LANDSLIDE INVENTORY MAP

ENGINEERING GEOLOGIC ASSESSMENT AND
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14915 SHANNON ROAD
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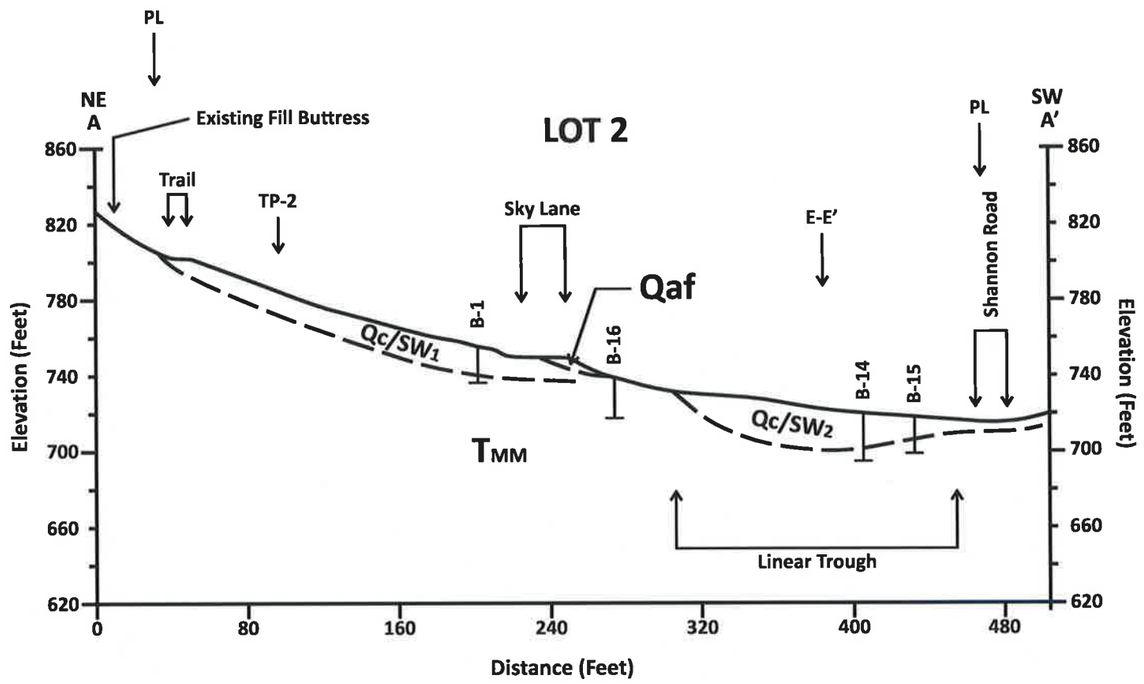
August 2023

PLATE

19



Qaf	Artificial Fill	PL	Property Line
Qc/SW1	Holocene Colluvium / Slope Wash	B-1	Borings by Millstone (2021) Unless Noted Otherwise
Qc/SW/DF	Pleistocene-Holocene Colluvium, Slope Wash, & Debris Flows	TP-1	Test Pit by Connelly (2021)
Qc/SW2	Pleistocene Colluvium & Slope Wash		
TMM	Miocene Monterey Shale Bedrock (Siltstone & Sandstone)		

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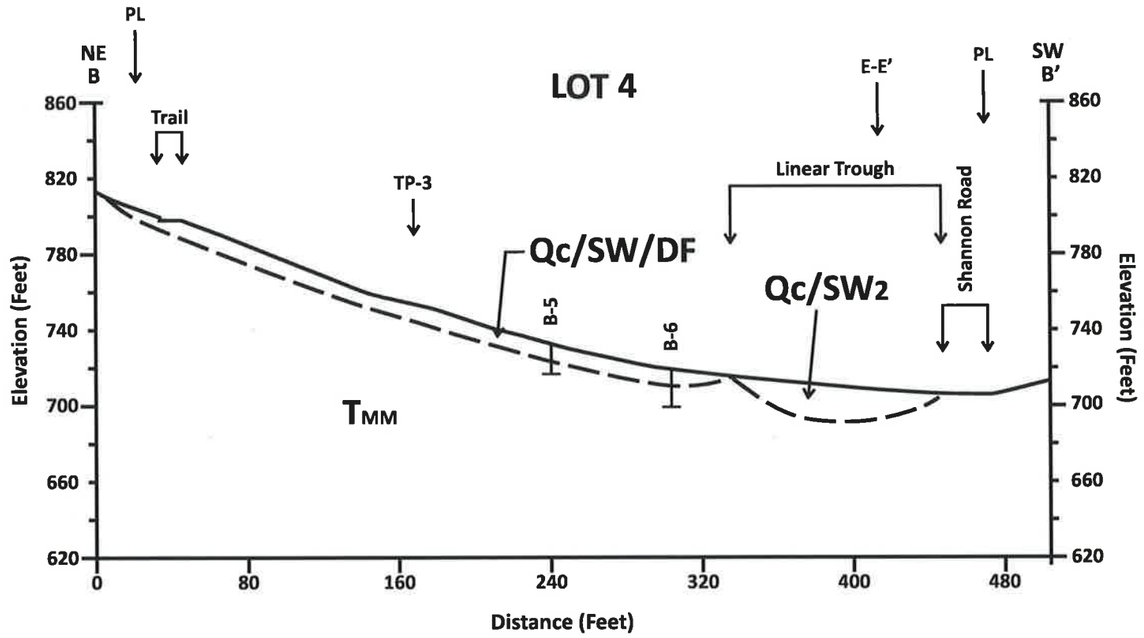
CROSS SECTION A-A'

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE
20



Qaf	Artificial Fill	PL	Property Line
Qc/SW1	Holocene Colluvium / Slope Wash	B-1	Borings by Millstone (2021) Unless Noted Otherwise
Qc/SW/DF	Pleistocene-Holocene Colluvium, Slope Wash, & Debris Flows	TP-1	Test Pit by Connelly (2021)
Qc/SW2	Pleistocene Colluvium & Slope Wash		
TMM	Miocene Monterey Shale Bedrock (Siltstone & Sandstone)		

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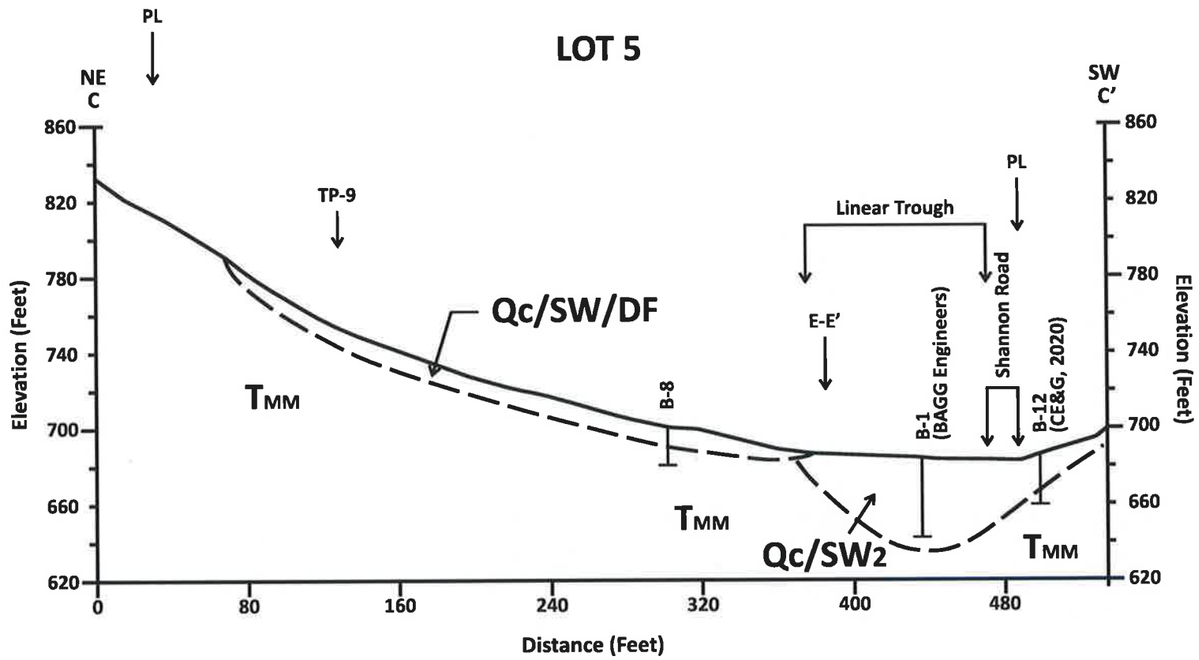
CROSS SECTION B-B'

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE
21



Qc/SW/DF	Pleistocene-Holocene Colluvium, Slope Wash, & Debris Flows
Qc/SW2	Pleistocene Colluvium & Slope Wash
TMM	Miocene Monterey Shale Bedrock (Siltstone & Sandstone)

PL	Property Line
B-1	Borings by Millstone (2021) Unless Noted Otherwise
TP-1	Test Pit by Connelly (2021)
CE&G	Cal Engineering & Geology (2020)

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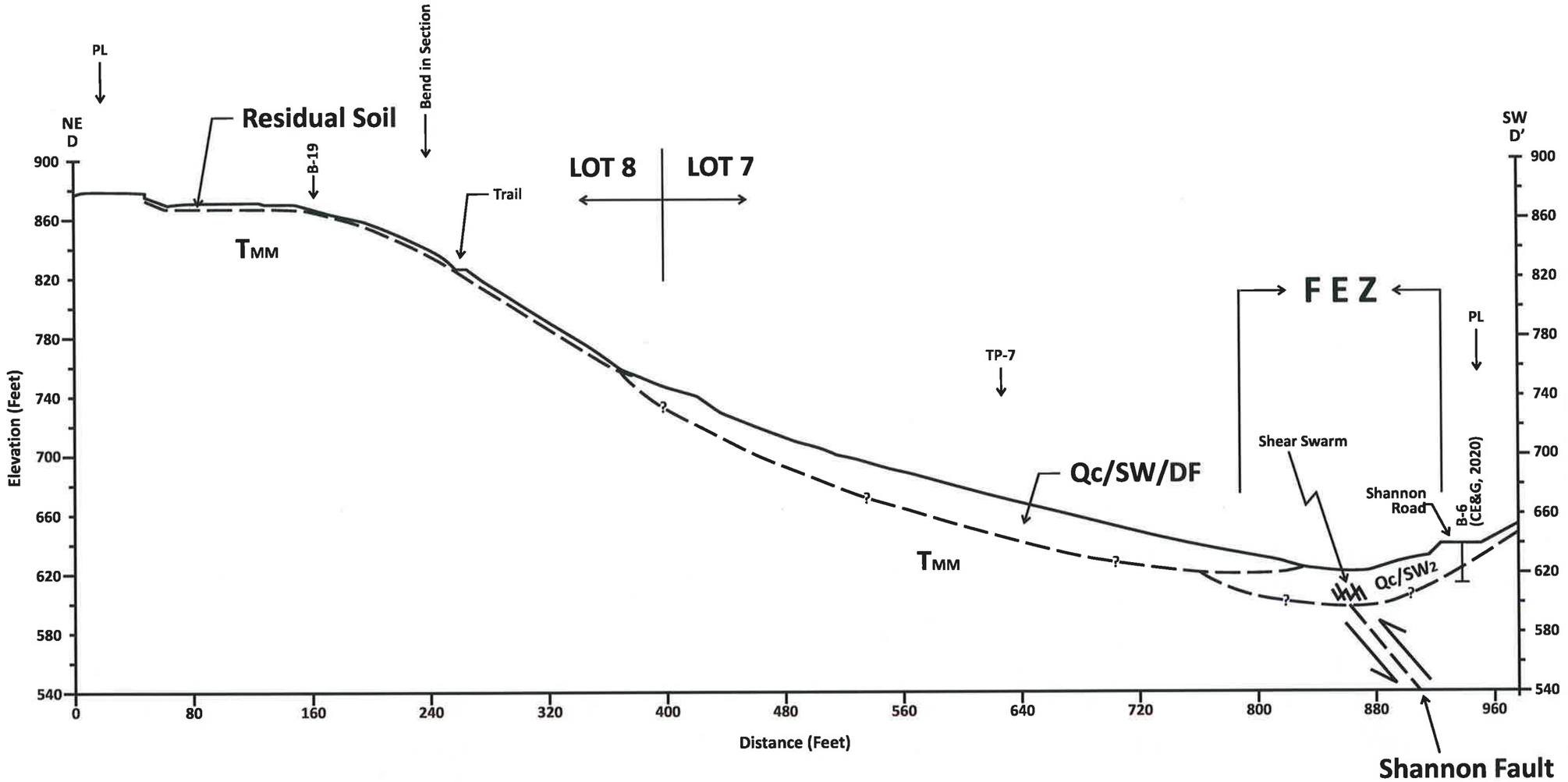
CROSS SECTION C-C'

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE
22



Qc/SW/DF	Pleistocene to Holocene Colluvium, Slope Wash, & Debris Flows	PL	Property Line
Qc/SW2	Pleistocene Colluvium & Slope Wash	B-19	Borings by Millstone (2021) Unless Noted Otherwise
TMM	Miocene Monterey Shale	TP-7	Test Pit by Connelly (2021)
		FEZ	Fault Exclusion Zone

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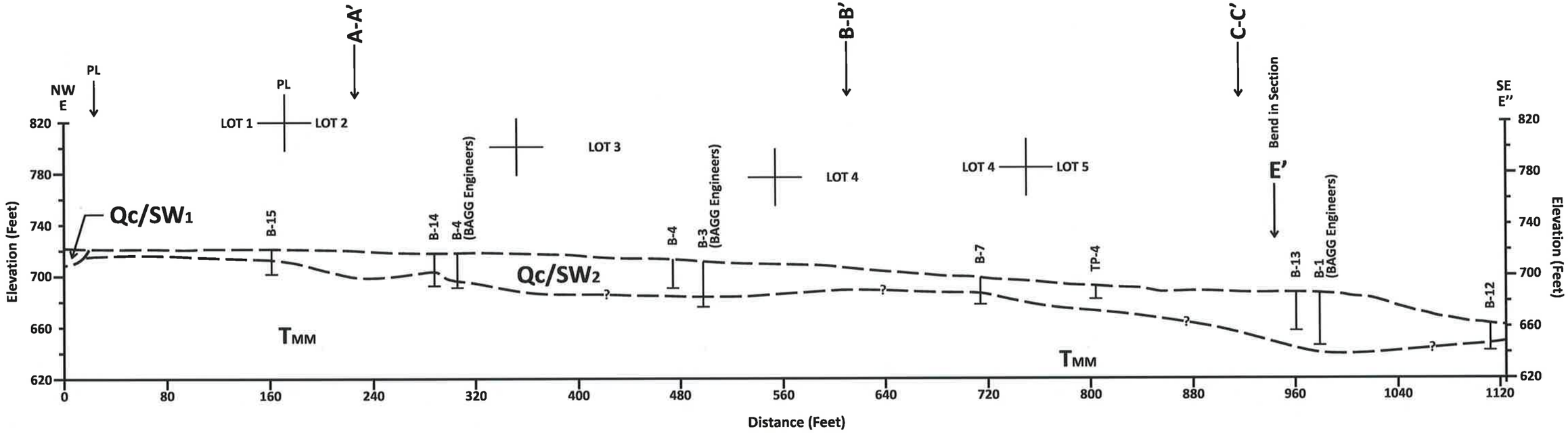
CROSS SECTION D-D'

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE
23



Qc/SW_1	Holocene Colluvium & Slope Wash
Qc/SW_2	Pleistocene Colluvium & Slope Wash
T_{MM}	Miocene Monterey Shale Bedrock (Diatomaceous Siltstone & Sandstone)
A-A'	Cross Section A-A'
PL	Property Line

NOTES: All borings by Millstone Geotechnical (2021) unless otherwise noted.
All test-pits by Connelly (2021)
CE&G Borings (2020)
BAGG Engineers Borings (2023)

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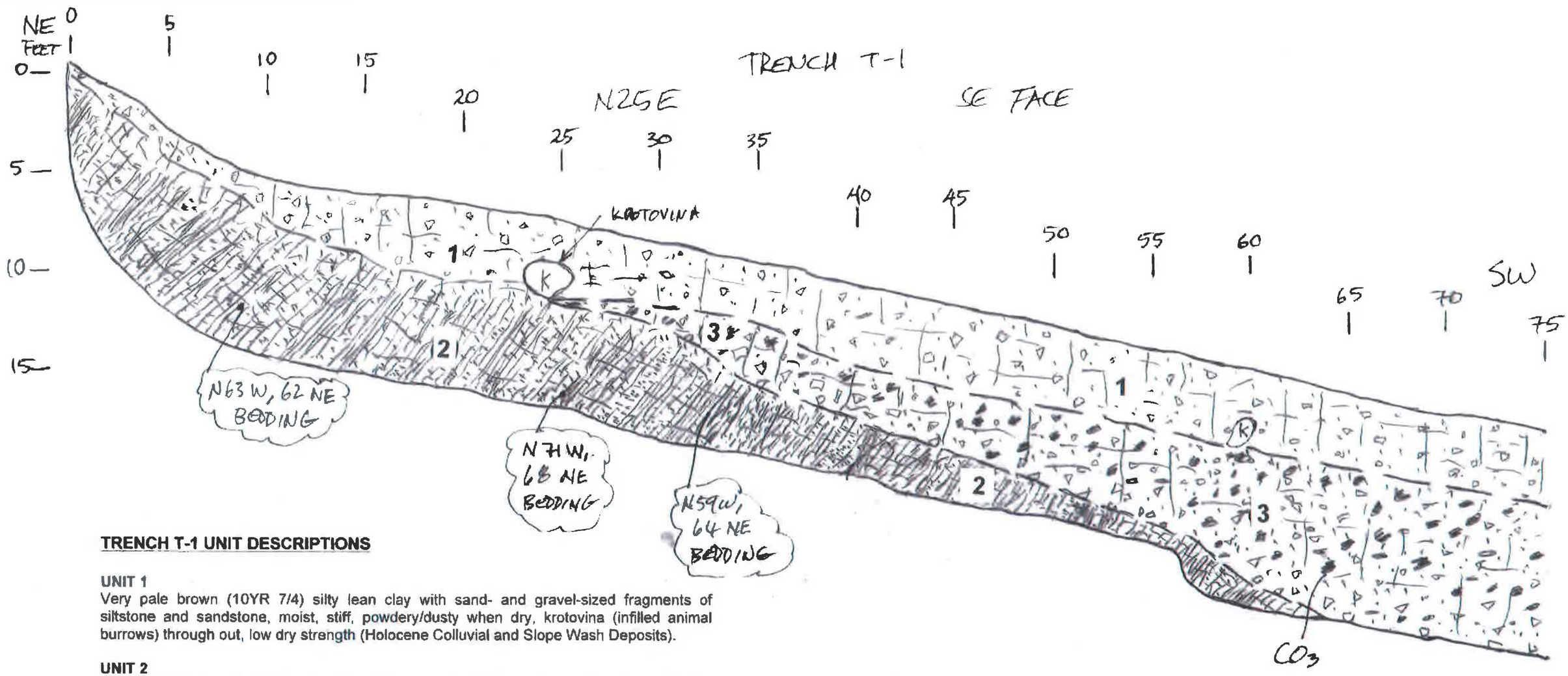
CROSS SECTION E-E'-E"

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE
24



TRENCH T-1 UNIT DESCRIPTIONS

UNIT 1
Very pale brown (10YR 7/4) silty lean clay with sand- and gravel-sized fragments of siltstone and sandstone, moist, stiff, powdery/dusty when dry, krotovina (infilled animal burrows) through out, low dry strength (Holocene Colluvial and Slope Wash Deposits).

UNIT 2
Brownish yellow (10YR 6/8) to white/light gray (10YR 7/1 – 8/1) sandy siltstone that is interbedded with fine-grained sandstone, noticeably light density, thinly bedded, laminated, gritty, fractured, moist, weak to strongly cemented, heavily stained with white carbonate, abundant reddish oxide (hematite) and yellow hydroxide (limonite) with upper portion highly to completely weathered into a silty/clayey matrix that supports rock fragments (Miocene Monterey Shale Bedrock).

UNIT 3
Dark yellowish brown (10YR 4/6) silty lean clay with sand- to gravel-sized Monterey Shale fragments within, moist, hard, plastic, prismatic, abundant carbonate staining and nodules, gypsum filaments through out (Pleistocene Colluvial and Slope Wash Deposits).

UNIT 4
Very dark gray to black (5YR 2.5/1) fat clay with sand-sized Monterey Shale fragments within, moist, hard, plastic, high dry strength, rootlets, occupies the axis of the linear trough and in gradational contact with Unit 1 (Holocene Colluvial Deposits and Slope Wash Deposits).

UNIT 5
Light olive brown (2.5YR 5/3) silty lean clay with Monterey Shale fragments within, moist, very stiff to hard, heavily sheared from near Station 1+21 Trench T-1 to southwestern end of trench, shears heavily lined with white carbonate and gypsum filaments, prismatic, shears somewhat dilated and readily part, rolled up gravels and in gradational contact with Unit 3 (Pleistocene Colluvial and Slope Wash Deposits).

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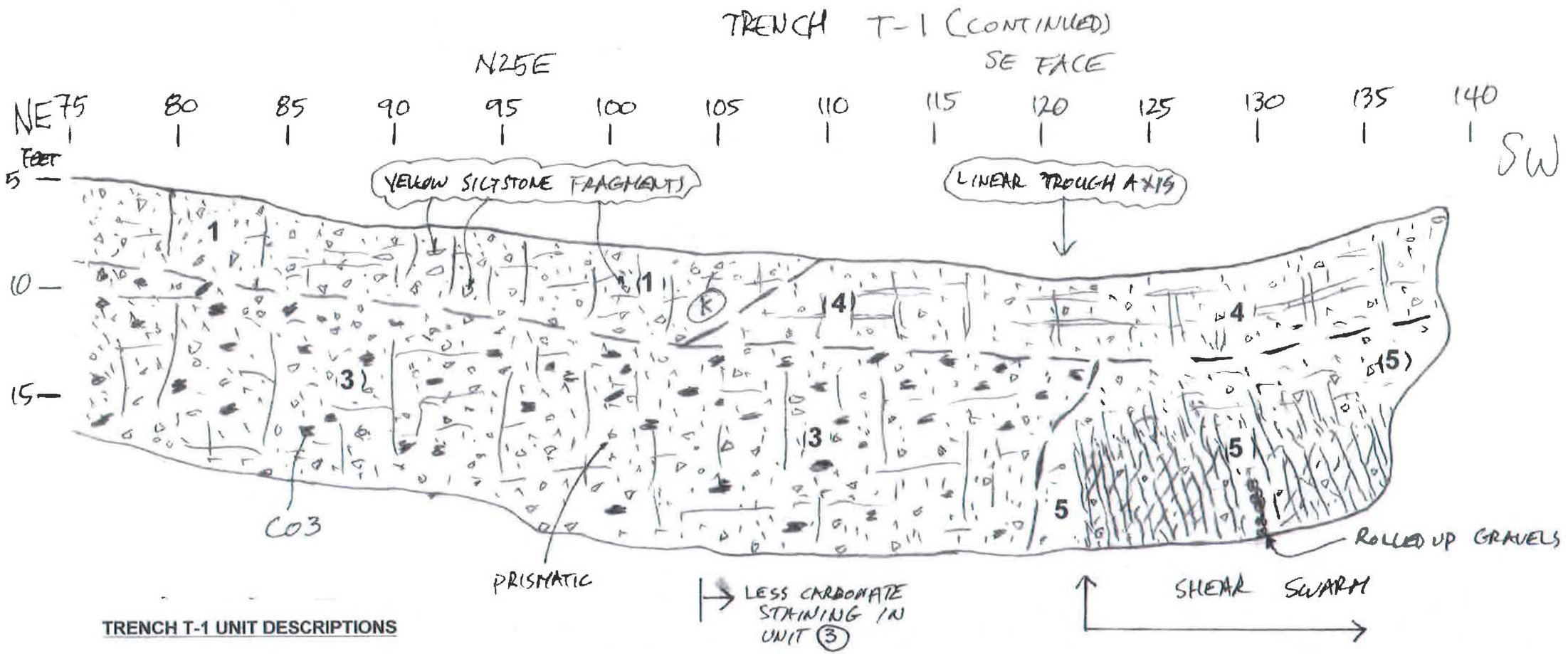
LOG OF TRENCH T-1

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE
25



TRENCH T-1 UNIT DESCRIPTIONS

UNIT 1
Very pale brown (10YR 7/4) silty lean clay with sand- and gravel-sized fragments of siltstone and sandstone, moist, stiff, powdery/dusty when dry, krotovina (infilled animal burrows) through out, low dry strength (Holocene Colluvial and Slope Wash Deposits).

UNIT 3
Dark yellowish brown (10YR 4/6) silty lean clay with sand- to gravel-sized Monterey Shale fragments within, moist, hard, plastic, prismatic, abundant carbonate staining and nodules, gypsum filaments through out (Pleistocene Colluvial and Slope Wash Deposits).

UNIT 4
Very dark gray to black (5YR 2.5/1) fat clay with sand-sized Monterey Shale fragments within, moist, hard, plastic, high dry strength, rootlets, occupies the axis of the linear trough and in gradational contact with Unit 1 (Holocene Colluvial Deposits and Slope Wash Deposits).

UNIT 5
Light olive brown (2.5YR 5/3) silty lean clay with Monterey Shale fragments within, moist, very stiff to hard, heavily sheared from near Station 1+21 Trench T-1 to southwestern end of trench, shears heavily lined with white carbonate and gypsum filaments, prismatic, shears somewhat dilated and readily part, rolled up gravels and in gradational contact with Unit 3 (Pleistocene Colluvial and Slope Wash Deposits).

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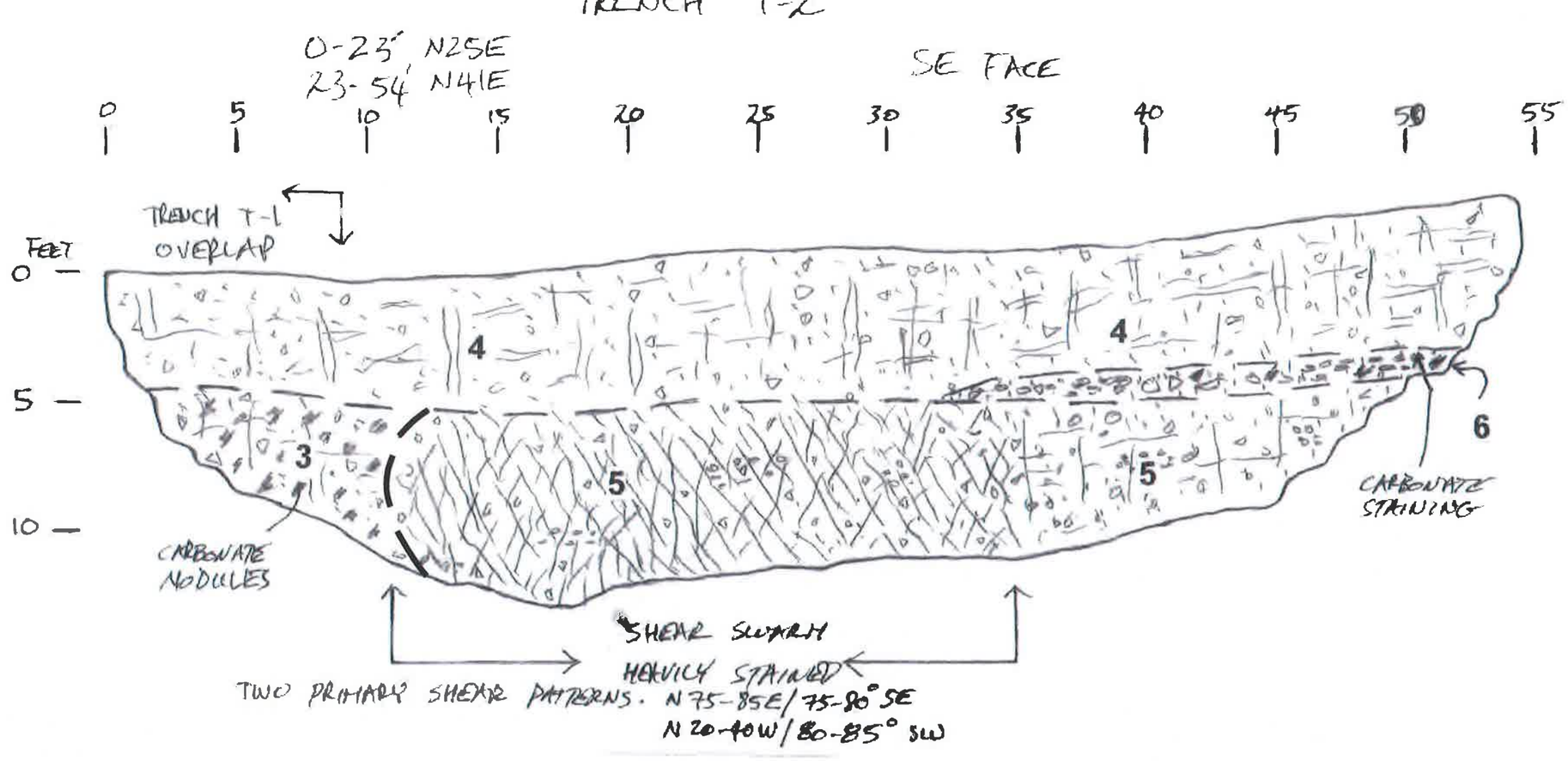
LOG OF TRENCH T-1 CONTINUED

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE
26



TRENCH T-2 UNIT DESCRIPTIONS

UNIT 3
Dark yellowish brown (10YR 4/6) silty lean clay with sand- to gravel-sized Monterey Shale fragments within, moist, hard, plastic, prismatic, abundant carbonate staining and nodules, gypsum filaments through out (Pleistocene Colluvial and Slope Wash Deposits).

UNIT 4
Very dark gray to black (5YR 2.5/1) fat clay with sand-sized Monterey Shale fragments within, moist, hard, plastic, high dry strength, rootlets, occupies the axis of the linear trough and in gradational contact with Unit 1 (Holocene Colluvial Deposits and Slope Wash Deposits).

UNIT 5
Light olive brown (2.5YR 5/3) silty lean clay with Monterey Shale fragments within, moist, very stiff to hard, heavily sheared from near Station 1+21 Trench T-1 to southwestern end of trench, shears heavily lined with white carbonate and gypsum filaments, prismatic, shears somewhat dilated and readily part, rolled up gravels and in gradational contact with Unit 3 (Pleistocene Colluvial and Slope Wash Deposits).

UNIT 6
Strong brown (7.5YR 5/6) silty lean clay with abundant gravel-sized Monterey Formation fragments, moist, hard, carbonate nodules/concretions within (Early Holocene Colluvial/Slope Wash/Flow).

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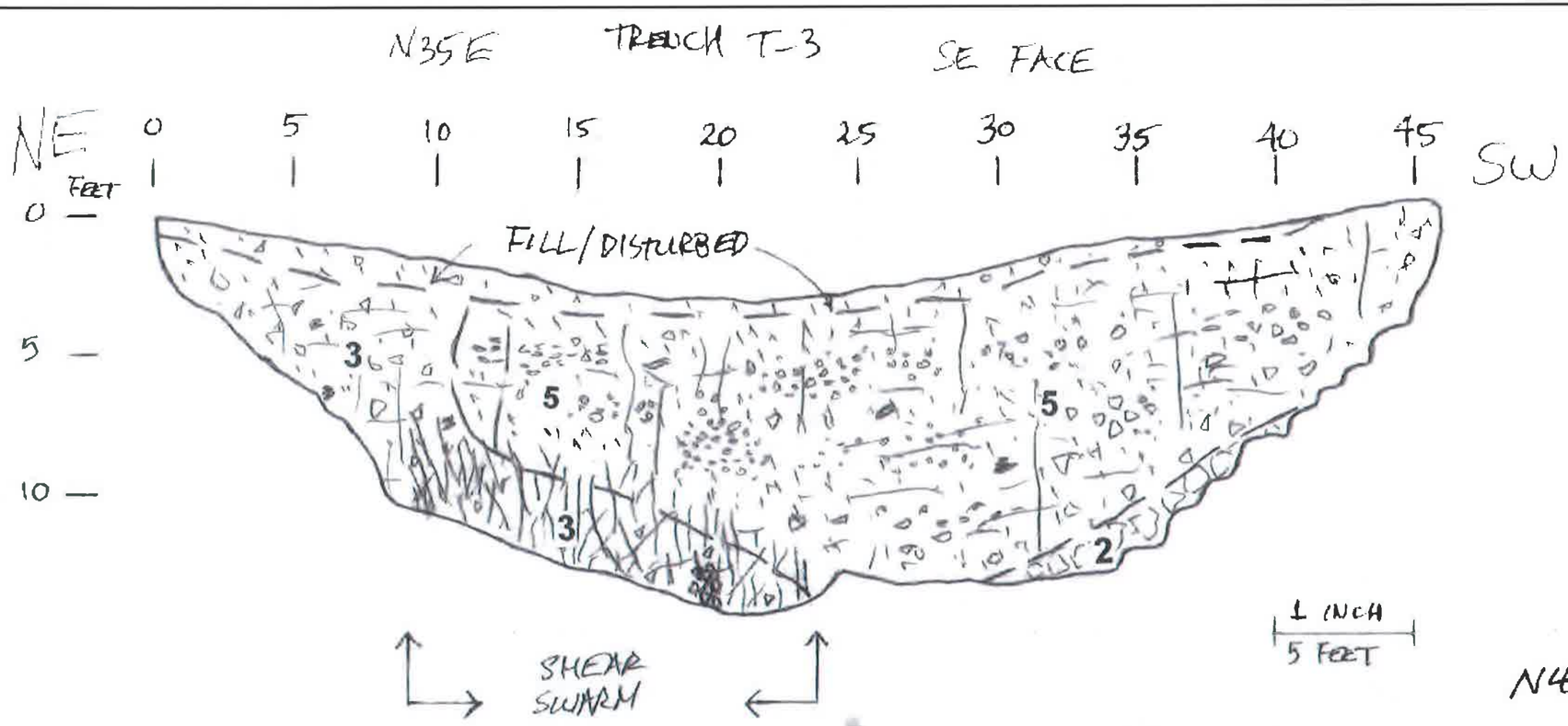
LOG OF TRENCH T-2

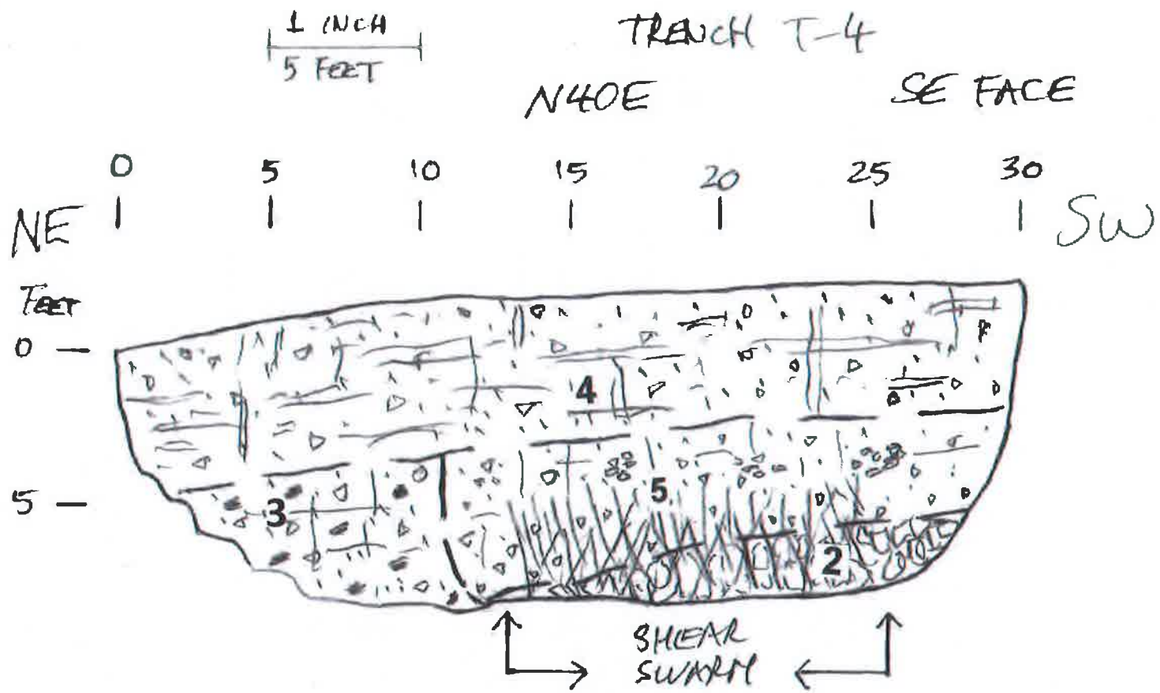
ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE
27



1 INCH
5 FEET



TRENCHES T-3 AND T-4 UNIT DESCRIPTIONS

UNIT 2
Brownish yellow (10YR 6/8) to white/light gray (10YR 7/1 – 8/1) sandy siltstone that is interbedded with fine-grained sandstone, noticeably light density, thinly bedded, laminated, gritty, fractured, moist, weak to strongly cemented, heavily stained with white carbonate, abundant reddish oxide (hematite) and yellow hydroxide (limonite) with upper portion highly to completely weathered into a silty/clayey matrix that supports rock fragments (Miocene Monterey Shale Bedrock).

UNIT 3
Dark yellowish brown (10YR 4/6) silty lean clay with sand- to gravel-sized Monterey Shale fragments within, moist, hard, plastic, prismatic, abundant carbonate staining and nodules, gypsum filaments through out (Pleistocene Colluvial and Slope Wash Deposits).

UNIT 4
Very dark gray to black (5YR 2.5/1) fat clay with sand-sized Monterey Shale fragments within, moist, hard, plastic, high dry strength, rootlets, occupies the axis of the linear trough and in gradational contact with Unit 1 (Holocene Colluvial Deposits and Slope Wash Deposits).

UNIT 5
Light olive brown (2.5YR 5/3) silty lean clay with Monterey Shale fragments within, moist, very stiff to hard, heavily sheared from near Station 1+21 Trench T-1 to southwestern end of trench, shears heavily lined with white carbonate and gypsum filaments, prismatic, shears somewhat dilated and readily part, rolled up gravels and in gradational contact with Unit 3 (Pleistocene Colluvial and Slope Wash Deposits).

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LOG OF TRENCHES T-3 AND T-4

ENGINEERING GEOLOGIC ASSESSMENT AND SUBSURFACE FAULT INVESTIGATION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

August 2023

PLATE
28

CE&G
CAL ENGINEERING & GEOLOGY

BORING NUMBER B-01

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 6/29/2020 COMPLETED 6/29/2020
GROUND ELEVATION 597 ft DATUM NAVD88 HOLE SIZE 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: LATITUDE 37.22207 LONGITUDE -121.92538
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb CHECKED BY P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 1.5')									
		Silty SAND w/ Gravel (SM): olive, dry, medium dense, angular gravel up to 1", fine to coarse sand [Embankment Fill]	CM	8-10-12							
		Sandy Lean CLAY (CL): very dark brown, dry, hard, medium dry strength, low plasticity, fine to coarse sand, trace angular gravel [Colluvium/Fill]			>4.5						
			SPT	6-7-8	>4.5						
5											
		Sandy SILT (ML): light gray, dry, medium dense	CM	6-14-16		82	28				
		Sandy Lean CLAY w/ Gravel (CL): dark yellowish brown, hard, fine to coarse sand, angular gravel	SPT	5-10-20							
10		Siltstone: brownish yellow to light gray, very weak to extremely weak, moderately weathered, some sandy siltstone interbeds [Bedrock]									
		becomes highly weathered to lean clay becomes moderately weathered, increase in sand	SPT	9-19-31							
		increased drilling difficulty									
15		becomes moderately to slightly weathered, moderately strong	SPT	11-21-40							
		becomes moderately weathered, weak, beds dip approximately 50 degrees	SPT	15-30-50							
20											

Bottom of borehole at 20.0 ft. Borehole backfilled with neat cement grout.

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CAL ENGINEERING & GEOLOGY

BORING NUMBER B-02

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 6/29/2020 **COMPLETED** 6/29/2020
GROUND ELEVATION 614 ft **DATUM** NAVD88 **HOLE SIZE** 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: **LATITUDE** 37.222484 **LONGITUDE** -121.92567
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb **CHECKED BY** P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 1.7')									
		Silty GRAVEL w/ Sand (GM): olive, dry, medium dense, fine to coarse sand, subangular to angular gravel up to 1.5" [Embankment Fill]	CM	18-14-10							
		Sandy Lean CLAY w/ Gravel (CL): very dark brown matrix, dry, low plasticity, angular gravel [Colluvium/Fill]	SPT	4-5-6							
5											
		Siltstone: pale yellow to dark gray, dry, moderately weathered, very weak, thinnly bedded and dips approximately 40 degrees [Bedrock] trace roots becomes olive yellow	CM	6-21-24							
			SPT	16-18-26							
10											
		becomes very weak, some highly weathered interbeds, oxidized	SPT	12-19-26							

Bottom of borehole at 12.5 ft. Borehole backfilled with neat cement grout.

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BORING NUMBER B-03

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 6/29/2020 COMPLETED 6/29/2020
GROUND ELEVATION 626 ft DATUM NAVD88 HOLE SIZE 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: LATITUDE 37.22272 LONGITUDE -121.92606
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb CHECKED BY P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 1.5')									
		Silty SAND w/ Gravel (SM): olive, dry, dense, fine to coarse sand, angular to subangular gravel up to 1" [Embankment Fill]	CM	15-18-18							
		Sandy SILT (ML): very dark brown, dry, medium dense, fine to medium sand	SPT	8-7-5							
5		becomes dark gray									
		Sandy SILT (SM): light olive brown, dry, medium dense, fine to coarse, trace fine gravel [Colluvium]	CM	6-15-20		75	29				85
			SPT	6-8-11							
10		Siltstone: yellowish brown, moderately to slightly weathered, varies from weak to moderately strong, beds dip approximately 50 degrees [Bedrock]	CM	4-18-40							
			SPT	16-21-33							
15		becomes very weak, moderately weathered	SPT	17-19-46							
		becomes weak									

Bottom of borehole at 17.5 ft. Borehole backfilled with neat cement grout.

CE&G
CAL ENGINEERING & GEOLOGY

BORING NUMBER B-04

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 6/29/2020 **COMPLETED** 6/29/2020
GROUND ELEVATION 630.5 ft **DATUM** NAVD88 **HOLE SIZE** 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: **LATITUDE** 37.22279 **LONGITUDE** -121.92632
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb **CHECKED BY** P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 1.3')									
		Silty SAND w/ Gravel (SM): olive, dry, medium dense, fine to coarse sand, angular to subangular gravel up to 1.25", some foam in voids [Embankment Fill]	CM	13-14-10							
			SPT	6-6-7							
5		Sandy Lean CLAY (CL): very dark brown, dry, hard, fine to medium sand, trace angular/fine gravel									
		Sandy SILT w/ Gravel (ML): dark grayish brown, dry, medium dense, fine to coarse sand, angular to subrounded gravel up to 0.5"	CM	8-11-13	>4.5						
		Gravelly Lean CLAY (CL): very dark brown, moist, hard, angular gravel up to 2" [Colluvium]			>4.5	88	13				
		Sandy Lean CLAY (CL): dark olive brown, moist, low plasticity, very stiff, fine to medium sand	SPT	5-5-6	3.0						
10		contains various completely weathered rock fragments	CM	9-13-20							
		Sandy Siltstone: dark yellowish brown to white, highly weathered, friable to sandy silt, extremely weak [Bedrock]	SPT	5-6-9							
15		some mudstone interbeds	CM	16-26-25		66	44				
		Silty sandstone bed	SPT	10-12-14							
20											

(Continued Next Page)

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CAL ENGINEERING & GEOLOGY

BORING NUMBER B-04

CLIENT NCE **PROJECT NAME** Shannon Road Embankment Stabilization

PROJECT NUMBER 200300 **PROJECT LOCATION** Los Gatos, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
20		Sandy Siltstone: dark yellowish brown to white, highly weathered, friable to sandy silt, extremely weak [Bedrock] *(continued)*									
25			SPT	8-13-15							
		becomes olive to yellowish brown, weak to extremely weak, highly to moderately weathered									
			SPT	50							

Bottom of borehole at 29.5 ft. Borehole backfilled with neat cement grout.

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CAL ENGINEERING & GEOLOGY

BORING NUMBER B-05

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 6/30/2020 **COMPLETED** 6/30/2020
GROUND ELEVATION 632 ft **DATUM** NAVD88 **HOLE SIZE** 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: **LATITUDE** 37.22282 **LONGITUDE** -121.92643
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb **CHECKED BY** P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 2')									
		Silty GRAVEL w/ Sand (GM): olive, moist, medium dense to dense, angular gravel up to 1.5", fine to coarse sand [Embankment Fill]	CM	10-15-20			3				11
			SPT	10-7-6	>4.5						
5		Sandy Lean CLAY w/ Gravel (CL): very dark brown, moist, hard, fine to coarse sand, gravel fragments are friable									
		Lean CLAY (CL): very dark brown to black, moist, low plasticity, very stiff, little fine sand, trace roots [Colluvium]	CM	7-11-16	3.5	90	27	74	40	34	
			SPT	5-6-10	4.25						
10											
			CM	15-24-36	>4.5 >4.5						
		Lean CLAY w/ Sand (CL): dark olive brown, dry, hard, fine sand, low plasticity, trace angular gravel up to 1.5"	SPT	9-15-19	>4.5						
15											
		Sandy Siltstone: light olive brown to dark yellowish brown, moist, some layerying, extremely weak, highly weathered, friable to sandy silt, some oxidation [Bedrock]	SPT	9-14-16							
20											

(Continued Next Page)

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BORING NUMBER B-05

CLIENT NCE **PROJECT NAME** Shannon Road Embankment Stabilization

PROJECT NUMBER 200300 **PROJECT LOCATION** Los Gatos, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
20		Sandy Siltstone: light olive brown to dark yellowish brown, moist, some layerying, extremely weak, highly weathered, friable to sandy silt, some oxidation [Bedrock] *(continued)*									
		Increase in oxidation	SPT	8-12-14							
25		becomes highly to moderately weathered, interbeds of extremely weak to weak zones	SPT	27-44-46							

Bottom of borehole at 29.5 ft. Borehole backfilled with neat cement grout.

CE&G
CAL ENGINEERING & GEOLOGY

BORING NUMBER B-06

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 6/30/2020 **COMPLETED** 6/30/2020
GROUND ELEVATION 638 ft **DATUM** NAVD88 **HOLE SIZE** 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: **LATITUDE** 37.222951 **LONGITUDE** -121.92667
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb **CHECKED BY** P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 2.25')									
		Silty SAND w/ Gravel (SM): olive, dry, dense, angular to subangular gravel up to 1.5", fine to coarse sand, some foam [Embankment Fill]	CM	21-33-25							
			SPT	7-7-9							
5		Sandy SILT (ML): very dark brown, dry, medium dense, fine sand, trace coarse sand									
			CM	8-16-20							
		Lean CLAY w/ Sand (CL): very dark brown, moist, hard, low plasticity, fine sand, trace coarse sand [Colluvium]									
			SPT	5-7-10							
10		Gravely Lean CLAY w/ Sand (CL): very dark grayish brown, dry, hard, angular gravel up to 1.5"									
		Diotomaceous Siltstone: yellow, dry, slightly weathered, weak rock [Bedrock]	SPT	12-20-33							
15											
		Sandy Siltstone: brown, dry, very weak, moderately weathered	SPT	27-35-42							
20											

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BORING NUMBER B-06

CLIENT NCE **PROJECT NAME** Shannon Road Embankment Stabilization

PROJECT NUMBER 200300 **PROJECT LOCATION** Los Gatos, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
20		Sandy Siltstone: brown, dry, very weak, moderately weathered *(continued)*									
		becomes grayish brown, slightly weathered, weak	SPT	15-16-29							
		Bottom of borehole at 22.5 ft. Borehole backfilled with neat cement grout.									

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BORING NUMBER B-07

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 6/30/2020 COMPLETED 6/30/2020
GROUND ELEVATION 644 ft DATUM NAVD88 HOLE SIZE 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: LATITUDE 37.2221 LONGITUDE -121.92693
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb CHECKED BY P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 2')									
		Silty GRAVEL w/ Sand (SM): olive, dry, medium dense, fine to coarse sand, angular to subangular gravel up to 1.75" [Embankment Fill]	CM	20-17-10							
		Sandy SILT (ML): very dark brown, dry, loose, fine to medium sand, trace roots [Colluvium]	SPT	5-4-4							
5		Sandy SILT w/ Gravel (ML): dark brown, dry, medium dense, angular gravel up to 2", fine to coarse sand	CM	10-12-7		69	29				
		Interbedded Diatomaceous Siltstone, Sandy Siltstone, and Mudstone: yellow siltstone to dark yellowish brown mudstone, dry, very weak, moderately to slightly weathered, oxidized [Bedrock]	SPT	11-8-11							
10			SPT	8-11-11							
15		Sandy Mudstone: dark yellowish brown, moist, extremely weak, moderately weathered	SPT	11-17-21							

Bottom of borehole at 17.5 ft. Borehole backfilled with neat cement grout.

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BORING NUMBER B-08

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 6/30/2020 COMPLETED 6/30/2020
GROUND ELEVATION 652 ft DATUM NAVD88 HOLE SIZE 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: LATITUDE 37.223122 LONGITUDE -121.927357
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb CHECKED BY P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 1.8')									
		Sandy SILT w/ Gravel (ML): olive, dry, medium dense, fine to coarse sand, angular to subangular gravel [Embankment Fill]									
		Sandy Lean CLAY (CL): very dark brown, dry, hard, fine to medium sand	CM	9-10-12							
			SPT	5-7-9							
5											
		Sandy Lean CLAY (CL): very dark brown, dry, hard, high dry strength, fine to medium sand [Colluvium]	CM	11-17-21	>4.5 >4.5						
		Sandy Lean CLAY w/ Gravel (CL): dark brown, dry, hard, high dry strength, fine to medium sand, angular gravel	SPT	6-8-12	>4.5						
10											
			SPT	6-9-13							
		Sandy Siltstone: yellowish brown, extremely weak to weak, highly to moderately weathered, friable [Bedrock]									
15											
		becomes dark gray to oxidized yellowish brown, very weak, moderately weathered	SPT	8-18-22							
20											

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BORING NUMBER B-08

CLIENT NCE **PROJECT NAME** Shannon Road Embankment Stabilization

PROJECT NUMBER 200300 **PROJECT LOCATION** Los Gatos, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
20		Sandy Siltstone: yellowish brown, extremely weak to weak, highly to moderately weathered, friable [Bedrock] *(continued)*									
			SPT	14-23-32							

Bottom of borehole at 24.5 ft. Borehole backfilled with neat cement grout.

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BORING NUMBER B-09

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 6/30/2020 **COMPLETED** 6/30/2020
GROUND ELEVATION 667 ft **DATUM** NAVD88 **HOLE SIZE** 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: **LATITUDE** 37.22338 **LONGITUDE** -121.92778
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb **CHECKED BY** P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 1.5')									
		Sandy SILT w/ Gravel (ML): olive, dry, medium dense, fine to coarse sand, angular to subangular gravel [Embankment Fill]									
		Sandy SILT (ML): very dark brown, dry, loose, fine to coarse sand, trace fine gravel [Colluvium]	CM	5-5-6		66	27				
5			SPT	3-3-5							
10		Sandy Siltstone and Mudstone: dark yellowish brown, moist, highly to moderately weathered, extremely weak, friable to sandy silt [Bedrock]	CM	10-21-39							
		becomes oxidized, rock structure still visible									
15			SPT	11-15-18							

Bottom of borehole at 15.5 ft. Borehole backfilled with neat cement grout.

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BORING NUMBER B-10

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 7/1/2020 **COMPLETED** 7/1/2020
GROUND ELEVATION 673 ft **DATUM** NAVD88 **HOLE SIZE** 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: **LATITUDE** 37.22342 **LONGITUDE** -121.92801
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb **CHECKED BY** P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0	Asphalt Pavement (approximately 1.5')									
	Silty SAND w/ Gravel (SM): very dark brown, moist, medium dense	CM	7-8-8							
	becomes olive, increase in gravel	SPT	5-5-7							
5	Lean CLAY w/ Sand (CL): very dark brown, dry, hard, low plasticity, fine sand [Colluvium]									
	contains slope stabilization foam, slight increase in plasticity, decrease in sand	CM	8-12-15							
	SILT w/ Sand (ML): dark yellowish brown, moist, low plasticity, medium dense, very fine sand [Colluvium/Residual Soil]	SPT	4-8-10	3.0						
10	Sandy Siltstone: dark yellowish brown, mottled grayish brown w/ orange oxidation, completely to highly weathered to sandy silt, extremely weak [Bedrock]	SPT	5-7-10							
15	becomes highly weathered	SPT	9-12-25							
	becomes olive yellow, increase in sand, oxidized, extremely weak to weak									
20										

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BORING NUMBER B-10

CLIENT NCE **PROJECT NAME** Shannon Road Embankment Stabilization

PROJECT NUMBER 200300 **PROJECT LOCATION** Los Gatos, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
20		Sandy Siltstone: dark yellowish brown, mottled grayish brown w/ orange oxidation, completely to highly weathered to sandy silt, extremely weak [Bedrock] *(continued)*									
		becomes highly to moderately weathered, very weak									
		becomes light olive brown, highly weathered	SPT	14-17-18							

Bottom of borehole at 22.5 ft. Borehole backfilled with neat cement grout.

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BORING NUMBER B-11

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 7/1/2020 COMPLETED 7/1/2020
GROUND ELEVATION 659 ft DATUM NAVD88 HOLE SIZE 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: LATITUDE 37.223192 LONGITUDE -121.927553
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb CHECKED BY P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 2')									
		Silty SAND w/ Gravel (SM): olive, moist, loose to medium dense, angular to subangular gravel up to 2", fine to coarse sand [Embankment Fill]	CM	5-6-7							
5		SILT w/ Sand (ML): very dark brown, moist, hard/loose to medium dense, fine to medium sand, trace roots [Colluvium]	SPT	4-5-6	>4.5						
		Lean CLAY w/ Sand (CL): very dark brown, moist, very stiff, low plasticity, fine to medium sand	CM	5-11-18	3.0 2.75	89	29				
10		becomes very dark grayish brown, some carbonate veins, trace roots	SPT	5-8-11	3.75						
			CM	11-11-25	>4.5	83	30				
15		trace angular gravel up to 0.5"	SPT	6-9-11	4.25 4.25						
		Sandy Siltstone and Mudstone: dark yellowish brown mottled light gray, moist, highly weathered, extremely weak to weak, oxidized [Bedrock]	SPT	11-18-22							
20											

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BORING NUMBER B-11

CLIENT NCE **PROJECT NAME** Shannon Road Embankment Stabilization

PROJECT NUMBER 200300 **PROJECT LOCATION** Los Gatos, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
20		Sandy Siltstone and Mudstone: dark yellowish brown mottled light gray, moist, highly weathered, extremely weak to weak, oxidized [Bedrock] *(continued)*									
		becomes brownish yellow, extremely weak, highly oxidized	SPT	7-13-12							
25		becomes very dark grayish brown, near vertical bedding, moderately to slightly weathered, weak	CM	20-25-46							
30			SPT	16-26-50/4"							

Bottom of borehole at 31.0 ft. Borehole backfilled with neat cement grout.

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BORING NUMBER B-12

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 7/1/2020 COMPLETED 7/1/2020
GROUND ELEVATION 680 ft DATUM NAVD88 HOLE SIZE 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: LATITUDE 37.22373 LONGITUDE -121.92825
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb CHECKED BY P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 1.3')									
		Silty SAND w/ Gravel (SM): olive, dry, medium dense, fine to coarse sand, angular to subangular gravel up to 1.5" [Embankment Fill]	CM	14-18-16			4				
			SPT	7-6-7							
5		Sandy SILT (ML): dark yellowish brown, dry, medium dense, fine sand, trace roots									
		Lean CLAY w/ Sand (CL): very dark brown, dry, hard, high dry strength, fine sand [Colluvium]	CM	8-17-25	>4.5						
		trace angular gravel			>4.5		20	47	28	19	
			SPT	8-14-17							
10											
			CM	17-28-38							
		becomes dark yellowish brown, moist, fine to medium sand, some carbonate veins	SPT	8-14-18							
15											
		Interbedded Siltstone and Mudstone: yellowish brown and dark yellowish brown, dry, extremely weak, completely to highly weathered [Bedrock]	SPT	7-10-12							
20											

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BORING NUMBER B-12

CLIENT NCE **PROJECT NAME** Shannon Road Embankment Stabilization

PROJECT NUMBER 200300 **PROJECT LOCATION** Los Gatos, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
20		Interbedded Siltstone and Mudstone: yellowish brown and dark yellowish brown, dry, extremely weak, completely to highly weathered [Bedrock] *(continued)*									
		some oxidation	SPT	11-14-18							
		Sandy Siltstone: dark yellowish brown and olive gray, weak, moderately to slightly weathered, thinly bedded									
25			SPT	16-29-43							

Bottom of borehole at 27.5 ft. Borehole backfilled with neat cement grout.

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BORING NUMBER B-13

CLIENT NCE
PROJECT NAME Shannon Road Embankment Stabilization
PROJECT NUMBER 200300
PROJECT LOCATION Los Gatos, CA
DATE STARTED 7/1/2020 **COMPLETED** 7/1/2020
GROUND ELEVATION 676 ft **DATUM** NAVD88 **HOLE SIZE** 6" in.
DRILLING CONTRACTOR Cenozoic Exploration, LLC.
COORDINATES: **LATITUDE** 37.22356 **LONGITUDE** -121.92809
DRILLING RIG/METHOD Simco 2400/ 6-in. Solid Flight Auger
GROUNDWATER AT TIME OF DRILLING --- Not Encountered
LOGGED BY K. Loeb **CHECKED BY** P. Sorci
GROUNDWATER AT END OF DRILLING --- N/A
HAMMER TYPE 140 lb hammer with 30 in. cathead
GROUNDWATER AFTER DRILLING --- N/A

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS (FIELD VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTIC LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	FINES CONTENT (%)
0		Asphalt Pavement (approximately 1.3')									
		Silty SAND w/ Gravel (SM): very dark brown, moist, medium dense [Embankment Fill]									
		Lean CLAY w/ Sand (CL): very dark brown, dry, hard, high dry strength, some slope stabilization foam at 4'	CM	8-12-18			21				80
5			SPT	5-8-11							
		becomes very stiff	CM	9-15-21	3.5 4.5						
		Sandy Siltstone: light olive brown, moist, highly to completely weathered, extremely weak [Bedrock]									
15			SPT	7-9-11							
		becomes highly weathered	SPT	9-12-15							
20											

Bottom of borehole at 20.0 ft. Borehole backfilled with neat cement grout.

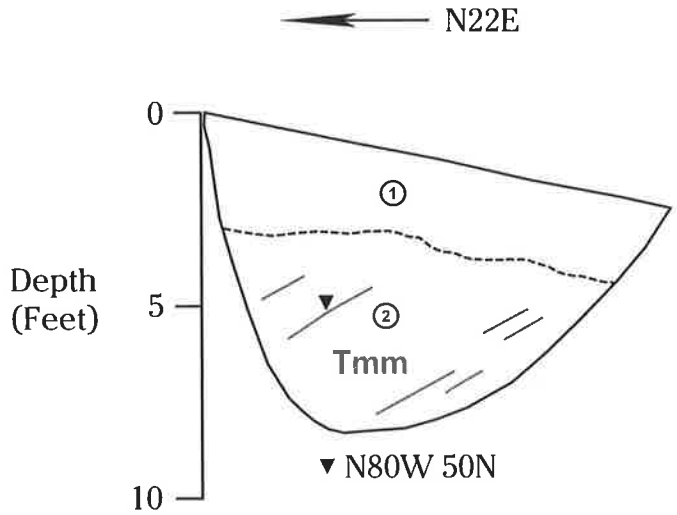
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Colluvial Soil)

② white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 1	APN 537-27-047 14915 Shannon Road Los Gatos, California			
STEVEN F. CONNELLY, C.E.G. Consulting in Engineering Geology	Project #	Scale	Date	Figure
	2104	1 Inch = 5 Feet	2/5/21	8

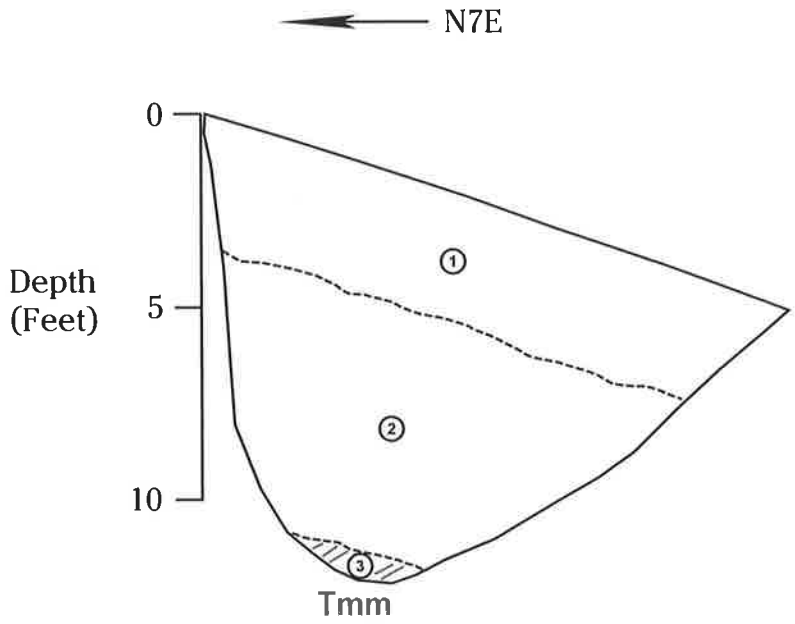
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Colluvial Soil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale, CL (Colluvial Soil)

③ white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 2

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	9

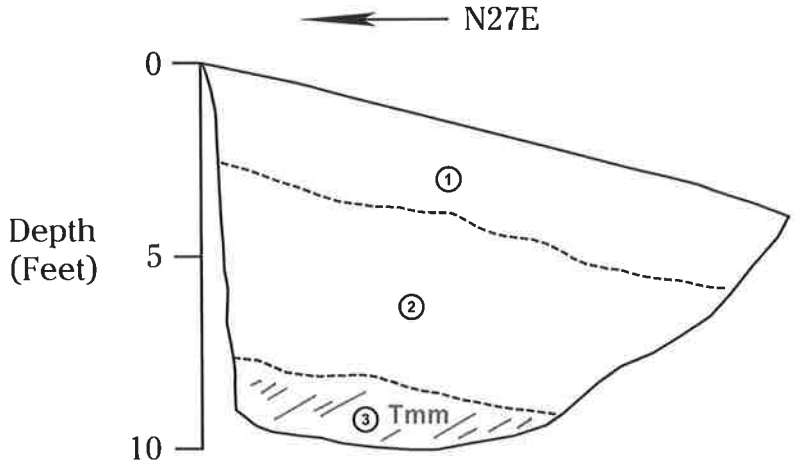
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Colluvial Soil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale to 1 inch, CL (Colluvial Soil)

③ white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 3	APN 537-27-047 14915 Shannon Road Los Gatos, California		
STEVEN F. CONNELLY, C.E.G. Consulting in Engineering Geology			
Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	10

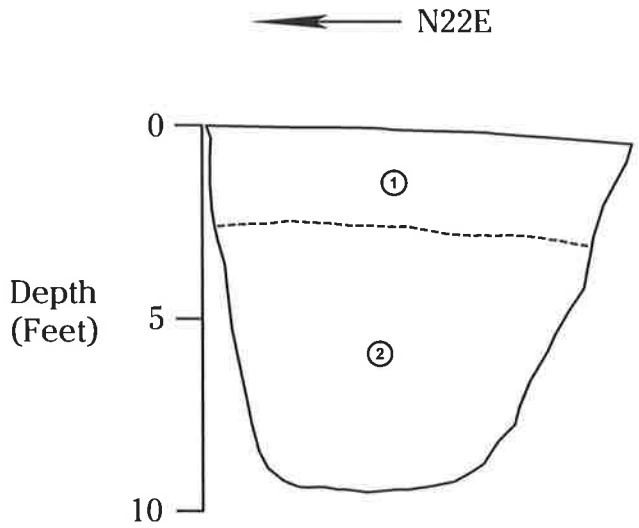
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Colluvial Soil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale to 1 inch, abundant fine white carbonate stringers, CL (Colluvial Soil/Slope Wash)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 4

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	11

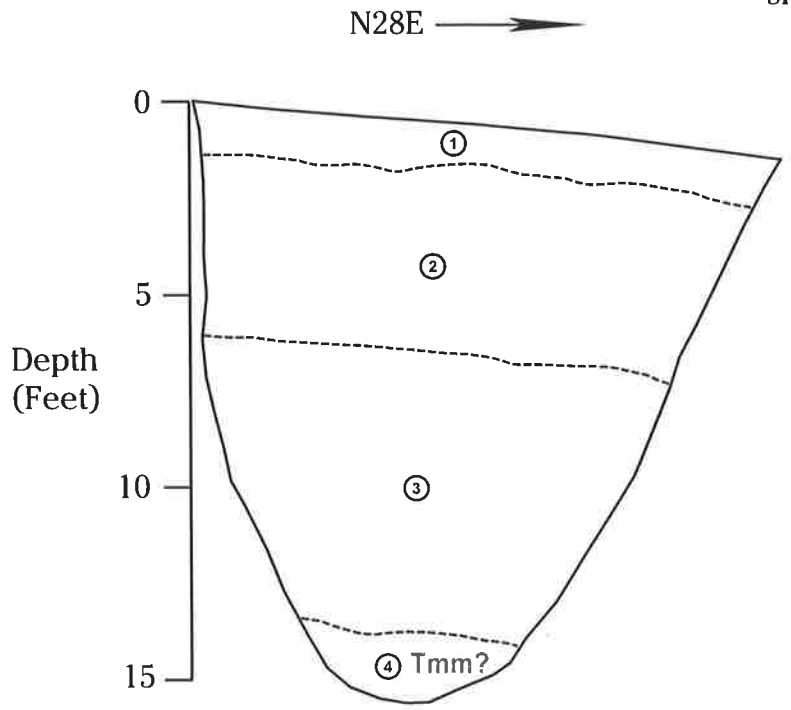
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Tilled Topsoil)

② black, 10YR2/1, silty clay, slightly moist, very stiff to hard, high plasticity, trace rock fragments of Monterey Shale to 1/2 inch (Collluvial Soil)

③ dark grayish brown, 2.5Y4/2, silty clay, slightly moist, hard to very hard, high plasticity, (Colluvial Soil/Slope Wash)

④ light yellowish brown, 2.5Y6/4, claystone, highly weathered, slightly sheared, (Highly Weathered Bedrock/Monterey Shale?)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 5

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	12

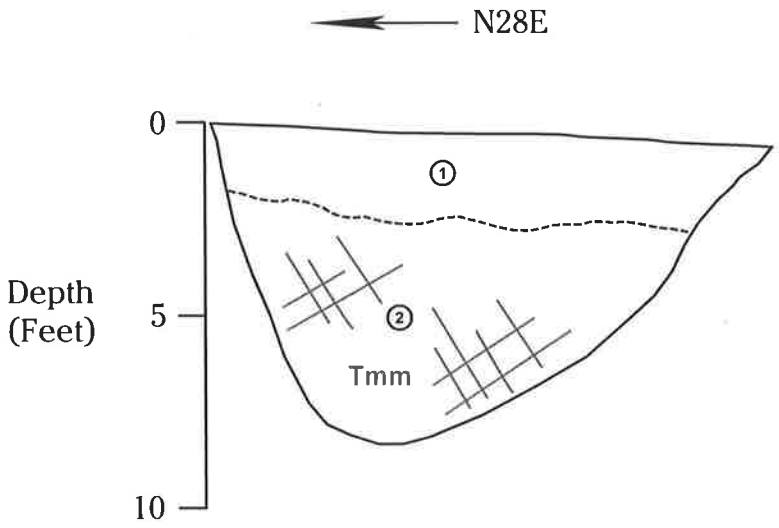
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Tilled Topsoil)

② light yellowish brown, 2.5Y6/4, siltstone, highly weathered, fractured, abundant white carbonate staining along fractures (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 6

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	13

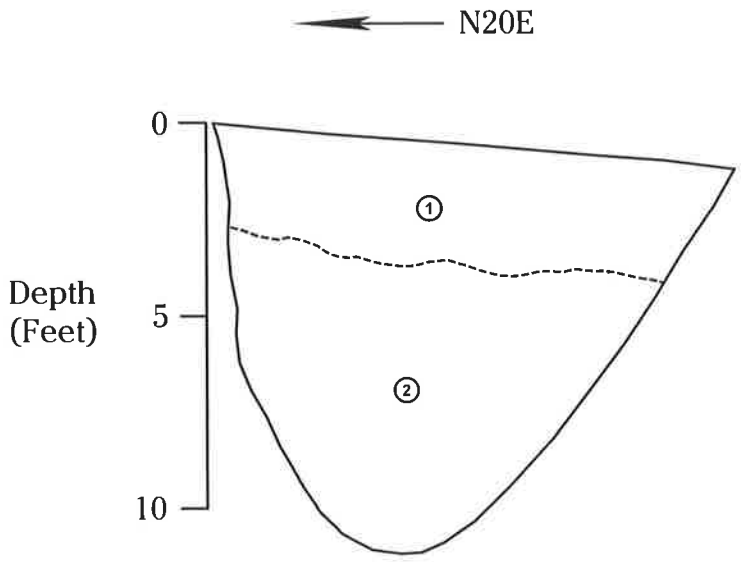
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Tilled Topsoil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale, CL (Colluvial Soil/Debris Flow Deposits)

Logged by Steven F. Connelly, C.E.G., 12/23/20

Log of Test Pit 7

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	14

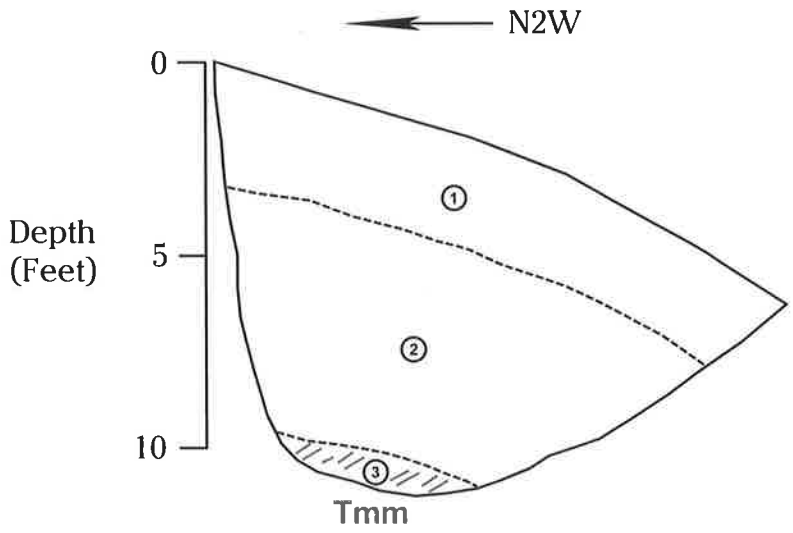
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Tilled Topsoil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale, CL (Colluvial Soil)

③ white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/23/20

Log of Test Pit 8

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	15

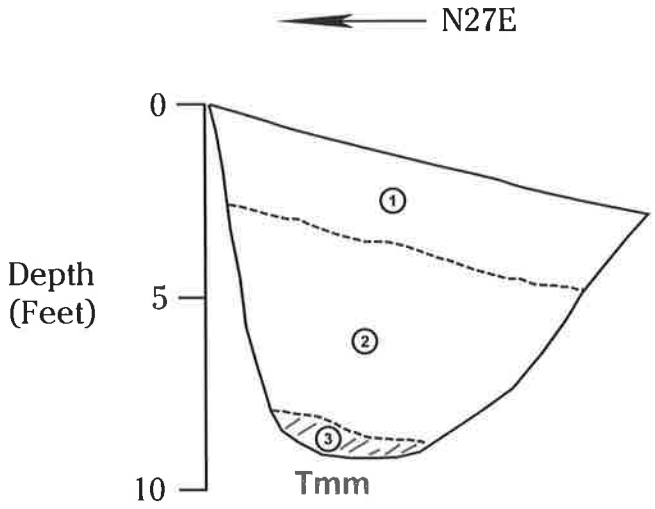
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Topsoil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale, CL (Colluvial Soil/Debris Flow Deposits)

③ white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/23/20

Log of Test Pit 9

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	16

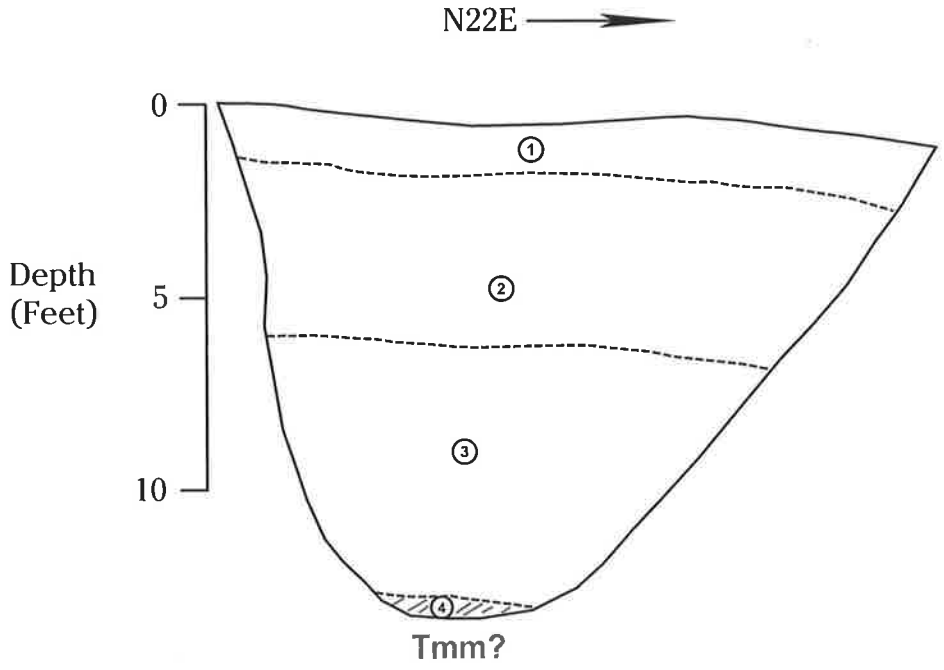
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Tilled Topsoil)

② black, 10YR2/1, silty clay, slightly moist, very stiff to hard, high plasticity, trace rock fragments of Monterey Shale to 1/2 inch (Colluvial Soil)

③ dark grayish brown, 2.5Y4/2, silty clay, slightly moist, hard to very hard, high plasticity, (Colluvial Soil/Slope Wash)

④ light yellowish brown, 2.5Y6/4, claystone, highly weathered, slightly sheared, (Highly Weathered Bedrock, Monterey Shale?)

Logged by Steven F. Connelly, C.E.G., 12/23/20

Log of Test Pit 10	APN 537-27-047 14915 Shannon Road Los Gatos, California		
STEVEN F. CONNELLY, C.E.G. Consulting in Engineering Geology			
Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	17

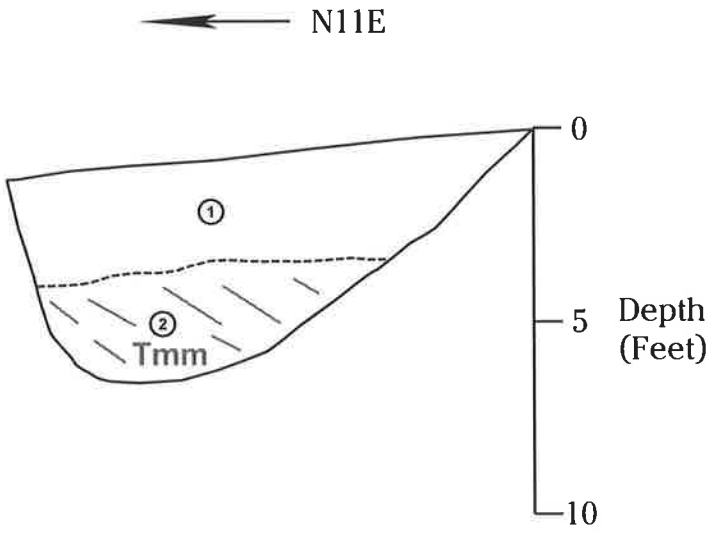
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 2.5Y4/2, silty clay, slightly moist, hard to very hard, high plasticity (Colluvial Soil)

② white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/23/20

Log of Test Pit 11	APN 537-27-047 14915 Shannon Road Los Gatos, California		
STEVEN F. CONNELLY, C.E.G. Consulting In Engineering Geology			
Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	18

LOG OF EXPLORATORY BOREHOLE MG1

Project: Proposed Elam Subdivision
Location: Lot 2 swale
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~756 feet
Hole Diameter: 6" solid-stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**COLLUVIUM**
			16/18	4	MC	B1	1			Sandy CLAY with gravel: Very dark grayish brown (10YR3/2); ~5% white to pale brown and light yellowish brown (10YR6/3,6/4), angular shale gravel to 1/2-inch size; ~20% medium grained sand; 20% very fine to fine grained sand; ~55% high plasticity fines; very stiff; moist.
						T1	2			
					AD		3			
							4		CL-CH	
			14/18	10	MC	B2	5			@5' - Sandy fat CLAY with gravel: trace siltstone and shale gravel to 1/2-inch size; ~10% medium grained sand; ~10% very fine to fine grained sand; ~80% medium to high plasticity fines; hard; moist.
		1.9				T2				
					AD		6			
	>2.7						7			
			18/18	7	MC	T3	8			
		>4.5				T4				
			15/18	11	CAL*	B3	9			Sandy lean CLAY with gravel: brown and very dark grayish brown (10YR4/3,3/2); ~5% yellowish brown, subangular shale gravel to 1/2-inch size; ~10% medium grained sand; ~30% very fine to fine grained sand; ~55% medium plasticity fines; very stiff; moist; abundant caliche veins and inclusions.
		>4.5					10		CL-CH	
			15/18	13	SPT	B4	11			
		>4.5								
					AD		12			**RESIDUAL SOIL**
			14/18	29	MC	B5	13		CL/SC	Sandy lean CLAY to clayey SAND: Dark yellowish brown (10YR3/4) mottled with white caliche staining; trace weathered shale to 1/2-inch size; trace very fine to fine grained sand; very stiff to hard; damp to moist.
		>4.5				T5				
			18/18	34	CAL*	B6	14			**WEATHERED BEDROCK**
		>4.5	18/18	60	SPT	B7	15			Weathered SILTSTONE and SHALE: Light yellowish brown and grayish brown (10YR6/4,5/2) with mineral staining on fracture facies; severely weathered; weak; soft; friable; moist.
					AD		16		Wrx	
		>4.5	18/18	33/2"	MC	T6	17			
			17/17	86/6.5"	SPT	B8	18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 18.9 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.
* No liners.

LOG OF EXPLORATORY BOREHOLE MG2

Project: Proposed Elam Subdivision
Location: Lot 2 swale
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~759 feet
Hole Diameter: 6" solid-stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		1			**COLLUVIUM**
		2.5	12/18	4	MC	B1 / T1	2			Sandy CLAY with gravel: Very dark grayish brown (10YR3/2); ~10-20% light yellowish brown (10YR6/8), angular to subangular shale gravel to one-inch size; ~20% fine to coarse grained sand; ~60-70% medium to high plasticity fines; very stiff; moist.
			14/18	3	CAL*	B2	3		CH	
			14/18	6	SPT	B3	4			
					AD		5			
		>4.5	18/18	10	MC	B4 / T2	6			
			16/18	32	CAL*	B5	7			**RESIDUAL SOIL**
			18/18	43	SPT	B6	8		CL/ SC	Sandy lean CLAY to clayey SAND: Dark yellowish brown (10YR3/4) mottled with white caliche staining; trace weathered shale to 1/2-inch size; trace very fine to fine grained sand; very stiff to hard; damp to moist.
					AD		9			
		>4.5	18/18	39	MC	B7 / T3	10			**WEATHERED BEDROCK**
							11		Wrx	Weathered SILTSTONE and SHALE: Light yellowish brown and grayish brown (10YR6/4,5/2) with trace caliche inclusions; severely weathered; weak; soft to low hardness; friable; moist.
							12			
							13			
							14			
							15			
							16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 12.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.
* No liners.

LOG OF EXPLORATORY BOREHOLE MG3

Project: Proposed Elam Subdivision
Location: Lot 3
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~716 feet
Hole Diameter: 6" solid-stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**COLLUVIUM**
		3.5	16/18	4	MC	B1	1			Sandy fat CLAY : Dark yellowish brown (10YR3/4); ~10% medium to coarse grained sand and gravel to 3/8-inch size; ~20% very fine to fine grained sand; ~55% medium to high plasticity fines; very stiff; moist.
						T1	2			
					AD		3		CH	
							4			
							5			
		>4.5	16/18	21	MC	T3	6			**RESIDUAL SOIL**
						T2				Very severely to severly weathered SILTSTONE and SHALE: Payle brown and light yellowish brown with white (10YR6/3,6/4, 8/1); soft, weak, intensly fractured; caliche filled joints and veins.
					AD		7		Wrx	
							8			**WEATHERED BEDROCK**
						B3	9			Weathered SILTSTONE and SHALE: Yellowish brown (10YR5/8); ~trace medium hard clasts to one-inch size; ~85% very fine to fine grained sand; ~15% non-plastic fines; slightly indurated; soft to medium hardness; damp to moist; severely weathered; weak; soft; friable; moist.
		>4.5	18/18	35	MC	T3	10			
						T4				
					AD		11			
							12			
							13		Wrx	
		>4.5	18/18	27	MC	B4	14			
						T5				
					AD		15			
							16			
							17			
		>4.5	15/18	47/11	MC	B5	18			
						T6				
			18/18	32	SPT	B6	19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 20.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG4

Project: Proposed Elam Subdivision
Location: Lot 3
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~711 feet
Hole Diameter: 6" solid stem
Surface: wood chips

Project Number: 205220
Page: 1 of 2
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		1			**ALLUVIUM**
			18/18	8	MC	B1	2		SC	Clayey SAND: Very dark grayish brown (10YR3/2); ~10% medium to coarse grained sand; ~60% very fine to fine grained sand; ~30% low to medium plasticity fines; loose; moist.
						T1				
			16/18	6	SPT	B2	3			
							4			
					AD		5			
		3.5	18/18	14	MC	B3	6		CL-CH	Silty CLAY: Very dark grayish brown (10YR3/2); ~5% yellowish brown sandstone clasts; ~5% medium grained sand; ~90% medium to high plasticity fines; very stiff; moist to wet.
						T2				
		3.5	18/18	23	SPT	B4	7			
							8			
					AD		9			
			15/18	26	MC	B5				Sandy CLAY : Dark yellowish brown (10YR3/6); ~5% medium to coarse grained sand; ~65% very fine to fine grained sand; ~40% medium to high plasticity fines; very dense; damp to moist.
						T3	10			
		>4.5				T4				
			18/18	25	SPT	B6	11			
		>4.5					12			
					AD		13		CL-CH	Silty CLAY : Dark yellowish brown (10YR3/4); ~15% very fine to fine grained sand; ~85% medium to high plasticity fines; very stiff; moist to wet.
							14			
		3.0	18/18	11	MC	B7				
						T5	15			
		3.9				T6				
			18/18	16	SPT	B8	16			
							17			
							18			
							19		CH	Silty CLAY: Very dark brown (10YR2/2); ~100% medium to high plasticity fines; medium stiff; moist.

MILSTONE GEOTECHNICAL

Remarks:

LOG OF EXPLORATORY BOREHOLE MG4

Project Proposed Elam Subdivision Date 2/22/21 Page 2 of 2

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIGNATION	DEPTH (ft)	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
		2.5	18/18	15	MC	B9 T7	21		CH	Silty CLAY: Very dark brown (10YR2/2); ~5% medium grained sand;~95% medium to high plasticity fines; stiff to very stiff; moist.
		>4.5	18/18	23	SPT	B10	22 23			
							24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 23.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG5

Project: Proposed Elam Subdivision
Location: Lot 3-4 swale
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration
Project Elev.: ~727 feet
Hole Diameter: 6" solid stem
Surface: wild grass
Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD	B1	0		SC	**SOIL** Clayey SAND: Dark brown (10YR3/3); ~60% very fine to fine grained sand; ~40% low to medium plasticity fines; loose; moist; monor rootlets.
		3.8	18/18	7	MC	T1	2			**COLLUVIUM** Silty CLAY: Very dark brayish brown (10YR3/2); ~10% light yellowish brown fine gravel and medium to coarse grained sand; ~25% very fine to fine grained sand; ~65% medium to high plasticity fines; firm; damp to moist; rootlets within upper three feet.
			14/18	8	SPT	B2	3		CH	
					AD		5			
		>4.5	18/18	17	MC	B3 T2 T3	7		ML-CL	**RESIDUAL SOIL** Clayey SILT to silty CLAY (Decomposed SANDSTONE): Yellowish brown (10YR5/4) laced with caliche staining and veining; ~30% very fine grained sand; ~70% medium to high plasticity fines; dense; damp to moist.
		>4.5	18/18	26	CAL*	B4	9			
			16/18	42	SPT	B5	10			**WEATHERED BEDROCK** Weathered SILTSTONE and SHALE: Light yellowish brown and grayish brown (10YR6/4,5/2) with mineral staining on fracture facies; severely weathered; weak; soft; moist; intensely fractured; remnant rock structure. @10.5 - Very pale brown and yellowish brown (10YR7/4,5/8) with white caliche; ~5% caliche nodules to 1/3-inch size.
					AD		12		Wrx	
		>4.5	12/12	33/6"	MC	B6 T4	15			
			12/12	50/6"	SPT	B8	16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 17.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG6

Project: Proposed Elam Subdivision
Location: Lot 4
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~719 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**COLLUVIUM**
			14/18	4	MC	B1	1			Clayey SAND to sandy CLAY: Dark brown (10YR3/3); ~50% very fine grained sand; ~50% medium plasticity fines; loose; moist; minor rootlets and dessicated within upper eight inches.
		3.2				T1	2		SC/ CL	
			8/18	4	SPT	B2	3			
					AD		4			
			12/18	11	MC	B3	5			@5.5 - rootlets
		>4.5				T2	6			
			18/18	23	SPT	B4	7		ML-CL	**RESIDUAL SOIL** Decomposed SILTSTONE and SHALE: Pale brown (10YR6/3) laced with white caliche; severely weathered; ~10% soft, v. pale brown siltstone clasts to 1/3-inch size; ~40% very fine grained sand; ~50% medium plastiticy fines; dense; moist.
					AD		8			
							9			**WEATHERED BEDROCK**
			16/18	24	MC	B5	10			Weathered SILTSTONE and SHALE: Light yellowish brown and grayish brown (10YR6/4,5/2) with mineral staining on fracture facies; severely weathered; weak; soft; moist; intensely fractured with 75° predominant fracture dip; remnant rock structure.
		>4.5				T3	11		Wrx	
			18/18	40	SPT	B6	12			
					AD		13			
							14			@ 14' - Slower drilling
			18/18	35	MC	B7	15			
		>4.5				T4	16		Wrx	@ 14' - Remant rock structure with 75° bedding plane
		>4.5	18/18	54	CAL*	B8	17			
			18/18	55	SPT	B9	18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 19.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.
* No liners.

LOG OF EXPLORATORY BOREHOLE MG7

Project: Proposed Elam Subdivision
Project Number: 205220
Location: Lot 4
Project Elev.: ~704 feet
Page: 1 of 1
Drilling Equipment: Track-mounted CME45 - 140#/30"
Hole Diameter: 6" solid stem
Logged By: BSM
Drilling Contractor: Britton Exploration
Surface: wild grass
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**COLLUVIUM**
			18/18	7	MC	B1	1			Sandy CLAY: Dark grayish brown (10YR4/2); trace angular, white and yellow, shale clasts; ~5% medium grained sand; ~20% very fine to fine grained sand; ~75% medium to high plasticity fines; very stiff; moist.
		1.8				T1	2			
			14/18	5	SPT	B1	3		CL-CH	
					AD		4			
			16/18	12	MC	B3	5			
		>4.5				T2	6			
					AD		7			**RESIDUAL SOIL**
							8		CL-CH	Lean CLAY: Dark yellowish brown and yellowish brown (10YR4/6,5/8) with white caliche veining throughout; trace very fine grained sand; very stiff to hard; damp to moist; remnant rock structure.
			18/18	17	MC	B4	9			
		>4.5				T3	10			
						T4				
					AD		11			**WEATHERED BEDROCK**
			12/18	28	MC	B5	12			Weathered SILTSTONE and SHALE: Brown and dark yellowish brown (10YR5/3,4/6) with mineral staining on fracture facies and white caliche veining; very severely to severely weathered; weak to moderate strength; very soft to soft; closely fractured; moist.
		>4.5				T5	13			
						B6	14			
					AD		15			
							16		Wrx	
			14/18	21	MC	B7	17			
		>4.5				T6	18			
			18/18	22	SPT	B8	19			

MILSTONE GEOTECHNICAL

Remarks:
Borehole terminated at 20.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.
* No liners.

LOG OF EXPLORATORY BOREHOLE MG8

Project: Proposed Elam Subdivision
Location: Lot 5
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~705 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/23/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD					**SOIL**
	2.5		14/18	4	MC	B1	1		CH	Sandy CLAY with gravel: Very dark grayish brown (10YR3/2); ~20% angular to subangular gravel to one-inch size and medium to coarse grained sand; ~10% very fine to fine grained sand; ~70% medium to high plasticity fines; stiff; moist; minor rootlets; slight organic odor.
						T1	2			
			16/18	6	SPT	B2	3			**COLLUVIUM**
					AD		4			Sandy CLAY: Dark brown with brownish yellow (10YR3/3, 6/8); ~30% very fine to coarse grained sand and angular to subangular siltstone gravel to 3/8-inch size; ~70% medium to high plasticity fines; medium stiff; damp to moist.
	>2.7		13/18	12	MC	B3	5			
		>4.5				T2	6		CH	
			18/18	13	SPT	B4	7			
					AD		8			
			16/18	34	MC	T3	9			
		>4.5				T4	10			**WEATHERED BEDROCK**
					AD		11			Weathered SILTSTONE and SHALE: Yellow and yellowish brown (10YR7/8,6/8) with white (10YR8/1) caliche veining throughout; severely weathered; weak; soft; moist; intensely fractured; white caliche nodules to one-inch size.
			18/18	51	MC	B4	12			
		>4.5				T5	13			
							14		Wrx	
					AD		15			
							16			
							17			
							18			
		>4.5	11/11	33/5"	MC	T6	19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 18.9 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG9

Project Proposed Elam Subdivision — Project Number 205220
Location Lot 6 — Project Elev. ~690 feet — Page 1 of 1
Drilling Equipment Track-mounted CME45 - 140#/30" — Hole Diameter 6" solid stem — Logged By BSM
Drilling Contractor Britton Exploration — Surface wild grass — Date 2/23/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**RESIDUAL SOIL/COLLUVIUM**
			15/18	2	MC	B1	1		CH	Sandy CLAY with gravel: Brown (10YR3/2); ~5% weathered, angular to subanguler siltstone gravel to 1/2-inch; ~30 fine to coarse grained sand; ~65% medium to high plasticity fines; stiff to very stiff; very moist; minor rootlets and organic debris.
		1.8				T1	2			
					AD		3			
							4			**WEATHERED BEDROCK**
			18/18	19	MC	T2	5			Weathered SILTSTONE and SHALE: Brownish yellow and light yellowish brown (10YR6/6,6/4) with white (10YR8/1) caliche veining throughout; severely weathered; weak; soft; friable; damp to moist; intensely fractured with predominant joint inclined at 85 degrees; remant rock structure.
		4.0				T3	6			
					AD		7			
							8			
			18/18	48	MC	B2	9		Wrx	
		>4.5				T4	10			
					AD		11			
							12			
							13			
			18/18	35	SPT	B3	14			
		>4.5					15			
							16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 14.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG10

Project: Proposed Elam Subdivision
Location: Lot 7
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration
Project Elev.: ~663 feet
Hole Diameter: 6" solid stem
Surface: wild grass
Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/23/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		1			Holocene **COLLUVIUM**
		>4.5	16/18	11	MC	T1	2		SM-SC	Silty to clayey SAND: Pale brown (10YR6/3) with grayish brown (10YR5/2) clasts; ~65% very fine to fine grained sand; ~35% low plasticity fines; medium dense; damp to moist.
						T2	3			Pleistocene
					AD		4			**RESIDUAL SOIL**
							5		CL-CH	Silty CLAY with gravel: Light olive brown (2.5Y5/4 to yellowish brown (10YR5/4); trace yellowish brown medium to coarse grained, weathered siltstone gragments; trace carbonage nodules; faint remnant rock structure.
		>4.5	18/18	25	MC	T3	6			
						T4				**WEATHERED BEDROCK**
					AD		7			Weathered SILTSTONE and SHALE: Brown (10YR5/3,5/6) with strong brown (7.5YR4/6) oxidation staining on fracture facies; weathered sandstone clasts to at least one-inch size; severely weathered; weak; soft (scratchable); damp to moist; intensely fractured with predominant fracture inclined at 65 degrees; white caliche filling fracture voids up to 1/4-inch wide.
							8			
							9			
		>4.5	16/18	30	MC	B1	10			
						T5				
					AD		11			
							12		Wrx	
							13			
		>4.5	18/18	34	MC	T6	14			
			18/18	37	SPT	B2	15			
							16			
					AD		17			
							18			
			18/18	30	SPT	B3	19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 19.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG11

Project: Proposed Elam Subdivision
Project Number: 205220
Location: Lot 7
Project Elev.: ~643 feet
Page: 1 of 1
Drilling Equipment: Track-mounted CME45 - 140#/30"
Hole Diameter: 6" solid stem
Logged By: BSM
Drilling Contractor: Britton Exploration
Surface: wild grass
Date: 2/23/21

GROUND WATER	TORVANE (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD					**COLLUVIUM**
			12/18	11	MC	T1	1–2		CH	Silty CLAY: Dark brown (10YR3/3); ~5% medium to coarse grained sand; ~95% medium to high plasticity fines; firm; moist.
		3.0	15/18	13	SPT	B1	3–4			
					AD		5			**ALLUVIUM**
			18/18	21	MC	T2	6			Silty CLAY to clayey SAND: Brown (10YR4/3) laced with white caliche and caliche nodules; ~5% medium to coarse grained sand; ~40 to 60% very fine to fine grained sand; ~35 to 55% medium to high plasticity fines; medium stiff to stiff; moist.
		>4.5	18/18	36	SPT	B4	7			
					AD		8–9		CH/ SC	
			16/18	18	MC	T3	10–11			
		4.0	18/18	21	SPT	B3	12–13			
					AD		14			**WEATHERED BEDROCK**
			18/18	24	MC	T4	15		Wrx	Severely weathered SILTSTONE and SHALE: Dark yellowish brown (10YR3/4); matrix of ssoft siltstone clasts to at least one-inch size with remnant rock structure in silty clay; very soft; weak; very moist.
		>4.5				T5	16			
			18/18	31	SPT	B4	17–18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 18.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG12

Project: Proposed Elam Subdivision
Project Number: 205220
Location: Lot 6
Project Elev.: ~665 feet
Page: 1 of 1
Drilling Equipment: Track-mounted CME45 - 140#/30"
Hole Diameter: 6" solid stem
Logged By: BSM
Drilling Contractor: Britton Exploration
Surface: wild grass
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD					**ALLUVIUM**
			15/18	4	MC	T1	1 2		SC/ CL	Sandy CLAY to Clayey SAND: Very dark grayish brown (10YR3/2); ~5% non-native rounded gravel to at least 3/4-inch size; ~5% medium to coarse grained sand; ~40% very fine to fine grained sand; ~50% medium plasticity fines; loose increasing to firm with depth; moist.
		1.9	18/18	10	SPT	B1	3			
					AD		4			
			18/18	11	MC	T2	5 6			Sandy CLAY: Very dark grayish brown (10YR3/2); trace pale brown coarse grained sand; ~20% medium to coarse grained sand and gravel to 1/2-inch size; ~25% very fine to fine grained sand; ~55% medium to high plasticity fines; moist to wet.
		1.6	18/18	9	SPT	B2	7			
					AD		8 9			Below 9' - stiff
			18/18	10	MC	T3	10 11		Cl-CH	
	2.0	2.3	18/18	12	SPT	B3	12			
					AD		13 14			
			16/18	16	MC	T4	15 16			**WEATHERED BEDROCK**
		3.0	15/18	32	SPT	B4	17		Wrx	Severely weathered SILTSTONE and SHALE: Dark yellowish brown (10YR4/4); matrix of soft siltstone clasts to at least one-inch size with remnant rock structure in silty clay; very soft; very weak; wet.
		3.0					18			
			15/18	15	SPT	B5	19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 19.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG13

Project: Proposed Elam Subdivision
Project Number: 205220
Location: Lot 5
Project Elev.: ~686 feet
Page: 1 of 2
Drilling Equipment: Track-mounted CME45 - 140#/30"
Hole Diameter: 6" solid stem
Logged By: BSM
Drilling Contractor: Britton Exploration
Surface: wild grass
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD					**ARTIFICIAL FILL**
			14/18	5	MC	B1	1		SC	Clayey SAND with gravel: Dark grayish brown (10YR4/2); ~10% rounded gravel to at least 3/4-inch size; ~10% medium to coarse grained sand; ~45% very fine to fine grained sand; ~35% medium plasticity fines; loose; moist.
		1.5				T1	2			
	>2.7				AD		3		CH/ SC	Sandy CLAY to Clayey SAND: Very dark grayish brown (10YR3/2); ~5% non-native rounded gravel to at least 3/4-inch size; ~5% medium to coarse grained sand; ~40% very fine to fine grained sand; ~50% medium to high plasticity fines; loose increasing to firm with depth; moist.
			15/18	10	MC	BA	4			
		>4.5				T2	5			
	1.1		15/18	11	SPT	B2	6			**ALLUVIUM**
					AD		7			Sandy lean CLAY: Brown and dark yellowish brown (10YR3/3,3/2); trace pale brown coarse grained sand; ~10 to 30% medium to coarse grained sand and angular shale gravel to 1/2-inch size; ~20 to 30% very fine to fine grained sand; ~70% medium to high plasticity fines; very stiff to hard; moist.
			18/18	11	MC		8			
		>4.5				T3	9			Below 8' - Trace caliche throughout.
			18/18	18	SPT	B3	10			
					AD		11		CL-CH	
			18/18	22	MC		12			
		>4.5				T4	13			
			18/18	22	SPT	B4	14			
					AD		15			
							16			
			18/18	16	MC		17			
		>4.5				T5	18			
			18/18	20	SPT	B5	19			

MILSTONE GEOTECHNICAL

Remarks:

LOG OF EXPLORATORY BOREHOLE MG13

Project Proposed Elam Subdivision Date 2/23/21 Page 2 of 2

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIGNATION	DEPTH (ft)	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
							21			**ALLUVIUM (Continued)**
							22			Sandy CLAY with gravel: Dark yellowish brown (10YR3/4); ~10% medium to coarse grained sand and subangular to angular shale gravel to 1/2-inch size; ~10% very fine to fine grained sand; ~80% medium to high plasticity fines; very stiff to hard; very moist.
							23			
		>4.5	12/18	23	MC	T6	24			
			18/18	23	SPT	B7	25			
					AD		26			
							27			
		>4.5	16/18	31	MC	T7	28			
			18/18	23	SPT	B7	29			
							30			
							31			
							32			
							33			
							34			
							35			
							36			
							37			
							38			
							39			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 30.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG14

Project: Proposed Elam Subdivision
Location: Lot 2
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~720 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 2
Logged By: BSM
Date: 2/23/21

GROUND WATER	TORVANE (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**ALLUVIUM**
			12/18	16	MC	T1	1			Silty CLAY with gravel: Black (10YR3/4); ~5% medium to coarse grained sand and very pale brown, subangular to angular gravel to 1/2-inch size; ~5% very fine to fine grained sand; ~90% medium to high plasticity fines; very stiff to hard; moist.
		>4.5				T2	2			
			18/18	24	MC	B1	3			
					AD		4			
			18/18	19	MC	T3	5			Below 5" - Dark yellowish brown (10YR3/4)
		>4.5					6			
			18/18	17	SPT	B2	7		CL-CH	
					AD		8			
			18/18	13	MC	T4	9			
		3.1					10			
			18/18	15	SPT	B3	11			
					AD		12			
			18/18	23	MC	T5	13			
		>4.5					14			
			18/18	26	SPT	B4	15			**RESIDUAL SOIL** Decomposed SILTSTONE and SHALE: Dark yellowish brown (10YR3/4); ~5% subangular to angular siltstone and shale clasts to 1/2-inch; ~5% fine grained sand; 90% medium plasticity fines; soft; weak; moist.
					AD		16		Wrx	
			18/18	21	MC	T6	17			**WEATHERED BEDROCK** Severely Weathered SILTSTONE and SHALE: Light yellowish brown (10YR6/4); ~50% soft to medium hard siltstone clasts to at least 3/4-inch size in matrix of 10% fine grained sand and 40% medium plasticity fines; soft; weak; moist.
		>4.5					18			
			18/18	30	SPT	B5	19		Wrx	

MILSTONE GEOTECHNICAL

Remarks:

LOG OF EXPLORATORY BOREHOLE MG14

Project Proposed Elam Subdivision Date 2/23/21 Page 2 of 2

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIGNATION	DEPTH (ft)	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
							21			**WEATHERED BEDROCK (continued)**
							22			Severely Weathered SILTSTONE and SHALE: LIght yellowish brown (10YR6/4); ~50% soft to medium hard siltstone clasts to at least 3/4-inch size in matrix of 10% fine grained sand and 40% medium plasticity fines; soft; weak; moist.
							23			
							24			
							25			
		>4.5	16/18	23	SPT	B6	26			
							27			
							28			
							29			
							30			
							31			
							32			
							33			
							34			
							35			
							36			
							37			
							38			
							39			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 26.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG15

Project: Proposed Elam Subdivision
Location: Lot 1
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~717 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/24/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**ALLUVIUM**
			16/18	14	MC	B1	1			Sandy CLAY: Very dark grayish brown with yellowish brown (10YR3/2,6/8); ~20% gravel to 3/8-inch and fine to coarse grained sand; 30% very fine grained sand; ~50% medium to high plasticity fines; medium stiff; damp to moist; minor roots.
		>4.5				T1	2			
					AD		3		CL	
							4			
							5			
			12/18	33	MC	B2	6			Silty CLAY: Light yellowish brown (10YR6/42) laced with white caliche; ~5% veryt pale brown sandstone clasts to 1/8-inch size; ~35% very fine grained sand; ~60% medium plasticity fines; very stiff to hard; damp to moist.
		>4.5				T2				
					AD		7		CL	
							8			
							9			**WEATHERED BEDROCK**
			18/18	23	MC	B3	10		Wrx	Severely weathered SANDSTONE and SILTSTONE: Brownish yellow and yellowish brown (10YR6/8,5/6); ~20% soft, weak, very pale b brown (10YR8/3) siltstone clasts to one-inch size; ~50% very fine grained sand; ~30% low plasticity fines; dense to very dense; moist.
		>4.5				T3				
					AD		11			
							12			
							13			Weathered SANDSTONE: Olive yellow (2.5Y6/8); with minor caliche on facies; ~70% very fine to fine grained sand; ~30% low plasticity fines; dense to very dense; damp; weak; crushable.
			18/18	23	MC	B4	14		Wrx	
		>4.5				T4				
					AD		15			
							16			
							17			Decomposed SILTSTONE and SHALE: Brownish yellow (10YR6/6); with minor caliche nodules; soft; weak; friable; damp to moist..
			18/18	25	MC	B5	18		Wrx	
		>4.5								
			18/18	17	SPT	B6	19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 20.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG16

Project: Proposed Elam Subdivision
Location: Lots 1 & 2
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~743 feet
Hole Diameter: 6" solid stem
Surface: bare

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/24/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**WEATHERED BEDROCK**
			10/18	20	MC	B1	1			Weathered SILTSTONE and SHALE: Light yellowish brown (10YR6/4) with white caliche on facies; medium hard siltstone clasts to at least two-inch size; trace very fine grained sand; soft; weak; damp; remnant rock structure..
		>4.5				T1	2			
					AD		3			
							4			
							5			
			18/18	31	MC	B2	6		Wrx	
		>4.5				T2				
			18/18	25	SPT	B3	7			
							8			@7.5 - 11.3' - increased very fine grained sand content; more advanced weathering.
					AD		9			
							10			
			18/18	35	MC	B4	11			
		>4.5				T3				
			18/18	32	SPT	B5	12			
							13			
							14			
							15			
							16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 13.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG17

Project: Proposed Elam Subdivision
Project Number: 205220
Location: Lots 9 & 10
Project Elev.: ~874 feet
Page: 1 of 1
Drilling Equipment: Track-mounted CME45 - 140#/30"
Hole Diameter: 6" solid stem
Logged By: BSM
Drilling Contractor: Britton Exploration
Surface: wild grass
Date: 2/24/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**SOIL**
			16/18	30	MC	B1	1		CL/ SC	Silty CLAY to clayey SAND: Very dark grayish brown (10YR3/2); ~5% decomposed sandstone clasts; ~5% medium to coarse grained sand; ~40% very fine to fine grained sand; ~50% low to medium plasticity fines; firm; moist; minor tootlets; slight organic odor.
		>4.5				T1	2			
			18/18	36	SPT	B2	3			**WEATHERED BEDROCK**
					AD		4			Weathered SILTSTONE and SHALE: Pale brown and light yellowish brown (10YR6/3,5/4) with strong brown (7.5YR4/6) oxidation staining on fracture facies and white (10YR8/1) caliche veining; weathered sandstone clasts to at least 3/4-inch size; severely weathered; weak; soft to very soft; damp to moist; intensely fractured with predominant fracture inclined at 65 degrees; white caliche nodules to 1/2-inch size; remnant rock structure.
			18/18	29	MC	B3	5			
		>4.5				T2	6			
			18/18	28	SPT	B4	7			
					AD		8			
							9			
			18/18	34	MC	B5	10		Wrx	
		>4.5				T3	11			
			18/18	33	SPT	B6	12			
					AD		13			
							14			
			18/18	31	MC	B7	15			
		>4.5					16			
			18/18	30	SPT	B8	17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 18.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG18

Project: Proposed Elam Subdivision
Location: Lot 10
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~860 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/24/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD				CL/ SC	**SOIL**
			18/18	27	MC	B1	1			Clayey SAND: Dark brown (10YR3/3); ~5% pale brown, decomposed, sandstone clasts to 1/2-inch size; ~70% fine grained sand; ~25% low to medium plasticity fines; medium dense; damp.
		>4.5				T1	2			
			18/18	51	SPT	B2	3			**WEATHERED BEDROCK**
					AD		4			Weathered SILTSTONE and SHALE: Pale brown and light yellowish brown (10YR6/3,5/4) with strong brown (7.5YR4/6) oxidation staining on fracture facies and white (10YR8/1) caliche veining; weathered sandstone clasts to at least 3/4-inch size; severely weathered; weak; soft to very soft; damp to moist; intensely fractured with predominant fracture inclined at 65 degrees; white caliche nodules to 1/2-inch size; remnant rock structure.
			18/18	31	MC	B3	5			
		>4.5				T2	6		Wrx	
			18/18	61/11'	SPT	B4	7			
					AD		8			
							9			
							10			
			18/18	29	MC		11			
		>4.5				T3				
			18/18	32	SPT	B5	12			
							13			
							14			
							15			
							16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 13.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG19

Project: Proposed Elam Subdivision
Project Number: 205220
Location: Lot 8
Project Elev.: ~863 feet
Page: 1 of 1
Drilling Equipment: Track-mounted CME45 - 140#/30"
Hole Diameter: 6" solid stem
Logged By: BSM
Drilling Contractor: Britton Exploration
Surface: wild grass
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD	B1	1		SC	**SOIL** Clayey SAND: Dark brown (10YR3/3); ~5% pale brown, decomposed, sandstone clasts to 1/2-inch size; ~70% fine grained sand; ~25% low to medium plasticity fines; medium dense; damp; slightly dessicated; slight organic odor.
		>4.5	15/18	10	MC	B2 T1	2			
			18/18	32	SPT	B2	3		Wrx	**WEATHERED BEDROCK** Weathered SILTSTONE and SHALE: Pale brown and light yellowish brown (10YR6/3,5/4) with strong brown (7.5YR4/6) oxidation staining on fracture facies and white (10YR8/1) caliche veining; weathered sandstone clasts to at least 3/4-inch size; severely weathered; weak; soft to very soft; damp to moist; intensely fractured with predominant fracture inclined at 65 degrees; white caliche nodules to 1/2-inch size; remnant rock structure.
					AD		4			
		>4.5	18/18	35	MC	B3 T2	5			
			18/18	20	SPT	B4	6			
					AD		7			
		>4.5	18/18	31	MC	B5 T3	8			
			18/18	31	SPT	B6	9			
							10			
							11			
							12			
							13			
							14			
							15			
							16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 13.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

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

November 15, 2022
LG6052

TO: WooJae Kim
Town Engineer
TOWN OF LOS GATOS
41 Miles Avenue
Los Gatos, California 95030

SUBJECT: **Geotechnical Peer Review**
RE: 10-Lot Subdivision M-22-003
FY23071
14915 Shannon Road

At your request, we have completed a geotechnical peer review of the proposed multi lot subdivision using:

- Geotechnical Investigation (report) prepared by Milstone Geotechnical, dated May 17, 2021;
- Engineering Geologic Investigation (report) prepared by Steven F. Connelly, CEG, dated February 5, 2021; and
- Civil Plans (10 sheets) prepared by TS Civil Engineering, Inc., dated March 11, 2022.

In addition, we have reviewed pertinent maps and technical documents from our office files and completed a recent site reconnaissance of the site vicinity.

DISCUSSION

We understand the applicant proposes to demolish the existing site improvements and subdivide the property into ten (10) lots. Lots 1 through 7 are proposed along Shannon Road. Access to Lots 1 through 7 is proposed by shared driveways extending from either Shannon Road or Sky Lane. Lots 8 through 10 will be accessed by Sierra Azule and are located upslope of Lot 7.

SITE CONDITIONS

The property is not located within a California Geological Survey liquefaction hazard zone, and is also not located within a State designated Alquist Priolo/ Fault Rupture hazard zone. However, the property is located within a California Geological Survey earthquake-induced landslide hazard zone and the Town Fault Lineament and Coseismic Deformation Map (compiled by Nolan Associates, 1999) delineates a trace of the Shannon Fault through the property in the vicinity of Shannon Road. The Town Geologic Map indicates that the subject site is underlain by Oligocene to Middle Miocene sedimentary bedrock. A majority of the site includes steep slopes (greater than 30 percent) that descend towards Shannon Road. Portions of the slope have developed colluvial swales. Lower portions of the property are overlain by alluvium/colluvium and debris flow deposits. The San Andreas Fault is located approximately 4.85 miles southwest of the site.

GEOLOGIC AND GEOTECHNICAL EVALUATIONS

We understand the Project Engineering Geologist (Connelly) has advanced an investigation that included reconnaissance level geologic tasks, as well as subsurface investigation by 11 test-pits. The Geologist maps 5 swale features and recommends avoidance of these features or retaining wall mitigative structures in locations where homes may be positioned downslope. As part of the subsurface investigation, the Geologist identified Monterey Formation bedrock as well as alluvium, colluvial soils and debris flow deposits. The Geologist notes that additional geologic investigation is necessary to evaluate fault rupture hazards, specifically in reference to Lot 7.

The Project Geotechnical Consultant (Milstone) has reviewed the results of the Engineering Geologic Investigation and completed additional investigative tasks including exploratory borings, laboratory testing and analysis to evaluate geotechnical conditions at the site. In total, 19 borings were advanced to a maximum depth of 30 feet below the ground surface. Artificial fill was encountered on proposed Lots 5 and 6. We understand no ground water was encountered in any geologic or geotechnical site investigation. The Geotechnical Consultant recommends additional swell testing of site soils prior to final foundation design of individual lots. The Consultant finds the risk of significant debris flow activity at the site to be low; however, they note that swales like those identified present increased risk to downslope improvements.

CONCLUSIONS AND RECOMMENDED ACTION

The proposed subdivision project is potentially constrained by surface fault rupture and secondary coseismic ground deformation, debris flows and shallow landsliding, undocumented fill, steep slopes, and very strong ground shaking. We concur

with the Project Engineering Geologist and Geotechnical Consultant that the mapped swales on the subject property present a potential for debris flow hazards as well as additional risk of adverse impacts form concentrated drainage, surface erosion, etc. We also concur that proposed subdivision plans and potential homesites should carefully consider these hazards through avoidance or engineered mitigative measures. Typically, colluvial swales are avoided, if possible, as part of site development. Alternatively, debris walls, confinement structures, and collection basins may be designed to protect proposed habitable structures. Due to the likelihood that geologic and geotechnical hazards such as debris flows, landslides, and surface runoff/erosion, will cross property lines, careful consideration should be paid to alignments and orientations of proposed engineered structures intended to mitigate hazards. Such considerations will likely facilitate future maintenance of the structures and could reduce litigation.

The only acceptable mitigation alternative recognized by the State for fault rupture hazards is avoidance through set-backs from investigated and identified fault traces. Consequently, the potential for surface fault rupture from the potentially active Shannon Fault should be investigated prior to approval of proposed subdivision applications and tentative building sites across the property.

With the understanding above, we recommend completion of the following three (3) Items prior to supplemental peer review and approval of subject permit applications:

1. **Supplemental Engineering Geologic Investigation and Evaluation** – The Project Engineering Geologist should perform the investigative tasks necessary to address the following:

    a. The Engineering Geologist should complete an investigation for surface fault rupture and secondary ground deformation to impact the site. The applicant's Consultant should advance appropriate subsurface investigation (i.e., trenching) to characterize rupture hazards and develop suitable set-backs, as necessary. We understand the Engineering Geologist finds that the Shannon Fault is mapped across the southern portion of Lot 7. We recommend the Engineering Geologist considers a fault trench investigation which extends across Lot 7 to shadow additional Lots 1 through 6, and evaluate the risk of surface fault rupture to those lots.

    b. The Engineering Geologist should perform additional mapping of potential debris flow hazards. We recommend the applicant's Geologist prepare an updated Engineering Geologic map clearly showing areas of both debris flow

source, and moderate to high debris flow run-out potential to be avoided or mitigated. Given inherent variability in mapping debris flow hazards the Engineering Geologist may also consider recommendations for habitable building set-backs from inferred source or run-out areas, unless mitigated through engineering design. We also recommend the engineering geologic map denote areas of undocumented fill, as applicable.

The applicant's Engineering Geologist should compile the results in a signed and stamped supplemental letter-report or updated investigation to be submitted to the Town for supplemental peer review prior to approval of subject subdivision level permit applications. If subsurface investigation (i.e., trenching) is advanced, then the Town Geotechnical Consultant should be contacted to observe cleaned and shored exposures.

2. **Supplemental Geotechnical Evaluations and Recommendations** – The Project Geotechnical Consultant should review the results of Item 1 as well as perform additional investigation and analysis to address the following:

   a. The Geotechnical Consultant should discuss and evaluate the potential for erosional failures or debris flows to retrogress across Lot 8 towards the proposed building site. The Consultant should evaluate whether a habitable building set-back is warranted, or, alternatively, whether a retaining wall (e.g., buried stitch pier wall) is warranted.

   b. Based on the results of Item 1, the Geotechnical Consultant should evaluate potential debris impact to structures and provide design recommendations for mitigative alternatives, as necessary.

   The Supplemental Geotechnical Evaluations and Recommendations should be compiled by the applicant's Geotechnical Consultant in a supplemental signed and stamped response letter and submitted to the Town for supplemental peer review prior to approval of subject permit applications.

3. **Revised Civil Plans** – Plans for the proposed subdivision should be revised, as necessary, to include recommendations of the Project Engineering Geologist and Geotechnical Consultant. Proposed

property lines and building sites should consider potential fault and debris flow hazards and mitigative structures.

The Project Civil Engineer should coordinate with the Project Engineering Geologist and Geotechnical Consultant, as necessary, to revise proposed subdivision plans with respect to investigated geologic and geotechnical constraints. Plans should be submitted with responses to Items 1 and 2 to the Town for supplemental peer review prior to approval of subject permit applications.

LIMITATIONS

This geotechnical peer review has been performed to provide technical advice to assist the Town 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.
TOWN GEOTECHNICAL CONSULTANT

Craig Stewart
Senior Geologist
PG 9786

David T. Schrier
Principal Geotechnical Engineer
GE 2334

DTS:CS:st

BYGG ENGINEERS

BORING LOG

Boring No. B-1
Page 1 of 2

JOB NAME: Proposed 10-Lot Subdivision
CLIENT: Elam Family Trust-A
LOCATION: 14915 Shannon Road, Los Gatos, California
DRILLER: West Coast Exploration
DRILL METHOD: 4.5-inch continuous flight auger

JOB NO.: ELAMF-01-00
DATE DRILLED: 6/12/2023
ELEVATION: 685 feet
LOGGED BY: JW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Wood chip-mulch-soil mixture	FILL
DSX	280	25.3	760	22.9	97		18 6 7	CL	LEAN CLAY, orange brown, moist, stiff, some medium to fine sand, brown and black mottling, trace concrete fragments	0.67% swell
DSX	480	22.8	840	20.8	100	4	7 8 10			0.42% swell
								CL	LEAN CLAY, brown, moist, stiff, some medium to fine sand, trace to some fine sandstone fragments	COLLUVIUM
DSX	1000	42.7	550	37.2	70	8	9 11 16			0.21% consol
						12			...color change to light brown	
DSX	1500	37.4	1420	36.0	80		11 18 20			0.09% swell
						16				
				38.1	78		11 12 18			
						20			...slightly moist	
							15 15 18			
						24				

BVGG ENGINEERS

BORING LOG

Boring No. B-1
Page 2 of 2

JOB NAME: Proposed 10-Lot Subdivision

JOB NO.: ELAMF-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
				38.2	79	28	22 30 32		...color change to brown	
				33.5	84	32	18 30 30		...trace oxidation stains	
				30.1	90	36	25 42 50		CLAYEY SAND, brown, moist, intensely weathered, closely fracture to crushed with clayey infilling of joints, trace oxidation stains	
				24.2	96	40			Boring terminated at 39.5 feet. Groundwater was not encountered. Boring was backfilled with neat cement grout.	
						44				
						48				
						52				

BYGG ENGINEERS

BORING LOG

Boring No. B-2
Page 1 of 1

JOB NAME: Proposed 10-Lot Subdivision
CLIENT: Elam Family Trust-A
LOCATION: 14915 Shannon Road, Los Gatos, California
DRILLER: West Coast Exploration
DRILL METHOD: 4.5 inche continuous flight auger

JOB NO.: ELAMF-01-00
DATE DRILLED: 6/12/2023
ELEVATION: 685 feet
LOGGED BY: JW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Wood chip-mulch mixture	FILL
							12 14 17	CL	LEAN CLAY, brown, moist, very stiff, some medium to fine sand, trace angular sandstone fragments, trace oxidation stains	COLLUVIUM
							50/6'		... brown, slightly moist, moderately weathered, trace oxidation stains	
						4			Practical refusal encountered at 4 feet. Groundwater was not encountered. Boring was backfilled with neat cement grout.	
						8				
						12				
						16				
						20				
						24				

BORING LOG

Boring No. B-3
Page 1 of 2

JOB NAME: Proposed 10-Lot Subdivision
CLIENT: Elam Family Trust-A
LOCATION: 14915 Shannon Road, Los Gatos, California
DRILLER: West Coast Exploration
DRILL METHOD: 4.5 inch continuous flight auger

JOB NO.: ELAMF-01-00
DATE DRILLED: 6/13/2023
ELEVATION: 714 feet
LOGGED BY: MM

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0		CL	dry grass and weeds at surface	
							15 17 20		LEAN CLAY, dark brown, moist, very stiff, some medium to fine sand, trace rootlets	NATIVE
DSX	330	33.2	730	28.0	84					0.76% swell LL=59 PI=30
						4	14 22 28			
DSX	500	35.4	1230	33.8	83					0.29% swell
						8	18 22 30			
DSX	1000	34.3	1750	32.6	84					0.27% swell
								CL	LEAN CLAY, brown, moist, very stiff, trace angular shale fragments	
						12	12 12 17			
DSX	1500	36.4	1570	35.5	81					0.09% swell
						16	15 15 21			
				32.9	85					
						20	30 32 40		...trace oxidation stains	
				36.6	82	24				

BYGG ENGINEERS

BORING LOG

Boring No. B-3
Page 2 of 2

JOB NAME: Proposed 10-Lot Subdivision

JOB NO.: ELAMF-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
								rock	SILTSTONE, gray, slightly moist, highly weathered, some oxidation stains ...completely weathered	MONTEREY SHALE BEDROCK
MD				34.6	83	28	30 26 28			
MD				36.8	81	32	45 50/6"		Rock fabric and structure present	
						36			Boring terminated at 34 feet. Groundwater was not encountered. Boring was backfilled with neat cement grout.	
						40				
						44				
						48				
						52				

BAGG ENGINEERS

BORING LOG

Boring No. B-4
Page 1 of 2

JOB NAME: Proposed 10-Lot Subdivision
CLIENT: Elam Family Trust-A
LOCATION: 14915 Shannon Road, Los Gatos, California
DRILLER: West Coast Exploration
DRILL METHOD: 4.5 inch continuous flight augers

JOB NO.: ELAMF-01-00
DATE DRILLED: 6/13/2023
ELEVATION: 720 feet
LOGGED BY: JW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Mulch-wood chip mixture	FILL
				34.3	78		10 15 20	CL	LEAN CLAY, dark brown, moist, stiff, some sand, trace rock fragments	
				37.9	79	4	19 22 28		... brown, moist, very stiff, some medium to fine sand, trace oxidation stains, trace sandstone fragments	NATIVE
DSX	1000	38.9	80	36.1	80	8	14 16 24			0.41% swell
						12	9 9 11		...stiff	
DSX	1500	40.4	77	39.8	77					0.09% consol
						16	9 13 20		...very stiff	
				34.1	84	20				
							15 22 28		... light brown, moist, friable, trace oxidation stains	
				35.7	83	24				

BYGG ENGINEERS

BORING LOG

Boring No. B-4
Page 2 of 2

JOB NAME: Proposed 10-Lot Subdivision

JOB NO.: ELAMF-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
				34.8	84	28	18 25 50/6"	ROCK	CLAYEY SILTSTONE, highly weathered, plastic, weak	MONTEREY SILTSTONE BEDROCK
						32			Boring terminated at 29.5 feet. Groundwater was not encountered. Boring was backfilled with neat cement grout.	
						36				
						40				
						44				
						48				
						52				

BYGG ENGINEERS

BORING LOG

Boring No. B-5
Page 1 of 2

JOB NAME: Proposed 10-Lot Subdivision
CLIENT: Elam Family Trust-A
LOCATION:
DRILLER:
DRILL METHOD:

JOB NO.: ELAMF-01-00
DATE DRILLED: 6/13/2023
ELEVATION: 664 feet
LOGGED BY:

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Grass clipping-soil mixutre	FILL
							15 20 22	CL	LEAN CLAY, brown, moist, very stiff, some medium to fine sand, trace orange and gray mottling	
DSX	440			30.6	85					COLLUVIUM
							18 30 30			
DSX	440	34.6	1570	30.6	85	4			... dark brown, moist, some medium to fine sand, trace sandstone fragments	1.87% swell
						8	18 25 32		...color change to brown, trace oxidation stains	
				36.1	81					
						12				
							20 28 35			
DSX	1800	35.3	36.6	35.3	82					0.23% swell
						16				
							28 35 50		...sandstone and shale fragments in sandy clay matrix	
				32.4	86	20				
							18 20 25		...little to no rock fragments	
				34.3	84	24				

BVGG ENGINEERS

BORING LOG

Boring No. B-5
Page 2 of 2

JOB NAME: Proposed 10-Lot Subdivision

JOB NO.: ELAMF-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						28	20 22 45		... brown, moist, intensely weathered, trace to some pebble	
						32			Boring terminated at 29.5 feet. Groundwater was not encountered. Boring was backfilled with neat cement grout.	
						36				
						40				
						44				
						48				
						52				

REPORT
SUPPLEMENTAL GEOTECHNICAL EVALUATION AND RECOMMENDATIONS PROPOSED 9-LOT RESIDENTIAL SUBDIVISION 14915 SHANNON ROAD LOS GATOS, CALIFORNIA

for

ELAM FAMILY TRUST

September 2023

BAGG Engineers

BAGG Engineers, © Septembert 2023

September 5, 2023
BAGG Job No: ELAM-01-00

Elam Family Trust
14915 Shannon Road
Los Gatos, California

Supplemental Geotechnical Evaluation and Recommendations
Proposed 9-Lot Residential Subdivision
14915 Shannon Road
Los Gatos, California

References:

1. Steven F. Connelly, (CEG), report, Engineering Geologic Investigation, Proposed Subdivision, APN 527-27-047, 14915 Shannon Road, Los Gatos, California, dated February 2021.

2. Millstone Geotechnical, report, Feasibility Geotechnical Investigation, Proposed 10-Lot Subdivision, 14915 Shannon Road, Los Gatos, California, dated May 17, 2021.

3. Cotton Shires and Associates, letter, Geotechnical Peer Review, 10-Lot Subdivision M-22-003, FY23071, 14915 Shannon Road (LG6052), dated November 15, 2022.

4. Sadek Derrega Consulting Engineering Geologist (CEG), report, Engineering Geologic Assessment and Subsurface Fault Investigation , Proposed 9-Lot Subdivision, August 31, 2023.

INTRODUCTION:

This report presents the results of our Supplemental Geotechnical Evaluation and Recommendations for the planned 9-lot residential subdivision project at 14915 Shannon Road, Los Gatos, California. The attached Plate 1, Vicinity Map, shows the location of the site in relation to surrounding cultural features. Previously, an engineering geologic investigation dated February 2021 was prepared by Steven F. Connelly (Connelly), CEG, for the subject site, which included the excavation of 11 test pits (Reference 1). In addition, a feasibility level geotechnical engineering investigation report was prepared by Millstone Geotechnical (Millstone) for the subject project dated May 17, 2021 (Reference 2), which included 19 borings advanced to a maximum depth of 30 feet, and laboratory testing of collected subsurface materials.

Subsequently, a peer review of References 1 and 2 was performed by Cotton Shires and Associate, Inc. (CSA) and their comments were presented in a letter dated November 15, 2022 (Reference 3). The CSA peer review comments indicated that supplemental engineering geologic investigation and evaluation should be performed primarily to address potential fault rupture hazards and to develop habitable structure setback criteria, and to perform additional mapping of potential debris flow hazards. The supplemental engineering geologic investigation and evaluation was performed by Sadek Derrega, Consulting Engineering Geologist (SDCEG) and the findings of the study are presented in a separate report dated August 31, 2023 (Reference 4).

In addition, CSA's peer review comments also indicated that a supplemental design-level geotechnical evaluation report be prepared, which would provide geotechnical recommendations for grading, foundations and drainage and to address the identified geologic and seismic hazards identified in the SDCEG August 2023 fault investigation report, which include landslide and debris flow hazards and stability of the downslope side of proposed Lot 8 planned near the head of a prominent headscarp of a topographic Swale 9 present near the northeast corner of the property. A copy of the CSA peer review letter is attached in Appendix A.

PURPOSE:

The purpose of our study was to conduct a supplemental geotechnical engineering investigation at the subject site with additional borings and laboratory testing in order to address peer review comments by CSA in their November 15, 2022 letter (Reference 3) and to provide design-level geotechnical recommendations for the project. The purpose of our supplemental study was to include the following:

- Generate seismic design parameters for the site per the 2022 edition of the California Building Code,
- Review specific subsurface conditions discovered by previous and current borings, test pits and trenches such as expansive, loose, saturated, collapsible, or soft surface and subsurface soils that may require special mitigation measures or impose restrictions on the project, including consistency of the native bedrock materials, and depth to groundwater in each boring/test pit, as encountered,
- Criteria for preparation of the building pads as well as placement of fills and backfills and trench backfill requirements, including the suitability of the excavated soils from the site for use as fill and backfill material and grading on the hillside, maximum allowable cut and fill slope gradients, stability of the existing site slopes, as well as grading for the access roadway,

- Remedial measures to address landslide and debris flow potential and slope stability, as judged appropriate.
- Estimates of the allowable bearing values for the subgrade materials under dead loads, total design loads, and under seismic conditions for the support of the proposed residences; recommendations will be provided for conventional spread footing foundations as well as skin friction values for drilled, cast-in-place reinforced concrete piers or geotechnical design parameters for other type of shallow or deep foundations, as deemed appropriate;
- Estimate of the allowable passive soil pressures acting on the side of the foundation members for resisting the lateral loads and the applicable coefficient of friction between soil and concrete foundations,
- Estimates of the post-construction total and differential settlements for the future buildings supported on the recommended foundation system(s),
- Earth pressures, including active and at-rest pressures acting on site and building retaining walls, as deemed appropriate,
- Under-slab measures, including the vapor barrier requirements, and concrete pads for exterior equipment,
- Design of flexible and rigid pavements,
- Drainage requirements in areas surrounding the proposed buildings, and surface and subsurface drainage control measures,
- Preliminary screening of the soil for corrosion as it may impact the selection of the proper concrete type and protection of the buried utility piping.

The scope of our services consisted of the following specific tasks:

1. Review available geotechnical reports, including the 2021 preliminary engineering geologic/geotechnical reports by Connelly and Millstone the August 2023 supplemental Derrega engineering geologic report in addition to other relevant geologic maps and reports pertinent to the site and the immediate vicinity.
2. Mark the exploration locations at the site and notify Underground Service Alert (USA) at least 72 hours in advance.
3. Drill, log, and sample and/or core five (5) confirmation borings to a maximum explored depth of 39½ feet with 4-wheel drive drilling rig. Advance the borings under the supervision of one of our geologists who also collected disturbed bulk and relatively undisturbed geotechnical samples at 3- to 5-foot intervals from the borings for visual examination and laboratory testing. Backfill the borings with cement grout and leave the drill cuttings at the boring locations.
4. Perform a laboratory testing program on the collected soil samples to evaluate the geotechnical engineering characteristics of the subsurface soils and to confirm the findings of the previous studies. Tests included direct shear tests under saturated

conditions, shrink/swell tests, Atterberg Limits, gradation tests, moisture-density measurements, as judged appropriate.

5. Conduct geotechnical engineering analysis oriented toward the above-noted purpose of the investigation.
6. Consult and interact with the project CEG (SDCEG) to gain input and develop representative geologic models for slope stability analysis purpose. In addition, the project GE and CEG performed site reconnaissance of the site including the sloping ridge flank, Sky Lane, linear trough and topographic swales at or near the site.
7. Prepare this supplemental geotechnical engineering investigation report for the project summarizing our findings and providing recommendations for site grading, support of the proposed residences, landslide/debris flow remediation and appropriate support of the upper lots based on slope stability analysis results. This report includes a vicinity map, a site plan and geologic map and copies of boring logs by BAGG copies of boring/test pit logs/trench logs by others, and laboratory testing results and slope stability analysis plots, as well as our findings, conclusions and recommendations.

Our services included a review of the above documents, site reconnaissance and consultation with SDCEG, a supplemental subsurface exploration with borings and laboratory testing of collected earth materials, engineering analyses, and preparation of this supplemental report. Based on a review of the above documents, the following items were addressed to satisfy CSA's inquiries and to provide geotechnical recommendations and design criteria for the subject project.

- Retrogressing erosion failures or debris flows that could potentially impact lot 8.
- Shrink-swell characteristics of the site soils, as well as the creeping characteristics of the site soils.
- Potential debris flows that could impact the property below and originating from the several topographic swales that descend the ridge flank.
- Geotechnical recommendations for site grading, foundations, utility trench backfill, and flexible and rigid pavement.

Our supplemental investigation included additional borings, laboratory testing of selected samples and site reconnaissance. As part of our supplemental investigation we have included at the end of this report: Plate 1, Vicinity Map showing the site location with respect to the surrounding vicinity, , Site Plan and Geologic Map showing the locations of our borings drilled for this study, and the logs of our Borings B-1 through B-5 and the results of slope stability analyses presented in Appendix A. References 1 through 3 are presented in Appendix B. A discussion of our field exploration and laboratory testing is presented below followed by our findings, conclusions and supplemental recommendations.

FIELD EXPLORATION AND LABORATORY TESTING:

Our supplemental subsurface exploration was performed on June 12 and 13, 2023 with a four-wheel drive truck mounted drilling rig equipped with 5-inch diameter continuous flight augers. Five (5) borings, B-1, B-2, B-4 and B-5 were drilled to depths ranging from about 29½ to 39 ½ feet below the ground surface (bgs). Boring B-2 encountered refusal at a depth of 4 feet. The approximate locations of the borings are shown on the attached and Geologic Map, Site Plan. Samples of the site subsurface earth materials were obtained form the borings by driving Modified California and Standard Penetration Testing (SPT) samplers into the subsurface strata via 140-pound hammer with about a 30-inch free fall. The borings were logged by a geologist from our office and the logs are presented on Plates 7-A through 11-B.

Laboratory shear strength data is included in the boring logs. Direct shear strength tests were run at various surcharge pressures and under saturated conditions. Prior to shearing the samples, shrink/swell measurements of samples were taken when the samples were submerged under various surcharge pressures. The results of the shrink swell tests are summarized in the table below, as well as in the boring logs. A summary of our findings from this supplemental geotechnical engineering study is presented below followed by our conclusions and recommendations for the subject project**.**

FINDINGS

The findings below are to address the geotechnical peer review comments by CSA and are based on a review of the SDCEG's August 2023 report, our supplemental subsurface investigation and laboratory testing, and several site reconnaissance visits by BAGG in tandem with SDCEG to observe field conditions. They address shrink/swell characteristics of the site surface and near surface soils, potential retrogressing failures and slope instability that could undermine Lot 8, and potential debris flow hazards imposed by four of the eight swale areas mapped at the subject site by SDCEG.

Soil Shrink-Swell Characteristics and Soil Creep

Soil shrink-swell data was developed in the laboratory by subjecting soil samples to their approximate in-situ overburden pressure, inundating the soil samples, and then measuring the equilibrating shrink or swell that occurs. Table 1 below summarizes the shrink-swell data of the subsurface materials obtained from our recent borings, and shows higher swelling in the shallower samples with a gradual reduction in swelling with an increase in depth (overburden pressure).

Table 1

Summary of Shrink/Swell Data

Boring No.	Sample Depth (feet)	Dry Density (pcf)	In-situ Moisture Content (%)	Saturated Moisture Content (%)	Surcharge Pressure (psf)	Percent Shrink /Swell (-/+ %)
B-1	2	97	22.9	25.3	280	+0.67
B-1	4	100	20.8	22.8	480	+0.42
B-1	9	70	37.2	42.7	1000	-0.21
B-1	14	80	36.0	37.4	1500	+0.09
B-3	2	84	28.0	33.2	330	+0.76
B-3	4	83	33.8	35.4	500	+0.29
B-3	9	84	32.6	34.3	1000	+0.27
B-3	14	81	35.5	36.4	1500	+0.09
B-4	9	80	36.1	38.9	1000	+0.41
B-4	14	77	39.8	40.4	1500	-0.09
B-5	4	85	30.6	34.6	440	+1.87
B-5	9	82	35.3	36.6	1750	+0.23

The overall shrink-swell data indicates an average swell of about 0.8 percent in samples between 0 and 5 feet below the ground surface (bgs), 0.2 percent between 5 and 10 feet bgs and less than 0.1 percent between 10 and 15 feet bgs. However, a localized exception indicated a significantly high swell in the upper 4 feet at Boring B-5. Based on these findings, drilled pier foundations are recommended for the proposed development. The piers should be at least 15 feet deep to negate potential shrink-swell effects. Drilled piers will also help resist creep forces which develop from shrink-swell conditions on sloping ground. Recommendations and design criteria for drilled piers are discussed in the subsequent sections of this supplemental report.

Retrogressing Failures Below Lot 8

The upper portion of Swale 7 is about 1¼H:1V in steepness and comprises the southern side of Lot 8. Given the height and steepness of this area along with the colluvial/slope wash/debris flow features mapped by SDCEG in this area, there is a potential for retrogressing erosional failures, soil slumps and slope instability that may encroach the development area at Lot 8. As such, a row of stitch piers is recommended across the width of Lot 8, on the downhill side of the proposed residence, roughly along the elevation 854-feet contour. The stitch piers should be at least 25 feet deep and 2 feet in diameter and spaced no further than 3 diameters apart. The need for the stitch piers at Lot 8 as discussed in the

"Slope Stability" section below. More detailed design parameters for the stitch piers are discussed and the subsequent "Stitch Piers" section of this supplemental report.

Debris Flow Potential

A total of nine (9) natural swale areas are situated on or adjacent to the site and are labeled on the attached Plate 2, Site Plan and Geologic Map. Based on SDCEG's latest studies, slope failures/debris flows are a potential hazard to proposed residential Lots 4, 5, and 6 situated downslope of identified Swales 4, 5 and 6, respectively, and to Sky Lane where it crosses Swale 3 as indicated on the attached Plate 2. Compacted soil berms should be included across the lower portion of the Swale 4, 5 and 6 areas and a retaining wall should be built along the Sky Lane road cut across Swale No. 3 as discussed in SDCEG's latest study. Catch basins and storm drainage should be included on the uphill side of the soil berm and designed by the project civil engineer. Recommendations for site grading and retaining walls are presented in subsequent sections of this report.

We note that Swale 7 is the steepest and highest of the swales and the most significant debris flow source area, however, it trends southeastward direction, allowing for developable area on the northwestern portion of Lot 7. To increase the developable area and to address potential debris flows from impacting it, SDCEG provided recommendations for a curvy debris deflection berm to extend diagonally across the lower portion of Swale 7 and direct potential flows away from the buildable envelope at Lot 7.

Slope Stability Analysis

Slope stability analyses were performed to evaluate the upper portion of Swale 7 (lower portion of Lot 8) to address CAS's peer review comments with regard to potential slope retrogression failures. Additionally, slope stability analyses were also performed on Swales 3, 4 and 5 from a due diligence standpoint and based on SDCEG findings. Swale 6 is relatively minor than the others, therefore, it was not included in our slope stability analyses. The stability of the noted swale areas was evaluated with the conventional method of limit equilibrium stability analysis on two dimensional slope cross-sections with the aid of the computer program PCSTABL developed by Purdue University in 1988. Cross Sections A-A,' B-B,' C-C' and D-D' were used in the analyses to represent Swale 3, 4, 5 and 7, respectively. The location of the noted cross section lines are shown on the attached Plate 2, Site Plan and Geologic Map.

Bishop's Method of slices was used in the analyses, which is based on vertical equilibrium of the individual slices, into which the soil mass above the failure surface is divided, and on overall moment equilibrium. Various trial failure surfaces are analyzed in this manner until a minimum factor of safety is obtained. Slope stability under seismic conditions was evaluated using the screening procedure outlined in the Special Publication 117A (CGS, 2008).

Strength data was obtained from Millstone laboratory test results as well as saturated direct shear strength tests performed on samples from our recent Borings B-1 through B-5 advanced as part of this supplemental geotechnical investigation report. The direct shear strength data developed by BAGG Engineers is presented on the boring logs and while those generated by Millstone are included in Appendix A for reference. A summary of the selected strength parameters is presented in the following Table 2.

Table 2

Summary of Subsurface Strength Parameters

Material	Moist Unit Weight (pcf)	Angle of Internal Friction (degrees)	Cohesion (psf)
Surficial Soil (Qc/Qal)	120	29	150
Monterey Shale (Tmm)	120	25	1,000
Stitch Pier Alignment	120	0	120,000

Groundwater was not encountered in any of the borings drilled at the site by BAGG Engineers and Millstone in 2021 which were advanced to maximum depths of about 39½ and 30 feet, respectively. For purposes of the slope stability analysis, we have assumed that groundwater levels are present several feet below the bottom of our borings. The general surface and subsurface geometry along with the assumed groundwater surface is shown on our slope stability plots presented in Appendix A.

Based on the noted strength parameters, assumed groundwater depths, and the geometry along Cross Sections A-A' through D-D' the results of our slope stability analyses yielded minimum static safety factors of greater than 1.5 under existing conditions. We note that three analyses where performed for Cross Section D-D' representing Swale 7 in our evaluation of retrogressive failures. The analysis included the toe of the failure planes roughly midway down the swale where the topography becomes less steep and extended upslope to three different areas; the trail downslope from the proposed residence, the downhill

side of the residence and on the uphill side of the residence. The results of our static stability analysis are summarized in Table 3.

Table 3

Summary of Static Analyses

Cross Section	Critical Failure Location	Safety Factor
A-A'	Swale No.3, extends from upper property line down to Sky Lane	2.79
B-B'	Swale No. 4, extends from upper property down to upper limits of development area	2.37
C-C'	Swale No. 5, extends from upper property line down to upper limits of development area	1.99
D-D'	Swale No. 7, extends from midslope to trail area located downhill of proposed residence	1.60
D-D'	Swale No. 7, extends from midslope up to and encroaching downhill side of proposed residence	1.56
D-D'	Swale No. 7, extends from midslope up to uphill side of proposed residence	1.66
D-D'	Swale No. 7, extends from midslope up to roughly the property line on uphill side of lot	1.79

The seismic stability of the slopes was analyzed using a pseudo-static approach per the general guidelines included in CGS (2008) Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California. Earthquake Engineering Research Institute has published a screen analysis procedure for seismic slope stability (Stewart, Blake, and Hollingsworth, 2003), that takes into account local variations in the seismicity as presented by the earthquake magnitude, as well as the distance from the fault that most significantly contribute to the ground motion hazard at the site. The screening procedure is based on a statistical relationship previously developed by Bray and Rathji (1998) between seismic slope displacement (u), peak amplitude of shaking in the slide mass (kmax), significant duration of shaking (D5-95), and the ratio of slope resistance to peak demand (ky/kmax, where ky is the yield acceleration, or the horizontal acceleration required to reduce the safety factor to unity). A tolerable seismic slope displacement (u) for residential development ranges from 5 cm to 15 cm. A safety factor of 1 is the minimum required for passing the screen.

Using the slope screen procedure set forth in Special Publication 117A (CGS, 2008), a pseudo-static coefficient of 0.30g was estimated for the analysis based on respective deformation of 5 cm. Based on the results of our pseudo-static stability analysis, Cross Sections A-A' through C-C' achieved safety factors of greater than 1, thereby passing the screening procedure. However, cases represented by Cross Section D-D' (Swale 7 along lower portion of proposed Lot 7) obtained safety factors of less than one. However, when incorporating a row of 25-foot deep, 2-foot diameter stitch piers across Lot 8 roughly midway

between the downhill side of the proposed residence and the existing trail downslope, safety factors of greater than unity were obtained. A summary of our seismic slope stability analyses are presented on the following Table 4. The slope stability plots representing the results in Table 3 and Table 4 are included in Appendix A.

Table 4

Summary of Seismic Analyses

Cross Section	Critical Failure Location and Description	Seismic Safety Factor
A-A'	Swale 3, Lot 3, extends from upper lot line down to Sky Lane, about 40 feet deep	1.31
B-B'	Swale 4, Lot 4, extends from upper lot down to upper limits of development area	1.17
C-C'	Swale 5, Lot 5, extends from upper lot line down to upper limits of development area	1.03
D-D'	Swale 7, Lot 8 , extends from lower lot line up to trail located downslope of proposed residence	0.95
D-D'	Swale 7, Lot 8 extends lower lot line to downhill side of proposed residence	0.90
D-D'	Swale 7, Lot 8, extends from lower lot line up to uphill side of proposed residence	0.95
D-D'	Swale 7, Lot 8, extends from lower lot line up to roughly the property line on uphill side of lot	0.99
D-D' w/stitch piers	Swale 7, Lot 8, extends from lower lot line up to and encroaching downhill side of proposed residence	1.17
D-D' w/stitch piers	Swale 7, Lot 8, extends from lower lot line to uphill side of proposed residence	1.00

CONCLUSIONS AND RECOMMENDATIONS

General

Based on our review of the SDCEG August 2023 report, the feasibility level reports by Millstone and Connelly performed in 2021, the results of our supplemental borings and laboratory testing, our site reconnaissance, and our consultations with SDCEG, it is our opinion that the subject project is feasible from a geotechnical standpoint. Our recommendations for the subject project are presented as follows.

CBC 2022 Seismic Design Parameters

Based on the soil information obtained from the exploratory borings performed at the site, the soil profile is classified as Class "C", defined as a "Very Dense Soil/Soft Rock" with an average shear wave velocity between 1,200 to 2,500 feet per second, average Standard Penetration Test (N) value greater than 50 blows per foot, and/or average undrained shear strength greater than 2,000 in the upper 100 feet of subgrade at the site. Using the site coordinates of 37.2352° North Latitude and 121.9395° West Longitude, and the U.S. Seismic Design Maps by USGS (http://earthquake.usgs.gov/designmaps/us/application.php),

earthquake ground motion parameters were computed in accordance with the 2022 California Building Code and are listed in the following table.

Table 5

Parameters for Seismic Design

2022 CBC Site Parameter	Value
Site Latitude	37. 2352° N
Site Longitude	121.9395° W
Site Class, Chapter 20 of ASCE 7	Class C, Stiff Soil
Risk Category	I, II, III
Mapped Spectral Acceleration for Short Periods S_s	2.38g
Mapped Spectral Acceleration for 1-second Period S_1	0.87g
Site Coefficient F_a	1.2
Site Coefficient F_v	1.4
Site-Modified Spectral Acceleration for short Periods S_{Ms}	2.85g
Site-Modified Spectral Acceleration for 1-second Period S_{M1}	1.21g
Design Spectral Acceleration for short Periods S_{Ds}	1.90g
Design Spectral Acceleration for 1-second Periods S_{D1}	0.78g

Site Grading

Site grading is anticipated to consist of the removal of existing trees and vegetation from the proposed development areas, remedial and hillside grading, preparation of street subgrades and underground utility installations. The term 'compact' and its derivatives mean that all engineered fill material, whether imported or onsite material, should be compacted to at least 95% of the maximum dry density within 12 inches of pavement subgrades and to at least 90 percent of the maximum dry density in all other areas, as determined by ASTM Test Method D1557; where fills are greater than 20 feet in depth, the portion of the fill below a depth of 20 feet should be compacted to at least 95 percent relative compaction to help address settlement potential of deep fills. The term also implies that immediately prior to being compacted, the fill material should be thoroughly mixed and moisture conditioned to a moisture content that is slightly above optimum for imported non-expansive fill material, but at least 3% over optimum for the onsite clayey soils within the upper 20 feet below finish grade. The properly moisture-conditioned fill should be spread evenly in lifts not exceeding 8 inches in loose thickness, and each lift should be thoroughly mechanically compacted before subsequent lifts are placed. The following grading procedures should be followed as part of fill placement operations.

- Areas to receive fill should be stripped and cleared all bushes, vegetation, roots, and organically contaminated topsoil, and other debris. Remove all organically-contaminated soils from the site and do not re-use as site fill except for use in landscaping areas only. Where trees are to be removed, the removal should include all major root systems down to 1 inch in size or less.

- Existing utilities where known should be located on the grading plan so that the project engineer could evaluate the necessity of removing abandoned pipes during site grading;

- Loose, disturbed soils created by the removal of brush, roots, existing utilities, old foundations, and landslide material should be cleared down to firm native material;

- Scarify overexcavated surfaces to a depth of 6 to 8 inches. Thoroughly moisture condition the scarified surfaces to a moisture content that is 3% over optimum and re-compact as specified above. A lower moisture content may be considered acceptable provided it is for fill 20 feet or greater below finish grade where a minimum of 95 percent relative compaction is required. Any weak, yielding, or pumping soils should be over-excavated and removed to their full depth under the observation of the Geotechnical Engineer and re-compacted; and

- Place fill on the overexcavated surfaces and in the holes/depressions created by the above actions in uniformly moisture conditioned and compacted horizontal lifts not exceeding 8 inches in loose thickness. Rocks or cobbles larger than 2 inches in maximum dimensions should not be allowed to remain within the foundation areas, unless they can be crushed in-place by the construction equipment.

Fill Slope Construction

Fill slopes should not be constructed at steeper gradients than 2H:1V unless they are reinforced with geogrid. All fill slopes should be supported by base keyways with widths 15 feet minimum. The keyway bases should extend into competent native material as recommended by the CEG in the field, be cut dipping into the slope and a subdrain line should be installed to drain via gravity along the heel of the keyway excavation. The construction of fill slopes should incorporate the fill placement and compaction criteria discussed above.

The fills should be benched into the native ground at regular vertical intervals as the fill progresses upslope and any encountered clayey colluvial/slope wash/residual soil material should be removed at the discretion of the project CEG before the placement of fill. All fill slopes should be overbuilt by a minimum

of 3 feet and then trimmed back to expose an even firm slope face. All keyway excavations should be observed and mapped by the project CEG.

Cut Slope Construction

Slopes should not be cut at gradients exceeding 2H:1V gradients unless they are cut into competent bedrock at the discretion of the project CEG or only if they are overexcavated and rebuilt as cut slope buttresses that are reinforced with geogrid. The cut slope buttress should be constructed in general conformance with fill slope construction guidelines including overbuilding and trimming.

All cut slopes exceeding 10 feet in height, regardless of the proposed gradient, should be observed by the project CEG while they are being cut and after the cut is complete and if clayey zones, shear planes, adverse fracture orientation, seepages, or adversely dipping slip surfaces are encountered then the slopes should be overexcavated and rebuilt as cut slope buttresses. All cut slopes steeper than 3H:1V should have an 8-foot wide drainage terraces at about every 30 vertical feet or as approved by the project CEG/GE. The terraces should be drained by a concrete V-ditch that is constructed along the heel of the drainage terrace.

Subdrainage

In general, we recommend that subdrainage be provided on the uphill sides (heels) of all keyways, at springs and seepage areas, along the toes of planned cut slopes, at landslide repair excavations and in other areas of the site where seepage is observed during and/or after grading as determined in the field by the project CEG/GE. Subdrains should consist of perforated PVC pipe conforming to ASTM Designation D2751, Type SDR 35. Subdrain pipes should be 6 inches in diameter and placed with perforations pointing down. All subdrain pipes should be underlain and surrounded by at least 6 inches of Caltrans Class 2 permeable material, as defined in Section 68-1.025 of the State of California Standard Specifications. The permeable material envelope of the subdrain should be at least 2 feet wide and 4 feet high. Subdrain systems should be discharged into storm drain structures, where possible, or suitable (armored) surface discharge points.

The pipe segments should be glued together and the subdrain line equipped with capped clean-outs. A surveyed as-built plan of the finish subdrain layout should be made available in order to help avoid damaging the subdrain during foundation construction and underground utility installations. The Caltrans

Class 2 permeable material (drain rock) does not need to be wrapped with geofabric and it can be placed directly beneath and above the perforated pipe. All subdrain lines should be directed to discharge to approved inlets or at properly designed energy dissipation structures. Subdrain lines placed in trenches such as perimeter drains should be capped with a minimum 2-foot clayey soil cap.

Drilled Pier Foundations

Given the generally steep conditions at the site, the presence of deep colluvium, and the potential for seismically induced ground shaking during the lifetime of the development, proposed residences should be supported on drilled pier foundations with interconnecting grade beams and crawl space. In general, piers should be a minimum of 18 inches in diameter and at least 15 feet in depth. For upper proposed Lots 8 and 9, a minimum 18-inch diameter and 10-foot depth should be adhered to. Vertical resistance may be assumed to act between the pier shaft and the surrounding soil and bedrock. Skin friction within the top 7 feet of piers of the lower lots should be neglected to address shrink-swell effects and soil creep. Additionally, a creep force should be assumed to act over the upper 10 feet of piers in deep colluvial soils and fills. Lateral resistance will be as passive resistance acting against the side of the piers. The following parameters, in Table 5 below, may be assumed for design purposes.

Table 6
Parameters for Drilled Pier Foundations

Areas	Minimum Diameter	Miminum Depth	Allowable Skin Friction	Passive Resistance	Soil Creep
Lower Development Area	18 inches	15 feet	500 psf neglecting upper 7 feet of embedment	400 pcf neglecting upper 7 feet of embedment	200 psf uniform acting over 1 pier diameter to depth of 7 feet
Upper Development Area	18 inches	10 feet	700 psf neglecting upper 4 feet of embedment	500 pcf	200 psf uniform acting over 1 pier diameter to depth of 4 feet

In addition, the indicated skin friction value for total design loads may be increased by one-third for seismic and transient loads. Loads between piers should be supported on grade beams that are designed to span between the piers with the assumption that they obtain no vertical support from the underlying soils. Grade beams should be founded at least 12 inches below the lowest adjacent grade and, due to the

expansive nature of the on-site soil and bedrock materials, a 200 psf uplift pressure should be assumed to act on the bottom of the grade beams for design purposes.

The bottom of the pier and grade beam excavations should be relatively clean, firm, and free of any loose cuttings before concrete is poured. If the pier hole bottoms cannot be cleaned of loose cuttings, it would be advisable to place one or several bags of cement in the pier hole and mix the cuttings and cement with water. If perched water/groundwater is encountered in the pier holes, it should either be pumped out before concrete is poured, or displaced via tremie method. In general, concrete placement via tremie method is a more acceptable method than pouring it from the top.

Piers and grade beams should be reinforced appropriately and the reinforcement should be properly tied together to enable the entire system to act as a unit. Design of the pier and grade beam reinforcement, depth, size, and spacing of the piers will depend upon actual building loads and should be determined by the engineer responsible for the foundation design. Final pier depths in the field should be verified and approved by the GE during the drilling operations.

It is imperative for the GE to have an active role during the foundation construction to identify the materials encountered and confirm that proper penetration into competent materials has been achieved. Therefore, full-time observation of the grading and pier drilling operations by the Geotechnical Engineer will be required as adjustments may need to be made during construction. The final foundation excavation depths should be confirmed under observation by the geotechnical engineers' field representatives.

Foundation and Underfloor Drains

Given the steep terrain at the site, new homes will be subject to subfloor infiltrating runoff, which can accumulate uncontrolled in crawl spaces of the new residences and be difficult to drain. Therefore, we recommend a perimeter subdrain be installed adjacent to the pier and grade beam foundation along the upslope side of the residential structure. Additionally, crawl spaces should be covered with a 2- to 3-inch layer of shotcrete over a drainage composite placed directly on the crawl space surface and should tie-in to a collector subdrain. The collector and perimeter subdrains should drain via gravity flow to an approved discharge point.

Stitch Piers

Stitch Piers should be included across the width of Lot 8, along the 854 foot elevation contour. Stitch piers should be a minimum 25 feet deep and 24 inches in diameter. The top of the stitch piers should be structurally connected to a grade beam embedded at least 2 feet below the ground surface. The top of the grade beam may be flush with the ground surface.

For design purposes, an active pressure of 70 pcf (equivalent fluid weight) should be assumed to act on the grade beam and over 3 pier diameters down to a depth of 10 feet to address potential retrogressive soil failures occurring downslope of the stitch piers. Additionally, a uniform pressure of 200 psf should be assumed to act over the grade beam and over 3 pier diameters down to a depth of 4 feet in consideration of soil creep acting upslope of the stitch piers. A passive resistance of 250 pcf (equivalent fluid pressure) acting over 2 pier diameters may be assumed to act starting at a depth of 10 feet below the ground surface in order to resist the active pressure and soil creep.

Utility Trench Backfill

Utility trenches may be backfilled with onsite soils, except in the upper 12 inches of subgrade for slabs-on-grade, pavements, or exterior flat work. If shallow foundations are used, the onsite soils cannot be used as utility trench backfill in the upper 3 feet of soil building pad. The fill material should be free of debris, roots and other organic matter, and rocks or lumps exceeding 2 inches in greatest dimension. The fill should also be uniformly moisture conditioned to the proper moisture content and compacted as per the recommendations included above. The utility lines should be properly “bedded and shaded” with granular material, such as, sand or pea gravel. As a general rule, the bedding layer should be 2 to 4 inches thick and the utility lines should be shaded (covered) with granular materials to a minimum of 4 inches above the utility line. The bedding and shading layers should be compacted using a vibratory compactor before subsequent backfill is placed. The contractor should use extreme caution with the vibratory compactor on the shading layer, as excessive vibrations and/or imbalanced shading materials could result in dislodging the pipe and loosening the joints.

In order to avoid accumulation of surface water runoff in the utility trenches, within areas that are not covered with a pavement or concrete slab, the top 12-inches of the utility trench backfill should consist of uniformly moisture conditioned, and compacted, native clayey soil with low permeability. BAGG

Engineers should be allowed the opportunity to observe the trench backfill operations and perform field compaction tests to evaluate the moisture content and relative compaction of the fill materials.

Alternatively, the utility trenches may be backfilled with flowable fill (a cementitious slurry consisting of a mixture of fine aggregate or filler, water, and cementitious materials capable of filling all voids in irregular excavations and hard to reach places). The flowable fill is a self-leveling material that hardens in a matter of a few hours without the need for compaction in layers. Flowable fill is sometimes referred to as controlled density fill (CDF), controlled low strength material (CLSM), and lean concrete slurry. A 1- to 2-sack flowable fill material should be considered to be acceptable for the subject project. Vertical trenches 5 feet or deeper may require temporary shoring in accordance with OSHA excavation requirements.

Settlements

At the time this report was prepared, the actual loads and loading configurations were not available. However, total static settlement for drilled piers constructed as recommended is anticipated to be less than ½-inch provided the grading recommendations discussed above are adhered to. Differential settlements are anticipated to be approximately one half of these values.

Retaining Walls

Retaining walls will be incorporated in the building foundations and will also be included as site retaining walls in various locations throughout the development. Retaining walls may consist of cast-in place reinforced concrete or masonry retaining walls supported on drilled piers as described above. The following design parameters should be adhered to.

Table 7
Reinforced Concrete Retaining Wall Design Parameters

Parameter	Value
Active Pressure	40 pcf for level backfill 55 pcf for 2H:1V backfill
At-Rest Pressure	60 pcf for level backfill 80 pcf for 2H:1V backfill
Passive Pressure	400 pcf in fill and colluvium 500 pcf in bedrock

*Assume passive pressure to act over one pier diameter. Neglect upper 1 foot of passive resistance unless pavement abuts bottom of wall. On sloping ground neglect upper portion of passive resistance until there is at least 5 feet of soil horizontally from slope surface to nearest pier surface.

Mechanically stabilized earth (MSE) retaining walls may also be used as site retaining walls for the project provided the grading recommendations presented in this report are adhered to. The base-leveling pad for modular block retaining walls may be founded in engineered fill, firm native soil or bedrock depending on where it is located. The following parameters should be incorporated in the design.

Table 8
MSE Retaining Wall Design Parameters

Parameter	Value
Phi Angel (foundation, reinforced earth and retained soils)	30 degrees
Cohesion	0 psf
Unit Weight (foundation, reinforced or retained soils	125 pcf
Block embedment	8 inches on flat ground 16 inches on sloping ground
Minimum Leveling Coarse Thickness	12 inches

The recommended design parameters above assume drained conditions and do not include any surcharge loads. The retaining wall designer should incorporate the appropriate surcharge loads. Additionally, to prevent hydrostatic pressure build-up, retaining walls should be constructed with backdrains consisting of Class 2 permeable material and with a 4-inch diameter perforated pipe. The permeable blanket should be placed behind the wall, along the full length of the wall, extending from the base of the wall to within about 1 foot below the finish grade at the top of the wall. The perforated pipe should be entirely surrounded with permeable material and placed at a level matching the bottom of the wall elevation (perforations down) to carry collected water to a suitable gravity discharge. For cast-in-place retaining walls that are part of the building structure, the invert of the perforated pipe should be at least 18 inches below the finish floor elevation of the lower level.

Slab-on-Grade Floors and Exterior Flatwork

As discussed under Site Grading, exterior slabs/walkways should be underlain by a minimum of 12 inches of imported non-expansive soils. If aggregate base is used beneath the slab, then the thickness of the non-expansive soil can be reduced by the thickness of the aggregate base. The exposed subgrades should be maintained moist until the slab is poured.

Where moisture transmission through a floor slab is undesirable, it is recommended, as a minimum, that the slab be underlain by Stegowrap vapor barrier, which in turn should be underlain by a 6-inch layer of capillary break consisting of 3/4-inch free draining gravel on the prepared subgrade. If a typical 2-inch thick layer of curing sand is desired directly beneath the slab, then up to 2 inches of capillary break material may be excluded from the under-slab-materials. The final design of the under-slab-materials should be specified by the floor slab designer. If curing sand is used, caution should be exercised by the contractor to avoid displacing the sand when concrete is poured.

Where new driveway and exterior slabs will be constructed adjacent to irrigated landscape areas, or where natural runoff will drain toward the pavement area, below-grade concrete curbs should be constructed at the edges of planters and landscaping areas. The intent is to minimize moisture seeping from landscaping areas into the pavement subgrade through the aggregate base. The curbs should extend 2 to 3 inches below the bottom of the aggregate base. Where trees will be located adjacent to pavement areas, a suitable root barrier will also help limit migration of irrigation water into the aggregate base.

Surface Drainage

Drainage measures to control and collect surface run-off are an integral consideration for sites with expansive soils. It is recommended that a minimum 5-percent slope away from the structures for a horizontal distance of at least 5 feet be established in adjacent planter areas and a minimum 1 percent slope away from the structures for a horizontal distance of at least 5-feet be established in areas containing hardscape. Drainage should not be allowed to pond on the pad or against to any foundation. Drainage should be directed towards appropriate discharge points. Any area where surface run-off becomes concentrated should be provided with a catch basin that discharges the collected runoff in a manner that will not cause erosion. Surface and subsurface drainage facilities and catchment areas should be checked frequently and cleaned or maintained throughout the project life, as necessary.

Temporary Shoring

Vertical site excavations measuring 5 feet or more in depth should be properly shored as per the Cal-OSHA guidelines. In general, the site soils should be considered as Cal-OSHA Type B for trenching and shoring purposes. Construction equipment should not be allowed at the top of the excavation closer than a distance equal to the height of the excavation. Where a temporary sloped excavation is desired, the side slope gradient of 1H:1V should be utilized if the excavation exposes clayey soils and 1½H:1V if the

excavation contains granular materials. A CEG should verifying allowable temporary slope gradients in the field.

Flexible Pavements

Due to the variable nature of clayey soils, for design purposes, an R-Value of 5 was used to calculate the thickness of pavement sections for Traffic Indices of 5.0, 6.0, and 7.0 with aggregate base and subbase. The flexible pavement sections are tabulated in the following table. Generally, a Traffic Index (TI) of 5.0 is appropriate for automobile parking stalls, whereas a Traffic Index of 6.0 would be appropriate for heavily-used automobile driveways with only occasional use by heavy trucks (such as once a week or so by garbage trucks), and Traffic Indices of 7.0 or higher are used where the pavement would be subject to more frequent truck traffic such as daily use by delivery trucks.

The pavement sections presented in the following table were calculated using the design method described in the Caltrans Highway Design Manual (Topic 633, May 2012) with the added safety factors. The method characterizes the subgrade soil conditions with R-values, and characterizes the traffic loading conditions with a Traffic Index. All materials and construction procedures, including placement and compaction of pavement components, should be performed in conformance with the latest edition of the Caltrans Standard Specifications, except that compaction should be performed in accordance with ASTM Test Method D1557, and at moisture contents specified under the Site Grading section of this report. All pavement components should be compacted to at least 95 percent of maximum dry density at slightly above optimum moisture content.

Table 9
Summary of Asphaltic Concrete Pavement Sections
(Subgrade R-value=5)

Pavement Component	TI=5.0		TI=6.0		TI=7.0	
Asphaltic Concrete (AC) in Inches	3	3	3½	3½	4	4
Class II Aggregate Base (R_{Min}=78)	10	4	13	4	16	5
Class II Aggregate Subbase or Recycled AB (R_{Min}=50)	--	7	--	10	--	12
Total Thickness in Inches	13	14	16½	17½	20	21

Rigid Pavements

Where Portland Cement Concrete (rigid) Pavements are to be used, they should be supported on a subgrade that has been prepared as recommended under the Site Grading section. Concrete pavements exposed to regular automobiles and weekly use by a garbage truck (if applicable), should consist of 5 inches of concrete with a minimum compressive strength of 3,700 psi (MR=550 psi) supported on at least 6 inches of Class II Aggregate Base material compacted to a minimum of 95 percent relative compaction. As a minimum, concrete pavements should be reinforced with deformed bars in both directions to control cracking, and joints should be provided in both directions within the pavement designed to prevent formation of irregular cracks. Where traffic can drive over the edge of the concrete pavement, such as at transition to AC paving, the Portland Cement Association suggests the thickened edge should be increased by 20 percent, and tapered back to normal slab thickness over a distance of 10 times the slab thickness.

Corrosion Potential

Two (2) samples of the subsurface materials obtained from Borings B-2 and B-5 at a depth of 2 feet bgs, were submitted to Cooper Testing Laboratories for corrosivity testing. The results of chemical analyses, pH, and resistivity are tabulated in the following table and also included in the Appendix C. The following Table 10 also presents the results of our preliminary screening of the corrosivity of the sample tested.

Table 9
Corrosion Tests Results

Analysis/Test	Boring B-2 @ 2'	Boring B-5 @ 2'	Corrosivity Classification
Resistivity	2,321 Ohm-cm	1,561 Ohm-cm	Mildly to Highly Corrosive[1]
pH	7.9	8.1	Neutral
Chloride	2 mg/kg	< 2 mg/kg	Negligible[2]
Sulfate	13 mg/kg	4 mg/kg	Negligible[3]
Moisture Content (%)	16.4	24.8	N.A.

[1] National Association of Corrosion Engineers (NACE) Corrosion Basics, page 191.
[2] For metals encased in concrete, extrapolated from CTM 372.
[3]For metals encased in concrete, ACI-318, Building Code Requirements for Reinforced Concrete.

The results for pH, chloride, and sulfate were essentially reported as neutral or negligible amounts in terms of corrosion. With respect to resistivity, the samples were classified as "mildly to highly corrosive." Corrosive effects to concrete and masonry materials should be moderate, however, the effects would be significant with metals in direct contact with the soil subgrade.

To minimize the corrosive degradation of any steel, ductile iron, or copper pipes over time, we recommend that these types of pipes be coated or polyethylene sleeved, or cathodic protection should be designed and implemented for the protection of such pipes. The soils can severely degrade copper pipes over a short period of time; as such, copper pipes should not be in contact with soil.

Subsurface conditions are not the only factors that may cause corrosion; design and construction practice may also be primary causes for failure. A review of plans and specifications for underground structures may be conducted by a qualified corrosion engineer prior to installation, if desired.

Plan Review

It is recommended that BAGG Engineers be retained to review the final grading and foundation plans. This review is intended to assess general suitability of our earthwork and foundation recommendations for the project in its final forms, and to verify the appropriate implementation of our recommendations into the project plans and specifications.

Observation and Testing

It is recommended that the BAGG Engineers be retained to provide observation and testing services during all phases of the grading, excavation, backfilling, and foundation construction portions of the work. This is intended to verify that the work in the field is performed as recommended and in accordance with the approved plans and specifications, as well as verify that subsurface conditions encountered during construction are similar to those anticipated during the design phase. Unanticipated soil conditions may warrant revised recommendations. For this reason, we cannot accept responsibility for the recommendations contained in this report, unless we are given the opportunity to observe and test the construction activities.

CLOSURE

This report has been prepared in accordance with generally accepted engineering geologic and geotechnical practices for the strict use of the Elam Family Trust and other professionals associated with the specific project described in this report. The recommendations presented in this report are based on our understanding of the proposed construction as described herein, and upon the subsurface conditions encountered in the exploratory borings/trenches advanced for this project.

The conclusions and recommendations contained in this report are based on a review of various published documents, site reconnaissance and the subsurface conditions revealed at the current and previous boring locations shown on Plate 2, on the laboratory test results, stability analysis and our experience with nearby similar projects. It is not uncommon for unanticipated conditions to be encountered during site grading and/or foundation installation and it is not possible for all such variations to be found by a field exploration program appropriate for this type of project. The recommendations contained in this report are therefore contingent upon the review of the final grading and foundation plans by this office, and upon geotechnical observation and testing by BAGG Engineers of all pertinent aspects of site grading including clearing, preparation of subgrades, foundation construction, and installation of drainage facilities.

Subsurface conditions and standards of practice change with time. Therefore, we should be consulted to update this report, if the construction does not commence within 12 months from the date this report is submitted. Additionally, the recommendations of this report are only valid for the proposed development as described herein. If the proposed project is modified, our recommendations should be reviewed and either approved or modified by this office in writing. Our scope did not include assessing the environmental conditions at the site above or below ground. No environmental analytical testing was performed on any soil, air or water samples from the site including the existing fill since such services were beyond the scope of our services to date.

The following plates and references are attached and complete this report:

Plate 1	Vicinity Map
Plate 2	Site Plan and Geologic Map
Plate 3	Unified Soil Classification System

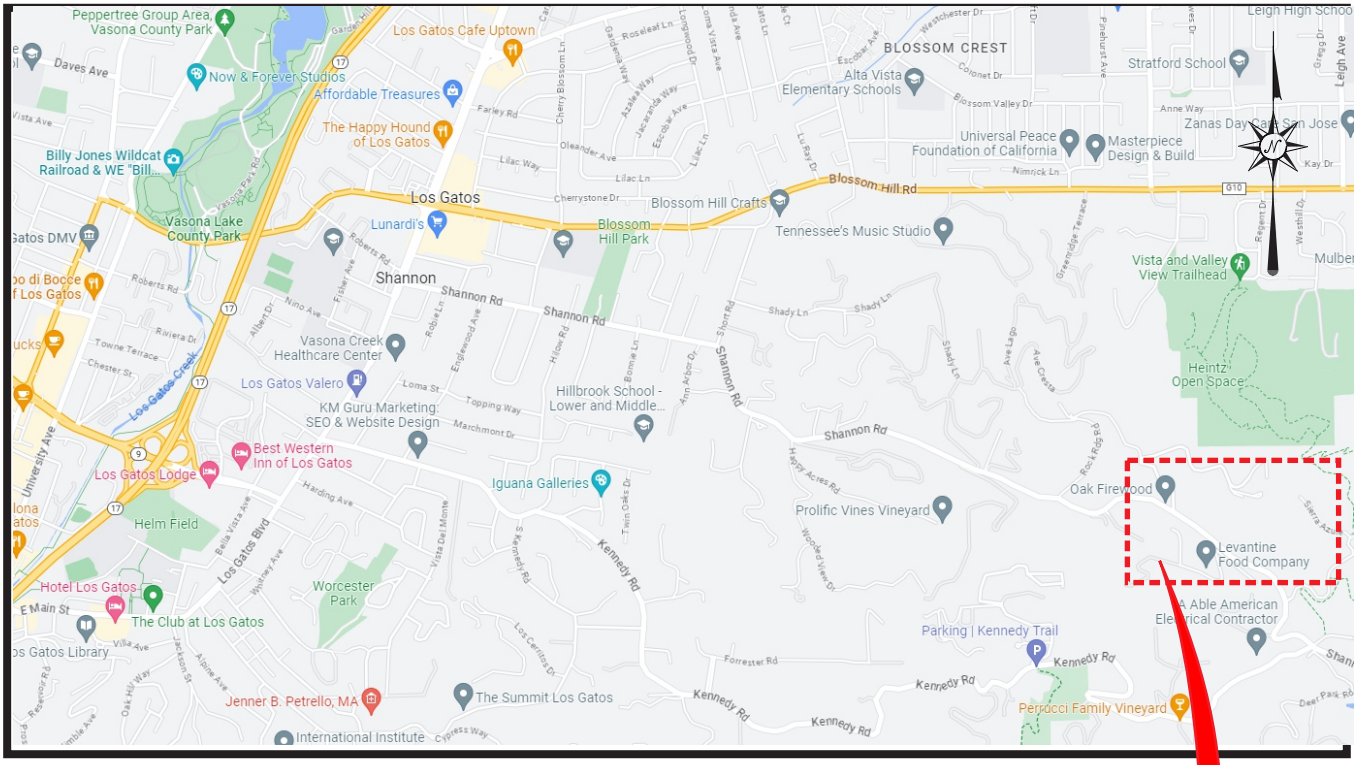
Plate 4	Soil Terminology
Plate 5	Bedrock Terminology
Plate 6	Key to Boring Logs
Plate 7-A through 11-B	Boring Logs

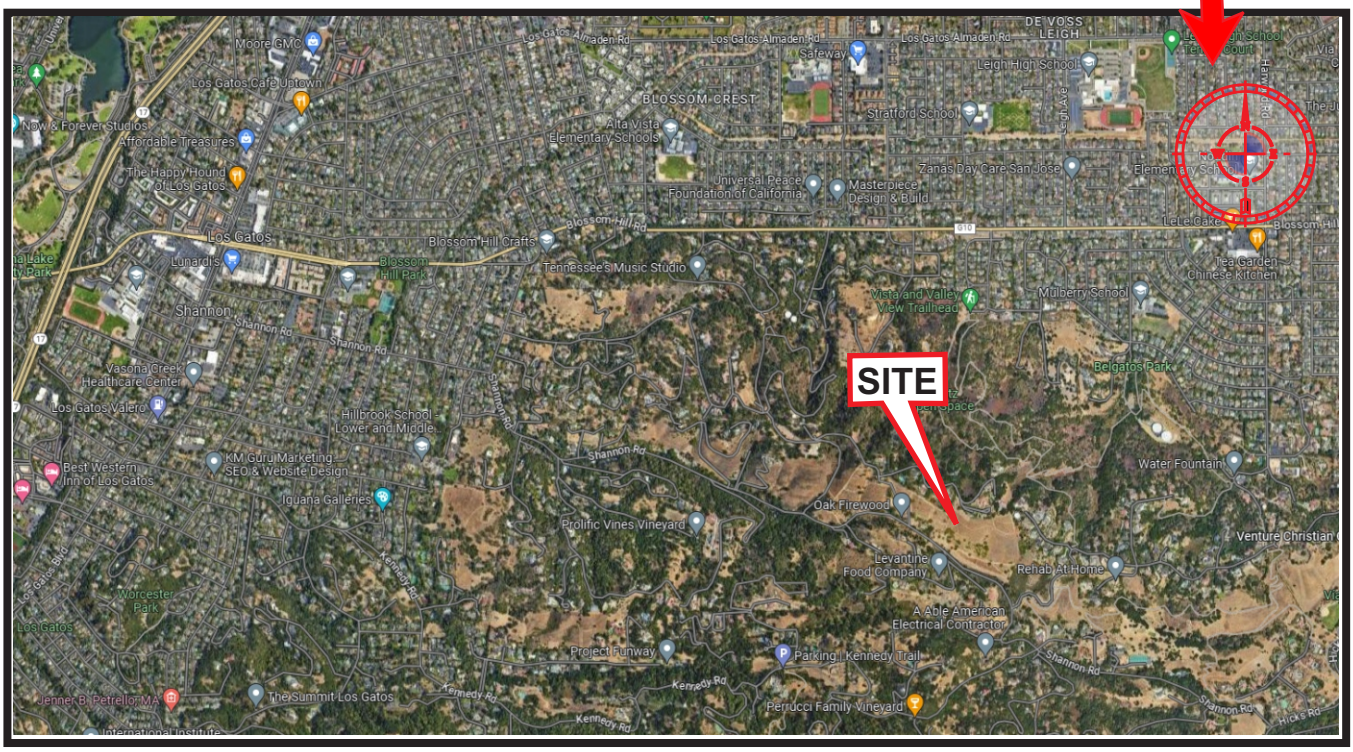
Appendix A	Peer Review Letter by CSA
Appendix B	Slope Stability Analysis Plots
Appendix C	Corrosion Test Results
Appendix D	Subsurface and Laboratory Test Data by Others

Very truly yours,

BAGG Engineers

Michael G. Matusich
Senior Engineer
GE 3013, Expires 12/31/23



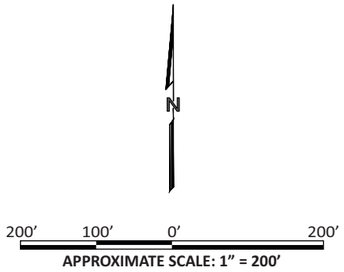


SUPPLEMENTAL GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED RESIDENTIAL SUBDIVISION
14915 SHANNON ROAD
LOS GATOS, CALIFORNIA

VICINITY MAP

DATE:	JOB NUMBER:	PLATE
September 2023	ELAMF-01-00	1

BAYGG ENGINEERS



Qls1 — Probable Subdued Landslide as Mapped by the CGS (2002)

Existing Cut Slope

A — A′ — Geologic Cross Section

B-1 — Boring (CE&G, 2020)

TP-1 — Test Pit (Connely, 2021)

B-1 — Boring (Millstone Geotechnical, 2021)

B-1 — Boring (BAGG Engineers, 2023)

T-1 — Fault Trench (This Study, 2023)

Preliminary Building Sites Based on Ruth and Going Site Plan

Qaf	Artificial Fill
Qc/SW	Holocene Colluvium/ Slope Wash
Qc/SW/DF	Holocene/Pleistocene Colluvium/Slope Wash /Debris Flow
Qc/SW	Linear Trough Pleistocene Colluvium and Slope Wash
TMM	Miocene Monterey Shale Bedrock with 5 feet or Less Soil Veneer
Qc/SW	Shear Swarm Observed in Trenches. Interpreted Fault Trace Location is Shown as Dashed Red Line. Part of FEZ Below.
FEZ	Fault Exclusion Zone: Habitable Structure Setback and Exclusion Zone

NOTES:

- Lot lines shown are only approximate.
- See Geologic Report Plates 3 and 4 for locations of Swales 1,2, & 9.
- Location of Diduca Way is only approximate.

Base:
Record Boundary, 14915 Shannon Road, APN 537-27-047, Los Gatos, California, by Ruth and Going, Inc., dated January 31, 2019. Geology from Engineering Geologic Assessment and Subsurface Fault Investigation, Proposed 9-Lot Subdivision, August 31, 2023 by Sadek Derrega Consulting Engineering Geologist.

GEOTECHNICAL ENGINEERING INVESTIGATION
10-LOT SUBDIVISION
14915 SHANNON RD
LOS GATOS, CA

BAGG ENGINEERS

SITE PLAN

JOB NUMBER:	SCALE:	DATE:	PLATE:
ELAMF-01-00	1” ≈ 200’	September 2023	2

COARSE-GRAINED SOILS

LESS THAN 50% FINES*

GROUP SYMBOLS	ILLUSTRATIVE GROUP NAMES	MAJOR DIVISIONS
GW	Well graded gravel Well graded gravel with sand	GRAVELS More than half of coarse fraction is larger than No. 4 sieve size
GP	Poorly graded gravel Poorly graded gravel with sand	
GM	Silty gravel Silty gravel with sand	
GC	Clayey gravel Clayey gravel with sand	
SW	Well graded sand Well graded sand with gravel	SANDS More than half of coarse fraction is smaller than No. 4 sieve size
SP	Poorly graded sand Poorly graded sand with gravel	
SM	Silty sand Silty sand with gravel	
SC	Clayey sand Clayey sand with gravel	

NOTE: Coarse-grained soils receive dual symbols if:
(1) their fines are CL-ML (e.g. SC-SM or GC-GM) or
(2) they contain 5-12% fines (e.g. SW-SM, GP-GC, etc.)

FINE-GRAINED SOILS

MORE THAN 50% FINES*

GROUP SYMBOLS	ILLUSTRATIVE GROUP NAMES	MAJOR DIVISIONS
CL	Lean clay Sandy lean clay with gravel	SILTS AND CLAYS liquid limit less than 50
ML	Silt Sandy silt with gravel	
OL	Organic clay Sandy organic clay with gravel	
CH	Fat clay Sandy fat clay with gravel	SILTS AND CLAYS liquid limit more than 50
MH	Elastic silt Sandy elastic silt with gravel	
OH	Organic clay Sandy organic clay with gravel	
PT	Peat Highly organic silt	HIGHLY ORGANIC SOIL

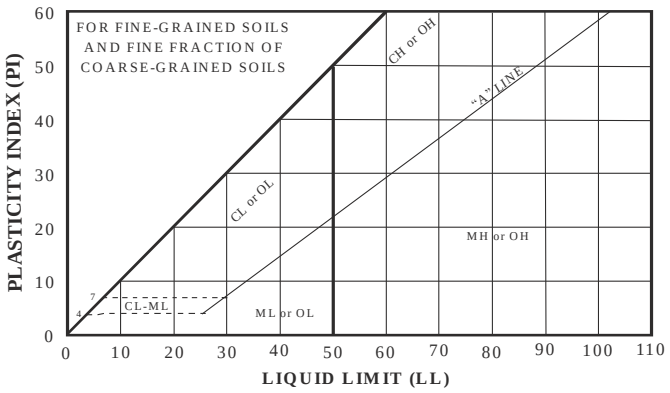
NOTE: Fine-grained soils receive dual symbols if their limits in the hatched zone on the Plasticity Chart(L-M)

SOIL SIZES

COMPONENT	SIZE RANGE
BOULDERS	ABOVE 12 in.
COBBLES	3 in. to 12 in.
GRAVEL	No. 4 to 3 in.
Coarse	¾ in to 3 in.
Fine	No. 4 to ¾ in.
SAND	No. 200 to No.4
Coarse	No. 10 to No. 4
Medium	No. 40 to No. 10
Fine	No. 200 to No. 40
*FINES:	BELOW No. 200

NOTE: Classification is based on the portion of a sample that passes the 3-inch sieve.

PLASTICITY CHART



Reference: ASTM D 2487-06, Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

GENERAL NOTES: The tables list 30 out of a possible 110 Group Names, all of which are assigned to unique proportions of constituent soils. Flow charts in ASTM D 2487-06 aid assignment of the Group Names. Some general rules for fine grained soils are: less than 15% sand or gravel is not mentioned; 15% to 25% sand or gravel is termed "with sand" or "with gravel", and 30% to 49% sand or gravel is termed "sandy" or "gravelly". Some general rules for coarse-grained soils are: uniformly-graded or gap-graded soils are "Poorly" graded (SP or GP); 15% or more sand or gravel is termed "with sand" or "with gravel", 15% to 25% clay and silt is termed clayey and silty and any cobbles or boulders are termed "with cobbles" or "with boulders".

UNIFIED SOIL CLASSIFICATION SYSTEM

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SOIL TYPES (Ref 1)

Boulders: particles of rock that will not pass a 12-inch screen.

Cobbles: particles of rock that will pass a 12-inch screen, but not a 3-inch sieve.

Gravel: particles of rock that will pass a 3-inch sieve, but not a #4 sieve.

Sand: particles of rock that will pass a #4 sieve, but not a #200 sieve.

Silt: soil that will pass a #200 sieve, that is non-plastic or very slightly plastic, and that exhibits little or no strength when dry.

Clay: soil that will pass a #200 sieve, that can be made to exhibit plasticity (putty-like properties) within a range of water contents, and that exhibits considerable strength when dry.

MOISTURE AND DENSITY

Moisture Condition: an observational term; dry, moist, wet, or saturated.

Moisture Content: the weight of water in a sample divided by the weight of dry soil in the soil sample, expressed as a percentage.

Dry Density: the pounds of dry soil in a cubic foot of soil.

DESCRIPTORS OF CONSISTENCY (Ref 3)

Liquid Limit: the water content at which a soil that will pass a #40 sieve is on the boundary between exhibiting liquid and plastic characteristics. The consistency feels like soft butter.

Plastic Limit: the water content at which a soil that will pass a #40 sieve is on the boundary between exhibiting plastic and semi-solid characteristics. The consistency feels like stiff putty.

Plasticity Index: the difference between the liquid limit and the plastic limit, i.e. the range in water contents over which the soil is in a plastic state.

MEASURES OF CONSISTENCY OF COHESIVE SOILS (CLAYS) (Ref's 2 & 3)

Very Soft	N=0-1*	C=0-250 psf	Squeezes between fingers
Soft	N=2-4	C=250-500 psf	Easily molded by finger pressure
Medium Stiff	N=5-8	C=500-1000 psf	Molded by strong finger pressure
Stiff	N=9-15	C=1000-2000 psf	Dented by strong finger pressure
Very stiff	N=16-30	C=2000-4000 psf	Dented slightly by finger pressure
Hard	N>30	C>4000 psf	Dented slightly by a pencil point

***N**=blows per foot in the Standard Penetration Test. In cohesive soils, with the 3-inch-diameter ring sampler, 140-pound weight, divide the blow count by 1.2 to get N (Ref 4).

MEASURES OF RELATIVE DENSITY OF GRANULAR SOILS (GRAVELS, SANDS, AND SILTS) (Ref's 2 & 3)

Very Loose	N=0-4**	RD=0-30	Easily push a ½-inch reinforcing rod by hand
Loose	N=5-10	RD=30-50	Push a ½-inch reinforcing rod by hand
Medium Dense	N=11-30	RD=50-70	Easily drive a ½-inch reinforcing rod
Dense	N=31-50	RD=70-90	Drive a ½-inch reinforcing rod 1 foot
Very Dense	N>50	RD=90-100	Drive a ½-inch reinforcing rod a few inches

****N**=Blows per foot in the Standard Penetration Test. In granular soils, with the 3-inch-diameter ring sampler, 140-pound weight, divide the blow count by 2 to get N (Ref 4).

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Ref 1: ASTM Designation: D 2487-06, **Standard Classification of Soils for Engineering Purposes** (Unified Soil Classification System).

Ref 2: Terzaghi, Karl, and Peck, Ralph B., **Soil Mechanics in Engineering Practice,** John Wiley & Sons, New York, 2nd Ed., 1967, pp. 30, 341, and 347.

Ref 3: Sowers, George F., **Introductory Soil Mechanics and Foundations: Geotechnical Engineering,** Macmillan Publishing Company, New York, 4th Ed., 1979, pp. 80, 81, and 312.

Ref 4: Lowe, John III, and Zaccheo, Phillip F., **Subsurface Explorations and Sampling,** Chapter 1 in "Foundation Engineering Handbook," Hsai-Yang Fang, Editor, Van Nostrand Reinhold Company, New York, 2nd Ed, 1991, p. 39.

SOIL TERMINOLOGY

WEATHERING DESCRIPTORS

Fresh — No discoloration, not oxidized, no separation, hammer rings when crystalline rocks are struck.

Slight — Discoloration or oxidation is limited to surface of, or short distance from, fractures; some feldspar crystals are dull, no visible separation, hammer rings when crystalline rocks are struck, body of rock not weakened.

Moderate — Discoloration extends from fractures, usually throughout; Fe-Mg materials are “rusty”, feldspar crystals are “cloudy”, all fractures are discolored or oxidized, partial separation of boundaries visible, texture generally preserved, hammer dose not ring when rock is struck, body of rock is slightly weakened.

Intense — Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in situ disaggregation, all fracture surfaces are discolored or oxidized, surfaces friable, partial separation, texture altered by chemical disintegration, dull sound when struck with hammer, rock is significantly weakened.

Decomposed — Discolored or oxidized throughout, but resistant mineral such as quartz may be unaltered, all feldspars and Fe-Mg minerals are completely altered to clay, complete separation of grain boundaries, resembles a soil, partial or complete remnant of rock structure may be preserved, can be granulated by hand, resistant minerals such as quartz may be present as “stringers” or “dykes”.

BEDDING FOLIATION AND FRACTURE SPACING DESCRIPTORS

Millimeters	Feet	Bedding	Fracture Spacing
>10	<0.03	Laminated	Very Close
10-30	0.03-0.1	Very Thin	Very Close
30-100	0.1-0.3	Thin	Close
100-300	0.3-1	Moderate	Moderate
300-1000	1-3	Thick	Wide
1000-3000	3-10	Very Thick	Very Wide
>3000	>10	Massive	Extremely Wide

ROCK HARDNESS/STRENGTH DESCRIPTORS*

Extremely Hard — Core, fragment, or exposure cannot be scratched with knife or sharp pick; can only be chipped with repeated heavy hammer blows.

Very Hard — Cannot be scratched with knife or sharp pick. Core or fragment breaks with repeated heavy hammer blows.

Hard — Can be scratched with knife or sharp pick with difficulty (heavy pressure). Heavy hammer blow required to break specimen.

Moderately Hard — Can be scratched with knife or sharp pick with light or moderate pressure. Core or fragment breaks with moderate hammer blow.

Moderately Soft — Can be grooved $^{1}/_{16}$ inch (2mm) deep by knife or sharp pick with moderate or heavy pressure. Core fragment breaks with light hammer blow or heavy manual pressure.

Soft — Can be grooved or gouged easily by knife or sharp pick with light pressure, can be scratched with fingernail. Breaks wit light to moderate manual pressure.

Very Soft — Can be readily indented, grooved, or gouged with fingernail, or carved with a knife. Breaks with light manual pressure.

*Note: Although “sharp pick” is included in those definitions, descriptions of ability to be scratched, grooved, or gouged by a knife is the preferred criteria.

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"Engineering Geology Field Manual, Second Edition, Volume 1, by U.S. Department of Interior, Bureau of Reclamation, 1998

ROCK TERMINOLOGY

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Organics
	Sandy lean clay
	Lean clay with fine sandstone fragments
	Lean clay with angular shale fragments
	Siltstone
	Claystone
Misc. Symbols	
	Boring continues
	Drilling refusal
Soil Samplers	
	Modified California Sampler: 24" long, 2.375" ID by 3" OD, split-barrel sampler driven w/ 140-pound hammer falling 30 inches
Line Types	
_____	Denotes a sudden, or well identified strata change
_ _ _	Denotes a gradual, or poorly identified strata change
Laboratory Data	
DS	Direct Shear Test performed at a sample at natural or field moisture content (ASTM D3080)

Symbol	Description
DSX	Direct Shear Test performed after the sample was submerged in water until volume changes ceased(ASTM D3080)
LL	Liquid Limit (ASTM D4318)
PI	Plasticity Index (ASTM D4318)
MD	Moisture and Dry Density (ASTM D7263)
bgs	below ground surface

BORING LOG

Boring No. B-1
Page 1 of 2

JOB NAME: Proposed 10-Lot Subdivision
CLIENT: Elam Family Trust-A
LOCATION: 14915 Shannon Road, Los Gatos, California
DRILLER: West Coast Exploration
DRILL METHOD: 4.5-inch continuous flight auger

JOB NO.: ELAMF-01-00
DATE DRILLED: 6/12/2023
ELEVATION: 685 feet
LOGGED BY: JW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Wood chip-mulch-soil mixture	FILL
							18 6 7	CL	LEAN CLAY, orange brown, moist, stiff, some medium to fine sand, brown and black mottling, trace concrete fragments	
DSX	280	25.3	760	22.9	97					0.67% swell
							7 8 10			
DSX	480	22.8	840	20.8	100	4				0.42% swell
								CL	LEAN CLAY, brown, moist, stiff, some medium to fine sand, trace to some fine sandstone fragments	COLLUVIUM
							9 11 16			
DSX	1000	42.7	550	37.2	70	8				0.21% consol
						12				
							11 18 20		...color change to light brown	
DSX	1500	37.4	1420	36.0	80					0.09% swell
						16				
							11 12 18			
				38.1	78	20				
							15 15 18		...slightly moist	
						24				

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BORING LOG

Boring No. B-1
Page 2 of 2

JOB NAME: Proposed 10-Lot Subdivision

JOB NO.: ELAMF-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
				38.2	79	28	22 30 32		...color change to brown	
				33.5	84	32	18 30 30		...trace oxidation stains	
				30.1	90	36	25 42 50		CLAYEY SAND, brown, moist, intensely weathered, closely fracture to crushed with clayey infilling of joints, trace oxidation stains	
				24.2	96	40			Boring terminated at 39.5 feet. Groundwater was not encountered. Boring was backfilled with neat cement grout.	
						44				
						48				
						52				

BORING LOG

Boring No. B-2
Page 1 of 1

JOB NAME: Proposed 10-Lot Subdivision
CLIENT: Elam Family Trust-A
LOCATION: 14915 Shannon Road, Los Gatos, California
DRILLER: West Coast Exploration
DRILL METHOD: 4.5 inche continuous flight auger

JOB NO.: ELAMF-01-00
DATE DRILLED: 6/12/2023
ELEVATION: 685 feet
LOGGED BY: JW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0	12 14 17 50/6'		Wood chip-mulch mixture	FILL
								CL	LEAN CLAY, brown, moist, very stiff, some medium to fine sand, trace angular sandstone fragments, trace oxidation stains	COLLUVIUM
						4			... brown, slightly moist, moderately weathered, trace oxidation stains	
									Practical refusal encountered at 4 feet. Groundwater was not encountered. Boring was backfilled with neat cement grout.	
						8				
						12				
						16				
						20				
						24				

BORING LOG

Boring No. B-3
Page 1 of 2

JOB NAME: Proposed 10-Lot Subdivision
CLIENT: Elam Family Trust-A
LOCATION: 14915 Shannon Road, Los Gatos, California
DRILLER: West Coast Exploration
DRILL METHOD: 4.5 inch continuous flight auger

JOB NO.: ELAMF-01-00
DATE DRILLED: 6/13/2023
ELEVATION: 714 feet
LOGGED BY: MM

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0		CL	dry grass and weeds at surface	
							15 17 20		LEAN CLAY, dark brown, moist, very stiff, some medium to fine sand, trace rootlets	NATIVE
DSX	330	33.2	730	28.0	84					0.76% swell LL=59 PI=30
							14 22 28			
DSX	500	35.4	1230	33.8	83	4				0.29% swell
							18 22 30			
DSX	1000	34.3	1750	32.6	84	8				0.27% swell
								CL	LEAN CLAY, brown, moist, very stiff, trace angular shale fragments	
						12				
							12 12 17			
DSX	1500	36.4	1570	35.5	81					0.09% swell
						16				
							15 15 21			
				32.9	85	20				
							30 32 40		...trace oxidation stains	
				36.6	82	24				

BORING LOG

Boring No. B-3
Page 2 of 2

JOB NAME: Proposed 10-Lot Subdivision

JOB NO.: ELAMF-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
								rock	SILTSTONE, gray, slightly moist, highly weathered, some oxidation stains ...completely weathered	MONTEREY SHALE BEDROCK
MD				34.6	83	28	30 26 28			
						32				
MD				36.8	81		45 50/6"		Rock fabric and structure present	
						36			Boring terminated at 34 feet. Groundwater was not encountered. Boring was backfilled with neat cement grout.	
						40				
						44				
						48				
						52				

BORING LOG

Boring No. B-4
Page 1 of 2

JOB NAME: Proposed 10-Lot Subdivision
CLIENT: Elam Family Trust-A
LOCATION: 14915 Shannon Road, Los Gatos, California
DRILLER: West Coast Exploration
DRILL METHOD: 4.5 inch continuous flight augers

JOB NO.: ELAMF-01-00
DATE DRILLED: 6/13/2023
ELEVATION: 720 feet
LOGGED BY: JW

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0	10 15 20		Mulch-wood chip mixture	FILL
				34.3	78			CL	LEAN CLAY, dark brown, moist, stiff, some sand, trace rock fragments	
				37.9	79	4	19 22 28		... brown, moist, very stiff, some medium to fine sand, trace oxidation stains, trace sandstone fragments	NATIVE
DSX	1000	38.9	80	36.1	80	8	14 16 24			0.41% swell
						12	9 9 11		...stiff	
DSX	1500	40.4	77	39.8	77					0.09% consol
						16	9 13 20		...very stiff	
				34.1	84	20				
							15 22 28		... light brown, moist, friable, trace oxidation stains	
				35.7	83	24				

BORING LOG

Boring No. B-4
Page 2 of 2

JOB NAME: Proposed 10-Lot Subdivision

JOB NO.: ELAMF-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
				34.8	84	28	18 25 50/6"	ROCK	CLAYEY SILTSTONE, highly weathered, plastic, weak	MONTEREY SILTSTONE BEDROCK
						32			Boring terminated at 29.5 feet. Groundwater was not encountered. Boring was backfilled with neat cement grout.	
						36				
						40				
						44				
						48				
						52				

BORING LOG

Boring No. B-5
Page 1 of 2

JOB NAME: Proposed 10-Lot Subdivision
CLIENT: Elam Family Trust-A
LOCATION:
DRILLER:
DRILL METHOD:

JOB NO.: ELAMF-01-00
DATE DRILLED: 6/13/2023
ELEVATION: 664 feet
LOGGED BY:

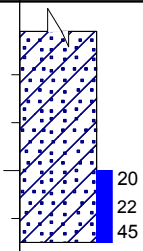
Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						0			Grass clipping-soil mixutre	FILL
							15 20 22	CL	LEAN CLAY, brown, moist, very stiff, some medium to fine sand, trace orange and gray mottling	
DSX	440			30.6	85		18 30 30			COLLUVIUM
DSX	440	34.6	1570	30.6	85	4			... dark brown, moist, some medium to fine sand, trace sandstone fragments	1.87% swell
						8	18 25 32		...color change to brown, trace oxidation stains	
				36.1	81					
						12	20 28 35			
DSX	1800	35.3	36.6	35.3	82					0.23% swell
						16	28 35 50		...sandstone and shale fragments in sandy clay matrix	
				32.4	86					
						20	18 20 25		...little to no rock fragments	
				34.3	84	24				

BORING LOG

Boring No. B-5
Page 2 of 2

JOB NAME: Proposed 10-Lot Subdivision

JOB NO.: ELAMF-01-00

Type of Strength Test	Test Surcharge Pressure, psf	Test Water Content, %	Shear Strength, psf	In-Situ Water Content, %	In-Situ Dry Unit Weight, pcf	Depth, ft.	Soil Symbols, Samplers and Blow Counts	USCS	Description	Remarks
						28	 20 22 45		... brown, moist, intensely weathered, trace to some pebble	
						32			Boring terminated at 29.5 feet. Groundwater was not encountered. Boring was backfilled with neat cement grout.	
						36				
						40				
						44				
						48				
						52				

GEOTECHNICAL PEER REVIEW LETTER

COTTON, SHIRES AND ASSOCIATES, INC.

NOVEMBER 15, 2022

November 15, 2022
LG6052

TO: WooJae Kim
Town Engineer
TOWN OF LOS GATOS
41 Miles Avenue
Los Gatos, California 95030

SUBJECT: **Geotechnical Peer Review**
RE: 10-Lot Subdivision M-22-003
FY23071
14915 Shannon Road

At your request, we have completed a geotechnical peer review of the proposed multi lot subdivision using:

- Geotechnical Investigation (report) prepared by Milstone Geotechnical, dated May 17, 2021;
- Engineering Geologic Investigation (report) prepared by Steven F. Connelly, CEG, dated February 5, 2021; and
- Civil Plans (10 sheets) prepared by TS Civil Engineering, Inc., dated March 11, 2022.

In addition, we have reviewed pertinent maps and technical documents from our office files and completed a recent site reconnaissance of the site vicinity.

DISCUSSION

We understand the applicant proposes to demolish the existing site improvements and subdivide the property into ten (10) lots. Lots 1 through 7 are proposed along Shannon Road. Access to Lots 1 through 7 is proposed by shared driveways extending from either Shannon Road or Sky Lane. Lots 8 through 10 will be accessed by Sierra Azule and are located upslope of Lot 7.

SITE CONDITIONS

The property is not located within a California Geological Survey liquefaction hazard zone, and is also not located within a State designated Alquist Priolo/ Fault Rupture hazard zone. However, the property is located within a California Geological Survey earthquake-induced landslide hazard zone and the Town Fault Lineament and Coseismic Deformation Map (compiled by Nolan Associates, 1999) delineates a trace of the Shannon Fault through the property in the vicinity of Shannon Road. The Town Geologic Map indicates that the subject site is underlain by Oligocene to Middle Miocene sedimentary bedrock. A majority of the site includes steep slopes (greater than 30 percent) that descend towards Shannon Road. Portions of the slope have developed colluvial swales. Lower portions of the property are overlain by alluvium/colluvium and debris flow deposits. The San Andreas Fault is located approximately 4.85 miles southwest of the site.

GEOLOGIC AND GEOTECHNICAL EVALUATIONS

We understand the Project Engineering Geologist (Connelly) has advanced an investigation that included reconnaissance level geologic tasks, as well as subsurface investigation by 11 test-pits. The Geologist maps 5 swale features and recommends avoidance of these features or retaining wall mitigative structures in locations where homes may be positioned downslope. As part of the subsurface investigation, the Geologist identified Monterey Formation bedrock as well as alluvium, colluvial soils and debris flow deposits. The Geologist notes that additional geologic investigation is necessary to evaluate fault rupture hazards, specifically in reference to Lot 7.

The Project Geotechnical Consultant (Milstone) has reviewed the results of the Engineering Geologic Investigation and completed additional investigative tasks including exploratory borings, laboratory testing and analysis to evaluate geotechnical conditions at the site. In total, 19 borings were advanced to a maximum depth of 30 feet below the ground surface. Artificial fill was encountered on proposed Lots 5 and 6. We understand no ground water was encountered in any geologic or geotechnical site investigation. The Geotechnical Consultant recommends additional swell testing of site soils prior to final foundation design of individual lots. The Consultant finds the risk of significant debris flow activity at the site to be low; however, they note that swales like those identified present increased risk to downslope improvements.

CONCLUSIONS AND RECOMMENDED ACTION

The proposed subdivision project is potentially constrained by surface fault rupture and secondary coseismic ground deformation, debris flows and shallow landsliding, undocumented fill, steep slopes, and very strong ground shaking. We concur

with the Project Engineering Geologist and Geotechnical Consultant that the mapped swales on the subject property present a potential for debris flow hazards as well as additional risk of adverse impacts form concentrated drainage, surface erosion, etc. We also concur that proposed subdivision plans and potential homesites should carefully consider these hazards through avoidance or engineered mitigative measures. Typically, colluvial swales are avoided, if possible, as part of site development. Alternatively, debris walls, confinement structures, and collection basins may be designed to protect proposed habitable structures. Due to the likelihood that geologic and geotechnical hazards such as debris flows, landslides, and surface runoff/erosion, will cross property lines, careful consideration should be paid to alignments and orientations of proposed engineered structures intended to mitigate hazards. Such considerations will likely facilitate future maintenance of the structures and could reduce litigation.

The only acceptable mitigation alternative recognized by the State for fault rupture hazards is avoidance through set-backs from investigated and identified fault traces. Consequently, the potential for surface fault rupture from the potentially active Shannon Fault should be investigated prior to approval of proposed subdivision applications and tentative building sites across the property.

With the understanding above, we recommend completion of the following three (3) Items prior to supplemental peer review and approval of subject permit applications:

1. **Supplemental Engineering Geologic Investigation and Evaluation** – The Project Engineering Geologist should perform the investigative tasks necessary to address the following:

    a. The Engineering Geologist should complete an investigation for surface fault rupture and secondary ground deformation to impact the site. The applicant's Consultant should advance appropriate subsurface investigation (i.e., trenching) to characterize rupture hazards and develop suitable set-backs, as necessary. We understand the Engineering Geologist finds that the Shannon Fault is mapped across the southern portion of Lot 7. We recommend the Engineering Geologist considers a fault trench investigation which extends across Lot 7 to shadow additional Lots 1 through 6, and evaluate the risk of surface fault rupture to those lots.

    b. The Engineering Geologist should perform additional mapping of potential debris flow hazards. We recommend the applicant's Geologist prepare an updated Engineering Geologic map clearly showing areas of both debris flow

source, and moderate to high debris flow run-out potential to be avoided or mitigated. Given inherent variability in mapping debris flow hazards the Engineering Geologist may also consider recommendations for habitable building set-backs from inferred source or run-out areas, unless mitigated through engineering design. We also recommend the engineering geologic map denote areas of undocumented fill, as applicable.

The applicant's Engineering Geologist should compile the results in a signed and stamped supplemental letter-report or updated investigation to be submitted to the Town for supplemental peer review prior to approval of subject subdivision level permit applications. If subsurface investigation (i.e., trenching) is advanced, then the Town Geotechnical Consultant should be contacted to observe cleaned and shored exposures.

2. **Supplemental Geotechnical Evaluations and Recommendations** – The Project Geotechnical Consultant should review the results of Item 1 as well as perform additional investigation and analysis to address the following:

   a. The Geotechnical Consultant should discuss and evaluate the potential for erosional failures or debris flows to retrogress across Lot 8 towards the proposed building site. The Consultant should evaluate whether a habitable building set-back is warranted, or, alternatively, whether a retaining wall (e.g., buried stitch pier wall) is warranted.

   b. Based on the results of Item 1, the Geotechnical Consultant should evaluate potential debris impact to structures and provide design recommendations for mitigative alternatives, as necessary.

   The Supplemental Geotechnical Evaluations and Recommendations should be compiled by the applicant's Geotechnical Consultant in a supplemental signed and stamped response letter and submitted to the Town for supplemental peer review prior to approval of subject permit applications.

3. **Revised Civil Plans** – Plans for the proposed subdivision should be revised, as necessary, to include recommendations of the Project Engineering Geologist and Geotechnical Consultant. Proposed

property lines and building sites should consider potential fault and debris flow hazards and mitigative structures.

The Project Civil Engineer should coordinate with the Project Engineering Geologist and Geotechnical Consultant, as necessary, to revise proposed subdivision plans with respect to investigated geologic and geotechnical constraints. Plans should be submitted with responses to Items 1 and 2 to the Town for supplemental peer review prior to approval of subject permit applications.

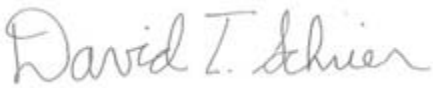
LIMITATIONS

This geotechnical peer review has been performed to provide technical advice to assist the Town 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.
TOWN GEOTECHNICAL CONSULTANT

Craig Stewart
Senior Geologist
PG 9786



David T. Schrier
Principal Geotechnical Engineer
GE 2334

DTS:CS:st

SLOPE STABILITY ANALYSIS PLOTS

Elam Family Trust Swale No.3 Static

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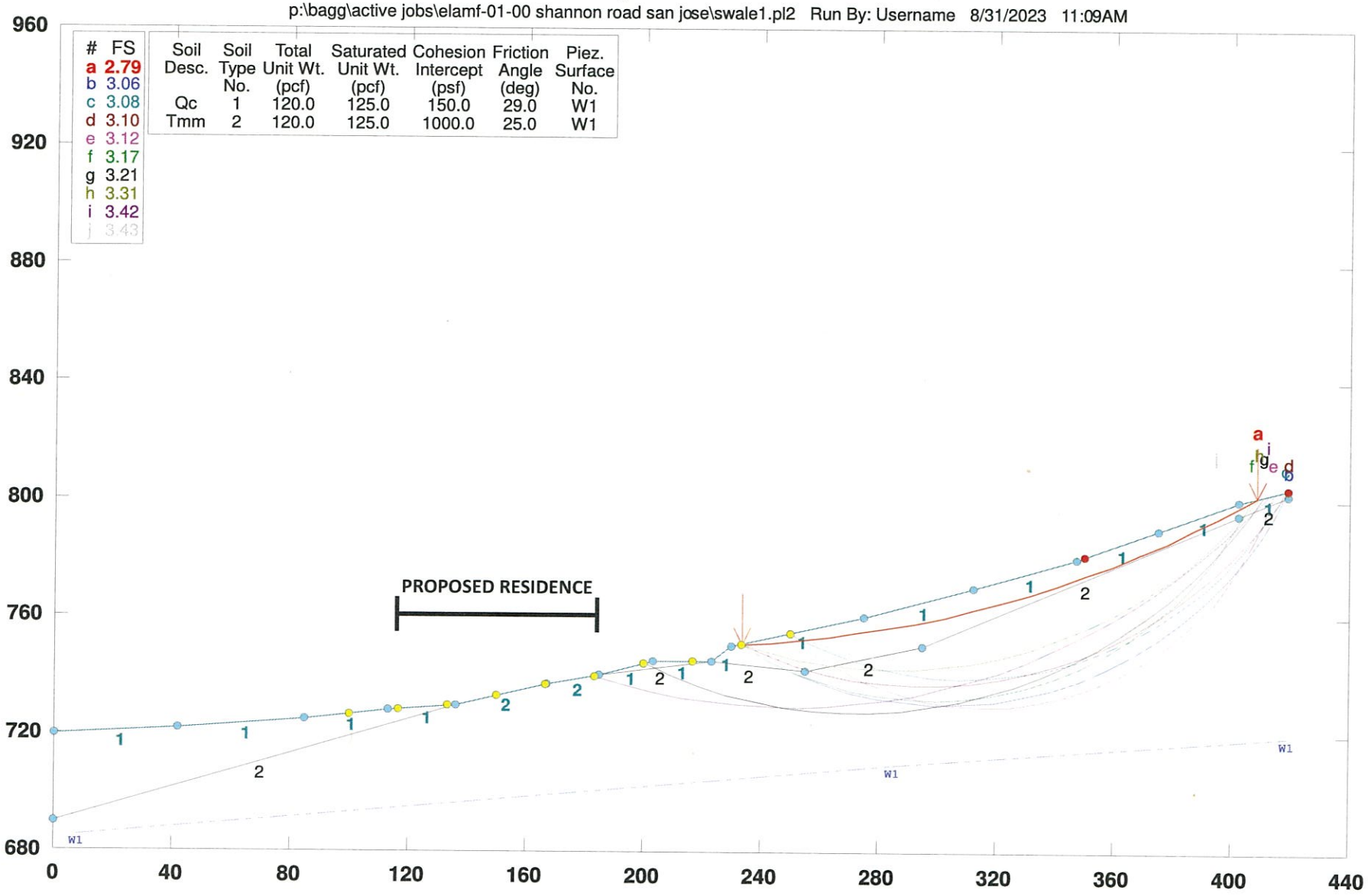
b	3.06
c	3.08
d	3.10
e	3.12
f	3.17
g	3.21
h	3.31
i	3.42
j	3.43

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qc	1	120.0	125.0	150.0	29.0	W1
Tmm	2	120.0	125.0	1000.0	25.0	W1



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Safety Factors Are Calculated By The Modified Janbu Method

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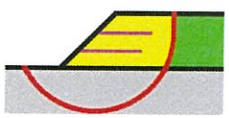

Elam Family Trust Swale No.4 Static

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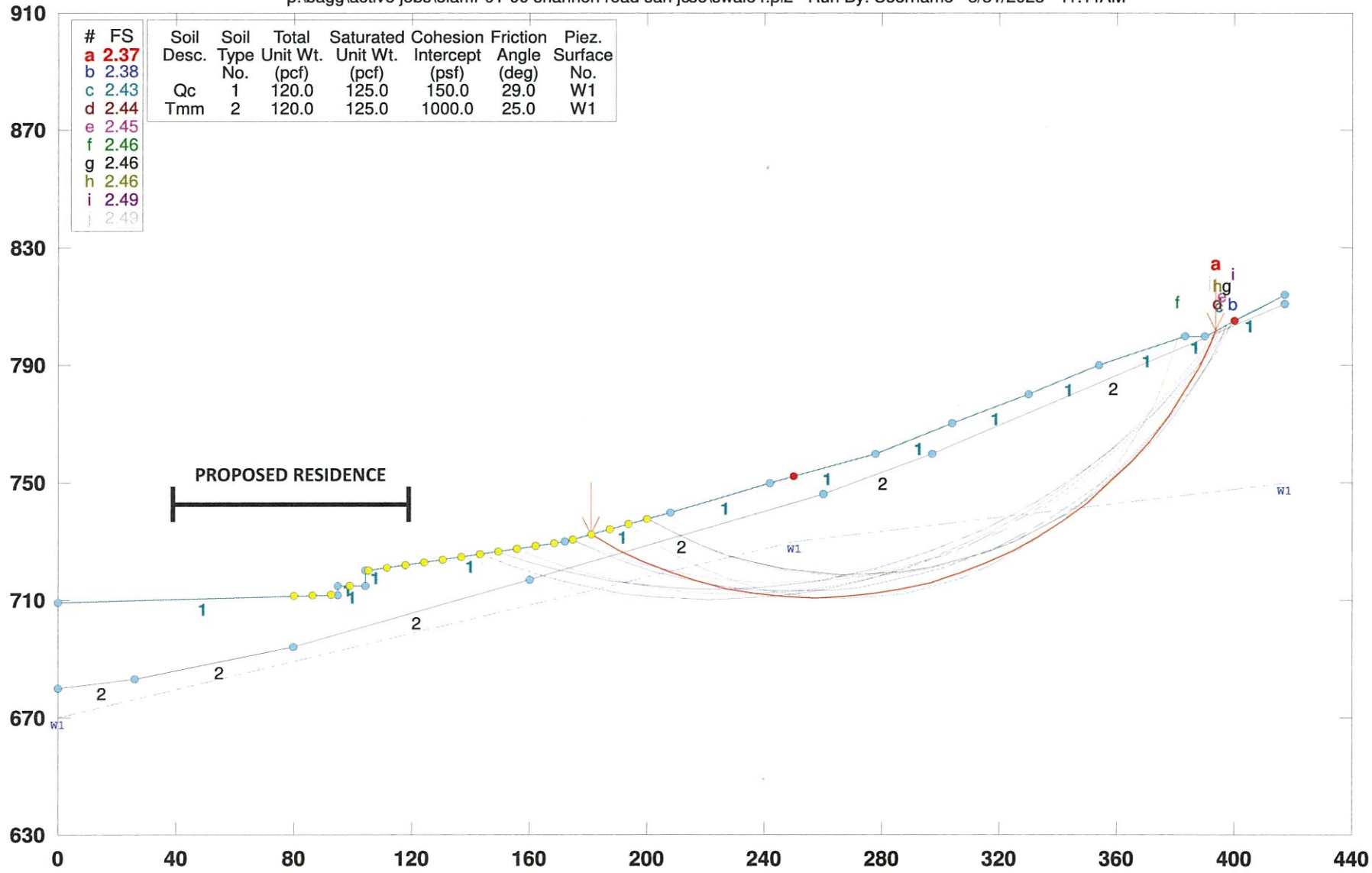
b	2.38
c	2.43
d	2.44
e	2.45
f	2.46
g	2.46
h	2.46
i	2.49
j	2.49

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qc	1	120.0	125.0	150.0	29.0	W1
Tmm	2	120.0	125.0	1000.0	25.0	W1



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Safety Factors Are Calculated By The Modified Janbu Method

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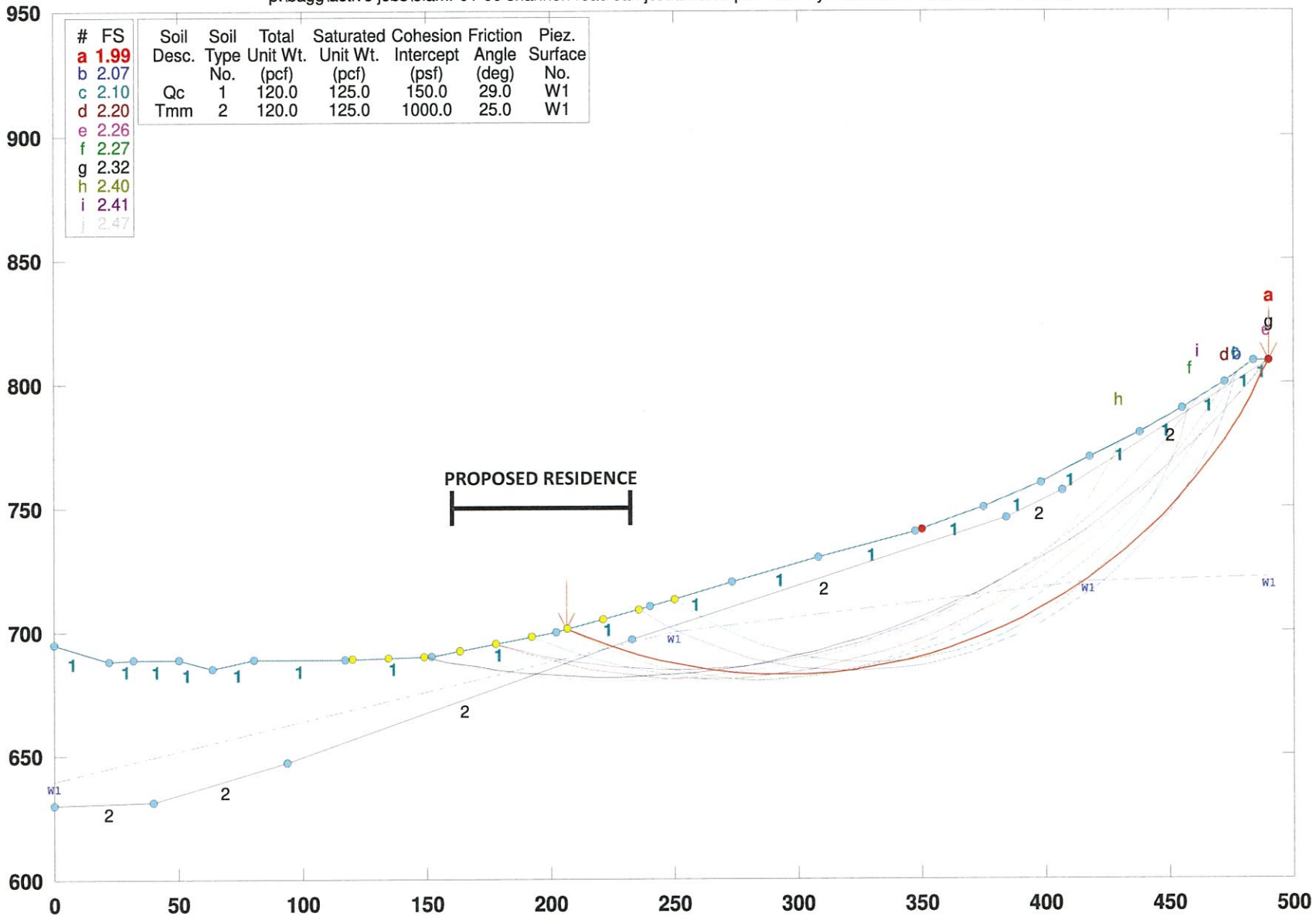

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Safety Factors Are Calculated By The Modified Janbu Method

STED

Elam Family Trust Lot 8 (Global/Static)

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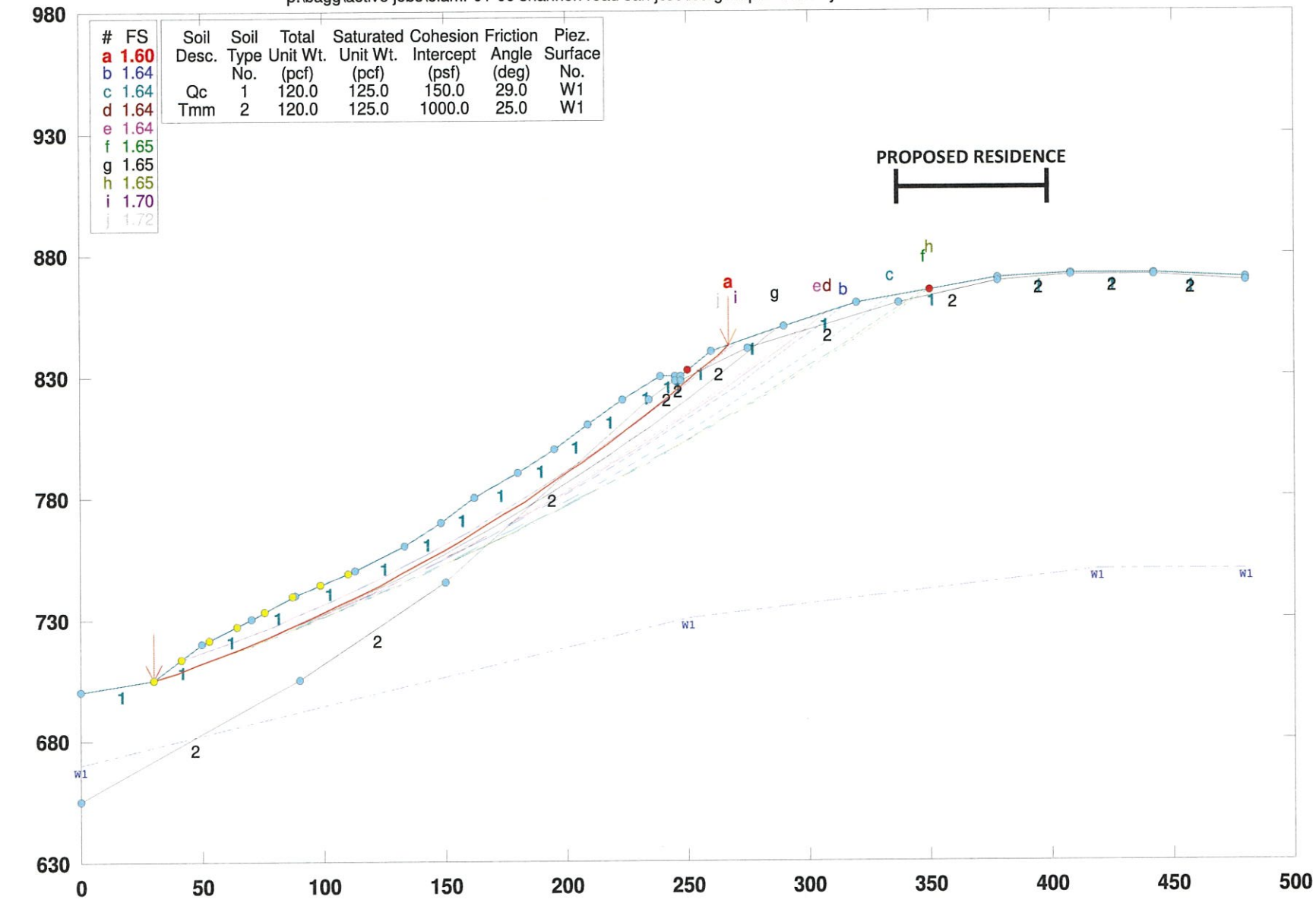

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b	1.64
c	1.64
d	1.64
e	1.64
f	1.65
g	1.65
h	1.65
i	1.70
j	1.72

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qc	1	120.0	125.0	150.0	29.0	W1
Tmm	2	120.0	125.0	1000.0	25.0	W1

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Safety Factors Are Calculated By The Modified Janbu Method

STED

Elam Family Trust Lot 8 (Global/Static)

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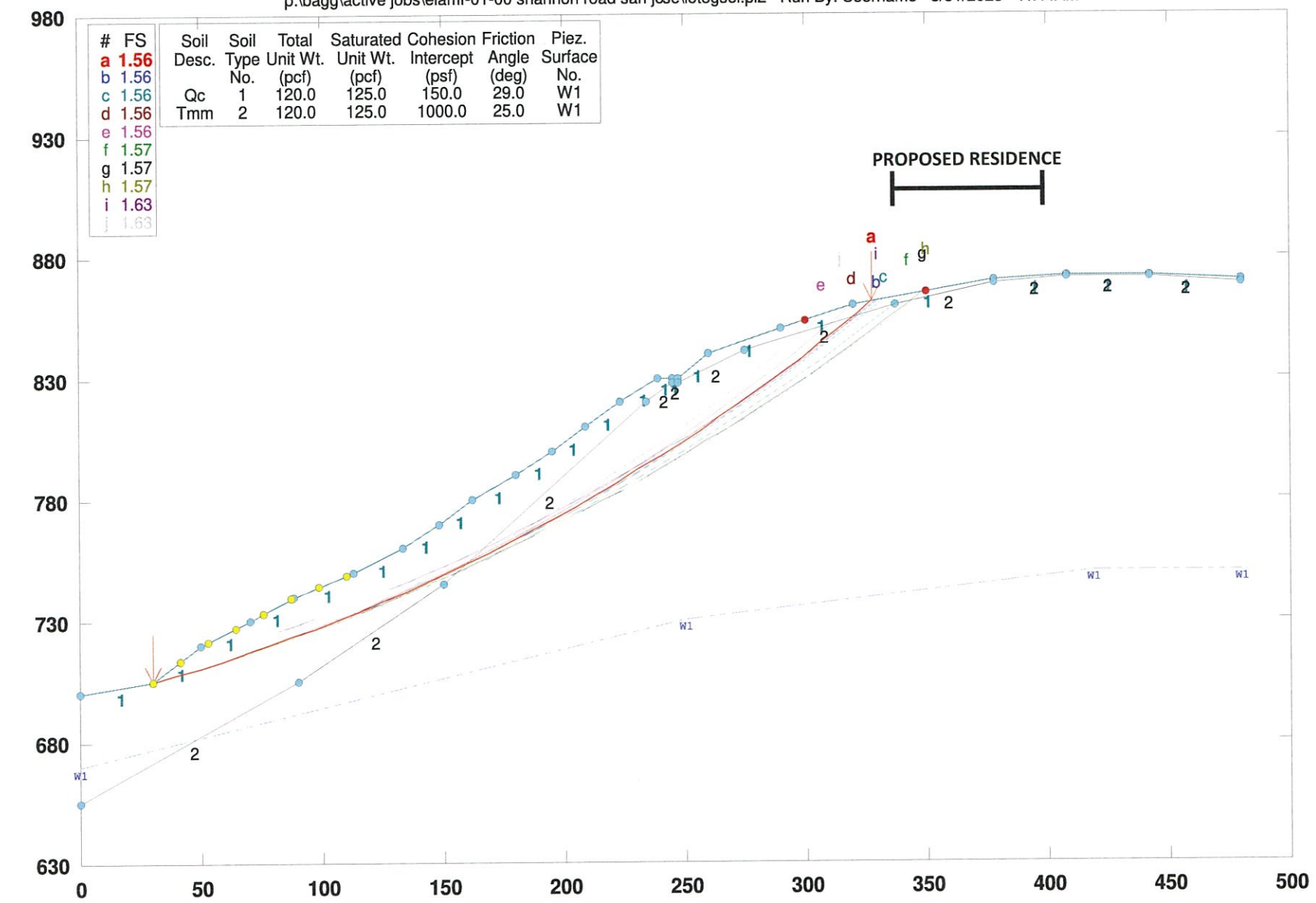

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b	1.56
c	1.56
d	1.56
e	1.56
f	1.57
g	1.57
h	1.57
i	1.63
j	1.63

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qc	1	120.0	125.0	150.0	29.0	W1
Tmm	2	120.0	125.0	1000.0	25.0	W1

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Safety Factors Are Calculated By The Modified Janbu Method

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Elam Family Trust Lot 8 (Global/Static)

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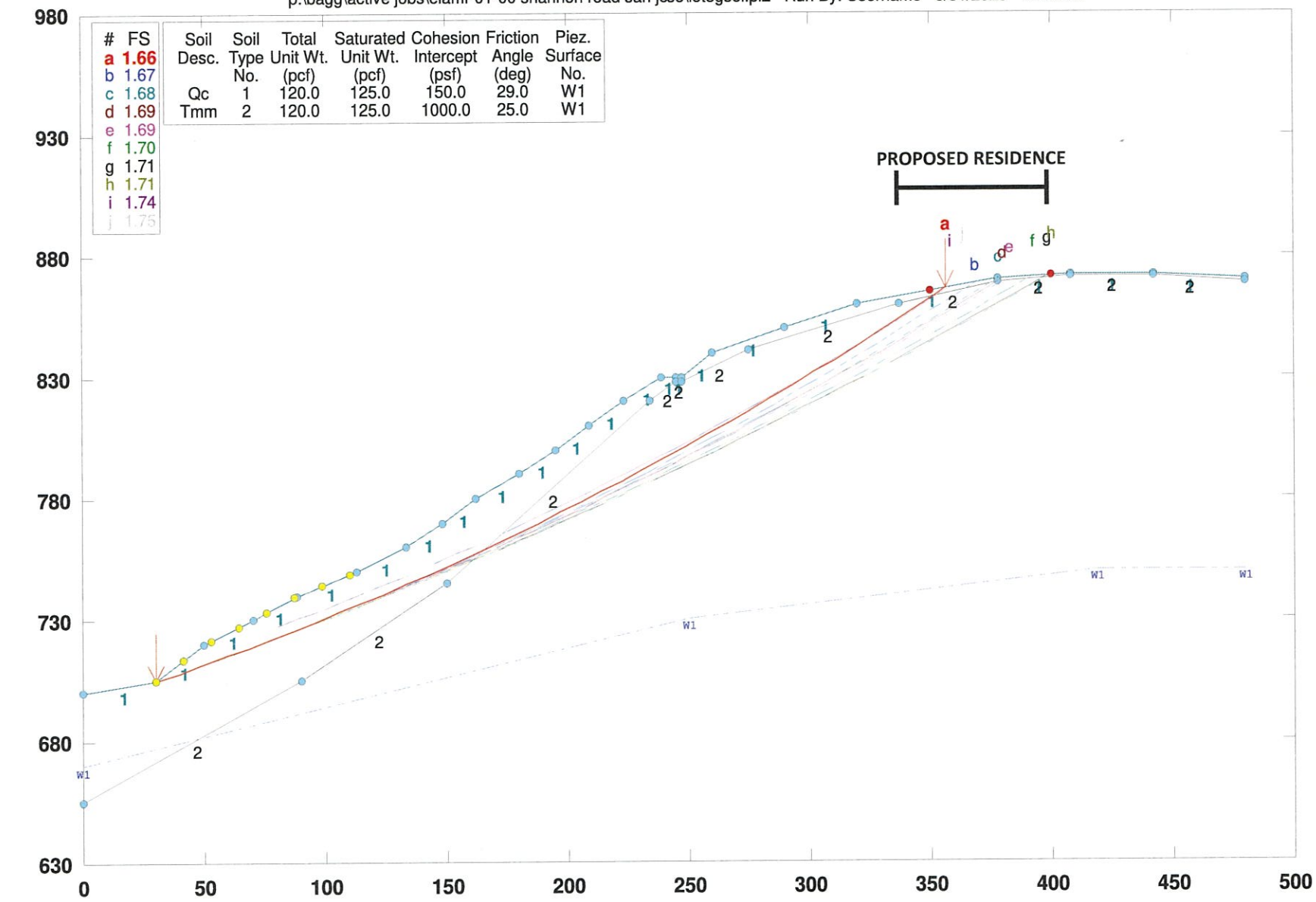

#	FS
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c	1.68
d	1.69
e	1.69
f	1.70
g	1.71
h	1.71
i	1.74
j	1.75

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qc	1	120.0	125.0	150.0	29.0	W1
Tmm	2	120.0	125.0	1000.0	25.0	W1

PCSTABL5M/si FSmin=1.66

Safety Factors Are Calculated By The Modified Janbu Method

STED

Elam Family Trust Lot 8 (Global/Static)

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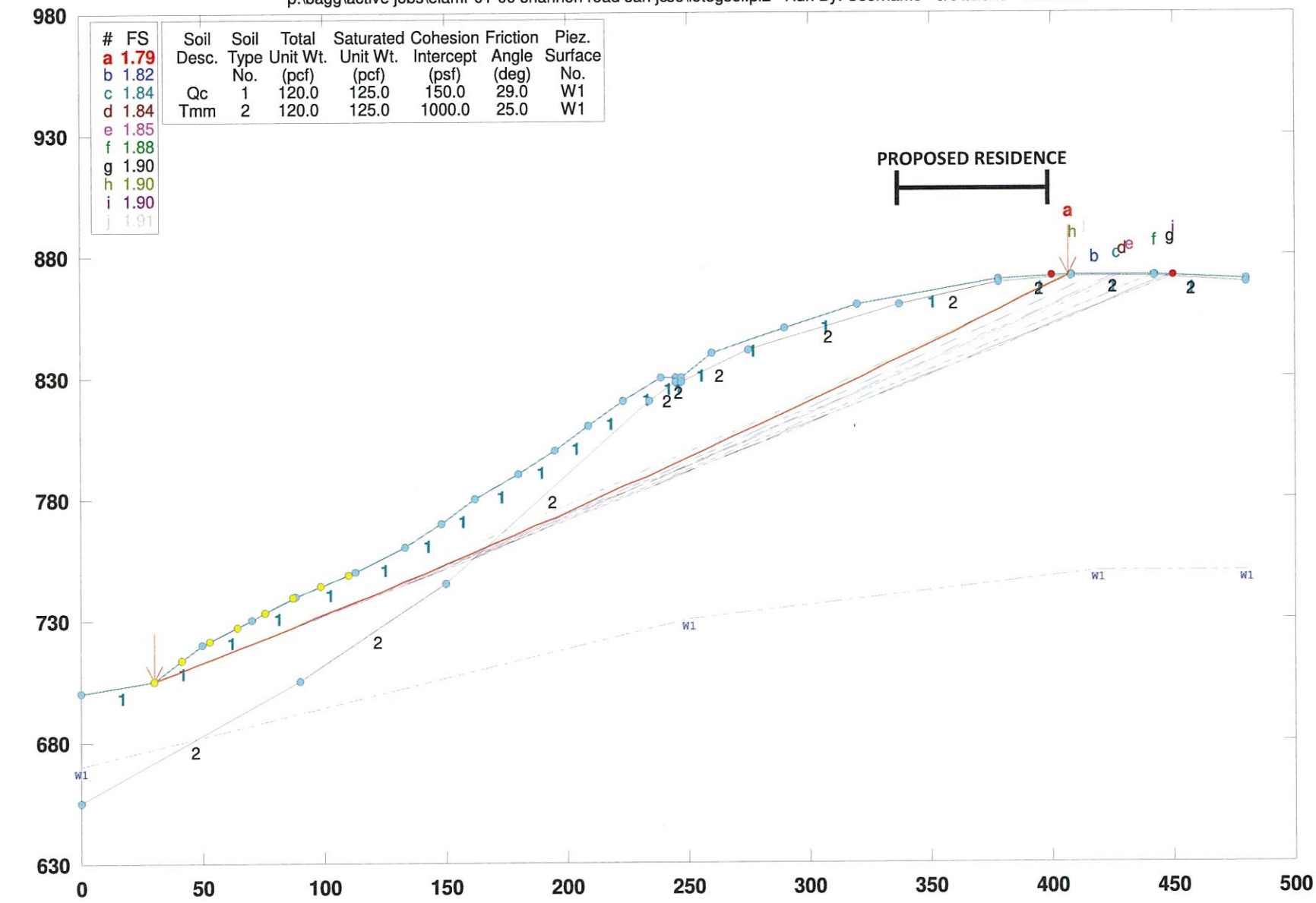

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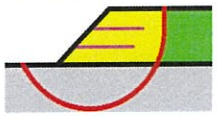
c	1.84
d	1.84
e	1.85
f	1.88
g	1.90
h	1.90
i	1.90
j	1.91

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qc	1	120.0	125.0	150.0	29.0	W1
Tmm	2	120.0	125.0	1000.0	25.0	W1

PCSTABL5M/si FSmin=1.79

Safety Factors Are Calculated By The Modified Janbu Method

STED



Elam Family Trust Swale No.3 Seismic

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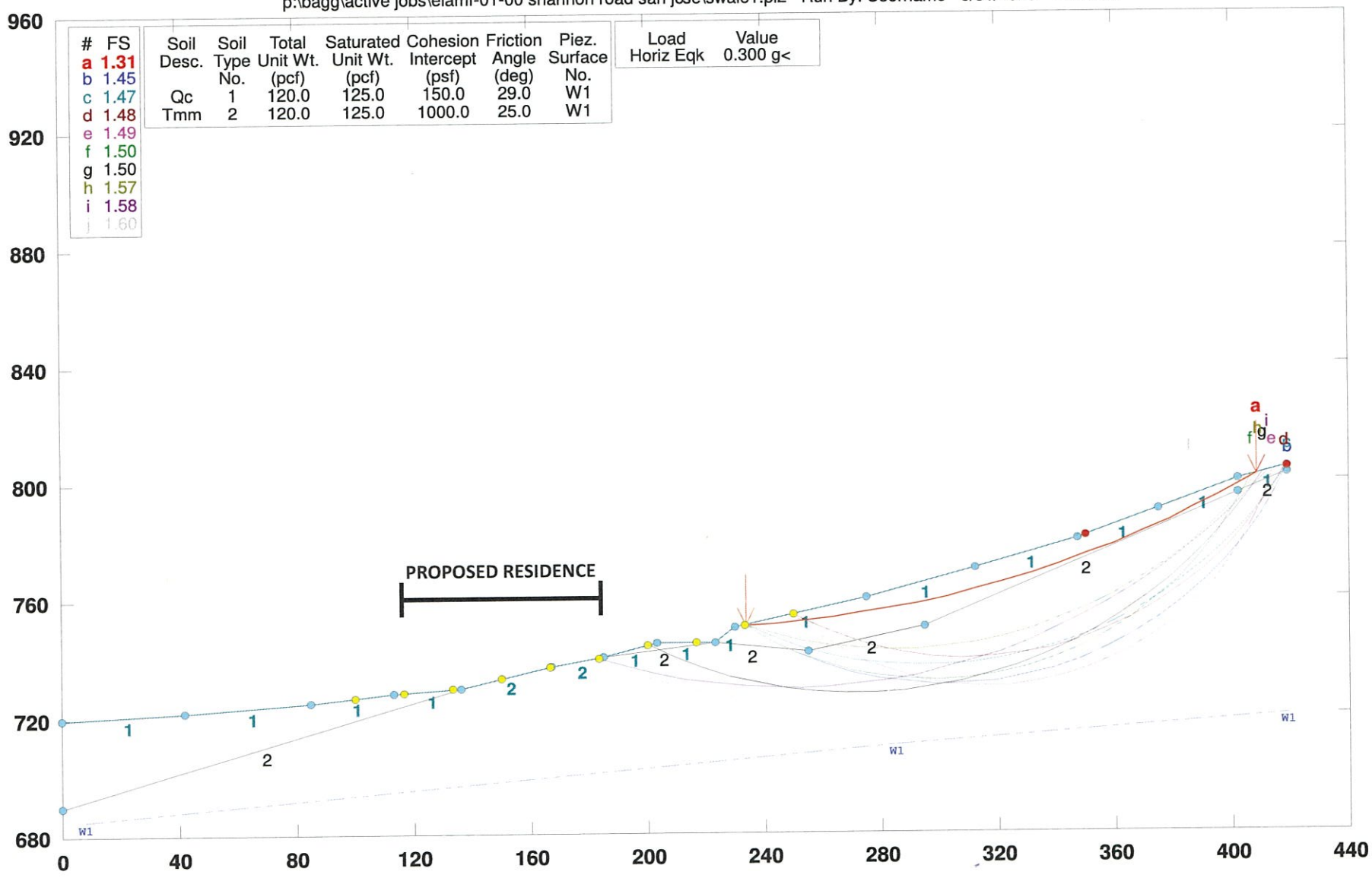
c	1.47
d	1.48
e	1.49
f	1.50
g	1.50
h	1.57
i	1.58
j	1.60

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qc	1	120.0	125.0	150.0	29.0	W1
Tmm	2	120.0	125.0	1000.0	25.0	W1

Load	Value
Horiz Eqk	0.300 g<



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Safety Factors Are Calculated By The Modified Janbu Method

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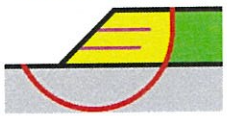

Elam Family Trust Swale No.4 Seismic

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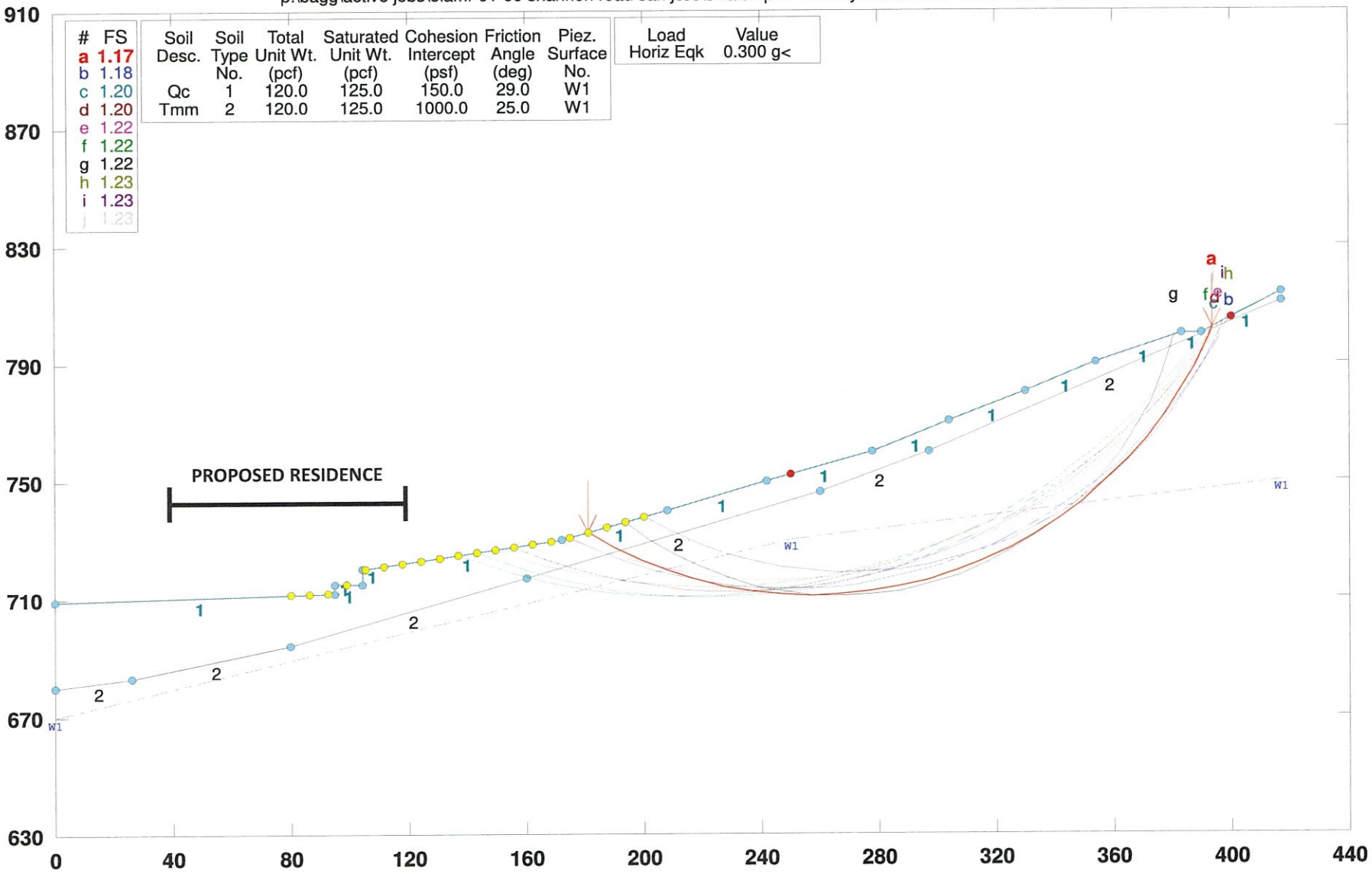
d	1.20
e	1.22
f	1.22
g	1.22
h	1.23
i	1.23
j	1.23

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qc	1	120.0	125.0	150.0	29.0	W1
Tmm	2	120.0	125.0	1000.0	25.0	W1

Load	Value
Horiz Eqk	0.300 g<



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Safety Factors Are Calculated By The Modified Janbu Method

STED

Elam Family Trust Swale No.5 Seismic

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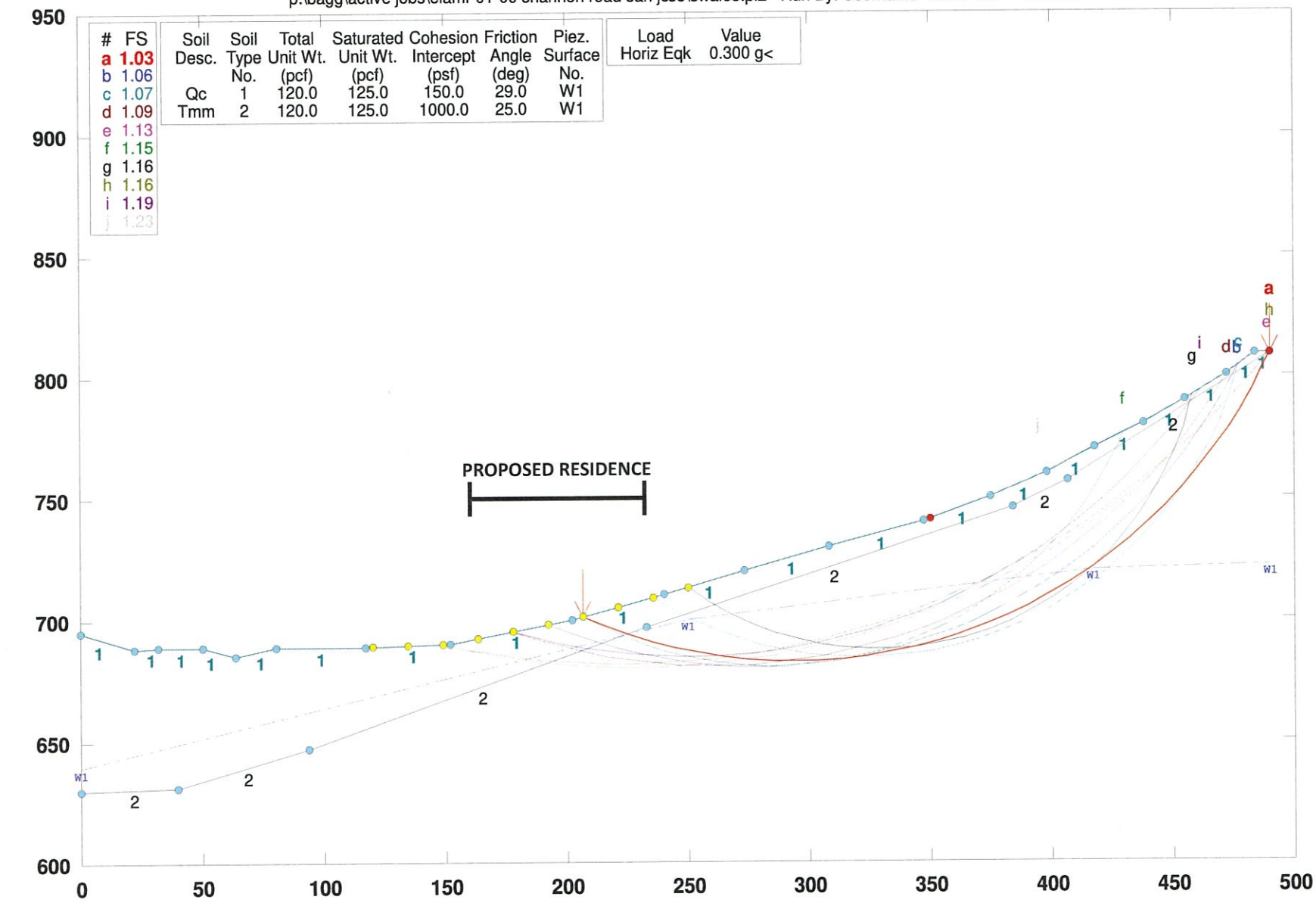

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Safety Factors Are Calculated By The Modified Janbu Method

STED

Elam Family Trust Lot 8 (Global/Seismic)

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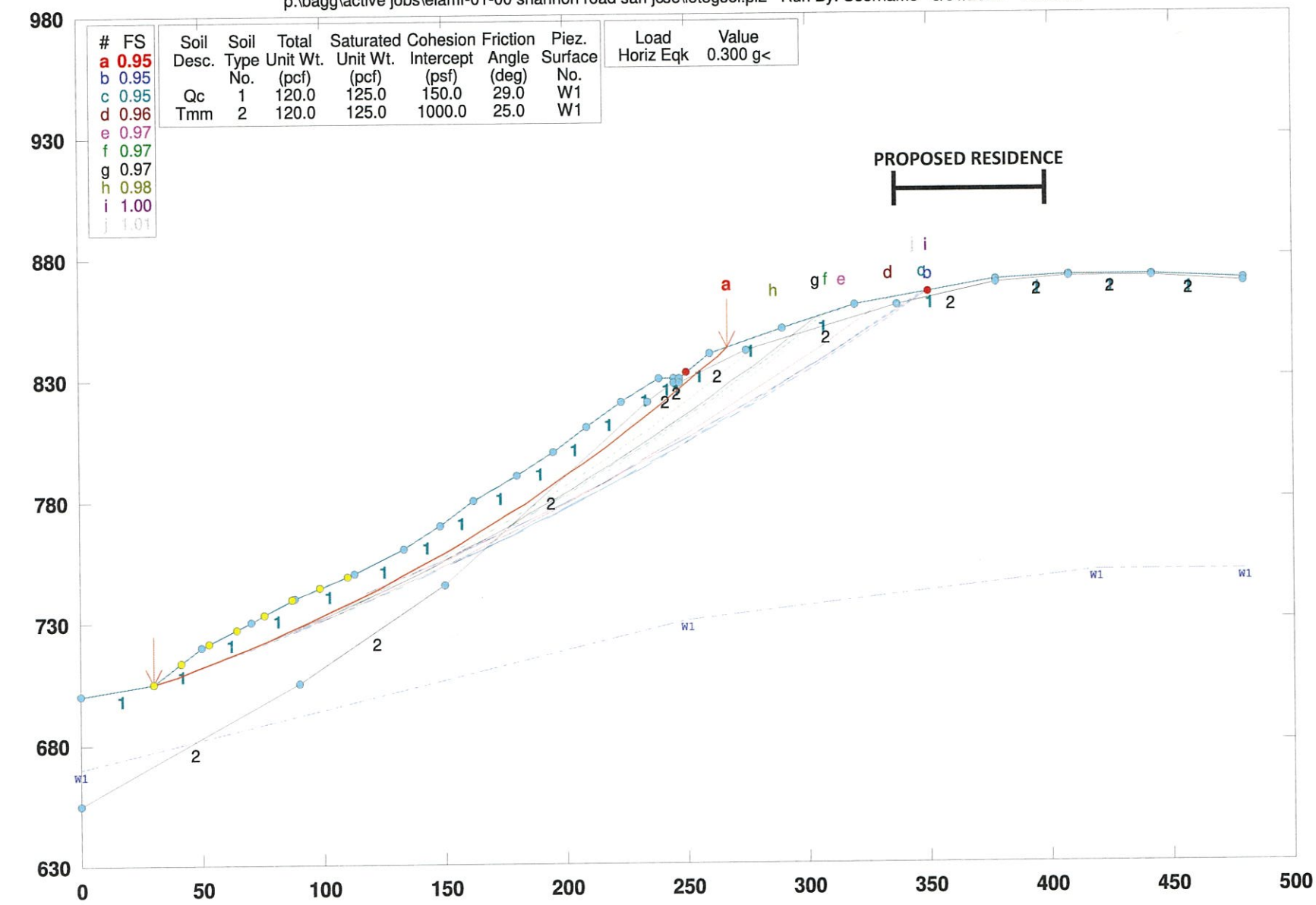

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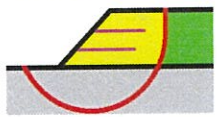
Safety Factors Are Calculated By The Modified Janbu Method

STED



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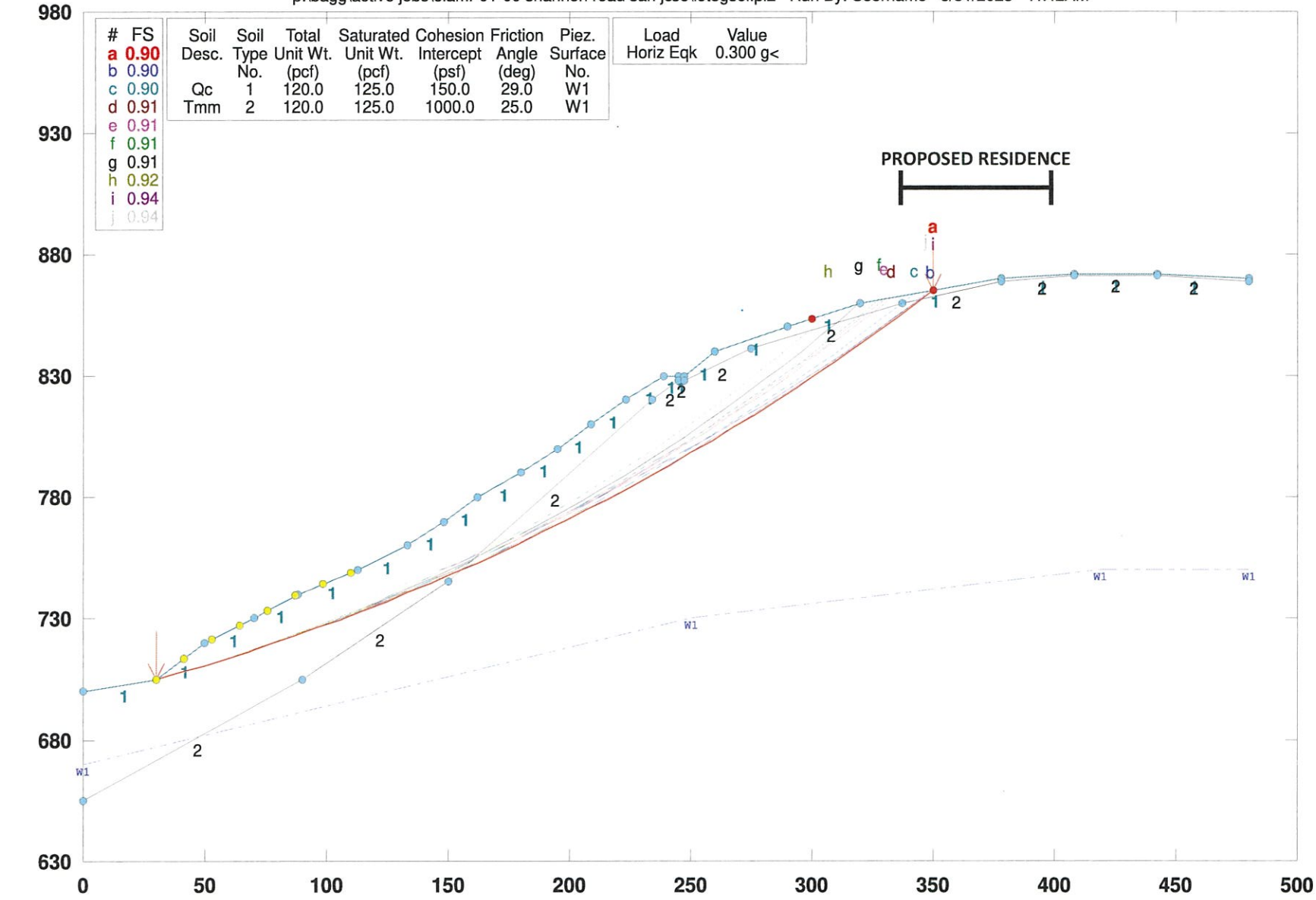

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Safety Factors Are Calculated By The Modified Janbu Method

STED

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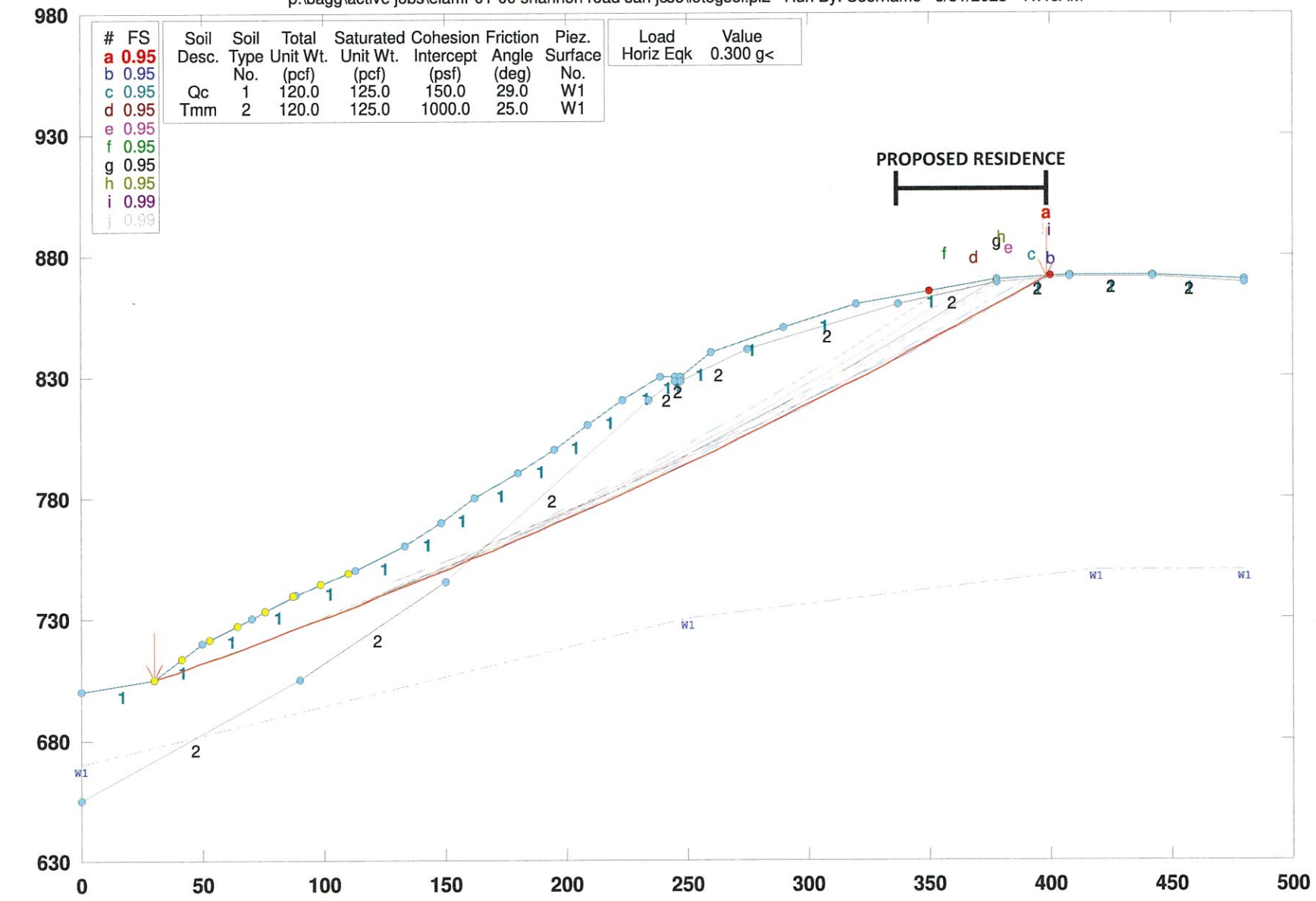

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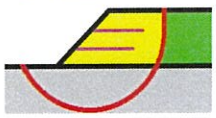
Safety Factors Are Calculated By The Modified Janbu Method

STED



Elam Family Trust Lot 8 (Global/Seismic)

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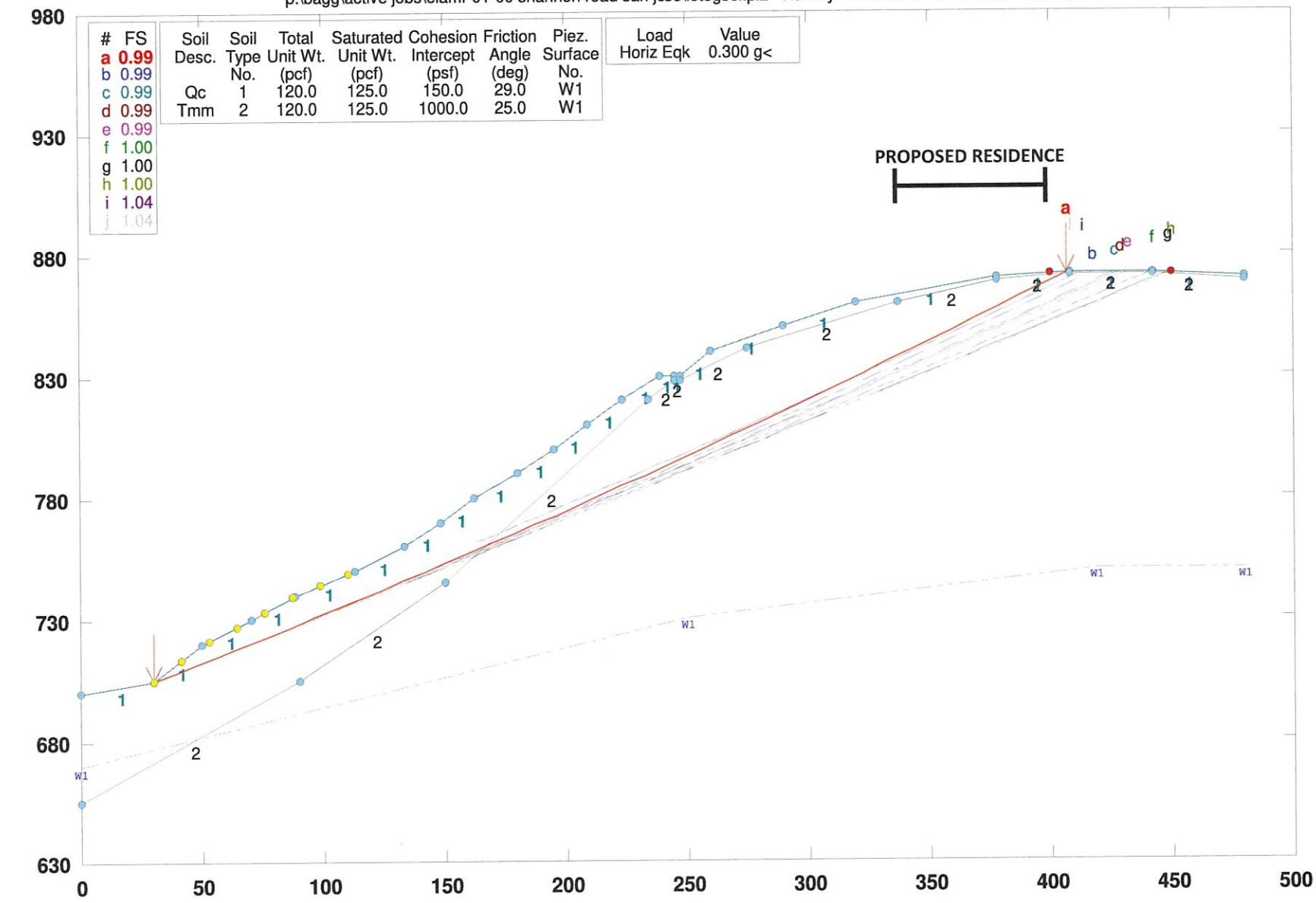

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Safety Factors Are Calculated By The Modified Janbu Method

STED

Elam Family Trust Lot 8 (Global/Seismic)

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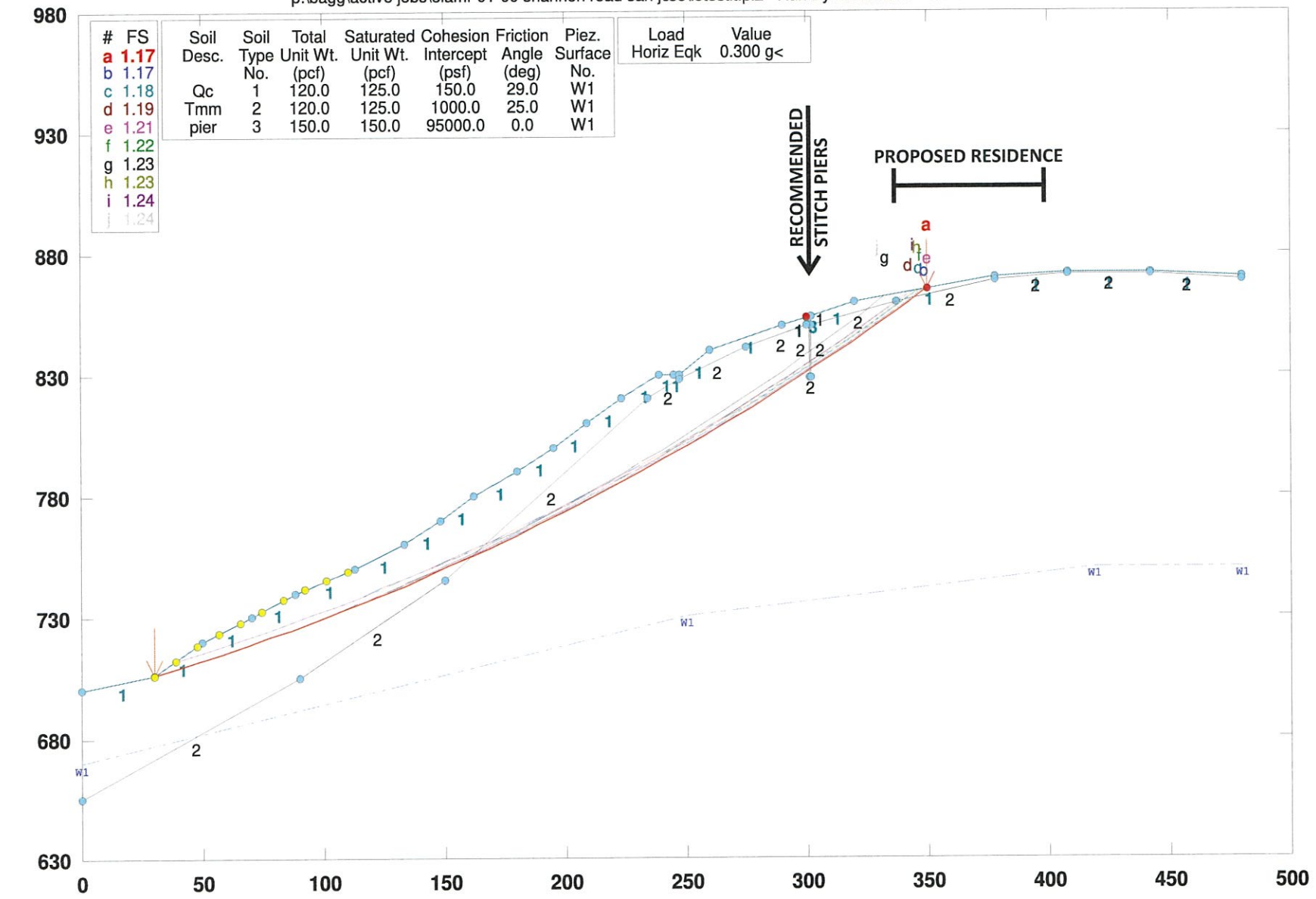

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Safety Factors Are Calculated By The Modified Janbu Method

STED

Elam Family Trust Lot 8 (Global/Seismic)

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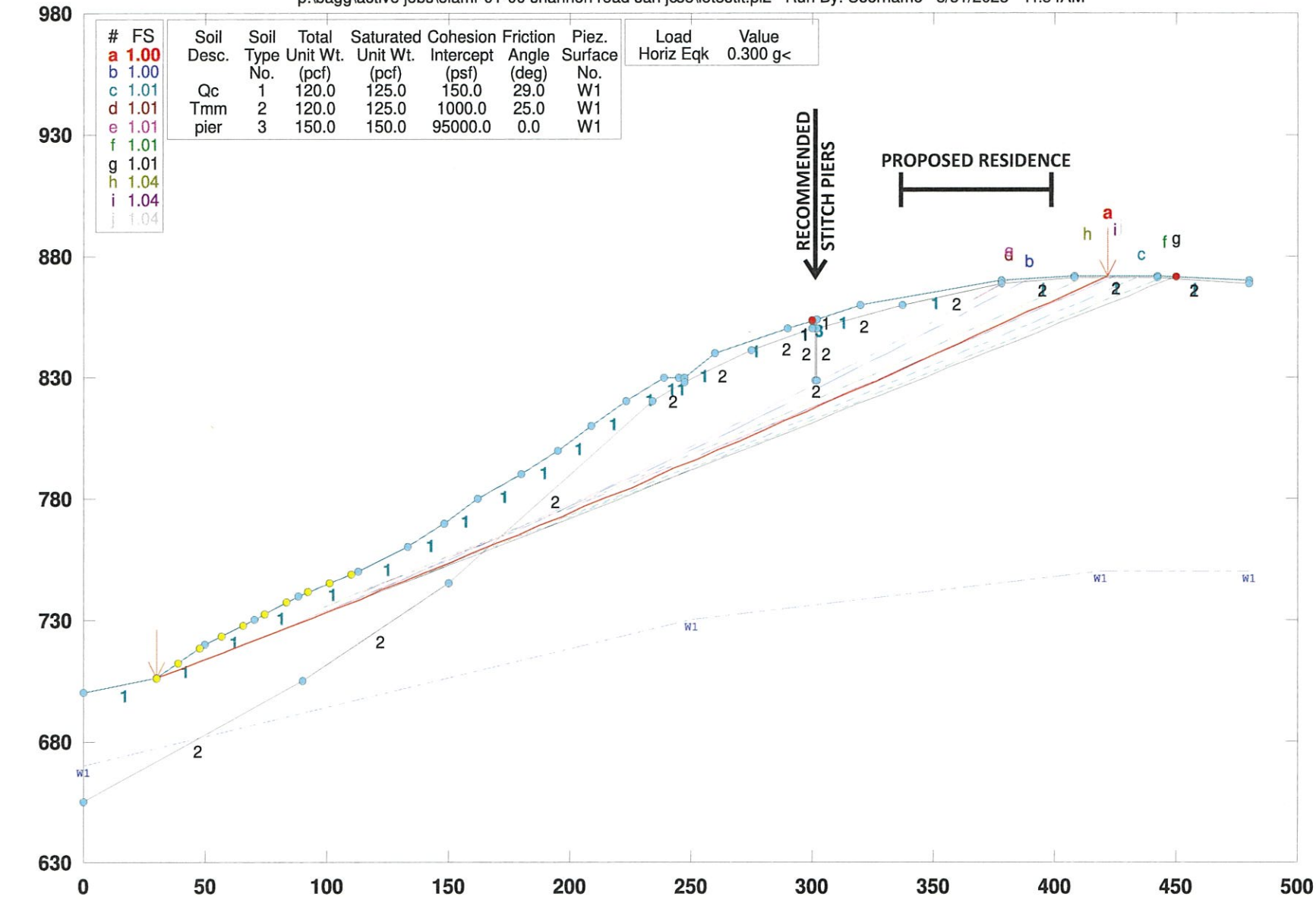

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Safety Factors Are Calculated By The Modified Janbu Method

STED

CORROSION TEST RESULTS

COOPER TESTING LABS

Corrosivity Tests Summary

CTL # 011-946 **Date:** 6/21/2023 **Tested By:** PJ **Checked:** PJ
Client: BAGG Engineers **Project:** 10- Lot Subdivision **Proj. No:** ELAMF-01-00
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP (Redox)		Sulfide Qualitative by Lead Acetate Paper	Moisture At Test % ASTM D2216	Soil Visual Description
			As Rec.	Min	Sat.	mg/kg	mg/kg	%		E_H (mv)	At Test			
						Dry Wt.	Dry Wt.	Dry Wt.		ASTM G200	Temp °C			
Boring	Sample, No.	Depth, ft.	ASTM G57	Cal 643	ASTM G57	ASTM D4327	ASTM D4327	ASTM D4327	ASTM G51					
B-2	-	2	-	-	2,321	2	13	0.0013	7.9	490	22	-	16.4	Brown Sandy CLAY w/ Gravel
B-5	-	2	-	-	1,561	<2	4	0.0004	8.1	452	22	-	24.8	Brown CLAY w/ Sand & organics

SUBSURFACE DATA

AND LABORATORY TEST RESULTS

BY OTHERS

LOG OF EXPLORATORY BOREHOLE MG1

Project: Proposed Elam Subdivision
Location: Lot 2 swale
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~756 feet
Hole Diameter: 6" solid-stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0		CL-CH	**COLLUVIUM**
			16/18	4	MC	B1	1			Sandy CLAY with gravel: Very dark grayish brown (10YR3/2); ~5% white to pale brown and light yellowish brown (10YR6/3,6/4), angular shale gravel to 1/2-inch size; ~20% medium grained sand; 20% very fine to fine grained sand; ~55% high plasticity fines; very stiff; moist.
						T1	2			
					AD		3			
			14/18	10	MC	B2	4			@5' - Sandy fat CLAY with gravel: trace siltstone and shale gravel to 1/2-inch size; ~10% medium grained sand; ~10% very fine to fine grained sand; ~80% medium to high plasticity fines; hard; moist.
		1.9				T2	5			
					AD		6			
	>2.7		18/18	7	MC	T3	7			
		>4.5				T4	8			
		>4.5	15/18	11	CAL*	B3	9		CL-CH	Sandy lean CLAY with gravel: brown and very dark grayish brown (10YR4/3,3/2); ~5% yellowish brown, subangular shale gravel to 1/2-inch size; ~10% medium grained sand; ~30% very fine to fine grained sand; ~55% medium plasticity fines; very stiff; moist; abundant caliche veins and inclusions.
		>4.5	15/18	13	SPT	B4	10			
					AD		11			
		>4.5	14/18	29	MC	B5	12		CL/SC	**RESIDUAL SOIL** Sandy lean CLAY to clayey SAND: Dark yellowish brown (10YR3/4) mottled with white caliche staining; trace weathered shale to 1/2-inch size; trace very fine to fine grained sand; very stiff to hard; damp to moist.
						T5	13			
		>4.5	18/18	34	CAL*	B6	14		Wrx	**WEATHERED BEDROCK** Weathered SILTSTONE and SHALE: Light yellowish brown and grayish brown (10YR6/4,5/2) with mineral staining on fracture facies; severely weathered; weak; soft; friable; moist.
		>4.5	18/18	60	SPT	B7	15			
					AD		16			
		>4.5	18/18	33/2"	MC	T6	17			
			17/17	86/6.5"	SPT	B8	18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 18.9 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.
* No liners.

LOG OF EXPLORATORY BOREHOLE MG2

Project: Proposed Elam Subdivision
Location: Lot 2 swale
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~759 feet
Hole Diameter: 6" solid-stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		1			**COLLUVIUM**
		2.5	12/18	4	MC	B1	2			Sandy CLAY with gravel: Very dark grayish brown (10YR3/2); ~10-20% light yellowish brown (10YR6/8), angular to subangular shale gravel to one-inch size; ~20% fine to coarse grained sand; ~60-70% medium to high plasticity fines; very stiff; moist.
						T1				
			14/18	3	CAL*	B2	3		CH	
			14/18	6	SPT	B3	4			
					AD		5			
			18/18	10	MC	B4	6			
		>4.5				T2	7			
			16/18	32	CAL*	B5	8		CL/ SC	**RESIDUAL SOIL**
			18/18	43	SPT	B6	9			Sandy lean CLAY to clayey SAND: Dark yellowish brown (10YR3/4) mottled with white caliche staining; trace weathered shale to 1/2-inch size; trace very fine to fine grained sand; very stiff to hard; damp to moist.
					AD		10			
			18/18	39	MC	B7	11		Wrx	**WEATHERED BEDROCK**
		>4.5				T3	12			Weathered SILTSTONE and SHALE: Light yellowish brown and grayish brown (10YR6/4,5/2) with trace caliche inclusions; severely weathered; weak; soft to low hardness; friable; moist.
							13			
							14			
							15			
							16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 12.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.
* No liners.

LOG OF EXPLORATORY BOREHOLE MG3

Project: Proposed Elam Subdivision
Location: Lot 3
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~716 feet
Hole Diameter: 6" solid-stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**COLLUVIUM**
			16/18	4	MC	B1	1			Sandy fat CLAY : Dark yellowish brown (10YR3/4); ~10% medium to coarse grained sand and gravel to 3/8-inch size; ~20% very fine to fine grained sand; ~55% medium to high plasticity fines; very stiff; moist.
		3.5				T1	2			
					AD		3		CH	
							4			
							5			
			16/18	21	MC	T3	6			**RESIDUAL SOIL**
		>4.5				T2			Wrx	Very severely to severly weathered SILTSTONE and SHALE: Payle brown and light yellowish brown with white (10YR6/3,6/4, 8/1); soft, weak, intensly fractured; caliche filled joints and veins.
					AD		7			
							8			**WEATHERED BEDROCK**
			18/18	35	MC	B3	9			Weathered SILTSTONE and SHALE: Yellowish brown (10YR5/8); ~trace medium hard clasts to one-inch size; ~85% very fine to fine grained sand; ~15% non-plastic fines; slightly indurated; soft to medium hardness; damp to moist; severely weathered; weak; soft; friable; moist.
		>4.5				T3	10			
						T4				
					AD		11			
							12			
							13		Wrx	
			18/18	27	MC	B4	14			
		>4.5				T5				
					AD		15			
							16			
							17			
			15/18	47/11	MC	B5	18			
		>4.5				T6				
							19			
			18/18	32	SPT	B6				

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 20.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG4

Project: Proposed Elam Subdivision
Location: Lot 3
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~711 feet
Hole Diameter: 6" solid stem
Surface: wood chips

Project Number: 205220
Page: 1 of 2
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**ALLUVIUM**
			18/18	8	MC	B1	1			Clayey SAND: Very dark grayish brown (10YR3/2); ~10% medium to coarse grained sand; ~60% very fine to fine grained sand; ~30% low to medium plasticity fines; loose; moist.
						T1	2		SC	
			16/18	6	SPT	B2	3			
					AD		4			
		3.5	18/18	14	MC	B3	5			Silty CLAY: Very dark grayish brown (10YR3/2); ~5% yellowish brown sandstone clasts; ~5% medium grained sand; ~90% medium to high plasticity fines; very stiff; moist to wet.
						T2	6		CL-CH	
		3.5	18/18	23	SPT	B4	7			
					AD		8			
			15/18	26	MC	B5	9			Sandy CLAY : Dark yellowish brown (10YR3/6); ~5% medium to coarse grained sand; ~65% very fine to fine grained sand; ~40% medium to high plasticity fines; very dense; damp to moist.
						T3	10			
		>4.5				T4				
		>4.5	18/18	25	SPT	B6	11			
					AD		12			
							13		CL-CH	Silty CLAY : Dark yellowish brown (10YR3/4); ~15% very fine to fine grained sand; ~85% medium to high plasticity fines; very stiff; moist to wet.
		3.0	18/18	11	MC	B7	14			
						T5				
		3.9				T6	15			
			18/18	16	SPT	B8	16			
							17			
							18			
							19		CH	Silty CLAY: Very dark brown (10YR2/2); ~100% medium to high plasticity fines; medium stiff; moist.

MILSTONE GEOTECHNICAL

Remarks:

LOG OF EXPLORATORY BOREHOLE MG4

Project Proposed Elam Subdivision Date 2/22/21 Page 2 of 2

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIGNATION	DEPTH (ft)	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
		2.5	18/18	15	MC	B9	21		CH	Silty CLAY: Very dark brown (10YR2/2); ~5% medium grained sand;~95% medium to high plasticity fines; stiff to very stiff; moist.
						T7				
		>4.5	18/18	23	SPT	B10	22			
							23			
							24			
							25			
							26			
							27			
							28			
							29			
							30			
							31			
							32			
							33			
							34			
							35			
							36			
							37			
							38			
							39			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 23.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG5

Project: Proposed Elam Subdivision
Location: Lot 3-4 swale
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~727 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD	B1	0		SC	**SOIL** Clayey SAND: Dark brown (10YR3/3); ~60% very fine to fine grained sand; ~40% low to medium plasticity fines; loose; moist; monor rootlets.
			18/18	7	MC	T1	2		CH	**COLLUVIUM** Silty CLAY: Very dark brayish brown (10YR3/2); ~10% light yellowish brown fine gravel and medium to coarse grained sand; ~25% very fine to fine grained sand; ~65% medium to high plasticity fines; firm; damp to moist; rootlets within upper three feet.
		3.8	14/18	8	SPT	B2	3			
					AD		5			
			18/18	17	MC	B3 T2 T3	7		ML-CL	**RESIDUAL SOIL** Clayey SILT to silty CLAY (Decomposed SANDSTONE): Yellowish brown (10YR5/4) laced with caliche staining and veining; ~30% very fine grained sand; ~70% medium to high plasticity fines; dense; damp to moist.
		>4.5	18/18	26	CAL*	B4	9			
		>4.5	16/18	42	SPT	B5	10			
					AD		12		Wrx	**WEATHERED BEDROCK** Weathered SILTSTONE and SHALE: Light yellowish brown and grayish brown (10YR6/4,5/2) with mineral staining on fracture facies; severely weathered; weak; soft; moist; intensely fractured; remnant rock structure. @10.5 - Very pale brown and yellowish brown (10YR7/4,5/8) with white caliche; ~5% caliche nodules to 1/3-inch size.
		>4.5	12/12	33/6"	MC	B6 T4	15			
			12/12	50/6"	SPT	B8	16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 17.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG6

Project: Proposed Elam Subdivision
Location: Lot 4
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~719 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**COLLUVIUM**
			14/18	4	MC	B1	1			Clayey SAND to sandy CLAY: Dark brown (10YR3/3); ~50% very fine grained sand; ~50% medium plasticity fines; loose; moist; minor rootlets and dessicated within upper eight inches.
		3.2				T1	2		SC/ CL	
			8/18	4	SPT	B2	3			
					AD		4			
			12/18	11	MC	B3	5			@5.5 - rootlets
		>4.5				T2	6			
			18/18	23	SPT	B4	7		ML-CL	**RESIDUAL SOIL** Decomposed SILTSTONE and SHALE: Pale brown (10YR6/3) laced with white caliche; severely weathered; ~10% soft, v. pale brown siltstone clasts to 1/3-inch size; ~40% very fine grained sand; ~50% medium plastiticy fines; dense; moist.
					AD		8			
			16/18	24	MC	B5	9			**WEATHERED BEDROCK**
		>4.5				T3	10			Weathered SILTSTONE and SHALE: Light yellowish brown and grayish brown (10YR6/4,5/2) with mineral staining on fracture facies; severely weathered; weak; soft; moist; intensely fractured with 75° predominant fracture dip; remnant rock structure.
			18/18	40	SPT	B6	11		Wrx	
					AD		12			
			18/18	35	MC	B7	13			@ 14' - Slower drilling
		>4.5				T4	14			
			18/18	54	CAL*	B8	15			@ 14' - Remant rock structure with 75° bedding plane
		>4.5					16		Wrx	
			18/18	55	SPT	B9	17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 19.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.
* No liners.

LOG OF EXPLORATORY BOREHOLE MG7

Project: Proposed Elam Subdivision
Location: Lot 4
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~704 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**COLLUVIUM**
		1.8	18/18	7	MC	B1	1		CL-CH	Sandy CLAY: Dark grayish brown (10YR4/2); trace angular, white and yellow, shale clasts; ~5% medium grained sand; ~20% very fine to fine grained sand; ~75% medium to high plasticity fines; very stiff; moist.
						T1	2			
			14/18	5	SPT	B1	3			
					AD		4			
			16/18	12	MC	B3	5			
		>4.5				T2	6			**RESIDUAL SOIL**
					AD		7			Lean CLAY: Dark yellowish brown and yellowish brown (10YR4/6,5/8) with white caliche veining throughout; trace very fine grained sand; very stiff to hard; damp to moist; remnant rock structure.
							8		CL-CH	
			18/18	17	MC	B4	9			
		>4.5				T3				
						T4	10			
					AD		11			**WEATHERED BEDROCK**
							12			Weathered SILTSTONE and SHALE: Brown and dark yellowish brown (10YR5/3,4/6) with mineral staining on fracture facies and white caliche veining; very severely to severely weathered; weak to moderate strength; very soft to soft; closely fractured; moist.
			12/18	28	MC	B5	13			
		>4.5				T5	14			
						B6				
					AD		15			
							16		Wrx	
							17			
			14/18	21	MC	B7	18			
		>4.5				T6				
			18/18	22	SPT	B8	19			

MILSTONE GEOTECHNICAL

Remarks:
Borehole terminated at 20.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.
* No liners.

LOG OF EXPLORATORY BOREHOLE MG8

Project: Proposed Elam Subdivision
Location: Lot 5
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~705 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
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Logged By: BSM
Date: 2/23/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD					**SOIL**
	2.5		14/18	4	MC	B1	1		CH	Sandy CLAY with gravel: Very dark grayish brown (10YR3/2); ~20% angular to subangular gravel to one-inch size and medium to coarse grained sand; ~10% very fine to fine grained sand; ~70% medium to high plasticity fines; stiff; moist; minor rootlets; slight organic odor.
						T1	2			
			16/18	6	SPT	B2	3			**COLLUVIUM**
					AD		4			Sandy CLAY: Dark brown with brownish yellow (10YR3/3, 6/8); ~30% very fine to coarse grained sand and angular to subangular siltstone gravel to 3/8-inch size; ~70% medium to high plasticity fines; medium stiff; damp to moist.
	>2.7		13/18	12	MC	B3	5			
		>4.5				T2	6		CH	
			18/18	13	SPT	B4	7			
					AD		8			
			16/18	34	MC	T3	9			
		>4.5				T4	10			**WEATHERED BEDROCK**
					AD		11			Weathered SILTSTONE and SHALE: Yellow and yellowish brown (10YR7/8,6/8) with white (10YR8/1) caliche veining throughout; severely weathered; weak; soft; moist; intensely fractured; white caliche nodules to one-inch size.
			18/18	51	MC	B4	12			
		>4.5				T5	13			
							14		Wrx	
					AD		15			
							16			
							17			
							18			
		>4.5	11/11	33/5"	MC	T6	19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 18.9 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG9

Project: Proposed Elam Subdivision
Location: Lot 6
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~690 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/23/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		1			**RESIDUAL SOIL/COLLUVIUM**
			15/18	2	MC	B1	2		CH	Sandy CLAY with gravel: Brown (10YR3/2); ~5% weathered, angular to subanguler siltstone gravel to 1/2-inch; ~30 fine to coarse grained sand; ~65% medium to high plasticity fines; stiff to very stiff; very moist; minor rootlets and organic debris.
		1.8				T1				
					AD		3			
							4			
							5			**WEATHERED BEDROCK**
			18/18	19	MC	T2				Weathered SILTSTONE and SHALE: Brownish yellow and light yellowish brown (10YR6/6,6/4) with white (10YR8/1) caliche veining throughout; severely weathered; weak; soft; friable; damp to moist; intensely fractured with predominant joint inclined at 85 degrees; remant rock structure.
		4.0				T3	6			
					AD		7			
							8			
							9		Wrx	
			18/18	48	MC	B2				
		>4.5				T4	10			
					AD		11			
							12			
							13			
			18/18	35	SPT	B3	14			
		>4.5					15			
							16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 14.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG10

Project: Proposed Elam Subdivision
Location: Lot 7
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~663 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/23/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**COLLUVIUM**
			16/18	11	MC	T1	1		SM-SC	Silty to clayey SAND: Pale brown (10YR6/3) with grayish brown (10YR5/2) clasts; ~65% very fine to fine grained sand; ~35% low plasticity fines; medium dense; damp to moist.
		>4.5				T2	2			
					AD		3			
							4			**RESIDUAL SOIL**
			18/18	25	MC	T3	5		CL-CH	Silty CLAY with gravel: Light olive brown (2.5Y5/4 to yellowish brown (10YR5/4); trace yellowish brown medium to coarse grained, weathered siltstone gragments; trace carbonage nodules; faint remnant rock structure.
		>4.5				T4	6			**WEATHERED BEDROCK**
					AD		7			Weathered SILTSTONE and SHALE: Brown (10YR5/3,5/6) with strong brown (7.5YR4/6) oxidation staining on fracture facies; weathered sandstone clasts to at least one-inch size; severely weathered; weak; soft (scratchable); damp to moist; intensely fractured with predominant fracture inclined at 65 degrees; white caliche filling fracture voids up to 1/4-inch wide.
			16/18	30	MC	B1	8			
		>4.5				T5	9			
					AD		10			
							11		Wrx	
			18/18	34	MC	T6	12			
		>4.5					13			
			18/18	37	SPT	B2	14			
					AD		15			
							16			
			18/18	30	SPT	B3	17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 19.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG11

Project: Proposed Elam Subdivision
Location: Lot 7
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~643 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/23/21

GROUND WATER	TORVANE (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD					**COLLUVIUM**
			12/18	11	MC	T1	1–2		CH	Silty CLAY: Dark brown (10YR3/3); ~5% medium to coarse grained sand; ~95% medium to high plasticity fines; firm; moist.
		3.0	15/18	13	SPT	B1	3–4			
					AD					**ALLUVIUM**
			18/18	21	MC	T2	5–6			Silty CLAY to clayey SAND: Brown (10YR4/3) laced with white caliche and caliche nodules; ~5% medium to coarse grained sand; ~40 to 60% very fine to fine grained sand; ~35 to 55% medium to high plasticity fines; medium stiff to stiff; moist.
		>4.5	18/18	36	SPT	B4	7–8			
					AD		9		CH/ SC	
			16/18	18	MC	T3	10–11			
		4.0	18/18	21	SPT	B3	12–13			
					AD		14			**WEATHERED BEDROCK**
			18/18	24	MC	T4	15			Severely weathered SILTSTONE and SHALE: Dark yellowish brown (10YR3/4); matrix of ssoft siltstone clasts to at least one-inch size with remnant rock structure in silty clay; very soft; weak; very moist.
		>4.5				T5	16		Wrx	
			18/18	31	SPT	B4	17–18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 18.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG12

Project: Proposed Elam Subdivision
Project Number: 205220
Location: Lot 6
Project Elev.: ~665 feet
Page: 1 of 1
Drilling Equipment: Track-mounted CME45 - 140#/30"
Hole Diameter: 6" solid stem
Logged By: BSM
Drilling Contractor: Britton Exploration
Surface: wild grass
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**ALLUVIUM**
			15/18	4	MC	T1	1		SC/ CL	Sandy CLAY to Clayey SAND: Very dark grayish brown (10YR3/2); ~5% non-native rounded gravel to at least 3/4-inch size; ~5% medium to coarse grained sand; ~40% very fine to fine grained sand; ~50% medium plasticity fines; loose increasing to firm with depth; moist.
		1.9	18/18	10	SPT	B1	2			
					AD		3			
			18/18	11	MC	T2	4			
		1.6	18/18	9	SPT	B2	5			Sandy CLAY: Very dark grayish brown (10YR3/2); trace pale brown coarse grained sand; ~20% medium to coarse grained sand and gravel to 1/2-inch size; ~25% very fine to fine grained sand; ~55% medium to high plasticity fines; moist to wet.
					AD		6			
			18/18	10	MC	T3	7			Below 9’ - stiff
	2.0	2.3	18/18	12	SPT	B3	8			
					AD		9			
			16/18	16	MC	T4	10		Cl-CH	
		3.0	15/18	32	SPT	B4	11			
		3.0	15/18	15	SPT	B5	12			
							13			
							14			
							15			**WEATHERED BEDROCK**
							16		Wrx	Severely weathered SILTSTONE and SHALE: Dark yellowish brown (10YR4/4); matrix of soft siltstone clasts to at least one-inch size with remnant rock structure in silty clay; very soft; very weak; wet.
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 19.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG13

Project: Proposed Elam Subdivision
Location: Lot 5
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~686 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 2
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**ARTIFICIAL FILL**
			14/18	5	MC	B1	1		SC	Clayey SAND with gravel: Dark grayish brown (10YR4/2); ~10% rounded gravel to at least 3/4-inch size; ~10% medium to coarse grained sand; ~45% very fine to fine grained sand; ~35% medium plasticity fines; loose; moist.
	>2.7	1.5				T1	2			
					AD		3		CH/ SC	Sandy CLAY to Clayey SAND: Very dark grayish brown (10YR3/2); ~5% non-native rounded gravel to at least 3/4-inch size; ~5% medium to coarse grained sand; ~40% very fine to fine grained sand; ~50% medium to high plasticity fines; loose increasing to firm with depth; moist.
			15/18	10	MC	BA	4			
		>4.5				T2	5			
	1.1		15/18	11	SPT	B2	6			**ALLUVIUM**
					AD		7			Sandy lean CLAY: Brown and dark yellowish brown (10YR3/3,3/2); trace pale brown coarse grained sand; ~10 to 30% medium to coarse grained sand and angular shale gravel to 1/2-inch size; ~20 to 30% very fine to fine grained sand; ~70% medium to high plasticity fines; very stiff to hard; moist.
			18/18	11	MC		8			
		>4.5				T3	9			Below 8' - Trace caliche throughout.
			18/18	18	SPT	B3	10			
					AD		11		CL-CH	
			18/18	22	MC		12			
		>4.5				T4	13			
			18/18	22	SPT	B4	14			
					AD		15			
			18/18	16	MC		16			
		>4.5				T5	17			
			18/18	20	SPT	B5	18			
							19			

MILSTONE GEOTECHNICAL

Remarks:

LOG OF EXPLORATORY BOREHOLE MG13

Project Proposed Elam Subdivision Date 2/23/21 Page 2 of 2

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIGNATION	DEPTH (ft)	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
							21			**ALLUVIUM (Continued)**
							22			Sandy CLAY with gravel: Dark yellowish brown (10YR3/4); ~10% medium to coarse grained sand and subangular to angular shale gravel to 1/2-inch size; ~10% very fine to fine grained sand; ~80% medium to high plasticity fines; very stiff to hard; very moist.
							23			
		>4.5	12/18	23	MC	T6	24			
			18/18	23	SPT	B7	25			
					AD		26			
							27			
		>4.5	16/18	31	MC	T7	28			
			18/18	23	SPT	B7	29			
							30			
							31			
							32			
							33			
							34			
							35			
							36			
							37			
							38			
							39			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 30.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG14

Project: Proposed Elam Subdivision
Location: Lot 2
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~720 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
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Date: 2/23/21

GROUND WATER	TORVANE (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**ALLUVIUM**
			12/18	16	MC	T1	1			Silty CLAY with gravel: Black (10YR3/4); ~5% medium to coarse grained sand and very pale brown, subangular to angular gravel to 1/2-inch size; ~5% very fine to fine grained sand; ~90% medium to high plasticity fines; very stiff to hard; moist.
		>4.5				T2	2			
			18/18	24	MC	B1	3			
					AD		4			
			18/18	19	MC	T3	5			Below 5" - Dark yellowish brown (10YR3/4)
		>4.5					6			
			18/18	17	SPT	B2	7		CL-CH	
					AD		8			
			18/18	13	MC	T4	9			
		3.1					10			
			18/18	15	SPT	B3	11			
					AD		12			
			18/18	23	MC	T5	13			
		>4.5					14			
			18/18	26	SPT	B4	15			**RESIDUAL SOIL** Decomposed SILTSTONE and SHALE: Dark yellowish brown (10YR3/4); ~5% subangular to angular siltstone and shale clasts to 1/2-inch; ~5% fine grained sand; 90% medium plasticity fines; soft; weak; moist.
					AD		16		Wrx	
			18/18	21	MC	T6	17			
		>4.5					18			**WEATHERED BEDROCK** Severely Weathered SILTSTONE and SHALE: LIght yellowish brown (10YR6/4); ~50% soft to medium hard siltstone clasts to at least 3/4-inch size in matrix of 10% fine grained sand and 40% medium plasticity fines; soft; weak; moist.
			18/18	30	SPT	B5	19		Wrx	

MILSTONE GEOTECHNICAL

Remarks:

LOG OF EXPLORATORY BOREHOLE MG14

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GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIGNATION	DEPTH (ft)	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
						B9	21			**WEATHERED BEDROCK (continued)**
							22			Severely Weathered SILTSTONE and SHALE: LIght yellowish brown (10YR6/4); ~50% soft to medium hard siltstone clasts to at least 3/4-inch size in matrix of 10% fine grained sand and 40% medium plasticity fines; soft; weak; moist.
							23			
							24			
							25			
		>4.5	16/18	23	SPT	B6	26			
							27			
							28			
							29			
							30			
							31			
							32			
							33			
							34			
							35			
							36			
							37			
							38			
							39			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 26.5 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG15

Project: Proposed Elam Subdivision
Location: Lot 1
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~717 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/24/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**ALLUVIUM**
			16/18	14	MC	B1	1			Sandy CLAY: Very dark grayish brown with yellowish brown (10YR3/2,6/8); ~20% gravel to 3/8-inch and fine to coarse grained sand; 30% very fine grained sand; ~50% medium to high plasticity fines; medium stiff; damp to moist; minor roots.
		>4.5				T1	2			
					AD		3		CL	
							4			
							5			
			12/18	33	MC	B2	6			Silty CLAY: Light yellowish brown (10YR6/42) laced with white caliche; ~5% veryt pale brown sandstone clasts to 1/8-inch size; ~35% very fine grained sand; ~60% medium plasticity fines; very stiff to hard; damp to moist.
		>4.5				T2	7		CL	
					AD		8			
							9			**WEATHERED BEDROCK**
			18/18	23	MC	B3	10		Wrx	Severely weathered SANDSTONE and SILTSTONE: Brownish yellow and yellowish brown (10YR6/8,5/6); ~20% soft, weak, very pale b brown (10YR8/3) siltstone clasts to one-inch size; ~50% very fine grained sand; ~ 30% low plasticity fines; dense to very dense; moist.
		>4.5				T3	11			
					AD		12			
							13			Weathered SANDSTONE: Olive yellow (2.5Y6/8); with minor caliche on facies; ~70% very fine to fine grained sand; ~30% low plasticity fines; dense to very dense; damp; weak; crushable.
			18/18	23	MC	B4	14		Wrx	
		>4.5				T4	15			
					AD		16			
							17			Decomposed SILTSTONE and SHALE: Brownish yellow (10YR6/6); with minor caliche nodules; soft; weak; friable; damp to moist..
			18/18	25	MC	B5	18		Wrx	
		>4.5					19			
			18/18	17	SPT	B6				

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 20.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG16

Project: Proposed Elam Subdivision
Location: Lots 1 & 2
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~743 feet
Hole Diameter: 6" solid stem
Surface: bare

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/24/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		1			**WEATHERED BEDROCK**
		>4.5	10/18	20	MC	B1	2			Weathered SILTSTONE and SHALE: Light yellowish brown (10YR6/4) with white caliche on facies; medium hard siltstone clasts to at least two-inch size; trace very fine grained sand; soft; weak; damp; remnant rock structure..
						T1				
					AD		3			
							4			
							5			
		>4.5	18/18	31	MC	B2	6		Wrx	
						T2				
			18/18	25	SPT		7			
						B3	8			@7.5 - 11.3' - increased very fine grained sand content; more advanced weathering.
					AD		9			
							10			
		>4.5	18/18	35	MC	B4	11			
						T3				
			18/18	32	SPT		12			
						B5	13			
							14			
							15			
							16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 13.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG17

Project: Proposed Elam Subdivision
Location: Lots 9 & 10
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~874 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/24/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		0			**SOIL** Silty CLAY to clayey SAND: Very dark grayish brown (10YR3/2); ~5% decomposed sandstone clasts; ~5% medium to coarse grained sand; ~40% very fine to fine grained sand; ~50% low to medium plasticity fines; firm; moist; minor tootlets; slight organic odor.
		>4.5	16/18	30	MC	B1 T1	1 2		CL/ SC	
			18/18	36	SPT	B2	3 4			**WEATHERED BEDROCK** Weathered SILTSTONE and SHALE: Pale brown and light yellowish brown (10YR6/3,5/4) with strong brown (7.5YR4/6) oxidation staining on fracture facies and white (10YR8/1) caliche veining; weathered sandstone clasts to at least 3/4-inch size; severely weathered; weak; soft to very soft; damp to moist; intensely fractured with predominant fracture inclined at 65 degrees; white caliche nodules to 1/2-inch size; remnant rock structure.
					AD		5			
		>4.5	18/18	29	MC	B3 T2	6			
			18/18	28	SPT	B4	7			
					AD		8 9			
		>4.5	18/18	34	MC	B5 T3	10 11		Wrx	
			18/18	33	SPT	B6	12			
					AD		13 14			
		>4.5	18/18	31	MC	B7	15 16			
			18/18	30	SPT	B8	17			
							18 19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 18.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG18

Project Proposed Elam Subdivision
Project Number 205220
Location Lot 10
Project Elev. ~860 feet
Page 1 of 1
Drilling Equipment Track-mounted CME45 - 140#/30"
Hole Diameter 6" solid stem
Logged By BSM
Drilling Contractor Britton Exploration
Surface wild grass
Date 2/24/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD		1		CL/ SC	**SOIL**
			18/18	27	MC	B1	2			Clayey SAND: Dark brown (10YR3/3); ~5% pale brown, decomposed, sandstone clasts to 1/2-inch size; ~70% fine grained sand; ~25% low to medium plasticity fines; medium dense; damp.
		>4.5				T1				
			18/18	51	SPT	B2	3			**WEATHERED BEDROCK**
					AD		4			Weathered SILTSTONE and SHALE: Pale brown and light yellowish brown (10YR6/3,5/4) with strong brown (7.5YR4/6) oxidation staining on fracture facies and white (10YR8/1) caliche veining; weathered sandstone clasts to at least 3/4-inch size; severely weathered; weak; soft to very soft; damp to moist; intensely fractured with predominant fracture inclined at 65 degrees; white caliche nodules to 1/2-inch size; remnant rock structure.
			18/18	31	MC	B3	5			
		>4.5				T2	6		Wrx	
			18/18	61/11’	SPT	B4	7			
					AD		8			
							9			
							10			
			18/18	29	MC		11			
		>4.5				T3				
			18/18	32	SPT		12			
						B5	13			
							14			
							15			
							16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 13.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

LOG OF EXPLORATORY BOREHOLE MG19

Project: Proposed Elam Subdivision
Location: Lot 8
Drilling Equipment: Track-mounted CME45 - 140#/30"
Drilling Contractor: Britton Exploration

Project Elev.: ~863 feet
Hole Diameter: 6" solid stem
Surface: wild grass

Project Number: 205220
Page: 1 of 1
Logged By: BSM
Date: 2/22/21

GROUND WATER	VANE SHEAR (tsf)	POCKET PENET. (tsf)	RECOVERY (in./in.)	SPT (bpf) or PRESS. (psi)	SAMPLE OR DRILL MODE	SAMPLE DESIG-NATION	DEPTH IN FEET	GRAPHIC LOG	USCS DESIG.	GEOTECHNICAL DESCRIPTION
					AD	B1	1		SC	**SOIL** Clayey SAND: Dark brown (10YR3/3); ~5% pale brown, decomposed, sandstone clasts to 1/2-inch size; ~70% fine grained sand; ~25% low to medium plasticity fines; medium dense; damp; slightly dessicated; slight organic odor.
		>4.5	15/18	10	MC	B2	2			
						T1				
			18/18	32	SPT	B2	3		Wrx	**WEATHERED BEDROCK** Weathered SILTSTONE and SHALE: Pale brown and light yellowish brown (10YR6/3,5/4) with strong brown (7.5YR4/6) oxidation staining on fracture facies and white (10YR8/1) caliche veining; weathered sandstone clasts to at least 3/4-inch size; severely weathered; weak; soft to very soft; damp to moist; intensely fractured with predominant fracture inclined at 65 degrees; white caliche nodules to 1/2-inch size; remnant rock structure.
					AD		4			
			18/18	35	MC	B3	5			
		>4.5				T2	6			
			18/18	20	SPT	B4	7			
					AD		8			
							9			
							10			
			18/18	31	MC	B5	11			
		>4.5				T3				
			18/18	31	SPT	B6	12			
							13			
							14			
							15			
							16			
							17			
							18			
							19			

MILSTONE GEOTECHNICAL

Remarks: Borehole terminated at 13.0 feet.
No ground water encountered.
Borehole backfilled with tamped cuttings.

APPENDIX B
LABORATORY INVESTIGATION

Summary of Laboratory Test Results
Unconfined Compression
Direct Shear
Atterberg Limits

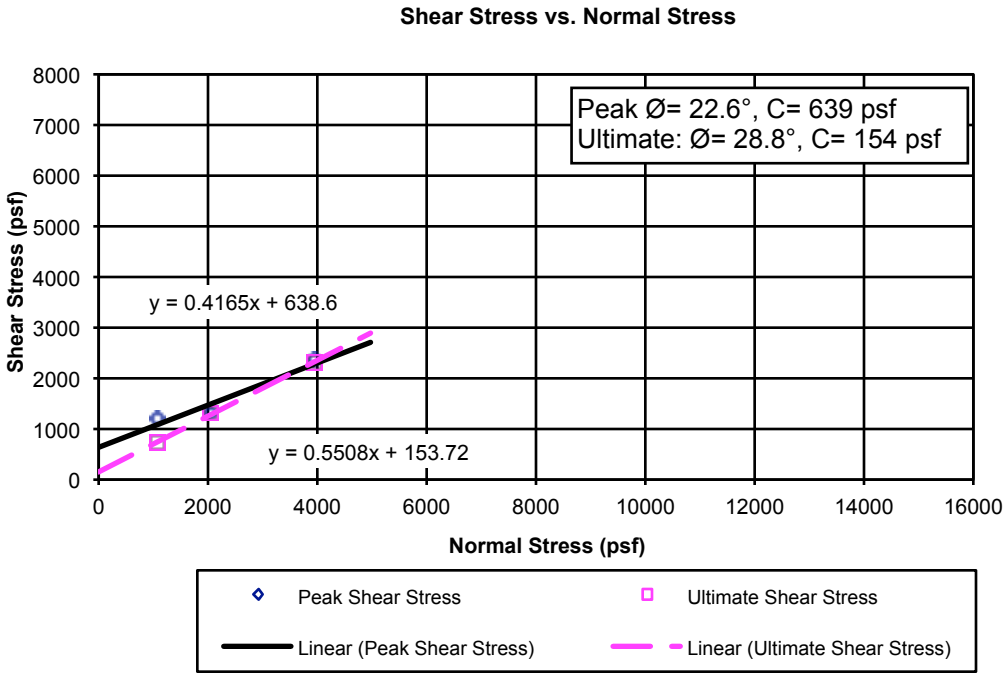
Summary of Laboratory Test Results
Proposed 10-Lot Subdivision
14519 Shannon Road
Los Gatos, California

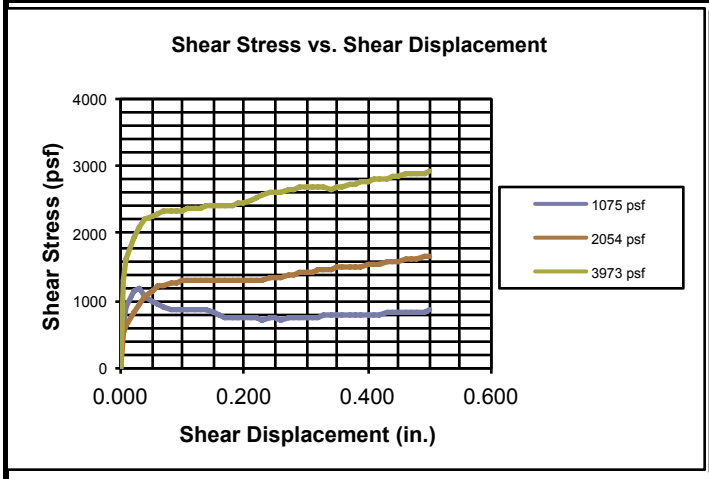
Borehole/ Sample No.	Depth (ft)	Earth Material	Moisture Content (%)	Dry Density (pcf)	Unconfined Compressive Strength (psf)	Direct Shear (PHI / C) (deg / psf)	Atterberg Limits (LL / PI) (% / %)	Passing #200 Sieve (%)
MG1/T1	2.0	CL-CH	36.8	67.7	-	-	-	65.7
MG1/T2	5.0	CL-CH	35.7	76.2	-	22.6 / 639 P 28.8 / 154 U	-	-
MG1/T4	8.0	CL-CH	29.9	68.2	-	-	-	-
MG1/T5	13.0	CL-CH	32.6	80.7	10,426	-	-	-
MG1/T6	17.0	Siltstone	34.5	80.3	-	-	-	-
MG2/T1	2.0	CL-CH	37.0	68.1	-	-	-	-
MG2/T2	7.0	Siltstone	29.7	77.2	9,917	-	-	-
MG2/T3	12.0	Siltstone	31.4	79.3	-	-	-	-
MG3/T1	2.0	CH	35.2	74.8	-	-	-	-
MG3/T2	6.0	Siltstone	24.2	81.1	-	-	-	-
MG4/T1	2.0	CL-CH	34.9	84.8	-	19.7 / 178 P 37.8 / 0 U	-	-
MG4/T2	6.0	CH	28.8	83.5	6,451	-	-	-
MG4/T3	9.5	CH	28.6	83.4	-	-	-	-
MG4/T5	14.5	CH	32.1	84.5	4,851	-	-	-
MG4/T6	15.0	CH	32.0	86.5	-	-	-	-
MG5/T1	2.0	CL-CH	35.8	76.6	2,939	-	-	-
MG5/T3	8.0	CL-CH	24.7	73.2	4,851	-	-	-
MG5/T4	15.5	Siltstone	30.7	86.2	-	-	-	-
MG6/T1	2.0	SC-CL	33.9	77.0	2,147	-	-	-
MG6/T2	6.0	ML-CL	22.2	78.0	5,007	-	-	-
MG6/T3	10.0	Siltstone	20.8	69.7	-	-	-	-
MG6/T4	16.0	Siltstone	28.7	82.0	-	-	-	-
MG7/T1	2.0	CL-CH	34.1	74.8	-	-	-	-
MG7/T2	6.0	CL-CH	23.7	76.1	-	-	-	-
MG7/T4	10.0	CL-CH	26.1	76.0	-	-	-	-
MG7/T5	14.0	Siltstone	33.5	86.4	9,840	-	-	-
MG7/T6	18.5	Siltstone	31.6	84.9	-	-	-	-
MG8/T1	2.0	CL-CH	32.8	73.0	-	-	-	-
MG8/T2	6.0	CL-CH	24.9	79.2	-	22.3 / 130 P 35.5 / 139 U	-	-
MG8/T4	10.0	Siltstone	23.4	80.2	7,772	-	-	-
MG8/T5	14.0	Siltstone	25.8	87.4	5,987	-	-	-
MG9/T1	2.0	CL-CH	32.3	71.9	-	-	-	-
MG9/T3	6.0	Siltstone	24.6	74.3	-	-	-	-
MG9/T4	10.0	Siltstone	24.8	85.9	-	-	-	-
MG10/T2	2.0	SC	31.6	78.6	-	-	-	-
MG10/T5	10.0	Siltstone	34.6	85.2	-	-	-	-
MG11/T1	2.0	CH	33.0	76.2	2,003	-	-	-
MG11/T2	6.0	CH/SC	29.2	75.9	-	-	75 / 43	-
MG11/T3	11.0	CH/SC	32.7	81.9	7,266	-	-	-
MG11/T5	16.0	Siltstone	32.7	83.0	6,537	-	-	-

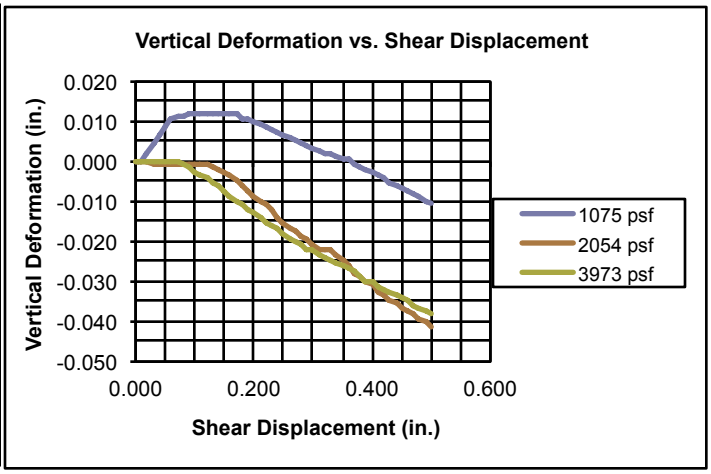
P = Peak strength at 5% areal strain; U = Ultimate strength

Borehole/ Sample No.	Depth (ft)	Earth Material	Moisture Content (%)	Dry Density (pcf)	Unconfined Compressive Strength (psf)	Direct Shear (PHI / C) (deg / psf)	Atterberg Limits (LL / PI) (% / %)	Passing #200 Sieve (%)
MG12/T1	2.0	CL-CH	108.8	81.0	-	24.5 / 488 [P] 40.0 / 0 [U]	-	-
MG12/T2	6.0	CH	35.9	78.6	-	-	-	-
MG12/T3	11.0	CH	38.5	81.1	-	13.3 / 1,133 [P] 27.2 / 531 [U]	-	-
MG12/T4	16.0	Siltstone	37.4	81.3	6,103	-	-	-
MG13/T1	2.0	CL-CH	24.7	93.2	-	-	-	-
MG13/T2	5.0	CL-CH	29.2	74.7	-	-	-	-
MG13/T3	9.0	CL-CH	27.3	68.5	2,460	-	-	-
MG13/T5	18.0	CL-CH	30.6	75.8	5,203	-	-	-
MG13/T7	28.0	CL-CH	29.7	86.2	-	-	-	-
MG14/T2	2.0	CH	34.0	76.3	4,376	-	-	-
MG14/T3	6.0	CL-CH	33.1	81.0	10,736	-	-	-
MG14/T5	14.0	CL-CH	29.1	84.4	-	-	-	-
MG14/T6	18.0	Siltstone	33.8	78.5	-	-	-	-
MG15/T1	2.0	CL-CH	32.9	79.0	-	32.1 / 1237 [P] 40.3 / 0 [U]	-	-
MG15/T2	6.1	CL-CH	28.8	80.4	5,312	-	-	-
MG15/T4	14.0	Sandstone	12.2	105.8	-	-	-	-
MG16/T1	2.0	Siltstone	70.5	74.8	-	-	-	-
MG16/T2	6.0	Siltstone	22.9	92.4	-	-	-	-
MG16/T3	10.5	Siltstone	31.0	86.3	5,421	-	-	-
MG17/T1	2.0	Siltstone	35.3	77.4	-	-	-	-
MG17/T2	6.0	Siltstone	31.8	77.3	-	-	-	-
MG17/T3	11.0	Siltstone	37.4	798.3	-	-	-	-
MG18/T1	2.0	Siltstone	34.7	81.7	-	-	-	-
MG18/T2	6.0	Siltstone	42.0	69.5	-	32.3 / 1,761 [P] 24.9 / 976 [U]	-	-
MG18/T3	11.0	Siltstone	40.2	73.1	-	-	-	-
MG19/T1	2.0	Siltstone	41.8	65.5	-	-	-	-
MG19/T2	6.0	Siltstone	35.1	82.3	-	-	-	-
MG19/T3	11.0	Siltstone	26.0	87.2	-	-	-	-
TP2/T1	3.5	CH	28.1	60.5	-	-	70 / 36	-
TP4/T1	3.5	CH	25.9	68.3	-	-	63 / 33	-

P = Peak strength at 5% areal strain; U = Ultimate strength







TEST DATA	Sample No.	1	2	3	4
Initial	Water Content (%)	40.6	37.7	37.2	
	Dry Unit Weight (pcf)	72.4	75.0	78.2	
	Saturation (%)	82.6	81.5	87.1	
	Void Ratio	1.33	1.25	1.15	
	Height (in.)	1.2000	1.2000	1.2000	
At Test	Water Content (%)	49.2	47.1	46.3	
	Dry Unit Weight (pcf)	72.6	76.3	80.9	
	Saturation (%)	100.0	100.0	100.0	
	Void Ratio	1.32	1.21	1.08	
	Height (in.)	1.197	1.1783	1.1601	
Normal Stress (psf)		1075	2054	3973	
Peak Failure Stress (psf)		1205	1315	2354	
Displacement (in.)		0.03	0.13	0.08	
Ultimate Failure Stress (psf)		730	1309	2334	
Displacement (in.)		0.23	0.15	0.09	
Sample Diameter (in.)		2.42	2.42	2.42	

Sample Location:
MG1,T2, 5.0'

Sample Description: Sandy Fat Clay (CH/CL), v dk gry brn (10yr3/2), ~10% vfg-fg ~10% mg-cg, trace siltstone/shale gravel to 1/2"

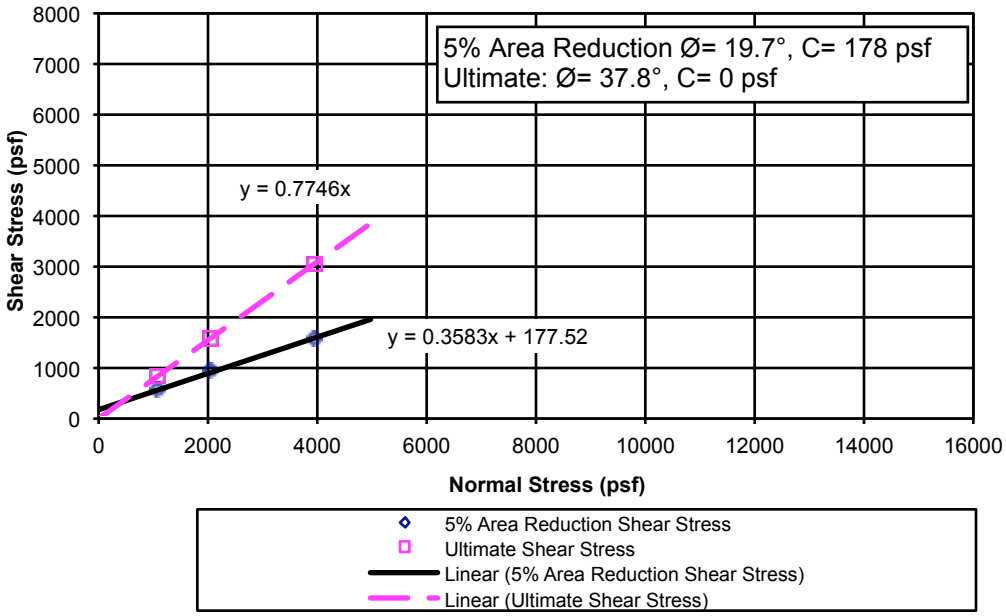
Notes:
Consolidated Undrained
Min. 4 hour min. inundation and load
G=2.70 assumed, strain rate 0.029"/min.
At-test density, void ratio, and saturation are approximate based on test method limitations

Direct Shear Test
ASTM D 3080 Modified

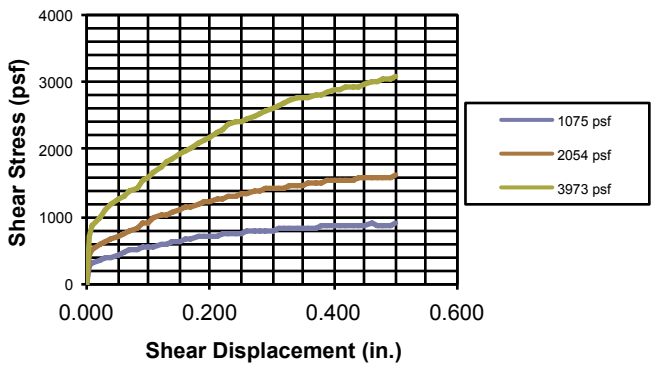
Client: **Milstone Geotechnical**
Project: **Elam**
Project No. **205220** Date: **4/3/21**

FISHER GEOTECHNICAL

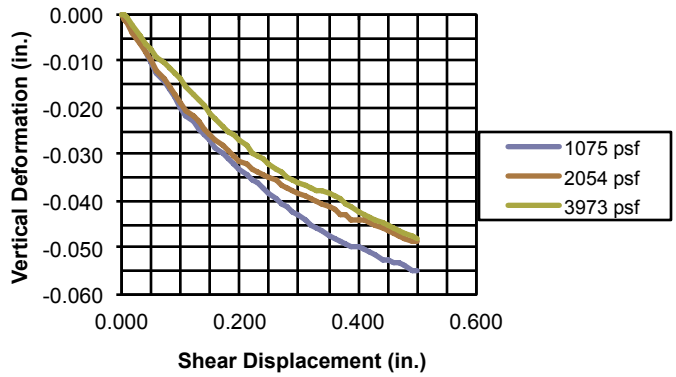
Shear Stress vs. Normal Stress



Shear Stress vs. Shear Displacement



Vertical Deformation vs. Shear Displacement



TEST DATA	Sample No.	1	2	3	4
Initial	Water Content (%)	27.9	28.1	28.2	
	Dry Unit Weight (pcf)	73.9	75.6	76.4	
	Saturation (%)	58.9	61.8	63.1	
	Void Ratio	1.28	1.23	1.21	
	Height (in.)	1.2000	1.2000	1.2000	
At Test	Water Content (%)	41.3	38.3	37.3	
	Dry Unit Weight (pcf)	76.1	83.9	85.1	
	Saturation (%)	100.0	100.0	100.0	
	Void Ratio	1.21	1.01	0.98	
	Height (in.)	1.1652	1.0809	1.0771	
Normal Stress (psf)		1075	2054	3973	
5% Area Red. Failure Stress (psf)		553	928	1596	
Displacement (in.)		0.10	0.10	0.10	
Ultimate Failure Stress (psf)		909	1605	3073	
Displacement (in.)		0.50	0.50	0.50	
Sample Diameter (in.)		2.42	2.42	2.42	

Sample Location:
MG4,T1, 2.0'

Sample Description: Sandy Lean Clay Gravel (CL), v dk gry brn (10yr3/2), ~30% vfg-cg, trace gravel to 1/2"
% consol: #1=2.9%, #2=9.9%, #3=10.2%

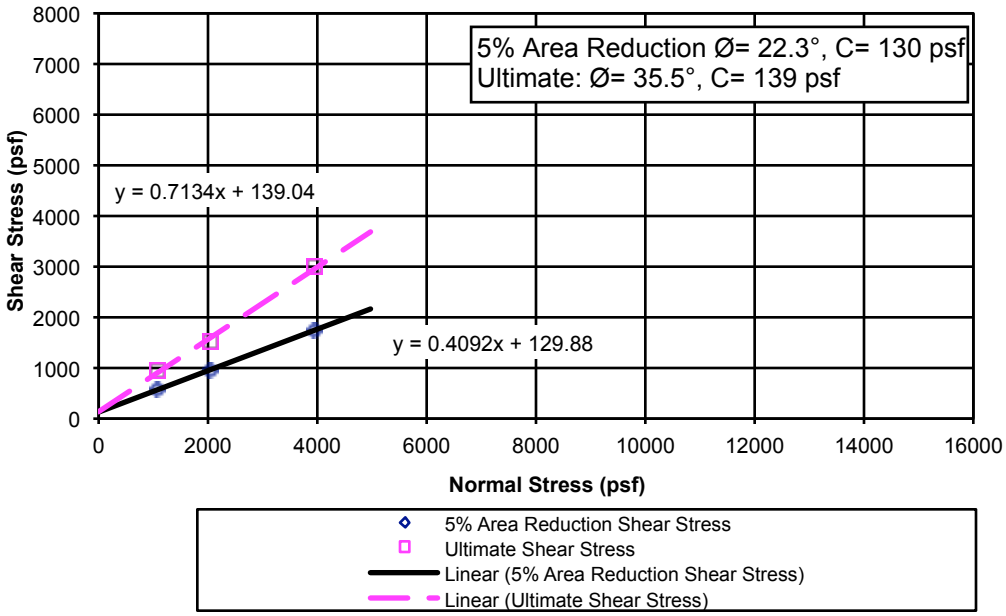
Notes:
Consolidated Undrained
Min. 8 hour min. inundation and load
G=2.70 assumed, strain rate 0.029"/min.
At-test density, void ratio, and saturation are approximate based on test method limitations

Direct Shear Test
ASTM D 3080 Modified

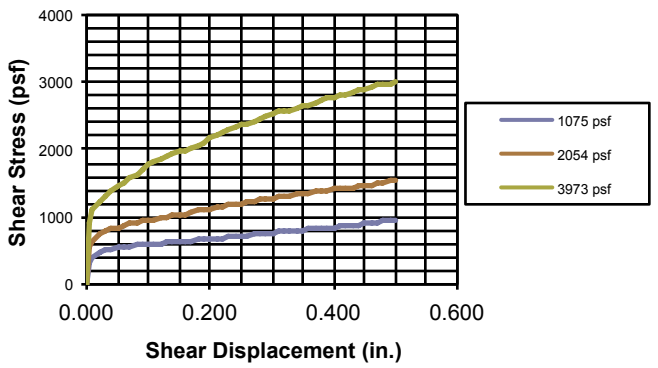
Client: **Milstone Geotechnical**
Project: **Elam**
Project No. **205220** Date: **4/5/21**

FISHER GEOTECHNICAL

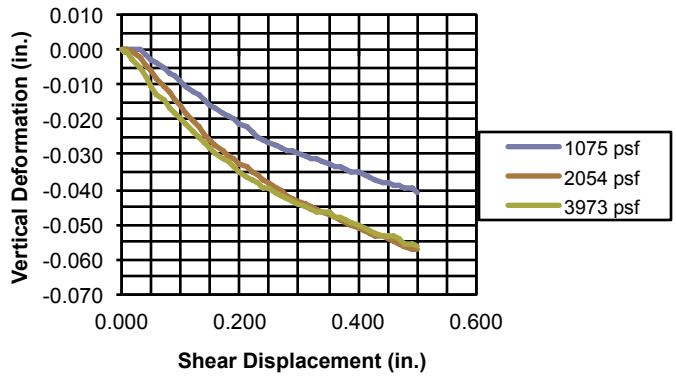
Shear Stress vs. Normal Stress



Shear Stress vs. Shear Displacement



Vertical Deformation vs. Shear Displacement



TEST DATA	Sample No.	1	2	3	4
Initial	Water Content (%)	24.6	25.9	24.3	
	Dry Unit Weight (pcf)	78.6	79.0	80.1	
	Saturation (%)	58.1	61.6	59.4	
	Void Ratio	1.14	1.13	1.10	
	Height (in.)	1.2000	1.2000	1.2000	
At Test	Water Content (%)	43.7	42.4	39.7	
	Dry Unit Weight (pcf)	79.7	81.2	84.6	
	Saturation (%)	100.0	100.0	100.0	
	Void Ratio	1.11	1.07	0.99	
	Height (in.)	1.1836	1.1663	1.1358	
Normal Stress (psf)		1075	2054	3973	
5% Area Reduction Failure Stress (psf)		584	949	1763	
Displacement (in.)		0.10	0.10	0.10	
Ultimate Failure Stress (psf)		950	1538	2996	
Displacement (in.)		0.50	0.50	0.50	
Sample Diameter (in.)		2.42	2.42	2.42	

Sample Location:
MG8,T2, 6.0

Sample Description: Sandy Lean Clay (CL/CH), dk brn w/brn yel (10yr3/3,6/8), ~30% vfg-cg + grav<3/8", brn yel vsw SH grav + mw-vsw mg-cg

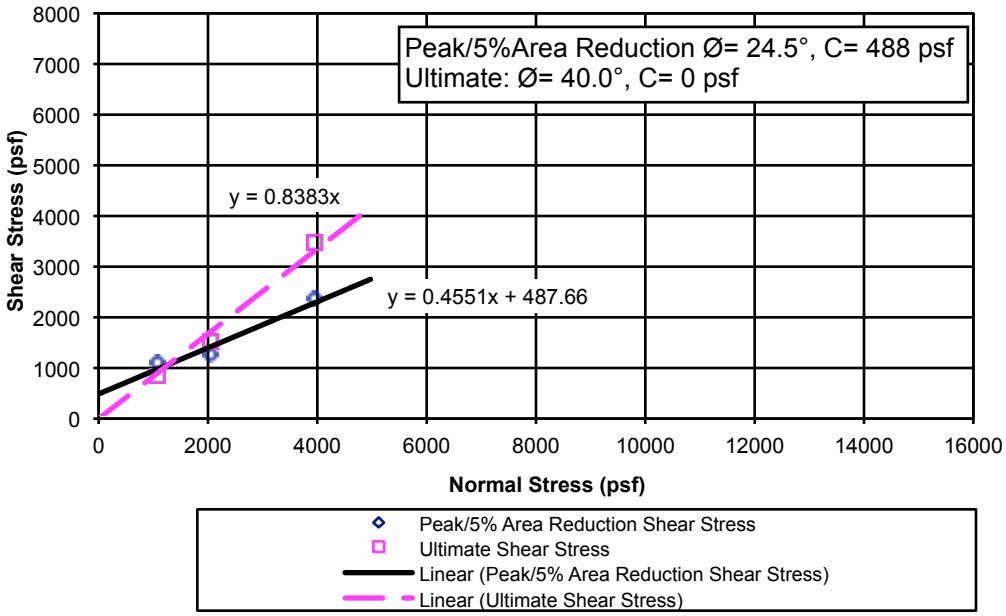
Notes:
Consolidated Undrained
Min. 8 hour min. inundation and load
G=2.70 assumed, strain rate 0.029"/min.
At-test density, void ratio, and saturation are approximate based on test method limitations

Direct Shear Test
ASTM D 3080 Modified

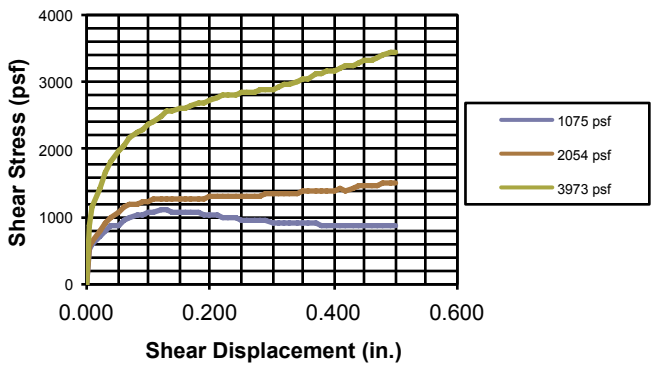
Client: **Milstone Geotechnical**
Project: **Elam**
Project No. **205220** Date: **4/20/21**

FISHER GEOTECHNICAL

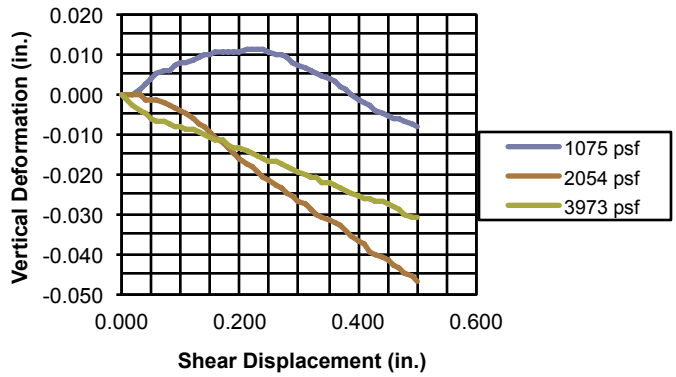
Shear Stress vs. Normal Stress



Shear Stress vs. Shear Displacement



Vertical Deformation vs. Shear Displacement



TEST DATA	Sample No.	1	2	3	4
Initial	Water Content (%)	20.2	17.1	16.5	
	Dry Unit Weight (pcf)	104.7	109.3	112.5	*5 clasts*
	Saturation (%)	89.7	85.0	89.5	*1/4"-3/8" on*
	Void Ratio	0.61	0.54	0.50	*shear plane*
	Height (in.)	1.2000	1.2000	1.2000	*No.3*
At Test	Water Content (%)	23.4	19.5	17.2	
	Dry Unit Weight (pcf)	106.3	111.2	116.2	
	Saturation (%)	100.0	100.0	100.0	
	Void Ratio	0.58	0.51	0.45	
	Height (in.)	1.1814	1.1789	1.1615	
Normal Stress (psf)		1075	2054	3973	
Peak/5% Area Red. Failure Stress (psf)		1097	1241	2357	
Displacement (in.)		0.12	0.10	0.10	
Ultimate Failure Stress (psf)		863	1511	3450	
Displacement (in.)		0.49	0.50	0.50	
Sample Diameter (in.)		2.42	2.42	2.42	

Sample Location:
MG12,T1, 2.0'

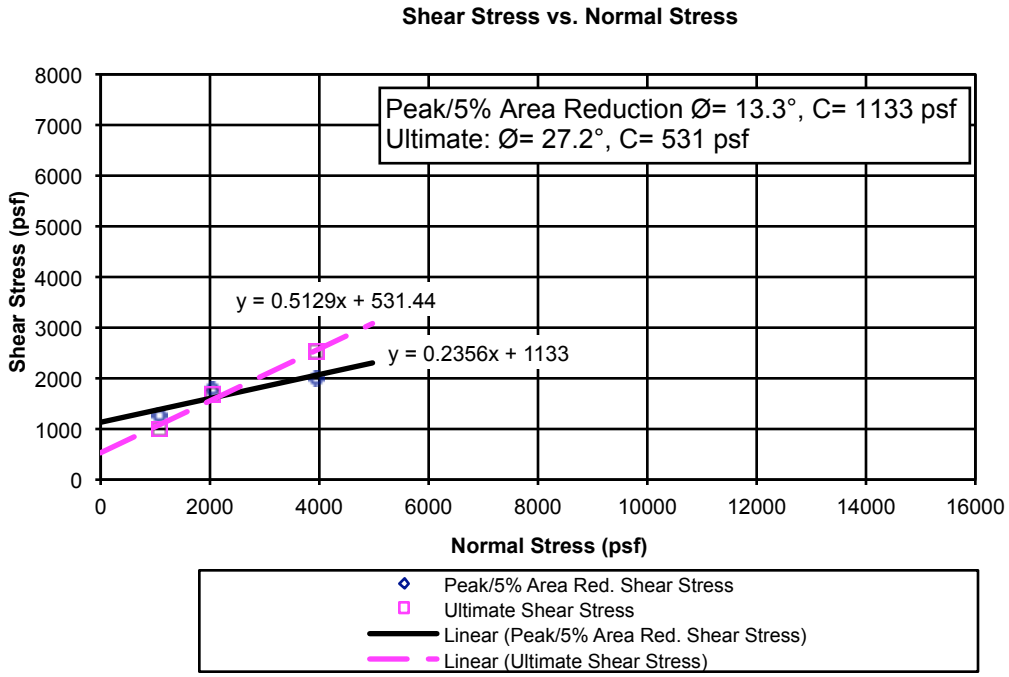
Sample Description: Sandy Lean Clay Gravel (CL/SC), mot v dk gry brn, dk gry brn w/yel brn (10yr4/2,3/2,5/4), ~40% vfg-fg, ~10% mg-cg+grav<3/4",rnd grav, fill?

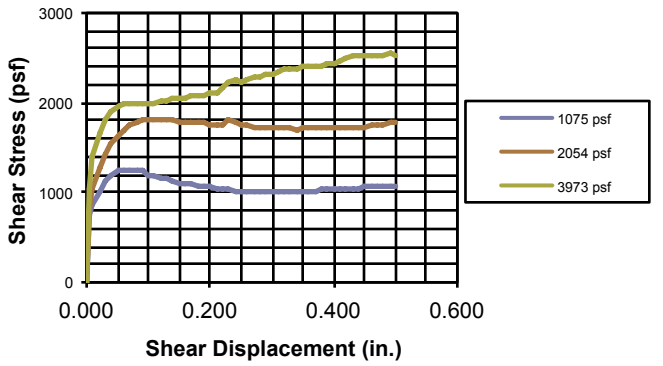
Notes:
Consolidated Undrained
Min. 4 hour min. inundation and load
G=2.70 assumed, strain rate 0.029"/min.
At-test density, void ratio, and saturation are approximate based on test method limitations

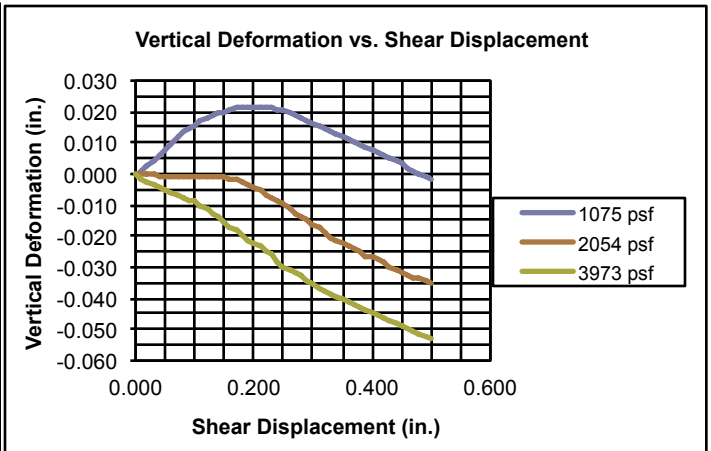
Direct Shear Test
ASTM D 3080 Modified

Client: **Milstone Geotechnical**
Project: **Elam**
Project No. **205220** Date: **4/17/21**

FISHER GEOTECHNICAL







TEST DATA	Sample No.	1	2	3	4
Initial	Water Content (%)	37.1	39.0	38.6	
	Dry Unit Weight (pcf)	81.1	80.6	81.4	
	Saturation (%)	93.0	96.5	97.6	
	Void Ratio	1.08	1.09	1.07	
	Height (in.)	1.2000	1.2000	1.2000	
At Test	Water Content (%)	42.5	42.8	42.7	
	Dry Unit Weight (pcf)	81.4	81.8	84.7	
	Saturation (%)	100.0	100.0	100.0	
	Void Ratio	1.07	1.06	0.99	
	Height (in.)	1.1951	1.1823	1.1545	
Normal Stress (psf)		1075	2054	3973	
Peak/5% Area Reduct. Failure Stress (psf)		1255	1815	2002	
Displacement (in.)		0.06	0.09	0.10	
Ultimate Failure Stress (psf)		1002	1707	2528	
Displacement (in.)		0.29	0.34	0.50	
Sample Diameter (in.)		2.42	2.42	2.42	

Sample Location:
MG12,T3, 11.0

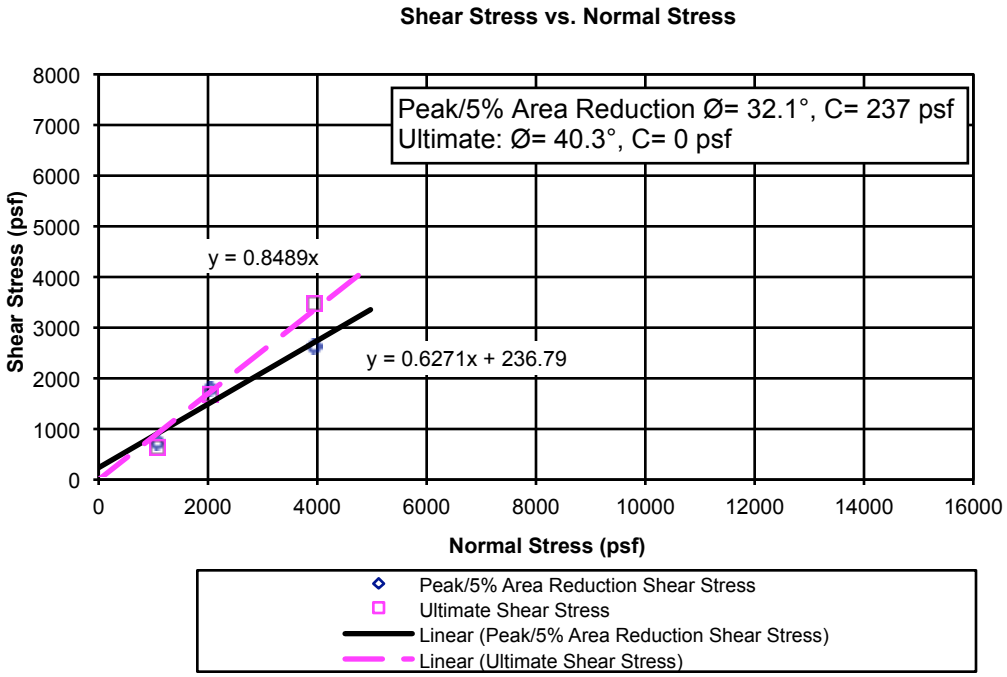
Sample Description: Fat Clay w/Sand (CH), dk yel brn w/pale brn (10yr3/4,6/3), 5%-10% fg-cg, very severely to completely weathered mg-cg pale brn shale clasts

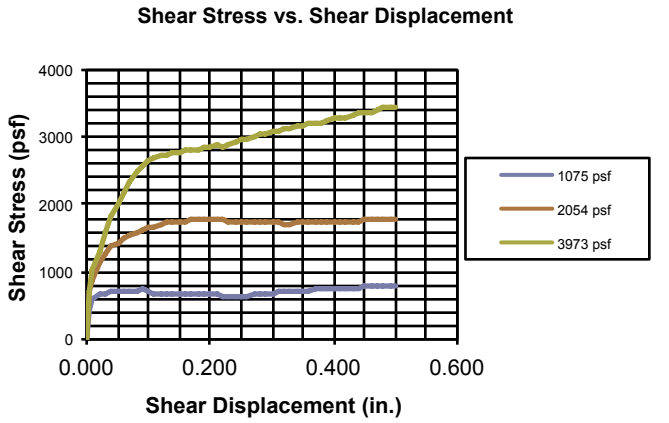
Notes:
Consolidated Undrained
Min. 8 hour min. inundation and load
G=2.70 assumed, strain rate 0.029"/min.
At-test density, void ratio, and saturation are approximate based on test method limitations

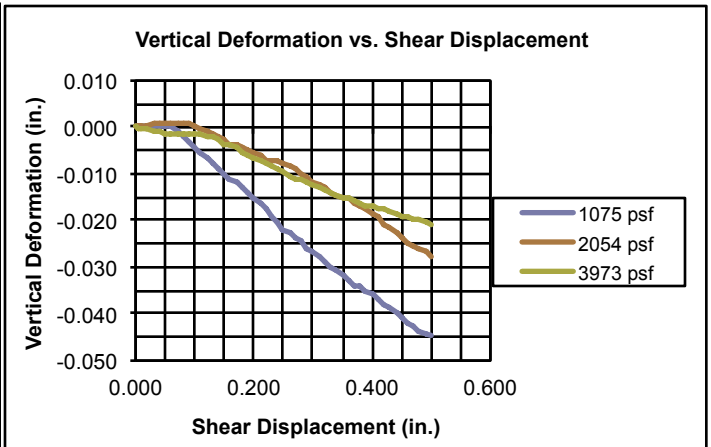
Direct Shear Test
ASTM D 3080 Modified

Client: **Milstone Geotechnical**
Project: **Elam**
Project No. **205220** Date: **4/23/21**

FISHER GEOTECHNICAL







TEST DATA	Sample No.	1	2	3	4
Initial	Water Content (%)	31.5	34.2	33.0	
	Dry Unit Weight (pcf)	77.6	78.0	81.4	
	Saturation (%)	72.6	79.5	83.3	
	Void Ratio	1.17	1.16	1.07	
	Height (in.)	1.2000	1.2000	1.2000	
At Test	Water Content (%)	44.6	41.9	39.7	
	Dry Unit Weight (pcf)	78.1	79.6	84.9	
	Saturation (%)	100.0	100.0	100.0	
	Void Ratio	1.16	1.12	0.98	
	Height (in.)	1.1924	1.1757	1.1509	
Normal Stress (psf)		1075	2054	3973	
5% Area Reduction Failure Stress (psf)		736	1789	2639	
Displacement (in.)		0.09	0.19	0.10	
Ultimate Failure Stress (psf)		641	1709	3464	
Displacement (in.)		0.23	0.33	0.50	
Sample Diameter (in.)		2.42	2.42	2.42	

Sample Location:
MG15,T1, 2.0

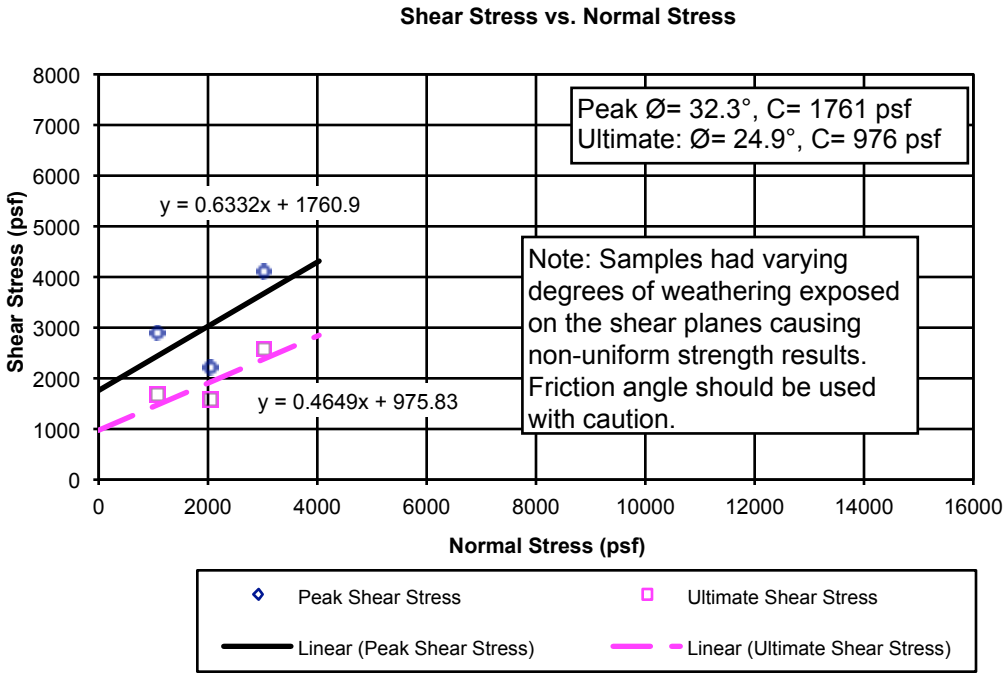
Sample Description: Sandy Lean Clay (CL/CH), v dk gry brn (10yr3/2), hard, moist, ~20% vfg-cg, w/ yel brn (10yr6/8) mg-cg and gravel (shale frag) to 3/8"

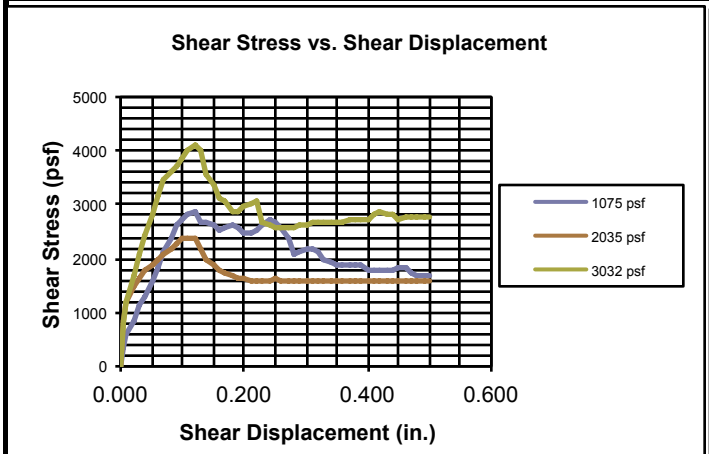
Notes:
Consolidated Undrained
Min. 4 hour min. inundation and load
G=2.70 assumed, strain rate 0.029"/min.
At-test density, void ratio, and saturation are approximate based on test method limitations

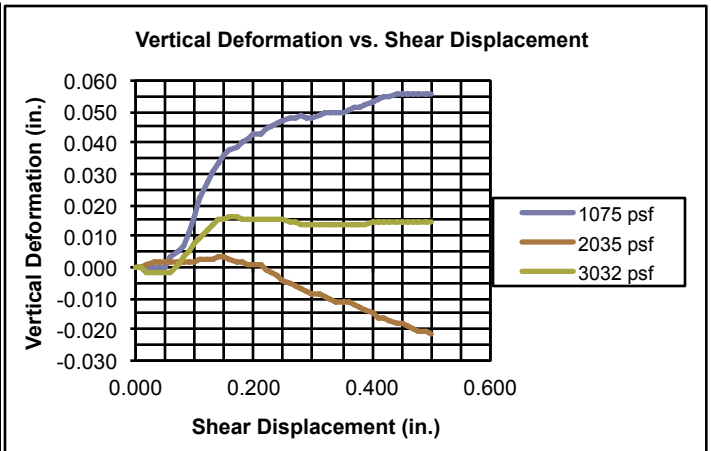
Direct Shear Test
ASTM D 3080 Modified

Client: **Milstone Geotechnical**
Project: **Elam**
Project No. **205220** Date: **4/19/21**

FISHER GEOTECHNICAL







TEST DATA	Sample No.	1	2	3	4
Initial	Water Content (%)	40.6	37.7	37.2	
	Dry Unit Weight (pcf)	72.4	75.0	78.2	
	Saturation (%)	82.6	81.5	87.1	
	Void Ratio	1.33	1.25	1.15	
	Height (in.)	1.2000	1.2000	1.2000	
At Test	Water Content (%)	49.2	47.1	46.3	
	Dry Unit Weight (pcf)	72.8	75.9	79.6	
	Saturation (%)	100.0	100.0	100.0	
	Void Ratio	1.31	1.22	1.12	
	Height (in.)	1.1936	1.1852	1.1789	
Normal Stress (psf)		1075	2035	4086	
Peak Failure Stress (psf)		2879	2191	4102	
Displacement (in.)		0.12	0.11	0.12	
Ultimate Failure Stress (psf)		1660	1560	2563	
Displacement (in.)		0.49	0.41	0.26	
Sample Diameter (in.)		2.42	2.42	2.42	

Sample Location:
MG18,T2, 6.0'(#1&2), MG19, T2,6.0' (#3)

Sample Description: Siltstone/Shale
Brn Yel (10yr6/6,6/8), variably sev. to mod. weath., soft to low hardness, w/CO3 bands
Shear planes #1 & 3 had hard zones

Notes:
Consolidated Undrained
Min. 8 hour min. inundation and load
G=2.70 assumed, strain rate 0.029"/min.
At-test density, void ratio, and saturation are approximate based on test method limitations

Direct Shear Test
ASTM D 3080 Modified

Client: **Milstone Geotechnical**
Project: **Elam**
Project No. **205220** Date: **3/25/21**

FISHER GEOTECHNICAL

Unconfined Compression Test Results
Elam, Project 205220
Boring MG1, T5 @ 13.0'
Lean Clay (CL) dk yel brn, tr vfg sand, v silty

Dry Density = 80.7 pcf
Moisture Content = 32.6%
q_u= 10,426 psf @ 2.0%
Failure plane: ≈ 70°
Dia.=2.40", Ht.= 5.98"

Axial Load (psf)

20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0

0.0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0 18.0 20.0

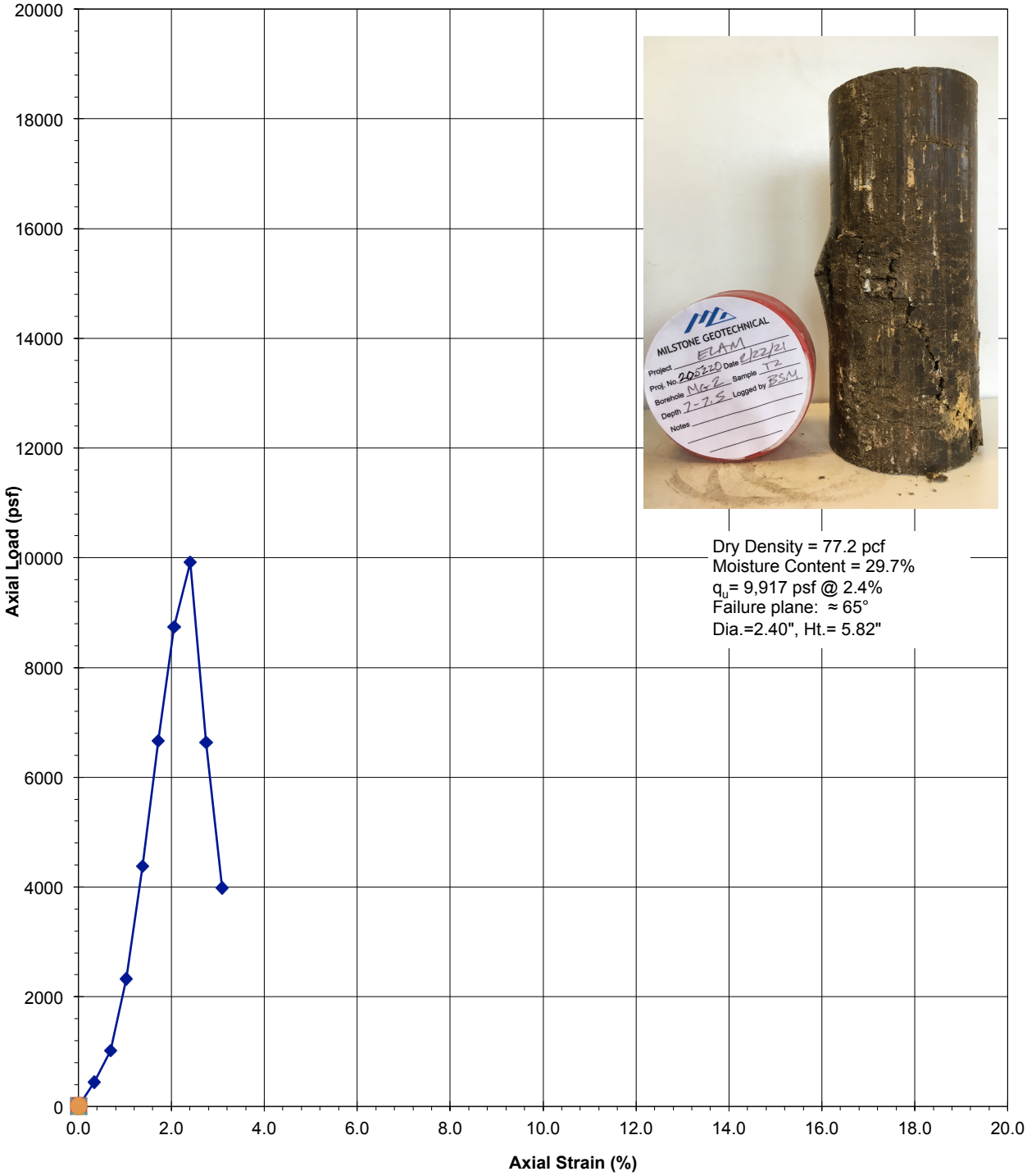
Axial Strain (%)

CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

Unconfined Compression Test Results
Elam, Project 205220
Boring MG2, T2 @ 7.0'
Sandy Lean Clay w/Gravel (CL/CH) dk yel brn, ~20% fg-cg, ~10% ang/sub-ang gravel

Dry Density = 77.2 pcf
Moisture Content = 29.7%
q_u= 9,917 psf @ 2.4%
Failure plane: ≈ 65°
Dia.=2.40", Ht.= 5.82"

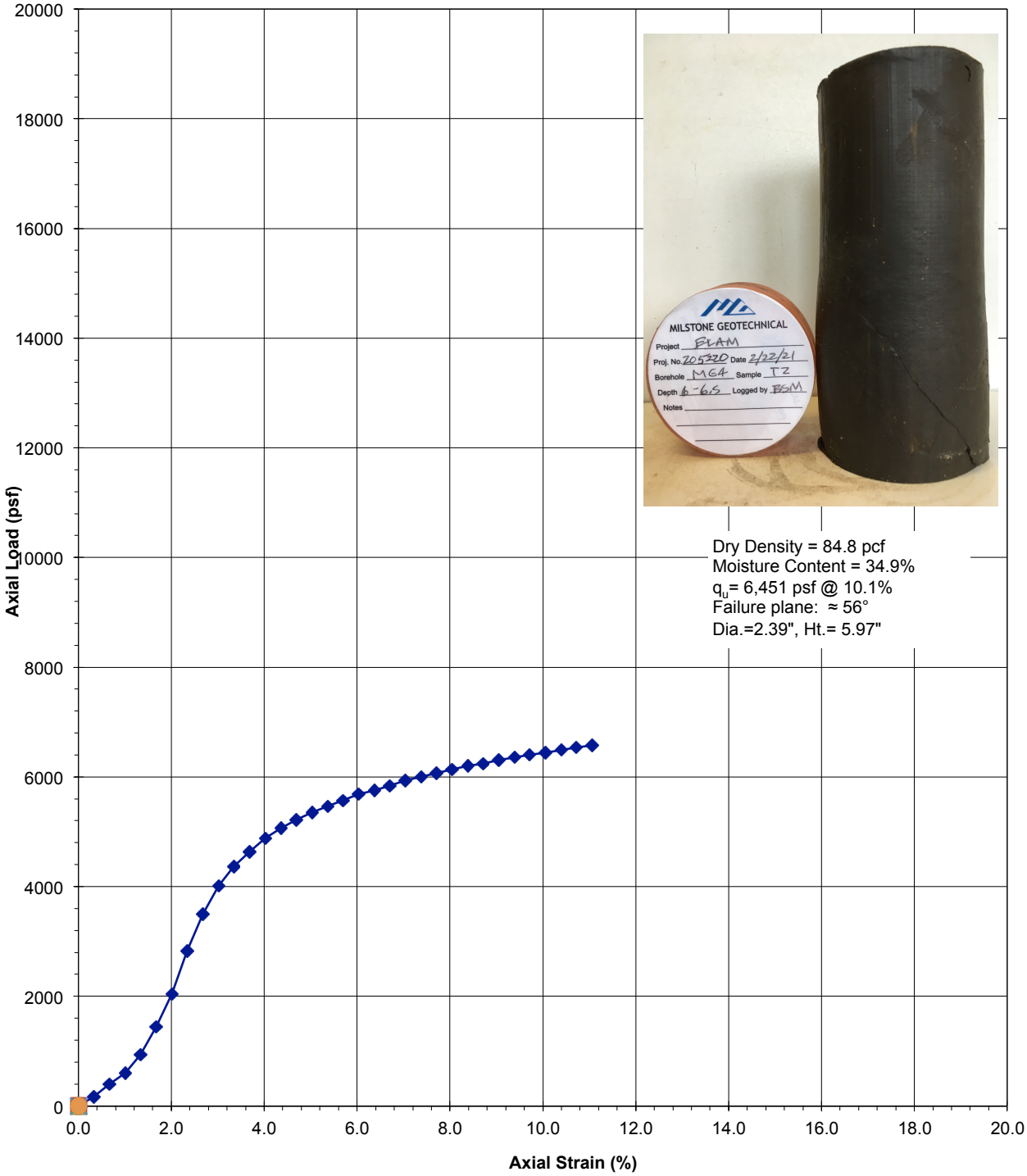


CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

Unconfined Compression Test Results
Elam, Project 205220
Boring MG4, T2 @ 6.0'
Fat Clay (CH) v dk gry, trace mg sand, uniform color, saturated

Dry Density = 84.8 pcf
Moisture Content = 34.9%
q_u = 6,451 psf @ 10.1%
Failure plane: ≈ 56°
Dia.=2.39", Ht.= 5.97"



CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

Unconfined Compression Test Results
Elam, Project 205220
Boring MG4, T5 @ 14.5'
Fat Clay (CH) dk yel brn w/~5%vfg-fg sand, uniform color

Dry Density = 84.5 pcf
Moisture Content = 32.1%
q_u= 4,851 psf @ 3.4%
Failure plane: ≈ n/a°
Dia.=2.41", Ht.= 5.86"

Axial Load (psf)

20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0

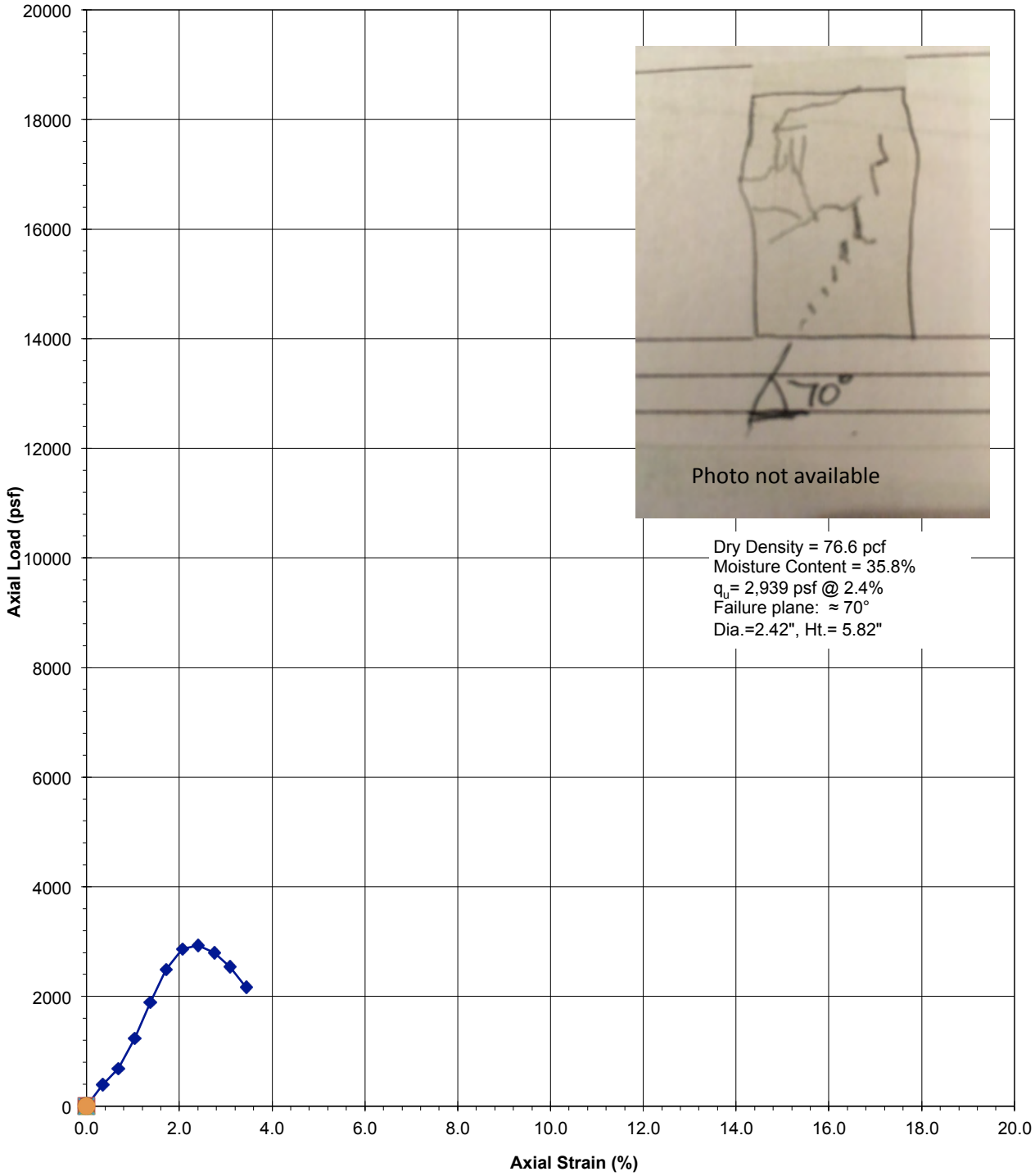
0.0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0 18.0 20.0

Axial Strain (%)

CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

Unconfined Compression Test Results
Elam, Project 205220
Boring MG5, T1 @ 2.0'
Sandy Lean Clay (CL/CH) dk brn w/~10%vfg-fg sand, ~10% mg-cg

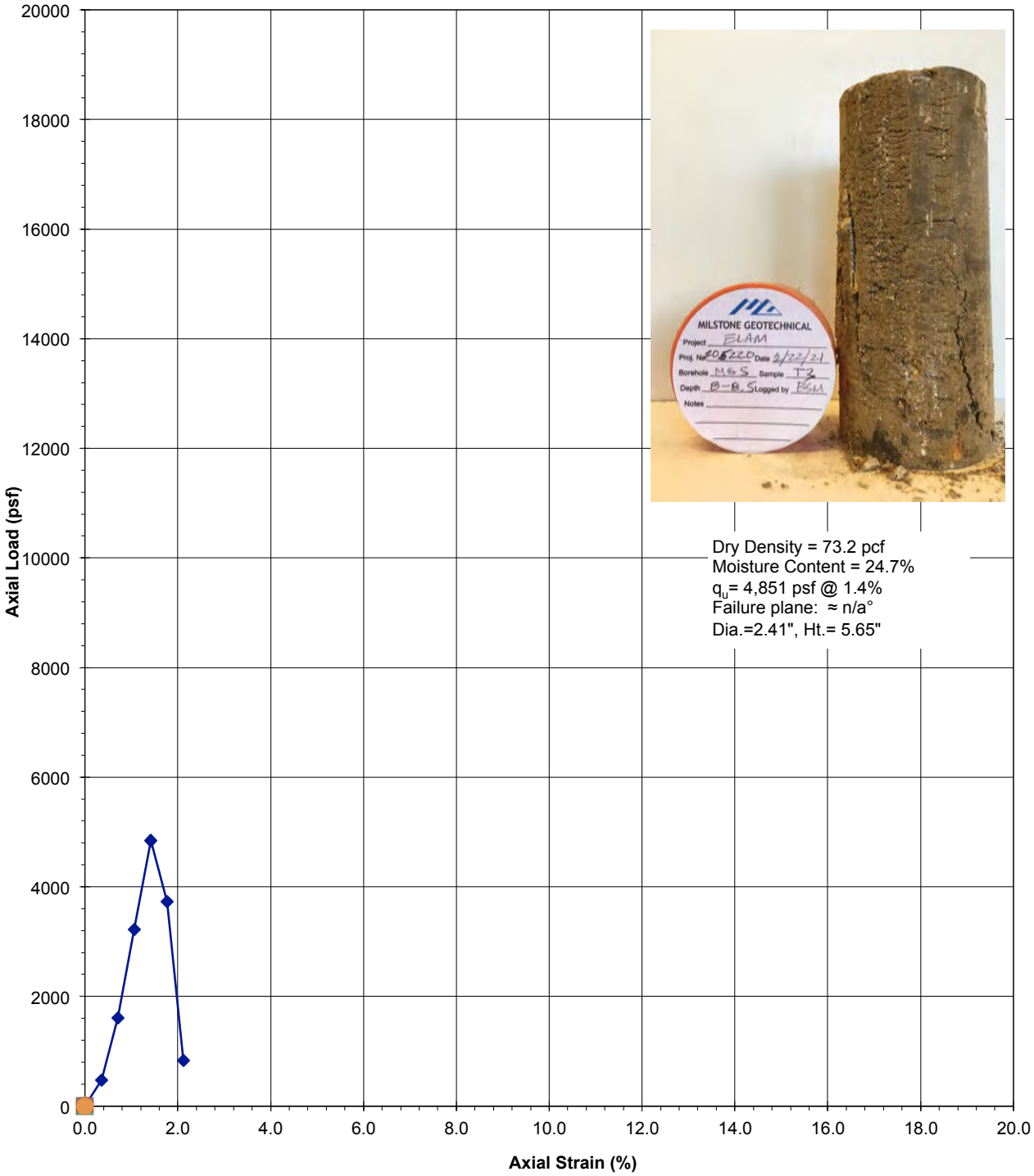


CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

Unconfined Compression Test Results
Elam, Project 205220
Boring MG5, T3 @ 8.0'
Sandy Lean Clay (CL/CH) dk brn w/~10%vfg-fg sand, ~10% mg-cg

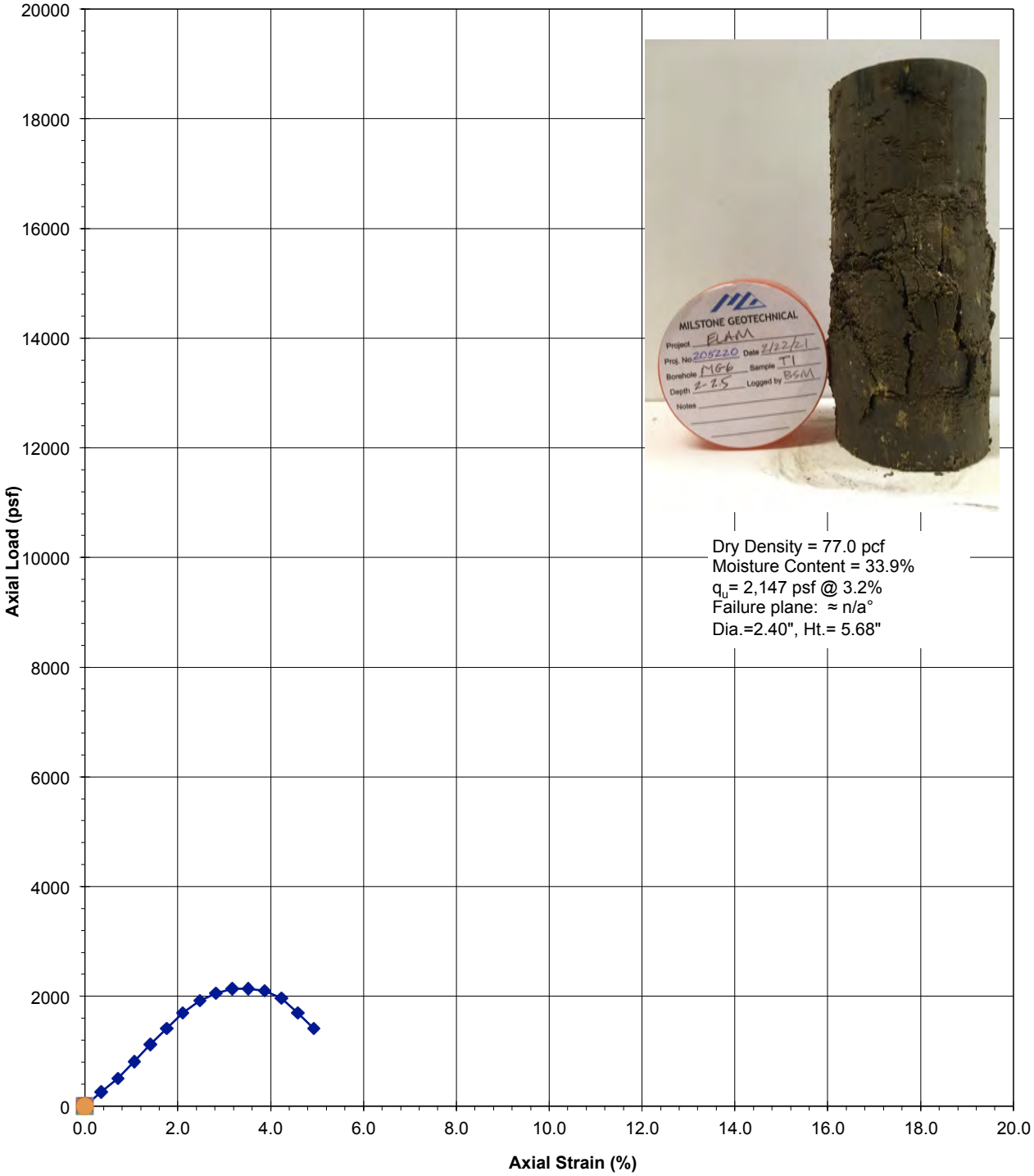
Dry Density = 73.2 pcf
Moisture Content = 24.7%
q_u= 4,851 psf @ 1.4%
Failure plane: ≈ n/a°
Dia.=2.41", Ht.= 5.65"



CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

Unconfined Compression Test Results
Elam, Project 205220
Boring MG6, T1 @ 2.0'
Sandy Fat Clay (CH/CL) olv brn to brn, 15% vfg-cg sand

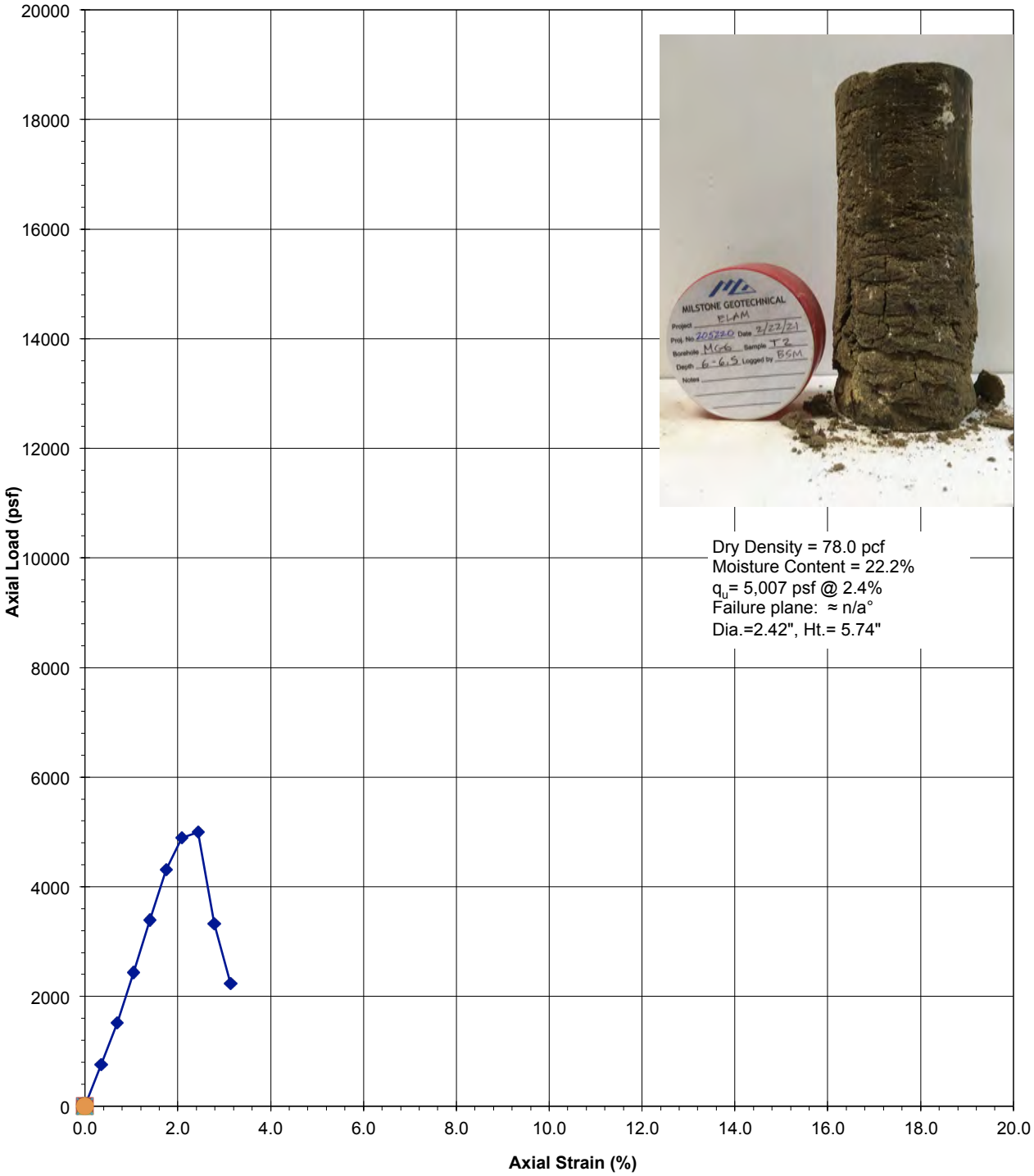


CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

Unconfined Compression Test Results
Elam, Project 205220
Boring MG6, T2 @ 6.0'
Sandy Fat Clay (CH/CL) brn w/wt, vfg-cg sand, moist/sl. moist

Dry Density = 78.0 pcf
Moisture Content = 22.2%
q_u= 5,007 psf @ 2.4%
Failure plane: ≈ n/a°
Dia.=2.42", Ht.= 5.74"

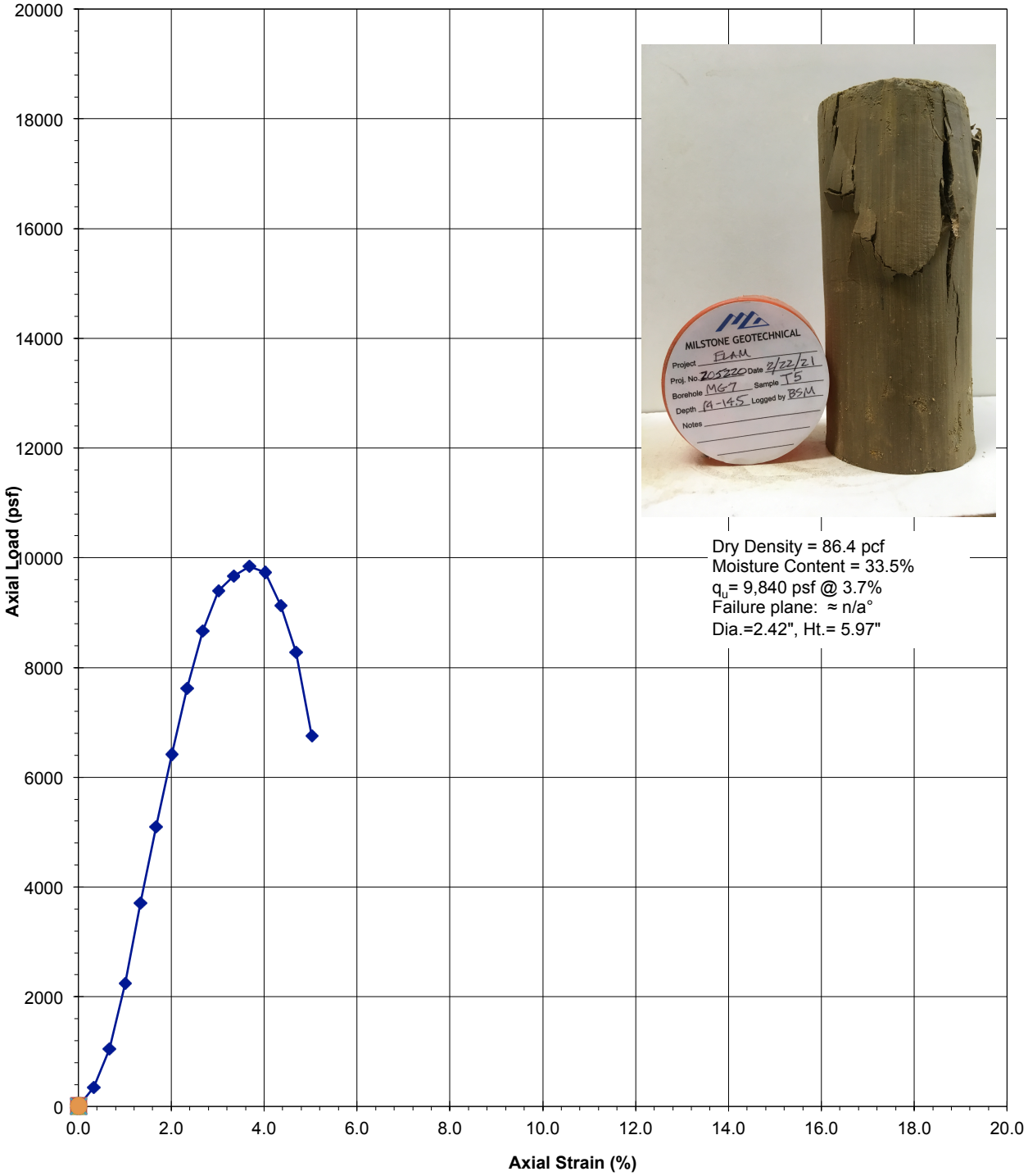


CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

Unconfined Compression Test Results
Elam, Project 205220
Boring MG7, T5 @ 14.0'
Siltstone/Shale, brn w dk yel brn, very severely weathered, soft

Dry Density = 86.4 pcf
Moisture Content = 33.5%
q_u= 9,840 psf @ 3.7%
Failure plane: ≈ n/a°
Dia.=2.42", Ht.= 5.97"

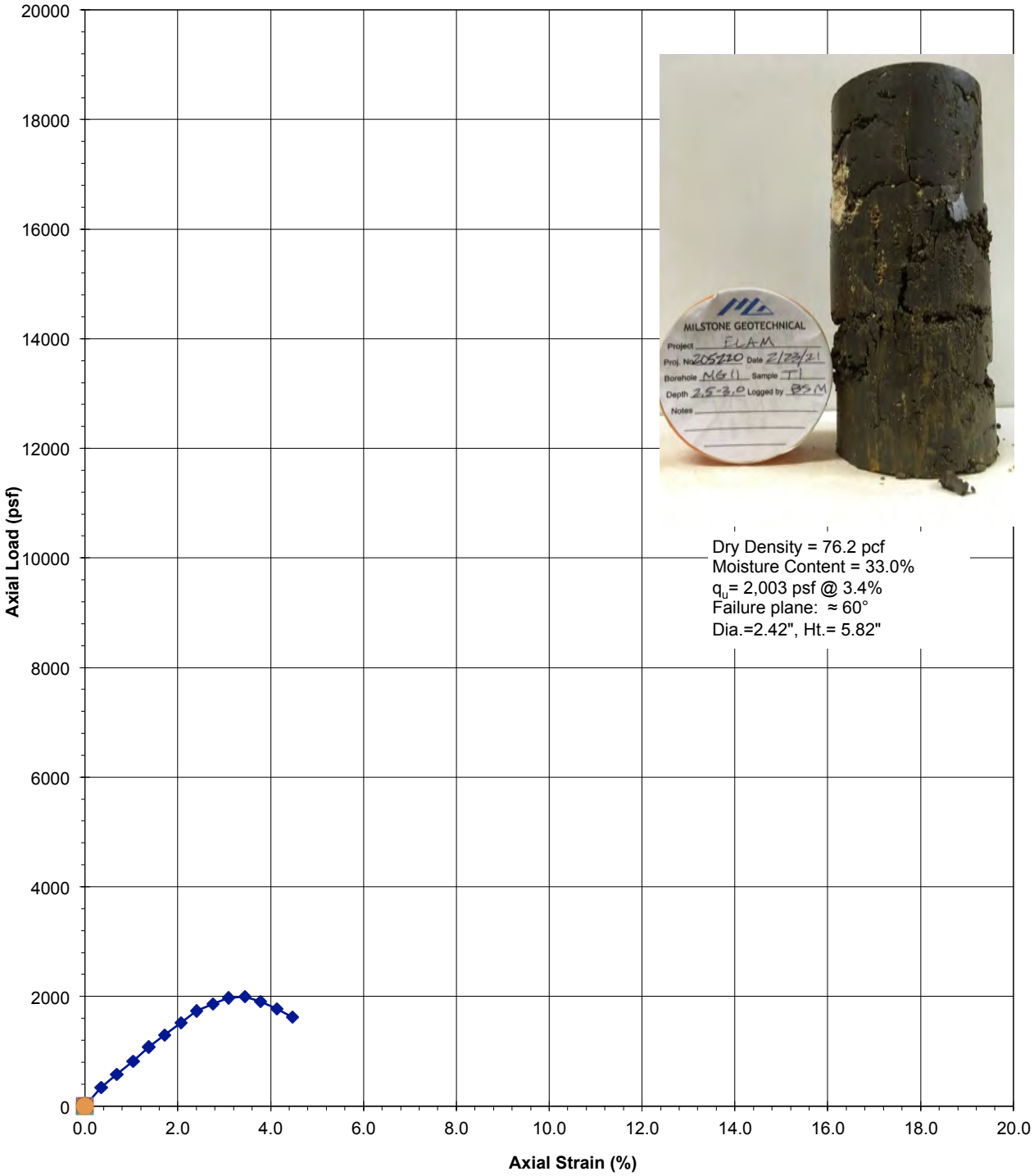


CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

Unconfined Compression Test Results
Elam, Project 205220
Boring MG11, T1 @ 2.5'
Sandy Fat Clay (CH) v dk gry, w/~15% fg-cg sand, trace CO_3

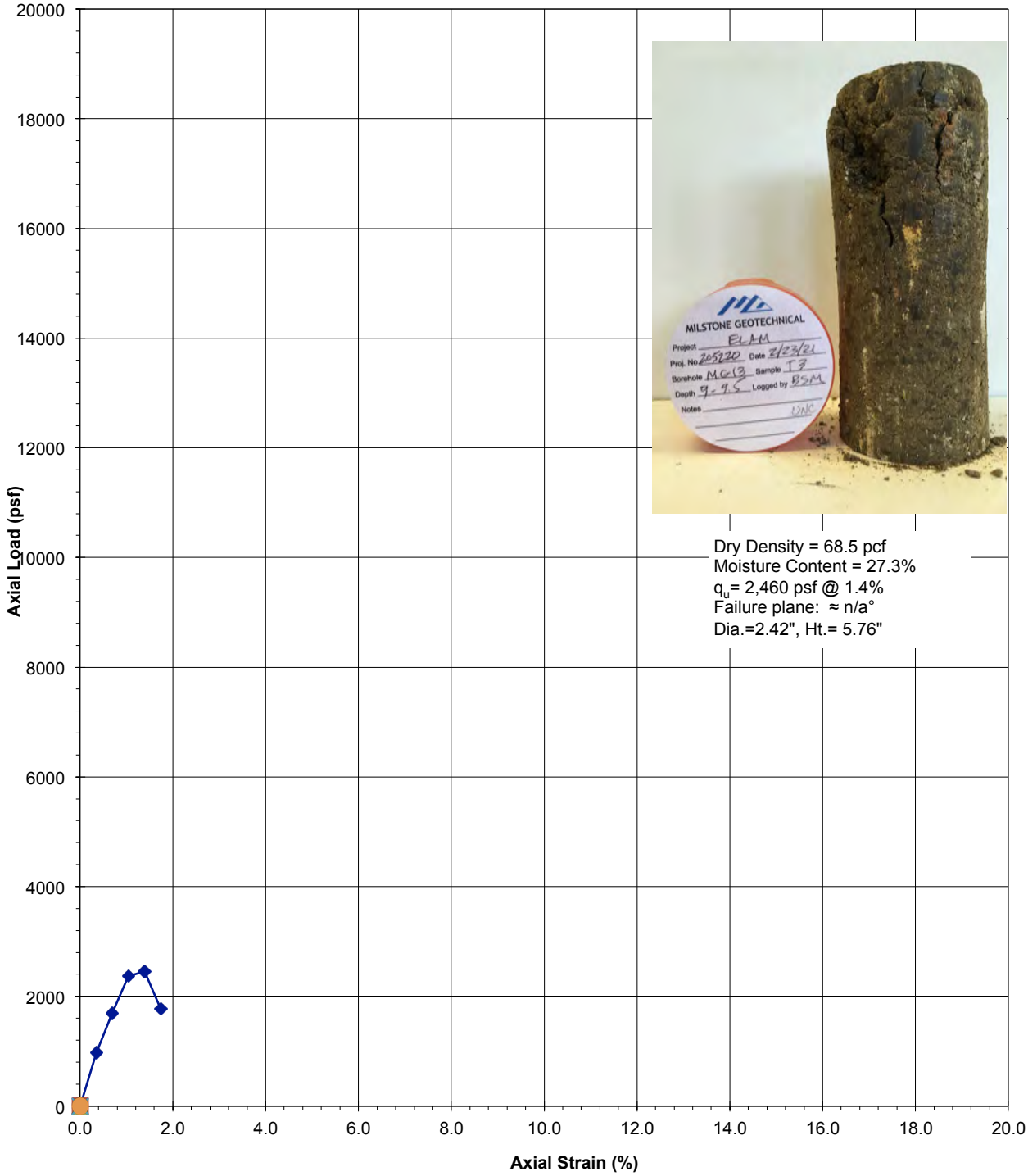
Dry Density = 76.2 pcf
Moisture Content = 33.0%
q_u= 2,003 psf @ 3.4%
Failure plane: ≈ 60°
Dia.=2.42", Ht.= 5.82"



CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

Unconfined Compression Test Results
Elam, Project 205220
Boring MG13, T3 @ 9.0'
Sandy Lean Clay w/Gravel (CL) v dk gry, ~30% vfg-cg + grav<1/2"

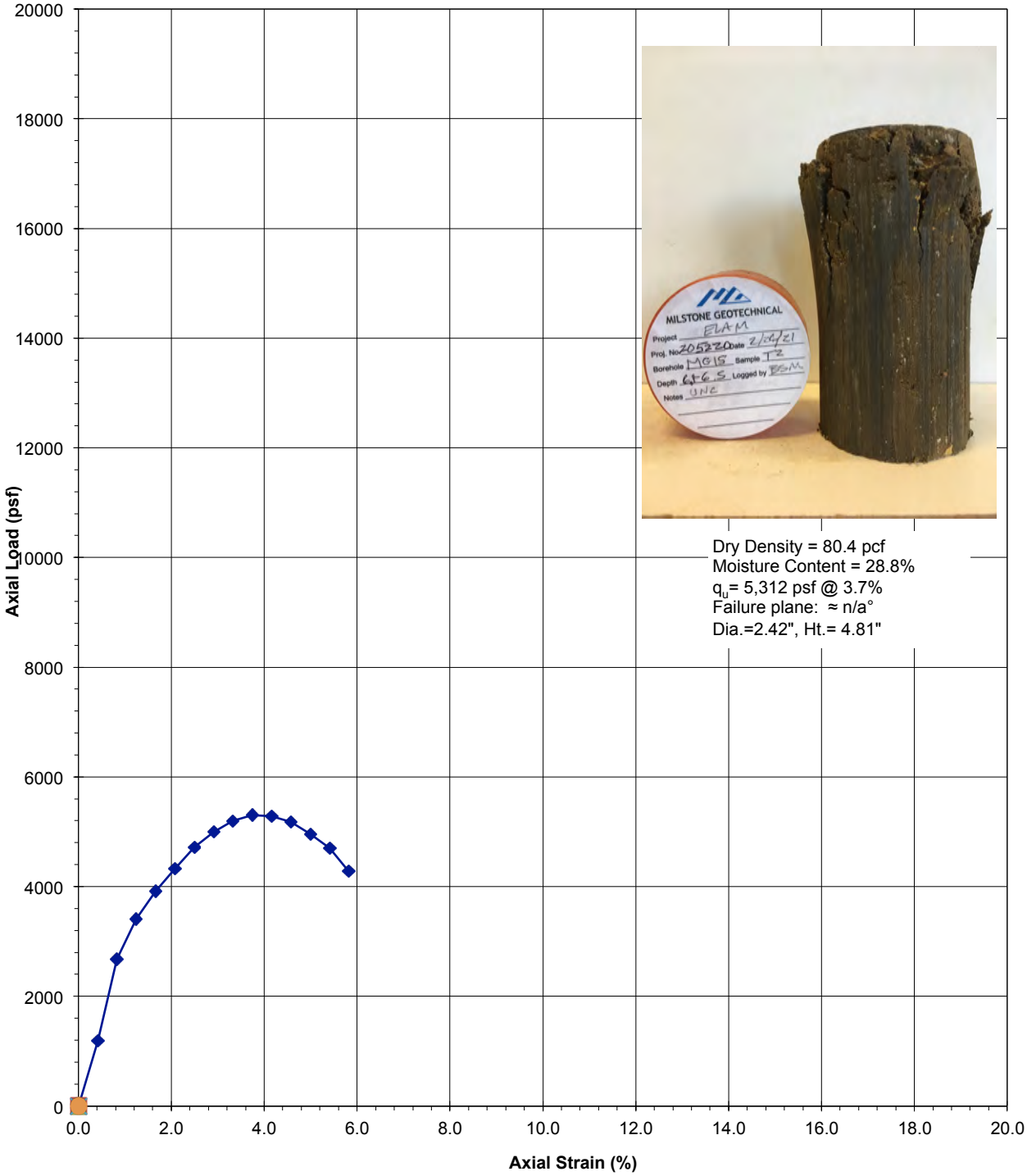


CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

Unconfined Compression Test Results
Elam, Project 205220
Boring MG15, T2 @ 6.1'
Sandy Lean Clay w/Gravel (CL) v dk gry, ~20% fg-cg, tr grav<1/4"

Dry Density = 80.4 pcf
Moisture Content = 28.8%
q_u= 5,312 psf @ 3.7%
Failure plane: ≈ n/a°
Dia.=2.42", Ht.= 4.81"



CLIENT: Milstone Geotechnical

FISHER GEOTECHNICAL
SOIL TESTING LABORATORY

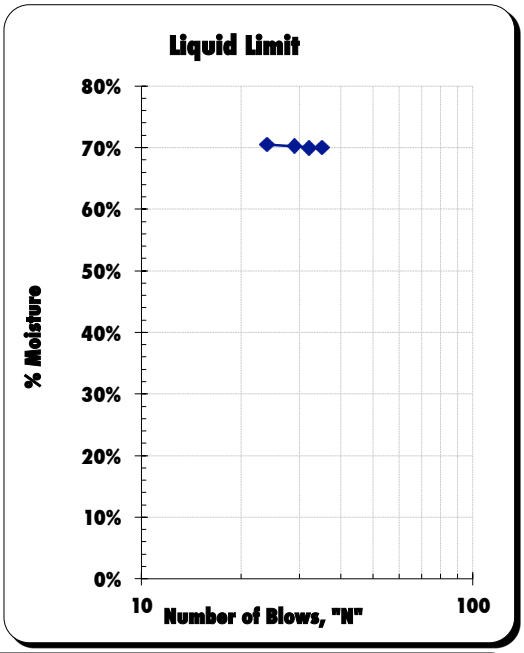
FISHER GEOTECHNICAL

Client Name:	Milstone Geotechnical	Project Name/No.:	Elam, MG205220
Client Address:	17020 Melody Lane Los Gatos, CA 95033	Sample ID:	TP2, 3.5'
		Visual Description:	Sandy Elastic Silt (MH), v dk gry brn (10yr3/2), ~20% vfg-fg, ~5% mg-cg+grav<3/8", v clayey
Client Contact:	Barry Milstone		
Report Date:	5/15/21	Reference:	Passing No. 40 portion tested
Date Received:	5/14/21	Test Classification:	MH

Liquid Limit Determination

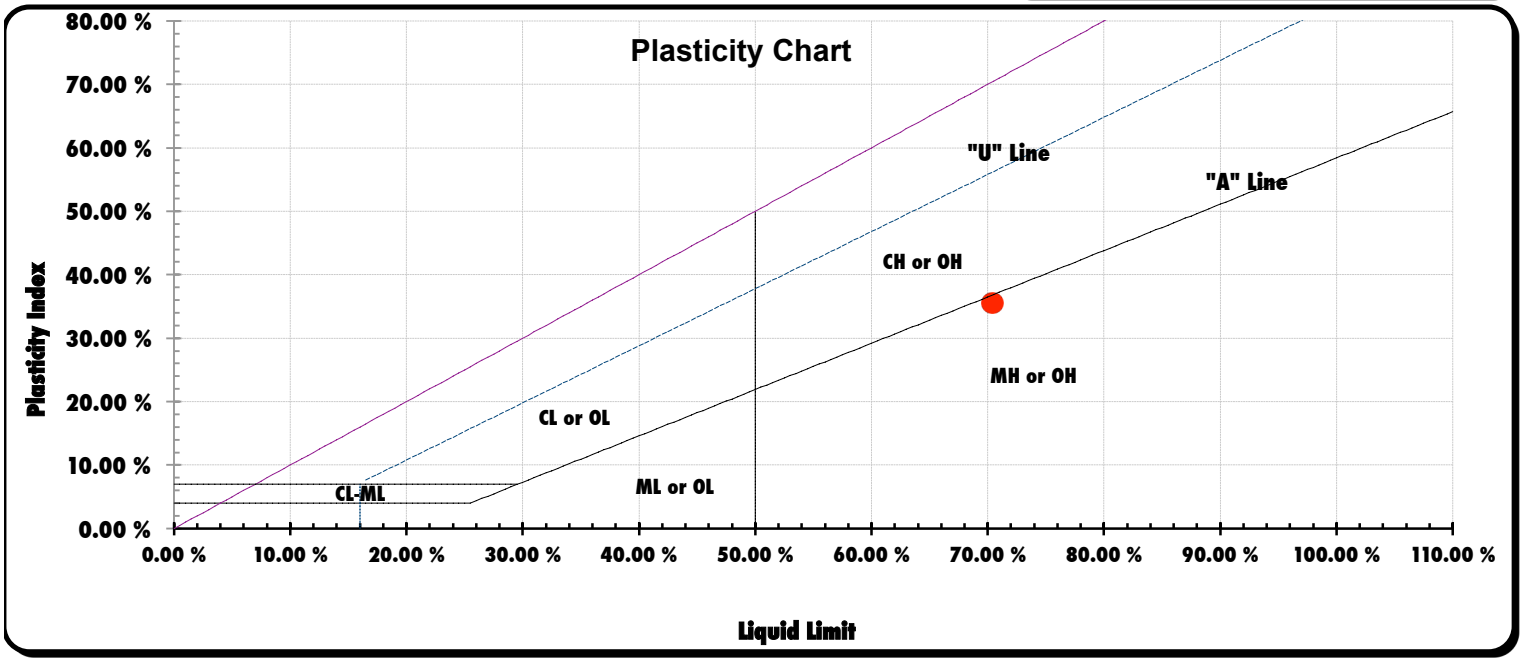
	#1	#2	#3	#4	#5	#6
Weight of Wet Soils + Pan:	12.68	7.61	9.81	9.94		
Weight of Dry Soils + Pan:	8.93	5.68	7.25	7.03		
Weight of Pan:	3.57	2.92	3.61	2.90		
Weight of Dry Soils:	5.36	2.76	3.64	4.13		
Weight of Moisture:	3.75	1.93	2.56	2.91		
% Moisture:	70.0 %	69.9 %	70.3 %	70.5 %		
Number of Blows, N:	35	32	29	24		

Atterberg Limits		(whole no.)
Liquid Limit@ 25 Blows:	70.43 %	70
Plastic Limit Average:	34.88 %	35
Plasticity Index, I_P:	35.55 %	36



Plastic Limit Determination

	#1	#2	#3	#4	#5	#6
Weight of Wet Soils + Pan:	11.71	16.61				
Weight of Dry Soils + Pan:	9.65	13.24				
Weight of Pan:	3.68	3.68				
Weight of Dry Soils:	5.97	9.56				
Weight of Moisture:	2.06	3.37				
% Moisture:	34.5 %	35.3 %				



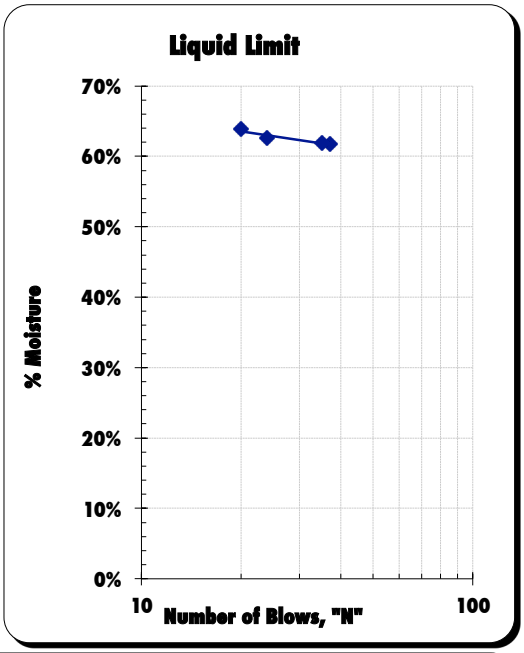
FISHER GEOTECHNICAL

Client Name:	Milstone Geotechnical	Project Name/No.:	Elam, MG205220
Client Address:	17020 Melody Lane Los Gatos, CA 95033	Sample ID:	TP4, 3.5'
		Visual Description:	Sandy Fat Clay (CH), v dk gry brn (10yr3/2), ~10%-20% vfg-fg, ~5% mg-cg+grav<3/4", v silty
Client Contact:	Barry Milstone		
Report Date:	5/15/21	Reference:	Passing No. 40 portion tested
Date Received:	5/14/21	Test Classification:	CH

Liquid Limit Determination

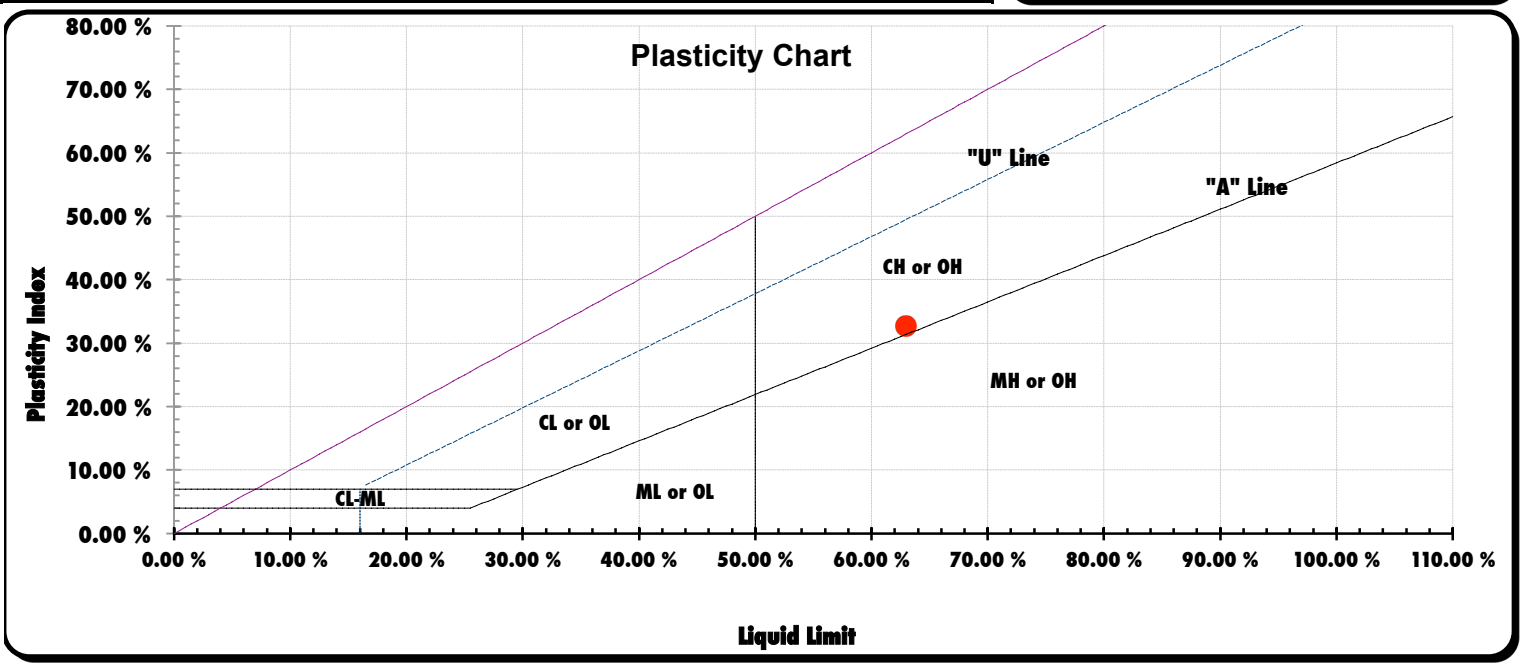
	#1	#2	#3	#4	#5	#6
Weight of Wet Soils + Pan:	14.56	10.20	11.30	11.61		
Weight of Dry Soils + Pan:	10.37	7.40	8.32	8.51		
Weight of Pan:	3.59	2.88	3.56	3.66		
Weight of Dry Soils:	6.78	4.52	4.76	4.85		
Weight of Moisture:	4.19	2.80	2.98	3.10		
% Moisture:	61.7 %	62.0 %	62.6 %	63.9 %		
Number of Blows, N:	37	35	24	20		

Atterberg Limits		(whole no.)
Liquid Limit@ 25 Blows:	63.00 %	63
Plastic Limit Average:	30.20 %	30
Plasticity Index, I_P:	32.80 %	33



Plastic Limit Determination

	#1	#2	#3	#4	#5	#6
Weight of Wet Soils + Pan:	21.06	19.58				
Weight of Dry Soils + Pan:	17.03	15.72				
Weight of Pan:	3.71	2.91				
Weight of Dry Soils:	13.32	12.81				
Weight of Moisture:	4.03	3.86				
% Moisture:	30.3 %	30.1 %				



FISHER GEOTECHNICAL

Client Name:	Milstone Geotechnical	Project Name/No.:	Elam, MG205220
Client Address:	17020 Melody Lane Los Gatos, CA 95033	Sample ID:	MG11, T2, 6.0'
		Visual Description:	Sandy Fat Clay (CH), brn (10yr4/3), ~10% vfg-cg, tr ang/sub ang shale<3/8", w/CO3 fine veins, v silty
Client Contact:	Barry Milstone		
Report Date:	5/15/21	Reference:	Passing No. 40 portion tested
Date Received:	5/14/21	Test Classification:	CH

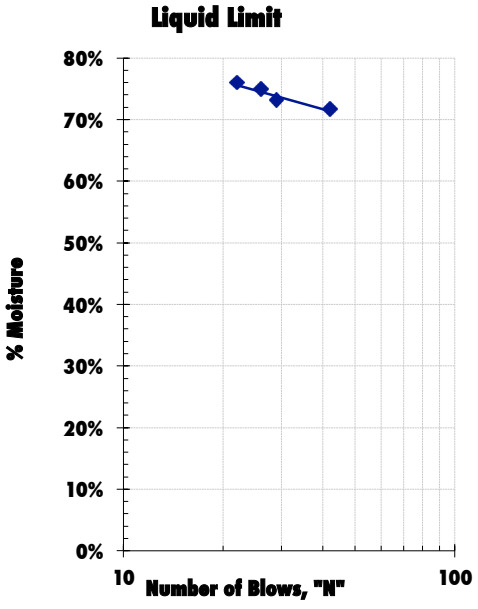
Liquid Limit Determination

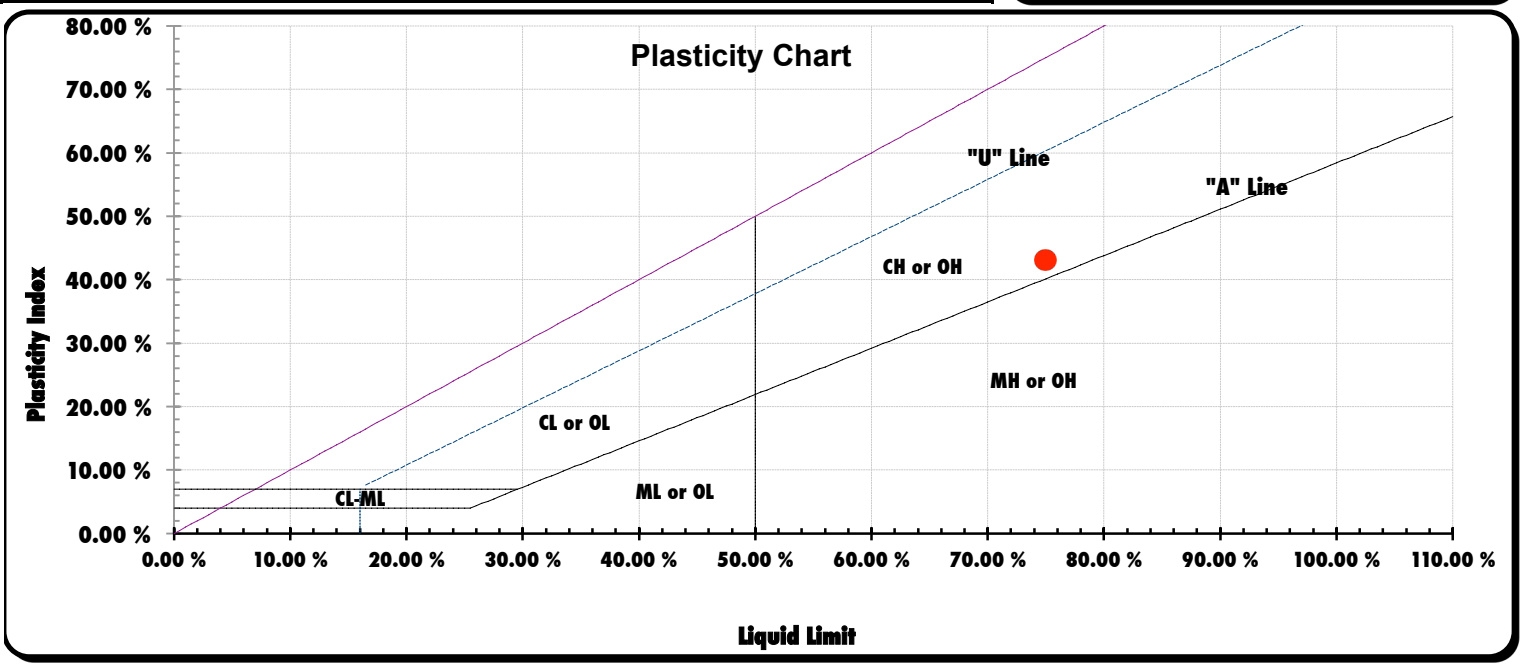
	#1	#2	#3	#4	#5	#6
Weight of Wet Soils + Pan:	21.67	25.29	19.27	22.29		
Weight of Dry Soils + Pan:	14.14	16.19	12.27	14.26		
Weight of Pan:	3.63	3.75	2.93	3.70		
Weight of Dry Soils:	10.51	12.44	9.34	10.56		
Weight of Moisture:	7.53	9.10	7.00	8.03		
% Moisture:	71.7 %	73.2 %	75.0 %	76.0 %		
Number of Blows, N:	42	29	26	22		

Atterberg Limits		(whole no.)
Liquid Limit@ 25 Blows:	74.95 %	75
Plastic Limit Average:	31.89 %	32
Plasticity Index, I_P:	43.07 %	43

Plastic Limit Determination

	#1	#2	#3	#4	#5	#6
Weight of Wet Soils + Pan:	22.86	19.77				
Weight of Dry Soils + Pan:	18.26	15.68				
Weight of Pan:	3.76	2.92				
Weight of Dry Soils:	14.50	12.76				
Weight of Moisture:	4.60	4.09				
% Moisture:	31.7 %	32.1 %				





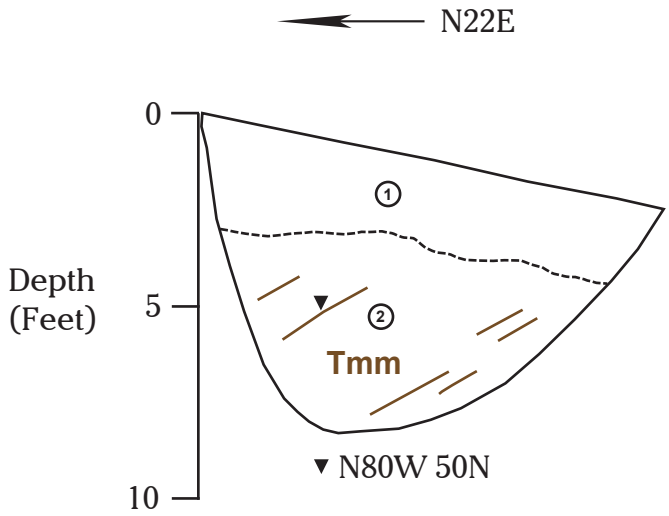
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Colluvial Soil)

② white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 1

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	8

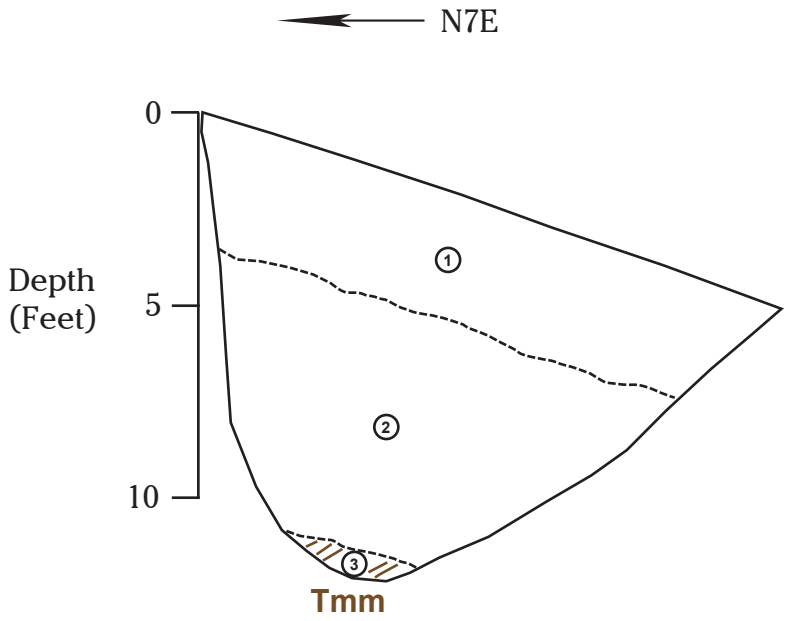
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Colluvial Soil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale, CL (Colluvial Soil)

③ white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 2

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	9

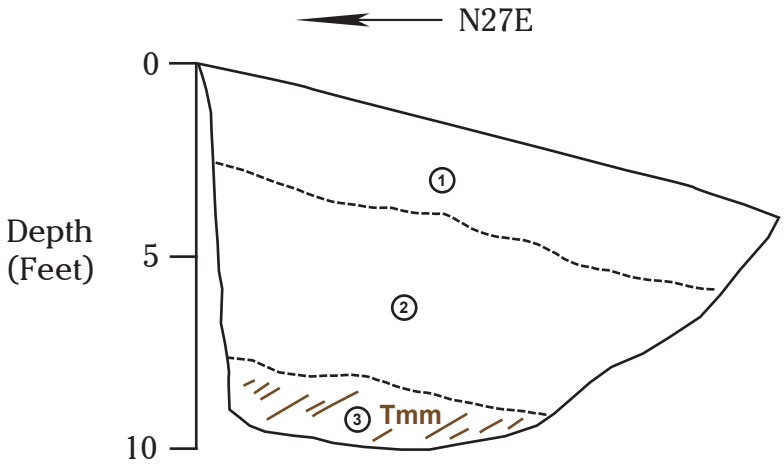
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Colluvial Soil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale to 1 inch, CL (Colluvial Soil)

③ white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 3

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	10

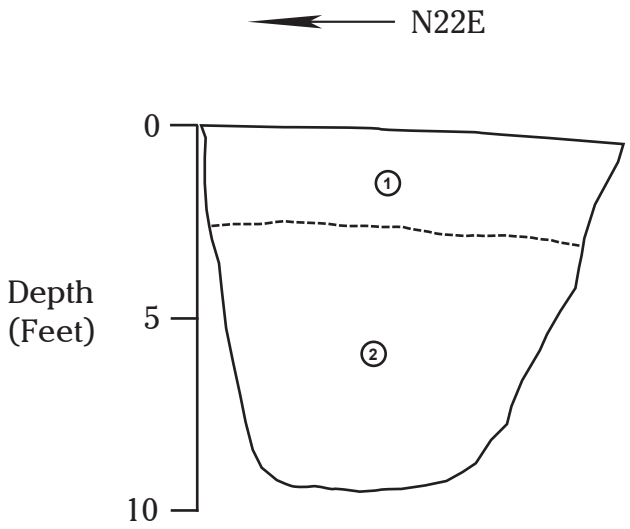
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Colluvial Soil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale to 1 inch, abundant fine white carbonate stringers, CL (Colluvial Soil/Slope Wash)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 4

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	11

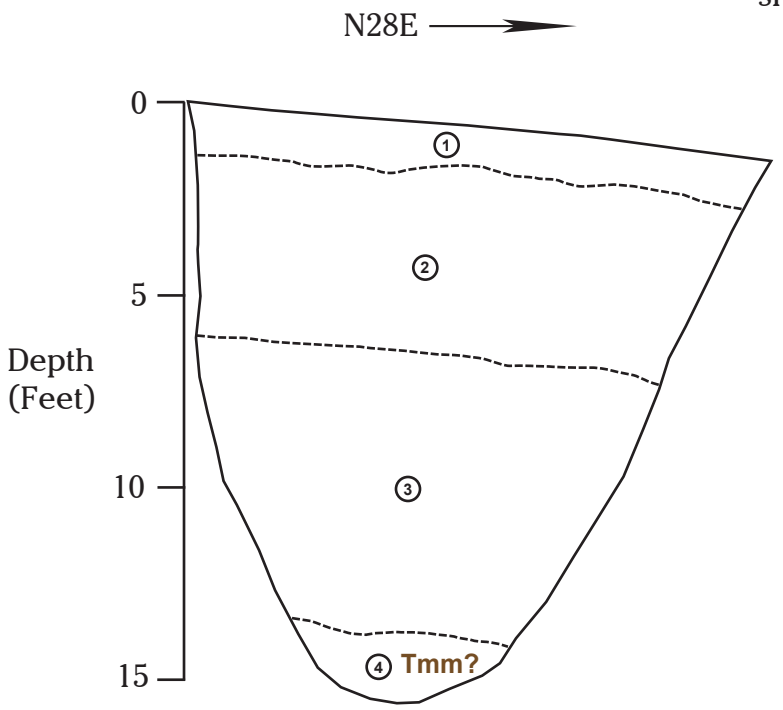
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Tilled Topsoil)

② black, 10YR2/1, silty clay, slightly moist, very stiff to hard, high plasticity, trace rock fragments of Monterey Shale to 1/2 inch (Collluvial Soil)

③ dark grayish brown, 2.5Y4/2, silty clay, slightly moist, hard to very hard, high plasticity, (Colluvial Soil/Slope Wash)

④ light yellowish brown, 2.5Y6/4, claystone, highly weathered, slightly sheared, (Highly Weathered Bedrock/Monterey Shale?)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 5

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	12

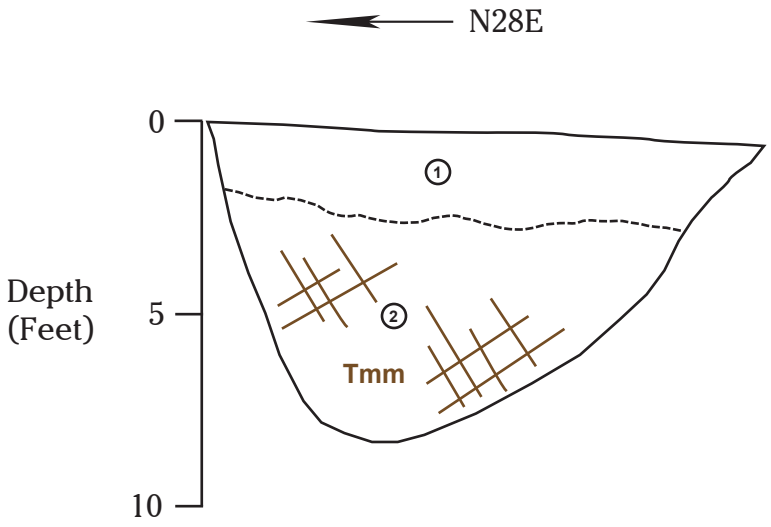
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Tilled Topsoil)

② light yellowish brown, 2.5Y6/4, siltstone, highly weathered, fractured, abundant white carbonate staining along fractures (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/22/20

Log of Test Pit 6

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	13

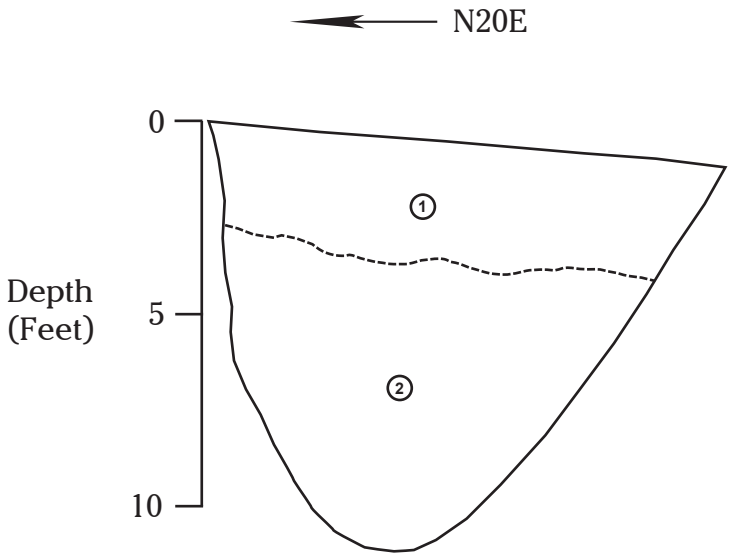
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Tilled Topsoil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale, CL (Colluvial Soil/Debris Flow Deposits)

Logged by Steven F. Connelly, C.E.G., 12/23/20

Log of Test Pit 7

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	14

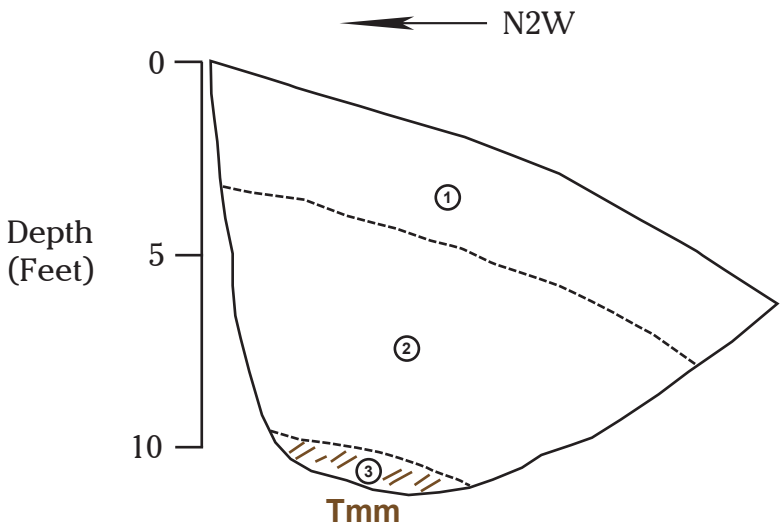
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Tilled Topsoil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale, CL (Colluvial Soil)

③ white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/23/20

Log of Test Pit 8

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	15

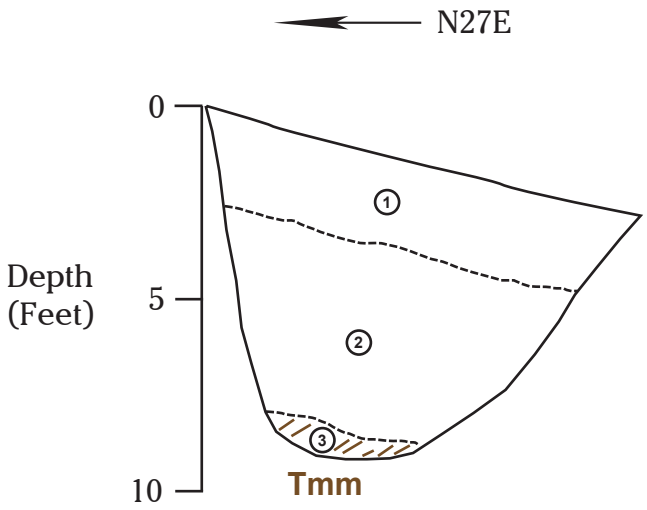
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Topsoil)

② very dark grayish brown, 10YR3/2, clayey silt, slightly moist, stiff, low plasticity, trace roots, trace rock fragments of Monterey Shale, CL (Colluvial Soil/Debris Flow Deposits)

③ white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/23/20

Log of Test Pit 9

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	16

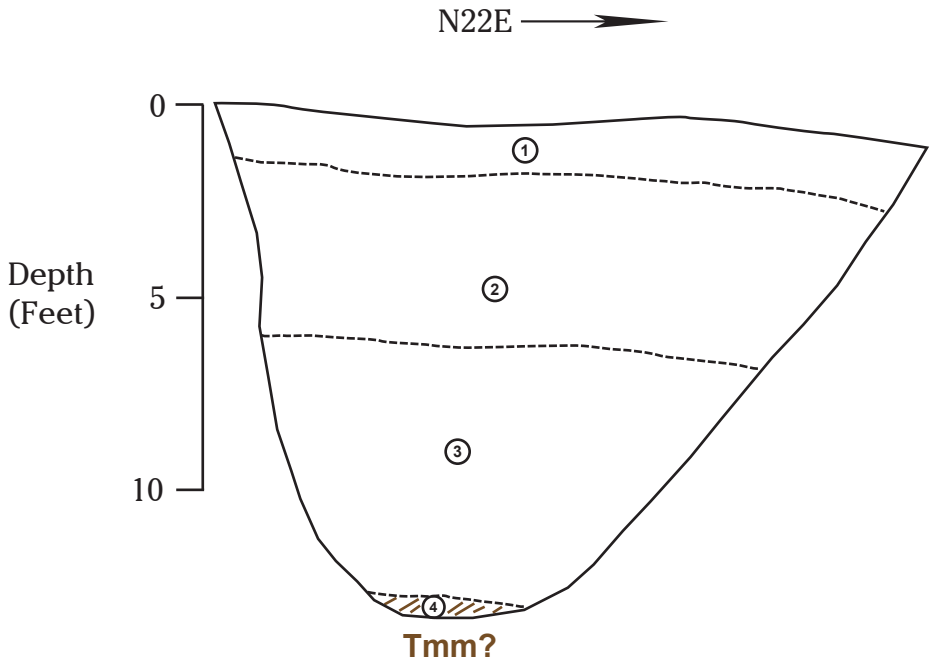
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 10YR6/2, silty clay, slightly moist, firm to stiff, low to medium plasticity, trace roots and rootlets, CL (Tilled Topsoil)

② black, 10YR2/1, silty clay, slightly moist, very stiff to hard, high plasticity, trace rock fragments of Monterey Shale to 1/2 inch (Colluvial Soil)

③ dark grayish brown, 2.5Y4/2, silty clay, slightly moist, hard to very hard, high plasticity, (Colluvial Soil/Slope Wash)

④ light yellowish brown, 2.5Y6/4, claystone, highly weathered, slightly sheared, (Highly Weathered Bedrock, Monterey Shale?)

Logged by Steven F. Connelly, C.E.G., 12/23/20

Log of Test Pit 10

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	17

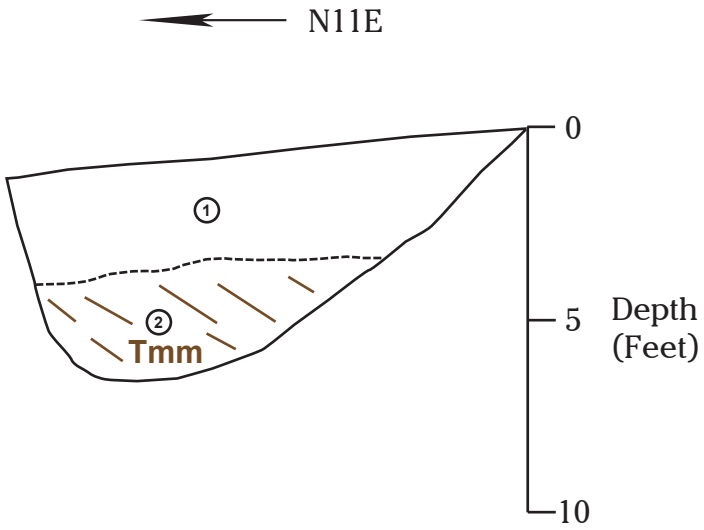
Symbols

gradational contact

relatively sharp contact

very sharp contact

N35W 9SW ▼ strike and dip of bedding or trend and plunge of shear surface



① dark grayish brown, 2.5Y4/2, silty clay, slightly moist, hard to very hard, high plasticity (Colluvial Soil)

② white, 10YR8/1 to very pale brown, 10YR7/3, siltstone and shale, moderately hard, lithified, moderately bedded, stained with white calcium carbonate (Weathered Bedrock, Monterey Shale)

Logged by Steven F. Connelly, C.E.G., 12/23/20

Log of Test Pit 11

STEVEN F. CONNELLY, C.E.G.

Consulting in Engineering Geology

APN 537-27-047
14915 Shannon Road
Los Gatos, California

Project #	Scale	Date	Figure
2104	1 Inch = 5 Feet	2/5/21	18

October 18, 2023
LG6052A

TO: Corvell Sparks
Assistant Engineer
TOWN OF LOS GATOS
41 Miles Avenue
Los Gatos, California 95030

SUBJECT: **Supplemental Geologic and Geotechnical Peer Review**
RE: 9-Lot Subdivision M-22-003
FY23071
14915 Shannon Road

At your request, we have completed a supplemental geologic and geotechnical peer review of the proposed multi-lot subdivision using:

- Supplemental Geotechnical Evaluation and Recommendations (report) prepared by BAGG Engineers, dated September 5, 2023;
- Engineering Geologic Assessment and Subsurface Fault Investigation (report) prepared by Sadek Derrega Consulting, CEG, dated August 31, 2023; and
- Civil Plans (15 sheets) prepared by TS Civil Engineering, Inc., dated August 14, 2023.

In addition, we have reviewed pertinent maps and technical documents from our office files and observed exploratory fault trenches with the Project Engineering Geologist.

DISCUSSION

We understand the applicant proposes to demolish the existing site improvements and subdivide the property into nine lots. Lots 1 through 7 are proposed along Shannon Road. Access to Lots 1 through 7 is proposed by shared driveways extending from either Shannon Road or Sky Lane. Lots 8 and 9 will be accessed by Sierra Azule and are located upslope of Lot 7.

The property is not located within a California Geological Survey liquefaction hazard zone, and is also not located within a State designated Alquist Priolo/ Fault Rupture hazard zone. However, the property is located within a California Geological Survey earthquake-induced landslide hazard zone and the Town Fault Lineament and Coseismic Deformation Map (compiled by Nolan Associates, 1999) delineates a trace of the Shannon Fault through the property in the vicinity of Shannon Road.

In our previous peer review letter, dated November 15, 2022, we recommended that the Project Engineering Geologist complete an investigation to evaluate the potential for surface fault rupture and secondary ground deformation to impact the site. We also recommended that the Engineering Geologist perform additional mapping of potential debris flow hazards and areas of undocumented fill. We further recommended that the Project Geotechnical Consultant discuss and evaluate the potential for erosional failures or debris flows to retrogress across Lot 8 towards the proposed building site and evaluate whether a habitable building set-back is warranted, or, alternatively, whether a retaining wall (e.g., buried stitch pier wall) is warranted. We also recommended that the Geotechnical Consultant evaluate potential debris impact to structures and provide design recommendations for mitigative alternatives, as necessary.

Based on the submitted documents we understand that the Project Engineering Geologist is now Sadek Derrega Consulting and the Project Geotechnical Consultant is now BAGG Engineers. We refer to our previous letter for a description of site conditions.

RECENT GEOLOGIC EVALUATIONS

The previous Project Engineering Geologist (Connelly) explored the subsurface conditions by means of 11 test-pits. Connelly also mapped five swale features on the site. As part of their subsurface investigation, Connelley identified Monterey Formation bedrock as well as alluvium, colluvial soils and debris flow deposits. The current Project Engineering Geologist (Derrega) performed a supplemental investigation that included excavating four exploratory trenches ranging in length from 30 feet to 139 feet. Derrega concluded that *"A shear swarm associated with the Shannon fault was encountered in all 4 trenches excavated along the southeastern portion of the property, generally where the fault has been mapped by the U.S. Geological Survey (USGS) and Nolan (1999). Instead of a single planar trace, the fault was represented by a relatively wide zone/swarm of shear planes that were heavily lined with dull white carbonate staining and bright gypsum filaments."* Derrega recommended a 50-foot wide setback from the identified fault zone for habitable structures.

Derrega also mapped landslides and debris flows (source areas, potential chutes and travel paths) and provided input to the project team with regard to structure setback zones and siting of the proposed structures. Based on their mapping, the Project Engineering Geologist identified nine topographic swales that potentially impact the

proposed subdivision. Derrega concluded that five of the nine swales (Swales 3 through 7) presented a geologic hazard and provided mitigation recommendations for each of the five swales. Recommended mitigation measures include a retaining wall with a minimum of 3 feet of freeboard (Swale 3), 6-foot high debris detention berms (Swales 4, 5, and 6), 7-foot high soil debris deflection berm (Swale 7, bottom), and buried stitch pier wall (Swale 7, top).

Derrega also identified areas of undocumented fill and documented the location of the fill on their geologic map. Derrega recommended that the undocumented fill be over-excavated and reworked or removed and utilized as new engineered fill as necessary.

Based on their investigation Derrega concluded that *"…it is our professional opinion that the proposed 9-lot subdivision and associated improvements are considered feasible, from an engineering geologic viewpoint, provided that the conclusions and recommendations of this report and the forth coming BAGG Engineers geotechnical report for the project are incorporated in the design and construction of the planned project."*

RECENT AND GEOTECHNICAL EVALUATIONS

The previous Project Geotechnical Consultant (Milstone) advanced 19 borings to a maximum depth of 30 feet below the ground surface. Milstone also performed laboratory testing and analysis to evaluate geotechnical conditions at the site. The current Geotechnical Consultant (BAGG) supplemented the previous subsurface investigation with five additional exploratory borings advanced to depths ranging from 4 to 39.5 feet. Groundwater was not encountered in any of the exploratory borings, test pits, or trenches excavated at the site.

In addition to the supplemental borings, BAGG performed laboratory tests, supplemental geotechnical analysis, consulted with the Project Engineering Geologist and provided geotechnical design criteria and recommendations. BAGG concluded that *"Based on our review of the SDCEG August 2023 report, the feasibility level reports by Millstone and Connelly performed in 2021, the results of our supplemental borings and laboratory testing, our site reconnaissance, and our consultations with SDCEG, it is our opinion that the subject project is feasible from a geotechnical standpoint."*

CONCLUSIONS AND RECOMMENDED ACTION

The proposed subdivision project is potentially constrained by surface fault rupture and secondary coseismic ground deformation, debris flows and shallow landsliding, undocumented fill, steep slopes, and very strong ground shaking. The Project Engineering Geologist and Geotechnical Consultant have performed investigations,

evaluated the site hazards, and provided recommendations that are in conformance with the standard of practice within the Town. We note that the mitigation measures recommended by the Consultants are not shown on the submitted tentative map. These recommendations included a retaining wall with a minimum of 3 feet of freeboard (Swale 3), 6-foot high debris detention berms (Swales 4, 5, and 6), 7-foot high soil debris deflection berm (Swale 7, bottom), and a buried stitch pier wall (Swale 7, top). We also note that the identified fault zone is shown on the Tentative Map as a discrete line rather than the wider zone identified by the Project Engineering Geologist. Consequently, we recommend that the following items be completed prior to geologic and geotechnical approval of the presented Tentative Map:

1. **Engineering Geologic and Geotechnical Tentative Map Review** – The Project Engineering Geologist and Project Geotechnical Consultant should review the Tentative Map and associated civil plans to ensure that their recommendations are correctly incorporated. Specifically, the Consultants should address the following:

    a. The Engineering Geologist should review the current civil drawings, consult with the Project Team, and ensure that the locations of the mapped fault zone and associated 50-foot setback is accurately shown on the Tentative Map, and supporting Civil Drawings.

    b. The Engineering Geologist and Project Geotechnical Consultant should consult with the Project Civil Engineer to ensure that the Tentative Map accurately shows their development level mitigation measures, specifically:

        i. Retaining wall with a minimum of 3 feet of freeboard (Swale 3);

        ii. 6-foot high debris detention berms (Swales 4, 5, and 6);

        iii. 7-foot high soil debris deflection berm (Swale 7, bottom); and

        iv. Buried stitch pier wall (Swale 7, top).

    The applicant's Engineering Geologist and Geotechnical Consultant should compile the results of their Tentative Map review in a signed and stamped letter to be submitted to the Town along with the revised Tentative Map for supplemental Geologic and Geotechnical peer review prior to Tentative Map approval.

2. **Revised Civil Plans** – Plans for the proposed subdivision should be revised, as warranted, to incorporate sub-division level recommendations of the Project Engineering Geologist and Geotechnical Consultants. The plans should also indicate how the fault setback zones will located in the field during construction (i.e. bearing and distances from property corners).

   The Project Civil Engineer should consult with the Project Engineering Geologist and Geotechnical Consultant, to revise proposed subdivision plans with respect to the recommended sub-division level mitigation measures. The revised Tentative Map and supported plans should be submitted with responses to Item 1 to the Town for supplemental Geologic and Geotechnical peer review prior to approval of Tentative Map.

LIMITATIONS

This supplemental geologic and geotechnical peer review has been performed to provide technical advice to assist the Town 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.
TOWN GEOTECHNICAL CONSULTANT

Andrew T. Mead
Principal Engineering Geologist
CEG 2560

David T. Schrier
Principal Geotechnical Engineer
GE 2334

DTS:AM:st

APPENDIX D

PHASE I AND PHASE II ENVIRONMENTAL SITE ASSESSMENTS

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

PREPARED FOR:

RANEY PLANNING AND MANAGEMENT, INC.
1501 SPORTS DRIVE SUITE A
SACRAMENTO, CALIFORNIA 95834

PREPARED BY:

GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DRIVE, SUITE 800
RANCHO CORDOVA, CALIFORNIA 95742

GEOCON PROJECT NO. S2421-07-01

MARCH 2023

Project No. S2421-07-01
March 9, 2023

Nick Pappani
Raney Planning & Management, Inc.
1501 Sports Drive, Suite A
Sacramento, California 95834
npappani@raneymanagement.com

Subject: PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT
14915 SHANNON ROAD
LOS GATOS, SANTA CLARA COUNTY, CALIFORNIA

Mr. Pappani:

In accordance with the Raney Planning and Management, Inc. (Raney) *Sub-Consultant Agreement* executed on July 14, 2022, Geocon Consultants, Inc. (Geocon) has performed a Phase I Environmental Site Assessment (ESA) of the property and improvements at 14915 Shannon Road (the Site) near Los Gatos, Santa Clara County, California. We understand that Raney is preparing an Initial Study/Mitigated Negative Declaration (IS/MND) for the Town of Los Gatos for future residential development of the Site and they will include our Phase I ESA report in their IS/MND. The enclosed report describes the Phase I ESA and presents our findings, conclusions, and recommendations.

We performed the Phase I ESA for Raney to assess the Site for the potential presence of recognized environmental conditions as defined by the ASTM International (ASTM) *Designation E 1527-21, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.* The Code of Federal Regulations (CFR) *Standards and Practices for All Appropriate Inquiries* (AAI; CFR Title 40, Part 312) identifies ASTM Designation E 1527-21 as an acceptable guidance document for performing a Phase I ESA that satisfies the federal requirements for AAI under Sections 101(35)(B)(ii) and (iii) of the Comprehensive Environmental Response, Compensation, and Liability Act.

We appreciate the opportunity to have performed this Phase I ESA for Raney. Please contact us if you have any questions concerning this report or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.

Christine Hughes
Senior Staff Geologist

Jim Brake, PG
Senior Geologist

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PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

1.0 INTRODUCTION

Geocon Consultants, Inc. (Geocon) has performed a Phase I Environmental Site Assessment (ESA) of the property and improvements at 14915 Shannon Road (the Site) near Los Gatos in Santa Clara County, California. We performed the Phase I ESA for Raney Planning & Management (Raney, the Client) to assess the potential presence of recognized environmental conditions (REC) pursuant to guidelines established by ASTM International (ASTM) *Designation E1527-21, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. We understand that Raney is preparing an Initial Study/Mitigated Negative Declaration (IS/MND) for the Town of Los Gatos for future residential development of the Site and that they will include our Phase I ESA report in their IS/MND.

This report describes the Phase I ESA methodology and presents our findings, conclusions and recommendations. The report is organized as follows:

- Section 1.0 provides a description of the purpose and objectives of the Phase I ESA, defines terms, and describes the Phase I ESA services, limitations, and identified data gaps;
- Section 2.0 describes the Site's physical setting and conditions;
- Section 3.0 summarizes information provided by Raney as the "user" of the Phase I ESA;
- Section 4.0 summarizes readily available records for the Site and surrounding properties that we obtained from regulatory and administrative agencies and other sources;
- Section 5.0 describes the historical use of the Site and surrounding area ascertained from historical records and information sources;
- Section 6.0 describes the Site and surrounding properties and facilities from our observations during the site reconnaissance;
- Section 7.0 summarizes information obtained from interviews of persons familiar with the Site;
- Section 8.0 presents our conclusions regarding RECs and recommendations for further environmental assessment, if any;
- Section 9.0 lists the references cited in this Phase I ESA report; and
- Section 10.0 provides a qualifications statement from the environmental professional responsible for the Phase I ESA and report.

1.1 Purpose and Definitions

The purpose of the Phase I ESA was to identify evidence or indications of RECs or other qualified RECs at the Site as defined by ASTM *Designation E1527-21* and/or any potential environmental concerns. ASTM *Designation E1527-21* defines an REC as "(1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous

substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment. A de minimis condition is not a recognized environmental condition." De minimis conditions are further described as "a condition related to a release that generally does not present a threat to human health or the environment and generally would not be the subject of the enforcement action if brought to the attention of appropriate governmental agencies. A condition determined to be a de minimis condition is not a recognized environmental condition nor a controlled recognized environmental condition."

ASTM *Designation E1527-21* also defines "Historical" and "Controlled" RECs (HREC and CREC, respectively). An HREC is defined as "a previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls (for example, activity and use limitations or other property use limitations)." A CREC is defined as "recognized environmental condition affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls (for example, activity and use limitations or other property use limitations)." An HREC is generally not an REC if a property meets current standards for unrestricted residential use. A CREC remains an REC by definition when a property does not meet the unrestricted residential use requirement unconditionally.

We define a "potential environmental concern" as a past use of the Site or adjoining or adjacent property that may have involved the use, storage, and/or release of hazardous substances or petroleum products that could have impacted the Site, but for which there are no records or other information to confirm that use, storage, or release. An example would be the possible application of pesticides to an agricultural field (i.e., irrigated row crop or orchard), but for which there are no records of such application or confirmation from a knowledgeable person (i.e., site owner/occupant/operator) that pesticides were used at the Site.

The Code of Federal Regulations (CFR) *Standards and Practices for All Appropriate Inquiries* (AAI; CFR Title 40, Part 312) identifies ASTM *Designation E 1527-21* as an acceptable guidance document for performing a Phase I ESA that satisfies the federal requirements for conducting AAI under Sections 101(35)(B)(ii) and (iii) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The purpose of AAI is to meet some of the requirements to qualify for certain landowner liability protections under CERCLA.

1.2 Phase I ESA Principles

The following principles are an integral part of ASTM *Designation E1527-21*:

- "**Uncertainty Not Eliminated** - No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a subject property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with a subject property, and this practice recognizes reasonable limits of time and cost."
- "**Not Exhaustive** - All Appropriate Inquiries does not mean an exhaustive assessment of a property. There is a point at which the cost of information obtained or the time required to gather it outweighs the usefulness of the information and, in fact, may be a material detriment to the orderly completion of transactions. One of the purposes of this practice is to identify a balance between the competing goals of limiting the costs and time demands inherent in performing an environmental site assessment and the reduction of uncertainty about unknown conditions resulting from additional information."
- "**Level of Inquiry is Variable** - Not every property will warrant the same level of assessment. Consistent with good commercial and customary standards and practices as defined at 42 U.S.C. § 9601(35)(B), the appropriate level of environmental site assessment will be guided by the type of property subject to assessment, the expertise and risk tolerance of the user, future intended uses of the subject property disclosed to the environmental professional, and the information developed in the course of the inquiry."
- **"Comparison with Subsequent Inquiry** - It should not be concluded or assumed that an inquiry was not all appropriate inquiries merely because the inquiry did not identify recognized environmental conditions in connection with a subject property. Environmental site assessments must be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made. Subsequent environmental site assessments should not be considered valid standards to judge the appropriateness of any prior assessment based on hindsight, new information, use of developing technology or analytical techniques, or other factors."
- **"Point in Time** - The environmental site assessment is based upon conditions at the time of completion of the individual environmental site assessment elements." The following table lists the Phase I ESA elements and the date they were completed:

Phase I ESA Element	Report Section	Completion Date
Physical Setting Resources	2.0	February 14, 2023
Government Records	4.0	February 28, 2023
Historical Records	5.0	February 14, 2023
Site Reconnaissance	6.0	February 13, 2023
Owner/Operator/Occupant Interviews	7.0	March 2, 2023
Local Government Official Interviews	4.0	March 1, 2023
Evaluation and Report	8.0	March 1, 2023

Therefore, the information contained herein is valid as of February 13, 2023, and will require an update after 180 days to reflect updated records and another site reconnaissance to assess current site conditions.

1.3 Scope of Services

Geocon Proposal No. LS-22-191 dated June 14, 2022, describes the services for this Phase I ESA. We performed the services as outlined in the proposal with the exception that we did not review Sanborn Fire Insurance Maps (Sanborn maps) as Environmental Data Resources, Inc. (EDR) indicated that Sanborn map coverage does not exist for the Site and vicinity.

The main components of the Phase I ESA and their objectives, as specified by the referenced standards, include the following:

- **Physical Setting:** We reviewed various references to obtain information concerning the topographic, geologic, and hydrologic/hydrogeologic characteristics of the Site and vicinity. Such information may be indicative of the direction and/or extent that a contaminant could be transported in the event of a spill or release on or near the Site.
- **Records Review:** We reviewed publicly available federal, state, and local regulatory agency records to obtain information that could potentially help identify RECs at or potentially affecting the Site.
- **Site History:** We reviewed historical information sources to assess previous uses of the Site and surrounding area and identify those that could have led to RECs on the Site. Those information sources included historical aerial photographs and topographic maps, and city directories. In addition, we conducted interviews with persons who were expected to be reasonably knowledgeable about historical and/or current uses and conditions at of the Site.
- **Site Reconnaissance:** We performed a site reconnaissance to observe site uses and conditions for evidence or indications of RECs. We viewed adjoining and adjacent offsite properties and features solely from the vantage of the Site and public thoroughfares.

1.4 Report Limitations

We prepared this Phase I ESA report exclusively for Raney. The information obtained is only relevant for the latest of the dates of the records reviewed, the latest site visit, and completion of interviews with governmental officials and/or site owner(s), occupant(s), and/or operator(s) as cited in Section 1.2.

Raney should recognize that a Phase I ESA is not a comprehensive site characterization and should not be construed as such. The findings and conclusions presented in this report are predicated on the site reconnaissance, information in the specified regulatory records, and information regarding the historical usage of the Site, as presented in this report. Raney should also understand that we did not assess the Site for wetlands or perform testing (sample collection and laboratory analysis) for asbestos-containing building materials, lead-containing paint, lead in drinking water, radon, mercury or other contaminants related to mining, methane, mold, per- and polyfluoroalkyl substances, or potential naturally occurring hazards such as asbestos and arsenic as part of this Phase I ESA. The Phase I ESA did not include sample collection or laboratory analysis, nor did it include the evaluation of regulatory compliance, cultural and historical resources, industrial hygiene, health and safety, ecological resources, endangered species, air quality or geologic hazards.

The information provided in this report is not meant to eliminate the risk involved in property transactions. No guarantee or warranty of the results of the Phase I ESA is implied within the intent of this report or any subsequent reports, correspondence or consultation, either express or implied. We strived to conduct the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.

1.5 Data Gaps and Significant Data Gaps

A data gap is defined by ASTM *Designation E1527-21* as "a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information." Data gaps could include such things as insufficient historical information, the inability to interview persons with direct site knowledge (e.g., the owner(s), past owner(s), tenants, workers, etc.) or the lack of access to all parts of a site during the site reconnaissance.

A "significant" data gap is defined by *ASTM Designation E1527-21* as "a data gap that affects the ability of the environmental professional to identify a recognized environmental condition." These data gaps are significant if "other information and/or professional experience raises reasonable concerns involving the effects of that data gap on the ability of the environmental professional to render an opinion regarding whether conditions exist that are indicative of recognized environmental conditions or controlled recognized environmental conditions."

We identified no significant data gaps during this Phase I ESA. Raney did not complete a user questionnaire (Section 3.0), which is a data gap for this Phase I ESA. As described in Section 1.2, we did not review Sanborn maps for the Site as EDR indicated that Sanborn map coverage does not exist for the Site and vicinity. However, we were able to review other sufficient historical information and therefore do not consider the lack of Sanborn map coverage a significant data gap.

2.0 SITE DESCRIPTION

This section describes the location and physical characteristics of the Site including its size, topography, geologic, soil, and hydrologic and hydrogeologic conditions of the Site.

2.1 Location and Legal Description

The Site is located at 14915 Shannon Road near Los Gatos in Santa Clara County, California (Figure 1). The Site is approximately 2.5 miles east of State Route (SR) 17 on the southern side of Blossom Hill in an area that is outside the Los Gatos city limits, but within the Town of Los Gatos's sphere of influence.

Within the Public Land Survey System of California, the Site is in the northeastern and northwestern portions of Sections 23 and 24, respectively, of Township 8 South, Range 1 West, Mount Diablo Base and Meridian.

The Site is identified by Santa Clara County assessor's parcel number 537-27-047. A parcel map depicting the Site is in Appendix A.

2.2 Site and Vicinity General Characteristics

The approximate 27.1-acre Site is predominantly fallow agricultural land with a residential area in the southern-central portion (Figure 2). The Site is surrounded primarily by low-density, single-family residential properties to the north and south with similar fallow agricultural property adjoining to the west of the Site and undeveloped property adjoining to the east.

2.2.1 Topography

The Site is situated on the southwestern flank of the northwest-southeast-trending Blossom Hill, a ridge that is the lowest-elevation expression of the Sierra Azul - the northeasternmost portion of the Santa Cruz Mountains. Elevations on the Site range from approximately 600 feet above mean sea level (MSL) in the southern portion of the Site along Shannon Road to approximately 800 feet MSL in the northern portion of the Site near the top of the Blossom Hill ridge line (USGS, 2021).

2.2.2 Geologic Conditions

We obtained site geologic information from a variety of sources including:

- *Geotechnical Investigation, 14915 Shannon Road* (Milstone Geotechnical, 2021);
- *California Geology* (Harden, 2003);
- *Note 36, California Geomorphic Provinces* (California Geological Survey [CGS], 2002); and
- *Geologic Map of the Los Gatos Quadrangle, Santa Clara & Santa Cruz Counties, California* (Dibblee, 2005).

Following are summaries of pertinent information obtained.

2.2.2.1 Geomorphic Region

The Site is located in the central portion of the Coast Ranges geomorphic province. The Coast Ranges are a series of generally northwest-southeast-trending mountain ranges that extend along California's Pacific coast from the Klamath Mountains in the north to the Transverse Range in the south and 50 to 80 miles inland. They form the western front of the Great Valley to the east, and are adjacent to the Pacific Ocean to the west. The Coast Ranges were formed by subducting, compressive, and transform tectonic plate motions and are composed of thick Mesozoic and Cenozoic sedimentary strata.

2.2.2.2 Geologic Formations/Stratigraphy

Nick Pappani, Vice President with Raney, provided us with a *Geotechnical Investigation* (GI) report dated May 17, 2021, prepared by Milstone Geotechnical (Milstone). Milstone's GI included excavation of eleven exploratory test pits to unspecified depths and drilling of 19 soil borings to depths ranging from 12.5 to 30 feet throughout the Site. Milstone's GI report shows that they encountered silty clay, sandy clay, sandy clay with gravel, clayey sand, and weathered bedrock from the surface to a depth of 10 feet,

and clay, silty clay, sandy clay, clayey silt, and weathered bedrock from 10 feet to 23 feet in the soil borings. Milstone encountered weathered bedrock from the surface to a depth of 2 feet in the northeastern portion of the Site, and at depths ranging from 8 to 14 feet in other areas of the Site. In the test pits, Milstone encountered alluvial and colluvial soil overlying weathered siltstone and sandstone.

The *Geologic Map of the Los Gatos Quadrangle, Santa Clara & Santa Cruz Counties, California* shows the surficial geology of the Site as the Temblor Sandstone, an early-to middle-Miocene arkosic, light gray to tan sandstone. The Temblor Sandstone overlies the Monterey Formation, a middle- to late-Miocene marine shale with fine-grained sandstone layers, which locally is mapped as outcropping to the north and south of the Temblor (Dibblee, 2005).

2.2.3 Soil Conditions

The United States Department of Agriculture – Natural Resources Conservation Service *Web Soil Survey* (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx) indicates that surficial soil on and in the vicinity of the Site is classified primarily as the Zeppelin-Alumrock complex, which is a sandy clay loam to fine sandy loam formed in weathered sandstone. Soil on the southeastern portion of the Site is classified as the Alo-Altamont complex, which is a clay to silty clay weathered from calcareous shale.

2.2.4 Hydrologic and Hydrogeologic Conditions

There are no surface water bodies on the Site. The nearest surface water is in Pheasant Creek approximately 0.8 miles southeast of the Site near the intersection of Shannon Road and Hicks Road.

Milstone's *Geotechnical Investigation* report indicates that they did not encounter groundwater in soil borings advanced on the Site to a maximum depth of 30 feet. No other site-specific groundwater information is available.

Information available on the California State Water Resources Control Board's GeoTracker (http://geotracker.waterboards.ca.gov) online data management system for the Arco Service Station #2155 at 5755 Camden Avenue in San Jose, approximately 1.5 miles northeast of the Site indicates that depth to groundwater there ranged from 27.1 to 34.8 feet in the fourth quarter 2012, and that groundwater flow was toward the northeast. However, given the distance of this facility from the Site, its location in the lower-elevation and flatter-lying Santa Clara Valley, and age of the available groundwater information, groundwater conditions beneath this facility are likely not representative of current groundwater conditions beneath the Site.

Information pertaining to groundwater in the vicinity of the Site is not available on the California Department of Water Resources' Sustainable Groundwater Management Act (SGMA) online data viewer.

2.3 Current and Planned Uses of the Site

The majority of the Site is former agricultural land not used for any purpose. An area in the southwestern portion of the Site is used to store and sell firewood, and an area in the southern-central portion of the Site is used for residential purposes. The residence is occupied by a tenant, and the firewood area is operated by a tenant not living at the Site. We understand that the Site is proposed for single-family residential development; however, the development project is in the early planning and entitlement (Raney's IS/MND) stage and therefore a developer is not yet involved.

2.4 Descriptions of Structures, Roads, Other Improvements on the Site

A house, four barns, and a corral are present in the residential area in the southern-central portion of the Site (Figure 3). Sky Lane extends generally northwest-southeast across the western portion of the Site. A rectangular (approximately 9 feet by 25 feet), in-ground vault-like feature of unknown use is located in the northeastern portion of the Site. This feature, while on the Site, is adjacent to a large water storage tank owned by the San Jose Water Company on the adjoining property to the east of this part of the Site and may be related to the tank. We were unable to identify the purpose or use of this vault-like feature. Further description of site conditions is in Section 6.0.

2.5 Current Uses of Adjoining Properties

Properties adjoining to the north and northeast of the Site and those adjacent to the south beyond Shannon Road are low-density, single-family residential properties. The adjoining property to the west of the Site is fallow (former) agricultural property similar to the Site and the adjoining property to the east of the southeastern portion of the Site is in an undeveloped, natural state. As described above, a San Jose Water Company water storage tank is on an adjoining property east of the northeastern portion of the Site.

3.0 USER–PROVIDED INFORMATION

We provided Mr. Pappani with a user questionnaire to be completed by Raney. The questionnaire has not been completed as of the date of this report.

3.1 Previous Documents

Mr. Pappani provided us with a *Phase I Environmental Site Assessment* report for the Site prepared by AWR Environmental (AWR) and dated June 2022. AWR performed their Phase I ESA for the Elam Family Trust, the site owner. In their report, AWR summarized their interview with the owner who indicated "the walnut orchards were periodically sprayed with pesticides, which ceased sometime in the 1970s." AWR concluded that the historical use of pesticides at the Site was an REC for the Site.

In May 2021, AWR collected four surficial soil samples at the locations shown on their Site Plan (Appendix B). Enthalpy Analytical analyzed the soil samples for organochlorine pesticides (OCP). The OCPs 4,4-DDE and 4,4-DDT were detected in each of the soil samples at concentrations ranging from

0.086 to 0.13 milligrams per kilogram (mg/kg) and 0.028 to 0.038 mg/kg, respectively. AWR compared the OCP concentrations detected in the soil samples to the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) Environmental Screening Levels (ESL) for 4,4-DDT and 4,4-DDE in soil in a residential setting, for construction worker exposure, and for their presence in terrestrial habitat. 4,4-DDT was detected in all soil samples at concentrations exceeding the ESL for terrestrial habitat of 0.0011 mg/kg, but all reported concentrations were less than the ESLs for soil a residential setting and construction worker exposure of 1.9 and 8.5 mg/kg, respectively.

We concur that the historical application of pesticides at the Site is an REC for the Site. However, AWR collected soil samples from only four locations in the southern-central portion of the Site, which is not representative of the extent of the former orchards on the Site. The former orchards are described further in Section 5.0., and our recommendations regarding additional investigation of site soil for OCPs and associated metals are provided in Section 8.0.

In their Phase I ESA report, AWR also states that the owner indicated that a well had been installed near the residence on the Site, but that the well did not produce "quality water" and was therefore never used. The well was reportedly "capped in place." AWR was unable to find the well during their site reconnaissance, and indicated that information pertaining to the well (i.e., a *Well Completion Report*) was not available. AWR recommended that he well be located, unearthed, and abandoned per Santa Clara Valley Water District requirements. We also did not identify information pertaining to a well at the Site nor did we observe evidence of a well during our site reconnaissance (Section 6.0).

3.2 Owner, Property Manager, and Occupant Information

We provided Raney with an owner/occupant questionnaire to be forwarded and completed by the site owner, Bud Elam. The owner/occupant questionnaire was completed by Mr. Elam's representative, Terrence Szewczyk, principal engineer with TS Civil Engineering. Information provided in the owner/occupant questionnaire is summarized in Section 7.0.

4.0 RECORDS REVIEW

This section summarizes information we obtained from readily available agency records pertaining to the Site and properties and facilities in the vicinity of the Site.

4.1 Standard Environmental Record Sources

EDR searched federal, state, and local environmental databases for the Site and properties/facilities within one mile of the Site. A copy of *The EDR Radius Map Report with GeoCheck* (database report), dated February 24, 2023, is in Appendix C.

The Site is not listed on the databases searched by EDR. The database report identifies three properties/facilities within ¼ mile of the Site, two of which are listed on the Certified Unified Program Agencies (CUPA) Listings database, a non-release-related[1] database, and therefore are unlikely to have caused an REC at the Site.

The database report identifies a residential property at 14922 Diduca Way, approximately 375 feet south of the Site, on the Leaking Underground Storage Tank (LUST), Cortese, and the California Environmental Reporting Systems (CERS) databases. The LUST case is for a release of heating oil to soil discovered during removal of an underground storage tank (UST) from that property in 2010. The EDR report indicates that approximately 40 cubic yards of petroleum-impacted soil were removed from the UST excavation and petroleum hydrocarbons were detected in "soil samples collected at the furthest extent of the excavation." The database report indicates that a "Preliminary Site Assessment" was performed in January 2012, and that the SFBRWQCB closed the LUST case in February 2012. This petroleum release is unlikely to have impacted the Site. Additional information regarding the LUST case for this property is described in Section 4.2.1.

4.2 Orphan Summary

The database report's Orphan Summary identifies properties and facilities that have incomplete address information and therefore could not be accurately plotted. The EDR Orphan Summary identifies the Shannon Valley Ranch Tract at the intersection of Shannon Road and Hicks Road approximately 0.8 miles southeast of the Site on the California Integrated Water Quality System Project (CIWQS) database (a non-release-related database). The Shannon Road Valley Ranch Tract listing on the CIWQS database and distance from the Site suggest it would not have caused an REC at the Site.

4.3 Other Environmental Record Sources

4.3.1 GeoTracker and EnviroStor

We reviewed information available on GeoTracker and the California Department of Toxic Substances Control's (DTSC) EnviroStor (http://www.envirostor.dtsc.ca.gov/public/) online data management system for information regarding documented environmental assessment and cleanup at the Site and/or properties/facilities within ¼ mile of the Site. No information pertaining to the Site or for any properties or facilities within ¼ mile of the Site is available EnviroStor.

GeoTracker identifies the LUST case at the residence at 14922 Diduca Way approximately 375 feet south of the Site as described in Section 4.1. A Preliminary Site Assessment performed for the Site in January 2012 by Weber, Hayes & Associates (WHA) included the collection and laboratory analysis of ten soil samples

[1] "Release" refers to an unauthorized release of a petroleum product or hazardous substance to the environment - i.e. the ground surface, soil, soil vapor, groundwater, or surface water on a property. "Release-related database" refers to those which provide information regarding an unauthorized release. "Non-release-related database" refers to those that may report use, storage, or disposal of hazardous substances and/or petroleum products or other environmental conditions, but do not report releases of such.

and one soil vapor sample. The soil samples were analyzed for total petroleum hydrocarbons as heating oil (TPHho), methyl tert-butyl ether (MTBE), and benzene, toluene, ethylbenzene, and xylenes, and the soil vapor sample was analyzed for volatile organic compounds. WHA indicated that the lateral and vertical extent of soil contamination was defined and was limited to the area beneath the UST release and approximately 15 feet laterally from the release, and that no vapor intrusion threat to current and/or future "building occupants" existed. WHA indicated that groundwater was not encountered during the assessment and that "groundwater has not been impacted and is likely not at risk of becoming impacted by the residual soil impacts." The soil only nature of the LUST case and demonstrated limited extent of impacts suggest that the release at this property would not have caused an REC at the Site.

4.3.2 Santa Clara County Department of Environmental Health

We submitted a request to the Santa Clara County Department of Environmental Health (SCCDEH) for records pertaining to the use, storage, or any releases of or violations related to hazardous substances and/or petroleum products at the Site. On March 1, 2023, Melissa Belloso with the SCCDEH, indicated that they have no such records for the Site.

4.3.3 California Geologic Energy Management Division

The California Geologic Energy Management Division's (CalGEM) Well Finder, an online petroleum (oil and natural gas) field and well mapping system does not identify any oil or gas wells or fields on or in the vicinity of the Site. The nearest oil or gas feature is a plugged/abandoned well approximately 1.65 miles northwest of the Site (CalGEM, 2022), which is too far from the Site to be of concern.

4.3.4 National Pipeline Mapping System

The National Pipeline Mapping System (NPMS) online pipeline mapping system does not show any natural gas or liquid petroleum pipelines on or in the vicinity of the Site (USDOT, 2022). The nearest pipeline is approximately 2.5 miles northwest of the Site, which is too far from the Site to be of concern.

5.0 HISTORICAL USE

We evaluated the historical use of the Site and adjacent properties through review of historical aerial photographs, topographic maps, and city directories provided by EDR. This section summarizes information obtained from these sources.

5.1 Aerial Photographs

We reviewed historical aerial photographs provided by EDR for the years 1939, 1948, 1950, 1956, 1963, 1968, 1974, 1982, 1998, 2005, 2009, 2012, and 2016 (Appendix D) for indications of past land uses that had the potential to have impacted the Site through the use, storage or disposal of hazardous substances and/or petroleum. The following table summarizes our observations of the Site and adjacent properties on the historical aerial photographs.

Year	Observations	
	Site	Adjoining and Adjacent Properties
1939 (1" = 500')	Two structures were present in the southern-central portion of the Site. A road (current Sky Lane) extended across the western portion of the Site. Orchards were present in the southern and central-northern portions of the Site. The western and eastern portions of the Site appear to have been undeveloped and/or fallow agricultural land. Unimproved roads were present on the Site.	A road (current Shannon Road) was adjacent to the south of the Site, beyond which were orchards and rural (larger acreage) residential properties. Orchards were also present on properties west and east of the Site. Undeveloped and/or fallow agricultural land was north and east of the Site.
1948 (1" = 500')	Conditions were generally similar to those observed on the 1939 photograph.	Conditions were generally similar to those observed on 1939 photograph.
1950 (1" = 500')	Conditions were generally similar to those observed on the 1948 photograph.	Conditions were generally similar to those observed on the 1948 photograph.
1956 (1" = 500')	Conditions were generally similar to those observed on the 1950 photograph.	Conditions were generally similar to those observed on the 1950 photograph.
1963 (1" = 500')	Conditions were generally similar to those observed on the 1956 photograph except that some orchards that had been on the Site in 1956 were no longer present.	Conditions were generally similar to those observed on the 1956 photograph. Low-density, single-family residential development was present north of the Site.
1968 (1" = 500')	Conditions were generally similar to those observed on the 1963 photograph.	Conditions were generally similar to those observed on the 1963 photograph. Additional single-family residences were present on adjoining or adjacent properties north of the Site.
1974 (1" = 500')	Conditions were generally similar to those observed on the 1968 photograph with the exception that a shed or animal shade structure was present in the western portion of the Site near Sky Lane.	Conditions were generally similar to those observed on the 1968 photograph.
1982 (1" = 500')	Conditions were generally similar to those observed on the 1974 photograph. Only two relatively small areas of orchards (or remnants of orchards) were on the Site.	Conditions were generally similar to those observed on the 1974 photograph.
1998 (1" = 500')	Conditions were generally similar to those observed on the 1982 photograph.	Conditions were generally similar to those observed on the 1982 photograph. Additional single-family residences were present east of the Site.
2005 (1" = 500')	Conditions were generally similar to those observed on the 1998 photograph with the exception that an area of light color, suggesting graded or disturbed soil, was present in the central-southern portion of the Site on the southeastern side of the residential area. This light-colored area has the appearance of a corral or riding area.	Conditions were generally similar to those observed on the 1998 photograph.

Year	Observations	
	Site	Adjoining and Adjacent Properties
2009 (1" = 500')	Conditions were generally similar to those observed on the 2005 photograph with the exception that additional light-colored areas were present in the southwestern portion of the Site and unimproved roads (or possibly mowed or plowed fire breaks) appear to have been present.	Conditions were generally similar to those observed on the 2005 photograph.
2012 (1" = 500')	Conditions were generally similar to those observed on the 2009 photograph.	Conditions were generally similar to those observed on the 2009 photograph.
2016 (1" = 500')	Conditions were generally similar to those observed on the 2012 photograph.	Conditions were generally similar to those observed on the 2012 photograph.

The past agricultural use (orchard cultivation) of the Site from sometime prior to 1939 until sometime between 1956 and 1963, after which the orchards appear to have gradually been removed or not maintained, suggests that pesticides may have been applied and persistent pesticides, such as OCPs and associated metals could be present in soil as a result. As described in Section 3.1, AWR confirmed the presence of pesticides in soil in the area that they investigated, which is an REC for the Site. Pesticides and metals may be present in soil in other former orchard areas of the Site that have yet to be assessed.

5.2 Topographic Maps

We reviewed historical topographic maps provided by EDR for the years 1916, 1919, 1940, 1943, 1947, 1953, 1968, 1973, 1980, 2012, 2015, and 2018 (Appendix E). The following table summarizes our observations of the Site and adjacent properties on the historical topographic maps.

Year	Observations	
	Site	Adjoining and Adjacent Properties
1916 (1: 48,000)	No structures or land uses are depicted on the Site.	A road (current Shannon Road) is depicted along the southern site boundary.
1919 (1: 62,500)	Conditions depicted are similar to those on the 1916 map.	Conditions depicted are similar to those on the 1916 map. Structures are depicted east and west of the Site along Shannon Road.
1940 (1: 62,500)	Conditions depicted are similar to those on the 1919 map.	Conditions depicted are similar to those on the 1919 map.
1943 (1: 62,500)	Conditions depicted are similar to those on the 1940 map.	Conditions depicted are similar to those on the 1940 map.
1947 (1: 50,000)	Conditions depicted are similar to those on the 1943 map.	Conditions depicted are similar to those on the 1943 map.

Year	Observations	
	Site	Adjoining and Adjacent Properties
1953 (1: 24,000)	A structure is depicted in the southwestern portion of the Site and a northwest-southeast-trending road (current Sky Lane) is depicted in the western portion of the Site. Orchards are depicted in the southern portion of the Site.	Conditions depicted are similar to those on the 1947 map. Structures are depicted along a road (current Sky Lane) north of the Site. A windmill is also depicted north of the Site. Orchards are depicted west, south, and southeast of the Site.
1968 (1: 24,000)	Conditions depicted are similar to those on the 1953 map. Two structures are depicted in the southwestern portion of the Site.	Conditions depicted are similar to those on the 1953 map.
1973 (1: 24,000)	Conditions depicted are similar to those on the 1968 map.	Conditions depicted are similar to those on the 1968 map.
1980 (1: 24,000)	Conditions depicted are similar to those on the 1973 map. Three structures are depicted in the southwestern portion of the Site.	Conditions depicted are similar to those on the 1973 map
2012, 2015, and 2018 (1: 24,000)	Conditions depicted are similar to those on the 1980 map, however structures and orchards are not depicted on the maps.	Conditions depicted are similar to those on the 1980 map, however structures and orchards are not depicted on the maps.

As observed on the aerial photographs described in Section 5.1, the 1953 through 1980 topographic maps depict orchards on the Site. The confirmed presence of pesticides in soil in the area of the Site previously investigated is an REC for the Site. The topographic maps do not depict any other features or land uses on the Site or adjacent properties that could have caused an REC at the Site.

5.3 City Directories

EDR prepared an abstract of city directories including city, cross-referenced, and telephone directory listings (Appendix F). EDR included information from directories at approximate 5-year intervals, if available, from 1962 to 2017. City directories list "Elam, Ray Jr" for the Site from 1971 through 1995, and "Elam, Ray J", "Elam, Ray M", or "Elam, Ray" for 2000 through 2017. The city directories primarily list individual residents for properties along Shannon Road, with the exception of the property at 15110 Shannon Road approximately 0.12 miles southwest of the Site. The following businesses are listed for this address:

- ACT (acronym undefined) for 1995, 1992 and 1985;
- Asbestos Removal & Consultants for 1995 and 1985; and
- Maintenance Men Parking Lot for 1995 and 1985.

Historical aerial photographs and Google Earth imagery show that 15110 Shannon Road was a residential property during the years listed above and was likely a mailing address or home office for the listed businesses.

6.0 SITE RECONNAISSANCE

This section summarizes our observations of the Site and surrounding properties during the site reconnaissance.

6.1 Methodology and Limiting Conditions

Christine Hughes, Senior Staff Geologist with Geocon, performed the site reconnaissance on December 6, 2022, by driving and walking throughout the Site unaccompanied to observe site features and conditions. Ms. Hughes observed the Site again on February 13, 2023, and confirmed that site features and conditions had not changed since the reconnaissance on December 6, 2022. Mr. Elam provided us access to the Site by unlocking all gates and doors prior to our arrival, with the exception of the residence. No one was on the Site at any time during our reconnaissance. Ms. Hughes performed the offsite survey by observing adjoining and adjacent properties from the Site and public roads. Weather on the day of the site reconnaissance was partly cloudy with temperatures in the mid-50s°F. Photographs of various site features and offsite properties are appended.

6.2 Site Setting

The Site is situated in an area of low-density, single-family residential use with some agricultural use (vineyards) on surrounding and nearby properties.

6.3 Onsite Survey

The Site is primarily former agricultural land (Photo 1) with remnants of orchards and a "residential area" in the southern-central portion of the Site. Overgrown unimproved roads/firebreak lines (Photo 2) extend through the former and remnant orchards in the northern and southern portions of the Site. Sky Lane, a private road, extends northeast-southwest across the western portion of the Site (Photo 3). Wire-mesh fencing is present along the site boundaries and throughout the Site to partition portions of the Site. The partitions appear to have been for horses or other animals, however, we did not observe animals or evidence of them (i.e., water troughs, food, trampled areas or areas devoid of vegetation because of animal use, manure) on the Site during our reconnaissance.

The residential area includes a single-story residence, a western barn and single-room barn/shed structure, an eastern barn, and a corral. Following are descriptions of the interior and exterior portions of the Site that we observed during our site reconnaissance.

6.3.1 Interior Areas

A barn (Photo 4) is present in the area in the southwestern portion of the Site, west of Sky Lane that is used to store and sell firewood. We observed miscellaneous items such as storage tubs, tools, small-quantity (≤ 5 gallons) gasoline cans, propane tanks, and other liquid contents, cement bags, and other items (Photo 5) in the barn. The barn appears to have been constructed on a concrete slab with some

wooden flooring overlying portions of the slab throughout the barn, (Photo 5), therefore small-quantity spills of chemicals may not impact the subsurface. We also observed two trucks near the barn during our site reconnaissance.

Two barn/shed structures (Photo 6) are situated to the west of the occupied residence (Photo 7) in the residential area of the Site east of Sky Lane (Figure 3). One of the barn/shed structures is a predominantly empty, single-room structure (Photo 8). The other barn consists of a feeding room for cats (Photo 9), empty horse stalls (Photo 10), and a space used as a garage by the residence tenant. The tenant garage space contains hand and power tools, metal and wood debris, typical household items, and small-quantity household and automotive chemicals (Photos 11 and 12). The chemicals are in a portion of the barn with a concrete slab floor, therefore small-quantity spills would not likely impact the subsurface. We observed a truck-bed camper near the tenant portion of the barn (Photo 13).

Another barn (Photo 14) is situated east of the residence ("Eastern Barn", Figure 3) This barn consists of a feeding area for cats, empty horse stalls, and a predominantly empty portion containing cardboard boxes, and miscellaneous household items (Photo 15).

6.3.2 Exterior Areas

In the firewood area in the southwestern portion of the Site we observed piles of wood and lumber, miscellaneous items such as ladders and hand tools, and tarp-covered vehicles and equipment (Photo 16). The equipment included a truck, trailers, and plastic carboy water container (Photo 17). A gravesite (Photo 18) is in the northwestern portion of the Site. Mr. Elam indicated that a chicken is buried at the gravesite.

In the southern-central portion of the Site, east of the residence we observed a propane tank and an inoperable trailer-mounted pesticide tank (Photo 19). Further to the east (east of the eastern barn) is a circular corral or riding ring (Photo 20). We observed several concrete pipe sections (Photo 21) that appear to have been laid as a border to a riding or parking area adjacent to the west of the corrals. The pipe did not appear to be transite (asbestos-containing). The area surrounded by the concrete pipe sections appears to have been filled and graded (Photo 22). However, Mr. Elam indicated that the area has always been "relatively flat" and that his father "cut the northern side [of the area] and pushed it to the south." Mr. Elam also indicated that this area does not contain fill, but native soil mixed with a significant amount of cow and horse manure.

We observed agricultural equipment on the northern side of the residential area (Photo 23). Photo 24 shows remnants of orchards in the eastern portion of the Site. Overhead electrical power lines (Photo 25) extend northeast-southwest across the eastern portion of the Site; however, we observed no power line poles or pole-mounted transformers on the Site. A vault-like feature is in the northeastern portion of the Site (Photo 26). We asked Mr. Elam for more information pertaining to this feature; however, we have not received a response as of the date of this report.

As described in Section 3.0 and 5.1, AWR confirmed in an interview with the site owner that pesticides were applied to orchards on the Site in the past, which is an REC for the Site. Additionally, the presence of vehicles and gasoline-powered equipment, and the likely use of gasoline-powered tools (i.e., chainsaw) in the firewood area in the southwestern portion of the Site suggests that minor-quantity petroleum product releases to soil may have occurred, which is a potential environmental concern for the Site.

6.4 Offsite Survey

Properties adjoining the Site to the north are developed with single-family residences (Photo 27) as are properties south of the Site beyond Shannon Road (Photo 28). The property adjoining to the west is fallow, former agricultural land (Photo 29) and the property adjoining to the east is undeveloped property in a generally natural state (Photo 30). As described in Section 2.5, A San Jose Water Company water storage tank (Photo 31) is on the adjoining property northeast of the Site.

We observed no conditions or uses on adjoining and adjacent properties likely to cause or have caused an REC at the Site.

7.0 INTERVIEWS

As described in Section 3.2, we provided Mr. Elam with an owner/occupant questionnaire through Raney regarding past and present use of the Site and the potential for impacts related to the use, storage, or disposal of hazardous substances and/or petroleum products on the Site. Mr. Szewczyk, Mr. Elam's representative completed the questionnaire, a copy of which is in Appendix G.

Mr. Szewczyk indicated that the Elam family has owned the property since 1945 and that it has been used for residential and commercial (firewood sales) purposes for 77 years. He listed "barns and sheds" and a single-family home as the existing structures on the Site. Mr. Szewczyk indicated that the Site was previously planted with a walnut orchard that is no longer active. He also stated that he is aware of the previous use of pesticides on orchards at the Site. The confirmed presence of OCPs in soil in the area of the previously investigated is an REC for the Site. OCPs and associated metals may also be present in soil in other areas of the Site that have yet to be investigated.

8.0 CONCLUSIONS AND RECOMMENDATIONS

We have performed a Phase I ESA, in general conformance with the scope and limitations of ASTM *Designation E1527-21* of the property and improvements at 14915 Shannon Road near Los Gatos in Santa Clara County, California. Exceptions to, or deletions from, this practice are described in Section 1.4.

The Site was used for agricultural purposes (orchard cultivation) from sometime prior to 1939 until sometime between 1956 and 1963, after which the orchards appear to have gradually been removed or not maintained. AWR's investigation confirmed the presence of OCPs in soil in one area of the Site, which is an REC for the Site. OCPs and associated metals including arsenic and lead may be present in soil in other areas of the Site not yet assessed. We recommend further assessment of soil on the Site for the potential presence of OCPs and arsenic as described in our *Proposal – Change Order Request No. 1, Phase II Environmental Site Assessment* for the Site dated November 15, 2022.

The presence of gasoline-powered vehicles, equipment, and hand tools in the firewood area in the southwestern portion of the Site suggests the potential for small-quantity petroleum product releases, which may have impacted soil in this area and is a potential environmental concern for the Site.

If Raney and the Town of Los Gatos would like to determine whether petroleum products have impacted soil in the firewood area, soil samples that we proposed be collected in the firewood area in the southwestern portion of the Site and analyzed for the potential presence of pesticides and associated metals could also be analyzed for petroleum hydrocarbons.

We also recommend that the water supply well identified by AWR during their Phase I ESA be located and destroyed in accordance with Santa Clara Valley Water District requirements.

A user questionnaire has not yet been completed and is a data gap for this Phase I ESA.

9.0 REFERENCES

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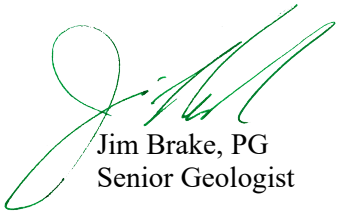
10.0 QUALIFICATIONS

This Phase I ESA report was prepared by Christine Hughes, and Jim Brake, PG. Ms. Hughes has experience performing Phase I and Phase II ESAs, subsurface drilling methods, soil and groundwater sampling, groundwater monitoring well installations, and sampling. She is also responsible for preparation of reports, work plans, health and safety plans, and quarterly groundwater monitoring reports. Ms. Hughes has performed Phase I and II ESAs on properties throughout California.

Mr. Brake has an MS degree in Geological Science and 35 years of experience in environmental investigation and remediation, including implementation of Remedial Investigation/Feasibility Study programs and soil and groundwater remedial actions for private industrial and government clients. He has managed a wide variety of projects for clients in the manufacturing, transportation, mining, automobile and real estate industries including Environmental Protection Agency and DTSC Superfund sites. Mr. Brake has extensive experience in the performance of Phase I and II ESAs of commercial, industrial, and agricultural properties throughout California.

I declare that, to the best of my professional knowledge and belief, I meet the definition of environmental professional as defined in §312.10 of 40 CFR 312 and I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries investigation in conformance with the standards and practices set forth in 40 CFR Part 312.



Jim Brake, PG
Senior Geologist

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Los Gatos,
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SITE LOCATION MAP

S2421-07-01	March 2023	Figure 1

N

LEGEND:

Approximate Site Boundary

1 Site Photograph Location & Orientation

0 200

Scale in Feet

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SITE PLAN

S2421-07-01	March 2023	Figure 2

LEGEND:

1 Site Photograph Location & Orientation

N

0 50

Scale in Feet

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RESIDENCE AREA

S2421-07-01	March 2023	Figure 3

Photo No. 1 View across the eastern portion of the Site from the southeastern portion of the Site

Photo No. 2 View to the west of typical unimproved road covered in vegetation in southern portion of the Site

PHOTOS NO. 1 & 2

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Photo No. 3 View to the north along Sky Lane in the western portion of the Site

Photo No. 4 Barn in firewood area in southwestern portion of the Site

PHOTOS NO. 3 & 4

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Photo No. 5 Various items stored in barn in southwestern portion of the Site

Photo No. 6 View to the east of two barns west of residence in southern-central portion of the Site

PHOTOS NO. 5 & 6

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Photo No. 7 View to the northwest of residence in southern-central portion of the Site

Photo No. 8 Single-room barn in southern-central portion of the Site

PHOTOS NO. 7 & 8

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Photo No. 9 Cat-feeding room in barn in southern-central portion of the Site

Photo No. 10 Empty animal stalls in barn in southern-central portion of the Site

PHOTOS NO. 9 & 10

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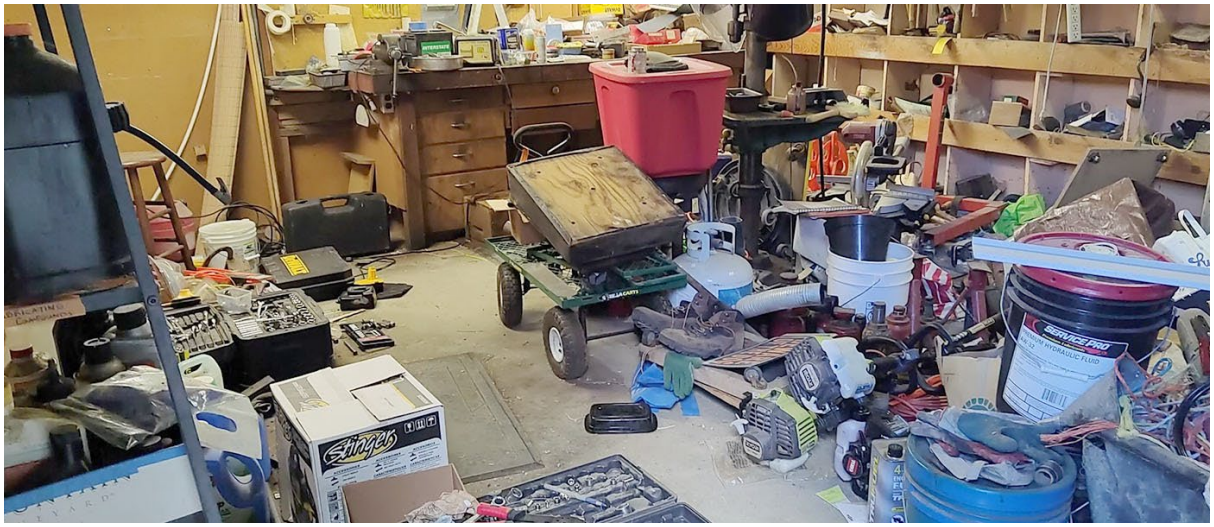

Photo No. 11 Tenant garage storage space in southern-central portion of the Site

Photo No. 12 Tenant storage space in southern-central portion of the Site

PHOTOS NO. 11 & 12

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Photo No. 13 Truck-bed camper near tenant portion of barn in southern-central portion of the Site

Photo No. 14 View to the southeast of eastern barn in southern-central portion of the Site

PHOTOS NO. 13 & 14

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Photo No. 15 Interior of eastern barn in southern-central portion of the Site

Photo No. 16 Firewood and covered vehicle in southwestern portion of the Site

PHOTOS NO. 15 & 16

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Photo No. 17 Above-ground storage tank in southwestern portion of the Site

Photo No. 18 Apparent gravesite in northwestern portion of the Site

PHOTOS NO. 17 & 18

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Photo No. 19 Inoperable trailer-mounted pesticide tank in southern-central portion of the Site

Photo No. 20 Circular corral/riding ring in southern-central portion of the Site

PHOTOS NO. 19 & 20

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Photo No. 21 Concrete pipe sections bordering area adjacent to west of the corral/riding ring

Photo No. 22 View to the west-northwest showing elevated, graded area beneath corral in southern-central portion of the Site

PHOTOS NO. 21 & 22

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Photo No. 23 Agricultural equipment on northern side of residential area

Photo No. 24 Remnant orchard in the eastern portion of the Site

PHOTOS NO. 23 & 24

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Photo No. 25 Northeast-southwest-trending overhead power lines in eastern portion of the Site

Photo No. 26 Vault feature in northeastern portion of the Site

PHOTOS NO. 25 & 26

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Photo No. 27 View to the northwest of single-family residential property north of the Site

Photo No. 28 View to the southwest across eastern portion of the Site and Shannon Road of single-family residential properties south of the Site

PHOTOS NO. 27 & 28

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Photo No. 29 View to the northwest of fallow, former agricultural property adjoining to the west of the Site

Photo No. 30 View to the south of undeveloped property adjoining to the east of the Site

PHOTOS NO. 29 & 30

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Photo No. 31 Vault feature in northeastern portion of the Site, beyond which is San Jose Water Co. water storage tank on adjoining property northeast of the Site

PHOTO NO. 31

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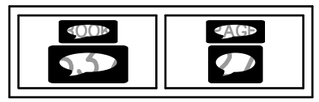
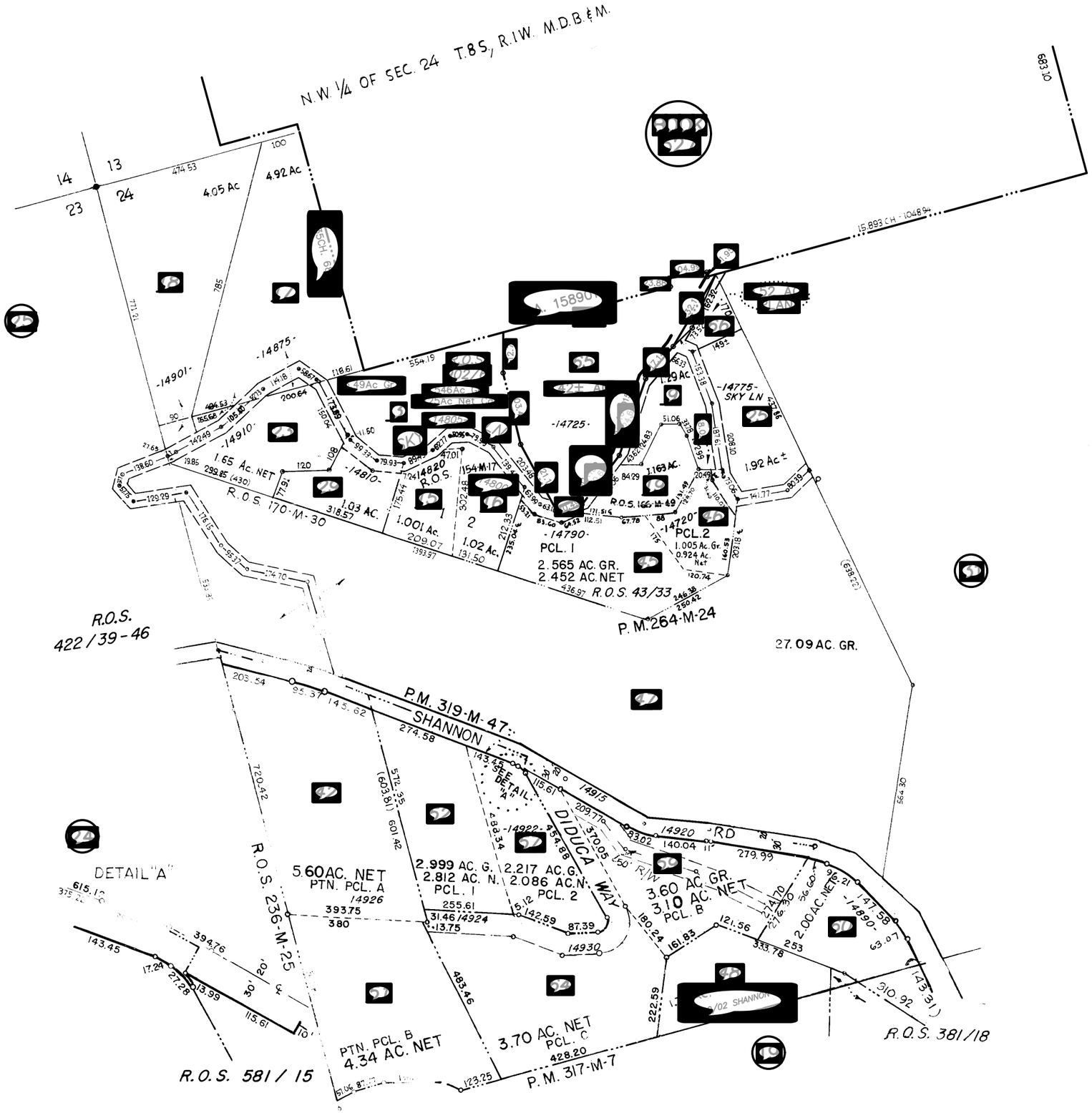
APPENDIX A





DET. MAP

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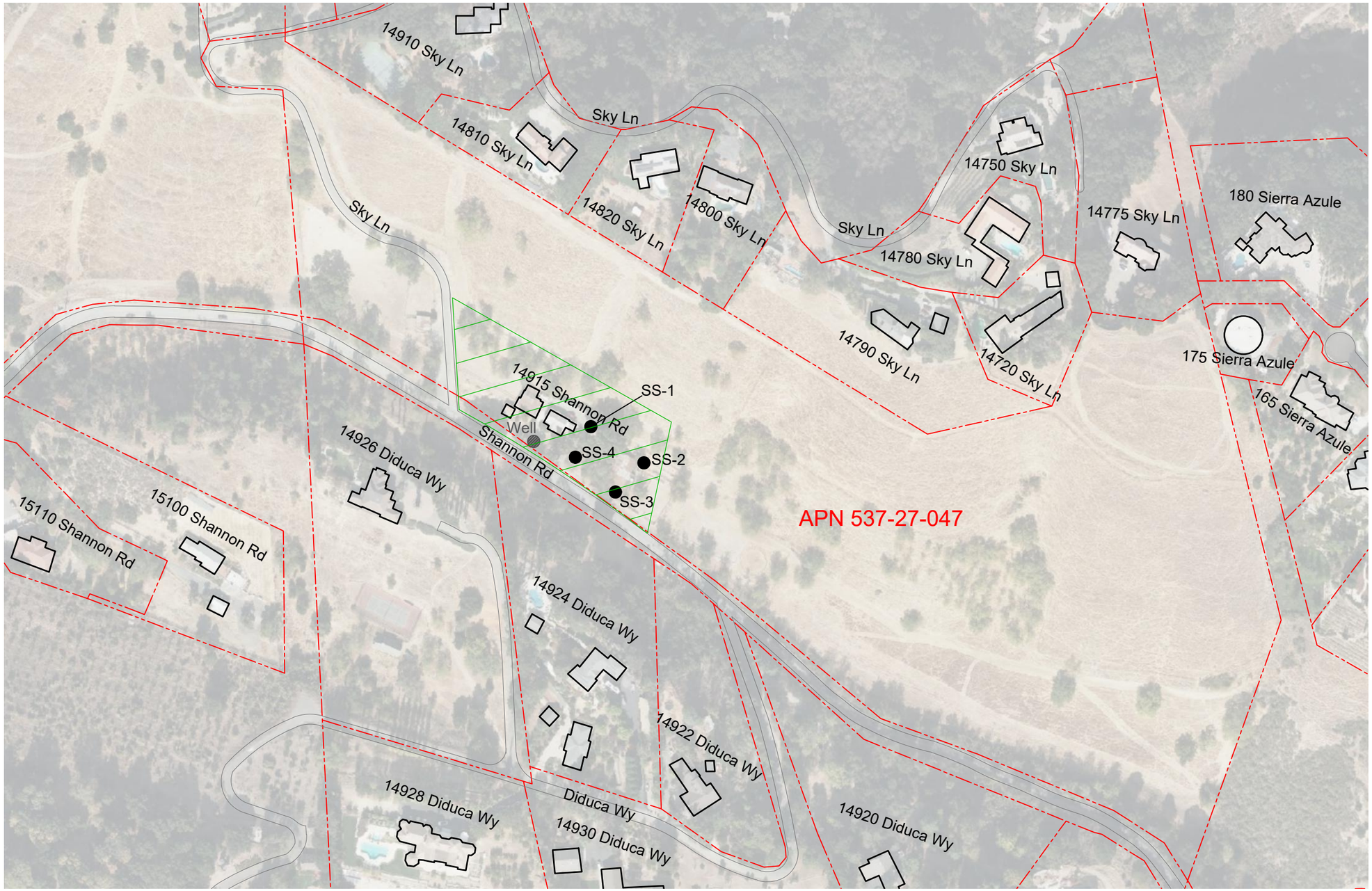
...ve Roll Year 2021...

APPENDIX B



LEGEND

0 200 400
SCALE IN FEET

Parcel Boundary
Existing Building
SS-1 Soil Sample Location
Approximate Area of Walnut Orchard

AWR ENVIRONMENTAL

FIGURE 2

Site Map

14915 Shannon Rd, Los Gatos CA

APPENDIX C

Shannon Road
14915 Shannon Road
Los Gatos, CA 95032

Inquiry Number: 7171414.2s
November 07, 2022

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
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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 (E1527-21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

14915 SHANNON ROAD
LOS GATOS, CA 95032

COORDINATES

Latitude (North):	37.2244890 - 37ˆ 13' 28.16''
Longitude (West):	121.9276600 - 121ˆ 55' 39.57''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	595135.2
UTM Y (Meters):	4120111.0
Elevation:	752 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	12008734 LOS GATOS, CA
Version Date:	2018

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140606
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
14915 SHANNON ROAD
LOS GATOS, CA 95032

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	FRONTIER CALIFORNIA	SHANNON RD @ DIDUCA	CUPA Listings	Lower	21, 0.004, SW
2	DIDUCA WAY	14922 DIDUCA WAY	LUST, Cortese, CERS	Higher	474, 0.090, SW
3	AT&T MOBILITY-SHANNO	15100 SHANNON RD	CUPA Listings	Lower	597, 0.113, West
4	SJWC - BELGATOS STAT	350 BELGATOS RD	CPS-SLIC, CERS	Lower	2252, 0.427, 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

Lists of Federal NPL (Superfund) sites

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---------- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---------- Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System

US ENG CONTROLS---- Engineering Controls Sites List
US INST CONTROLS---- Institutional Controls Sites List

Federal ERNS list

ERNS---- Emergency Response Notification System

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE---- State Response Sites

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR---- EnviroStor Database

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF---- Solid Waste Information System

Lists of state and tribal leaking storage tanks

INDIAN LUST---- Leaking Underground Storage Tanks on Indian Land
HIST LUST---- HIST LUST - Fuel Leak Site Activity Report

Lists of state and tribal registered storage tanks

FEMA UST---- Underground Storage Tank Listing
UST---- Active UST Facilities
AST---- Aboveground Petroleum Storage Tank Facilities
INDIAN UST---- Underground Storage Tanks on Indian Land

Lists of state and tribal voluntary cleanup sites

INDIAN VCP---- Voluntary Cleanup Priority Listing
VCP---- Voluntary Cleanup Program Properties

Lists of state and tribal brownfield 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

WMUDS/SWAT---- Waste Management Unit Database
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

IHS OPEN DUMPS ---------- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---------- Delisted National Clandestine Laboratory Register
HIST Cal-Sites ---------- Historical Calsites Database
SCH ---------- School Property Evaluation Program
CDL ---------- Clandestine Drug Labs
Toxic Pits ---------- Toxic Pits Cleanup Act Sites
CERS HAZ WASTE ---------- CERS HAZ WASTE
US CDL ---------- National Clandestine Laboratory Register
AQUEOUS FOAM ---------- Former Fire Training Facility Assessments Listing
PFAS ---------- PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST ---------- SWEEPS UST Listing
HIST UST ---------- Hazardous Substance Storage Container Database
CERS TANKS ---------- California Environmental Reporting System (CERS) Tanks
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

RCRA NonGen / NLR ---------- RCRA - Non Generators / No Longer Regulated
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
FUSRAP Formerly Utilized Sites Remedial Action Program
UMTRA Uranium Mill Tailings Sites
LEAD SMELTERS Lead Smelter Sites
US AIRS Aerometric Information Retrieval System Facility Subsystem
US MINES Mines Master Index File
ABANDONED MINES Abandoned Mines
FINDS Facility Index System/Facility Registry System
UXO Unexploded Ordnance Sites
ECHO Enforcement & Compliance History Information
DOCKET HWC Hazardous Waste Compliance Docket Listing
FUELS PROGRAM EPA Fuels Program Registered Listing
CA BOND EXP. PLAN Bond Expenditure Plan
DRYCLEANERS Cleaner Facilities
EMI Emissions Inventory Data
ENF Enforcement Action Listing
Financial Assurance Financial Assurance Information Listing
ICE ICE
HIST CORTESE Hazardous Waste & Substance Site List
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
HAZNET Facility and Manifest Data
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
HAZMAT Hazardous Material Facilities
UIC UIC Listing
UIC GEO UIC GEO (GEOTRACKER)
WASTEWATER PITS Oil Wastewater Pits Listing
WDS Waste Discharge System
WIP Well Investigation Program Case List
MILITARY PRIV SITES MILITARY PRIV SITES (GEOTRACKER)
PROJECT PROJECT (GEOTRACKER)
WDR Waste Discharge Requirements Listing
CIWQS California Integrated Water Quality System
CERS CERS
NON-CASE INFO NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ Well Stimulation Project (GEOTRACKER)
HWTS Hazardous Waste Tracking System
MINES MRDS Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Hist Auto---------- EDR Exclusive Historical Auto Stations
EDR Hist Cleaner---------- EDR Exclusive Historical 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.

STANDARD ENVIRONMENTAL RECORDS

Lists of state and tribal leaking storage tanks

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there is 1 LUST site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
DIDUCA WAY	***14922 DIDUCA WAY***	***SW 0 - 1/8 (0.090 mi.)***	***2***	***9***

Database: LUST SANTA CLARA, Date of Government Version: 03/03/2014
Database: LUST, Date of Government Version: 05/23/2022
Status: Completed - Case Closed
Date Closed: 02/28/2012
Global Id: T10000002022
SCVWD ID: 08S1W24E01F

CPS-SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the CPS-SLIC list, as provided by EDR, has revealed that there is 1 CPS-SLIC site within

approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SJWC - BELGATOS STAT	***350 BELGATOS RD***	***ENE 1/4 - 1/2 (0.427 mi.)***	***4***	***13***

Database: CPS-SLIC, Date of Government Version: 05/23/2022
Global Id: T10000011565
Facility Status: Open - Assessment & Interim Remedial Action

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

Cortese: 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).

A review of the Cortese list, as provided by EDR, and dated 06/21/2022 has revealed that there is 1 Cortese site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
DIDUCA WAY	***14922 DIDUCA WAY***	***SW 0 - 1/8 (0.090 mi.)***	***2***	***9***

Cleanup Status: COMPLETED - CASE CLOSED

CUPA Listings: 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.

A review of the CUPA Listings list, as provided by EDR, has revealed that there are 2 CUPA Listings sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
FRONTIER CALIFORNIA	SHANNON RD @ DIDUCA	SW 0 - 1/8 (0.004 mi.)	1	9

Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2022

AT&T MOBILITY-SHANNO	15100 SHANNON RD	W 0 - 1/8 (0.113 mi.)	3	13

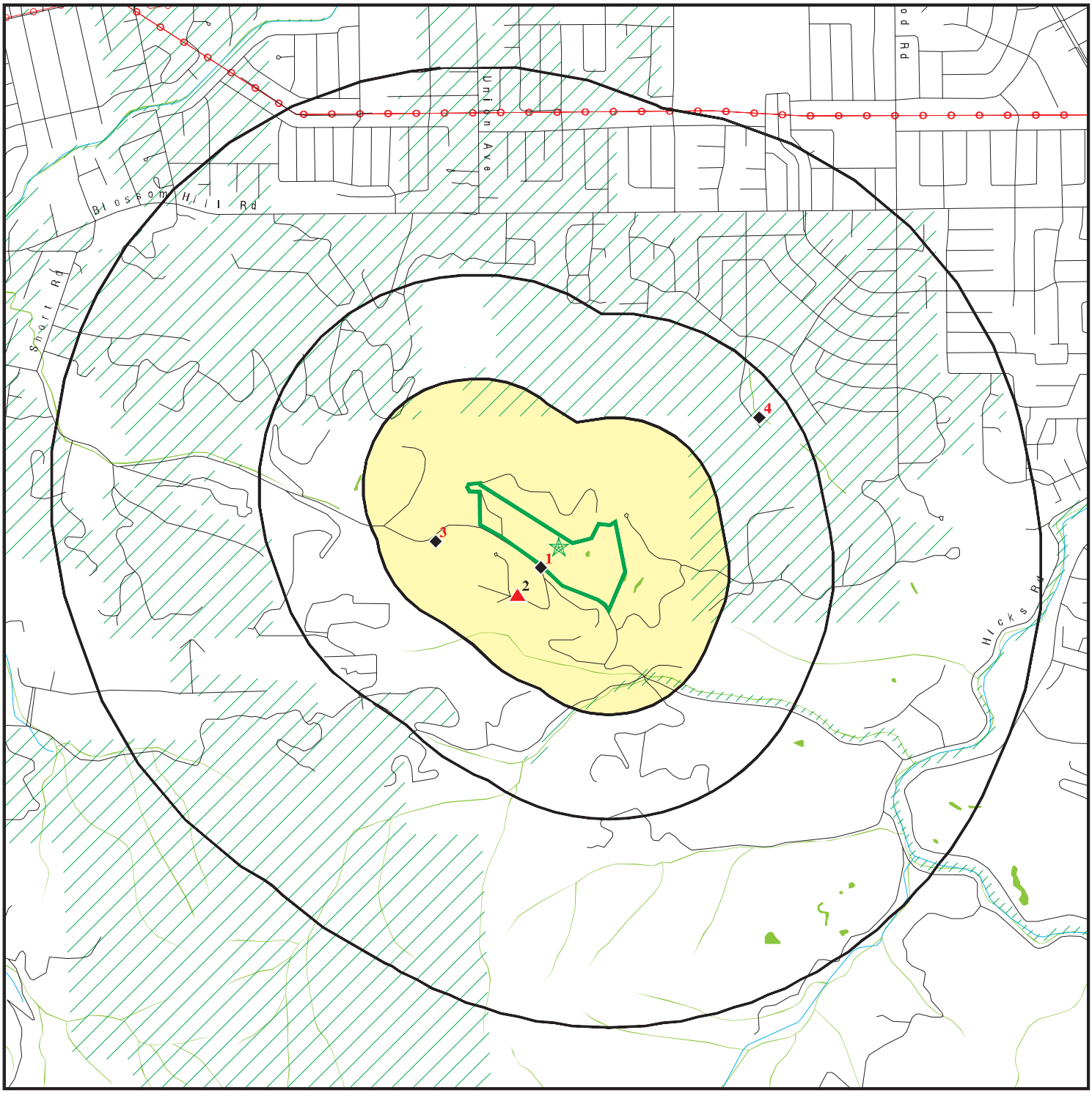
Database: CUPA SANTA CLARA, Date of Government Version: 05/16/2022

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
SHANNON VALLEY RNCH TRACT 9505	CIWQS

OVERVIEW MAP - 7171414.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- 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: Shannon Road ADDRESS: 14915 Shannon Road Los Gatos CA 95032 LAT/LONG: 37.224489 / 121.92766	CLIENT: Geocon Consultants, Inc. CONTACT: Christine Hughes INQUIRY #: 7171414.2s DATE: November 07, 2022 6:30 pm

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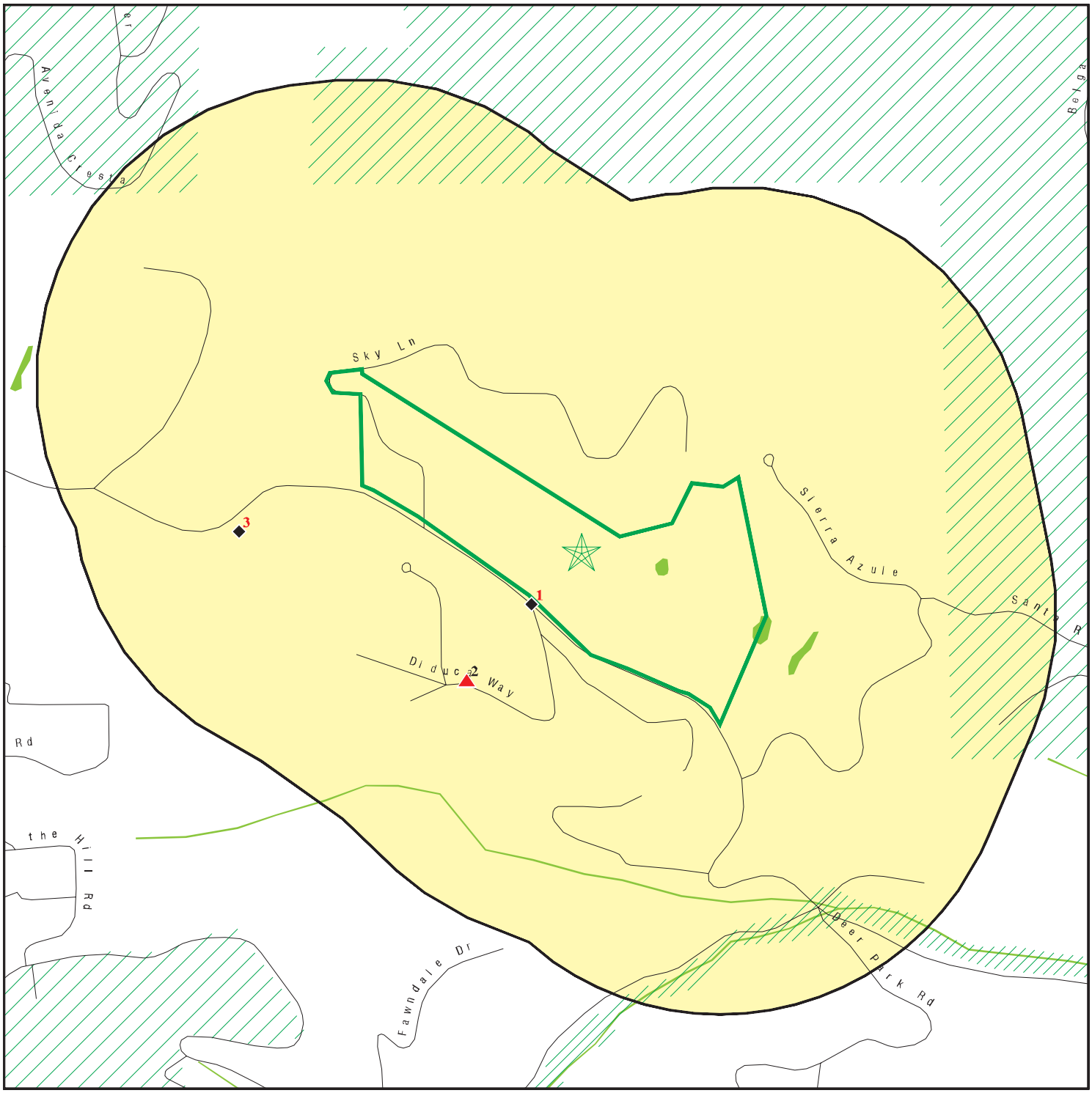
DETAIL MAP - 7171414.2S



0 1/16 1/8 1/4 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
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- 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: Shannon Road	CLIENT: Geocon Consultants, Inc.
ADDRESS: 14915 Shannon Road Los Gatos CA 95032	CONTACT: Christine Hughes
LAT/LONG: 37.224489 / 121.92766	INQUIRY #: 7171414.2s DATE: November 07, 2022 6:31 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								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	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 CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		0	0	0	0	NR	0
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	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
Lists of state and tribal leaking storage tanks								
LUST	0.500		1	0	0	NR	NR	1
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	1	NR	NR	1
HIST LUST	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
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
Lists of 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
Lists of state and tribal brownfield 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	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	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
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
AQUEOUS FOAM	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	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

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
CERS TANKS	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
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	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	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
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		1	0	0	NR	NR	1
CUPA Listings	0.250		2	0	NR	NR	NR	2
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
HAZMAT	0.250		0	0	NR	NR	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	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
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	4	0	1	0	0	5

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
SW
< 1/8
0.004 mi.
21 ft.

FRONTIER CALIFORNIA INC - RLU1 SHANNON RD
SHANNON RD @ DIDUCA WY
LOS GATOS, CA 95032

CUPA Listings
S118754870
N/A

Relative:
Lower

Actual:
676 ft.

CUPA SANTA CLARA:

Name:	FRONTIER CALIFORNIA INC - RLU1 SHANNON RD
Address:	SHANNON RD @ DIDUCA WY
City,State,Zip:	LOS GATOS, CA 95032
Region:	SANTA CLARA
PE#:	2502
Program Description:	HAZMAT STORAGE FACILITY-MINIMAL STORAGE SITE
Program Identifier:	DEH PERMIT-HAZ MAT STORAGE PROGRAM
Latitude:	37.22379
Longitude:	-121.928409
Record ID:	PR0382834
Facility ID:	FA0261115

2
SW
< 1/8
0.090 mi.
474 ft.

DIDUCA WAY
14922 DIDUCA WAY
LOS GATOS, CA 95032

LUST
Cortese
CERS

S110326479
N/A

Relative:
Higher

Actual:
755 ft.

LUST:

Name:	DIDUCA WAY
Address:	14922 DIDUCA WAY
City,State,Zip:	LOS GATOS, CA 95032-5702
Lead Agency:	SANTA CLARA COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000002022
Global Id:	T10000002022
Latitude:	37.223151
Longitude:	-121.928549
Status:	Completed - Case Closed
Status Date:	02/28/2012
Case Worker:	Not reported
RB Case Number:	14-808
Local Agency:	Not reported
File Location:	All Files are on GeoTracker or in the Local Agency Database
Local Case Number:	08S1W24E01f
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Heating Oil / Fuel Oil
Site History:	A residential heating oil tank was removed in 2010. Over-excavation was conducted to remove visibly impacted soil. Approximately 40 cubic yards of soil were removed. Soil samples collected at the furthest extent of the excavation reported petroleum hydrocarbons to still be present. Additional investigation will be conducted to determine the extent of contamination remaining and whether groundwater has been impacted.

LUST:

Global Id:	T10000002022
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported

DIDUCA WAY (Continued) **S110326479**

Phone Number: Not reported

LUST:
Global Id: T10000002022
Action Type: ENFORCEMENT
Date: 05/25/2010
Action: Staff Letter

Global Id: T10000002022
Action Type: ENFORCEMENT
Date: 05/18/2010
Action: Notice of Responsibility

Global Id: T10000002022
Action Type: ENFORCEMENT
Date: 12/07/2011
Action: Staff Letter

Global Id: T10000002022
Action Type: ENFORCEMENT
Date: 02/28/2012
Action: Closure/No Further Action Letter

Global Id: T10000002022
Action Type: Other
Date: 05/19/2010
Action: Leak Stopped

Global Id: T10000002022
Action Type: RESPONSE
Date: 12/31/2010
Action: Preliminary Site Assessment Workplan

Global Id: T10000002022
Action Type: RESPONSE
Date: 01/01/2010
Action: Correspondence

Global Id: T10000002022
Action Type: RESPONSE
Date: 10/19/2010
Action: Other Report / Document

Global Id: T10000002022
Action Type: RESPONSE
Date: 05/20/2010
Action: Tank Removal Report / UST Sampling Report

Global Id: T10000002022
Action Type: RESPONSE
Date: 05/18/2010
Action: Unauthorized Release Form

Global Id: T10000002022
Action Type: RESPONSE
Date: 12/07/2011
Action: Other Report / Document

DIDUCA WAY (Continued) **S110326479**

Global Id: T10000002022
Action Type: RESPONSE
Date: 05/19/2010
Action: Other Report / Document

Global Id: T10000002022
Action Type: RESPONSE
Date: 12/10/2010
Action: Other Workplan

Global Id: T10000002022
Action Type: RESPONSE
Date: 01/27/2012
Action: Preliminary Site Assessment Report

Global Id: T10000002022
Action Type: Other
Date: 05/10/2010
Action: Leak Discovery

Global Id: T10000002022
Action Type: ENFORCEMENT
Date: 12/17/2010
Action: Staff Letter

Global Id: T10000002022
Action Type: ENFORCEMENT
Date: 05/19/2010
Action: Other Report

Global Id: T10000002022
Action Type: Other
Date: 05/11/2010
Action: Leak Reported

Global Id: T10000002022
Action Type: RESPONSE
Date: 02/20/2012
Action: Preliminary Site Assessment Report

LUST:
Global Id: T10000002022
Status: Open - Case Begin Date
Status Date: 05/10/2010

Global Id: T10000002022
Status: Open - Site Assessment
Status Date: 05/17/2010

Global Id: T10000002022
Status: Completed - Case Closed
Status Date: 02/28/2012

LUST SANTA CLARA:
Name: DIDUCA WAY

DIDUCA WAY (Continued) **S110326479**

Address: 14922 DIDUCA WAY
City,State,Zip: LOS GATOS, CA
Region: SANTA CLARA
SCVWD ID: 08S1W24E01F
Date Closed: 02/28/2012
EDR Link ID: 08S1W24E01F

CORTESE:

Name:	DIDUCA WAY
Address:	14922 DIDUCA WAY
City,State,Zip:	LOS GATOS, CA
Region:	CORTESE
Envirostor Id:	Not reported
Global ID:	T10000002022
Site/Facility Type:	LUST CLEANUP SITE
Cleanup Status:	COMPLETED - CASE CLOSED
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	active
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	Not reported
WID Id:	Not reported
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported
File Name:	Active Open

CERS:

Name:	DIDUCA WAY
Address:	14922 DIDUCA WAY
City,State,Zip:	LOS GATOS, CA 95032-5702
Site ID:	208998
CERS ID:	T10000002022
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	Regional Water Board - SAN FRANCISCO BAY RWQCB (REGION 2)
Entity Title:	Not reported
Affiliation Address:	1515 CLAY ST SUITE 1400
Affiliation City:	OAKLAND
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

3
West
< 1/8
0.113 mi.
597 ft.

AT&T MOBILITY-SHANNON & SUVIEW (15473)
15100 SHANNON RD
LOS GATOS, CA 95032

CUPA Listings
S121473904
N/A

Relative:
Lower

Actual:
651 ft.

CUPA SANTA CLARA:

Name:	AT&T MOBILITY-SHANNON & SUVIEW (15473)
Address:	15100 SHANNON RD
City,State,Zip:	LOS GATOS, CA 95032
Region:	SANTA CLARA
PE#:	2502
Program Description:	HAZMAT STORAGE FACILITY-MINIMAL STORAGE SITE
Program Identifier:	DEH PERMIT-HAZ MAT STORAGE PROGRAM
Latitude:	37.224497
Longitude:	-121.929895
Record ID:	PR0382919
Facility ID:	FA0261158

4
ENE
1/4-1/2
0.427 mi.
2252 ft.

SJWC - BELGATOS STATION
350 BELGATOS RD
LOS GATOS, CA 95032

CPS-SLIC
CERS
S121785588
N/A

Relative:
Lower

Actual:
416 ft.

CPS-SLIC:

Name:	SJWC - BELGATOS STATION
Address:	350 BELGATOS RD
City,State,Zip:	LOS GATOS, CA 95032
Region:	STATE
Facility Status:	**Open - Assessment & Interim Remedial Action**
Status Date:	04/20/2018
Global Id:	T10000011565
Lead Agency:	SANTA CLARA COUNTY LOP
Lead Agency Case Number:	2018-12s
Latitude:	37.22871
Longitude:	-121.91819
Case Type:	Cleanup Program Site
Case Worker:	GOR
Local Agency:	SANTA CLARA COUNTY LOP
RB Case Number:	Not reported
File Location:	Not reported
Potential Media Affected:	Soil
Potential Contaminants of Concern:	Not reported
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

CERS:

Name:	SJWC - BELGATOS STATION
Address:	350 BELGATOS RD
City,State,Zip:	LOS GATOS, CA 95032
Site ID:	436899
CERS ID:	T10000011565
CERS Description:	Cleanup Program Site

Affiliation:

Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	Gerald O'Regan - SANTA CLARA COUNTY LOP
Entity Title:	Not reported

SJWC - BELGATOS STATION (Continued) **S121785588**

Affiliation Address:	1555 BERGER DRIVE STE 300
Affiliation City:	SAN JOSE
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

Count: 1 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LOS GATOS	S121673201	SHANNON VALLEY RNCH TRACT 9505	NE CONRER HICKS RD AT SHANNON	95032	CIWQS

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

Lists of Federal NPL (Superfund) sites

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: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 01/09/2023
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: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 01/09/2023
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

Lists of Federal Delisted NPL sites

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: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

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: 05/25/2021
Date Data Arrived at EDR: 06/24/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 09/06/2022
Next Scheduled EDR Contact: 01/10/2023
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list 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). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS 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 the 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. The 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 potential NPL site.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/19/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

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: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

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: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2022
Next Scheduled EDR Contact: 01/02/2023
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: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly 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). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

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: 08/16/2022
Date Data Arrived at EDR: 08/22/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 63

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 02/20/2023
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: 08/15/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

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: 08/15/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
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: 06/14/2022
Date Data Arrived at EDR: 06/15/2022
Date Made Active in Reports: 06/21/2022
Number of Days to Update: 6

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/20/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

Lists of state- and tribal (Superfund) equivalent sites

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: 07/25/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

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: 07/25/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

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: 08/08/2022
Date Data Arrived at EDR: 08/08/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 73

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Quarterly

Lists of state and tribal leaking storage tanks

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 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 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 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 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: 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: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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 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: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

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 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

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: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
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: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

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: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
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: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
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: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)

Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 10/14/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 02/01/2022
Number of Days to Update: 88

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 06/01/2022
Date Data Arrived at EDR: 06/09/2022
Date Made Active in Reports: 08/26/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/24/2022
Number of Days to Update: 78

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
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: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

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: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

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: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
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: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

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: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

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: 04/07/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

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: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

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: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

Lists of 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: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

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: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 09/13/2022
Next Scheduled EDR Contact: 01/02/2023
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: 07/25/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Quarterly

Lists of state and tribal brownfield 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: 06/21/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 09/08/2022
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 09/19/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

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: 02/23/2022
Date Data Arrived at EDR: 03/10/2022
Date Made Active in Reports: 03/10/2022
Number of Days to Update: 0

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/09/2022
Next Scheduled EDR Contact: 12/26/2022
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: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/23/2022
Number of Days to Update: 77

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 08/12/2022
Date Data Arrived at EDR: 08/16/2022
Date Made Active in Reports: 08/26/2022
Number of Days to Update: 10

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 02/20/2023
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: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
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: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
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

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 07/29/2022
Date Data Arrived at EDR: 08/18/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 67

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/18/2022
Next Scheduled EDR Contact: 12/05/2022
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: 07/25/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2022
Next Scheduled EDR Contact: 02/06/2023
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: 12/31/2019
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Varies

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 07/18/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 74

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Quarterly

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: 07/29/2022
Date Data Arrived at EDR: 08/18/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 67

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/18/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Quarterly

AQUEOUS FOAM: Former Fire Training Facility Assessments Listing

Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 09/06/2022
Date Data Arrived at EDR: 09/06/2022
Date Made Active in Reports: 10/26/2022
Number of Days to Update: 50

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 09/06/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 10/31/2022
Number of Days to Update: 61

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

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

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

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 08/04/2022
Date Data Arrived at EDR: 08/04/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 77

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 07/18/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 74

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Quarterly

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: 05/25/2022
Date Data Arrived at EDR: 05/26/2022
Date Made Active in Reports: 08/11/2022
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
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: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Semi-Annually

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: 05/31/2022
Date Data Arrived at EDR: 05/31/2022
Date Made Active in Reports: 08/18/2022
Number of Days to Update: 79

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
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: 09/19/2022
Date Data Arrived at EDR: 09/19/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 11

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/19/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

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: 06/30/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 74

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
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: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

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: 08/11/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 50

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

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: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/13/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

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: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/03/2022
Next Scheduled EDR Contact: 01/16/2023
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: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/20/2023
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: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/20/2022
Next Scheduled EDR Contact: 01/02/2023
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: 10/28/2022
Next Scheduled EDR Contact: 02/16/2023
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: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/16/2023
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: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/12/2022
Next Scheduled EDR Contact: 12/26/2022
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: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 11/28/2022
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: 07/18/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 11

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/18/2022
Next Scheduled EDR Contact: 01/30/2023
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: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 12/12/2022
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: 04/27/2022
Date Data Arrived at EDR: 05/04/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/27/2022
Next Scheduled EDR Contact: 01/30/2023
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: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 02/16/2023
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: 01/20/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 64

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
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: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
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: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

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: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

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: 06/10/2022
Date Data Arrived at EDR: 06/14/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 69

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 84
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
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: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
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: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/13/2023
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: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 09/21/2022
Next Scheduled EDR Contact: 01/10/2023
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: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/24/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Quarterly

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: 06/30/2022
Date Data Arrived at EDR: 07/21/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 71

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
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: 12/31/2019
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 23

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 09/19/2022
Next Scheduled EDR Contact: 01/02/2023
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: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 07/26/2021
Date Data Arrived at EDR: 07/27/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 10/27/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

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: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/24/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 01/09/2023
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: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 08/01/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 59

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

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: 08/03/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 14

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
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: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
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: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 06/14/2022
Date Data Arrived at EDR: 06/15/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 68

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/13/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

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: 08/03/2022
Date Data Arrived at EDR: 08/25/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 60

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 06/25/2022
Date Data Arrived at EDR: 07/01/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 91

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 09/30/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/22/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 01/11/2022
Date Made Active in Reports: 02/14/2022
Number of Days to Update: 34
Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/05/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/11/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 50
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
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: 06/21/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 09/08/2022
Number of Days to Update: 79
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 09/19/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 12/07/2021
Date Data Arrived at EDR: 05/09/2022
Date Made Active in Reports: 05/17/2022
Number of Days to Update: 8
Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 05/20/2022
Date Data Arrived at EDR: 05/20/2022
Date Made Active in Reports: 08/09/2022
Number of Days to Update: 81

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 08/16/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

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: 08/27/2021
Date Data Arrived at EDR: 09/01/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 79

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Annually

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 05/25/2022
Date Data Arrived at EDR: 05/26/2022
Date Made Active in Reports: 08/11/2022
Number of Days to Update: 77

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/30/2022
Number of Days to Update: 78

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/16/2022
Next Scheduled EDR Contact: 12/26/2022
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: 07/12/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 09/29/2022
Number of Days to Update: 73

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 10/19/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 07/06/2022
Date Data Arrived at EDR: 07/21/2022
Date Made Active in Reports: 10/03/2022
Number of Days to Update: 74

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
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: 08/09/2022
Date Data Arrived at EDR: 08/10/2022
Date Made Active in Reports: 08/30/2022
Number of Days to Update: 20

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Varies

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 08/11/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 10/28/2022
Number of Days to Update: 78

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Quarterly

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: 08/11/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 10/28/2022
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
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: 07/05/2022
Date Data Arrived at EDR: 07/05/2022
Date Made Active in Reports: 09/19/2022
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/03/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Quarterly

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: 12/31/2021
Date Data Arrived at EDR: 07/05/2022
Date Made Active in Reports: 09/19/2022
Number of Days to Update: 76

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Annually

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/23/2022
Number of Days to Update: 77
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

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: 05/06/2022
Date Data Arrived at EDR: 05/31/2022
Date Made Active in Reports: 08/18/2022
Number of Days to Update: 79
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/08/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 73
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/20/2023
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: 05/31/2022
Date Data Arrived at EDR: 05/31/2022
Date Made Active in Reports: 08/18/2022
Number of Days to Update: 79
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/23/2022
Number of Days to Update: 77
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
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: 06/10/2022
Date Data Arrived at EDR: 06/10/2022
Date Made Active in Reports: 08/26/2022
Number of Days to Update: 77
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
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: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/23/2022
Number of Days to Update: 77
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
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 boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
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: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: No Update Planned

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: 09/13/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/24/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 08/16/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 08/18/2022
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 07/18/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 74

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System
DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 04/05/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 04/26/2022
Number of Days to Update: 21

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 10/03/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 09/28/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 09/28/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120
Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/28/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3
Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
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 Hist Auto: EDR Exclusive Historical Auto 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 Hist Cleaner: EDR Exclusive Historical 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:

CS ALAMEDA: 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: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 06/29/2022
Date Data Arrived at EDR: 06/29/2022
Date Made Active in Reports: 07/21/2022
Number of Days to Update: 22

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 07/22/2022
Date Data Arrived at EDR: 07/27/2022
Date Made Active in Reports: 08/01/2022
Number of Days to Update: 5

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/14/2022
Date Data Arrived at EDR: 06/15/2022
Date Made Active in Reports: 09/02/2022
Number of Days to Update: 79

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 07/20/2022
Date Data Arrived at EDR: 07/20/2022
Date Made Active in Reports: 10/03/2022
Number of Days to Update: 75

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 05/04/2022
Date Data Arrived at EDR: 05/06/2022
Date Made Active in Reports: 07/28/2022
Number of Days to Update: 83

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/09/2022
Date Made Active in Reports: 09/01/2022
Number of Days to Update: 23

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: 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: 06/28/2021
Date Data Arrived at EDR: 12/21/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 72

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 09/30/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/12/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 07/13/2022
Date Data Arrived at EDR: 07/14/2022
Date Made Active in Reports: 09/29/2022
Number of Days to Update: 77

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 05/06/2022
Date Data Arrived at EDR: 05/12/2022
Date Made Active in Reports: 08/01/2022
Number of Days to Update: 81

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 10/05/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 05/06/2022
Date Data Arrived at EDR: 05/12/2022
Date Made Active in Reports: 08/01/2022
Number of Days to Update: 81

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 10/05/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: 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: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 07/22/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

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: N/A
Telephone: N/A
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 07/06/2022
Date Data Arrived at EDR: 07/07/2022
Date Made Active in Reports: 09/21/2022
Number of Days to Update: 76

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/11/2022
Date Data Arrived at EDR: 07/11/2022
Date Made Active in Reports: 09/23/2022
Number of Days to Update: 74

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/07/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2022
Date Data Arrived at EDR: 01/21/2022
Date Made Active in Reports: 04/11/2022
Number of Days to Update: 80

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/19/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 01/10/2022
Date Data Arrived at EDR: 01/12/2022
Date Made Active in Reports: 04/04/2022
Number of Days to Update: 82
Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 01/13/2022
Date Data Arrived at EDR: 03/21/2022
Date Made Active in Reports: 06/15/2022
Number of Days to Update: 86
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/20/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 03/22/2022
Date Data Arrived at EDR: 06/24/2022
Date Made Active in Reports: 09/08/2022
Number of Days to Update: 76
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/20/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 05/26/2021
Date Data Arrived at EDR: 07/09/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 82
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/22/2022
Date Data Arrived at EDR: 07/19/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 73

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: 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: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 09/21/2022
Next Scheduled EDR Contact: 01/10/2023
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/22/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 4

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/16/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/15/2022
Date Data Arrived at EDR: 02/17/2022
Date Made Active in Reports: 05/11/2022
Number of Days to Update: 83

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/15/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/15/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/15/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/21/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 07/28/2022
Number of Days to Update: 3

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 05/24/2022
Date Data Arrived at EDR: 08/09/2022
Date Made Active in Reports: 10/28/2022
Number of Days to Update: 80

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 05/18/2022
Date Made Active in Reports: 08/03/2022
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 05/24/2022
Date Data Arrived at EDR: 08/01/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 80

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 05/25/2022
Date Data Arrived at EDR: 05/26/2022
Date Made Active in Reports: 06/01/2022
Number of Days to Update: 6

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/07/2022
Date Data Arrived at EDR: 07/08/2022
Date Made Active in Reports: 09/21/2022
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 07/07/2022
Date Data Arrived at EDR: 07/08/2022
Date Made Active in Reports: 09/21/2022
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 06/18/2021
Date Data Arrived at EDR: 09/28/2021
Date Made Active in Reports: 12/14/2021
Number of Days to Update: 77

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 09/30/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Quarterly

ML SACRAMENTO: 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: 05/04/2022
Date Data Arrived at EDR: 06/30/2022
Date Made Active in Reports: 07/05/2022
Number of Days to Update: 5

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 09/26/2022
Next Scheduled EDR Contact: 01/10/2023
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 07/27/2022
Date Data Arrived at EDR: 07/27/2022
Date Made Active in Reports: 10/11/2022
Number of Days to Update: 76

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: 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: 05/12/2022
Date Data Arrived at EDR: 05/12/2022
Date Made Active in Reports: 05/18/2022
Number of Days to Update: 6

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: 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: 05/31/2022
Date Data Arrived at EDR: 05/31/2022
Date Made Active in Reports: 08/18/2022
Number of Days to Update: 79

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/27/2021
Date Data Arrived at EDR: 03/04/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 88

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/22/2021
Date Data Arrived at EDR: 10/19/2021
Date Made Active in Reports: 01/13/2022
Number of Days to Update: 86

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

SAN DIEGO CO SAM: 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: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 08/04/2022
Date Data Arrived at EDR: 08/04/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 77

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

LUST SAN FRANCISCO: 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: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/04/2022
Date Data Arrived at EDR: 08/04/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 77

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Quarterly

SAN FRANCISO COUNTY:

SAN FRANCISCO MAHER: Maher Ordinance Property Listing
a listing of properties that fall within a Maher Ordinance, for all of San Francisco

Date of Government Version: 01/18/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 04/27/2022
Number of Days to Update: 97

Source: San Francisco Planning
Telephone: 628-652-7483
Last EDR Contact: 10/07/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/10/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 10/28/2022
Number of Days to Update: 78

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/09/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 08/29/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: 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: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/18/2022
Date Made Active in Reports: 08/04/2022
Number of Days to Update: 78
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

HIST LUST SANTA CLARA: 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

LUST SANTA CLARA: 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: 08/15/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/13/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/13/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2022
Date Data Arrived at EDR: 02/10/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 05/03/2022
Date Data Arrived at EDR: 05/27/2022
Date Made Active in Reports: 08/11/2022
Number of Days to Update: 76

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 07/27/2022
Date Data Arrived at EDR: 07/27/2022
Date Made Active in Reports: 10/11/2022
Number of Days to Update: 76

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 07/13/2022
Date Data Arrived at EDR: 07/14/2022
Date Made Active in Reports: 09/29/2022
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 04/26/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 10/05/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: 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: 05/26/2022
Date Data Arrived at EDR: 07/21/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 71

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Quarterly

LF VENTURA: 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: 09/21/2022
Next Scheduled EDR Contact: 01/10/2023
Data Release Frequency: No Update Planned

LUST VENTURA: 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: 11/01/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: No Update Planned

MED WASTE VENTURA: 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: 05/26/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 05/26/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/24/2022
Number of Days to Update: 78
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 06/22/2022
Date Data Arrived at EDR: 06/30/2022
Date Made Active in Reports: 09/14/2022
Number of Days to Update: 76
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 09/21/2022
Next Scheduled EDR Contact: 01/10/2023
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 10/25/2022
Date Data Arrived at EDR: 10/26/2022
Date Made Active in Reports: 10/31/2022
Number of Days to Update: 5
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
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: 08/08/2022
Date Data Arrived at EDR: 08/08/2022
Date Made Active in Reports: 10/21/2022
Number of Days to Update: 74
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/08/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36
Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/03/2022
Next Scheduled EDR Contact: 01/16/2023
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: 01/01/2019
Date Data Arrived at EDR: 10/29/2021
Date Made Active in Reports: 01/19/2022
Number of Days to Update: 82

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/05/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/10/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 08/29/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Annually

Oil/Gas Pipelines

Source: Endeavor Business Media

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 Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data

Source: Endeavor Business Media

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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 was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

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

SHANNON ROAD
14915 SHANNON ROAD
LOS GATOS, CA 95032

TARGET PROPERTY COORDINATES

Latitude (North):	37.224489 - 37ˆ 13’ 28.16’’
Longitude (West):	121.92766 - 121ˆ 55’ 39.58’’
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	595135.2
UTM Y (Meters):	4120111.0
Elevation:	752 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	12008734 LOS GATOS, CA
Version Date:	2018

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 principle 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).

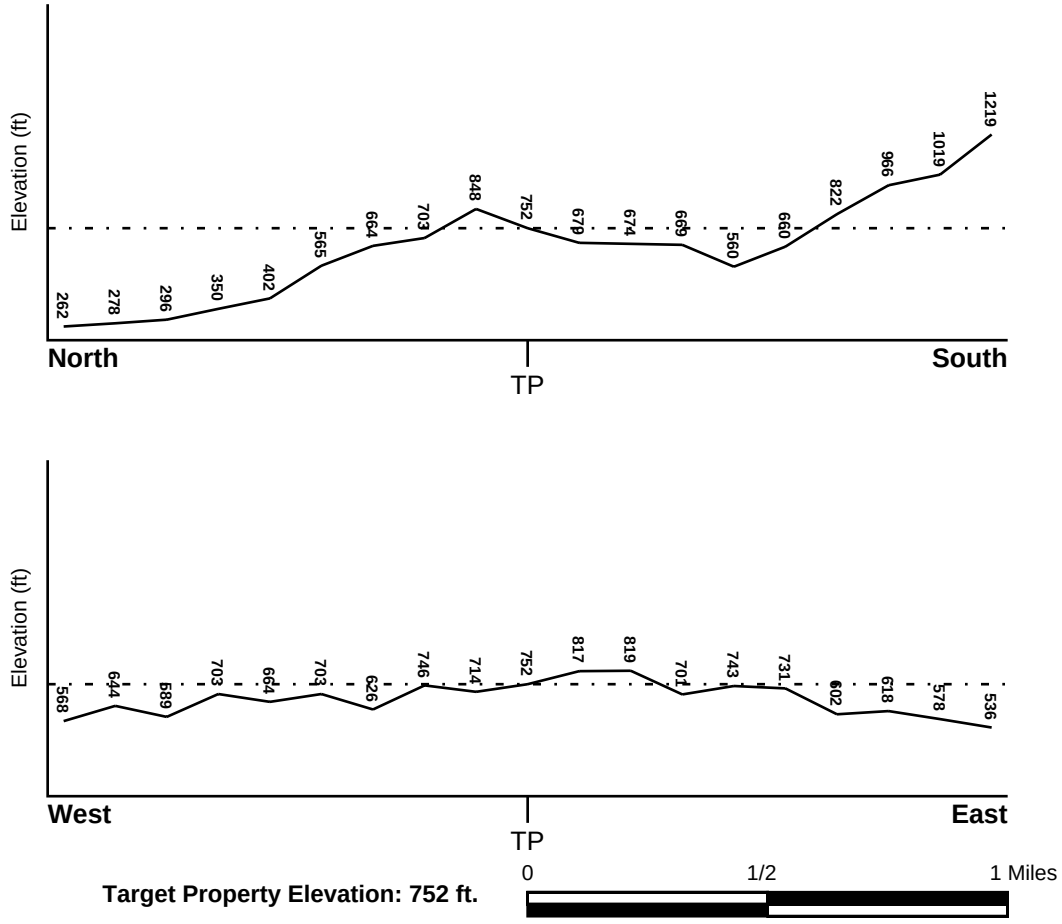
TOPOGRAPHIC INFORMATION

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 WSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 752 ft.

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

Flood Plain Panel at Target Property	FEMA Source Type
06085C0381H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06085C0377H	FEMA FIRM Flood data
06085C0380H	FEMA FIRM Flood data
06085C0383H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
LOS GATOS	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
Not Reported		

* ©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:	Mesozoic
System:	Cretaceous
Series:	Upper Mesozoic
Code:	uMze*(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Eugeosynclinal Deposits

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).

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. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	VALLECITOS
Soil Surface Texture:	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. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel:	HIGH
Depth to Bedrock Min:	> 10 inches
Depth to Bedrock Max:	> 20 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	6 inches	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: 2.00 Min: 0.60	Max: 6.50 Min: 6.10
2	6 inches	16 inches	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: 0.20 Min: 0.06	Max: 7.30 Min: 6.60
3	16 inches	20 inches	unweathered bedrock	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures:
gravelly - loam
gravelly - clay loam
stony - clay loam
sand
fine sandy loam
unweathered bedrock
silty clay loam
silty clay
clay loam
silt loam

Surficial Soil Types:
gravelly - loam
gravelly - clay loam
stony - clay loam
sand
fine sandy loam
unweathered bedrock
silty clay loam
silty clay
clay loam
silt loam

Shallow Soil Types:
gravelly - clay loam
very gravelly - clay loam
silty clay

Deeper Soil Types:
stratified
loam
clay loam
weathered bedrock

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

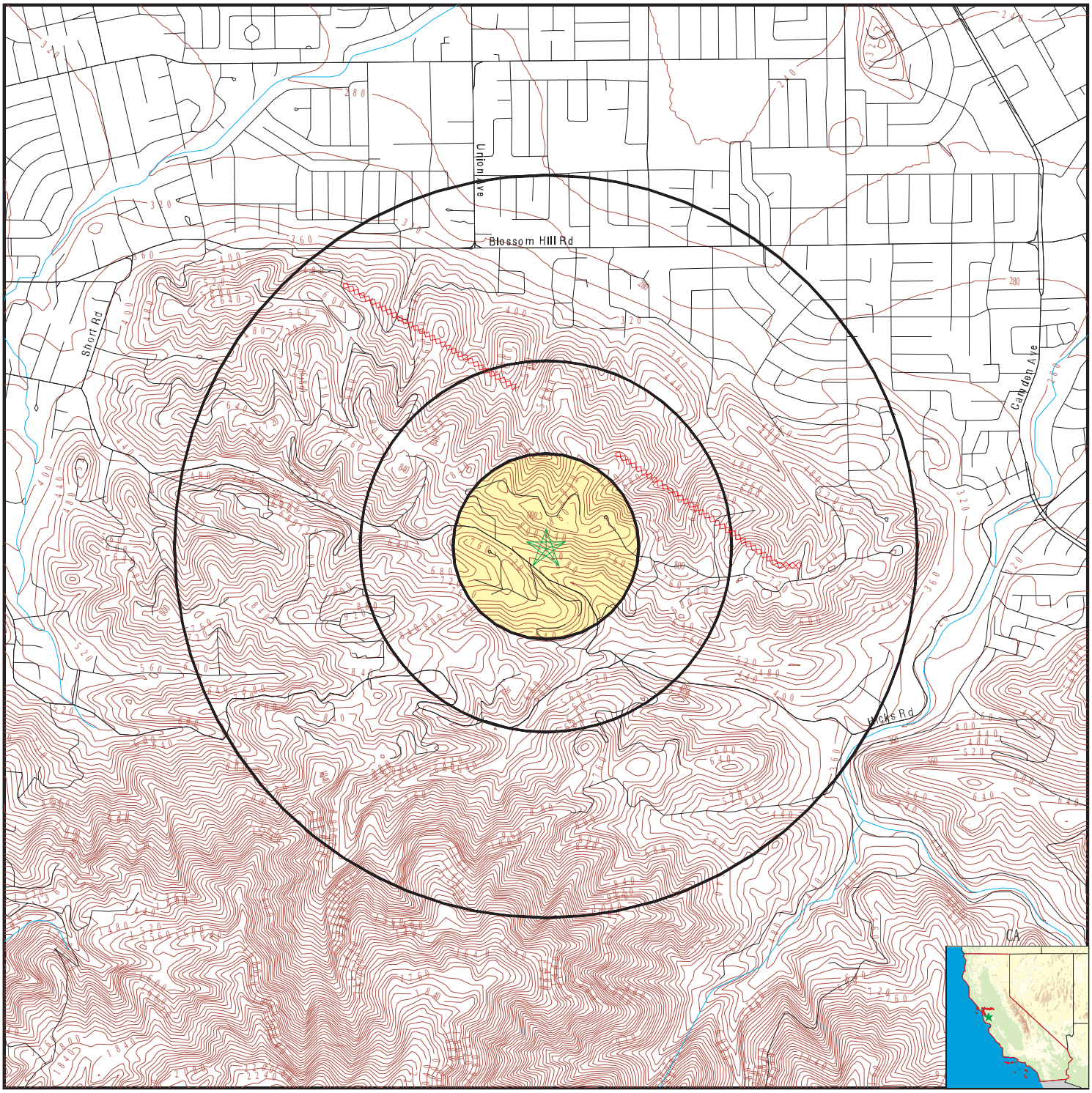
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

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		

PHYSICAL SETTING SOURCE MAP - 7171414.2s



- 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:	Shannon Road	CLIENT:	Geocon Consultants, Inc.
ADDRESS:	14915 Shannon Road Los Gatos CA 95032	CONTACT:	Christine Hughes
LAT/LONG:	37.224489 / 121.92766	INQUIRY #:	7171414.2s
		DATE:	November 07, 2022 6:31 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
95032	34	0

Federal EPA Radon Zone for SANTA CLARA 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 Zip Code: 95032

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.550 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

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 was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

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 Service (NRCS)
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 Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, 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.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

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.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
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.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

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.

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 D

Shannon Road Phase I ESA

14915 SHANNON RD

LOS GATOS, CA 95032

Inquiry Number: 7058972.8

July 19, 2022

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

07/19/22

Site Name:

Shannon Road Phase I ESA
14915 SHANNON RD
LOS GATOS, CA 95032
EDR Inquiry # 7058972.8

Client Name:

Geocon Consultants, Inc.
3160 Gold Valley Drive Suite 800
Rancho Cordova, CA 95742
Contact: Christine Hughes

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
1998	1"=500'	Flight Date: August 27, 1998	USDA
1982	1"=500'	Flight Date: July 05, 1982	USDA
1974	1"=500'	Flight Date: June 26, 1974	USGS
1970	1"=500'	Flight Date: May 14, 1970	USGS
1968	1"=500'	Flight Date: June 14, 1968	USGS
1963	1"=500'	Flight Date: June 23, 1963	EDR Proprietary Aerial Viewpoint
1956	1"=500'	Flight Date: June 09, 1956	USDA
1950	1"=500'	Flight Date: April 10, 1950	USDA
1948	1"=500'	Flight Date: September 26, 1948	USDA
1939	1"=500'	Flight Date: July 31, 1939	USDA

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INQUIRY #: 7058972.8

YEAR: 2016

= 500'

N

EDR

INQUIRY #: 7058972.8

YEAR: 2012

= 500'

N

EDR

INQUIRY #: 7058972.8

YEAR: 2009

= 500'

N

EDR

INQUIRY #: 7058972.8

YEAR: 2005

= 500'

N

EDR

INQUIRY #: 7058972.8

YEAR: 1998

= 500'

N

EDR

INQUIRY #: 7058972.8

YEAR: 1982

= 500'

N

EDR

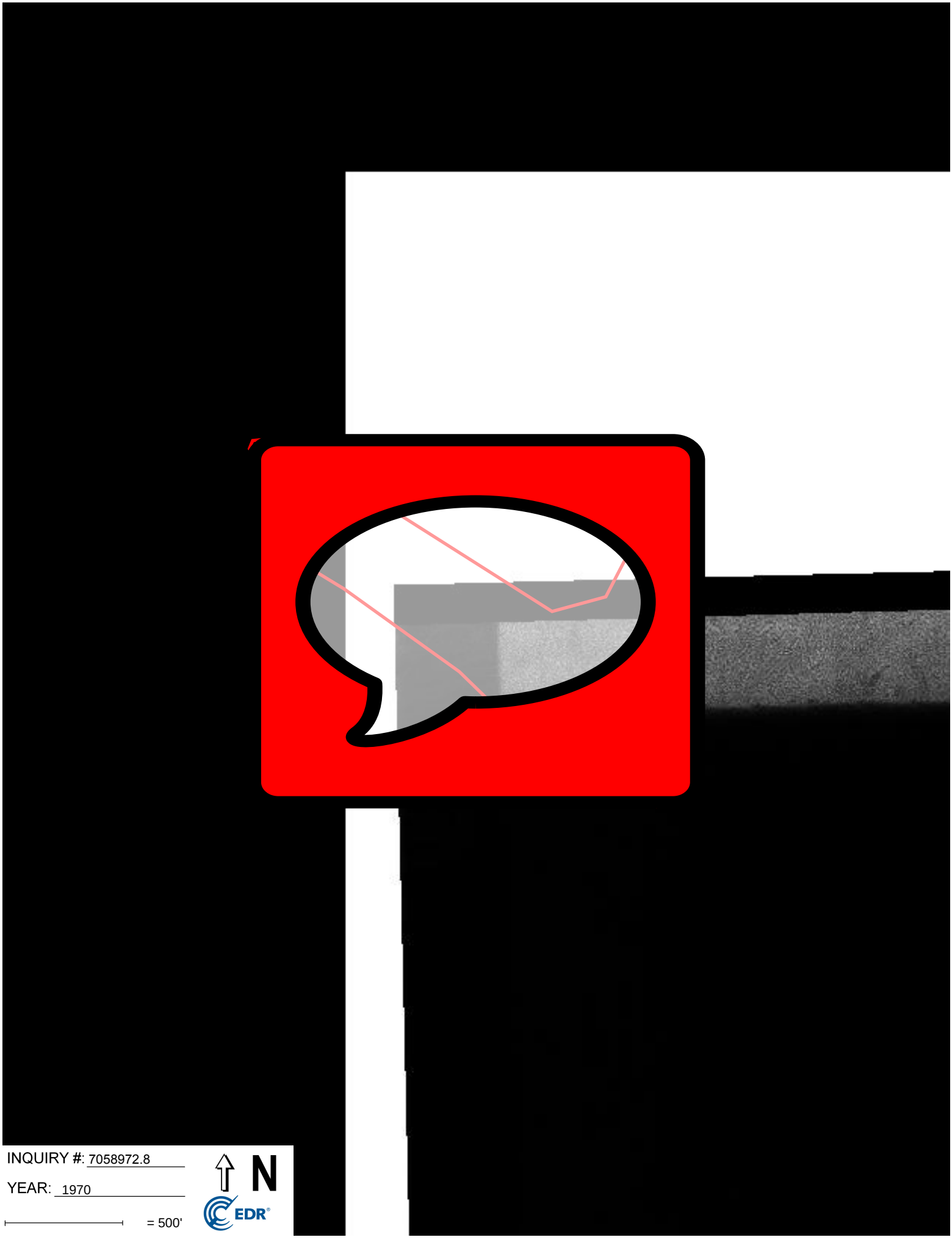
INQUIRY #: 7058972.8

YEAR: 1974

= 500'

N

EDR



INQUIRY #: 7058972.8

YEAR: 1970

= 500'

N

EDR

INQUIRY #: 7058972.8

YEAR: 1968

= 500'

N

EDR

INQUIRY #: 7058972.8

YEAR: 1963

= 500'

N

EDR

INQUIRY #: 7058972.8

YEAR: 1956

= 500'

N

EDR

INQUIRY #: 7058972.8

YEAR: 1950

= 500'

N

EDR

INQUIRY #: 7058972.8

YEAR: 1948

= 500'

N

EDR

INQUIRY #: 7058972.8

YEAR: 1939

= 500'

N

EDR

APPENDIX E

Shannon Road Phase I ESA

14915 SHANNON RD

LOS GATOS, CA 95032

Inquiry Number: 7058972.4

July 19, 2022

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

07/19/22

Site Name:

Shannon Road Phase I ESA
14915 SHANNON RD
LOS GATOS, CA 95032
EDR Inquiry # 7058972.4

Client Name:

Geocon Consultants, Inc.
3160 Gold Valley Drive Suite 800
Rancho Cordova, CA 95742
Contact: Christine Hughes

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Geocon Consultants, Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# S2421-07-01
Project: Shannon Road Phase I ESA

Coordinates:

Latitude:	37.224489 37° 13' 28" North
Longitude:	-121.92766 -121° 55' 40" West
UTM Zone:	Zone 10 North
UTM X Meters:	595132.87
UTM Y Meters:	4120314.72
Elevation:	741.75' above sea level

Maps Provided:

2018	1943
2015	1940
2012	1919
1980	1916
1973	
1968	
1953	
1947	

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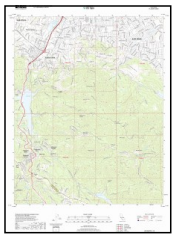
Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2018 Source Sheets



Los Gatos
2018
7.5-minute, 24000

2015 Source Sheets

Los Gatos
2015
7.5-minute, 24000

2012 Source Sheets

Los Gatos
2012
7.5-minute, 24000

1980 Source Sheets

Los Gatos
1980
7.5-minute, 24000
Aerial Photo Revised 1978

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1973 Source Sheets

Los Gatos
1973
7.5-minute, 24000
Aerial Photo Revised 1973

1968 Source Sheets

Los Gatos
1968
7.5-minute, 24000
Aerial Photo Revised 1968

1953 Source Sheets

Los Gatos
1953
7.5-minute, 24000
Aerial Photo Revised 1948

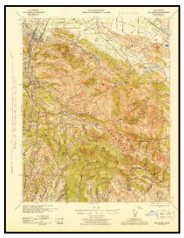
1947 Source Sheets

LOS GATOS
1947
15-minute, 50000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1943 Source Sheets

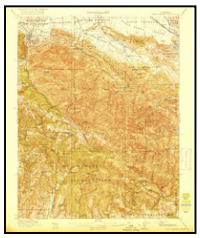


Los Gatos
1943
15-minute, 62500
Aerial Photo Revised 1937

1940 Source Sheets

Los Gatos
1940
15-minute, 62500
Aerial Photo Revised 1937

1919 Source Sheets



New Almaden
1919
15-minute, 62500

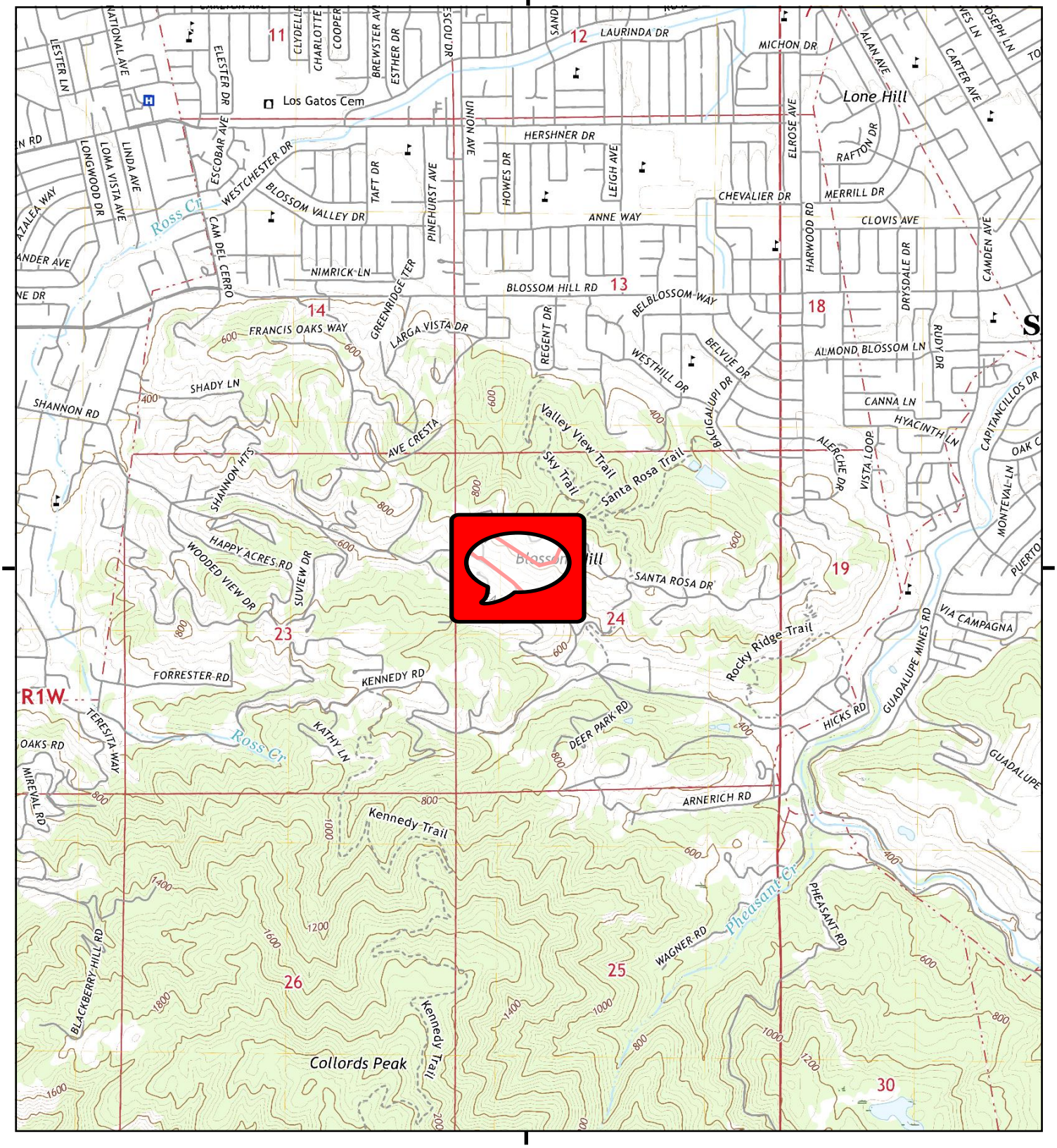
Los Gatos
1919
15-minute, 62500

1916 Source Sheets

New Almaden
1916
15-minute, 48000

Historical Topo Map

2018



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

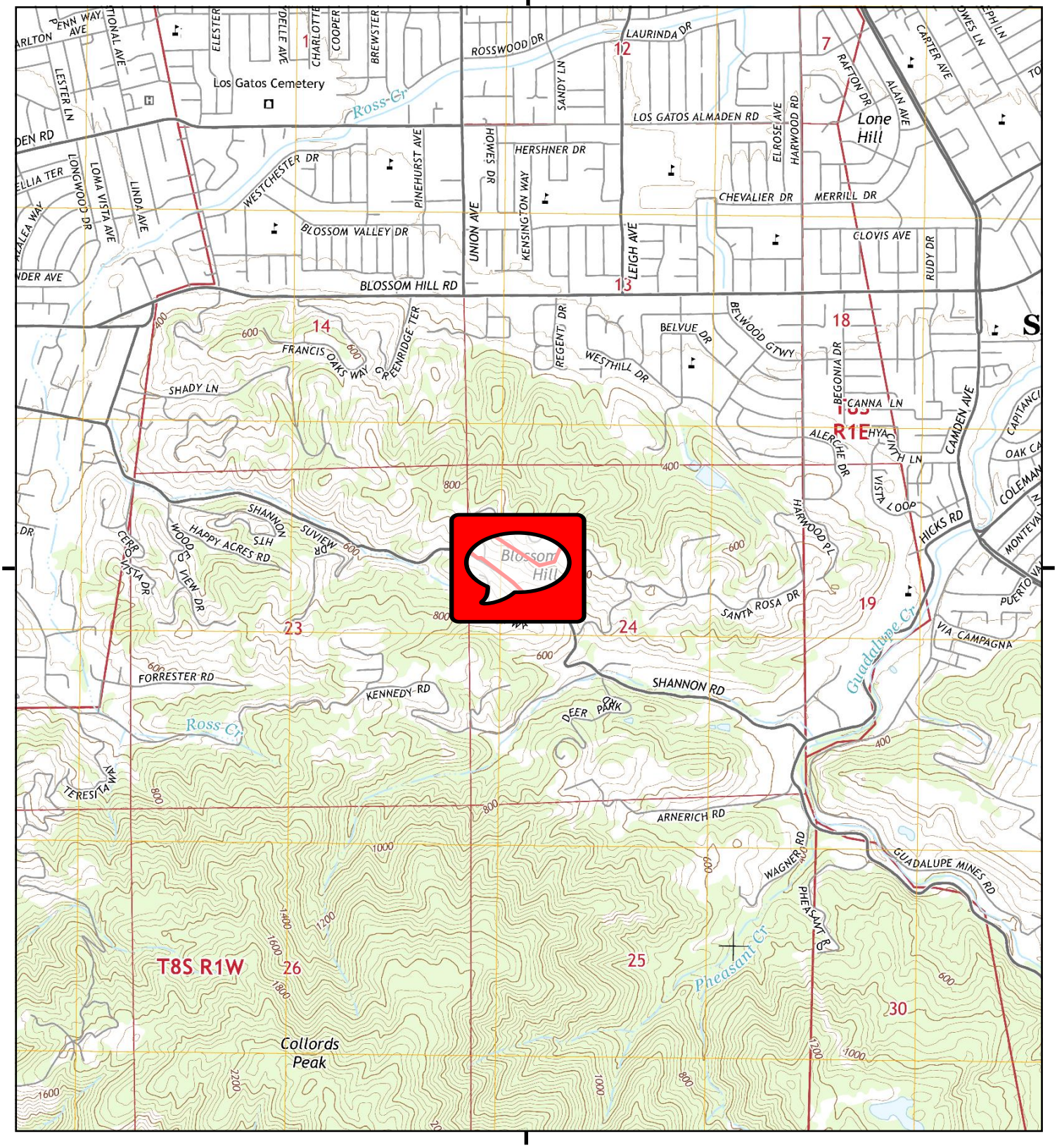
TP, Los Gatos, 2018, 7.5-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N

Historical Topo Map

2015



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

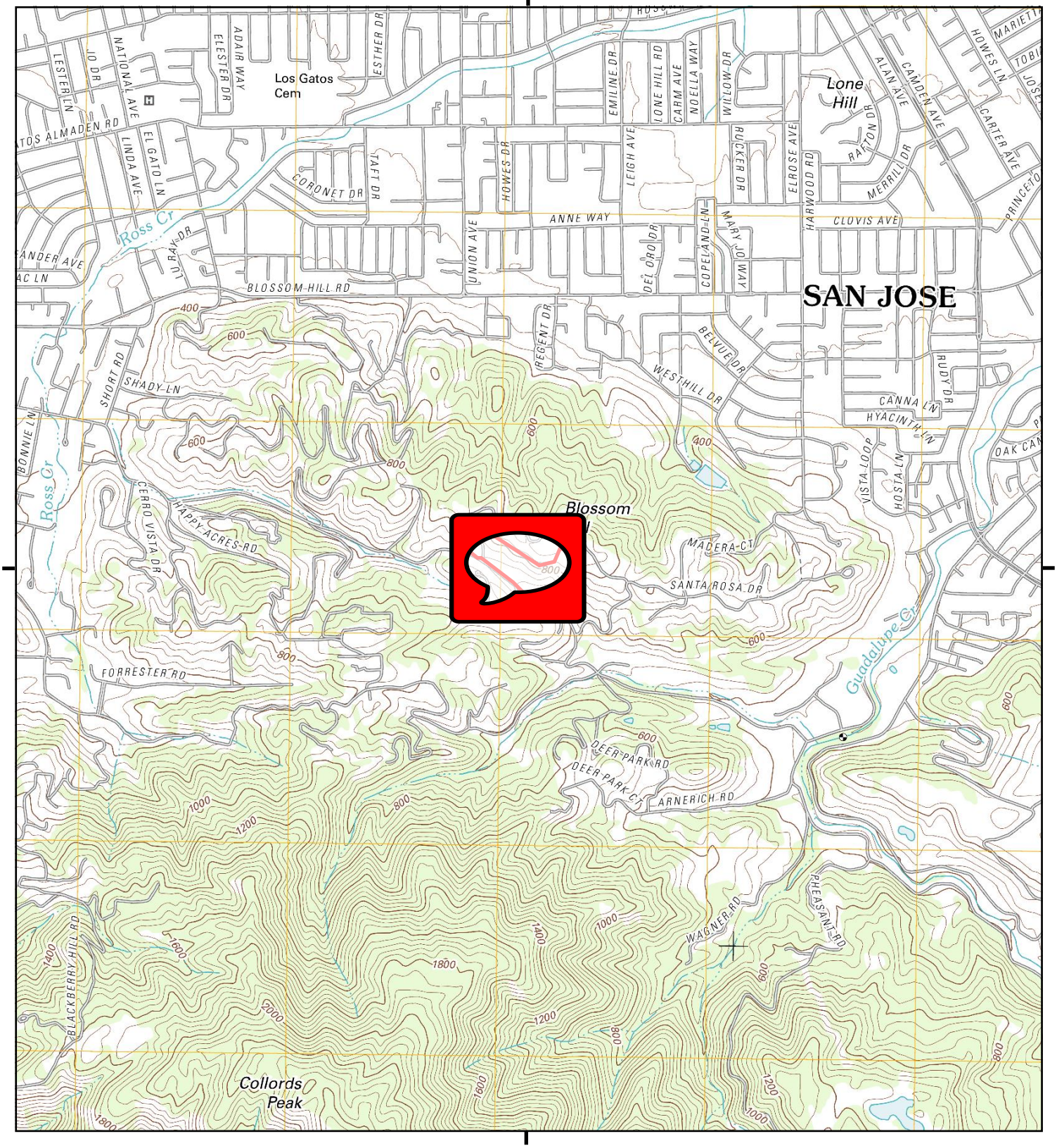
TP, Los Gatos, 2015, 7.5-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N

Historical Topo Map

2012



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

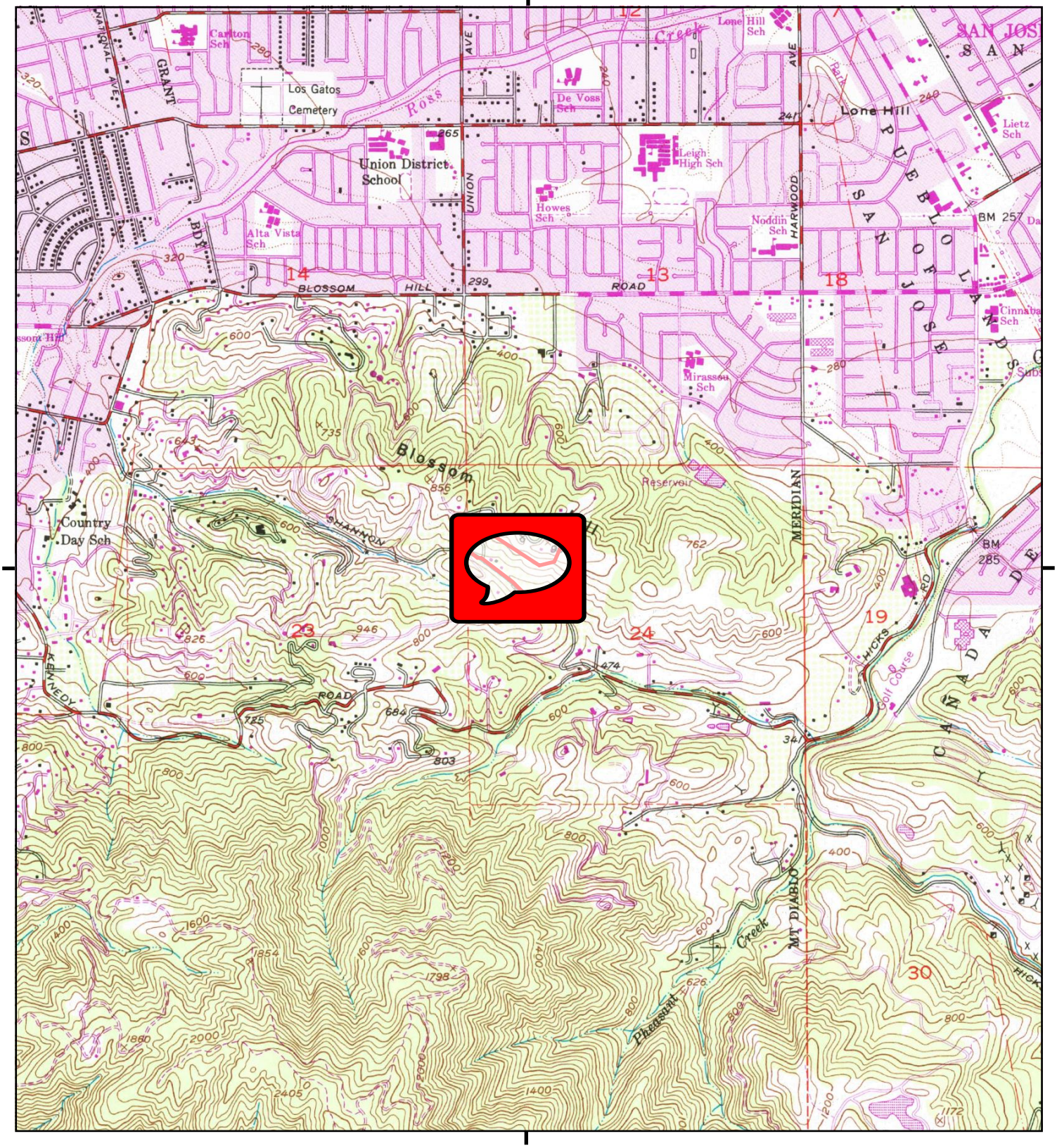
TP, Los Gatos, 2012, 7.5-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N

Historical Topo Map

1980



This report includes information from the following map sheet(s).

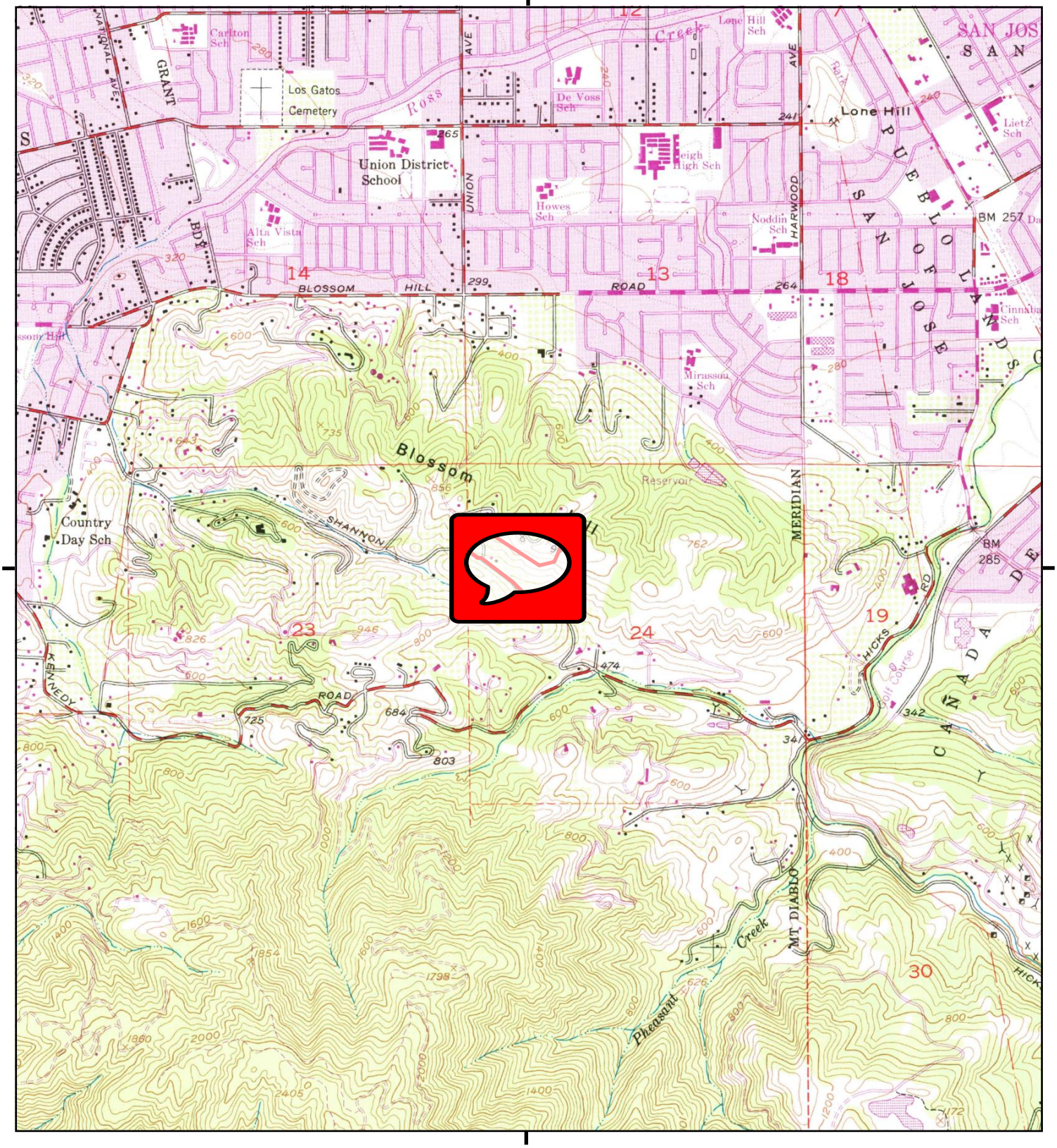
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Los Gatos, 1980, 7.5-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

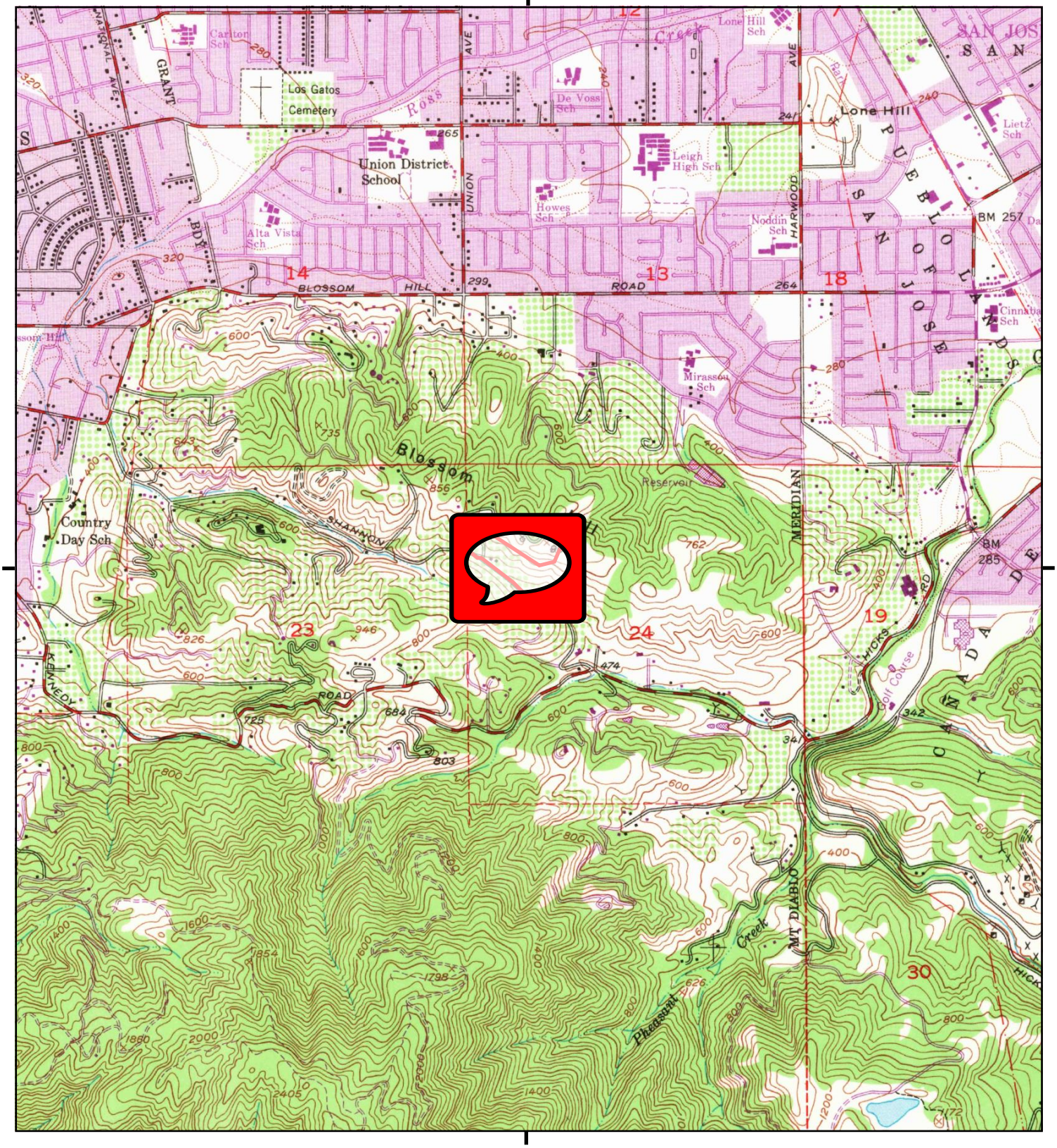
TP, Los Gatos, 1973, 7.5-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N

Historical Topo Map

1968



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

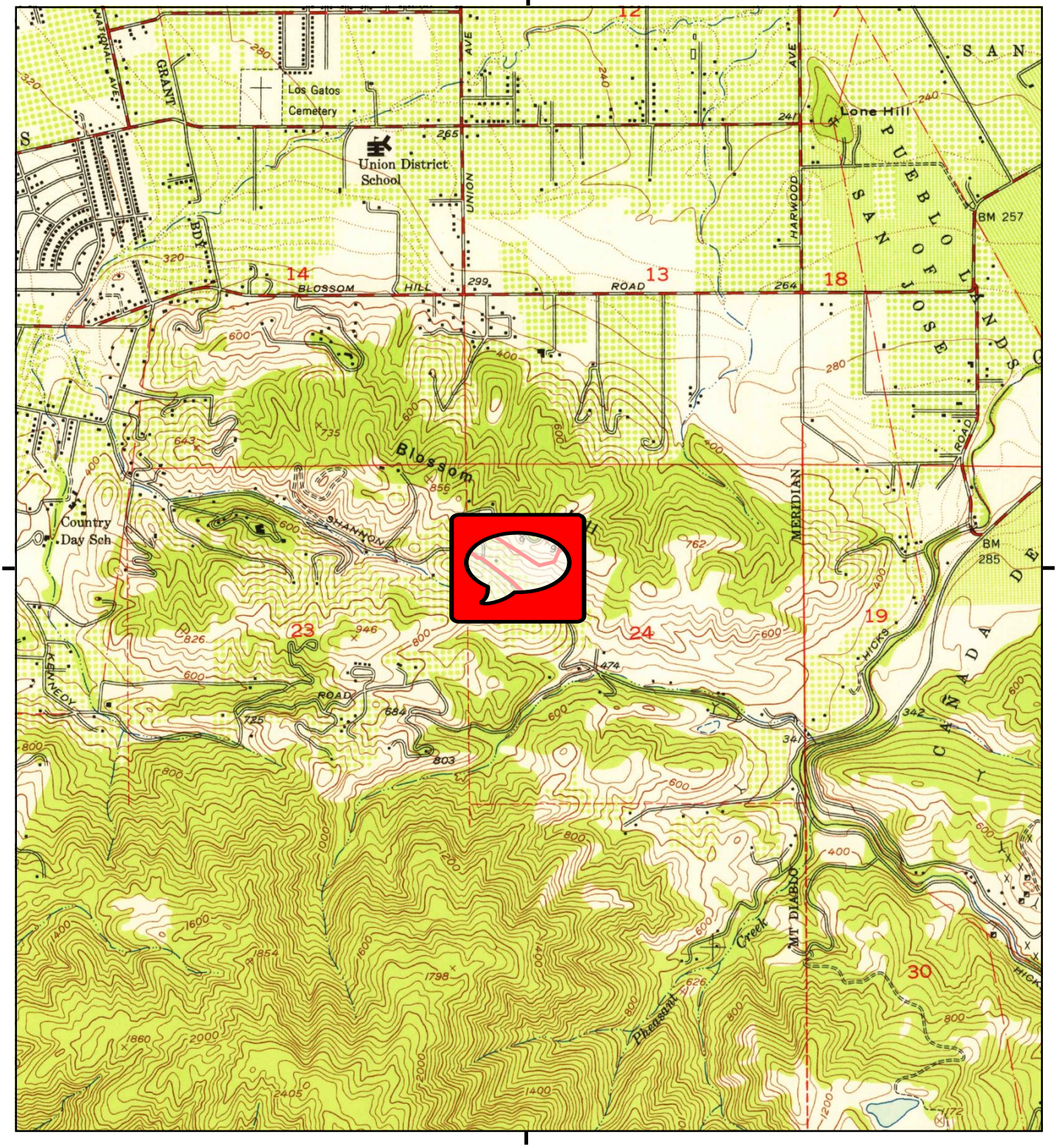
TP, Los Gatos, 1968, 7.5-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N

Historical Topo Map

1953



This report includes information from the following map sheet(s).

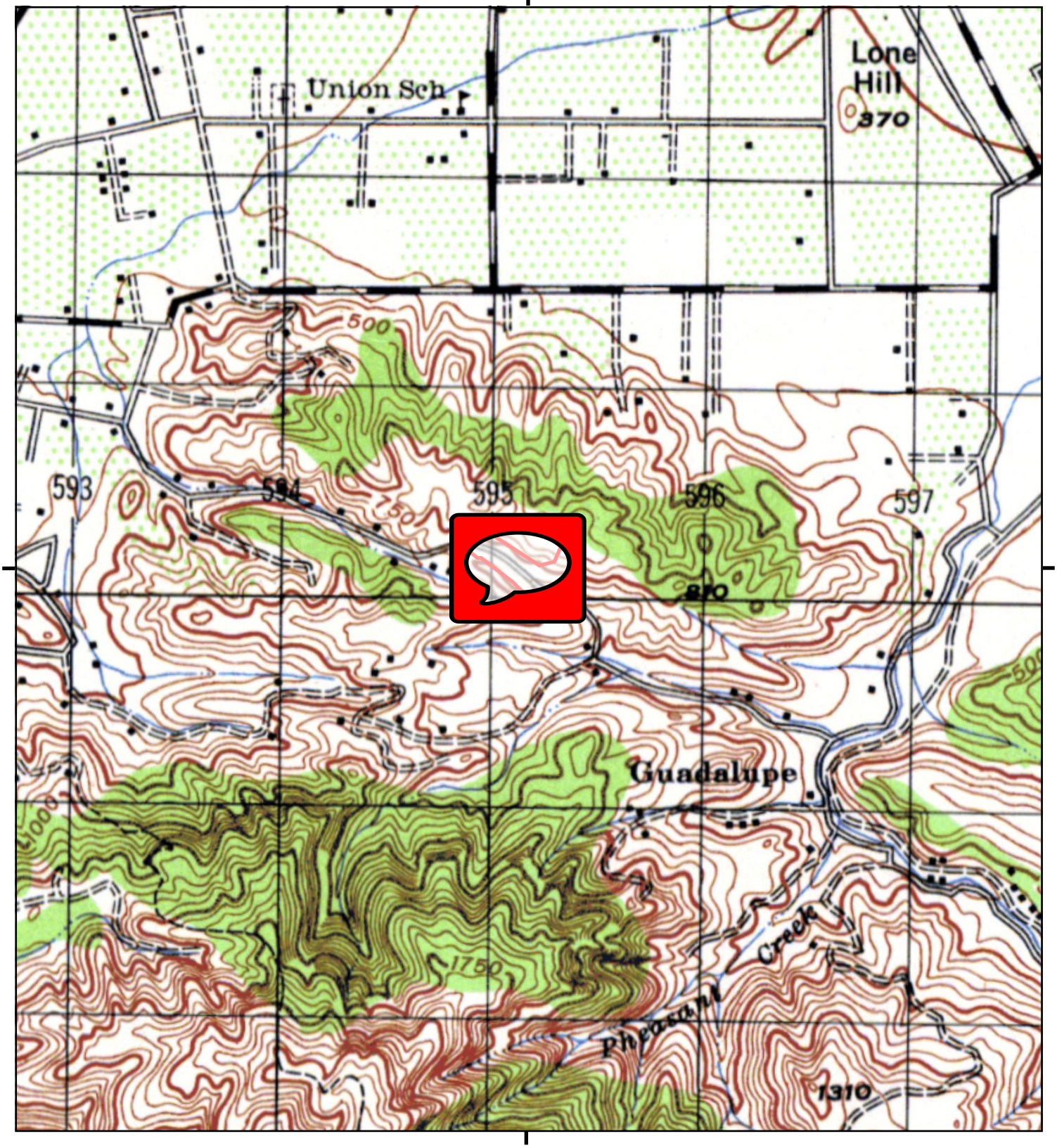
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Los Gatos, 1953, 7.5-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N



This report includes information from the following map sheet(s).

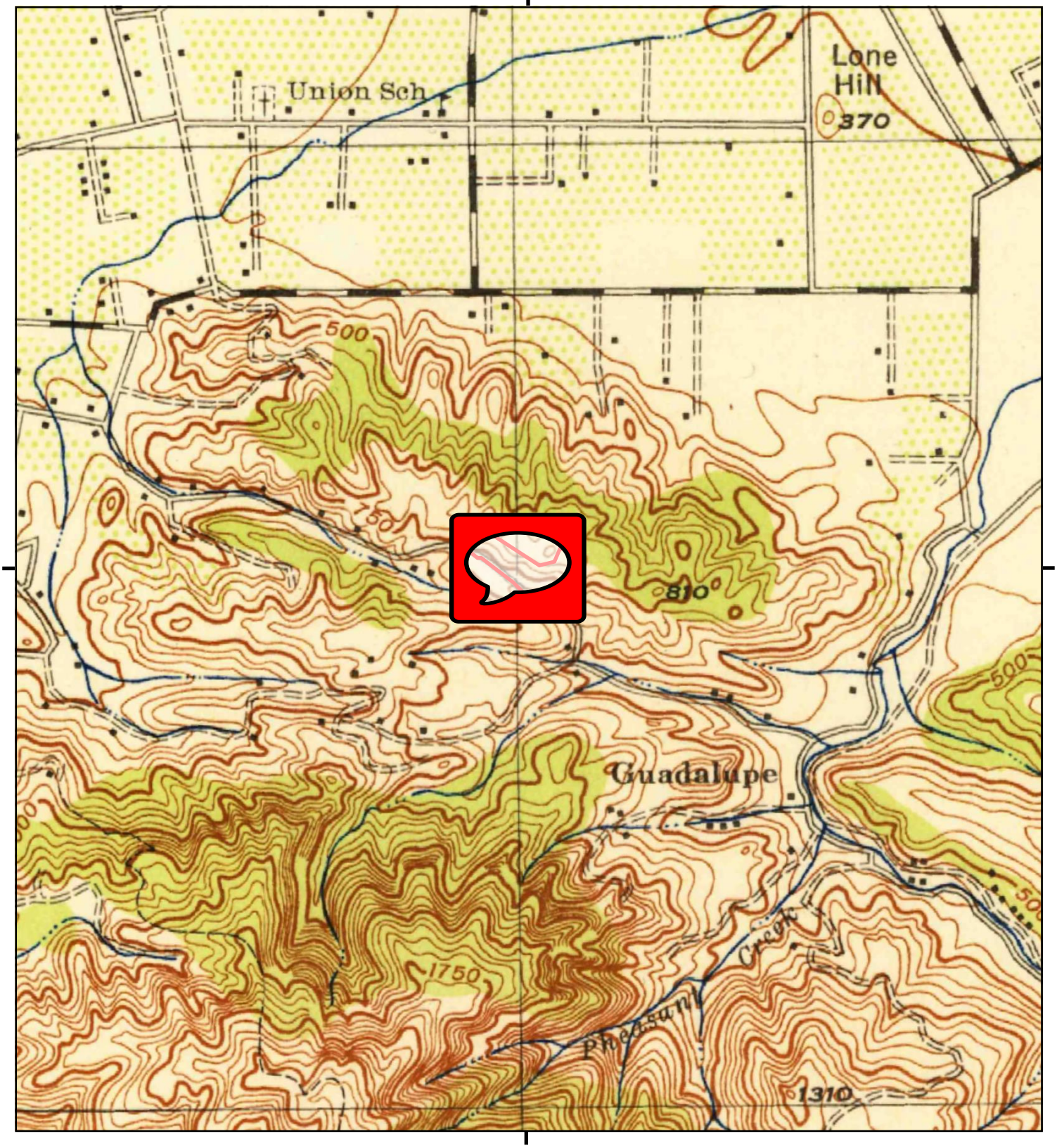
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, LOS GATOS, 1947, 15-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N



This report includes information from the following map sheet(s).

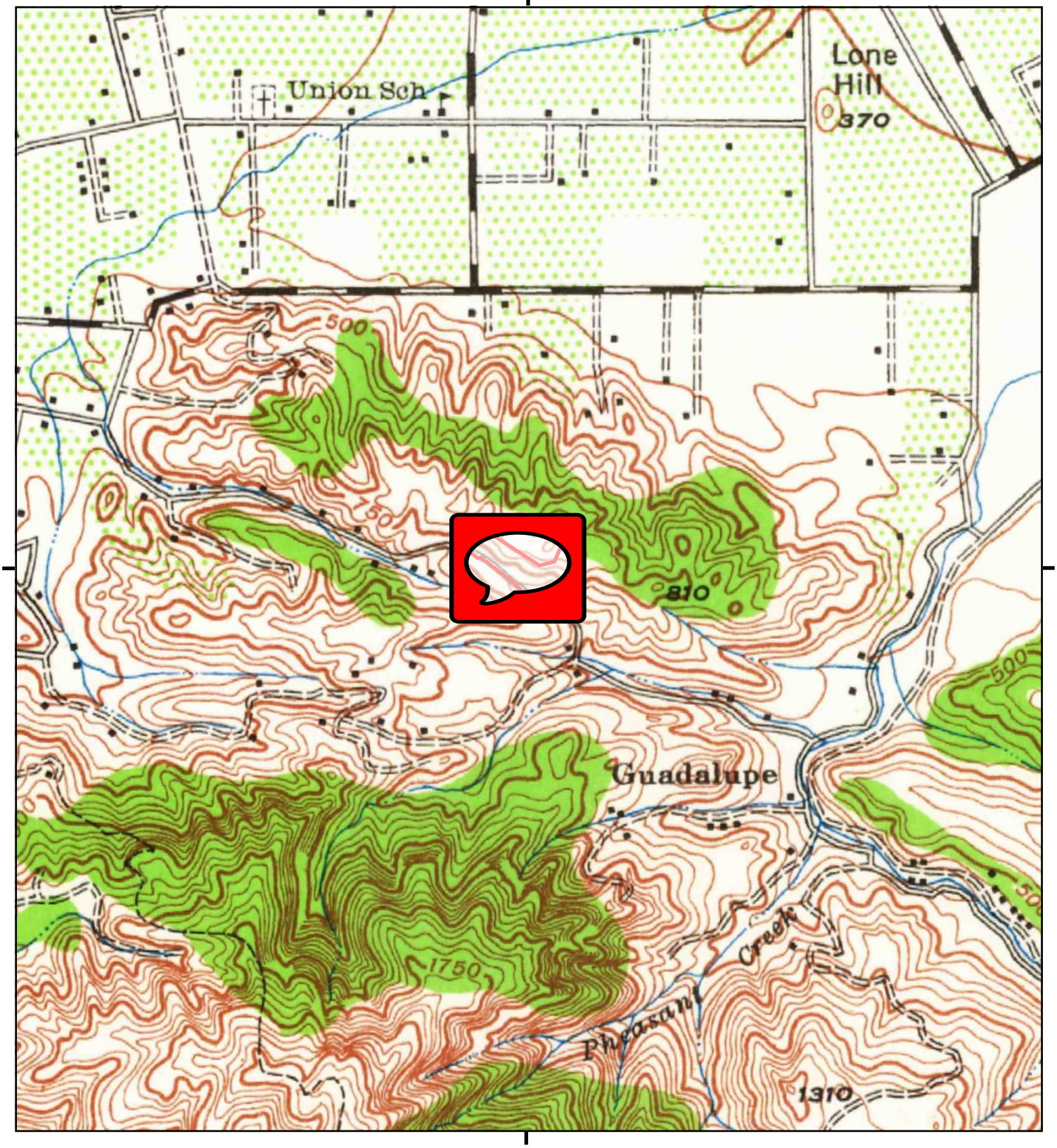
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Los Gatos, 1943, 15-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N



This report includes information from the following map sheet(s).

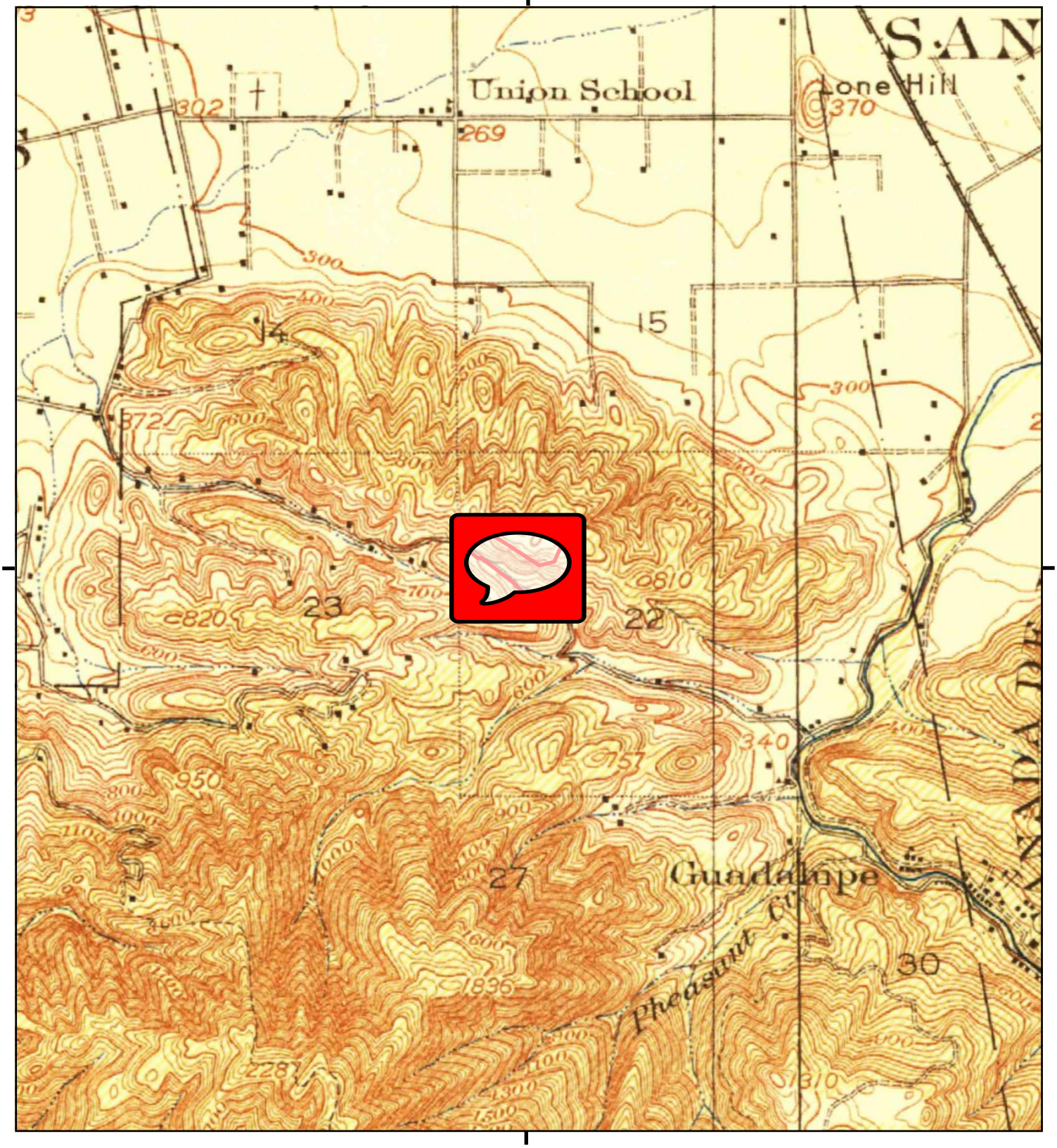
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Los Gatos, 1940, 15-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N



This report includes information from the following map sheet(s).

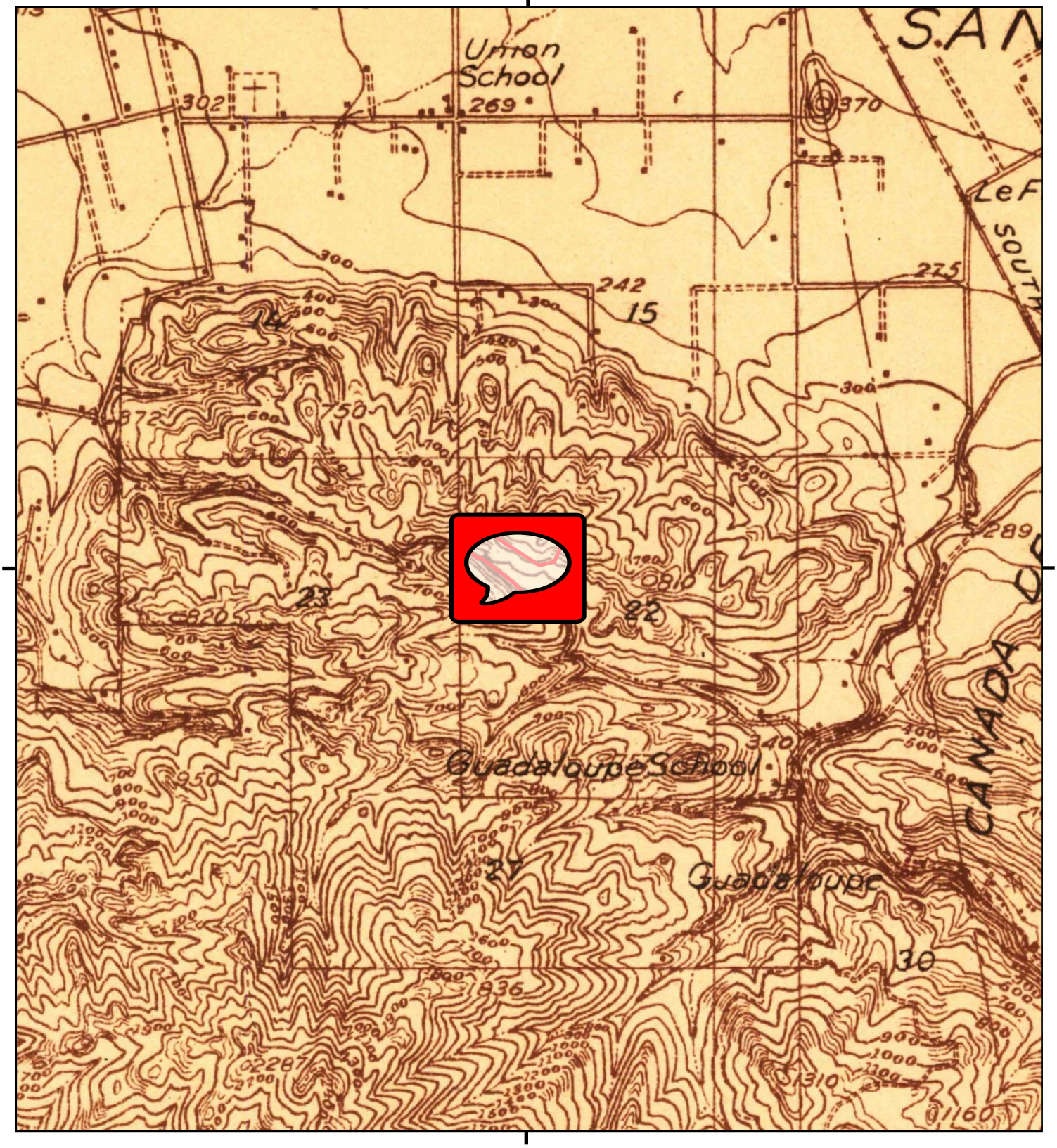
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, New Almaden, 1919, 15-minute
TP, Los Gatos, 1919, 15-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, New Almaden, 1916, 15-minute

SITE NAME: Shannon Road Phase I ESA
ADDRESS: 14915 SHANNON RD
LOS GATOS, CA 95032
CLIENT: Geocon Consultants, Inc.

N

APPENDIX F

Shannon Road Phase I ESA
14915 SHANNON RD
LOS GATOS, CA 95032

Inquiry Number: 7058972.5
July 22, 2022

The EDR-City Directory Image Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

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with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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Data by
infoUSA®
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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2017	☑	☐	EDR Digital Archive
2014	☑	☐	EDR Digital Archive
2010	☑	☐	EDR Digital Archive
2005	☑	☐	EDR Digital Archive
2000	☑	☐	EDR Digital Archive
1995	☑	☐	EDR Digital Archive
1992	☑	☐	EDR Digital Archive
1985	☑	☐	Haines Criss-Cross Directory
1981	☑	☐	Haines Criss-Cross Directory
1976	☑	☐	Haines Criss-Cross Directory
1971	☑	☐	Haines Criss-Cross Directory
1968	☑	☐	Polk's City Directory
1962	☑	☐	Polk's City Directory

FINDINGS

TARGET PROPERTY STREET

14915 SHANNON RD
LOS GATOS, CA 95032

Year	*CD Image*	*Source*
SHANNON RD		
2017	pg A1	EDR Digital Archive
2014	pg A2	EDR Digital Archive
2010	pg A3	EDR Digital Archive
2005	pg A4	EDR Digital Archive
2000	pg A5	EDR Digital Archive
1995	pg A6	EDR Digital Archive
1992	pg A7	EDR Digital Archive
1985	pg A8	Haines Criss-Cross Directory
1981	pg A9	Haines Criss-Cross Directory
1976	pg A10	Haines Criss-Cross Directory
1971	pg A11	Haines Criss-Cross Directory
1968	pg A12	Polk's City Directory
1962	pg A13	Polk's City Directory

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

SHANNON RD 2017

14704	PANG, WEI
14720	BARNETT, JEFF V
14915	ELAM, RAY M
15100	JOHNSON, BLAIR
15280	SMITS, DIRK D

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

SHANNON RD 2014

14704	BONHAM, MARVIN L
14720	BARNETT, JEFF V
14900	SAMHOURI, JAMAL F
14915	ELAM, RAY M
15100	JOHNSON, FLOYD T
15110	FANELLI, GIOVANNI V
15215	ESTES, CHAD
15280	SMITS, DIRK D

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

SHANNON RD 2010

14704 BONHAM, MARVIN L
14720 BARNETT, JEFF V
14900 ABUZAYYAD, FATIMA
14915 ELAM, RAY M
15100 OCCUPANT UNKNOWN,
15110 FANELLI, DOMINICK V
15215 ESCOBEDO, EBARISTO
15280 SMITS, DIRK D

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

SHANNON RD 2005

14704 BONHAM, MARVIN L
14720 BARNETT, JEFF V
14900 OCCUPANT UNKNOWN,
14915 ELAM, RAY J
15100 JOHNSON, FLOYD L
15110 FANELLI, DOMINICK V
15215 ESCOBEDO, EBARISTO
15280 SMITS, JOSINE E

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

SHANNON RD 2000

14704	BONHAM, MARVIN L
14720	BARNETT, JEFFREY V
14900	BEYE, ROBERT
	HUANG, SALLY L
	SHACKLEFORD, JOHN E
14915	ELAM, RAY
14920	LUTHMAN, ELMER
15100	URBANO, DIANE B
15110	FANELLI, D
15215	SAHADI, HELEN M
15280	SMITS, DIRK

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

SHANNON RD 1995

14704 BONHAM, MARVIN L
14720 SUTHERLAND, WILLIAM A
14900 EMMA, VINCENT D
14915 ELAM, RAY JR
14920 LUTHMAN, ELMER
15100 JOHNSON, FLOYD L
15110 ACT
ASBESTOS REMOVAL & CONSULTANTS
FANELLI, D V
MAINTENANCE MEN PARKING LOT
15280 SMITS, DIRK

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

SHANNON RD 1992

14720 SUTHERLAND, WILLIAM A
14900 EMMA, VINCENT D
14915 ELAM, RAY JR
14920 LUTHMAN, ELMER
15100 JOHNSON, FLOYD L
15110 A C T
15280 SMITS, DIRK

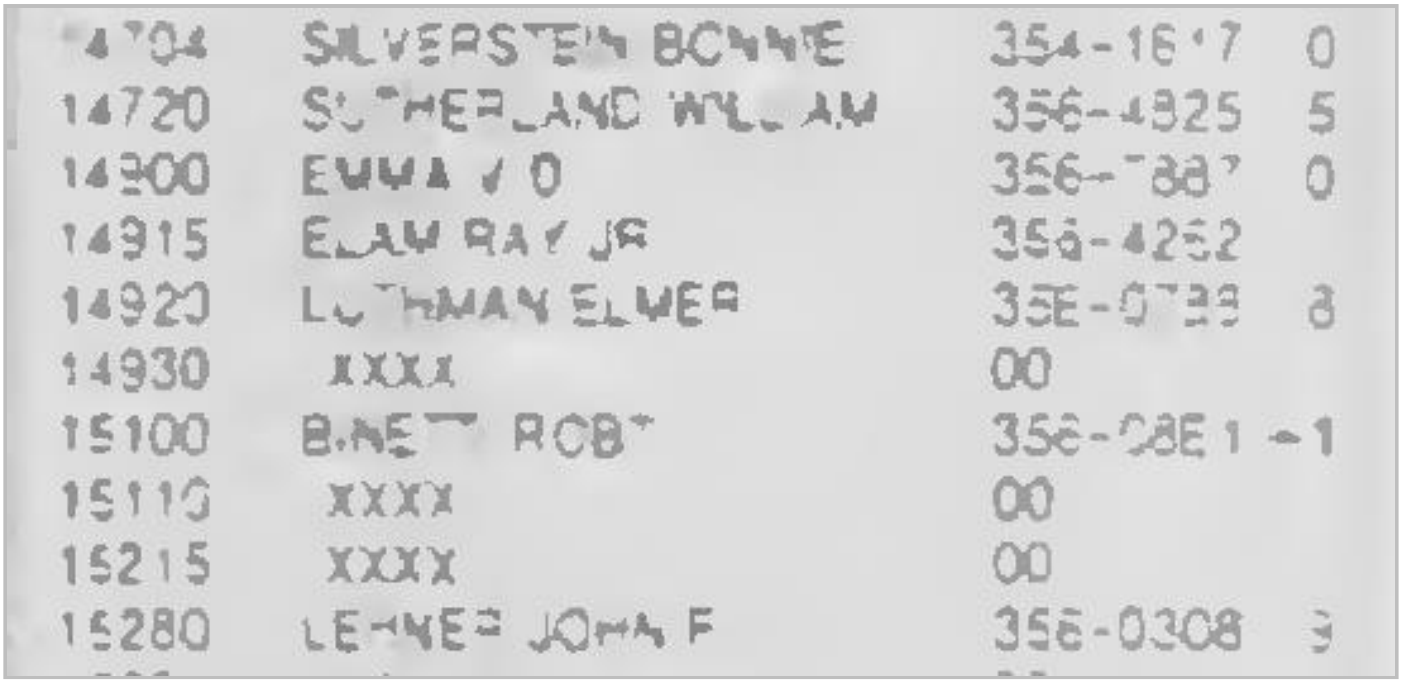
Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

SHANNON RD 1985

14704	WILLIAMS KENDALL M	356-9484	+S
14720	SUTHERLAND WILLIAM	356-4825	
14900	EMMA V D	356-7887	0
	EMMA VINCENT CHLD	356-2852	+S
	TISDALE CHARLIE	358-1084	+S
14915	ELAM RAY JR	356-4262	
14920	LUTHMAN ELMER	356-0788	8
14930	XXXX	00	
15100	JOHNSON FLOYD L	356-6858	+S
15110	A C T	356-7676	
	ASBESTOS REMOVAL	356-7676	4
	MAINTENANC LOT SWPG	356-7676	4
15215	XXXX	00	
15280	XXXX	00	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

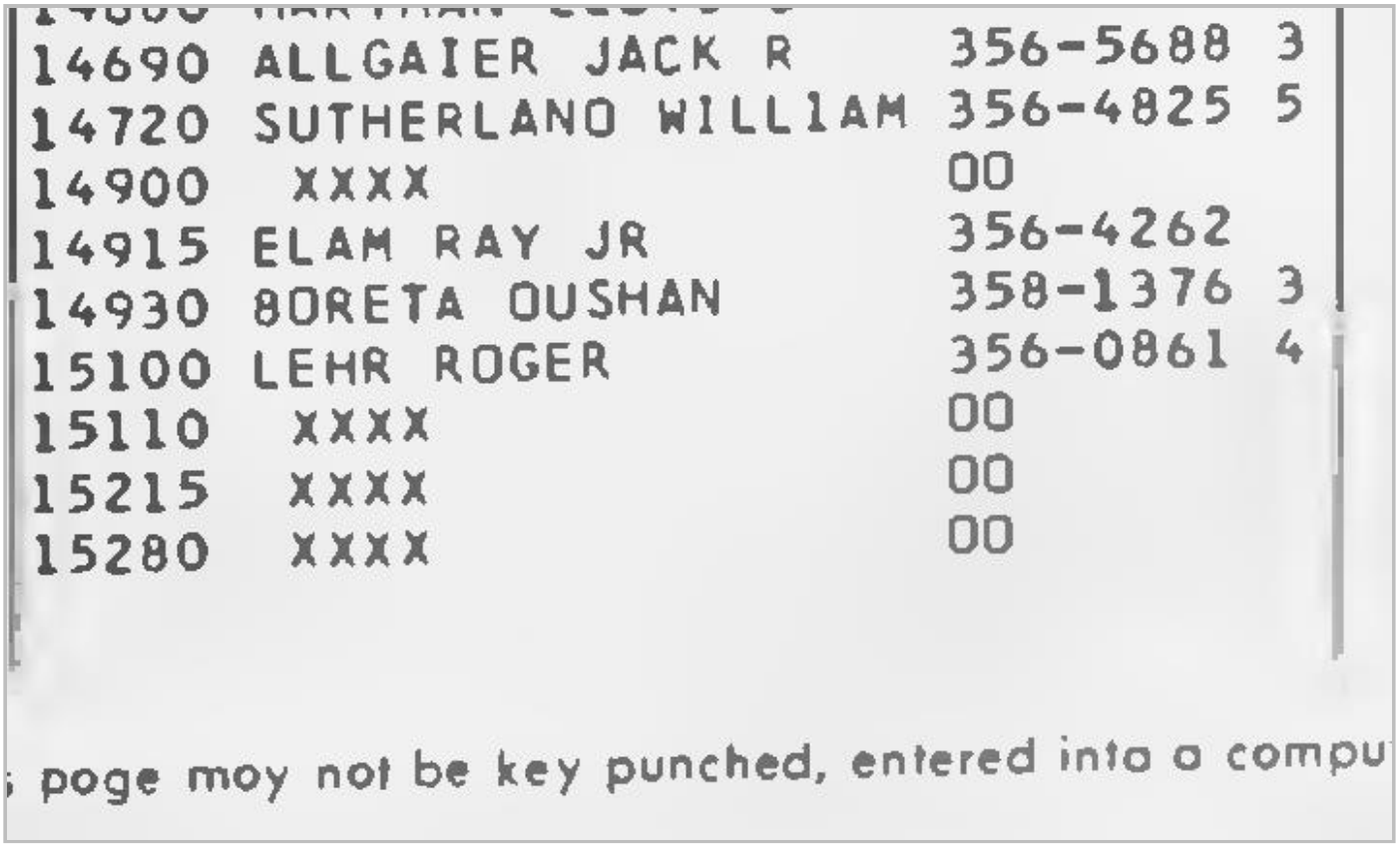
SHANNON RD 1981



14704	SILVERSTEIN BONNIE	354-16[illegible]7	0
14720	SUTHERLAND WILLIAM	356-4825	5
14900	EMMA J O	356-[illegible]88[illegible]	0
14915	ELAM RAY JR	356-4252	
14920	LUTHMAN ELMER	35E-0[illegible]39	8
14930	XXXX	00	
15100	BANE[illegible] ROB[illegible]	356-08E1	-1
15110	XXXX	00	
15215	XXXX	00	
15280	LEHNER JOHN F	356-0308	3

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

SHANNON RD 1976



14690	ALLGAIER JACK R	356-5688	3
14720	SUTHERLAND WILLIAM	356-4825	5
14900	XXXX	00	
14915	ELAM RAY JR	356-4262	
14930	BORETA OUSHAN	358-1376	3
15100	LEHR ROGER	356-0861	4
15110	XXXX	00	
15215	XXXX	00	
15280	XXXX	00	

poge moy not be key punched, entered into a compu

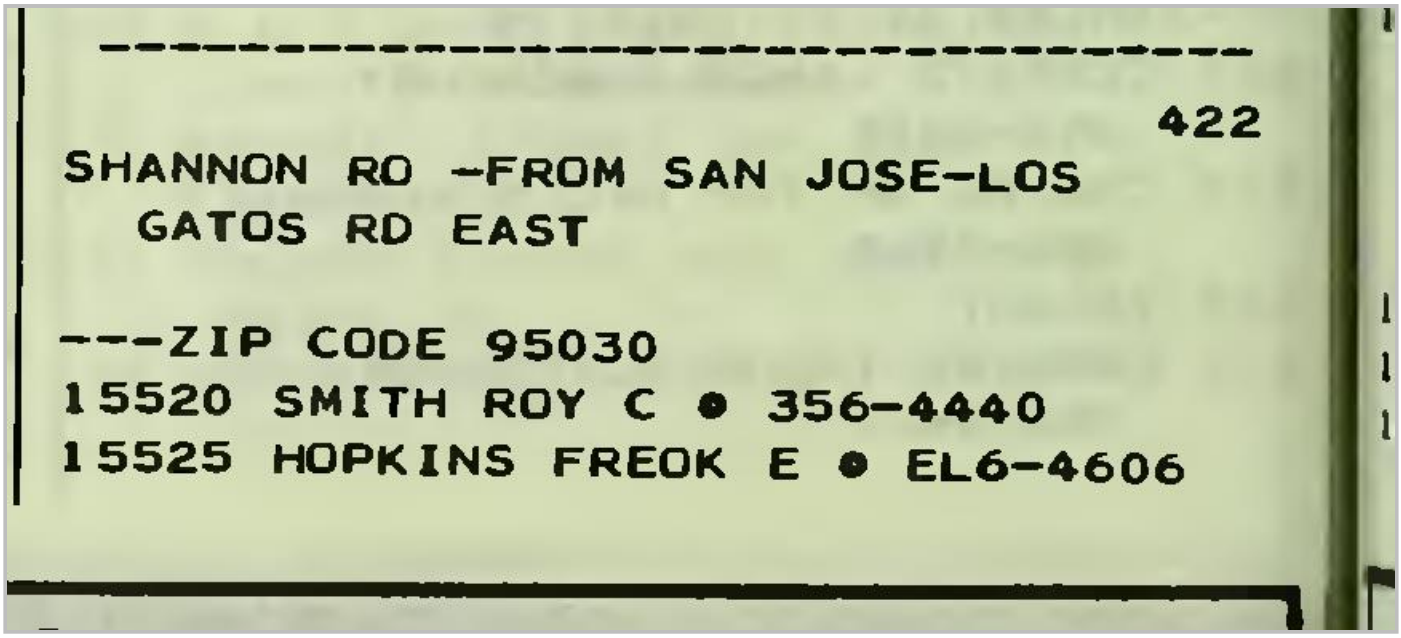
Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

SHANNON RD 1971

14690	ALLGAIR JACK R	356-5688
14900	CHIECHI MICHELE A	356-2959
14915	ELAM RAY JR	356-4262
15110	FANELLI DOMINICK V	356-7983
15215	XXXX	OO
15280	WOOD RALPH C	356-6804

Target Street	Cross Street	Source
✓	-	Polk's City Directory

SHANNON RD 1968



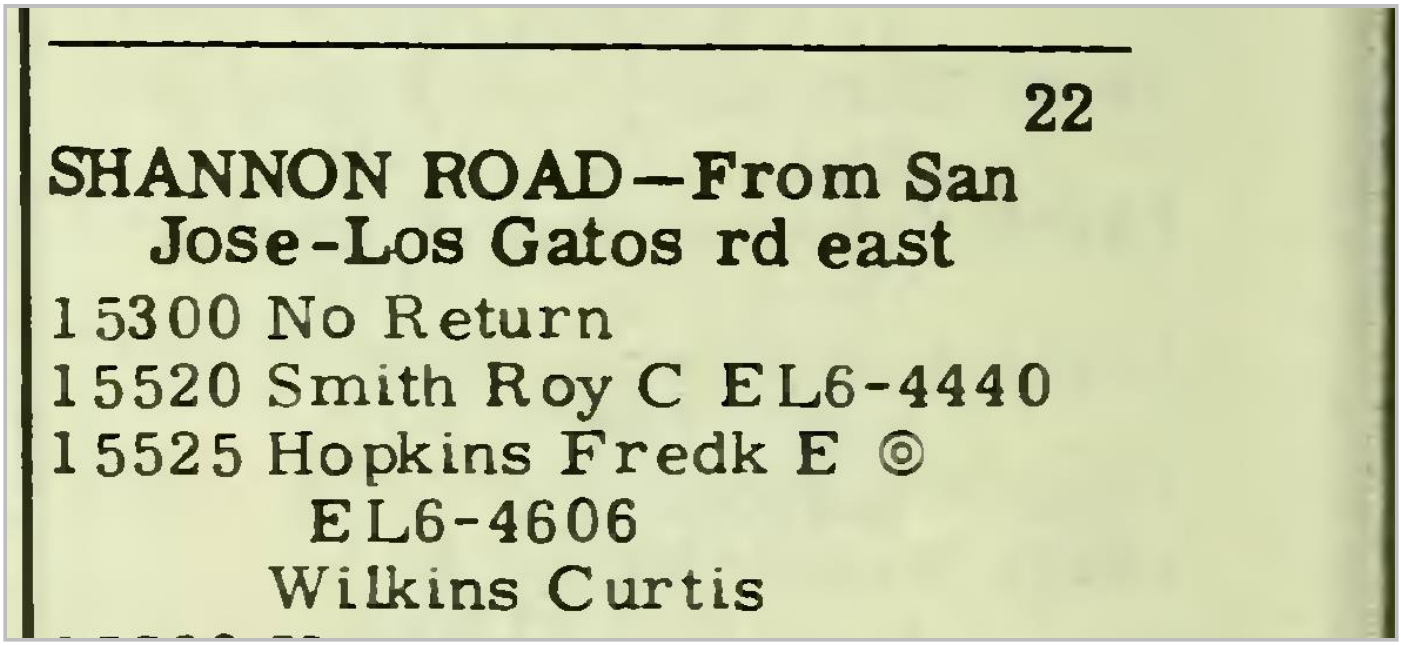
422

SHANNON RD -FROM SAN JOSE-LOS
GATOS RD EAST

---ZIP CODE 95030
15520 SMITH ROY C • 356-4440
15525 HOPKINS FREOK E • EL6-4606

Target Street	Cross Street	Source
✓	-	Polk's City Directory

SHANNON RD 1962



22

SHANNON ROAD—From San Jose-Los Gatos rd east

15300 No Return

15520 Smith Roy C EL6-4440

15525 Hopkins Fredk E ◎
EL6-4606
Wilkins Curtis

APPENDIX G

Site Owner/Occupant Questionnaire

The following questions are for: (1) the current owner of the property, (2) any major occupant of the property or, if the property does not have any major occupants, at least 10% of the occupants of the property, and (3) in addition to the current owner and the occupants identified in (2), any occupant likely to be using, treating, generating, storing, or disposing of hazardous substances and/or petroleum products on or from the property. A major occupant is any occupant using at least 40% of the leasable area of the property or any anchor tenant when the property is a shopping center. In a multi-family property containing both residential and commercial uses, residential occupants do not need to respond to this questionnaire unless they are involved in or have knowledge of the commercial or other uses.

Address:	14195 SHANNON RD., LOS GATOS
Description of Site:	20 AC HILLSIDE FAMILY FARM WALNUT ORCHARD

Question	Owner			Occupants (if applicable)		
1a. Is the property used for an industrial use?	Yes	(No)	Unk	Yes	No	Unk
Explain if yes:						
1b. Is any adjoining property used for an industrial use?	Yes	(No)	Unk	Yes	No	Unk
Explain if yes:						
2a. Have you observed evidence of or do you have any knowledge that the property has been used for an industrial use in the past?	Yes	(No)	Unk	Yes	No	Unk
Explain if yes:						
2b. Have you observed evidence of or do you have any knowledge that any adjoining property has been used for an industrial use in the past?	Yes	(No)	Unk	Yes	No	Unk
Explain if yes:						
3a. Is the property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes	(No)	Unk	Yes	No	Unk
Explain if yes:						
3b. Is any adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes	(No)	Unk	Yes	No	Unk
Explain if yes:						

4a. Have you observed evidence of or do you have any knowledge that the property was previously used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
4b. Have you observed evidence of or do you have any knowledge that any adjoining property was previously used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
5a. Are there currently any damaged or discarded automotive or industrial batteries, petroleum products, pesticides, paints or other chemicals in individual containers of > 5gal (19L) in volume or 50gal (190L) in the aggregate, stored on or used at the property or facility?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
5b. Have you observed evidence of or do you have any knowledge that there have been previously any damaged or discarded automotive or industrial batteries, petroleum products, pesticides, paints or other chemicals in individual containers of > 5gal (19L) in volume or 50gal (190L) in the aggregate, stored on or used at the property or facility?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
6a. Are there currently any industrial drums (typically 55 gal [208L]) or sacks of chemicals located on the property or at the facility?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
6b. Have you observed evidence of or do you have any knowledge that there have been previously any industrial drums (typically 55 gal [208L]) or sacks of chemicals located on the property or at the facility?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
7a. Have you observed evidence of or do you have any knowledge that fill dirt has been brought onto the property that originated from a contaminated site?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						

7b. Have you observed evidence of or do you have any knowledge that fill dirt has been brought onto the property that is of an unknown origin?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
8a. Are there currently any pits, ponds, or lagoons located on the property in connection with waste treatment or disposal?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
8b. Have you observed evidence of or do you have any knowledge that there have been previously any pits, ponds, or lagoons located on the property in connection with waste treatment or disposal?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
9a. Is there currently any stained soil on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
9b. Have you observed evidence of or do you have any knowledge that there has been previously any stained soil on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
10a. Are there currently any registered or unregistered storage tanks (aboveground or underground) located on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
10b. Have you observed evidence of or do you have any knowledge that there have been previously any registered or unregistered storage tanks (aboveground or underground) located on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
11a. Are there currently any vent pipe, fill pipes, or access ways indicating a fill pipe protruding from the ground on the property or adjacent to any structure located on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
11b. Have you observed evidence of or do you have any knowledge that there have been previously any vent pipe, fill pipes, or access ways indicating a fill pipe protruding from the ground on the property or adjacent to any structure located on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						

12a. Are there currently any flooring, drains, or walls located within the facility that are stained by substances other than water or were emitting foul odors?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
12b. Have you observed evidence of or do you have any knowledge that there have been previously any flooring, drains, or walls located within the facility that are stained by substances other than water or were emitting foul odors?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
13a. If the property is served by a private well or non-public water system, is there evidence of or do you have knowledge that contaminants have been identified in the well or system that exceed guidelines applicable to the water system?	Yes	No	Unk	Yes	No	Unk
Explain if yes: KENNON MUTUAL WATER COMPANY PROVIDES WATER.						
13b. If the property is served by a private well or non-public water system, is there evidence of or do you have knowledge that the well has been designated as contaminated by any government/health agency?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
14. Do you have any knowledge of environmental liens of governmental notification relating to past or recurrent violations of environmental laws with respect to the property or any facility located on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
15a. Have you been informed of the past existence of hazardous substances and/or petroleum products with respect to the property or any facility located on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes: HISTORICAL USE OF DDT.						
15b. Have you been informed of the current existence of hazardous substances and/or petroleum products with respect to the property or any facility located on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
15c. Have you been informed of the past existence of environmental violations with respect to the property or any facility located on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
15d. Have you been informed of the current existence of environmental violations with respect to the property or any facility located on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						

16. Do you have any knowledge of any environmental site assessment of the property or facility that indicated the presence of hazardous substances and/or petroleum products on, or contamination of, the property or recommended further assessment of the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes: PHASE ONE BY AWR						
17. Do you know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substances and/or petroleum products involving the property by any owner or occupant of the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
18a. Does the property discharge wastewater, on or adjacent to the property, other than stormwater, into a stormwater sewer system?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
18b. Does the property discharge wastewater, on or adjacent to the property, other than stormwater, into a sanitary sewer system?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
19. Have you observed evidence of or do you have any knowledge that any hazardous substances and/or petroleum products, unidentified waste materials, tires, automotive or industrial batteries, or any other waste materials have been dumped above grade, buried and/or burned on the property?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						
20. Is there a transformer, capacitor, or any hydraulic equipment for which there are records indicating the presence of PCBs?	Yes	No	Unk	Yes	No	Unk
Explain if yes:						

Unk – "unknown" or "no response"

Additional Questions

A) Describe the current use of the property.

RESIDENTIAL HOUSE RENTAL & FIREWOOD SALES.

B) How long has the property been used for this purpose?

77 YEARS

C) How long have you owned the property?

ELAM HAS OWNED PROPERTY SINCE 1945

D) List the existing structures on the property and their age.

BARNS & SHEDS
SINGLE FAMILY HOME

E) Describe the past uses, owners, and operators of the property. (Be as detailed as possible and note approximate time periods.) ELAM FAMILY FARM. PRIVATE RESIDENCE & WALNUT ORCHARD. INACTIVE ORCHARD SINCE

This questionnaire was completed by:

Name: TERENCE J. SLEWCZYK P.E.
Title: PRINCIPAL ENGINEER
Address: TS/CIVIL ENGINEERING
1776 TECHNOLOGY DR.
SAN JOSE, CA 95110
Phone number: (408) 316-2696
Date: DEC 5, 2022

Project No. S2421-07-02
March 9, 2023

Nick Pappani
Raney Planning & Management, Inc.
1501 Sports Drive, Suite A
Sacramento, California 95834
npappani@raneymanagement.com

Subject: PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT
14915 SHANNON ROAD
LOS GATOS, SANTA CLARA COUNTY, CALIFORNIA

Mr. Pappani:

In accordance with the Raney Planning and Management, Inc. (Raney) amendment #1 to the *Sub-Consultant Agreement* executed on July 14, 2022, Geocon Consultants, Inc. (Geocon) has performed a Phase II Environmental Site Assessment (ESA) of the property at 14915 Shannon Road (the Site) near Los Gatos, Santa Clara County, California. We understand that Raney is preparing an Initial Study/Mitigated Negative Declaration (IS/MND) for the Town of Los Gatos for future residential development of the Site, and they will include our previous Phase I ESA report and the enclosed Phase II ESA report in their IS/MND.

We performed the Phase II ESA to assess surficial soil on the Site for the potential presence of contaminants of concern including organochlorine pesticides, metals, and petroleum hydrocarbons on the Site. The enclosed report describes the Phase II ESA services, presents the results of laboratory analysis of soil samples, and provides conclusions and recommendations based on the findings.

We appreciate the opportunity to have assisted Raney with this project. Please contact us if you have any questions concerning this report or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.

Christine Hughes
Senior Staff Geologist

Jim Brake, PG
Senior Geologist

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PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT

1.0 INTRODUCTION

Geocon Consultants, Inc. (Geocon) performed a Phase II Environmental Site Assessment (ESA) of the property located at 14915 Shannon Road (the Site) near Los Gatos, Santa Clara County, California (Figure 1). We performed the Phase II ESA for Raney Planning and Management, Inc. (Raney; the Client) who is preparing an Initial Study/Mitigated Negative Declaration (IS/MND) for the Town of Los Gatos for future residential development of the Site and will include our previous Phase I ESA report and this Phase II ESA report in their IS/MND.

This report states the purpose and objectives of the Phase II ESA, provides a summary of pertinent background information for the Site, describes the methodologies and procedures used to complete the Phase II ESA, presents the results of laboratory analysis of soil samples collected from the Site, and provides conclusions and recommendations based on the findings of the Phase II ESA.

2.0 PURPOSE AND OBJECTIVES

The primary purpose of the Phase II ESA was to assess surficial soil on the Site for the potential presence of contaminants of concern (COC) associated with the past agricultural (orchard) use of the Site including organochlorine pesticides (OCP) and arsenic, which we identified during our Phase I ESA as a recognized environmental condition (REC) for the Site. Additionally, the Phase II ESA was intended to assess soil in two other areas of the Site where we identified uses and/or conditions as potential environmental concerns for the Site - a firewood-cutting area in the southwestern portion of the Site where gasoline was stored and used in equipment and potentially undocumented fill material in a corral area east of the site residence in the southern-central portion of the Site. If the Phase II ESA confirmed that COCs were present in site soil in any of the assessed areas, then we would evaluate if they were present at concentrations that could pose a threat to the health of future site occupants.

The primary objective of the Phase II ESA was to collect representative surficial soil samples from former orchard areas of the Site and have them analyzed for the COCs in accordance with the California Department of Toxic Substances Control's (DTSC) *Interim Guidance for Sampling Agricultural Properties (Third Revision)* (guidance) dated August 7, 2008. Another objective was to collect representative soil samples from the southwestern and southern-central portions of the Site and have them analyzed for the COCs specific to those areas.

3.0 BACKGROUND

3.1 Site Location and Description

The approximate 27.1-acre Site is located at 14915 Shannon Road near Los Gatos in Santa Clara County, California (Figure 1). The Site is approximately 2.5 miles east of State Route (SR) 17 on the southern side of Blossom Hill in an area that is outside the Los Gatos city limits, but within its sphere of influence. The Site is predominantly fallow agricultural land with a residential area in the southern-central portion and a commercial firewood-cutting area in the southwestern portion of the Site.

The Site is surrounded primarily by low-density, single-family residential properties to the north and south with similar fallow agricultural property adjoining to the west of the Site and undeveloped property adjoining to the east.

3.2 Previous Site Assessment

We performed a Phase I ESA of the Site in February 2023 and identified the past agricultural (orchard) use of the majority of the Site from sometime prior to 1939 until sometime between 1956 and 1963, and the reported application of OCPs to the orchards, as an REC for the Site. As described in our Phase I ESA report, AWR Environmental (AWR) performed a Phase I ESA of the Site in May 2022, which included a limited assessment of soil in one area of the Site for OCPs. AWR reported that the site owner, Bud Elam, stated during an interview that "the walnut orchards were periodically sprayed with pesticides, which ceased sometime in the 1970s." AWR concluded, and we concurred, that the historical application of pesticides to the orchards at the Site was an REC for the Site.

AWR collected four surficial soil samples from an area in the southern-central portion of the Site near the residence and associated structures and had the samples analyzed for OCPs. The OCPs 4,4-DDE and 4,4-DDT were detected in each of the soil samples at concentrations ranging from 0.086 to 0.13 milligrams per kilogram (mg/kg) and 0.028 to 0.038 mg/kg, respectively. AWR compared the OCP concentrations detected in the soil samples to the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) Environmental Screening Levels (ESL) for 4,4-DDT and 4,4-DDE in soil in a residential setting, for construction worker exposure, and for their presence in terrestrial habitat. The reported 4,4-DDT concentrations for all four soil samples exceeded the ESL for 4,4-DDT in terrestrial habitat of 0.0011 mg/kg, but were all less than the ESLs for soil in a residential setting and construction worker exposure of 1.9 and 8.5 mg/kg, respectively. Based on AWR's findings for the limited area they assessed, we recommended that soil in the rest of the former orchard areas on the Site be assessed for the presence of OCPs and associated metals.

During our Phase I ESA site reconnaissance, we observed that the southwestern portion of the Site was used to cut, store, and sell firewood, and we observed gasoline-powered vehicles, equipment, and hand tools there with the potential to have released gasoline to the ground surface. In our Phase I ESA report we

identified the potential release(s) of gasoline to soil in this portion of the Site as a potential environmental concern for the Site and recommended that soil samples be collected from this area and analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylenes (BTEX).

We also observed potentially undocumented fill material in the corral area east of the residence in the southern-central portion of the Site and identified it as a potential environmental concern for the Site. We could not discern if the fill material had been imported from offsite or had been generated from soil on the Site. We recommended that soil samples be collected from the fill material and analyzed for metals.

Mr. Elam informed us after the completion of this Phase II ESA that soil in the area of suspected fill was not imported but is a mixture of soil from the Site and cow and horse manure.

4.0 ASSESSMENT SERVICES

The Phase II ESA consisted of the following tasks:

- Pre-field activities – subcontractor procurement;
- Field activities – soil sample collection; and
- Laboratory analysis: chemical analysis of soil samples for OCPs, metals, TPHg, and BTEX.

Following are descriptions of each task.

4.1 Pre-field Activities

We retained California Laboratory Services (CLS) of Rancho Cordova, California for laboratory analysis of soil samples. CLS is accredited by the State Water Resources Control Board's Environmental Laboratory Accreditation Program and the National Environmental Laboratory Accreditation Program.

4.2 Field Activities

4.2.1 Soil Sample Collection and Observations

On February 13, 2023, we divided the Site into seven sections (S1 through S7) of approximately equal area (Figure 2) based on the acreage of the area to be assessed and in accordance with the DTSC guidance. Within each section, we collected four discrete (individual) soil samples (samples A, B, C, and D) from the upper 6 inches of soil (beneath the surface vegetative layer, where present) with a clean, stainless-steel trowel. We placed a portion of each discrete sample into a one-gallon Ziploc bag and homogenized the soil to create a single four-part composite soil sample representative of surface soil in that section of the Site. We then filled a new, laboratory-provided, 8-ounce glass jar with the homogenized soil and labeled the jar with a unique sample identification number (e.g., COMP-1 indicating a composite soil sample from section 1) and date and time of collection , and placed it into a chilled cooler for transport under chain-of-custody to CLS for analysis. We then repeated this sample collection, compositing, and handling process in each section.

Prior to compositing, we also placed a portion of the discrete surface soil sample collected from the "A" location within each section into a 4-ounce glass jar for arsenic analysis. These samples were labeled and handled as described above.

In the firewood-cutting area in the southwestern portion of the Stie, we collected separate discrete surficial soil samples from locations 7A and 7C by driving a 6-inch-long by 2-inch-diameter stainless steel tube into the soil. We capped the exposed ends of the sample tubes with Teflon sheets and tight-fitting plastic end caps, then labeled and handled these soil samples as described above.

In the area of suspected fill in the southern-central portion of the Site, we collected three fill material samples from the locations shown on Figure 2 at depths ranging from approximately 0.5 to one foot using a stainless steel trowel. We transferred the samples to stainless steel sample tubes, capped them, and labeled and handled them as described above.

4.2.2 Field Quality Assurance/Quality Control

Our field quality assurance/quality control (QA/QC) procedures included decontamination of the sampling equipment prior to each use and providing chain-of-custody documentation for each sample submitted to the laboratory. We decontaminated the sampling equipment by washing it in an Alconox® solution followed by a double-rinse with distilled water.

4.3 Laboratory Analysis

CLS performed the following laboratory analyses:

- analyzed composite soil samples COMP-1 through COMP-7 for OCPs by United States Environmental Protection Agency (USEPA) Test Method 8081A;
- analyzed discrete surface soil samples 1A through 7A for arsenic by USEPA Test Method 6010B;
- analyzed discrete soil samples SS-7A and SS-7C for TPHg, benzene, toluene, ethylbenzene, and xylenes by USEPA Test Method 8015M; and
- analyzed discrete surface soil samples SS-8A through SS-8C for California Administrative Manual 17 metals by USEPA Test Method 6010B.

Laboratory analyses were conducted on a standard, 5-day turnaround time. Copies of the laboratory analytical report and chain-of-custody documentation are appended.

5.0 LABORATORY ANALYSIS RESULTS

Following are summaries of the results of laboratory analysis of the soil samples for OCPs, metals, and TPHg and a comparison of their reported concentrations to applicable regulatory health risk-based screening levels including the DTSC, Human Health Risk Assessment Note 3 screening levels (DTSC-SL) and the USEPA's Regional Screening Level (RSL). These screening levels are not enforceable cleanup levels, but are guidelines which, if exceeded, suggest that further assessment and possible corrective action to mitigate exposure to COCs may be warranted.

5.1 OCPs

As shown on Table 1, 4,4-DDE was detected in five of the composite soil samples at concentrations ranging from 5.9 micrograms per kilogram (µg/kg) to 26 µg/kg, which are less than the RSL for 4,4-DDE in residential soil of 2,000 µg/kg. 4,4-DDT was detected in two of the composite soil samples, and dieldrin and endrin aldehyde were detected in one composite soil sample at concentrations less than their respective RSLs for residential soil.

5.2 Arsenic

As shown on Table 2, arsenic was detected in one discrete soil sample only at a concentration of 2.6 mg/kg, which exceeds the DTSC-SL for arsenic in residential soil of 0.11 mg/kg. However, the reported arsenic concentration is within the range of naturally occurring ("background") concentrations for arsenic in California soils, which can be up to 11 mg/kg or higher depending on the mineralogy of the soil. The DTSC typically allows comparison of arsenic concentrations in soil to background levels as arsenic is a naturally occurring mineralogic component of many soils.

5.3 Metals

As shown on Table 2, the metals barium, chromium, cobalt, copper, lead, molybdenum, nickel, vanadium, and zinc were detected in at least one discrete sample collected from the fill material in the southern-central portion of the Site, but at concentrations less than their respective DTSC-SLs and RSLs for residential soil, where established.

5.4 Petroleum Hydrocarbons

TPHg and BTEX were not detected in the discrete samples collected from the firewood area in the southwestern portion of the Site at concentrations equal to or exceeding laboratory reporting limits.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This Phase II ESA did not identify COCs in soil samples collected from the three areas of concern on the Site at concentrations exceeding their respective DTSC-SLs or RSLs. Additional environmental investigation does not appear to be warranted, and the Site appears to be appropriate for residential use.

7.0 LIMITATIONS

This report has been prepared exclusively for Raney. The information obtained is only relevant as of the date of this report. Raney should recognize that this report is not a comprehensive site characterization and should not be construed as such. The findings presented in this report are predicated on the results of the limited sampling and laboratory analyses described herein.

Therefore, the report should only be deemed conclusive with respect to the information obtained. No guarantee of the results of the study is implied within the intent of this report. The services performed were conducted in accordance with the local standard of care in the geographic region at the time the services were rendered.

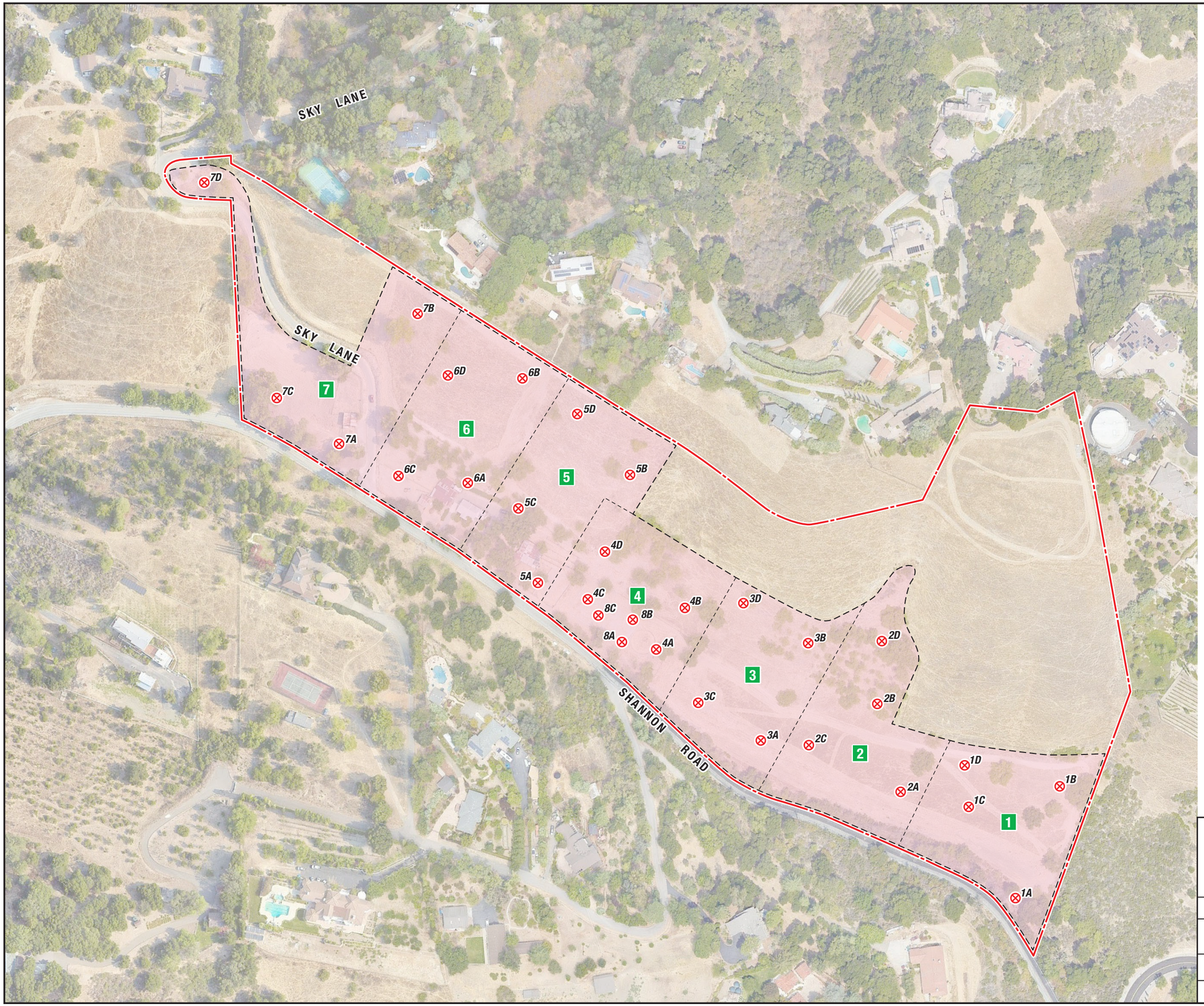
GEOCON
CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

14915 Shannon Road

Los Gatos,
California

SITE LOCATION MAP

S2421-07-02	March 2023	Figure 1



LEGEND:

- Approximate Site Boundary
- Area of Former Orchards
- 1A ⊗ Soil Sample Location
- 1 Section ID

Note: Discrete soil sample for arsenic analysis collected from location A of each section

N

0 200

Scale in Feet

GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

14915 Shannon Road

Los Gatos, California

SITE PLAN

S2421-07-02	March 2023	Figure 2

TABLE 1
SUMMARY OF LABORATORY ANALYSIS RESULTS - SOIL
ORGANOCHLORINE PESTICIDES BY USEPA METHOD 8081A
14915 SHANNON ROAD
LOS GATOS, SANTA CLARA COUNTY, CALIFORNIA

Sample ID	Sample Depth (feet)	Sample Date	4,4′-DDE	4,4′-DDT	Dieldrin	Endrin aldehyde	Other OCPs
			µg/kg				
COMP-1	0-0.5	2/13/2023	16	<3.3	<1.0	<3.3	ND
COMP-2	0-0.5	2/13/2023	9.3	<3.3	<1.0	<3.3	ND
COMP-3	0-0.5	2/13/2023	5.9	<3.3	<1.0	<3.3	ND
COMP-4	0-0.5	2/13/2023	<3.3	6.0	2.6	<3.3	ND
COMP-5	0-0.5	2/13/2023	53	9.6	<1.0	<3.3	ND
COMP-6	0-0.5	2/13/2023	<17	<17	<5.0	18	ND
COMP-7	0-0.5	2/13/2023	26	<17	<5.0	<17	ND
DTSC HHRA Note 3 SLs - Residential			2,000	1,900	34	---	Various
USEPA RSL Residential			2,000	1,900	34	---	Various

Notes:
µg/kg = micrograms per kilogram
OCP = organochlorine pesticides
< = less than laboratory reporting limits
ND = not detected at concentrations equal to or exceeding laboratory reporting limits
--- = not established
DTSC HHRA Note 3 SLs = California Department of Toxic Substances Control Human Health Risk Assessment Note 3 Screening Levels for soil in a residential setting, June 2020, Revised May 2022
USEPA RSL = United States Environmental Protection Agency Regional Screening Levels for soil in a residential setting, November 2020

TABLE 2
SUMMARY OF LABORATORY ANALYSIS RESULTS - SOIL
CAM 17 METALS
14915 SHANNON ROAD
LOS GATOS, SANTA CLARA COUNTY, CALIFORNIA

Sample ID	Sample Depth (feet)	Sample Date	CAM 17 Metals															
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
			mg/kg																
SS-8A	0-0.5	2/13/2023	<2.5	<1.0	65	<1.0	<1.0	23	1.2	9.4	4.5	<0.10	1.0	19	<2.5	<1.0	<4.0	21	26
SS-8B	0-0.5	2/13/2023	<2.5	<1.0	31	<1.0	<1.0	11	<1.0	3.7	2.7	<0.10	<1.0	8.2	<2.5	<1.0	<4.0	11	15
SS-8C	0-0.5	2/13/2023	<2.5	<1.0	63	<1.0	<1.0	20	1.2	11	5.6	<0.10	<1.0	18	<2.5	<1.0	<4.0	18	24
1A	0-0.5	2/13/2023	---	<2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2A	0-0.5	2/13/2023	---	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3A	0-0.5	2/13/2023	---	<2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4A	0-0.5	2/13/2023	---	<2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5A	0-0.5	2/13/2023	---	<2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6A	0-0.5	2/13/2023	---	<2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7A	0-0.5	2/13/2023	---	<2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
DTSC HHRA Note 3 SL - Residential			---	0.11	---	16	---	---	---	---	80	1.0	---	820	---	---	---	---	---
USEPA RSL - Residential			31	0.68	15,000	160	7.1	12,000	23	3,100	400	11	390	1,500	390	390	0.78	390	23,000
Background			---	0.6-11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

CAM = California Administrative Manual

mg/kg = milligrams per kilogram

< = less than laboratory reporting limit

--- = not analyzed/not established/not applicable

DTSC HHRA Note 3 SL = California Department of Toxic Substances Control Human Health Risk Assessment Note 3 Screening Levels for soil in a residential setting, June 2020, Revised May 2022

USEPA RSL = United States Environmental Protection Agency Regional Screening Levels for soil in a residential setting, November 2020

Background = naturally occurring concentration range from Bradford, et al, *Background Concentrations of Trace and Major Elements in California Soil,* Kearney Foundation Special Report, March 1996.

APPENDIX A

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

February 22, 2023

CLS Work Order #: 23B0826
COC #:

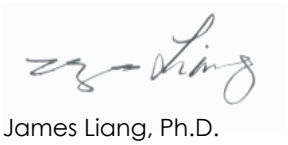
Christine Hughes
Geocon Consultants
3160 Gold Valley Dr. Suite #800
Rancho Cordova, CA 95742

Project Name: Shannon Rd Ph II

Enclosed are the results of analyses for samples received by the laboratory on 02/15/23 11:44. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



James Liang, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

CHAIN OF CUSTODY

CLS ID No.: 23B0824 LOG

HIGHLIGHTED AREAS MUST BE FILLED OUT PRIOR TO ACCEPTANCE

REPORT TO:

NAME AND ADDRESS: Christine Hughes
Hughes@geoconinc.com

PROJECT MANAGER: C. Hughes PHONE# 209-663-8884

PROJECT NAME: Shannon Rd Ph II

SAMPLED BY: C. Hughes / J. Esquivel

JOB DESCRIPTION: OCP, As, TPH soil sampling

SITE LOCATION: 14915 Shannon Rd, Los Gatos

CLIENT JOB NUMBER: 52421-07-02

DESTINATION LABORATORY: ☒ CLS (916) 638-7301, 3249 FITZGERALD RD., RANCHO CORDOVA, CA. 95742

☐ OTHER

GEOTRACKER: EDF REPORT ☐ YES ☒ NO
GLOBAL ID:

CDPH WRITE ON EDT TRANSMISSION? ☐ YES ☒ NO
STATE SYSTEM NUMBER
IF "YES" PLEASE ENTER THE SOURCE NUMBER(S).

COMPOSITE:

ANALYSIS REQUESTED

DATE	TIME	SAMPLE IDENTIFICATION	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	OCPs via 8081A	Arsenic via 6010	~~TPH (Glass, BTEX) 8015M and 8260B~~	~~CAM 17 metals via 6010~~	TURN AROUND TIME 1 DAY	2 DAY	3 DAY	5 DAY	SPECIAL INSTRUCTIONS OR ALT. ID:
2/13/23	1130	Comp-1	Soil	1	8oz glass	None	X				Standard				
	1050	1A			4oz glass			X							
	1133	Comp-2			8oz		X								
	1040	2A			4oz			X							
	1139	Comp-3			8oz		X								
	1105	3A			4oz			X							
	1143	Comp-4			8oz		X								
	1115	4A			4oz			X							
	1132	Comp-5			8oz		X								INVOICE TO: Same as report
	1012	5A			4oz			X							
	1127	Comp-6			8oz		X								
	1004	6A			4oz			X							P.O. #
	0952	Comp-7			8oz		X								QUOTE #

Email/Address: Hughes@geoconinc.com

PRESERVATIVES: (1) HCL (2) HNO_3 (3) = COLD (4) = NaOH (5) = H_2SO_4 (6) = $Na_2S_2O_3$ (7) =

RELINQUISHED BY (SIGN)	PRINT NAME / COMPANY	DATE / TIME	RECEIVED BY (SIGN)	PRINT NAME / COMPANY
[signature]	Christine Hughes/Geocon	2/15/23 1144		

REC'D AT LAB BY: [signature] DATE / TIME: 2/15/23 1144 CONDITIONS / COMMENTS: 9.1 / 8.0

SHIPPED BY: ☐ FED X ☐ UPS ☐ OTHER AIR BILL #

White-Lab/Terms and conditions Yellow-Lab file copy/Terms and Conditions Pink-Origin/Terms and Conditions Gold-Project Mgr./Field Sampler/Terms and conditions

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

CHAIN OF CUSTODY

CLS ID No.: 23B0824 LOG

HIGHLIGHTED AREAS MUST BE FILLED OUT PRIOR TO ACCEPTANCE

REPORT TO:

NAME AND ADDRESS: Christine Hughes
Hughes @ geosyntec.com

PROJECT MANAGER: C. Hughes PHONE: 209-663-9844

PROJECT NAME: Shannon Rd PhII

SAMPLED BY: C. Hughes / J. Esquivel

JOB DESCRIPTION: OCP, As, TPH soil sampling

SITE LOCATION: 14915 Shannon Rd Los Gatos

CLIENT JOB NUMBER: 52421-07-02

DESTINATION LABORATORY:
☒ CLS (916) 638-7301
3249 FITZGERALD RD.
RANCHO CORDOVA, CA.
95742

☐ OTHER

PRESERVATIVES

ANALYSIS REQUESTED

GEOTRACKER:
EDF REPORT ☐ YES ☒ NO
GLOBAL ID:

CDPH WRITE ON EDT TRANSMISSION? ☐ YES ☒ NO
STATE SYSTEM NUMBER
IF "YES" PLEASE ENTER THE SOURCE NUMBER(S).

COMPOSITE:

TURN AROUND TIME: 1 DAY | 2 DAY | 3 DAY | 5 DAY

SPECIAL INSTRUCTIONS

OR

ALT. ID:

DATE	TIME	SAMPLE IDENTIFICATION	MATRIX	CONTAINER NO.	CONTAINER TYPE	TPH (Gas & BTEX) 8015 M and 8260B	CAM 17 metals 6010	Arsenic via 6010
12/13/23	0935	7A	Soil	1	402 Sleeves			X
	0935	SS-7A			Tube	X		
	0940	SS-7C				X		
	1150	SS-8A					X	
	1146	SS-8B					X	
	1205	SS-8C					X	

Standard

INVOICE TO:

P.O. #

QUOTE #

Email/Address: Hughes@geosyntec.com

PRESERVATIVES: (1) HCL (2) HNO_3 (3) = COLD (4) = NaOH (5) = H_2SO_4 (6) = $Na_2S_2O_3$ (7) =

RELINQUISHED BY (SIGN)	PRINT NAME / COMPANY	DATE / TIME	RECEIVED BY (SIGN)	PRINT NAME / COMPANY
	Christine Hughes/Geosyntec	12/15/23 1144		

RECD AT LAB BY: DATE / TIME: 12/15/23 1144

CONDITIONS / COMMENTS: 9.1 / 8.0

SHIPPED BY: ☐ FED X ☐ UPS ☐ OTHER AIR BILL #

White-Lab/Terms and conditions Yellow- Lab file copy/Terms and Conditions Pink - Origin/Terms and Conditions Gold-Project Mgr./Field Sampler/Terms and conditions

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

CAM 17 Metals

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS - 8A (23B0826-17) Soil Sampled: 02/13/23 11:50 Received: 02/15/23 11:44									
Antimony	ND	2.5	mg/kg	1	2301307	02/15/23	02/17/23	EPA 6010B	
Arsenic	ND	1.0	"	"	"	"	"	"	
Barium	**65**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	1.0	"	"	"	"	"	"	
Chromium	**23**	1.0	"	"	"	"	"	"	
Cobalt	**1.2**	1.0	"	"	"	"	"	"	
Copper	**9.4**	1.0	"	"	"	"	"	"	
Lead	**4.5**	2.5	"	"	"	"	"	"	
Mercury	ND	0.10	"	"	2301309	02/15/23	02/17/23	EPA 7471A	
Molybdenum	**1.0**	1.0	"	"	2301307	02/15/23	02/17/23	EPA 6010B	
Nickel	**19**	1.0	"	"	"	"	"	"	
Selenium	ND	2.5	"	"	"	"	"	"	
Silver	ND	1.0	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**21**	1.0	"	"	"	"	"	"	
Zinc	**26**	1.0	"	"	"	"	"	"	
SS - 8B (23B0826-18) Soil Sampled: 02/13/23 11:46 Received: 02/15/23 11:44									
Antimony	ND	2.5	mg/kg	1	2301307	02/15/23	02/17/23	EPA 6010B	
Arsenic	ND	1.0	"	"	"	"	"	"	
Barium	**31**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	1.0	"	"	"	"	"	"	
Chromium	**11**	1.0	"	"	"	"	"	"	
Cobalt	ND	1.0	"	"	"	"	"	"	
Copper	**3.7**	1.0	"	"	"	"	"	"	
Lead	**2.7**	2.5	"	"	"	"	"	"	
Mercury	ND	0.10	"	"	2301309	02/15/23	02/17/23	EPA 7471A	
Molybdenum	ND	1.0	"	"	2301307	02/15/23	02/17/23	EPA 6010B	
Nickel	**8.2**	1.0	"	"	"	"	"	"	
Selenium	ND	2.5	"	"	"	"	"	"	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

CAM 17 Metals

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS - 8B (23B0826-18) Soil Sampled: 02/13/23 11:46 Received: 02/15/23 11:44									
Silver	ND	1.0	mg/kg	1	2301307	"	02/17/23	EPA 6010B	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**11**	1.0	"	"	"	"	"	"	
Zinc	**15**	1.0	"	"	"	"	"	"	
SS - 8C (23B0826-19) Soil Sampled: 02/13/23 12:05 Received: 02/15/23 11:44									
Antimony	ND	2.5	mg/kg	1	2301307	02/15/23	02/17/23	EPA 6010B	
Arsenic	ND	1.0	"	"	"	"	"	"	
Barium	**63**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	1.0	"	"	"	"	"	"	
Chromium	**20**	1.0	"	"	"	"	"	"	
Cobalt	**1.2**	1.0	"	"	"	"	"	"	
Copper	**11**	1.0	"	"	"	"	"	"	
Lead	**5.6**	2.5	"	"	"	"	"	"	
Mercury	ND	0.10	"	"	2301309	02/15/23	02/17/23	EPA 7471A	
Molybdenum	ND	1.0	"	"	2301307	02/15/23	02/17/23	EPA 6010B	
Nickel	**18**	1.0	"	"	"	"	"	"	
Selenium	ND	2.5	"	"	"	"	"	"	
Silver	ND	1.0	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**18**	1.0	"	"	"	"	"	"	
Zinc	**24**	1.0	"	"	"	"	"	"	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

Metals by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
1A (23B0826-02) Soil Sampled: 02/13/23 10:50 Received: 02/15/23 11:44									
Arsenic	ND	2.0	mg/kg	1	2301336	02/16/23	02/17/23	EPA 6010B	
2A (23B0826-04) Soil Sampled: 02/13/23 10:40 Received: 02/15/23 11:44									
Arsenic	**2.6**	2.0	mg/kg	1	2301336	02/16/23	02/17/23	EPA 6010B	
3A (23B0826-06) Soil Sampled: 02/13/23 11:05 Received: 02/15/23 11:44									
Arsenic	ND	2.0	mg/kg	1	2301336	02/16/23	02/17/23	EPA 6010B	
4A (23B0826-08) Soil Sampled: 02/13/23 11:15 Received: 02/15/23 11:44									
Arsenic	ND	2.0	mg/kg	1	2301336	02/16/23	02/17/23	EPA 6010B	
5A (23B0826-10) Soil Sampled: 02/13/23 10:12 Received: 02/15/23 11:44									
Arsenic	ND	2.0	mg/kg	1	2301336	02/16/23	02/17/23	EPA 6010B	
6A (23B0826-12) Soil Sampled: 02/13/23 10:04 Received: 02/15/23 11:44									
Arsenic	ND	2.0	mg/kg	1	2301336	02/16/23	02/20/23	EPA 6010B	
7A (23B0826-14) Soil Sampled: 02/13/23 09:33 Received: 02/15/23 11:44									
Arsenic	ND	2.0	mg/kg	1	2301336	02/16/23	02/20/23	EPA 6010B	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Comp - 1 (23B0826-01) Soil Sampled: 02/13/23 11:30 Received: 02/15/23 11:44									
4,4´-DDD	ND	3.3	µg/kg	1	2301381	02/17/23	02/21/23	EPA 8081A	
4,4´-DDE	**16**	3.3	"	"	"	"	"	"	
4,4´-DDT	ND	3.3	"	"	"	"	"	"	
Aldrin	ND	1.0	"	"	"	"	"	"	
alpha-BHC	ND	1.7	"	"	"	"	"	"	
beta-BHC	ND	1.7	"	"	"	"	"	"	
Chlordane-technical	ND	3.3	"	"	"	"	"	"	
delta-BHC	ND	1.7	"	"	"	"	"	"	
Dieldrin	ND	1.0	"	"	"	"	"	"	
Endosulfan I	ND	1.7	"	"	"	"	"	"	
Endosulfan II	ND	3.3	"	"	"	"	"	"	
Endosulfan sulfate	ND	3.3	"	"	"	"	"	"	
Endrin	ND	3.3	"	"	"	"	"	"	
Endrin aldehyde	ND	3.3	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	1.7	"	"	"	"	"	"	
Heptachlor	ND	1.7	"	"	"	"	"	"	
Heptachlor epoxide	ND	1.7	"	"	"	"	"	"	
Methoxychlor	ND	17	"	"	"	"	"	"	
Mirex	ND	3.3	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	
Surrogate: Decachlorobiphenyl		*49 %*	*52-141*		"	"	"	"	*QS-4*
Surrogate: Tetrachloro-meta-xylene		*70 %*	*46-139*		"	"	"	"	
Comp - 2 (23B0826-03) Soil Sampled: 02/13/23 11:33 Received: 02/15/23 11:44									
4,4´-DDD	ND	3.3	µg/kg	1	2301381	02/17/23	02/21/23	EPA 8081A	
4,4´-DDE	**9.3**	3.3	"	"	"	"	"	"	
4,4´-DDT	ND	3.3	"	"	"	"	"	"	
Aldrin	ND	1.0	"	"	"	"	"	"	
alpha-BHC	ND	1.7	"	"	"	"	"	"	
beta-BHC	ND	1.7	"	"	"	"	"	"	
Chlordane-technical	ND	3.3	"	"	"	"	"	"	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Comp - 2 (23B0826-03) Soil Sampled: 02/13/23 11:33 Received: 02/15/23 11:44									
delta-BHC	ND	1.7	µg/kg	1	2301381	"	02/21/23	EPA 8081A	
Dieldrin	ND	1.0	"	"	"	"	"	"	
Endosulfan I	ND	1.7	"	"	"	"	"	"	
Endosulfan II	ND	3.3	"	"	"	"	"	"	
Endosulfan sulfate	ND	3.3	"	"	"	"	"	"	
Endrin	ND	3.3	"	"	"	"	"	"	
Endrin aldehyde	ND	3.3	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	1.7	"	"	"	"	"	"	
Heptachlor	ND	1.7	"	"	"	"	"	"	
Heptachlor epoxide	ND	1.7	"	"	"	"	"	"	
Methoxychlor	ND	17	"	"	"	"	"	"	
Mirex	ND	3.3	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	
Surrogate: Decachlorobiphenyl		*21 %*	*52-141*		*"*	*"*	*"*	*"*	*QS-4*
Surrogate: Tetrachloro-meta-xylene		*30 %*	*46-139*		*"*	*"*	*"*	*"*	*QS-4*
Comp - 3 (23B0826-05) Soil Sampled: 02/13/23 11:39 Received: 02/15/23 11:44									
4,4´-DDD	ND	3.3	µg/kg	1	2301381	02/17/23	02/21/23	EPA 8081A	
4,4´-DDE	**5.9**	3.3	"	"	"	"	"	"	
4,4´-DDT	ND	3.3	"	"	"	"	"	"	
Aldrin	ND	1.0	"	"	"	"	"	"	
alpha-BHC	ND	1.7	"	"	"	"	"	"	
beta-BHC	ND	1.7	"	"	"	"	"	"	
Chlordane-technical	ND	3.3	"	"	"	"	"	"	
delta-BHC	ND	1.7	"	"	"	"	"	"	
Dieldrin	ND	1.0	"	"	"	"	"	"	
Endosulfan I	ND	1.7	"	"	"	"	"	"	
Endosulfan II	ND	3.3	"	"	"	"	"	"	
Endosulfan sulfate	ND	3.3	"	"	"	"	"	"	
Endrin	ND	3.3	"	"	"	"	"	"	
Endrin aldehyde	ND	3.3	"	"	"	"	"	"	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Comp - 3 (23B0826-05) Soil Sampled: 02/13/23 11:39 Received: 02/15/23 11:44									
gamma-BHC (Lindane)	ND	1.7	µg/kg	1	2301381	"	02/21/23	EPA 8081A	
Heptachlor	ND	1.7	"	"	"	"	"	"	
Heptachlor epoxide	ND	1.7	"	"	"	"	"	"	
Methoxychlor	ND	17	"	"	"	"	"	"	
Mirex	ND	3.3	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	
Surrogate: Decachlorobiphenyl		*39 %*		*52-141*	"	"	"	"	*QS-4*
Surrogate: Tetrachloro-meta-xylene		*61 %*		*46-139*	"	"	"	"	
Comp - 4 (23B0826-07) Soil Sampled: 02/13/23 11:43 Received: 02/15/23 11:44									
4,4´-DDD	ND	3.3	µg/kg	1	2301381	02/17/23	02/21/23	EPA 8081A	
4,4´-DDE	ND	3.3	"	"	"	"	"	"	
4,4´-DDT	**6.0**	3.3	"	"	"	"	"	"	
Aldrin	ND	1.0	"	"	"	"	"	"	
alpha-BHC	ND	1.7	"	"	"	"	"	"	
beta-BHC	ND	1.7	"	"	"	"	"	"	
Chlordane-technical	ND	3.3	"	"	"	"	"	"	
delta-BHC	ND	1.7	"	"	"	"	"	"	
Dieldrin	**2.6**	1.0	"	"	"	"	"	"	
Endosulfan I	ND	1.7	"	"	"	"	"	"	
Endosulfan II	ND	3.3	"	"	"	"	"	"	
Endosulfan sulfate	ND	3.3	"	"	"	"	"	"	
Endrin	ND	3.3	"	"	"	"	"	"	
Endrin aldehyde	ND	3.3	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	1.7	"	"	"	"	"	"	
Heptachlor	ND	1.7	"	"	"	"	"	"	
Heptachlor epoxide	ND	1.7	"	"	"	"	"	"	
Methoxychlor	ND	17	"	"	"	"	"	"	
Mirex	ND	3.3	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Comp - 4 (23B0826-07) Soil Sampled: 02/13/23 11:43 Received: 02/15/23 11:44									
Surrogate: Decachlorobiphenyl		*38 %*		*52-141*	*2301381*	"	*02/21/23*	*EPA 8081A*	*QS-4*
Surrogate: Tetrachloro-meta-xylene		*62 %*		*46-139*	"	"	"	"	
Comp - 5 (23B0826-09) Soil Sampled: 02/13/23 11:32 Received: 02/15/23 11:44									
4,4´-DDD	ND	3.3	µg/kg	1	2301381	02/17/23	02/21/23	EPA 8081A	
4,4´-DDE	**53**	17	"	5	"	"	"	"	
4,4´-DDT	**9.6**	3.3	"	1	"	"	"	"	
Aldrin	ND	1.0	"	"	"	"	"	"	
alpha-BHC	ND	1.7	"	"	"	"	"	"	
beta-BHC	ND	1.7	"	"	"	"	"	"	
Chlordane-technical	ND	3.3	"	"	"	"	"	"	
delta-BHC	ND	1.7	"	"	"	"	"	"	
Dieldrin	ND	1.0	"	"	"	"	"	"	
Endosulfan I	ND	1.7	"	"	"	"	"	"	
Endosulfan II	ND	3.3	"	"	"	"	"	"	
Endosulfan sulfate	ND	3.3	"	"	"	"	"	"	
Endrin	ND	3.3	"	"	"	"	"	"	
Endrin aldehyde	ND	3.3	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	1.7	"	"	"	"	"	"	
Heptachlor	ND	1.7	"	"	"	"	"	"	
Heptachlor epoxide	ND	1.7	"	"	"	"	"	"	
Methoxychlor	ND	17	"	"	"	"	"	"	
Mirex	ND	3.3	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	
Surrogate: Decachlorobiphenyl		*48 %*		*52-141*	"	"	"	"	*QS-4*
Surrogate: Tetrachloro-meta-xylene		*65 %*		*46-139*	"	"	"	"	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Comp - 6 (23B0826-11) Soil Sampled: 02/13/23 11:27 Received: 02/15/23 11:44									**QRL-8**
4,4´-DDD	ND	17	µg/kg	5	2301381	02/17/23	02/21/23	EPA 8081A	
4,4´-DDE	ND	17	"	"	"	"	"	"	
4,4´-DDT	ND	17	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
alpha-BHC	ND	8.5	"	"	"	"	"	"	
beta-BHC	ND	8.5	"	"	"	"	"	"	
Chlordane-technical	ND	17	"	"	"	"	"	"	
delta-BHC	ND	8.5	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	8.5	"	"	"	"	"	"	
Endosulfan II	ND	17	"	"	"	"	"	"	
Endosulfan sulfate	ND	17	"	"	"	"	"	"	
Endrin	ND	17	"	"	"	"	"	"	
Endrin aldehyde	**18**	17	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	8.5	"	"	"	"	"	"	
Heptachlor	ND	8.5	"	"	"	"	"	"	
Heptachlor epoxide	ND	8.5	"	"	"	"	"	"	
Methoxychlor	ND	85	"	"	"	"	"	"	
Mirex	ND	17	"	"	"	"	"	"	
Toxaphene	ND	100	"	"	"	"	"	"	
Surrogate: Decachlorobiphenyl		*34 %*	*52-141*		"	"	"	"	*QS-4*
Surrogate: Tetrachloro-meta-xylene		*54 %*	*46-139*		"	"	"	"	
Comp - 7 (23B0826-13) Soil Sampled: 02/13/23 09:52 Received: 02/15/23 11:44									**QRL-8**
4,4´-DDD	ND	17	µg/kg	5	2301381	02/17/23	02/21/23	EPA 8081A	
4,4´-DDE	**26**	17	"	"	"	"	"	"	
4,4´-DDT	ND	17	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
alpha-BHC	ND	8.5	"	"	"	"	"	"	
beta-BHC	ND	8.5	"	"	"	"	"	"	
Chlordane-technical	ND	17	"	"	"	"	"	"	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Comp - 7 (23B0826-13) Soil Sampled: 02/13/23 09:52 Received: 02/15/23 11:44									**QRL-8**
delta-BHC	ND	8.5	µg/kg	5	2301381	"	02/21/23	EPA 8081A	
Dieldrin	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	8.5	"	"	"	"	"	"	
Endosulfan II	ND	17	"	"	"	"	"	"	
Endosulfan sulfate	ND	17	"	"	"	"	"	"	
Endrin	ND	17	"	"	"	"	"	"	
Endrin aldehyde	ND	17	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	8.5	"	"	"	"	"	"	
Heptachlor	ND	8.5	"	"	"	"	"	"	
Heptachlor epoxide	ND	8.5	"	"	"	"	"	"	
Methoxychlor	ND	85	"	"	"	"	"	"	
Mirex	ND	17	"	"	"	"	"	"	
Toxaphene	ND	100	"	"	"	"	"	"	
Surrogate: Decachlorobiphenyl		*56 %*	*52-141*		"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*84 %*	*46-139*		"	"	"	"	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

TPH-Gasoline by GC FID

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS - 7A (23B0826-15) Soil Sampled: 02/13/23 09:35 Received: 02/15/23 11:44									
Gasoline	ND	1.0	mg/kg	1	2301378	02/16/23	02/17/23	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*91 %*		*65-135*		"	"	"	"	
SS - 7C (23B0826-16) Soil Sampled: 02/13/23 09:40 Received: 02/15/23 11:44									
Gasoline	ND	1.0	mg/kg	1	2301378	02/16/23	02/17/23	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*58 %*		*65-135*		"	"	"	"	*QS-4*

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS - 7A (23B0826-15) Soil Sampled: 02/13/23 09:35 Received: 02/15/23 11:44									
Benzene	ND	5.0	µg/kg	1	2301333	02/16/23	02/16/23	EPA 8260B	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
Xylenes (total)	ND	10	"	"	"	"	"	"	
Surrogate: Toluene-d8		*76 %*		*60-140*		"	"	"	
SS - 7C (23B0826-16) Soil Sampled: 02/13/23 09:40 Received: 02/15/23 11:44									
Benzene	ND	5.0	µg/kg	1	2301333	02/16/23	02/16/23	EPA 8260B	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
Xylenes (total)	ND	10	"	"	"	"	"	"	
Surrogate: Toluene-d8		*77 %*		*60-140*		"	"	"	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

CAM 17 Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2301307 - EPA 3050B										
Blank (2301307-BLK1)				Prepared & Analyzed: 02/15/23						
Antimony	ND	2.5	mg/kg							
Arsenic	ND	1.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	1.0	"							
Cobalt	ND	1.0	"							
Chromium	ND	1.0	"							
Copper	ND	1.0	"							
Lead	ND	2.5	"							
Molybdenum	ND	1.0	"							
Nickel	ND	1.0	"							
Selenium	ND	2.5	"							
Silver	ND	1.0	"							
Thallium	ND	4.0	"							
Vanadium	ND	1.0	"							
Zinc	ND	1.0	"							
LCS (2301307-BS1)				Prepared & Analyzed: 02/15/23						
Antimony	52.2	2.5	mg/kg	50.0		104	75-125			
Arsenic	49.3	1.0	"	50.0		99	75-125			
Barium	48.6	1.0	"	50.0		97	75-125			
Beryllium	51.9	1.0	"	50.0		104	75-125			
Cadmium	49.1	1.0	"	50.0		98	75-125			
Cobalt	50.6	1.0	"	50.0		101	75-125			
Chromium	50.7	1.0	"	50.0		101	75-125			
Copper	50.8	1.0	"	50.0		102	75-125			
Lead	50.4	2.5	"	50.0		101	75-125			
Molybdenum	51.4	1.0	"	50.0		103	75-125			
Nickel	50.5	1.0	"	50.0		101	75-125			
Selenium	46.9	2.5	"	50.0		94	75-125			
Silver	52.0	1.0	"	50.0		104	75-125			
Thallium	49.9	4.0	"	50.0		100	75-125			
Vanadium	49.0	1.0	"	50.0		98	75-125			

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

CAM 17 Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2301307 - EPA 3050B										
LCS (2301307-BS1)				Prepared & Analyzed: 02/15/23						
Zinc	47.3	1.0	mg/kg	50.0		95	75-125			
Matrix Spike (2301307-MS1)		**Source: 23B0759-01**		Prepared & Analyzed: 02/15/23						
Antimony	19.1	2.5	mg/kg	50.0	ND	38	75-125			QM-5
Arsenic	46.2	1.0	"	50.0	ND	92	75-125			
Barium	176	1.0	"	50.0	137	78	75-125			
Beryllium	50.1	1.0	"	50.0	0.119	100	75-125			
Cadmium	46.5	1.0	"	50.0	ND	93	75-125			
Cobalt	60.5	1.0	"	50.0	13.5	94	75-125			
Chromium	181	1.0	"	50.0	98.3	165	75-125			QM-5
Copper	62.7	1.0	"	50.0	16.5	92	75-125			
Lead	269	2.5	"	50.0	238	61	75-125			QM-4X
Molybdenum	46.9	1.0	"	50.0	ND	94	75-125			
Nickel	232	1.0	"	50.0	171	122	75-125			
Selenium	45.4	2.5	"	50.0	ND	91	75-125			
Silver	45.5	1.0	"	50.0	ND	91	75-125			
Thallium	43.2	4.0	"	50.0	ND	86	75-125			
Vanadium	88.2	1.0	"	50.0	37.5	102	75-125			
Zinc	125	1.0	"	50.0	75.0	101	75-125			
Matrix Spike Dup (2301307-MSD1)		**Source: 23B0759-01**		Prepared & Analyzed: 02/15/23						
Antimony	17.7	2.5	mg/kg	50.0	ND	35	75-125	7	30	QM-5
Arsenic	45.5	1.0	"	50.0	ND	91	75-125	2	30	
Barium	198	1.0	"	50.0	137	122	75-125	12	30	
Beryllium	48.7	1.0	"	50.0	0.119	97	75-125	3	30	
Cadmium	45.2	1.0	"	50.0	ND	90	75-125	3	30	
Cobalt	61.5	1.0	"	50.0	13.5	96	75-125	2	30	
Chromium	172	1.0	"	50.0	98.3	146	75-125	5	30	QM-5
Copper	65.7	1.0	"	50.0	16.5	98	75-125	5	30	
Lead	841	2.5	"	50.0	238	NR	75-125	103	30	QM-4X
Molybdenum	46.1	1.0	"	50.0	ND	92	75-125	2	30	
Nickel	241	1.0	"	50.0	171	141	75-125	4	30	QM-4X
Selenium	44.3	2.5	"	50.0	ND	89	75-125	3	30	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

CAM 17 Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2301307 - EPA 3050B										
Matrix Spike Dup (2301307-MSD1)	**Source: 23B0759-01**			Prepared & Analyzed: 02/15/23						
Silver	45.2	1.0	mg/kg	50.0	ND	90	75-125	0.7	30	
Thallium	42.0	4.0	"	50.0	ND	84	75-125	3	30	
Vanadium	83.8	1.0	"	50.0	37.5	93	75-125	5	30	
Zinc	157	1.0	"	50.0	75.0	164	75-125	22	30	QM-5
Batch 2301309 - EPA 7471A										
Blank (2301309-BLK1)				Prepared & Analyzed: 02/15/23						
Mercury	ND	0.10	mg/kg							
LCS (2301309-BS1)				Prepared & Analyzed: 02/15/23						
Mercury	0.210	0.10	mg/kg	0.208		101	75-125			
Matrix Spike (2301309-MS1)	**Source: 23B0759-01**			Prepared: 02/15/23 Analyzed: 02/17/23						
Mercury	0.772	0.10	mg/kg	0.208	0.644	62	75-125			QM-5
Matrix Spike Dup (2301309-MSD1)	**Source: 23B0759-01**			Prepared: 02/15/23 Analyzed: 02/17/23						
Mercury	0.679	0.10	mg/kg	0.208	0.644	17	75-125	13	25	QM-5

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2301336 - EPA 3050B										
Blank (2301336-BLK1)				Prepared: 02/16/23 Analyzed: 02/17/23						
Arsenic	ND	2.0	mg/kg							
LCS (2301336-BS1)				Prepared: 02/16/23 Analyzed: 02/17/23						
Arsenic	43.2	2.0	mg/kg	50.0		86	75-125			
Matrix Spike (2301336-MS1)	**Source: 23B0826-02**			Prepared: 02/16/23 Analyzed: 02/17/23						
Arsenic	34.8	2.0	mg/kg	50.0	ND	70	75-125			QM-5
Matrix Spike Dup (2301336-MSD1)	**Source: 23B0826-02**			Prepared: 02/16/23 Analyzed: 02/17/23						
Arsenic	38.4	2.0	mg/kg	50.0	ND	77	75-125	10	30	

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

Organochlorine Pesticides by EPA Method 8081A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2301381 - LUFT-DHS GCNV										
Blank (2301381-BLK1)				Prepared: 02/17/23 Analyzed: 02/21/23						
Toxaphene	ND	20	µg/kg							
Mirex	ND	3.3	"							
Aldrin	ND	1.0	"							
alpha-BHC	ND	1.7	"							
beta-BHC	ND	1.7	"							
gamma-BHC (Lindane)	ND	1.7	"							
delta-BHC	ND	1.7	"							
Chlordane-technical	ND	3.3	"							
4,4´-DDD	ND	3.3	"							
4,4´-DDE	ND	3.3	"							
4,4´-DDT	ND	3.3	"							
Dieldrin	ND	1.0	"							
Endosulfan I	ND	1.7	"							
Endosulfan II	ND	3.3	"							
Endosulfan sulfate	ND	3.3	"							
Endrin	ND	3.3	"							
Endrin aldehyde	ND	3.3	"							
Heptachlor	ND	1.7	"							
Heptachlor epoxide	ND	1.7	"							
Methoxychlor	ND	17	"							
Surrogate: Tetrachloro-meta-xylene	*8.02*		*"*	*8.33*		*96*	*46-139*			
Surrogate: Decachlorobiphenyl	*7.28*		*"*	*8.33*		*87*	*52-141*			
LCS (2301381-BS1)				Prepared: 02/17/23 Analyzed: 02/21/23						
Aldrin	10.6	1.0	µg/kg	16.7		63	47-132			
gamma-BHC (Lindane)	10.7	1.7	"	16.7		64	56-133			
4,4´-DDT	10.8	3.3	"	16.7		65	46-137			
Dieldrin	10.8	1.0	"	16.7		65	44-143			
Endrin	11.5	3.3	"	16.7		69	30-147			
Heptachlor	11.1	1.7	"	16.7		67	33-148			
Surrogate: Tetrachloro-meta-xylene	*8.76*		*"*	*8.33*		*105*	*46-139*			
Surrogate: Decachlorobiphenyl	*8.59*		*"*	*8.33*		*103*	*52-141*			

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

Organochlorine Pesticides by EPA Method 8081A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2301381 - LUFT-DHS GCNV										
LCS Dup (2301381-BSD1)				Prepared: 02/17/23 Analyzed: 02/21/23						
Aldrin	11.1	1.0	µg/kg	16.7		67	47-132	5	30	
gamma-BHC (Lindane)	11.1	1.7	"	16.7		67	56-133	4	30	
4,4´-DDT	13.2	3.3	"	16.7		79	46-137	20	30	
Dieldrin	11.5	1.0	"	16.7		69	44-143	6	30	
Endrin	13.3	3.3	"	16.7		80	30-147	15	30	
Heptachlor	12.2	1.7	"	16.7		73	33-148	9	30	
Surrogate: Tetrachloro-meta-xylene	*9.24*		*"*	*8.33*		*111*	*46-139*			
Surrogate: Decachlorobiphenyl	*9.24*		*"*	*8.33*		*111*	*52-141*			
Matrix Spike (2301381-MS1)	**Source: 23B0826-01**			Prepared: 02/17/23 Analyzed: 02/21/23						
Aldrin	8.60	1.0	µg/kg	16.7	ND	52	47-138			
gamma-BHC (Lindane)	10.3	1.7	"	16.7	ND	62	38-144			
4,4´-DDT	15.5	3.3	"	16.7	3.01	75	41-157			
Dieldrin	9.78	1.0	"	16.7	ND	59	46-155			
Endrin	12.1	3.3	"	16.7	ND	72	34-149			
Heptachlor	8.48	1.7	"	16.7	ND	51	36-155			
Surrogate: Tetrachloro-meta-xylene	*16.5*		*"*	*20.8*		*79*	*46-139*			
Surrogate: Decachlorobiphenyl	*11.9*		*"*	*20.8*		*57*	*52-141*			
Matrix Spike Dup (2301381-MSD1)	**Source: 23B0826-01**			Prepared: 02/17/23 Analyzed: 02/21/23						
Aldrin	7.72	1.0	µg/kg	16.7	ND	46	47-138	11	35	QM-7
gamma-BHC (Lindane)	9.60	1.7	"	16.7	ND	58	38-144	7	35	
4,4´-DDT	14.4	3.3	"	16.7	3.01	68	41-157	7	35	
Dieldrin	8.90	1.0	"	16.7	ND	53	46-155	9	35	
Endrin	10.7	3.3	"	16.7	ND	64	34-149	12	35	
Heptachlor	7.86	1.7	"	16.7	ND	47	36-155	8	35	
Surrogate: Tetrachloro-meta-xylene	*14.9*		*"*	*20.8*		*72*	*46-139*			
Surrogate: Decachlorobiphenyl	*11.4*		*"*	*20.8*		*55*	*52-141*			

Geocon Consultants	Project:	Shannon Rd Ph II	
3160 Gold Valley Dr. Suite #800	Project Number:	52421-07-02	**CLS Work Order #: 23B0826**
Rancho Cordova, CA 95742	Project Manager:	Christine Hughes	COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2301378 - Solvent Extraction										
Blank (2301378-BLK1)				Prepared: 02/16/23 Analyzed: 02/17/23						
Gasoline	ND	1.0	mg/kg							
Surrogate: o-Chlorotoluene (Gas)	*0.0184*		*"*	*0.0200*		*92*	*65-135*			
LCS (2301378-BS1)				Prepared: 02/16/23 Analyzed: 02/17/23						
Gasoline	2.13	1.0	mg/kg	2.00		107	65-135			
Surrogate: o-Chlorotoluene (Gas)	*0.0191*		*"*	*0.0200*		*95*	*65-135*			
LCS Dup (2301378-BSD1)				Prepared: 02/16/23 Analyzed: 02/17/23						
Gasoline	2.05	1.0	mg/kg	2.00		102	65-135	4	30	
Surrogate: o-Chlorotoluene (Gas)	*0.0181*		*"*	*0.0200*		*90*	*65-135*			
Matrix Spike (2301378-MS1)	**Source: 23B0759-01**			Prepared: 02/16/23 Analyzed: 02/17/23						
Gasoline	1.60	1.0	mg/kg	2.00	ND	80	63-124			
Surrogate: o-Chlorotoluene (Gas)	*0.0167*		*"*	*0.0200*		*84*	*65-135*			
Matrix Spike Dup (2301378-MSD1)	**Source: 23B0759-01**			Prepared: 02/16/23 Analyzed: 02/17/23						
Gasoline	1.54	1.0	mg/kg	2.00	ND	77	63-124	3	35	
Surrogate: o-Chlorotoluene (Gas)	*0.0166*		*"*	*0.0200*		*83*	*65-135*			

Geocon Consultants	Project:	Shannon Rd Ph II	
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Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2301333 - EPA 5030 Soil MS										
Blank (2301333-BLK1)				Prepared & Analyzed: 02/16/23						
Di-isopropyl ether	ND	5.0	µg/kg							
Ethyl tert-butyl ether	ND	5.0	"							
Methyl tert-butyl ether	ND	5.0	"							
tert-Amyl methyl ether	ND	5.0	"							
tert-Butyl alcohol	ND	50	"							
Benzene	ND	5.0	"							
Ethylbenzene	ND	5.0	"							
Toluene	ND	5.0	"							
Xylenes (total)	ND	10	"							
Surrogate: Toluene-d8	*23.9*		*"*	*30.0*		*80*	*60-140*			
LCS (2301333-BS1)				Prepared & Analyzed: 02/16/23						
Methyl tert-butyl ether	24.4	5.0	µg/kg	20.0		122	60-140			
Benzene	19.0	5.0	"	20.0		95	60-140			
Surrogate: Toluene-d8	*29.8*		*"*	*30.0*		*99*	*60-140*			
LCS Dup (2301333-BSD1)				Prepared & Analyzed: 02/16/23						
Methyl tert-butyl ether	21.7	5.0	µg/kg	20.0		109	60-140	11	30	
Benzene	19.3	5.0	"	20.0		96	60-140	2	30	
Surrogate: Toluene-d8	*29.3*		*"*	*30.0*		*98*	*60-140*			
Matrix Spike (2301333-MS1)		**Source: 23B0759-01**		Prepared & Analyzed: 02/16/23						
Methyl tert-butyl ether	19.8	5.0	µg/kg	20.0	ND	99	60-140			
Benzene	16.5	5.0	"	20.0	ND	83	60-140			
Surrogate: Toluene-d8	*24.1*		*"*	*30.0*		*80*	*60-140*			
Matrix Spike Dup (2301333-MSD1)		**Source: 23B0759-01**		Prepared & Analyzed: 02/16/23						
Methyl tert-butyl ether	20.4	5.0	µg/kg	20.0	ND	102	60-140	3	30	
Benzene	16.9	5.0	"	20.0	ND	84	60-140	2	30	
Surrogate: Toluene-d8	*30.2*		*"*	*30.0*		*101*	*60-140*			

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Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QRL-8	The extract of this sample was dark and/or oily. Therefore, the sample was analyzed with a dilution and the reporting limit was raised for all target compounds.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-5	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
*	Analyte and/or method is not currently on the CLS ELAP Certification

APPENDIX E

TRAFFIC OPERATIONS ANALYSIS

November 13, 2020

Ms. Courtney Rowe
TS/Civil Engineering, Inc.
1776 Technology Drive
San Jose, CA 95110

RE: Traffic Operations Analysis for the Proposed Residential Development Located at 14915 Shannon Road in Los Gatos, California

Dear Ms. Rowe:

The purpose of this letter is to quantify the potential traffic increases and operational issues that could occur as a result of the proposed residential project at 14915 Shannon Road in Los Gatos, California. The site location is shown on Figure 1. This project proposes to subdivide a lot parcel and construct nine detached homes on a project site that is currently occupied by one detached single-family homes. Access to the project site would be provided via Shannon Road. Shannon Road is a two-lane east-west neighborhood collector street that extends from Los Gatos Boulevard to Hicks Road. The project would have one shared driveway on Shannon Road, three driveways on Sky Lane which intersects with Shannon Road, and one driveway on Sierra Azule, which is connected to Shannon Road via Santa Rosa Drive. The shared driveway on Shannon Road would serve five single-family homes, and the rest of the homes would have their own dedicated driveways on Sky Lane and Sierra Azule. Figure 2 shows the site plan with site access to Shannon Road and Sky Lane.

Project Trip Generation Estimates

Trip generation for the proposed residential project was estimated using rates published in the ITE *Trip Generation Manual, Tenth Edition*. The rates published for Single-Family Detached Housing (210) were used to estimate the trips generated by the proposed single-family housing. Based on ITE rates, the proposed detached single-family residential development is estimated to generate a total of 76 net new daily trips, 6 net new AM peak hour trips and 8 net new PM peak hour trips. The project trip generation estimates are presented in Table 1.

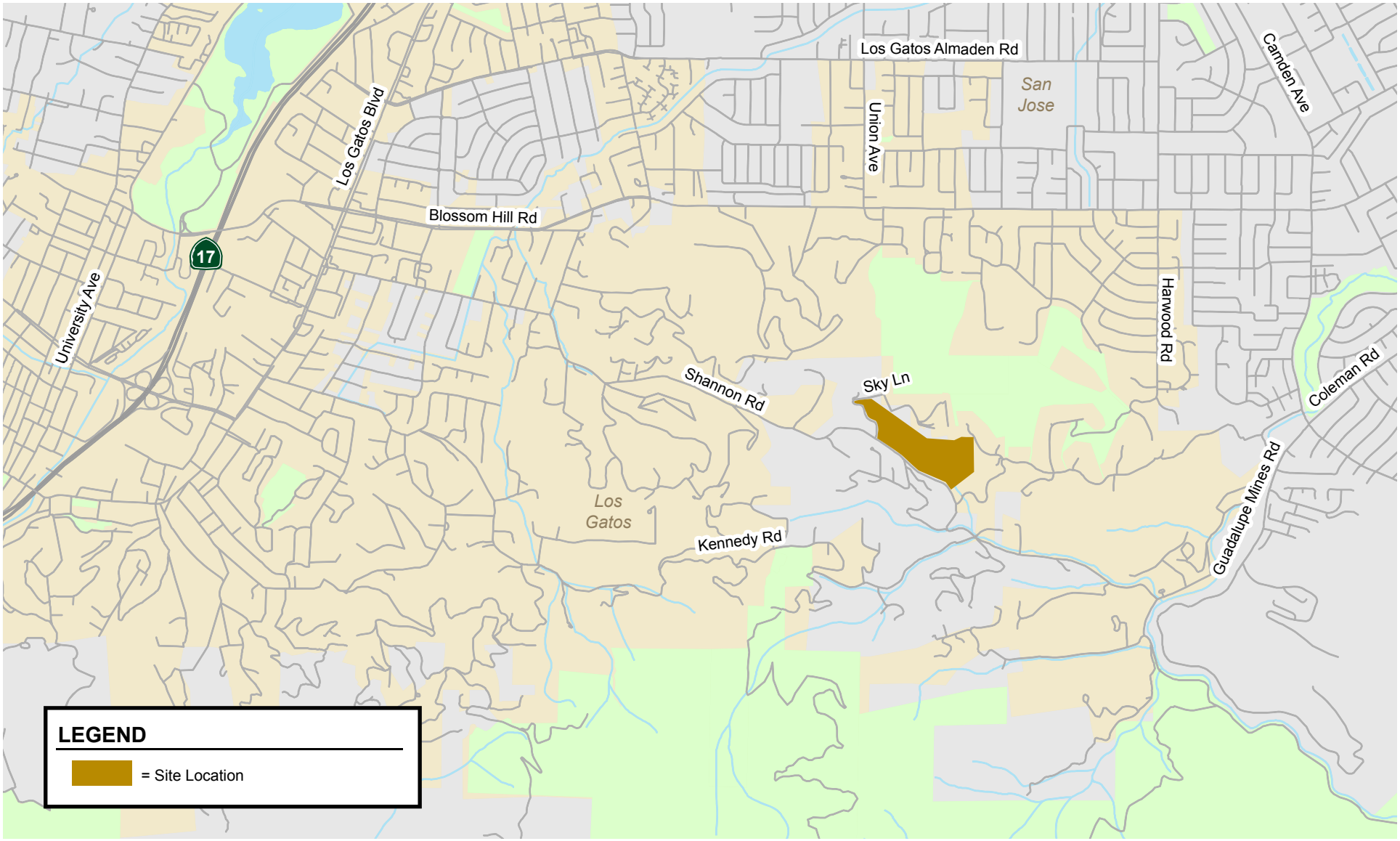

Figure 1
Site Location

NORTH
Not to Scale

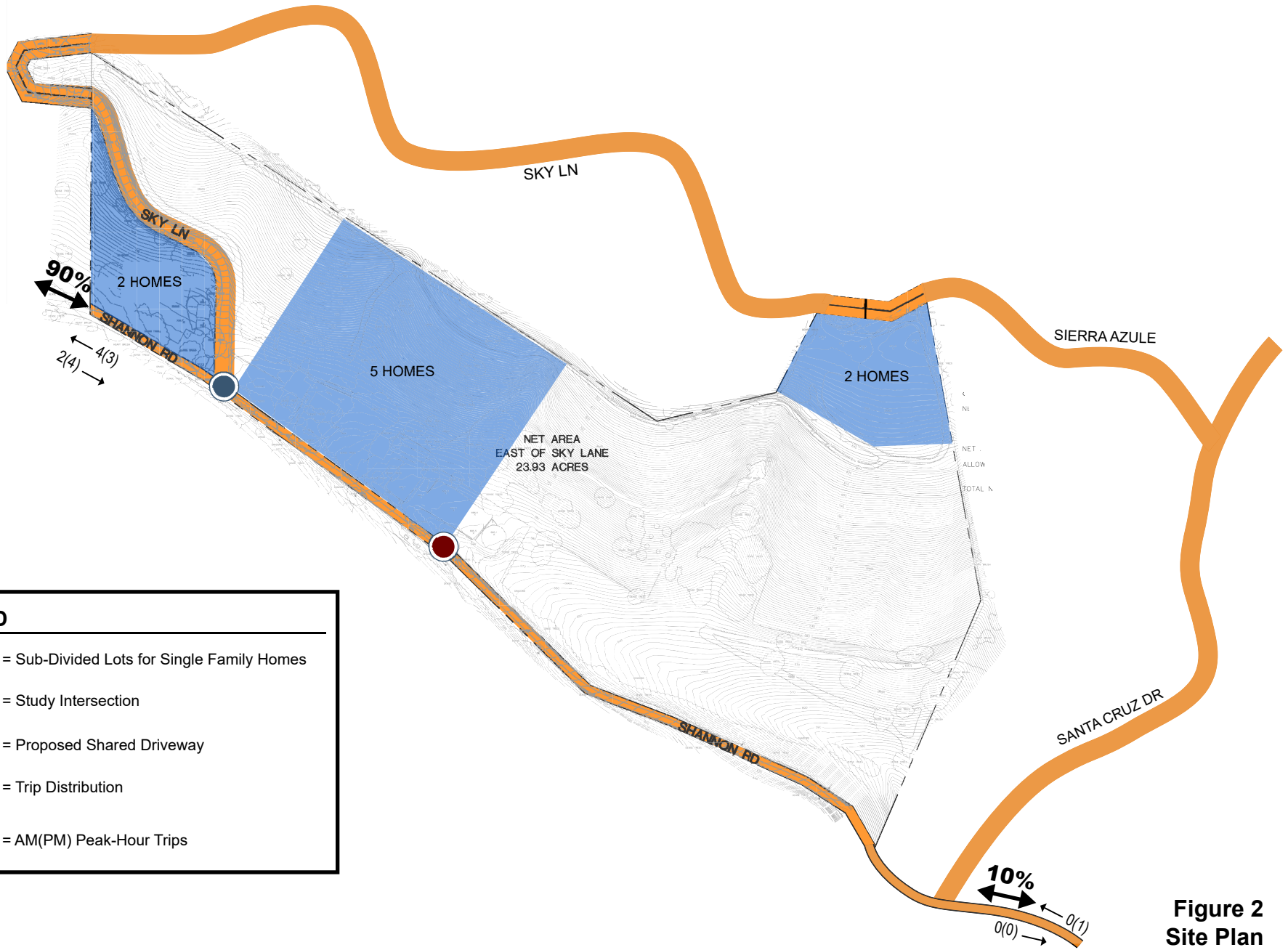

Figure 2
Site Plan

Table 1
Project Trip Generation

Land Use	Size		Daily Rate	Daily Trips	AM Peak Hour Pk-Hr Rate	AM In	AM Out	AM Total	PM Peak Hour Pk-Hr Rate	PM In	PM Out	PM Total
Proposed Use												
Single family residences[1]	9	units	9.44	85	0.74	2	5	7	0.99	6	3	9
Existing Use												
Single family residences[1]	1	units	9.44	(9)	0.74	0	(1)	(1)	0.99	(1)	(0)	(1)
Net New Trips:				**76**		**2**	**4**	**6**		**5**	**3**	**8**

Notes:
[1] Trip generation based on average rates contained in the *ITE Trip Generation Manual, 10th Edition* , for Single faimly detached housing (Land Use Code 210). Average rates were used. Rates are expressed in trips per unit.

The project trips were assigned to Shannon Road based on existing traffic patterns and the locations of complementary land uses. Figure 2 shows the project trip distribution and net trip assignment

The project is expected to add an estimated six and eight vehicle trips on Shannon Road during the AM and PM peak hour, respectively. Therefore, it is concluded that the amount of traffic increases would have a negligible effect on traffic operations on Shannon Road. On Sky Lane, it is anticipated that the project would add three vehicle trips during both the AM and PM peak hours. On Sierra Azule and Santa Rosa Drive, it is anticipated that the project would add one vehicle trip during both the AM and PM peak hours. There would not be a noticeable change to traffic operations.

Driveway Analysis

Providing the appropriate sight distance reduces the likelihood of a collision at a driveway or intersection and provides drivers with the ability to locate sufficient gaps in traffic. Sight distance generally should be provided in accordance with Caltrans standards. The minimum acceptable sight distance is often considered the Caltrans stopping sight distance. Sight distance requirements vary depending on the roadway speeds. For the driveways on Shannon Road, which has a posted speed limit of 30 mph, the Caltrans stopping sight distance is 250 feet (based on a design speed of 35 mph). This means that a driver must be able to see 250 feet down Shannon Road to locate a sufficient gap to turn out of the project driveway. There are no roadway curves or physical obstructions within 250 feet in either direction of the driveway locations on Shannon Road that would obstruct the vision of exiting drivers. Figure 3 shows the driveway sight triangles. Therefore, it is concluded that there is adequate intersection sight distance provided for the proposed shared driveway on Shannon Road.

The existing street cross-section of Shannon Road in the project vicinity is 20 feet with a 10-foot wide traveled lane in each direction.

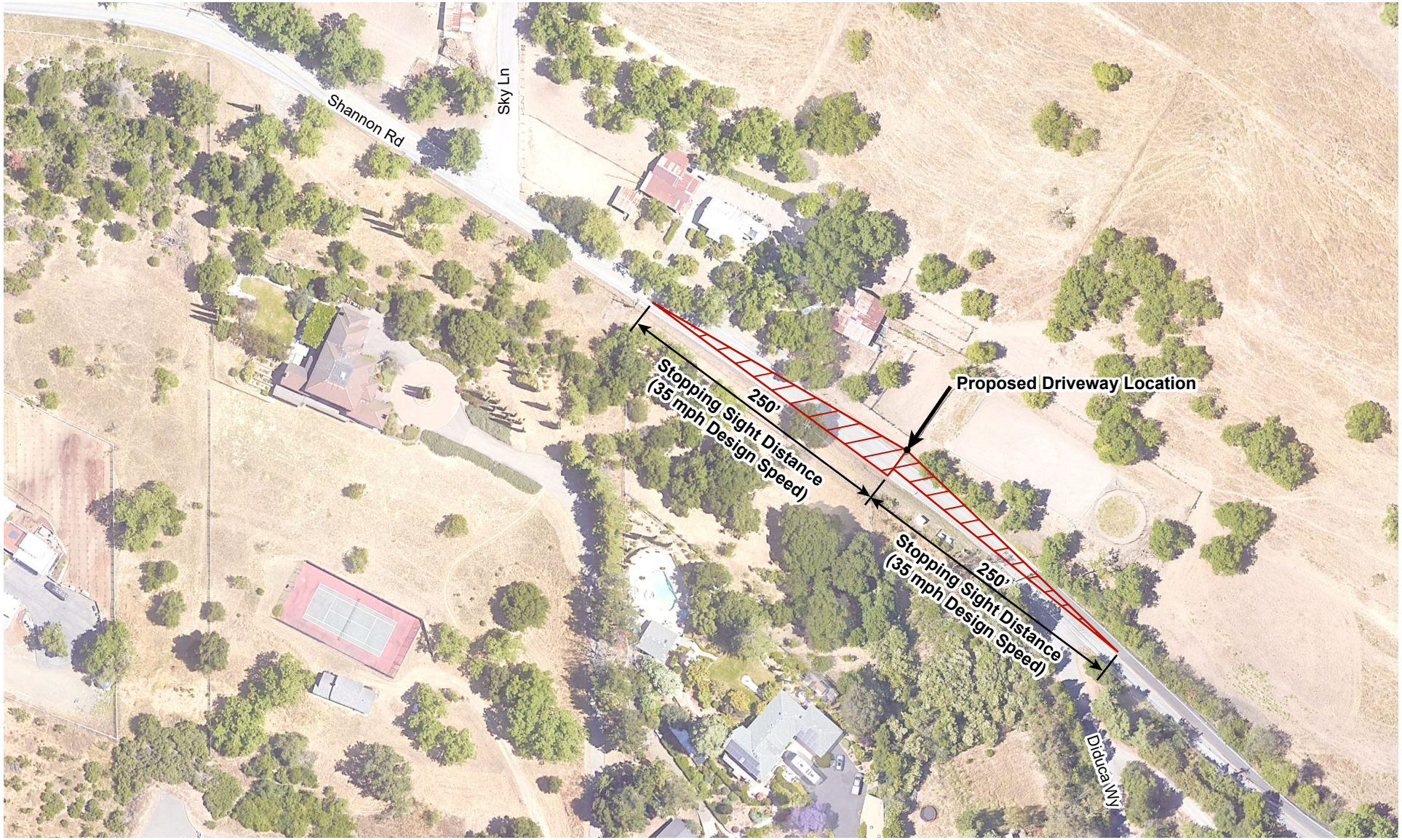

Figure 3
Driveway Sight Triangles

NORTH
Not to Scale

Recommendation: Although the Town does not have specific street design standards applicable to Shannon Road, it is recommended that the Shannon Road street cross-section along the project frontage to be widened to 24 feet (12-foot traveled lane provided in each direction) in order to enhance safety for motor vehicles and bicycles. Road widening should be achieved by right of way dedication along the project frontage.

Vehicle Miles Traveled (VMT) Analysis

Senate Bill (SB) 743 changed the way transportation impacts are identified under CEQA from vehicle level of service (LOS) to daily vehicle miles travelled (VMT). However, the Town of Los Gatos has not formally adopted a VMT analysis policy.

A VMT analysis review was conducted to assess the potential impacts caused by the proposed project. Because the project is expected to generate fewer than 110 trips per day, it is anticipated that the project would not have a significant VMT impact consistent with SB 743 and the Governor's Office of Planning and Research (OPR) recommendations.

Please do not hesitate to contact us if there are any questions regarding our analysis.

Sincerely,

HEXAGON TRANSPORTATION CONSULTANTS, INC.

Gary K. Black
President

Eric Tse, P.E., PTOE
Associate