



January 22, 2021
Kleinfelder No. MWSNMACO.001C

Ms. Caroline Judy
Director
County of Sonoma – General Services
2300 County Center Drive, Suite A-220
Santa Rosa, CA 95403
caroline.judy@sonoma-county.org

**SUBJECT: REVISED Proposal for Fault Investigation Study
Sonoma County Chanate Campus
Santa Rosa, California**

Dear Ms. Judy:

Kleinfelder (KLF) is pleased to present this proposal for a comprehensive fault investigation study for the Sonoma County Chanate Campus site located on Chanate Road, in Santa Rosa, California. It is our understanding that the County desires to more accurately define the fault rupture hazards at this site, associated with the active Rodger Creek fault, so that information can be incorporated into a building constraints map for future perspective buyers of the property. This entire site is located within the Alquist-Priolo Fault Hazard Zone, which requires that fault rupture hazards be defined for any future development. As you are aware, numerous individual fault investigation studies have been performed at various locations on this site for various developments over the past four+ decades, however no comprehensive study has been performed that clearly defines the overall fault rupture hazard for the entire site. Previous studies have identified locations of several fault splays with varying degrees of certainty, both in precise (surveyed) location or determination of fault activity status/risk.

In 2016, KLF previously consulted with County personnel and provided a Rough Order of Magnitude (ROM) costs analysis to provide a comprehensive fault investigation. That consultation also provided a conceptual subsurface trenching program designed to evaluate the faults. The previous conceptual plan proposed approximately 4,000 lineal feet of trenching. Our current subsurface exploration program, described below, includes approximately 3,250 lineal feet of trenching. The reduction in length of trenching is due to the fact that portions of our previous conceptual program had laid out trenches on parcels that were not owned by the County and also removal of previously proposed trenches from the open space sanctuary at the southern end of the County parcels, where no future development would be considered.

Kleinfelder is committed to providing quality service to its clients, commensurate with their requirements and desired level of risk. If a portion of this proposal does not meet the needs of the County or if those needs change, Kleinfelder will consider appropriate modifications, subject to the standards of care to which Kleinfelder adheres as professionals. Modifications such as changes in scope, methodology, scheduling, and contract terms may result in changes to the risks assumed by the County, as well as adjustments to the fees and schedule. The following includes our anticipated scope of services, an estimate of our fees, schedule, and project limitations.

PURPOSE AND SCOPE

The purpose of our services is to explore, define and characterize the fault rupture hazard at this site as it relates to future development planning only. Besides a summary Fault Investigation Study Report that will be done in compliance with California Geological Survey Special Note 42, the primary deliverable will be a geologic/fault rupture hazard constraints map that will show the locations of fault features or shear zones, as well as recommended building setbacks for improvements that are intended for human occupation. The proposed study and fault constraints map is intended to serve both the County and future development applicants in planning and approving (for fault rupture hazards clearance) appropriately placed developments, without the need for supplemental fault investigation studies. It should be noted that this study and constraints map are not intended to provide any geotechnical design recommendations for development. The following is a description of our proposed scope of services.

Task 1 – Field Preparation/HASP/Coordination

Personnel safety is our top priority at Kleinfelder. As part of our field preparation services, we will prepare documentation for a site-specific Health and Safety Plan (HASP). A copy of the HASP will be kept on site and referenced, as appropriate, during daily safety tailgate meetings with KLF staff and the subcontractors. Our preparation services will also include coordination with the utility locating and excavating subcontractors. Our work requires a Cal/OSHA trenching permit which we renew yearly, at no cost to our clients. In addition, we will coordinate site access and exploration locations and procedures with County staff. The HASP will be delivered to the County no less than 7 days prior to the initiation of the field work.

Task 2 – USA Marking/Exploration Marking/Utility Locating

Prior to the start of trench excavation, KLF will layout all of the proposed trenches and notify Underground Service Alert (USA) for clearance of public utilities. In order to provide additional clearance for private utilities, we will utilize a private utility locator subconsultant to try and clear our excavation sites. We request that the County provide us all available maps or other information that may indicate the location of underground utilities, structures and pipelines at least 48 hours prior to the initiation of our field work. If underground utilities are located within the areas where we propose trenching, our excavation contractor will pothole and carefully excavate around or under these utilities. Any damage to unmarked utilities will be the responsibility of the County and/or USA, as appropriate. Kleinfelder and Pearson Exploration can not take responsibility for unmarked utilities.

Task 3 – Geologic Literature Review

As previously indicated, there are numerous previous consultant studies on this and adjacent sites related to past fault investigations. We have reviewed several of them as part of our proposal preparation. We understand that the County has many reference documents regarding this site that they will provide us access to. KLF will review available geologic documents from the County's files and our files, as well as published references to incorporate into the assessment of surface fault rupture hazard at this site. There are discrepancies in what previous consultants have identified as faults or possibly fault-related features. Our review will include assessment of previous consultants' fault related features to try and determine whether these features are related to active faulting or other geologic phenomena and whether they pose a surface rupture risk that would necessitate building setback requirements.

Task 4 – Subsurface Field Exploration (Trench Excavation, Logging and Backfill)

Trench Logging

In order to provide enough detail to create a stand-alone fault rupture hazard constraints map for the whole site that would be in compliance with the CGS guidelines, field exploration will consist of a series of trenches across the site to expose the subsurface geologic conditions. The trenches will be placed in different locations north to south, to enable extrapolation of fault features from trench to trench and to investigate the limits of the practical development areas on this site with the Earthquake Fault Zone.

The trenches excavated and logged for this study will consist of 30- to 36-inch-wide, excavator trenches to allow for proper cleaning and photographing of trench walls. Based on our site observations, it is our assumption that trenches on the order of 8- to 10-feet-deep will suffice to expose any evidence of fault shearing through the underlying materials, as well as within the soil profile, and to make an adequate assessment of both fault trace location(s) and relative recency of faulting. If deep soil, fill and/or colluvium is encountered, trenches will be deepened accordingly to facilitate proper exposure and assessment of faulting. If a significant percentage of the trenches require deepening, we will consult with the County on how this may affect the use of contingencies fees or require a supplemental budget increase.

Side walls will be cleaned of smeared materials by our team(s) of geologists in order to expose the subsurface geologic profile and allow detailed logging of the exposed features. Logging will occur on a standard 1" = 5' scale. More detailed logging (1" = 1') may be performed in specific locations if warranted, to determine recency of faulting. Logging will include placement of level lines and stationing markers to facilitate precise measurement of geologic layers and features onto the scaled log drawings.

For the purposes of this proposal, we have developed a Fault Exploration Plan (Figure 1- Revised, attached) that demonstrates our current approach to the subsurface exploration program based on existing data, and to be in compliance (i.e. extend across the majority of the Earthquake Fault Zone) with the Alquist-Priolo Fault Hazard Mapping Act requirements. As the exploration work continues, there may be adjustments to trench locations, lengths and depths, as necessary. Any change that may affect the project budget will be communicated and approved by the County, prior to initiating. We propose (10) ten separate trenches that range in length from 110 to 600 feet each. Our previous exploration program included approximately 2,800 lineal feet of exploratory trenches. Our revised program now includes 3,250 lineal feet of trench. The additional 450 lineal feet of trenching is depicted on Figure 1- Revised as dashed yellow lines. We have estimated up to 34 team-workdays (i.e. 7 workweeks) to complete the logging of these trenches. If practical, we will use an additional geologic team and excavator to reduce the overall field time for the exploration phase. The logging schedule is based on evaluating and detailed logging up to 100 feet of trench per day by a single team.

It is our understanding that the County will make BKF Engineers available to field survey the locations of our trenches, as well as any significant fault-related features we identify and mark in the field for accurate survey location. We will use this detailed survey base map in our analysis and in preparing a scaled fault rupture hazards constraint map.

Trench Excavation

All of the site excavation and related work will be performed by our subconsultant Pearson Exploration of Sebastopol, California. The majority of the trenches are located within areas that

are currently covered by asphalt paving. To facilitate minimal ground disturbance, trenches within asphalt areas will be saw-cut such that the trench excavation will fit within the sawn areas and reduce the potential for extended and irregular disturbance of the existing asphalt surface. Our trench layout crosses both parking areas, driveway/access roads, fencing, sidewalk and curb and gutter areas. This will require saw cutting and removal of these features as well. *The County should understand and accept that this proposed work does not include repair or replacement of such features.* We will stage any trench excavation that crosses a currently used thoroughfare/access so that at least one lane is available for passage. We will coordinate our partial access closure with County personnel so that they can forewarn tenants of the site of possible access changes and restrictions. This proposal assumes the County will temporarily remove and replace existing fencing in areas where our trenches may cross.

Trench excavation will be performed by a track-mounted excavator(s). Soil spoils will be stockpiled at a safe distance from the edge of the trenches until the backfilling process. If stockpiles will be subject to inclement weather, they will be covered by plastic and surrounded by straw wattles to reduce the potential for sediment runoff. For safety purposes, trenches will be surrounded by cyclone fencing at the close of each workday outfitted with a locking gate. In addition, all open trenches will be covered by plywood at the end of the day to regulate access to the excavation. Currently we propose that no more than 500 feet of trench should be open at any one time. We will utilize trench plates where needed for safety and emergency vehicle access requirements. It is our understanding that the existing 24-hour security guard services will still be available at the site during the length of our study, to assist in keeping the public away from our excavations.

Each trench will be shored for safety and to permit entry of the logging crew. Shoring will consist of aluminum hydraulic speed shores spaced at select intervals in accordance with OSHA requirement and actual soil conditions. All trenches will have appropriate entry and exit points which will include stepped access and multiple extension ladders spaced in accordance with OSHA guidelines.

We have estimated up to 17 workdays for excavation activities; calculated at a minimum of 200 lineal feet per day. In general, excavations will start in the north and progressively move south upon completion of logging and backfilling. Once we commence the field exploration with Trenches K-1 and K-2, which are not within the current public thoroughfare, we will provide scheduling updates to the County prior to excavating areas that may cross such thoroughfares so that tenants can be notified and access can be rerouted, as necessary.

Trench Backfill

At the conclusion of logging for each trench, backfill procedures will be performed to return the site to a stable condition. Native soil spoils excavated from the trenches will be replaced, moisture conditioned as necessary and compacted to 90% Relative Compaction (R.C.). Compaction will be achieved by use of a compactor wheel attachment to the excavator. KLF will obtain compaction curves for the excavated materials and will provide a technician to perform backfill observation and testing. Backfill compaction testing observation and testing results will be provided in a separate letter to the County. This proposal assumes that all excavated materials, with the exception of asphalt, can be replaced as compacted fill into the trenches. Asphalt will be stockpiled and then removed from the site at the end of the field exploration. No import or export of excavated/backfill materials is included in this proposal. Likewise, this proposal assumes that none of the excavated materials will be contaminated or require special handling/disposal. If

obvious contaminated soils are encountered, we will meet with the County to decide on proper procedures, handling and additional costs that may be required if such soils are encountered.

If the excavated soils are found to contain over-optimum moisture content, additional efforts such as soil drying/prep time and/or other backfill methods may be required in order to achieve the specified 90% compaction or to promptly backfill the trenches. This proposal assumes that trench spoils will be near optimum, and that only water addition will be needed to achieve soil compaction. Any drying efforts or alternate backfill options would need to be authorized by the County and would require additional fees than those presented in this proposal.

We have estimate up to 17 workdays for backfill activities; calculated at a minimum of 200 lineal feet per day.

(Optional) Age-Dating Techniques/Testing

If deemed appropriate based on the exposures in the trench, we will collect and submit charcoal and/or bulk soil carbon samples for radiocarbon age-dating. This will be utilized if we encounter features that may indicate some antiquity, or being older than approximately 11,000 years, which is the standard definition of an “active” fault feature. The most appropriate technique will likely be AMS radiometric dating on soil carbon which can provide accurate dates with much less sample than standard radiocarbon dating on charcoal, which is often time absent in the trench exposures. We will send any radiocarbon dating samples to Beta Analytic, in Miami, Florida, for expedited turn-around time (6 business days). We have included costs for up to 10 samples for AMS dating using the 6-day turn-around. We anticipate that most exposed fault traces/shears will demonstrate recency (historic to Holocene) of movement and will not require age-dating to assess and evaluate.

Task 5 – Analysis and Reporting

Utilizing the results of our office review and field explorations, the fault conditions will be characterized and assessed. The results of our study will be summarized first in a draft report. The County will have the opportunity to review the draft report and to provide any comments for consideration and inclusion, into a final report. The final report will be signed by a California Certified Engineering Geologist, as required.

The report(s) will include the following items:

- Site plan showing the surveyed trench locations.
- Logs and photographs of the trenches.
- Discussion of exploration techniques, procedures, and site geologic/seismic conditions, characterization of the Rodgers Creek fault zone encountered in our field explorations, and assessment of future fault ground rupture hazards.
- Site plan/geologic map showing the surveyed locations of fault features, as well as extrapolation of identified faults/shear zones across the site.
- Site Fault Ground Rupture Constraints Map showing recommended building setbacks or exclusion zones for structures intend for human occupancy.

The results of our study, including the Constraints Map, are intended to be work products that the County, and ultimately their chosen buyer of the property, can rely on. Our report will be presented in electronic format. Our Fault Ground Rupture Constraints Map will be submitted to BKF Engineers so that a total Development Constraints Map can prepared for the site in Auto CADD or similar format.

Task 6 – Project Management/Consultation

We have included up to 32 hours of Sr. Principal Professional and 16 hours of Administrative support time to coordinate and manage the field, technical and financial elements of this project. This time also includes expected post-report submittal consultation with the County.

FEE ESTIMATE

We propose to provide our services on a Time and Materials basis in accordance with our Fee Schedule (attached). As per County direction, no work associated with this study is considered subject to Prevailing Wage. **For the scope of services outlined above, our estimated fee will be \$430,000.** A project summary outlining the fees by task is provided below.

Task 1 – Field Preparation/HASP/Coordination	\$ 4,250
Task 2 - USA Marking/Exploration Marking/Utility Locating	\$ 7,850
Task 3 - Geologic Literature Review	\$ 4,400
Task 4 - Subsurface Field Exploration (Trench Excavation, Logging and Backfill)	\$ 360,500
Task 5 - Analysis and Reporting	\$ 43,000
Task 6 - Project Management	<u>\$ 10,000</u>
	\$ 430,000*

Because this project is expected to be performed through the remainder of the winter and there are a lot of unknowns regarding actual underground conditions, we recommend that at least a 5% contingency be incorporated into the overall budget as follows:

Estimated Budget	\$ 430,000
5% Contingency	<u>\$ 21,500</u>
Estimated Budget with 5% Contingency	\$ 451,500

*This proposal excludes replacement of any disturbed or removed asphalt. If requested, asphalt and base material can be replaced by a paving contractor chosen by the County or by our subcontractor for an approximate additional price of \$19/sq. ft.

SCHEDULE

Kleinfelder will begin work on the project upon receipt of your signed authorization to proceed. We estimate we can mobilize into the field to begin excavation within 2 weeks of authorization. Currently our field work consists of 34 field days (7 workweeks), barring no unforeseen delays due to access, weather, etc. If practical, we can mobilize a second geologic logging team and an additional excavator. This may reduce the overall field time down to 5 weeks. We anticipate that the analysis and draft report preparation can be completed within 4 weeks following completion of the field work.

In general, we anticipate that the Draft Report and Draft Fault Rupture Hazard Constraints Map can be made available within approximately 11 to 13 weeks from written authorization.

LIMITATIONS

Our work will be performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions, and at the date the services are provided. Our conclusions, opinions, and recommendations will be based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated.

This study is intended for use in future development project planning only. This overall intent is to identify areas of active faulting and prepare a constraints map for proposed development intended for human occupancy. It will not provide constraints for any other potential development. Our study and Constraints Map will specifically exclude any recommendations for project engineering design.

The proposed scope specifically excludes the assessment of environmental characteristics, particularly those involving hazardous substances. During the course of the performance of Kleinfelder's services, hazardous materials may be discovered. Except in instances of Kleinfelder's negligent acts and/or omissions of willful misconduct, Kleinfelder will assume no responsibility or liability whatsoever for any claim for loss of property value, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials. In the event that obviously suspicious possible hazardous materials are encountered, Kleinfelder will notify you as soon as possible of such an occurrence and we will mutually decide whether to continue, modify, or cease the remainder of the program and whether an environmental assessment should be conducted. All added costs incurred as a result of suspected hazardous substances would be charged on a time-and-materials basis over and above the herein estimated fee for our investigation.

AUTHORIZATION

It is our understanding that the County will prepare a standard Purchase Order for the study described above, for our signature. Once fully executed, we will commence this study. Any additional services not included above can be performed on a Time and Materials basis utilizing the attached Fee Schedule.

We trust this proposal is satisfactory and meets with your approval. Please call us at 707.543.8225 if there are questions or if our scope or fee estimate needs clarification. We appreciate the opportunity and look forward to assisting the County with this important study.

Respectfully submitted,

KLEINFELDER, INC.



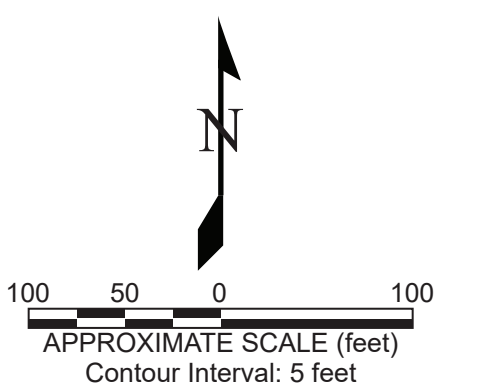
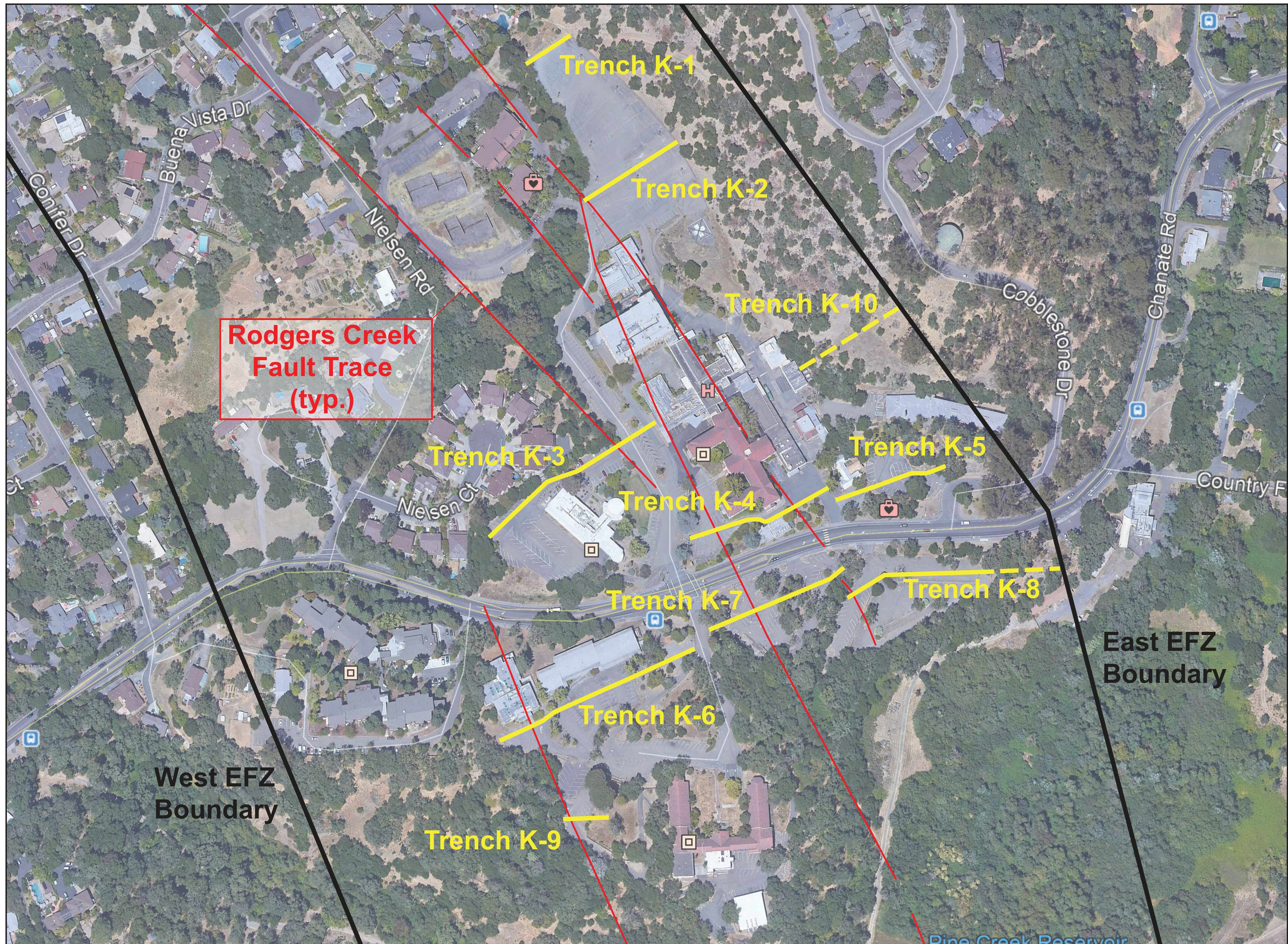
William V. McCormick, CEG
Sr. Principal Engineering Geologist



Jeff Richmond, CEG
Senior Project Professional

Attachments:

Figure 1: Fault Exploration Plan (Revised)
Fee Schedule



KLEINFELDER 2021 FEE SCHEDULE

PROFESSIONAL STAFF RATES*

Professional	\$ 140/ hour
Staff Professional.....	\$ 150/ hour
Project Professional	\$ 175/ hour
Senior Professional.....	\$ 190/ hour
Principal Professional	\$ 200/ hour
Senior Principal Professional	\$ 250/ hour

Project Controls Professional.....	\$ 125/ hour
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TECHNICAL STAFF RATES

Technician (Prevailing Wage Projects)	\$ 150/ hour
Technician (Non-Prevailing Wage Projects)	\$ 120/ hour
Senior Inspector.....	\$ 120/ hour
Construction Manager	\$ 155/ hour

ADMINISTRATIVE STAFF RATES

Administrator	\$ 125/ hour
Project Administrator	\$ 125/ hour
Mileage (portal to portal).....	\$ 0.80/ mile

Kleinfelder reserves the right to adjust the fee schedule on projects not completed within 180 days from the contract signature date.

* Applies to all professional rates including but not limited to civil, mechanical, chemical, electrical, geotechnical and environmental engineers; industrial hygienists; geologists; hydrogeologists; hydrologists; and computer specialists.

Hourly rates assume that other direct costs will be billed and reimbursed by the client. Kleinfelder reserves the right to adjust the fee schedule on projects where other direct costs are not reimbursed.