



May 11, 2022

Canyon Lakes GHAD Board of Directors
c/o GHAD Board Member Candice Andersen
309 Diablo Road
Danville, California 94526

**Subject: Second Amendment to Plan of Control for the
Canyon Lakes Geologic Hazard Abatement District**

Board members:

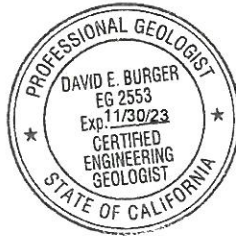
Please find attached the Second Amendment to the “Plan of Control” for the Canyon Lakes Geologic Hazard Abatement District (GHAD). Upon formation of the Canyon Lakes GHAD in 1985, a Plan of Control (POC) was implemented that expressly described its preliminary nature and that the POC would be subject to future revisions and modifications. The POC was subsequently updated in 1986¹ to better describe the responsibilities and limitations of the GHAD. Since the implementation of the 1986 POC, we have gained additional knowledge of the geologic hazards within the GHAD and have further refined best practices for mitigating these hazards. As such, we now submit this Second Amendment POC to the Canyon Lakes GHAD Board of Directors for approval. This updated POC supersedes all previous versions and has been prepared in accordance with the requirements of the California Public Resources Code Division 17, Section 26500-26654 of the State of California.

Sincerely,

Canyon Lakes Geologic Hazard Abatement District

Michael D. Sands
Sands Construction Company, Inc.
General Manager, Canyon Lakes GHAD

David Burger, P.G., C.E.G
Cal Engineering & Geology, Inc.



Phillip Gregory, P.E., G.E.
Cal Engineering & Geology, Inc.



¹ Amendment 1 to Plan of Control dated July 29, 1986 and approved July 29, 1986



**CANYON LAKES GEOLOGIC
HAZARD ABATEMENT DISTRICT**

**SECOND AMENDMENT TO
PLAN OF CONTROL**

May 11, 2022

**CANYON LAKES GEOLOGIC HAZARD ABATEMENT DISTRICT
PLAN OF CONTROL
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I. INTRODUCTION

The Canyon Lakes community is an approximately 1,050-acre mixed-use development comprised of 2,477 assessed parcels including residences, a golf course, a hospital, a commercial center with several office buildings, a retail shopping center, one elementary school, two church campuses, East Bay Municipal Utilities District facilities and various other improvements and amenities. Canyon Lakes GHAD is located within and shares a boundary with Contra Costa County Drainage Area (CDA) DA-75A, within the City of San Ramon, California.

The open space property included within the Canyon Lakes GHAD is generally characterized by open, rolling, grass-covered hills with scattered trees, intersected by drainages. Within the graded areas within the GHAD boundaries, the terrain has been extensively altered to create building pads, streets, and other improvements. The named drainages within the GHAD include portions of South San Ramon Creek, and Coyote Creek. Primary roadways crossing the GHAD areas include portions of Bollinger Canyon Road and Crow Canyon Road; the GHAD areas are bounded to the west by Alcosta Boulevard.

Under the authority of the California Public Resources Code (Division 17, commencing with Section 26500), the Contra Costa Board of Supervisors on June 4, 1985, adopted Resolution 85/289 forming the Canyon Lakes Geologic Hazard Abatement District ("Canyon Lakes GHAD", "GHAD", "the GHAD"). Funding for the Canyon Lakes GHAD is provided through an agreement with Contra Costa County under which the County collects property assessments which are annually updated by the GHAD.

The Canyon Lakes GHAD was formed to specifically address both known and potential landslide hazards within its boundaries. The Contra Costa County Board of Supervisors serves as the GHAD Board of Directors, and a General Manager manages the day-to-day operations of the GHAD. The General Manager reports directly to the GHAD Board of Directors.

GHAD Law requires that a Plan of Control (POC) be prepared that describes the geologic hazard of concern, its location, and the area affected. A plan for the prevention, mitigation, abatement, or control of the hazard must also be included. The General Manager is tasked with implementing

the POC. This POC presented herein includes a description of the geologic hazard present in the Canyon Lakes region (limited to threatening and actual landslides) and for which the GHAD was formed. It lays out both informational (e.g., document history, definitions, geologic conditions) and operational plans (including limitations and exclusions) for the prevention, mitigation, abatement, or control of the geologic hazard.

GHAD “Improvements” (as defined in in GHAD law) and all GHAD activities or projects undertaken in furtherance of, or in connection therewith, have been deemed by GHAD Law to be specific actions necessary to prevent or mitigate an emergency as described within Public Resources Code Section 21080(b)(4) (See, Pub. Res. Code Sections 26601 and 26505). Consistent therewith, all GHAD projects are exempt from review under the California Environmental Quality Act and are not subject to local permitting requirements.

II. HISTORY OF THE CANYON LAKES PLAN OF CONTROL

Upon formation of the Canyon Lakes GHAD in 1985, the original POC was adopted which outlined the type of geologic hazards (landslides) to be addressed by the GHAD. While GHAD Law broadly defines a "geologic hazard" that can be addressed by a geologic hazard abatement district, this GHAD was created to address only threatened or actual landslides¹. However, only generalities for prevention, mitigation, abatement, or control of landslides were provided due to a lack of knowledge about the extent of potential future landslides that the GHAD was formed to address. The original (1985) POC explicitly stated that the POC was a “[...] preliminary document” and that it “[...] will be subject to revisions and modifications, as new data and investigations warrant.”

The plan was amended in 1986 to provide additional guidance for the GHAD’s function and operation. Now, after years of operation, this current (2022) POC further updates the functional and operational aspects of the GHAD by considering the latest available information on geologic hazards and integrating new practices and technologies for mitigating these hazards.

¹ The original POC states “The proposed district [...] is prone to new landslides and reactivation of existing landslide areas.”

The GHAD benefits from its location in the San Francisco Bay Area where extensive expertise and constant innovation exist for addressing geologic hazards. Thus, it is important that the POC be updated periodically to ensure consideration of the known history of the landslide hazards within the GHAD areas, to reflect currently available investigation and mitigation practices and to provide additional guidance for the GHAD's function and operation. This Second Amendment further updates the functional and operational aspects of the GHAD by considering the latest available information on landslide hazards and integrating new practices and technologies for mitigating these hazards. This Second Amendment builds on the foundation laid out by the previous POCs, clarifies and further reinforces the intents of the original formation of the GHAD, and reflects the GHAD's current practice. This Second Amendment supersedes the First Amendment to the POC.

III. DEFINITIONS

The following terms (whether capitalized or not in this POC) shall have the following meaning:

- A.** "County Drainage Area 75A (DA75A)" exists as a County Special Drainage Area District. The GHAD boundary is coterminous with DA75A.
- B.** "Geologic hazard" as that term is used herein, means any actual (active or imminent) or threatened landslide.
- C.** "Landslide" is defined as a mass comprised of rock, soil, and other debris (e.g., water, vegetation) that has been displaced down slope by sliding, flowing, or falling mechanisms that have an established and distinct surface of separation between moving and non-moving rock and/or soil.
- D.** "Slopes" or "sloping ground" is defined as land that is inclined with a non-zero angle of inclination as measured from the horizontal. Slopes prone to landsliding are typically (but not limited to) those inclined more than 20 degrees.
- E.** "Soil creep" is defined as the slow (on the order of 0.4 inch per year²) downhill movement of near-surface (within the zone of seasonal changes of moisture and temperature) soil

² For example, see Fleming, R.W. and Johnson, A.M., 1975, Rates of seasonal creep of silty clay soil, Quaternary Journal of Engineering Geology, Vol. 8, pp. 1-29.

particles or weathered expansive bedrock materials resulting from the combined influences of gravity with wetting and drying cycles. Soil creep is distinguished from landsliding through the generally continuous motion and lack of distinct boundaries (both laterally and with depth) observed in soil creep.

- F. “Site improvements” indicates buildings, roads, sidewalks, utilities, constructed trails, golf course amenities, swimming pools, tennis courts, gazebos, cabanas, geologic stabilization features, V-ditches, or similar items.
- G. “Lot” or a “parcel” is defined as any single private or public area of land with closed boundaries defined by a recorded survey.
- H. “Creek”, as used herein, is equivalent to a “watercourse” as defined by the Contra Costa County Code Section 1010-6.028. A creek is thus defined as a natural or human-made channel for transporting water, including the stream bed and the banks, whether continuously flowing or intermittent. A channel is as defined by Contra Costa County Code Section 1010-6.004.
- I. “Structure setback area” indicates the portion of a lot situated between a creek and the “structure setback line” as defined by the Contra Costa County Flood Control District (see Contra Costa County Code Sections 1010-6.024, 914-14.012, and 914-14.014).
- J. “Structure setback line” indicates the line separating the structure setback area from the remainder of the lot where a residential structure or any permanent site improvement (other than drainage structures) is situated, as defined by the Contra Costa County Flood Control District (see Contra Costa County Code Section 914-14.012).
- K. GHAD Project – The prevention, mitigation, abatement, or control of a geologic hazard as defined herein.

IV. GEOLOGIC HAZARD DESCRIPTION

The Canyon Lakes GHAD is located south of Mount Diablo. The GHAD is situated between the Sycamore and San Ramon Valleys adjacent to and southwest of Sherburne Hills, in Contra Costa County, California. Similar to many other parts of Contra Costa County and the San Francisco Bay area overall, the topography and geology of the region combine to form terrain that can be

susceptible to landsliding (see Appendix A – Geologic Conditions). Although considerable effort and resources (e.g., slope regrading, removal of existing landslides, and installation of drainage infrastructure) were invested to ensure the long-term stability of slopes during the development of the residences and infrastructure within the GHAD boundary, the underlying soils and rocks can still be intermittently prone to instability from a suite of triggering processes that include rainfall-induced saturation or near saturation of soils or bedrock due to rainfall or domestic water sources, and earthquake shaking. The type of landslides that have occurred in the Canyon Lakes GHAD boundaries are typical for the San Francisco Bay region and generally occur as a result of intense or prolonged rainfall during the winter season. Upon the arrival of large storms, the soils can become nearly or fully saturated with resultant subsurface water pressures that may lead to destabilization of existing slopes. Landslides may be shallow (<5 feet deep) and involve surficial soils with potential to turn into highly mobile debris flows, or they may be deeper (>5 feet) and involve both soil and rock materials that move shorter distances. Both types of landslides may, in many cases, be prevented, mitigated, abated, or controlled by proactive and/or responsive activities; these activities are the purpose of the GHAD.

Additionally, geologic conditions such as thrust faults and adverse bedding conditions contribute to potential hillside instabilities. Areas of high liquefaction susceptibility potential have also been mapped in the vicinity of South San Ramon Creek and crossing Crow Canyon Road at three areas near the northeastern corner of the GHAD. Given the open creek channels and areas of potential liquefaction, some areas may be subject to localized embankment failures and lateral spreading during an earthquake.

Surface drainage facilities have been constructed throughout the hillside areas of the GHAD. These concrete line v-ditches and other structures are located on native soils, within areas of previous remedial grading, cuts, and fill slopes at various locations. These structures may be potentially impacted by creeping soils, debris flows, and slump failures. Often long term creep of localized instabilities will impact the functionality of these systems. Depending on the functionality of these systems, concentrated uncontrolled drainage may contribute to additional landsliding, debris flows, erosion, and soil transport, potentially impacting downslope improvements.

Seismic hazards are present throughout the San Francisco Bay Area. The Pleasanton fault has been mapped approximately 400 feet west of the GHAD boundary, while the Calaveras Fault has been mapped approximately 1.3 km (0.8 mile) west of the GHAD. The Mount Diablo Fold and Thrust fault has also been mapped 1.3 km (0.8 mile) to the east of the GHAD boundary. While the improvements within the GHAD boundary are outside the designated Alquist-Priolo zone for active faulting, the open space areas and improvements within the GHAD boundary will still be subject to impacts from seismic waves. Potential magnitude earthquakes of up to M6.9 are possible. The seismicity of the area may contribute to the development of earthquake-induced landsliding.

V. GHAD BOUNDARIES AND ANNEXATION POLICY

The boundary of the Canyon Lakes GHAD is shown in Figure 1 and is described by the Metes and Bounds Survey included in Appendix B.

As required by GHAD Law, the GHAD Board of Directors (in addition to the Board of Supervisors as the original sponsors of the GHAD's formation) must approve annexation of properties not currently within the GHAD boundaries.

VI. AUTHORIZED GHAD PROJECTS

The GHAD's operations are focused on the monitoring, maintenance, repair, and mitigation of threatened or actual landslides within the GHAD's boundaries. Typical GHAD projects fall into two categories: (1) major maintenance and monitoring activities of infrastructure and instrumentation meant to prevent instability of existing slopes and of which include, but are not limited to, cleaning, maintaining, replacing and/or installing surface and subsurface drainage systems and monitoring instrumentation, and (2) major landslide repair projects requiring, but not limited to, site grading and installation of drainage or engineered earth retaining system infrastructure. The General Manager has sole discretion for defining GHAD project priorities (subject to the guidance provided in Section VII and Section VIII) and for the selection of repair and mitigation methods appropriate to a particular situation, within the constraints described in this and other sections of the POC.

Property owners within the GHAD boundaries, whether private landowners or homeowners associations, may contact the GHAD management to either report a new geologic hazard incident or condition on their property or to inquire about an already-reported incident. When contacted, the General Manager shall respond to the inquiry and indicate whether the incident or inquiry falls within the responsibilities of the GHAD, and if so, what steps may be taken to address the incident. In cases where the property owner incurs their own expenses related to the prevention, mitigation, abatement, or control of a geologic hazard, as described herein, the reimbursement policies outlined in Section IX shall apply. In cases where the GHAD determines that an incident does not qualify for GHAD involvement and the property owner disagrees, the appeals policy outlined in Section X shall apply.

GHAD projects and situations in which the GHAD is authorized to prevent, mitigate, abate or control geologic hazards are listed and described in Sections VI(A) through VI(E):

A. Landslide Mitigation During and in Preparation for Emergencies

During emergency situations when a landslide presents an active or imminent threat to improved property, the GHAD may implement interim slope stabilization measures that can arrest or minimize further slope movement until long-term mitigation measures can be implemented. Interim slope stabilization measures include, but are not limited to, the temporary installation of slope coverings or drainage infrastructure to prevent further water infiltration or erosion, installation of structural elements to prevent or arrest motion of a landslide, or grading to remove or buttress unstable slopes. Emergency preparation measures may also be taken in advance of threatening landslides; these measures may include stockpiling slope stabilization materials and/or having resources in-place ready to respond rapidly.

B. Preventative Landslide Mitigation and Geotechnical Investigations

The GHAD may prevent, mitigate, abate, or control landslides that threaten improved property using a number of mitigation techniques. The selection of mitigation technique depends on the type and motion of land sliding, equipment accessibility, urgency, and other factors. Prevention of landslides can sometimes be achieved using surface and subsurface drains. Imminent landslides can be stabilized by the construction of retaining

structures such as closely spaced cast-in-place drilled piers reinforced with steel beams, soldier beam and lagging wall(s), or an array of tie-back or soil nail anchors extending beyond the slide plane (i.e., surface of separation between moving and non-moving soil and rock). Landslide-damaged slopes can be reconstructed and stabilized by removing the landslide debris and rebuilding the slope with properly compacted and drained, engineered fill. These or other appropriate techniques should be chosen based on the actual site conditions. The General Manager will make the final decision in determining the type of action that best fits the need of each GHAD project.

At the General Manager's sole discretion, a geotechnical investigation may be conducted for areas where unstable conditions or landslides exist or are believed to exist. The purposes of the geotechnical investigation are to determine the cause of the unstable slope conditions and to identify and define repair or stabilization options. Geotechnical monitoring, whether short-term as part of an active landslide investigation, or long-term, to track changes in groundwater levels and/or surface and subsurface movement, are authorized activities of the GHAD as related to the prevention, mitigation, abatement, or control of landslides within the GHAD's boundaries.

C. Activities Related to Slope Stabilization Surface and Subsurface Drainage Facilities

The GHAD may maintain, repair and/or replace those portions of surface and subsurface drainage facilities such as concrete "V" ditches, storm sewer lateral pipes, catch basins, drainage inlets, utility access chambers, storm sewer inlets and outlets, horizontal drains, subdrain pipes, subdrain pipe inlets and outlets, etc. when they are directly related to the repair, prevention, or control of landslides. Maintenance, as described herein, may also include removal of sediment from ditches and at the base of slopes and hydro-cleaning of horizontal drains and subdrains.

D. Activities Related to Creeks and Detention Basins

As part of its duties to mitigate against actual or threatened landslides, the GHAD may perform the following GHAD projects in creek channels and detention basins:

1. Clearing and removal of debris and/or impediments in creek channels under emergency conditions to maintain open stream flow in order to mitigate a threatening landslide.
2. Removal of significant quantities of sediment deposits in creek channels and detention basins to maintain functionality and open stream flow in order to mitigate a threatening landslide.

E. Activities Related to Prevention and Mitigation Research

The GHAD has directly benefitted from supporting, performing, and implementing the results of research on the behavior of slopes, landslides, and engineering mitigation methods. To prepare for and reduce the risk of future landslides causing property damage, the GHAD may conduct ongoing research into the behavior of slopes, slope failure prevention and slope failure mitigation. These efforts include maintaining and analyzing a record of all incident responses and monitoring events for the purposes of evaluating and mitigating future risk.

VII. LIMITATIONS TO GHAD INVOLVEMENT

The GHAD is authorized to prevent, mitigate, abate, or control geologic hazards and taking into consideration the following limitations and exclusions listed in Sections VII(A) through VII(H).

A. Funding and Risk Limitations

The GHAD General Manager is required to approve or not approve the prevention, mitigation, abatement, or control of geologic hazards based on funding limitations, project priorities based on risk evaluation, weather-related risk, the limitations specified in this POC, or other funding or risk-related issues not specified herein. Funding from tax assessment revenue (see Section I) is the sole source of revenue for the GHAD, including all operations. If revenue allocated for the GHAD is not available, the GHAD would be required to reduce and/or eliminate some or all GHAD services unless an alternative funding source (or sources) can be identified.

B. GHAD Services Only to Areas Within the GHAD Boundaries

The GHAD only has authority to provide its services to those properties located within the GHAD boundaries. Properties within the same Contra Costa County Tax Rate Areas (DA75A) as the GHAD that have not been annexed into the GHAD do not receive GHAD services.

The GHAD can only prevent, mitigate, abate, or control a geologic hazard on property outside the GHAD boundaries when the hazard has damaged or poses an imminent threat of damage to structures or site improvements located on properties within the GHAD boundaries. The GHAD can only prevent, mitigate, abate or control the geologic hazard outside the GHAD boundaries provided said work is limited to that which is necessary to address the damage or imminent threat of damage to the structures or site improvements within the GHAD boundaries. Any work outside the GHAD boundary must be performed in coordination with the outside landowner under specific agreement.

C. Geologic Hazard Limited to a Single Property

The GHAD can only prevent, mitigate, abate, or control landslides that are contained within the limits of a single parcel of property if the single parcel is greater than one acre in size. Services may not be provided for geologic hazards within a single parcel that is less than one acre in size. This exclusion does not apply to geologic hazards existing on open-space areas owned by any homeowners association or golf course property.

D. Geologic Hazard Resulting from Negligence of Property Owner

The GHAD may decline to prevent, mitigate, abate or control geologic hazards that occur due to, or resulting from, the negligence of the property owner and/or the property owner's contractors, agents or employees in developing, grading, constructing, maintaining, performing, or not performing, any work related to or that may have influenced the geologic hazard on the subject property including performing alterations to site drainage or to the overall existing stability of slopes.

E. Geologic Hazard which Requires Expenditure Amount Exceeding the Value of the Threatened or Damaged Improvement

The GHAD will not prevent, mitigate, abate, or control a geologic hazard where, as determined by the General Manager's sole discretion, the anticipated expenditure required to be funded by the GHAD to prevent, mitigate, abate, or control the geologic hazard will exceed the value of the structures and/or site improvements that are threatened with damage or loss.

F. Erosion Within Creek Structure Setback Areas

Creeks are dynamic landforms and are subject to natural changes from various forms of erosion. Erosion caused, for example, from water scouring of creek banks is a natural process and to be expected within creek areas. The GHAD will not respond to or be responsible for these conditions even if they damage authorized structures or improvements (e.g., fencing, landscaping, or other non-permanent structures) within creeks or structure setback area. Note that permanent structures and improvements are not allowed within creeks or their structure setback areas per Contra Costa County Code Section 914-14.014.

G. Damage Caused by Soil Creep

The GHAD will not prevent or repair property damage due to soil creep. Soil creep is a common phenomenon on almost all slopes throughout Canyon Lakes and is not included in the definition of a geological hazard as described herein (see Section III, subsections A, B, and D). The adverse effects of soil creep include shallow-founded improvements such as separations in concrete walkway and pool deck construction joints, tilting fences, separation of wooden deck elements, and generally very slow downhill movement of any structures constructed on or near the edge of slopes. Site-specific design and construction techniques can typically be implemented by property owners to reduce the impact of creep on their properties.

H. Damage Covered by Responsibilities of Others

The GHAD will not prevent, mitigate, abate, or control geologic hazards that are the responsibility of other districts, service areas, or entities operating within the GHAD boundaries. The GHAD will have the authority to monitor the specific district, service areas or entities to ascertain whether the work is being performed in a manner that does not interfere with nor impact the GHAD's responsibilities under the POC.

VIII. PRIORITY OF GHAD EXPENDITURES AND RESERVE FUND

A. Priority of GHAD Expenditures

The GHAD's sole source of funds is from property tax assessments collected on properties within the GHAD boundaries. Actions by the GHAD, including but not limited to such items as emergency response and scheduled repair expenditures, will be prioritized by and at the sole discretion of the General Manager based on available funds and the approved operating budget. The GHAD Manager prepares, and the GHAD Board of Directors approves an operating budget each year. When available funds are not sufficient to undertake all of the identified remedial and preventative stabilization measures identified in the budget, the expenditures shall be prioritized by the General Manager as follows, in descending order of priority.

1. Prevention, mitigation, abatement, or control of geologic hazards that have either damaged or pose a significant threat of damage to residences, critical underground or overhead utilities, or roadways that provide emergency egress.
2. Prevention, mitigation, abatement, or control of geologic hazards which have either damaged or pose a significant threat of damage to commercial buildings, including but not limited to office buildings or club houses.
3. Prevention, mitigation, abatement, or control of geologic hazards which have either damaged or pose a significant threat of damage to ancillary structures, including but not limited to pool cabanas or restroom buildings.

4. Prevention, mitigation, abatement, or control of geologic hazards existing entirely on open-space or golf course property which have neither damaged nor pose a significant threat of damage to any structure or site improvements.
5. Prevention, mitigation, abatement, or control of geologic hazards that have either damaged or pose a significant threat of damage to landscaping or other similar non-essential amenities.

B. Establishment and Operation of a GHAD Reserve Fund

A reserve fund may be set up to allow funding projects whose cost exceeds the annual budget for major repair projects, and to provide for funds required periodically when major landslide events occur within the GHAD (e.g., winter periods with high precipitation and the potential for several major GHAD projects needing to occur simultaneously). The source of revenue for the reserve fund is the property assessment revenue annually allocated to the GHAD (see Section I). The GHAD shall periodically conduct studies to determine the amount of funds that should be accumulated in reserve. These studies will be based on the most current experience with GHAD prevention and repair expenditures.

IX. REIMBURSEMENT POLICIES

A. Reimbursement of Expenses Incurred by Property Owner

1. Reimbursement of Expenses During Emergencies

At the General Manager's sole discretion and upon proof of payment through receipts, the GHAD may reimburse property owners for expenses incurred for materials used for temporary mitigation of geologic hazards during periods of emergency. Such materials are limited to sheet plastic placed over slope failures, sandbags, silt fencing, and other typical temporary winterization measures.

2. Reimbursement by Agreement

At the General Manager's sole discretion and upon proof of payment through receipts, the GHAD may reimburse a property owner for expenses incurred for the

prevention, mitigation, abatement, or control of a geologic hazard based on a written agreement between the property owner and the GHAD to that effect. Such agreement must be executed prior to the property owner incurring said expenses, and following a geologic investigation conducted by the GHAD.

B. Reimbursement for Damaged or Destroyed Structures and Site Improvements

1. Privately Owned Structures and Site Improvements

In the event a private residence, commercial office building, or any other structure, landscaping, or site improvement is damaged or destroyed due to, or as a result of, a geologic hazard, as defined herein, and pursuant to the other limitations and exclusions defined in this section, the General Manager has sole discretion, pursuant to Section VII, to fund or reimburse the property owner for the expenses necessary to repair or replace the damaged or destroyed structure, landscaping or site improvements. The dollar amount of the GHAD funding or reimbursement to the property owner may not exceed ten percent (10%) of the direct costs incurred by the GHAD in preventing, mitigating, abating, or controlling the geologic hazard responsible for the damage. In the event the geologic hazard damaged or destroyed a structure, site improvement or landscaping which violated any provisions of the County or City Building Code or County or City Ordinance Code at the time of its installation or improvement, the GHAD will not provide any funding or reimbursement to the property owner for repair or replacement of the damaged structure, landscaping, or site improvement.

2. HOA Owned Streets, Utilities, and Site Improvements

In the event street pavement, underground utilities, landscaping, or site improvements owned by a homeowners association (HOA) is damaged or destroyed due to, or as a result of, a geologic hazard, as defined herein, and pursuant to the other limitations and exclusions defined in this section, the General Manager has sole discretion, pursuant to Section VII, to include in the scope of the landslide repair, the repair or replacement of the damaged or destroyed street pavement,

above ground and underground utility structure(s), landscaping, or site improvement owned by the homeowners association.

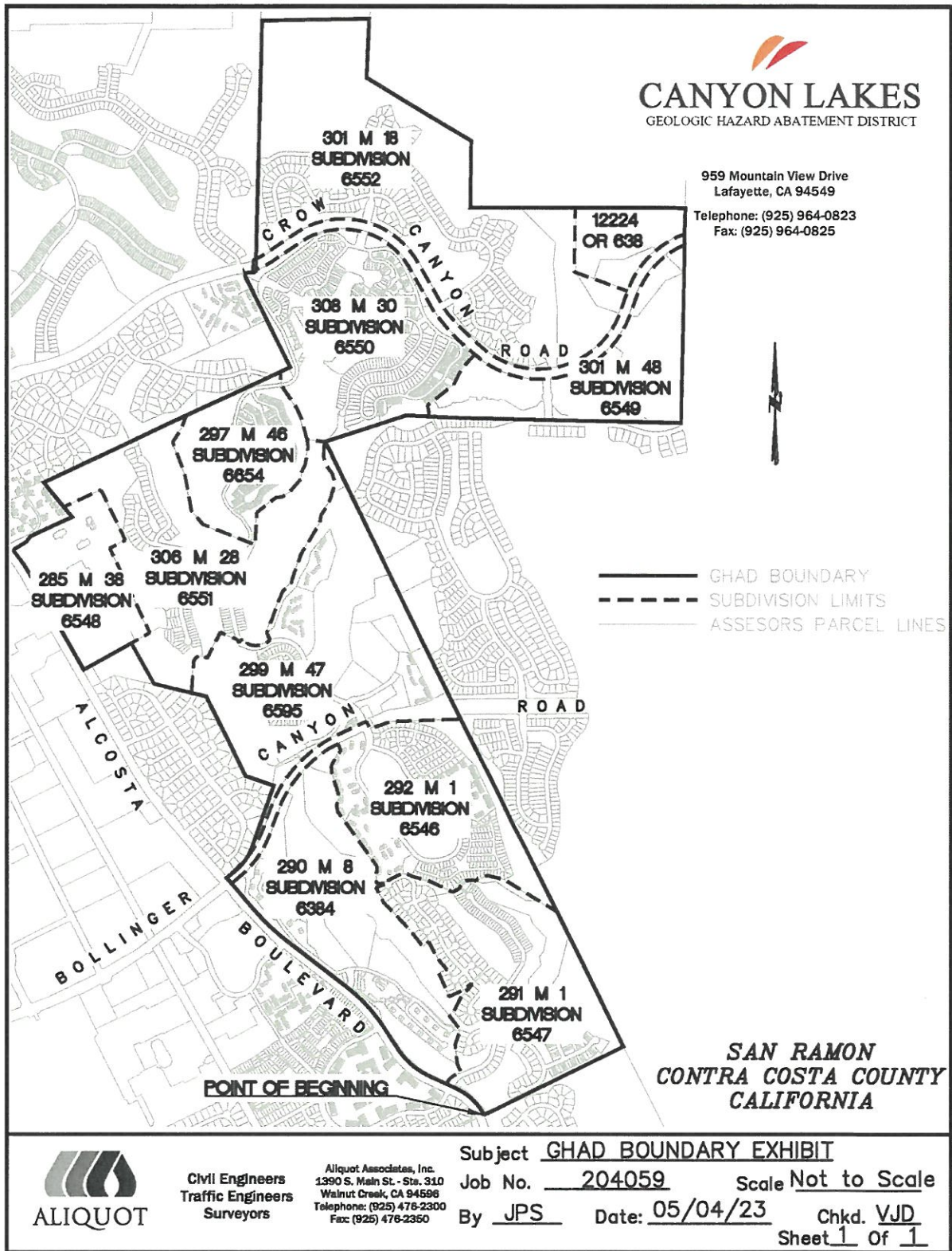
X. RECONSIDERATION AND APPEAL POLICY

If a property owner directly affected by an operational action as set forth in this POC does not agree with the decision of the General Manager, the property owner may request the GHAD Manager to provide its decision in writing. If the property owner continues to disagree with the decision, that property owner may request the GHAD Manager to reconsider that decision ("General Manager Decision"). The property owner shall, within fifteen (15) days from the date of the written General Manager Decision, file with the General Manager the grounds for reconsideration, and the requested relief, including the owner's special interest and injury. Within fifteen (15) days of receipt of the property owner's written request for reconsideration, the General Manager shall issue a written decision on the request based on the evidence presented ("General Manager Reconsideration Decision"). The property owner may appeal the General Manager Reconsideration Decision to the GHAD Board of Directors. This appeal must be filed with the General Manager on a form provided by the General Manager within fifteen (15) days from the date of the General Manager Reconsideration Decision. The appeal must include the reasons for the appeal and the property owner's requested relief. The Board will make the final decision on the appeal. The General Manager will proceed based on the decision of the Board of Directors.

XI. REVISION POLICY

This POC is meant to address the current needs of the GHAD and may be updated or revised should conditions or information change that result in new and/or different approaches related to addressing geologic hazards as defined herein (Section III-A and B). The POC will periodically be revisited by the General Manager. If the General Manager identifies the need to make minor updates or revisions, the General Manager can make those updates or revisions without seeking approval of the GHAD Board of Directors but shall thereafter inform the Board that the updates or revisions were made. If the updates or revisions are major, the General Manager shall submit the revisions to the Board of Directors for its approval. A minor update or revision is a change that clarifies a component of the POC and does not significantly change the purpose and character of the POC.

FIGURE 1 – CANYON LAKES GHAD BOUNDARY SITE PLAN



APPENDIX A - GEOLOGIC CONDITIONS

A. Topography and Geomorphology

The Canyon Lakes GHAD is located approximately three miles southeast of the town of Danville and six miles south of Mount Diablo in Contra Costa County, California. The area is situated on the slopes located between San Ramon to the southwest and Sycamore Valley to the north. The GHAD is located adjacent to and southwest of Sherburne Hills with Watson Canyon traversing through the northwestern area of the GHAD. Elevations within the GHAD boundary range between approximately 450 feet to 800 feet (USGS, 2018). The lower elevations are present within the Watson Canyon area (South San Ramon Creek) and Coyote Creek, while the higher elevations are present at the ridgeline peaks. Drainage within the GHAD limits is generally to the southwest via two named creeks (South San Ramon Creek and Coyote Creek) (USGS, 2018). Unnamed subsidiary drainages and creeks act as tributaries to the main drainage channels. The terrain consists of grass-covered ridges and hillslopes that drain to swales and small valleys that support modest tree and shrub growth.

B. Geology

The bedrock geology underlying the GHAD consists of Tertiary-age (Pliocene and late Miocene)¹ sedimentary deposits that have been folded and faulted due to the greater tectonics of the San Andreas fault system and associated uplift of Mount Diablo. The majority of the area is underlain by non-marine sandstones of the Orinda Formation (Dibblee, 2005) which is locally called the Green Valley Formation (Graymer et al., 1994). These rocks consist of gray to greenish gray, interbedded pebble conglomerates, sandstones and claystones (Dibblee, 2005). Flatter valley floors in the vicinity of the drainage channels and where much of the infrastructure in has been constructed consist of young (Holocene)¹ alluvial deposits (Helley and Graymer, 1997).

¹ Holocene refers to deposits that are less than 11,700 years old. Pliocene refers to rocks that are 2.6 to 5.3 million years old. Miocene refers to rocks that are 5.3 to 23 million years old.

The bedrock structure consists of a series of nearly parallel, northwest-southeast striking bedding. A northwest-southeast trending syncline has been mapped through the central area of the GHAD, while a portion of the nearly east-west trending Tassajara Anticline has been mapped near the northeastern corner of the GHAD boundary. Mapping indicates that bedding dips to the northeast west of the syncline and varies between southwest and overturned between the syncline and anticline. Within the GHAD, structural mapping shows sedimentary bedrock bedding dipping between 18 to 75° to the northeast (west of the mapped syncline) and ubiquitous and overturned (dipping at 65° to the east of the mapped syncline) (Dibblee, 2005; Crane, 1995).

Crane, 1995, mapped several thrust faults trending northwest-southeast within the GHAD limits. The western most mapped thrust fault is shown traversing through the southwestern portion of the GHAD limits. The hanging block is shown along the eastern side of the fault. Two thrust faults are mapped in close proximity and along either side of the aforementioned syncline traversing through the central portion of the GHAD limits. The hanging block side is shown between the two faults. Two additional thrust faults are mapped near the northeastern corner of the GHAD. Again, the hanging block is shown along the eastern side of the faults. Other thrust faulting mapped by Crane the vicinity of the GHAD have similar trending and orientations.

C. Tectonics and Seismic Sources

The Canyon Lakes GHAD's location within the greater San Francisco Bay area of northern California places it in proximity to several potential sources of seismicity. The GHAD is located within the eastern portion of the San Andreas Fault System but is not located within a State of California designated Alquist-Priola Earthquake Fault Zone. The nearest State of California zoned active faults are the Calaveras and Greenville faults located about 0.8 mile to the west and 7.4 miles east, respectively. Both faults have expected earthquake moment magnitudes of M6.7+ (Field et al., 2015). The Caltrans ARS website indicates these faults have a potential magnitude of M6.9 (CalTrans, 2013). An earthquake of these expected magnitudes could produce a ground acceleration of approximately 0.4g at the site according to attenuation relationships by Campbell and Bozorgnia (1994). Other sources for design-basis ground shaking near the area include smaller local faults that may produce lower magnitude earthquakes but potentially more intense ground shaking due to their closer proximity to the GHAD. These include the Mount Diablo blind thrust fault or potential subsidiary faults such as those mapped in the vicinity of the GHAD by Crane

(1988) and Sawyer (2015). Various mapping efforts have placed the approximate location of the Mount Diablo thrust fault close to the northeast boundary of the GHAD (Unruh and Sundermann, 2006; Sawyer, 2015; Bryant, 2017) with some mapping indicating the presence of fault structures within the GHAD boundary itself (Crane, 1995). Geomorphological studies indicate active deformation in the region as a result of late Holocene (modern) movement of the fault (Sawyer, 2015). These are manifest as fault-propagation folds and include the nearby Tassajara and Doolan anticlines which, in turn, are related to splay faults from the Mount Diablo thrust (Sawyer, 2015).

The U.S. Geological Survey provides a plausible scenario for a M6.5 earthquake on the Mount Diablo thrust fault with estimated peak ground acceleration of 0.4 to 0.6g in the vicinity of the GHAD (USGS, 2017). Earthquakes on blind thrust faults are not expected to cause surface ground rupture as might occur along a major strike slip fault such as the San Andreas, Hayward, or other nearby major faults. However, secondary seismic hazards such as landslides could be expected from such an event. More distant seismic ground shaking sources include the major known active faults of the San Francisco Bay Area; namely the San Andreas, Hayward, Rodgers Creek-Healdsburg, and the Concord–Green Valley faults. These sources are all at least five miles from the Canyon Lakes GHAD but are known to be capable of producing moderate to large-scale (up to M7+) seismic events. Based on the current state of knowledge, it appears likely that secondary seismic hazards from an earthquake on any of the seismic sources discussed above would occur in regional areas of localized weak soils, such as on unstable slopes.

D. Surficial Deposits

The area within the GHAD boundaries is covered primarily by relatively shallow soils. The soil over the majority of the GHAD area is mapped as Diablo clay of Contra Costa County (NRCS, 2022). This soil typically forms on uplands, derived from sedimentary bedrock. Below the surficial dark gray clay, the soils generally become light gray or olive gray silty to sandy clay and extend to the undisturbed bedrock. Diablo clays generally have high expansion potential resulting in surficial cracking during the summer and swelling during the winter. Soils with high expansion potential are generally susceptible to downhill soil creep on hillslopes.

E. Engineered Fill Deposits

As part of the original development within the GHAD boundary, significant excavations were made followed by placement of engineered fill deposits. Fill deposits are typically compacted during placement at controlled soil moisture levels to minimize overall settlement. Even still, fill deposits will in nearly all cases undergo some level of long-term settlement, and may undergo long-term movement depending on the overall level of soil moisture introduced. Because soil fills usually support infrastructure development, soil moisture levels may be increased (i.e., due to landscaping, etc.) compared to the background levels to which the soil fill material originated (i.e., as a hillslope subject only to infiltration during winter storms). As a result, areas of significant soil fill may be subject to potential long-term movement as the fill deposits adjust to their new configuration. Horizontal drains typically offer a means to control and limit the buildup of unfavorable soil moisture levels, and monitoring may provide a practical means of identifying potential instability issues.

F. Groundwater and Streamflow

Groundwater has been encountered at variable depths within the GHAD boundaries during drilling explorations by various geotechnical firms. Sandstone, siltstone and gravelly bedrock units can be expected to contain variable amounts of groundwater depending on location and underlying geologic structure. Overall, groundwater can be expected to be 10 feet or more below the ground surface. However, areas of springs and seeps are common, and perched transient zones of groundwater may occur as a result of winter precipitation. When soils approach saturation, creeks and other drainages within the GHAD's boundaries that are normally dry during the majority of the year can discharge water as streamflow. In some cases, flooding is possible near creek crossings. Creek bank erosion may also be caused by these types of flows. Groundwater and streamflow regimes may be affected by development within or near the GHAD boundaries. Long-term changes to these conditions can result from landscape irrigation, the addition of impervious pavement or structures, surface runoff collection systems, and subsurface drainage facilities.

G. Geologic Hazards

The most common geologic hazard affecting the Canyon Lakes GHAD is landslides caused by a combination of high seasonal cumulative rainfall and intense storm precipitation acting to destabilize the weak soil and rocks encompassing the steep slopes of the region. Earthquakes are also a concern given the nearby proximity of the GHAD to several active faults, and landslides generated from seismic shaking are likely in the event of strong shaking. In particular, the number and size of landslides may be greater if an earthquake occurs during the wettest months of the winter season when slopes are already weak due to rainfall infiltration.

Mapping in the region indicates that the GHAD (as well as many other areas in the Mount Diablo area and San Francisco Bay region in general) contains hundreds of existing landslides (Davenport, 1985) with slopes susceptible to movement and adjacent areas susceptible to inundation by landslide debris. Steep slopes may be subject to landsliding as a result of both natural (e.g., precipitation, earthquake) or human activities (e.g., lot grading, road construction, changes to site drainage, damage to water supply or wastewater piping, etc.).

Landslides in the Mount Diablo region consist of both shallow and deeper movements. Shallow landslides generally occur as earth (fine grained) or debris (coarse grained) slides and flows (Varnes, 1978) within soil overlying bedrock. Deep-seated landslides can be translational or rotational and mobilize both soil and weathered bedrock. Most landslides in the Canyon Lakes GHAD consist of shallow debris flows and deep-seated rotational earth and debris slides. Debris flows (often called mudflows) tend to be less than 10 feet deep and can move rapidly (seconds to minutes) within a relatively linear, narrow path that follows the existing topography (i.e., along swales, drainage channels, or simply straight downhill). Debris flows may travel hundreds of feet before stopping. Deep-seated slides typically move relatively slowly taking hours to days to move en masse along a relatively deep (20 feet or greater) curved slip plane with a better-defined headscarp, graben, or crevasse at the top of the slide. Movement may not exceed the length of the landslide source area but may move much larger areas and volumes of terrain compared to debris flows. In both cases, the most common causes of landslides involve weak soil/rock materials, a change in slope configuration, or an increase in subsurface moisture content, with a subsequent loss of soil or rock strength.

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APPENDIX B - METES AND BOUNDS DESCRIPTION

All that real property situate in the City of San Ramon, Contra Costa County, State of California, and described as follows:

Being all the following subdivisions situate in the City of San Ramon, Contra Costa County, State of California, "Subdivision 6547," recorded in Book 291, Page 1 of Maps, "Subdivision 6384," recorded in Book 290, Page 8 of Maps, "Subdivision 6546," recorded in Book 292, Page 1 of Maps, "Subdivision 6595," recorded in Book 299, Page 47 of Maps, "Subdivision 6551," recorded in Book 306, Page 28 of maps, "Subdivision 6548," recorded in Book 285, Page 38 of maps, "Subdivision 6654," recorded in Book 297, Page 46 of maps, "Subdivision 6550," recorded in Book 308, Page 30 of Maps, "Subdivision 6552," recorded in Book 301, Page 18 of Maps, and "Subdivision 6549," recorded in Book 301, Page 48 of Maps all in Official Records said County; and all that real property described in the Grant Deed conveyed to East Bay Municipal Utility District, recorded March 14, 1985 in Book 12224, Page 638 of Official Records of said Contra Costa County, and more particularly described as follows:

Beginning at the most southeasterly corner of Parcel "Q" as shown on aforementioned "Subdivision 6547", Thence along a non-tangent curve to the left having a radius of 700.00 feet, from which the center of said curve bears, South 63°19'04" West, through a central angle 38°14'37", an arc distance of 467.23 feet, said curve also being on the southwesterly boundary line of said "Subdivision 6547", said line also being on the northeasterly right-of-way line of Alcosta Boulevard; Thence continuing along said southwesterly boundary line of said "Subdivision 6547" and said northeasterly right-of-way line of Alcosta Boulevard, North 64° 55' 33" West, 165.02 feet to a point being the most southeasterly corner of aforementioned "Subdivision 6384"; Thence along the southwesterly boundary of said "Subdivision 6384" and said northeasterly right-of-way line of Alcosta Boulevard the following seven (7) courses:

- 1) North 64° 55' 33" West, 216.45 feet,
- 2) Northwesterly along a tangent curve to the right having a radius of 950.00 feet, through a central angle of 31° 38' 47" an arc distance of 524.72 feet,
- 3) North 33° 16' 46" West, 310.88 feet,
- 4) Northwesterly along a tangent curve to the left having a radius of 2050.00 feet, through a central angle of 19° 17' 20" an arc distance of 690.14 feet,
- 5) North 52° 34' 06" West, 876.64 feet,
- 6) Northwesterly along a tangent curve to the right having a radius of 2950.00 feet, through a central angle of 12° 16' 10" an arc distance of 631.72 feet, and
- 7) North 40° 17' 56" West, 378.41 feet to the most southwesterly corner of the dedicated right-of-way line of Bollinger Canyon Road, said point also being on the northeasterly line of the right of way of Alcosta Boulevard as shown on aforementioned "Subdivision 6546", thence along the northeasterly right-of-way line of Alcosta Boulevard, North 40° 17' 56" West, 110.00 feet to a point on the most northwesterly corner of said right-of-way of Bollinger Canyon Road, Thence leaving said northeasterly line of said right-of-way of Alcosta Boulevard and along the northwesterly line of the right-of way of said Bollinger Canyon Road, North 49° 42' 04" East, 150.00 feet to a point being the most southwesterly corner of aforementioned "Subdivision 6595", Thence leaving the northwesterly right-of-way line of said Bollinger Canyon Road and along the northwesterly boundary of said "Subdivision 6595" the following six (6) courses:

- 1) North 49°42'04" East, 15.47 feet,
- 2) Northwesterly along a tangent curve to the left with a radius of 600.00 feet, through a central angle 30° 22' 12" an arc distance of 318.03 feet,
- 3) North 19°19'44" East, 816.21 feet,
- 4) North 70°40'14" West, 366.26 feet,
- 5) North 25°43'10" West, 1090.00 feet, and

6) North $76^{\circ}25'32''$ West, 170.00 feet to a point being the most southeasterly corner of aforementioned "Subdivision 6551"; Thence along the southwesterly boundary of said "Subdivision 6551" the following two (2) courses:

- 1) North $76^{\circ}25'32''$ West, 483.69 feet, and
- 2) North $29^{\circ}24'58''$ West, 574.27 feet to a point on the south boundary line of aforementioned "Subdivision 6548", same point being, North $60^{\circ}35'06''$ East, 664.23 feet from the most southwest corner of said "Subdivision 6548"; Thence along said south boundary line of said "Subdivision 6548"; South $60^{\circ}35'06''$ West, 664.23 feet to the most southwest corner of said "Subdivision 6548"; Thence along the westerly line of said "Subdivision 6548", the following four (4) courses:

- 1) North $29^{\circ}24'54''$ West, 1356.19 feet,
- 2) Northwesterly along a tangent curve to the left having a radius of 1550.00 feet, through a central angle of $10^{\circ} 07' 38''$ an arc distance of 273.97 feet,
- 3) North $39^{\circ}32'32''$ West, 63.22 feet, and
- 4) Northeasterly along a tangent curve to the right having a radius of 20.00 feet, through a central angle of $98^{\circ} 38' 12''$, an arc distance of 34.43 feet to a point on the north line of said "Subdivision 6548";

Thence along said north line the following five (5) courses:

- 1) North $59^{\circ}05'40''$ East, 170.46 feet,
- 2) North $38^{\circ}55'09''$ East, 83.88 feet,
- 3) North $49^{\circ}12'55''$ East, 9.78 feet,
- 4) North $64^{\circ}54'35''$ East, 561.63 feet, and
- 5) North $39^{\circ}05'08''$ West, 160.00 feet to an angle point on the westerly boundary line of aforementioned "Subdivision 6551"; Thence continuing along said westerly boundary line of said "Subdivision 6551", North $39^{\circ}05'08''$ West, 385.74 feet to the most northwesterly corner of said "Subdivision 6551"; Thence along the north line of said "Subdivision 6551"; North $64^{\circ}30'06''$ East, 1271.53, and North $64^{\circ}45'21''$ East, 673.46 feet to the most northwesterly corner of aforementioned "Subdivision 6654"; Thence along the north line of said "Subdivision 6654"; North $64^{\circ}45'22''$ East, 1258.45 feet to the most northeasterly corner of said "Subdivision 6654", same point also being an angle point on the west line of aforementioned "Subdivision 6550"; Thence along said west line of said "Subdivision 6550" the following four (4) courses:

- 1) North $64^{\circ}45'22''$ East, 120.68 feet,
- 2) North $26^{\circ}11'37''$ West, 1295.09 feet,
- 3) Northeasterly along a non-tangent curve to the left having a radius of 1038.00 feet, from which the center of said curve bears North $6^{\circ}08'31''$ West, through a central angle $8^{\circ} 08' 16''$ an arc distance of 147.43 feet, and
- 4) North $02^{\circ}23'27''$ East, 44.26 feet to a point on the southerly right-of-way line of Crow Canyon Road (124' wide), same point also being on the southerly right-of-way line of Crow Canyon Road (124' wide), as shown on aforementioned "Subdivision 6552"; Thence leaving said boundary of aforementioned "Subdivision 6650" and crossing through said Crow Canyon Road (124' wide) the following two (2) courses:

- 1) North $01^{\circ}44'44''$ East, 16.99 feet, and
- 2) North $01^{\circ}29'54''$ East, 115.51 feet to the southwesterly corner of aforementioned "Subdivision 6552";

Thence along the boundary of aforementioned "Subdivision 6552" the following two (2) courses:

- 1) North $1^{\circ}44'44''$ East, 0.75 feet, and
- 2) North $1^{\circ}27'06''$ East, 2925.36 feet to the most northwesterly corner of said "Subdivision 6552";

Thence along the north line of said "Subdivision 6552" the following five (5) courses:

- 1) North $86^{\circ}29'44''$ East, 1322.31 feet,
- 2) South $1^{\circ}26'55''$ West, 775.19 feet,
- 3) South $59^{\circ}06'11''$ East, 1514.94 feet,
- 4) South $0^{\circ}52'30''$ West, 823.57 feet, and

5) South 89°57'14" East, 1303.18 feet to a point being the most northwesterly corner of "Parcel One" as described in the Grant Deed conveyed to East Bay Municipal Utility District, recorded March 14, 1985 in Book 12224, Page 638 of Official Records of said Contra Costa County; Thence along the exterior boundary of said "Parcel One" the following two (2) courses:

1) South 89°57'15" East, 1335.02 feet, and
2) South 1°32'42" West, 308.71 feet to a point on the northerly right-of-way line of Crow Canyon Road (124' wide) as shown on aforementioned "Subdivision 6552"; Thence crossing said Crow Canyon Road (124' wide) South 1°32'42" West, 134.04 feet, to the northeasterly corner of aforementioned "Subdivision 6549"; Thence along the boundary of aforementioned "Subdivision 6549" the following three (3) courses:

1) South 1°32'42" West, 2215.79 feet,
2) North 88°42'18" West, 2630.10 feet, and
3) North 87°26'36" West, 453.96 feet to an angle point on the southerly boundary of aforementioned "Subdivision 6550"; Thence along said southerly boundary line, the following two (2) courses:

1) North 87°26'36" West, 284.71 feet, and
2) South 72°08'23" West, 1057.94 feet more or less, (record 1042.80') to the northeasterly corner of aforementioned "Subdivision 6595"; Thence along the boundary of aforementioned "Subdivision 6595" the following three (3) courses:

1) South 26°51'06" East, 149.68 feet,
2) South 25°56'59" East, 849.67 feet, and
3) South 26°06'38" East, 2806.92 feet more or less, (record 2800.98')
to the northeasterly corner of aforementioned "Subdivision 6546", thence along the northeasterly boundary of aforementioned "Subdivision 6546" the following six (6) courses:

1) South 26°06'38" East, 28.31 feet,
2) South 26°44'43" East, 819.94 feet,
3) South 25°25'47" East, 225.74 feet,
4) South 25°18'38" East, 365.00 feet,
5) South 27°43'38" East, 320.00 feet and
6) South 26°21'38" East, 910.00 feet to the northeasterly corner of aforementioned "Subdivision 6547";
Thence along the northeasterly boundary of aforementioned "Subdivision 6547" the following three (3) courses:

1) South 26°21'38" East, 613.00 feet,
2) South 25°40'41" East, 1223.01 feet,
3) South 63°43'09" West, 1901.35 feet, to the **Point of Beginning**

Containing an area of 1064 acres, more or less.
Attached hereto is a plat entitled Exhibit "B" for reference only.

END OF DESCRIPTION

PREPARED BY:



VINCENT J. D'ALO
LS 4210



MAY 04, 2023
DATE