From:	Denise Charlebois
To:	Camille Leung; Planning_Commission; Timothy Fox; Steve Monowitz; mhaesloop@chsdg.com; Gregory Smith; Heather Forshey
Subject:	634 Palomar Dr. PLN2020-00251 June 21 Planning hearing D. Enea
Date:	Thursday, June 15, 2023 3:02:47 PM
Attachments:	D.Enea Planning Commission 6-21-23.pdf 223016 Wet Season 2023 Effects Letter 20230615Balanced Hydrologis.pdf Kilik 6-2023.pdf Enviromental Health failed septic_6-2023.pdf 2022 Arborist report Richard Smith-stating stability of hill in jeopardy.pdf Grading violation 634 Palomar.pdf 21 Estrada_Sewer hookup20080610_letter_051022430.pdf Drainage report 738 Loma Ct 4-13-23 GCD Inc_.pdf

Dear Camile -
Attached is my letter to the Planning Commission and reports that are crucial and provide an array of new site information. Also,after doing further research it seems the unstable slope characteristics and failed septic systems are more extensive and have been extremely problematic and impactful to downhill properties 300' to 500' downhill of 634 Palomar Dr. Please look into the slope failures at 21 Estrada as well as their failed septic back in 2008 that resulted in an emergency hookup to the San Carlos sewer. At the last Planning hearing, Director Monowitz stated there was no potential for sewers in Palomar Park.There is also currently an active failing septic system at 616 Palomar Dr. that is leaching onto the 21 Estrada property. These are examples of what Engineering Geologist, Engineers and Hydrologists; Steven Connelly, Dan Dykman, Balanced Hydrologics, Joseph Michelucci and Engineers, Jeff Lea,Lea & Braze, Alan KIlik, John Romandia and George Drew caution about in the design of the proposed 634 Palomar Dr. application. These and other cumulative and environmental significant impacts to the surrounding properties should have been highlighted and listed as potential impacts for further study in the CEQA checklist Planning completed. By inserting proposed cookie cutter mitigations or those which miss the point and which do not address the impact or potential threat at the planning phase of the project can become an entire community, and SMC health and safety issue.

Thank you,

Denise Enea


Sewer vs. Septic 634 Palomar Dr.
Legend
Failing leach field active
Previous failed leach field
Proposed 634 Palomar Leach field
Repaired Leach field
Sewer (San Carlos)
Palomar Drive
Google Earth
400 ft
N

Denise Enea
738 Loma Ct.
Redwood City, CA 94062

Planning Commission
400 County Center
Redwood City, CA 94063

June 15, 2023

RE: 634 Palomar Dr. PLN2020-00251

Dear Planning Commission,

My vacant parcel at 0 Los Cerros adjoins 634 Palomar Dr. I have had numerous professional experts including hydrologists, geologists, engineering geologist, geomorphologists, engineers, and arborists, evaluate my vacant parcel and developed parcel at 738 Loma Ct. in correlation to the 634 Palomar Dr. application. All nine experts strongly cautioned and recommend leaving the existing significant trees and to not add any further water such as landscape irrigation or a leach field of any kind to the hillside above the existing or previous landslides. Three structures have been destroyed and numerous landslides have occurred over the years. In 2017 a catastrophic landslide displaced almost the entire vacant parcel of 0 Los Cerros. My home at 738 Loma Ct. was almost lost to the slide. This wet winter provided ongoing challenges. The 634 Palomar Dr. lot has been previously illegally graded; VIO2012-00127 & PLN2013-00056, leaving two severe cut banks. This is the same area the applicant proposes to place two of their leach fields. A large volume of storm water ponded and then flowed from this area onto my 0 Los Cerrros parcel and created or exacerbated a new slip out directly above the 2017 repaired slide. The uncontrolled flow also jeopardized the repaired 2017 landslide. I tried contacting the owner and their professional team multiple times and received no response. Balanced Hydrologics and Kilik Engineering recommended an emergency sub/interceptor drain. In March of 2023 Kilik Engineering, at my significant expense, installed, per Bld2023-00624, 180 ft of perforated subdrain to collect as much of the runoff as possible from the higher 634 Palomar Dr. parcel. Even with the installation of the new drain deeper underground water was flowing from the 634 Palomar hillside during and after the extended downpours.

The entire hillside of Loma Ct., Los Cerros and Palomar Dr. moves and drains the prolific spring, traveling through many of the nearby properties, including the applicant's parcel. This water has been tested for conductivity by Balanced Hydrologics and concluded that it is deep aquifer spring water which flows 365 days a year. In April of 2023, I retained Geotechnical Construction & Design, Inc, (GCD), a professional engineering firm to assess the onsite drainage of my developed property at 738 Loma Ct. Under storm conditions, (GCD), conducted their inspection and produced a detailed report, stating "*Our reconnaissance of the site found that it has been provided with a comprehensive and robust drainage control system. The extensive drainage control systems appear to have been properly installed and are well maintained.*"

In the past, almost all the properties along Los Cerros and Loma Ct. have experienced failed leach fields and have needed to relocate new leach fields. Currently a downhill property, merely 300ft away from the applicant's parcel, is experiencing a failed system which is leaching effluent onto a neighboring property. In certain situations, property owners have been allowed to tie into the San Carlos sewer system because their leach field systems are irreparable such at the case of 21 Estrada

in Palomar Park. The proposed leach fields for 634 Palomar Dr. are proposed extremely close to the existing uphill 730 Loma Ct. leach field and will likely present a collective issue by the stacking of the two separate systems. 730 Loma Ct. has already had multiple failed leach fields and the current replacement fields were installed in 2001. This is the exact situation that Balanced Hydrologics warns against, and which is currently happening 300 ft downhill at 616 Palomar Dr. *Section 4.84.180* of the SMC Environmental Health Ordinance governing OWTS states "*use of an OWTS will not create adverse cumulative impacts." Section 4.84.185* of the same Ordinance states "*exemptions will not have any adverse environmental effect on the use of the subject and adjoining properties.*

We urge the Planning Commission to head the warning of the many professional experts who have warned against 634 Palomar Dr. adding any water, or a leach field above any of the existing or previous landslides, removing any significant trees providing hillside stabilization and extensive root structure with significant dewatering characteristics. Removing and replacing a 100 year old tree with a new tree(s) could potentially take 50 years before the root structure is re-established and the same dewatering effects are obtained.

Three homes have been destroyed over the years on this hillside and multiple other large landslides have occurred in very recent years causing substantial damage. The slides are repaired only to slide again.

The applicant could but seems to have no interest in revising and partially redesigning their project to fit the site and pose less significant impacts to the adjoining and downhill neighbors. The applicant could for example: 1. Reduce the size of the house to potentially relocate the proposed leach field below and a minimum 100' away from previous and or current slides.
2. Relocate leach fields a minimum of 50 ft from cut banks and existing neighboring leach fields. 3. Remove the pool from project 4. Investigate utilizing the San Carlos sewer system 5. Maintain the 100 yr. old oak which resides less than 10ft from the steep unstable property line and 20ft from a new slide on 0 Los Cerros.

The adjoining neighbors have reached out to County Planning to offer discussions with the applicant's professional team and some of the neighbor's high level experts, however even though County Planning thought this was a good idea the applicant's professional team has declined.

The neighboring property owners shouldn't have to endure significant impacts, expensive mitigations, be exposed to public health and safety issues, or possible legal litigation due to a blind and uncaring eye by an applicant.

Sincerely,

Denise Enea

Denise Enea

Attachments:
Balanced Hydrologics, 6-15-2023 letter
Kilik Engineering, 6-12-2023 letter
Environmental Health, failing septic 616 Palomar6-12-2023 email
Failed Leach fields map
GCD, Report 4-13-2023
BATS, Arborist report 11-2022
SMC Grading violation VIO2012-00127 & PLN2013-00056
Environmental Health septic failure 21 Estrada 6-10-2008

Balance Hydrologics

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June 15, 2023

Greg Smith, PG, REHS Supervisor Water Protection and Land Use Programs
Heather Forshey, Director
San Mateo County Environmental Health
2000 Alameda de las Pulgas, Suite 100
San Mateo, CA 94403
envhealth@smcgov.org

Re: Summary of 2023 wet-season observations. County file number PLN 2020-00251

Dear Greg Smith and Heather Forshey:

We understand that you have met with a neighbor's group on June 12, 2023, to discuss recent seepage and slope stability impacts during the 2023 wet season that are relevant to permitting the proposed residential development at APN 051-022-380, 634 Palomar Drive, Redwood City, CA (Project). We have been asked to summarize our observations, research, and hydrogeologic interpretation of the site's vicinity and suggest some possible mitigation ideas for you to consider.

We previously collected field data and prepared a Spring Source and Protection Reconnaissance report (Woyshner and Hecht, 2014) during the extreme multi-year dry conditions of the 2014 drought, then returned to the site this year to collect wet-year observations. We prepared and presented a comment letter with our findings and conclusions (Hecht and Woyshner, 2023) to the Planning Commission Hearing on March 8, 2023. Both documents are appended to this letter for reference. Our site investigations were mainly focused on the applicant's parcel APN 051-022-380 and the two neighboring parcels to the west APN 051-022-310 and APN 051-022-180 but also included surrounding streets Los Cerros Rd, Palomar Dr, Loma Ct, and Loma Rd.

We note the following observations and conditions to consider when developing the conditions of approval for the Project:

- Field evidence, aerial photos, historical records, and geologic documents suggest this site is part of a large unstable mass or compound landslide capable of storing and transmitting a reliable source of water to the perennial spring at APN 051-022-310, sourced from an aquifer marked by a distinctive water quality.

- The stabilizing influence of mature, equilibrium hillslopes and an oak-bay woodland which had not been graded prior to 1950 has now been disturbed by tree removal, cuts for roads, infrastructure, and buildings.

- The parcels are situated on steep slopes, clayey soils, and within a zone of groundwater discharge and streamflow generation, requiring preventative management for landsliding and slope instability.

- The subdivision is served by imported water, with local sanitary disposal through septic systems, a combination inevitably leading to more groundwater recharge, and usually rising groundwater levels and expanding seepage areas which is especially problematic during wet years.

- Though we have not investigated this site, we understand that you are aware of seepage and leachfield failure that developed this year about 300 feet downhill from the applicant's parcel at 616 Palomar Dr.

- We noted ponded water and related vegetation on the applicant's parcel during early March 2023 in the area proposed for Project expansion leachfield lines, which additionally is situated downslope from the leachfield lines for the adjoining uphill neighbor, compounding this wet season ponding condition. We understand that this ponding persistent to the onset of the dry season (Enea correspondence).

- Documented landsliding on the applicant's and neighboring parcels is associated with wet years or periods of wet years. As you may have noted in the field or perhaps in reviewing the aerial photographs we mentioned, nearly every year or years of above-average precipitation has resulted in at least one documented instability large enough to warrant a geotechnical report or road re-construction project.

- We documented several new soil slumps, slipouts, and seepages in the area during 2023, including on the applicant's parcel and on the adjoining parcel 20 feet from the applicant's property line. Roots of mature oak and bay trees prevented expansion of these slides. And an emergency 4-inch subdrain was installed along this property line to collect seepage (Kilik Engineering letter of March 6, 2023).

- Information which we believe is not previously noted in the files is the indications of active earth movement at the upslope property line of the Enea parcel (APN 051-022-310). As seen from the Enea parcel, the 10-foot high whitewashed cinderblock retaining wall is bulging outward with up to several feet of displacement. The wall bears fresh, unweathered open cracks of up to ½ to 1 inch wide in what seems to be evidence of at least some recent downslope movement. One of the largest of these cracks is about 30 to 40 feet southwest of end of the proposed expansion leachfield, and within the 100-foot setback from the proposed septic system. The deformed cinderblock wall is readily visible from either the applicant's lot or Ms Enea's.

The proposed project requires substantial grading, cumulatively adding to post-development instability of the compound slide area. It will be served by a septic system and leachfield, discharging a substantial amount of water to the landslide complex every year. It will also place a swimming pool at the head of one known near-surface slide, which if ruptures and drained suddenly will discharge many thousands of gallons of water aggravating even a minor instability associated with ongoing slope movement and/or ground shaking.

The County's third-party review, by Cotton-Shires Associates, called for the applicant to provide additional data on depth to groundwater, likely flowpaths of effluent such that effects on adjoining parcels might be reasonably assessed. We have not seen such an analysis. This reasonably might go beyond the terms of the ordinance. For example, if new slope instabilities develop, on the applicant's parcel or their neighbors', they and the County will want to have such information and analysis available to guide urgent repairs in this very constrained area.

As we recommended to the Planning Commission on March 8, the County should adhere closely to their ordinances and grant no exemptions. The setback of all septic leach lines from the west property line (including expansion or alternate lines) should be greater than 100 feet to limit the impact to adjacent unstable slopes. For soil stability, mature oak and bay trees along the property line should not be removed and additional oak and bay trees should be planted. And to mitigate potential seismic hazard, the storage of water in pools and tanks should not be permitted. Finally, the seepage and slope instability issues would be best mitigated if the proposed project were to include sewer service (such as by the San Carlos system) rather than by on-site wastewater disposal.

Closing

Thank you very much and kindly let us know whether any additional information might prove helpful in reaching resolution.

Sincerely,

BALANCE HYDROLOGICS, Inc.

Mark Woyshner, M.Sc.Eng.
Principal

Barry Hecht, CEG 1245, CHg. 50
Senior Principal

cc. Denise Enea

Enclosures:

Hecht, B., and Woyshner, M., 2023, Comment letter on the proposed residential development at APN 051-022-380, 634 Palomar Drive, Redwood City, CA: Balance Hydrologics letter to Denise Enea, March 7, 2023, 10 p., 1 table, 6 figures, 1 appendix.

Woyshner, M., and Hecht, B., 2014, Spring source and protection reconnaissance, APN 051-022-310: Balance Hydrologics letter report 214016, letter to Stan Low, San Mateo County Environmental Health Division, April 16, 2014, 8 p., 3 tables, 8 figures, 1 appendix.

ATTACHMENT 1

Balance Hydrologics' March 7, 2023 Comment Letter on
the Proposed Residential Development at APN 051-022-380

Balance Hydrologics

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March 7, 2023

Denise Enea
738 Loma Court, Redwood City, California
San Mateo, California
APN 051-022-180

Re: Comment letter on the proposed residential development at APN 051-022-380, 634 Palomar Drive, Redwood City, CA

Dear Denise Enea:

You have kindly asked us to assess the nature of risks posed by the proposed construction of a 4300-square foot home on a parcel adjoining your holdings at 738 Loma Court. You have asked that we consider, on a screening basis, the risks both to your property and to the larger community which has developed within a complex compound landslide which seems to encompass the Palomar Drive area in southern San Mateo. We find risks to slope stability, water quality, and wetland habitat. In our opinion, these should have been identified in an "Initial Study", and warrant consideration as part of an environmental document under CEQA focusing on these topics.

Work Conducted

We previously prepared a Spring Source and Protection Reconnaissance report (Woyshner and Hecht, 2014) during the extreme multi-year dry conditions of the 2014 drought. The two of us have since updated our understanding of conditions of the proposed project at APN 051-022-380, recent geologic mapping and planning geology of the Palomar Park area, obtained and analyzed additional historical aerial photography, and reviewed the hydrologic history of the area. We visited the site on March 2, 2023, and made measurements and drainage observations under the much wetter conditions that currently prevail. We measured setbacks from various proposed project features and walked the roads and throughout the neighborhood, mapping signs of springs, seeps or drainages or headwater streams on most roads near and uphill from the proposed project.

We considered the 70-year history of slope instability in light of rainfall history, identifying that (a) landsliding commenced with substantial settlement of Palomnar Park in the early 1950s, and that (b) nearly all landslides have occurred during periods of above-average seasonal rainfall, perhaps more so than particular storms. We have also prepared the attached review of our findings.

Hydrogeology of the Vicinity

We earlier (in 2014) conducted a study of the spring at the head of the landslide on APN 051-022-310, a parcel adjoining the project parcel to its west. We found that the spring is sourced from an aquifer not previously identified, marked by a distinctive water quality. Since we observed it during a third year of drought; since there was evidence of perennial flow, we hypothesized that the source was relatively large, extending beneath unspecified adjoining and nearby properties. Further, we tested the quality of the water, finding the spring to have a different water-quality fingerprint than the nearby stream at the north end of Los Cerros Road.

Field evidence led to the notion that the ground beneath the Enea home and its neighbors was in fact a large unstable mass or compound landslide capable of storing and transmitting a reliable source of water to the spring. We subsequently looked at aerial photos of decades past, all of which also hinted at a neighborhood-scale disturbed, hummocky ground which is part of a large area of fractured, weathered, and unstable Franciscan bedrock, where localized slippages should be expected (see Seismic Hazard Map in **Appendix A**). Our work occurred in the knowledge that there have been multiple home-damaging or home-destroying land instabilities beginning in the early 1950s in the Loma Court to Los Cerros Road area than had been destroyed or severely damaged by slope instabilities since settlement of the area in the 1950s.

We also learned that the entire subdivision is served by imported water (currently purveyed by California Water Service) with local sanitary disposal through septic systems. The combination of imported water with no sewer to drain it away inevitably leads to more groundwater recharge and usually rising groundwater because residents can freely apply water to landscaping and gardens and also for interior use (which generally ends up in the septic systems of the individual homes, thence percolating to groundwater. As a result, tens of additional acre feet of effluent and irrigation return flows are now percolating to the water table beneath the compound slide mass beyond what percolated 70 years ago. Furthermore, less water is being removed by woody vegetation, which is now sparser than it was prior to settlement of the neighborhood. Finally, the stabilizing influence of mature, equilibrium hillslopes which had not been graded prior to 1950 has now been disturbed by increasing cuts for roads, infrastructure, and buildings. The proposed project adds cumulatively to all three causes of instability; in light of its scale, size and weight, the cumulative effects are more than most other individual homes in the neighborhood.

Groundwater Flows from Water-Quality Data

Water levels and flow are one way of understanding groundwater movement and instability, but only give half of the picture. All natural waters have a water-quality story with evidence of how the water has moved, the paths of its flow, and how much has flowed and when. This section of the report helps explains the water quality side of the quantitative hydrology.

All natural waters carry dissolved solids, or salts. Generally, the longer water remains in the ground, the more salts it dissolves, and the types of salts tells us what kind of ground it has spent time in. The salt content of natural waters can be directly measured with a simple hand meter as conductivity, a measure of a liquid's ability to conduct a current. It is measured in units of "mhos", which is ohms (a measure of resistance), spelled backward. The International System of Units (SI) term for electrolyte conductivity is

siemens. Because it is salt ions that actually conduct the current, the higher the conductance, the more salt the liquid contains. Water can also be traced using its distinctive salt content. For example, we can tell in the field that a spring with a conductivity of 1,000 umhos makes up half of the flow downstream from whether spring enters a stream which has a conductivity of 600 downstream from the confluence but only 200 upstream of the spring. If a stream has a conductivity of 2,000 in the late summer and 200 at the same place after the winter, we can tell it is fed from the same sources but has been diluted nearly by 10 times as much rainfall with a conductivity of zero, the approximate conductance of rain. So, the stream crossing the north end of Los Cerros Road was measured to have a conductance of 2,000 in February 2014 (after three years of little or no recharge during a drought) and 650 in March 2023, after a wet winter which has recharged the soil draining to the stream, we can tell that much of the flow of the stream fell recently as rainfall. The 3:1 ratio of fresh recharge to older water is somewhat less than what hydrologists currently observe throughout San Mateo County, indicating more salts in the soils. Most streams contain about 10 to 15 percent of the conductivity measured late last summer. By contrast, the spring and subdrain discharge on APNs 051-022-310/380 with a conductivity of 1,200 during both wet and dry seasons suggest a larger body of groundwater, such that dilution by this years' rains has not made much difference in its composition.

Table A. Representative Ranges of Specific Conductance ("Conductivity") Measured in the Palomar and Los Cerros Road neighborhood, Palomar Park, Redwood City, California

Source	Wet Year (2023) (uS/cm@25C)	Dry Year (2014) (uS/cm@25C)
Rainfall (representative)	**10 – 40**	
Street and driveway runoff (representative)	**20 – 80**	
Tap water (Hetch Hetchy Reservoir)	**not measured**	**63**
Standing water and soil seepage to roads	**280 – 450**	**not present**
Canyon stream at Los Cerros Rd	**650**	**2,000**
Subdrain seepage from landslide areas on APNs 051-022-310/380	**1,100 – 1,300**	**subdrains not installed**
Spring on APN 051-022-310	**not present**	**1,200**

Notes: Conductivity is measured in units of microsiemens (uS) and adjusted to standard temperature of 25degC. All values shown are as measured in the field in Palomar Park, and all are temperature adjusted. Measurements were made in February 2014 in the third consecutive year of much-below-average rainfall regionally, and on March 2, 2023, during a year of substantially above average rainfall after 3 drought years.

Putting it all together, we believe that the irregular ground, with chaotic blocks of Franciscan bedrock is able to store a sizeable volume of groundwater intermixed with the blocks, which contributes to instability throughout the neighborhood. This groundwater pool probably existed before settlement of the neighborhood; the perennial spring may be the reason the first house in the neighborhood was built right next to it as a source of water. In the intervening years, we believe, the groundwater pool has expanded, as imported water has percolated from landscaping, gardens and septic systems, and as the larger native trees shown in the 1930 aerial photograph were gradually removed, reducing the total consumption of water by the trees tapping into the groundwater pool. The groundwater pool may still be growing, although absence of wells in the area makes it hard to discern whether that is the case.

At the same time, resistance of the slope to landsliding was diminished by numerous roadcuts, trenches, and cutbanks as homes and road were built. We can see evidence of no landsliding in the 1930 and 1941 aerial photographs but beginning with settlement of the area (in about 1950) slippage scars are evident (**Figure 2**). Further, we see that every one of the known landslides occurred during a period of wetter than normal rainfall (**Figure 1**), not so much from individual intense storms but from wet years, especially when these occurred periods of wet years, such as 1950 – 1952, 1982-3, or 1995-1999. And the regular slippages didn't commence until the slopes were disturbed after World War II by roadcuts, trenches, and cutbanks.

The proposed project is large and very heavy, with substantive cuts and trenches. It will be served by a leachfield which will be heavily loaded from a home nearly three times as large as the neighborhood norm. And there is little or no information about what direction the leachate will flow, or whether it will end up adding to the destabilizing groundwater pool. It will not be diminished by plant uptake, at least for the first decade or so, there is no guarantee that the roots will be as effective as the ones which have grown in place in response to a much more quiescent setting prior the 1950 (see further comments below). We do believe that no matter the stability of the proposed structure, the additional disturbance and uncontrolled increase in percolation will result in less slopes in the neighborhood at large.

We have thus far not discussed seismic instability. Again, the effect of this project will be adding water to the chaotic blocks and the aquifer in between them. When the shaking starts, the instabilities will likely begin propagating where there is excess water, which may be next to the proposed project or several hundred feet away. The evidence, if we will listen it, is one of multiple landslides in the same locations, and sometimes at different depths, in response to growing amounts of water entering the slope and being retained in it.

Contribution of Additional Percolate to the Larger Landslide Area

The State Water Resources Control Board has a policy statement governing the use of onsite wastewater disposal systems ("septic systems") which encourages that decisions regarding siting, use, and design are all based on the most current information. Specifically, when there is substantial new information which should be considered in the design or mitigation of septic systems, prior CEQA documents should be updated or amended to be consistent with the new information.

"…(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:

A. The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

B. Significant effects previously examined will be substantially more severe than shown in the previous EIR;

C. Mitigation measures or alternative previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative;

D. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce on or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative."

We take this policy to mean that identification of the spring and its attributes, the various geotechnical reports all identifying potential instabilities, and the presence of large compound landslide in the neighborhood are all substantive new information both individually and cumulatively, and warrant CEQA review of the proposed project, not solely based on the proposed septic system, but the slope stability and public safety associated with the compound slide which are linked to effluent discharge.

Inadequate Response to Third Party Review

The process of impact review and planning for suitable mitigation is also stymied by inadequate responses to the third-party review. As appropriate for a project of this complexity and a three-story residential structure three times the size typical of the Palomar Park area (and presumably much heavier and generating more effluent), the County commissioned a third-party review by the Cotton Shires firm, a suitable source, which requested identified gaps in the analysis. The Cotton Shires review plainly asked:

a. how much more water from site drainage and the leachfield will be put into the hillside?

b. in which direction(s) will it flow?

c. how deeply will it flow, given the hillside containing much water,

d. will the additional water and the grading for the structures affect the stability of the house or adjoining lots and structures.

The applicant was asked to drill as deeply as necessary and conduct tests to get the needed data.

Atlas responded with a 12-page letter which basically did not answer these questions.

The Planning Department and the community still have no calculations of how much effluent and drainage will enter the slope, whether the drainage and the effluent will surface and enter the surficial drainageways or the repaired landslide(s) or potential impacts to downslope drainageways and residents. The response hypothesizes that septic effluent will all flow into sandstone beds with 'adverse drainage' which seems inconsistent with their cross-section A-A', and contains no information about the depth or fluctuations of groundwater levels – information logically essential to answering the question of how much addition groundwater flow will result and which direction it will move, specifically toward known instabilities. There is no more information on depth of groundwater despite specific requests to drill deep enough to answer the questions of the third-party reviewers. The response also contends that runoff from the driveway and appurtenances at 738 Loma Court is responsible for much of the water in the slope, a contention which conflicts with the reality of our salinity measurements, as noted above. In our opinion, the impact review is not complete until these basic and reasonable questions have received a response.

Proposed Mitigation

Some of the measures proposed for mitigation by County staff seem to simply miss the point, not addressing the impact or potential threat.

Staff proposes to mitigate removal of several mature trees by post-construction replanting with:

a. Three 24-inch boxed oaks

b. Five 15-gallon oaks

The proposed mitigation does not immediately maintain or add to the slope stability subject to proposed removal of the trees. Additionally, there are no requirements for irrigation or maintenance of the replacement tress, or criteria for mitigation success. Such measures are standard for mitigation of aesthetic or habitat losses, but those are not particularly the issues raised in connection with these trees.

At issue are slope stability, which can be subdivided into (1) the stabilizing influence of their roots, and (2) the capability of these trees to dewater the slope through transpiration. At least four different knowledgeable professionals have strenuously cautioned against removal of these trees, generally independently of each other, declaring these two processes are key to the long- and short-term stability of the slopes. At some point, the planning staff must take notice of these calls from a range of registered professionals. How many such professionals can be ignored before the planning staff starts to substitute their own opinions for those of the professionals registered by the state to tender such opinions?

Expert	Partial quote	Source	Profession	State/Professional Registrat'n No.
Jeff Lea	"…given the need for root systems to help maintain a fragile ground surface and for transpiration to help remove subsurface water from the hillside"	Lea, 2014	Civil Engineer	CE31678
Richard Smith	"My concern is that the removal of these trees would further decrease the stability of the slope and hillside. . . Also, the amount of water that these trees uptake daily is significant in dewatering the hillside. Any moisture that can naturally be removed from these has a significant value. Trees are an integral part of slope stabilization alone, and with an already saturate soil environment year-round. It is my recommendation that these trees remain."	Smith, 2022	Arborist	ISA WE-87645A
Alan Kilik	". . .I advise extreme caution and believe that changing any of the surrounding uphill surface or underground conditions will have an effect on the water that exists in this slope and will negatively impact the longevity of the hillside repair."	Kilik, 2017	Engineering Contractor	CCL #A-928944
Joseph Michelucci	" . . .the existing ground cover, small trees, bushes . . .have enhanced the stability of the area."	Petroff and Michelucci, 2015	Geotechnical Engineer	GE593

We add our own concerns, for the same reasons, pleading for considering the role of the trees in stabilizing the slopes. We further note that replacing the stabilizing and dewatering functions is not a done deal. Given that these slopes seem to have accelerated activity during recent decades, how do we know that tree roots will establish themselves as well in the more-disturbed conditions which now may prevail? And what mitigates for the lost stabilizing influences of the existing trees while during the years while the new root systems grow in, and the transpiring crowns can replace the functions of the existing trees?

Further, we fail to see accountability for establishment of the proposed mitigation vegetation. Why not incorporate one of the typical conditions calling on the applicants to periodically report to the success of the mitigative growth after 5 or 10 years, or call for criteria for success (say, 100% survival of all trees after 5 years, and 10 years)? If the trees do not thrive, is there mitigation of any kind?

Finally, why haven't other mitigation approaches been considered. Ones which seem to address the concerns of the experts who have objected to tree removal might be (a) change the size or shape of the pool, (b) call for an arborist to trim or rebalance the trees to reduce stress, (c) limit the depth of excavation, or provide no-dig buffer within the tree's drip lines, or (d) simply move the location of the pool to a less impactful location. This the type of analysis seems needed in a neighborhood where slope stability has been diminishing.

Conclusions

1. The various parcels lie within a large, complex landslide area including about 20-30 homesites in Palomar Road and Los Cerros Road area of unincorporated San Mateo. The landslide, previously unmapped but consistent with evidence in the Seismic Safety element of the San Mateo County General Plan, showed evidence of stability over periods of decades prior to disturbance of construction of roads and homes during the early- to mid-1950s. Once the slide's profile was broken with excavations, landsliding has been chronic, occurring nearly every decade. Percolation for septic and drainage systems have added to local groundwater pool, and removal of larger trees seems to have further expanded it.

2. Landsliding is associated with wet years or periods of wet years. Nearly every year or years of above-average precipitation has resulted in at least one documented instability large enough to warrant a geotechnical report or road construction project. Most such wet periods were less profound than the pre-development wet periods of 1937-8 and 1940 - 1943, when no instabilities appear evident in aerial photographs. In its current configuration, slopes appear to go unstable when a relatively nominal amount of rainfall is added to the ground.

3. The proposed project requires substantial grading, cumulatively adding to post-development instability of the compound slide area. Additionally, it will be served by a septic system and leachfield, discharging a substantial amount of water to the landslide complex every year; it will also place a swimming pool at the head of one known near-surface slide, which if ruptures and drained suddenly will discharge many thousands of gallons of water aggravating even a minor instability associated with ongoing slope movement and/or ground shaking.

Closing

Thanks very much and kindly let us know whether any additional information might prove helpful in reaching resolution.

Sincerely,

BALANCE HYDROLOGICS, Inc.

Barry Hecht, CEG 1245, CHg. 50
Senior Principal

Mark Woyshner, M.Sc.Eng.
Principal

Enclosures: Table 1. Documented landslides near proposed project property.
Figure 1. Historical annual rainfall record.
Figure 2. Historical aerial photos.
Figure 3. Photos showing start of new landsliding at the property line.
Figure 4. Photos of other seeps and slumps along Palomar Dr.
Figure 5. Photos checked and patched asphalt indicating underlying water along Loma Rd.
Figure 6. Basemap noting indications of slope instability and evidence of water near the proposed project.
Appendix A. Seismic Hazard Map.

Please see references cited on the following page.

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Woyshner, M., and Hecht, B., 2014, Spring source and protection reconnaissance, APN 051-022-310: Balance Hydrologics letter report 214016, letter to Stan Low, San Mateo County Environmental Health Division, 8 p., 3 tables, 8 figs, 1 appendix.

TABLES

Table 1. Documented landslides near proposed project property, APN 051-022-380, San Mateo County, California

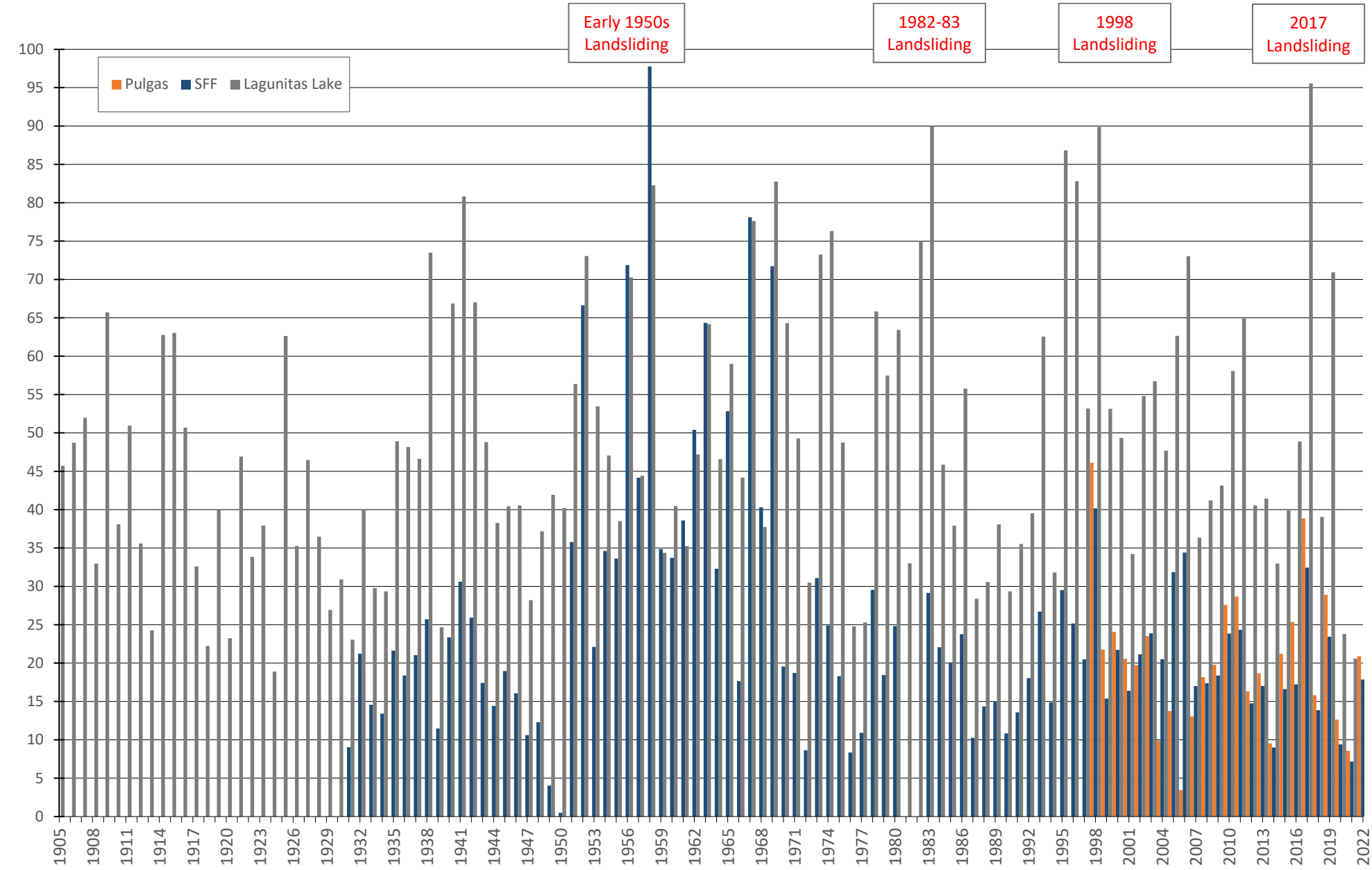
Year	Location	Source	Rainfall conditions	Remarks
Early 1950's	APN 051-022-310	Fowler & Associates, 1985	Water year 1952 was notably wet.	Existing house slid downhill towards Los Cerros Rd. Foundation rebuilt and septic field for home placed under Los Cerros Rd.
1955	APN 051-022-310 / Los Cerros Rd.	Fowler & Associates, 1985	December 1955 of water year 1956 was particularly wet.	Septic system removed under Los Cerros Rd. and shallow subdrain installed during road repair.
1971	APN 051-022-310 / Los Cerros Rd.	Jo Crosby & Associates, 1971	Water years 1969 and 1970 and the first have of water year 1971 were notably wet.	Abundant shallow groundwater noted in dark grey to reddish brown plastic clay overlying bedrock shale. Recent grading on APN 051-022-310 prior to slide. During road repair, subdrain under Los Cerros Rd. installed deeper than former drain.
1982-83	APN 051-022-310	Fowler & Associates, 1985	Extreme wet years of record	Slide destroyed house but did not involve Los Cerros Rd. House not rebuilt.
1998	not identified	Reported by neighbors.	Extreme wet year of record	Landslides not active on Los Cerros or Loma Ct. Other slides were in the neighborhood.
2006	APN 051-022-130	Verbal account by owner of property APN 051-022-120 adjacent to slide	Rainfall well above normal, especially during December	Slide associated with break in Cal Water main on Los Cerros Rd.
2017	APN 051-022-310, APN 051-022-380	Kilik Engineering, 2017 Geoforensic, 2020 Atlas Engineering, 2018	An extreme wet year of record	Slides recontoured and installed subdrains
2023	APN 051-022-310, APN 051-022-380	Balance Hydrologics, 2023	A wet year of record and still raining as of first week of March.	Two new small landslides forming along property line of two parcels

Notes:

APN 051-022-310 is adjacent to the Enea property, APN 051-022-180. APN 051-022-130 is across Los Cerros Rd. from Enea property.

Most hydrologic and geomorphic data characterizes a period defined as a water year, which begins on October 1 and ends on September 30 of the named year. For example, water year 2010 (WY2010) began on October 1, 2009 and ended on September 30, 2010.

FIGURES



Balance Hydrologics

Figure 1. Historical annual rainfall record at SFPUC Pulgas station (PUL) near Woodside, CA as compared to the longer record at San Francisco Airport (SFF) and more complete record at Marin Water Lagunitas Lake station (LGT). Missing data: PUL WYs2005-06; SFF WYs1981-83 and WYs1949-50. Data source: DWR California Data Exchange Center

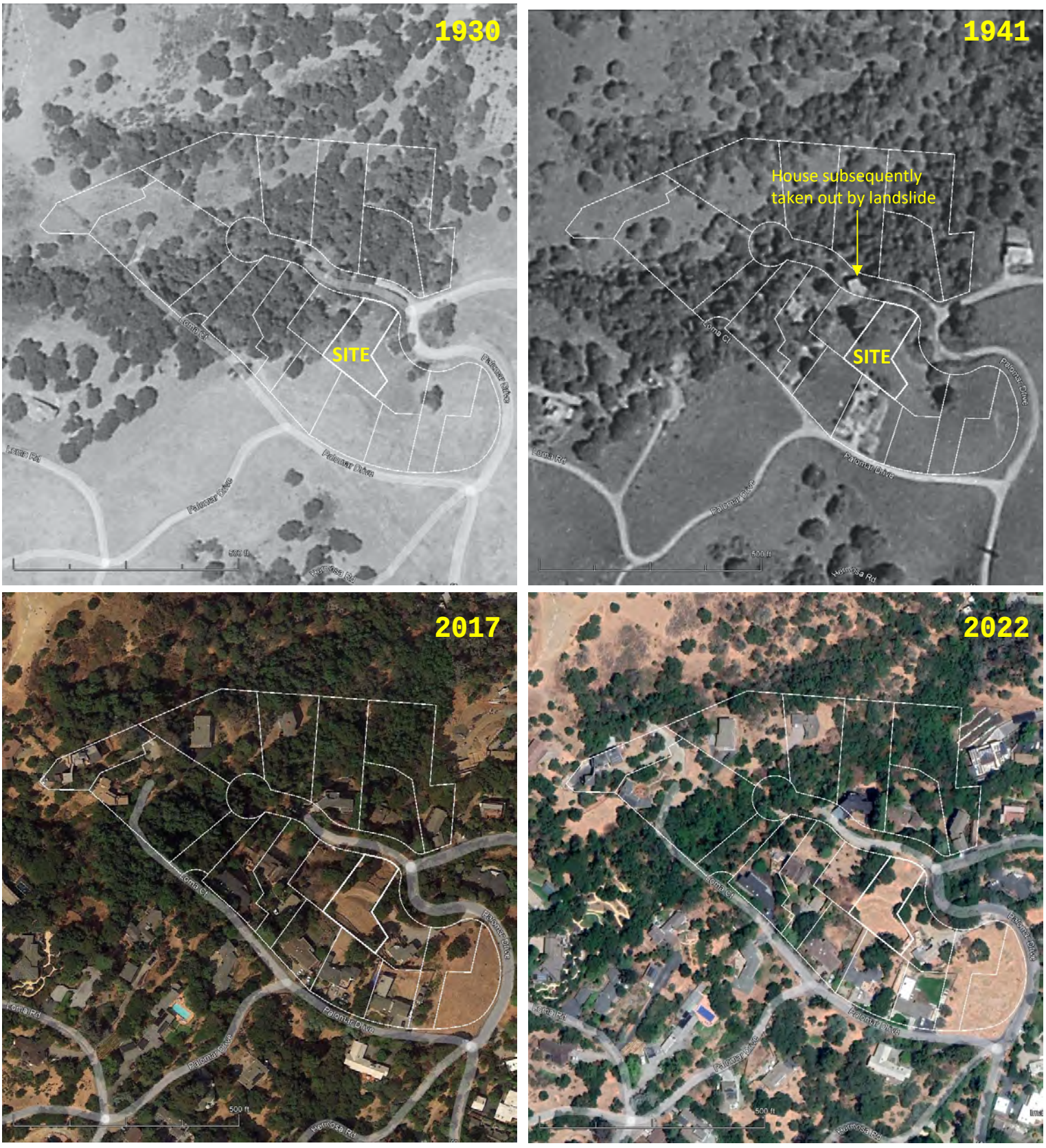


Figure 2. Historical aerial photos show increased home building, tree removal, and landsliding, Los Cerros Rd and Palomar Dr area, San Mateo County, CA. Major landsliding documented during wet years 2017, 1982-83, and 1950s.

Figure 3. Photos showing start of new landsliding at the property line of proposed project APN 051-022-380 and adjoining parcel APN 051-022-310, San Mateo County, CA. Note the importance of tree roots along the property line to contain landsliding.

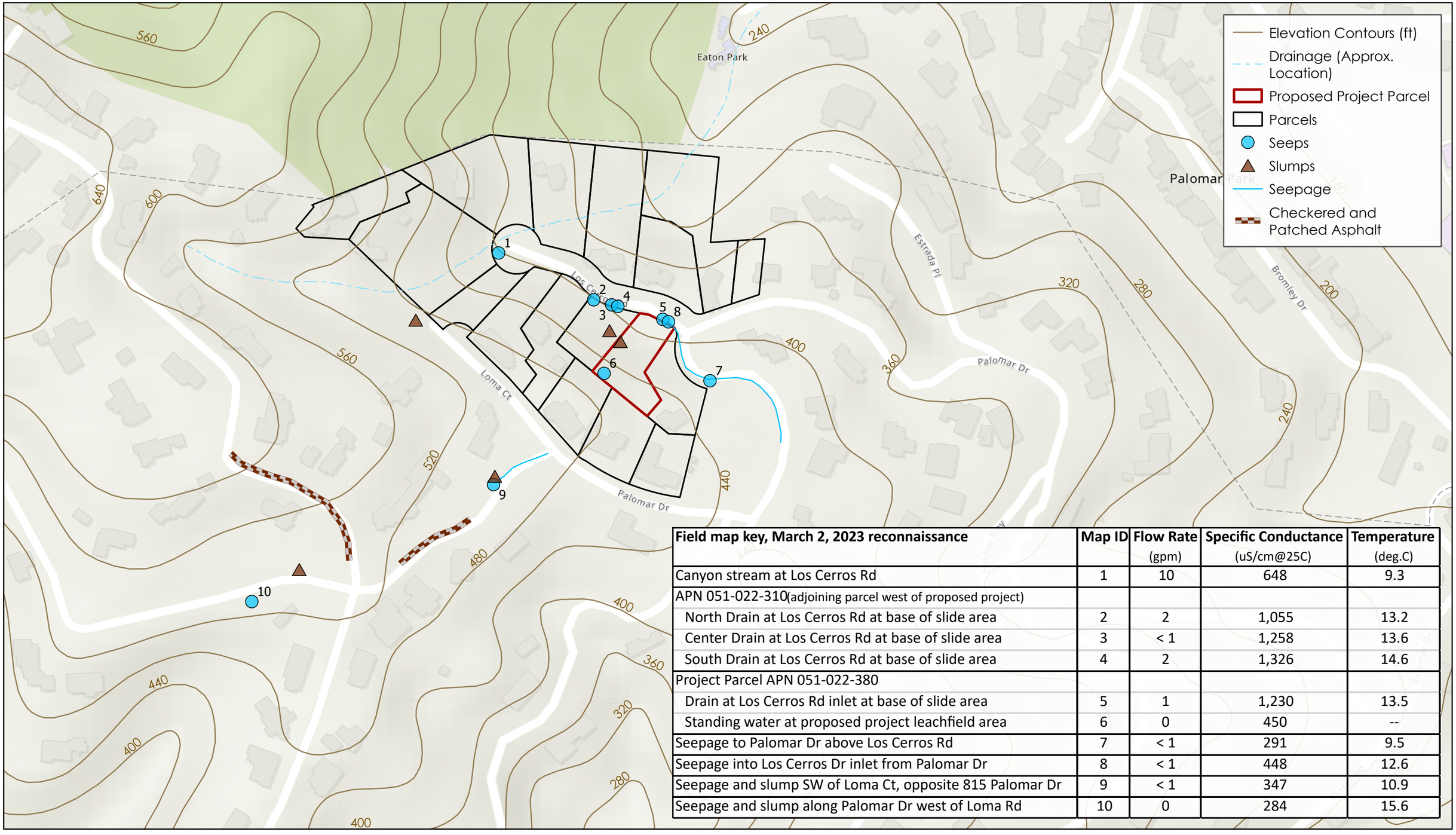
Palomar Dr west of Loma Rd

Southwest of Loma Ct, opposite 815 Palomar Dr

Figure 4. Photos of other seeps and slumps along Palomar Dr, San Mateo County, CA. Photos taken on March 2, 2023.

Figure 5. Photos checked and patched asphalt indicating underlying water along Loma Rd, San Mateo County, CA. Photos taken on March 2, 2023.

Balance Hydrologics



Field map key, March 2, 2023 reconnaissance	Map ID	Flow Rate (gpm)	Specific Conductance (uS/cm@25C)	Temperature (deg.C)
Canyon stream at Los Cerros Rd	1	10	648	9.3
APN 051-022-310(adjoining parcel west of proposed project)				
North Drain at Los Cerros Rd at base of slide area	2	2	1,055	13.2
Center Drain at Los Cerros Rd at base of slide area	3	< 1	1,258	13.6
South Drain at Los Cerros Rd at base of slide area	4	2	1,326	14.6
Project Parcel APN 051-022-380				
Drain at Los Cerros Rd inlet at base of slide area	5	1	1,230	13.5
Standing water at proposed project leachfield area	6	0	450	--
Seepage to Palomar Dr above Los Cerros Rd	7	< 1	291	9.5
Seepage into Los Cerros Dr inlet from Palomar Dr	8	< 1	448	12.6
Seepage and slump SW of Loma Ct, opposite 815 Palomar Dr	9	< 1	347	10.9
Seepage and slump along Palomar Dr west of Loma Rd	10	0	284	15.6

Source Layer Credits: ESRI ArcGIS Online, USGS, City of San Mateo County, California State Parks, and others.

Balance Hydrologics

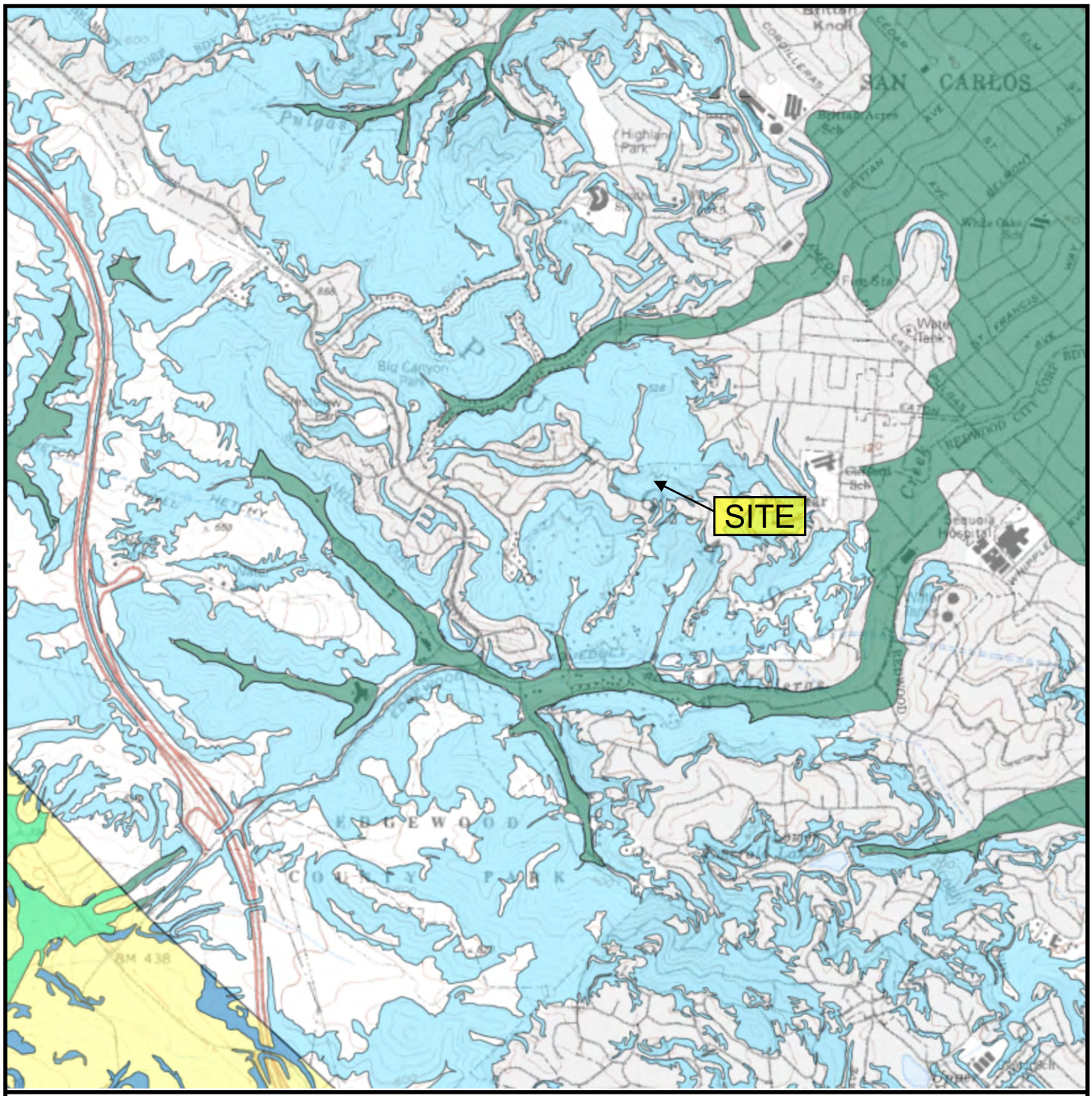
0 200 400 600
Feet

Figure 6. Basemap noting indications of slope instability and evidence of water near the proposed project at APN 051-022-380
636 Palomar Drive, Redwood City, San Mateo County, CA.

APPENDIX A

Seismic Hazard Map

Plate 2 of Atlas, 2020,
Geotechnical Report Update
Proposed Residential Development
634 Palomar Drive, Redwood City, California



EXPLANATION

EARTHQUAKE-INDUCED LANDSLIDES
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Overlap of Earthquake Fault Zone (yellow) and Earthquake Induced Landslide Zone (blue)

N

2000 ft.
Scale

LIQUEFACTION
Areas where historical occurrence of liquefaction, or local geological, geotechnical and ground water conditions indicate a potential for permanent ground displacements such that mitigation would be required.

Overlap of Earthquake Fault Zone (yellow) and Liquefaction Zone (green)

California Geological Survey (2018)

Geosphere Consultants, Inc.

Job No.: 91-55905-A
Approved: JEB
Date: 06.21.2020

SEISMIC HAZARD MAP

634 Palomar Drive
Woodside, California

Plate 2

ATTACHMENT 2

Balance Hydrologics' Report on
Spring Source and Protection Reconnaissance
at APN 051-022-310

Balance Hydrologics, Inc.®

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www.balancehydro.com • email: office@balancehydro.com
Berkeley • Santa Cruz • Truckee

April 16, 2014

Mr. Stan Low
County of San Mateo Environmental Health Division
2000 Alameda de las Pulgas, Suite 100
Redwood City, California 94403
Submitted via email to slow@smcgov.org

RE: Spring source and protection reconnaissance, APN 051-022-310

Dear Stan:

Ms. Denise Enea and Mr. John Charlebois own and reside at a home at 738 Loma Court, Redwood City, California, APN 051-022-180 (**Figure 1**). The neighboring parcel immediately to the east of their property (APN 051-022-310) has had four documented landslides on it since 1950 (**Table 1**), two of which damaged Los Cerros Road, and the last one (during the extreme wet years of 1982-83) destroying the house that had been on the parcel. Currently there is near-surface groundwater and a flowing spring on the parcel, as well as on the Enea/Charlebois parcel. The spring is reportedly perennial. More recently, during water year 2006[1], a new landslide developed downslope of Los Cerros Road. Considering the active slide-prone condition in close vicinity of their property, they are concerned for potential instability of the slope and soil adjacent to and on their property from a recently proposed construction project as well as any future development on the neighboring parcel 051-022-310.

This proposed project on APN 051-022-310 may likely require groundwater dewatering, soil excavation, and the placement of retaining wall(s), subdrains and engineered compacted fill, but these detail are currently not available to us. Ms. Enea and Mr. Charlebois are concerned that soil engineering on APN 051-022-310 will adversely affect groundwater levels and perhaps even the direction of flow on their property, and potentially cause further unstable conditions. In addition, given that sewer service in not available in this area, the proposed project must include a permitted septic system on the property. They are concerned that septic system discharge may aggravate soil instability and/or be in direct conflict with the long-term dewatering/drainage system proposed for the site, potentially discharging septic drainage to the storm drain on Los Cerros Road and to the creek.

Scope of our work

Ms. Enea contacted Balance Hydrologics (Balance) for assistance with characterizing the spring source and its hydrologic functions, particularly whether it is a shallow local source or discharging groundwater from a broader aquifer. She also asked us to recommend measures to reduce the ongoing erosion related

[1] Most hydrologic and geomorphic data characterizes a period defined as a water year, which begins on October 1 and ends on September 30 of the named year. For example, water year 2006 (WY2006) began on October 1, 2005 and ended on September 30, 2006.

to the spring and to comment on the possibility of using the spring water as a backup source for irrigation or drinking (homes in the area have connections to potable water service).
Mr. Mark Woyshner conducted a site reconnaissance on February 13, 2014, measured specific conductance[2] and temperature, and collected water quality samples of the spring and other surface waters in the vicinity. Water quality samples were sent to Soil Control Laboratory in Watsonville for analysis of general minerals. The sample from the spring was also measured for Title 22 inorganics. We understand that you also conducted a site visit on the morning of February 13, 2014 prior to the arrival of Mr. Woyshner.

We note that this is the second consecutive drought year, with limited groundwater recharge since December 2012 (**Figure 2**). Total rainfall during water year 2014 prior to February 13th was 3.73 inches at NWS RAWS Pulgas Station, located about a mile west of the property.[3] We consider our measurements and observations akin to dry season conditions.

We did not conduct a subsurface, soil, or slope stability investigation, or work that might be fundamentally geotechnical engineering. Ms. Enea provided us with copies of relevant sections from two engineering reports:

- Preliminary landslide investigation, Los Cerros Road, Redwood City, California by Jo Crosby & Associates, June 3, 1971, in response to a12-inch drop (failure), with several parallel cracks in Los Cerros Road at APN 051-022-310; and,
- Geotechnical investigation, Duggan Residence, Los Cerros Drive, Palomar Park, San Mateo County by Fowler & Associates, July 5, 1985, a soil and foundation investigation for the owners of APN 051-022-120, downslope of Los Cerros Road.

We also reviewed topographic and geologic maps of the area, as well as aerial photos from Google Earth. Standard soils information was taken from the National Resource Conservation Service 1991 soil survey.

Setback requirements for septic systems

The County of San Mateo Ordinance No. 03740, Article 4, Section 9321 identifies setback requirements for individual septic systems.

1. No septic, pumping or holding tank shall be located closer than:
    a. Five (5) feet of any building.
    b. Fifty (50) feet of any property line for parcels without an available public water supply. Ten (10) feet from any property line for parcels with approved public water supply.
    c. One hundred (100) feet from any well.

[2] Specific conductance measures the ability of the water to conduct electricity, and is a widely used index for salinity or total dissolved solids (TDS). Rainwater has very low specific conductance and as water passes over and through the ground, salts are dissolved, increasing the specific conductance. Higher specific conductance indicates transmittal through salt-bearing geologic formations or longer residence times in the ground.
[3] Loc. Pulgas California, Lat. 37° 28' 30" N, Long. 122° 17' 53" W, Elev., 644 ft.
http://www.raws.dri.edu/cgi-bin/rawMAIN.pl?caCPUL

   d. One hundred (100) feet of the top of the bank of a stream as defined by the most recent U.S. Geological Survey topographic map (7 ½-minute series, or equivalent scale) of the area.
   e. Twenty-five (25) feet of a swimming pool.
2. No drainfield or other leaching system shall be located closer than:
   a. Ten (10) feet of any building.
   b. Fifty (50) feet of any property line for parcels without an available public water supply. Ten (10) feet from any property line for parcels with approved public water supply.
   c. One hundred (100) feet from any well.
   d. One hundred (100) feet of the top of the bank of a stream.
   e. Fifty (50) feet of a ditch, or cut bank or slope fifty percent (50%) or greater.
   f. Twenty-five (25) feet of a swimming pool.
   g. Two hundred (200) feet of a domestic water supply reservoir.
   h. One hundred (100) feet of a reservoir, other than a domestic water supply reservoir.
3. The septic tank, drainfield, and other components of the septic system shall be located within the boundaries of the parcel upon which the structure requiring the system is built.
4. No drainfield or other leaching systems shall be located in slopes of fifty percent (50%) or greater.
5. Exception from Subsections 1, 2, or 3 above, shall be with the written approval of the Health Officer. No exception shall be considered for new development under Subsection 3. No exception shall be considered for Subsection 4.
6. No exceptions will be made for setbacks that are public health standards. These include but are not limited to Subsections 2 c, d, e, g, & h.

In terms of setback requirements, the ten-foot setback from any property line (1b and 2b) is relevant to the Enea/Charlebois property. There are also some slopes on APN 051-022-310 and APN 051-022-180 that appear greater than 50 percent (2e and 4). In addition, the requirement for a drainfield or leaching system to be greater than 50 feet from a ditch (2e) would apply to the ditch at Los Cerros Road (**see Figures 6 and 7**). As well as the requirement to be more than 50 feet from all 50 percent slopes, we question whether on-site improved subsurface drainage also might short circuit to this ditch any proposed drainfield or leaching system discharge. The ditch flows directly to a nearby canyon stream.

Hydrologic Reconnaissance

The Enea/Charlebois property (APN 051-022-180) and the adjoining parcel proposed for development (APN 051-022-310) are located on a relatively steep northeast facing slope in the Palomar Park community of Redwood City, California (**Figure 1**). The horizontal length of their parcel is roughly 260 feet and accessed at the top by Loma Court, and at the bottom by Los Cerros Road. It has an address of 738 Loma Court. Based on the U.S. Geological Survey 7 ½ minute quadrangle (Woodside, CA), Loma Court is at an elevation of approximately 500 feet, while Los Cerros Road is at about 400 feet (NGVD 29). The average slope across their property is 40 percent, or 2.5:1 (2.5 feet horizontal to 1 foot vertical). Native vegetation on the hillside is Bay-Oak woodland.

The geology at the site is mapped as steeply folded Franciscan sandstone (Jurassic/Cretaceous) with interbedded siltstone and shale striking northwest-southeast, along the trend of the San Andreas Fault (Brabb and others, 1998; Brabb and Pampeyan, 1983, 1972). Surface soils are mapped as either Los Gatos loam or cut and fill urban land complex (NRCS, 1991), having a hydrologic soils classification of Group C. These sandy clayey loam soils have a slow infiltration rate and a rapid to very rapid runoff rate with a high to very high hazard of erosion.

The parcel proposed for development (APN 051-022-310) is located east of their parcel and accessed only from Los Cerros Road. The upper portion of this parcel, above the flowing spring and at the head former slope failures is the steepest part of the parcel (**Figure 3**). The spring is approximately 50 feet wide and discharges groundwater near the property line common to both parcels and flows to Los Cerros Road. Groundwater was found at a depth of six inches below ground surface in a hole dug along the common property line, approximately 15 feet the foundation of the house on the Enea/Charlebois property (**Figure 4**). Flow from the spring splits at the center portion of the spring (**Figure 5**) with most of the discharge flowing down the middle of the parcel (**Figure 6**). A small earthen ditch also drains a portion of the spring along the property line common to the two parcels. Willows are found at the spring with buckeye and bay trees at close proximity. Surface soils were broadly wet and supported wetland vegetation along the flow path, as well as (what appeared to be) at the toe of the former landslides at Los Cerros Road. The spring discharge, as well as runoff from both parcels drain to an asphalt ditch on Los Cerros Road, which flows to a storm drain that empties into a canyon stream northwest of the Enea/Charlebois property (**Figure 7**). Springflow in the asphalt ditch was estimated at less than one gallon per minute (gpm), as was the flow in the canyon stream at Los Cerros Road (above the storm drain discharge). Flows in the canyon stream eventually reach Codilleras Creek and discharge to the Bay.

A history of slope instability and land sliding on APN 051-022-310 is presented in the geotechnical investigation by Fowler & Associates (1985), and summarized in attached **Table 1**.

> *"At some time in the early 1950's, an existing house (Lane House) slid downhill towards Los Cerros Drive. A new foundation was built under the house and it was located about 5 to 8 feet within the County road easement. In addition, it was reported that the septic system was placed under the road. The first slide involving Las Cerros Drive occurred in 1955. The County repaired the road and slide although details were not available as to which of several repair methods was finally selected. The Lane House septic system was moved from the road. A shallow subdrain was installed under the road.*
>
> *A second slide occurred in the spring of 1971. This slide was investigated by Jo Crosby & Associates…dated June 3, 1971. A fairly recent access road and relatively flat terrace was graded on the site before the slide occurred. Crosby concluded that the unstable conditions resulted from bedrock dipping steeply downhill and abundant groundwater moving through the soil just above the bedrock. Previous repair work had included installation of a subdrain to carry groundwater from the slide area. Crosby felt the subdrain had carried off just enough groundwater to give the repaired slope a slight degree of stability (safety factor greater than one). Since the original repair, either increased groundwater or cutting an access road across*

> *the toe of the repaired slide had given the slope a moderate degree of instability (safety factor less than one). The existing subdrain was increased in depth, and the roadway was repaired.*
>
> *Since repair of the 1971 slide, the slope [at the road] has remained stable and performed as designed through the wet winters of 1982 and 1983. Within the last several years a slide occurred on the slope above the Lane House which destroyed the structure, but did not involve the roadway or old repaired slide."*

Two soil borings were drilled in Los Cerros Road by Jo Crosby & Associates (1971) and four on APN 051-022-210 by Fowler and Associates (1983). Under Los Cerros Road, the bottom of the slide mass was identified at a depth of 13 ½ feet, above which wet dark grey to reddish brown plastic sandy clay was encountered, while the material below was relatively dry stiff light brown silty pebbly clay. Dense grey shale was encountered from 16 to 23 feet beneath the road. Two and a half to five feet of drain rock was found under the road. Downslope of the road, the site subsurface was described as 3.5 to 10 feet of medium stiff to stiff clayey residual soil and colluvium overlying very weathered, sheared shale or sandstone.

Since these reports, a slide occurred during 2006 downslope of Los Cerros Road, west of the Duggan Residence (APN 051-022-120). This slide was reportedly associated with break in a Cal Water main on Los Cerros Road. We do not have any information whether ground movement preceded or water caused by the ruptured main.

Water-Quality Results and Interpretation

We measured specific conductance and temperature of five water sources found in the vicinity of the Enea/Charlebois property (**Table 1**). Our primarily objective was to identify sources, rather the usual water-quality investigation that is designed for compliance with regulatory standards. Results indicate that the near-surface groundwater near the house on the Enea/Charlebois property is related to the spring source common to both parcels, and the potable tap water (supplied by Cal Water) and water in the fish pond on the Enea/Charlebois property is unrelated to the spring source. The specific conductance of the spring water was 1,200 umhos/cm (adjusted to 25 degrees Celsius), considerably higher than Hetch Hetchy water supplied to the community, but the baseflow in the canyon stream west of the Enea/Charlebois property was higher yet, at 2,000 umhos/cm at 25 ^{o}C, suggesting a longer flow path and deeper source.

We collected water samples from the spring, the canyon stream, and tap water. These were analyzed for general minerals, including iron and manganese. The spring sample was also measured for Title 22 inorganics (drinking water primary and secondary standards). The laboratory results are summarized in **Table 3**. As indicated by the field specific conductance measurements, the sample of groundwater discharging to the canyon stream had twice the dissolved solids content than the spring source. At the levels measured, both the spring and canyon stream baseflow appear to discharge groundwater from the bedrock. In addition, concentrations of iron, manganese, and sulfate were disproportionally higher in the canyon stream sample, and bicarbonate alkalinity was slightly lower (possibly consumed by acidity from

sulfide mineral oxidation). The general mineral composition and total dissolved solids concentration are plotted in a Piper Diagram (**Figure 8**) to illustrate the charge balance of the dissolved ions. This plot can be interpreted as an ionic fingerprint of the water source. The canyon stream sample and spring sample have a similar cation balance, but the anion balances illustrate the dominance of sulfate in the stream sample, suggesting that the spring does not likely discharge groundwater from the same aquifer as the canyon stream, nor does it draw water directly from the stream.

The spring sample results were below Title 22 primary and secondary standards for inorganic constituents (metals), indicating that it might be useful as a backup domestic water source, pending bacteriological results and setback criteria. Concentrations of nitrate, nitrite, chloride, and MBAS (surfactants) are common indicators of contamination from domestic septic systems. MBAS and nitrite were not detected, and nitrate was at typical background level for springs. The chloride concentration is non-conclusive, based on a similar level in the canyon stream. These results suggest that the spring source is not contaminated by domestic septic system discharge. Bacteriological sampling for fecal coliform would help confirm this inference.

Conclusions and Recommendations

Based on the findings of previous off-site geotechnical investigations, the perennial nature of the spring, and our hydrologic reconnaissance and water-quality results presented in this letter report, it is reasonable to conclude that the source of the spring on APN 051-022-310 and APN 051-022-180 is groundwater discharging from Franciscan sandstone and shale bedrock or at the bedrock contact but not locally perched shallow groundwater related to the clayey soils found on the site, though perched groundwater may likely be an issue during wet years. This groundwater discharge seems to provide a shallow hydraulic floor contributing to near-surface groundwater, slope instability and numerous documented slides on site that have extend beyond Los Cerros Road. Other site attributes related to the slope failures are the (a) steepness of the topography, (b) the plastic clayey soils, and (c) the underlying sheared bedrock shale possibly dipping steeply downhill. We observed near-surface groundwater related to the spring on the Enea/Charlebois property near the property line and foundation of their house (**Figure 4**). Even though this is the second consecutive drought year and groundwater recharge has been limited prior to our site reconnaissance on February 13th, we recommend also documenting these conditions during late dry season, prior to any wet-season rains.

Documented slope instabilities on APN 051-022-310 have occurred not only during wet years, but have also been related to previous on-site grading and/or water added to the soil from previous septic system discharge (**Table 1**). Based on conclusions of the landslide investigation at Los Cerros Road (Jo Crosby & Associates, 1971), the slopes on APN 051-022-310 seem to have only a slight degree of stability and become unstable with either modest grading or minor amounts of water added, resulting in more frequent slope failures. Based on available information, it is possible but unclear to what extent these conditions also pertain to slopes on the Enea/Charlebois property, and whether compacted fill and/or retaining walls installed on APN 051-022-310 may redirect groundwater flow and potentially cause unstable conditions elsewhere. We recommend that the geotechnical investigation for project development at APN 051-022-310 also establish potential project effects to the Enea/Charlebois property.

The spring and related near-surface groundwater supports wetland habitats, as well as some invasive plant species. Potential restoration opportunities might be provide some level of project mitigation pending biological investigation.

Based on our sample of the spring, the water quality of the spring water is currently suitable for domestic uses pending bacteriological testing. Water quality, though, could degrade if a septic drain field is installed upgradient of the spring. San Mateo County well ordinance (Section 4.68.190 standards for adequate water) requires the following yield: "For a horizontal well or spring serving a single family dwelling, said term shall mean a well or spring that produces a minimum flow of 2.5 gallons per minute with minimum storage of 1,250 gallons after 30 days of observation or if done in the dry period, August 1 through November 30, 1.5 gallons per minute for a thirty-day observation period and 2,000 gallons of storage." Given we estimated discharge from the spring at less than one gallon per minute during our reconnaissance, permitting the spring to serve a single family dwelling would not be possible at this time during drought conditions. However, flows might be higher during normal or wet years. The use of the spring for irrigation would be feasible.

Closing Remarks

We have prepared this letter on behalf of Denise Enea to address her concerns regarding safety and sanitation at her property, as well as her broader interest in best management of the hydrologic resources and sensitive slope-stability conditions found on and in close proximity of her property. Project implementation on APN 051-022-310 could potentially affect not only her property but parcels downhill. Wetland habitats on the parcel and downstream water quality in the canyon steam may also be directly affected by implementation of potential projects.

Sincerely,

BALANCE HYDROLOGICS, INC.

Mark Woyshner, M.Sc.Eng.
Senior Consultant/Director

Barry Hecht, CHg
Senior Principal

Enclosures: 3 tables, 8 figures, analytical laboratory
cc. Greg Smith, gjsmith@smcgov.org

Limitations

Results presented in the letter were prepared in general accordance with the accepted standard of hydrologic practice existing in Northern California at the time the hydrologic reconnaissance was performed. No other warranties, expressed or implied, are made. It should be recognized that interpretation geologic information and evaluation of groundwater flow and subsurface conditions is a difficult and inexact art. Balance has drawn on conventional published data sources and previous studies of the site and vicinity for much of this evaluation; our staff have not independently verified mapping or findings by agencies and other established sources, though checks on the reasonableness of results were performed. Balance did not independently assess the accuracy of calculations by others, only the appropriateness of the methodology and its consistency with the standards of professional care currently practicing in northern California. Balance has prepared this letter for this particular study. Information and interpretations presented in this memo should not be applied to specific projects or sites without the expressed written permission of the authors, nor should they be used beyond the particular area to which we have applied them.

Cited References

Brabb, E.E, Graymer, R.W., Jones, D.L., 1998, Geology of the onshore part of San Mateo County, California: A digital database: U.S. Geological Survey Open-File Report 98-137

Brabb, E. E., Pampeyan, E. H., 1983, Geologic map of San Mateo County, California: U.S. Geological Survey IMAP 1257-A

Brabb, E. E., Pampeyan, E. H., 1972, Preliminary geologic map of San Mateo County, California: U.S. Geological Survey Miscellaneous Field Studies Map: 328

Fowler & Associates, 1985, Geotechnical investigation, Duggan Residence, Los Cerros Drive, Palomar Park, San Mateo County: Consulting report for Kathleen Duggan at APN 051-022-120, July 5, 1985.

Jo Crosby & Associates, 1971, Preliminary landslide investigation, Los Cerros Road, Redwood City, California: Letter report to the County of San Mateo Engineering Department June 3, 1971.

National Resource Conservation Service, 1991, Soil survey of San Mateo County, eastern part, and San Francisco County, California: U.S. Department of Agriculture, 120 p., 12 plates.

TABLES

Table 1. Documented landslides near Enea/Charlebois property, APN 051-022-180, 738 Loma Ct., Redwood City, California

Year	Location	Source	Rainfall conditions	Remarks
Early 1950's	APN 051-022-310	Fowler & Associates, 1985	Water year 1952 was notably wet.	Existing house slid downhill towards Los Cerros Rd. Foundation rebuilt and septic field for home placed under Los Cerros Rd.
1955	APN 051-022-310 / Los Cerros Rd.	Fowler & Associates, 1985	Water year 1955 received below normal rainfall (Dec.1955 of WY1956 was particularly wet)	Septic system removed under Los Cerros Rd. and shallow subdrain installed during road repair.
Spring 1971	APN 051-022-310 / Los Cerros Rd.	Jo Crosby & Associates, 1971	Rainfall during water year 1971 was below normal and mostly during Nov. and Dec.	Abundant shallow groundwater noted in dark grey to reddish brown plastic clay overlying bedrock shale. Recent grading on APN 051-022-310 prior to slide. During road repair, subdrain under Los Cerros Rd. installed deeper than former drain.
1982-83	APN 051-022-310	Fowler & Associates, 1985	Extreme wet years of record	Slide destroyed house but did not involve Los Cerros Rd. House not rebuilt.
2006	APN 051-022-130	Verbal account by owner of property APN 051-022-120 adjacent to slide	Rainfall well above normal, especially during December	Slide associated with break in Cal Water main on Los Cerros Rd.

Notes:

APN 051-022-310 is adjacent to the Enea property, APN 051-022-180. APN 051-022-130 is across Los Cerros Rd. from Enea property.

Most hydrologic and geomorphic data characterizes a period defined as a water year, which begins on October 1 and ends on September 30 of the named year. For example, water year 2010 (WY2010) began on October 1, 2009 and ended on September 30, 2010.

Table 2. Measurements of specific conductance in the vicinity of the Enea/Charlebois property APN 051-022-180, 738 Loma Ct., Redwood City, California

Location	Field Measurements			Lab Measurement
	Water Temperature (^{o}C)	Specific Conductance at field temp. (µmhos/cm)	Specific Conductance at 25 ^{o}C (µmhos/cm)	Specific Conductance at 25 ^{o}C (µmhos/cm)
Spring on APN 051-022-310	12.0	950	1292	1200
Hole dug in soil on APN 051-022-180 at property line	14.0	970	1251	--
Canyon stream at Los Cerros Rd.	12.0	1550	2109	2000
Fish pond on APN 051-022-180	12.0	200	272	--
Tap water from APN 051-022-180	21	152	164	63

Notes:
Specific conductance measures the ability of the water to conduct electricity, and is a widely used index for salinity or total dissolved solids (TDS). Rainwater has very low specific conductance and as water passes over and through the ground, salts are dissolved, increasing the specific conductance. Higher specific conductance indicates transmittal through salt-bearing geologic formations or longer residence times in the ground.

Table 3. Water quality results of samples collected in the vicinity of the Enea/Charlebois property
APN 051-022-180, 738 Loma Ct., Redwood City, Califorina

PARAMETER	UNITS	DETECTION LIMIT	MCL	Spring	Creek	Tap
DESCRIPTORS						
Sample I.D.				4020393-01	4020393-02	4020393-03
Assessors parcel number						
Latitude, WGS84	degrees			37°28'53.10"N	37°28'54.73"N	37°28'52.65"N
Longitude, WGS84	degrees			122°16'14.39"W	122°16'15.89"W	122°16'15.34"W
Elevation (est.), WGS84	feet			425	385	460
Lab used				Soil Control	Soil Control	Soil Control
Sample collected by				M. Woyshner	M. Woyshner	M. Woyshner
Field filtered				yes	no	no
FIELD MEASUREMENTS						
Date	MM/DD/YY			2/13/14	2/13/14	2/13/14
Time	HH:MM			14:00	13:30	14:30
Specific conductance (@ 25 C°)	umhos/cm			*1258*	*2109*	*164*
Conductance (@ field temp)	umhos/cm			950	1550	152
Temperature	deg C			13	12	21
Flow estimate	gpm			< 1	< 1	na
WATER QUALITY INDICATORS						
Alkalinity (total)	mg/L CaCO3	2		330	260	23
Hardness (total)	mg/L CaCO3	5		510	980	14
pH	pH Units	0.1	10.6	7.7	7.9	9.1
Specific conductance (@ 25 C°)	umhos/cm	1	1600	1200	**2000**	63
Total dissolved solids (TDS)	mg/L	10	1000	700	**1500**	37
MBAS (surfactants)	mg/L	0.025	0.5	0		
GENERAL MINERALS						
Bicarbonate (as CaCO3)	mg/L	*2*		*328*	*262*	*16.4*
Bicarbonate (as HCO3)	mg/L	2		400	320	20
Calcium (Ca)	mg/L	0.5		100	210	4
Carbonate (as CaCO3)	mg/L	*3*		*0*	*0*	*7.2*
Carbonate (as CO3)	mg/L	2		0	0	4.3
Chloride (Cl)	mg/L	1	500	210	260	4.8
Magnesium (Mg)	mg/L	0.5		60	110	0.84
Potassiuim (K)	mg/L	0.5		1.5	4	0
Sodium (Na)	mg/L	0.5		80	120	6.5
Sulfate (SO4)	mg/L	1	500	23	**540**	3
Major Cations (Ca+Mg+K+Na)	meq/L	--	--	*13.45*	*24.85*	*0.55*
Major Anions (HCO3+CO3+Cl+SO4)	meq/L	--	--	*12.96*	*23.82*	*0.67*
Ion Balance (Cations/Anions)	--	--	--	*1.04*	*1.04*	*0.82*
TITLE 22 PRIMARY STANDARDS, INORGANIC						
Aluminum (Al)	ug/L	0.05	1	0		
Antimony (Sb)	ug/L	6	6	0		
Arsenic (As)	ug/L	2	10	0		
Barium (Ba)	ug/L	100	1000	170		
Beryllium (Be)	ug/L	1	4	0		
Cadmium (Cd)	ug/L	1	5	0		
Chromium (Cr)	ug/L	1	50	0		
Copper (Cu)	ug/L	50	1000	0	0	0
Cyanide (CN)	ug/L	100	200	0		
Fluoride (F)	mg/L	0.1	2	0.93	0.45	0.79
Lead (Pb)	ug/L	5	15	0		
Mercury (Hg)	ug/L	1	2	0		
Nickel (Ni)	ug/L	10	100	0		
Nitrate (as NO3)	mg/L	1	45	5.8		
Nitrate + Nitrite (as N)	mg/L	0.1	10	1.3		
Nitrite (as N)	mg/L	0.1	1	0		
Selenium (Se)	ug/L	5	50	0		

PARAMETER	UNITS	DETECTION LIMIT	MCL	Spring	Creek	Tap
Thallium (Tl)	ug/L	1	2	1.5		
TITLE 22 SECONDARY STANDARDS, INORGANIC						
Iron (Fe)	ug/L	50	300	0	280	0
Manganese (Mn)	ug/L	20	50	28	**110**	0
Sliver (Ag)	ug/L	0.01	10	0		
Zinc (Zn)	ug/L	50	5000	0	0	0
OTHER CONSTITUENTS						
Boron (B)	mg/L	0.1		0.1		

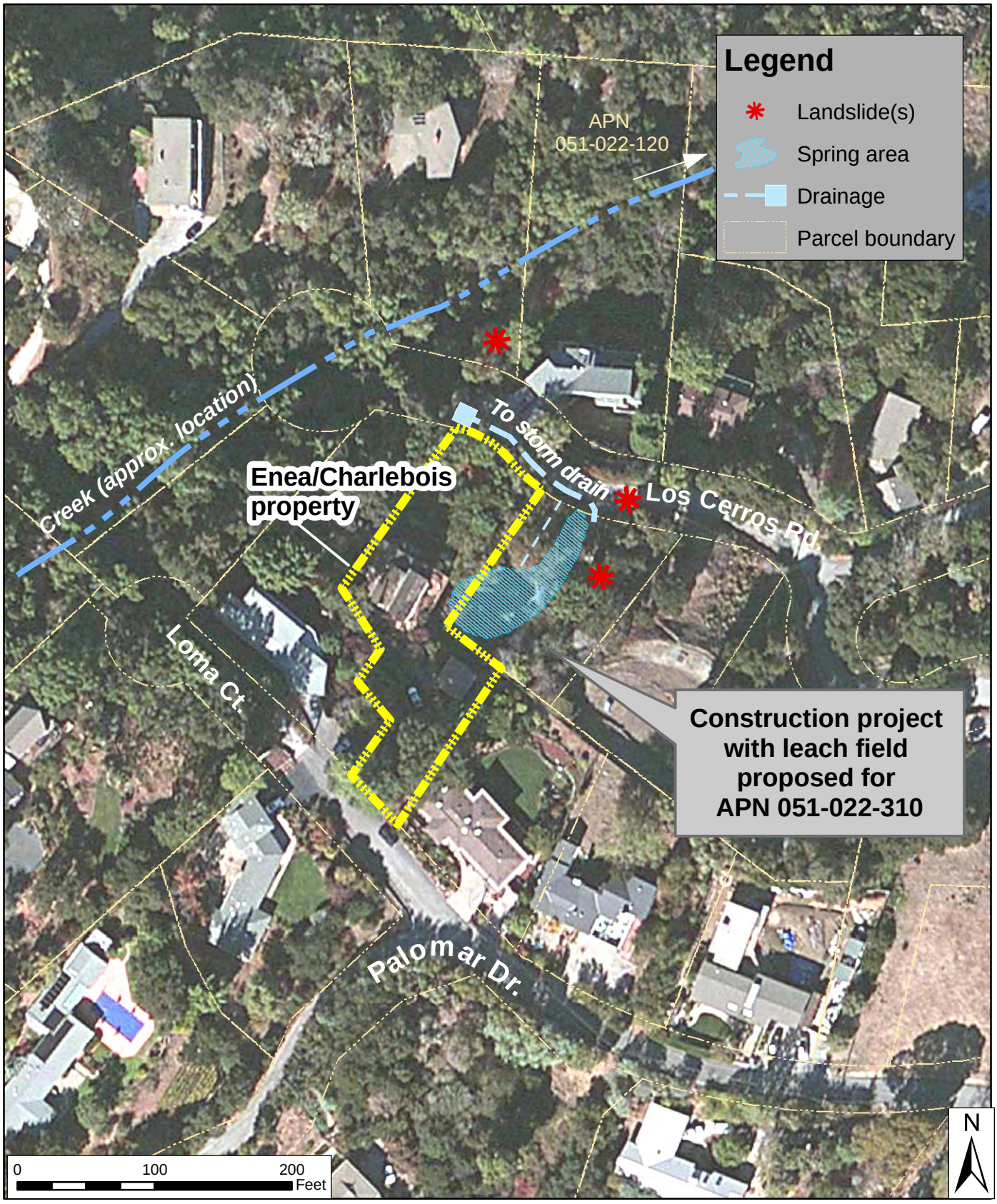
NOTES

Lab results: 0 = not detected; blank value = not tested; na = not applicable

MCL = Title 22 Maximum Contaminant Level as of June 12, 2003; the MCL of Lead is the Regulatory Action Level

Bold red font indicates a laboratory result exceeding its MCL.

FIGURES



Sources: San Mateo County, Bing Maps via ESRI.

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Figure 1. Spring area and historic landslides near the Enea/Charlebois property.

Note: A large spring area and high groundwater is present on APN 051-022-310, adjacent to the Enea property. Several landslides have been documented on this parcel (see Table 1).

214016 Enia site map.mxd

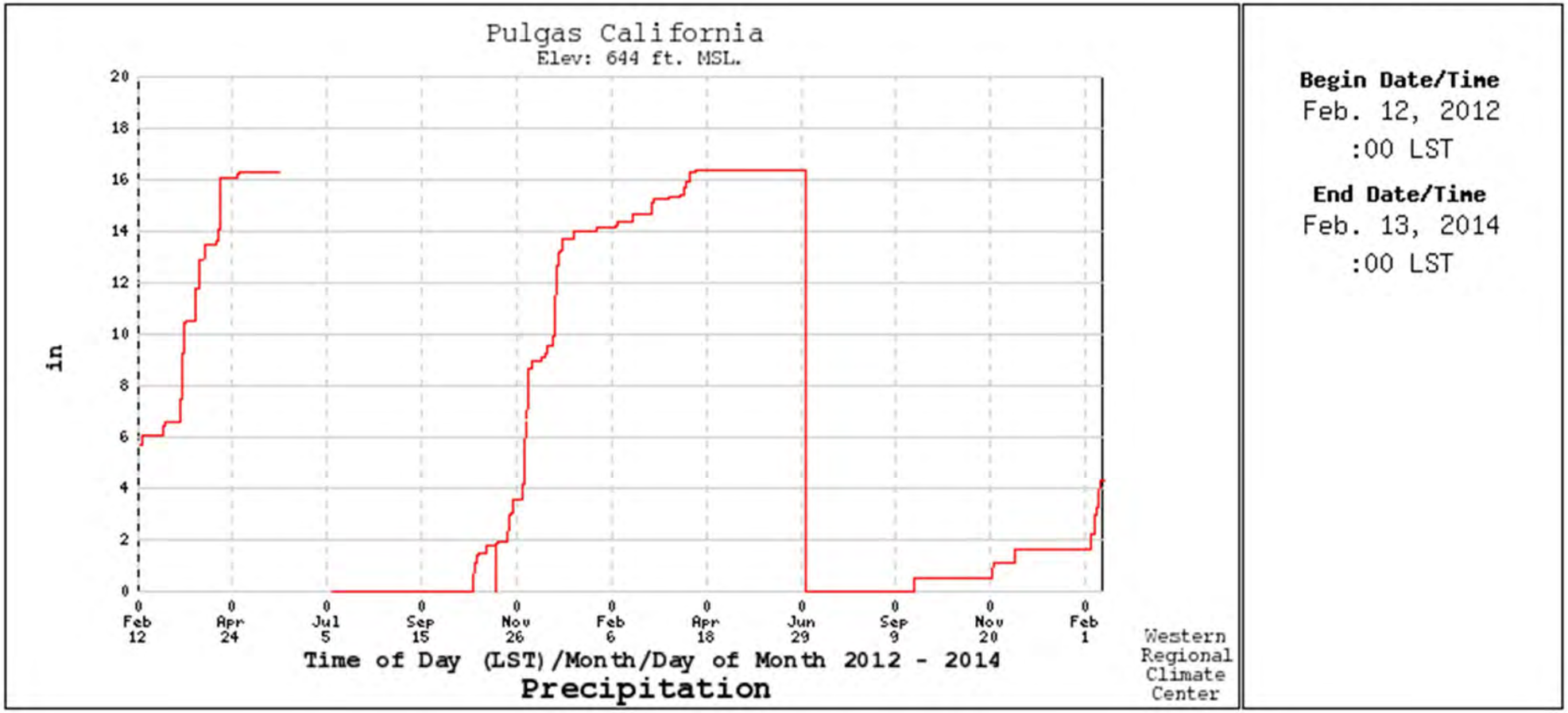

Figure 2. Rainfall at Pulgas California prior to site reconnaissance.

Source: National Weather Service (NWS) Remote Automatic Weather Stations (RAWS)
Lat. 37° 28' 30" N, Long. 122° 17' 53" W, Elev., 644 ft., http://www.raws.dri.edu/cgi-bin/rawMAIN.pl?caCPUL
Data plotted as cumulative rainfall since July 1.

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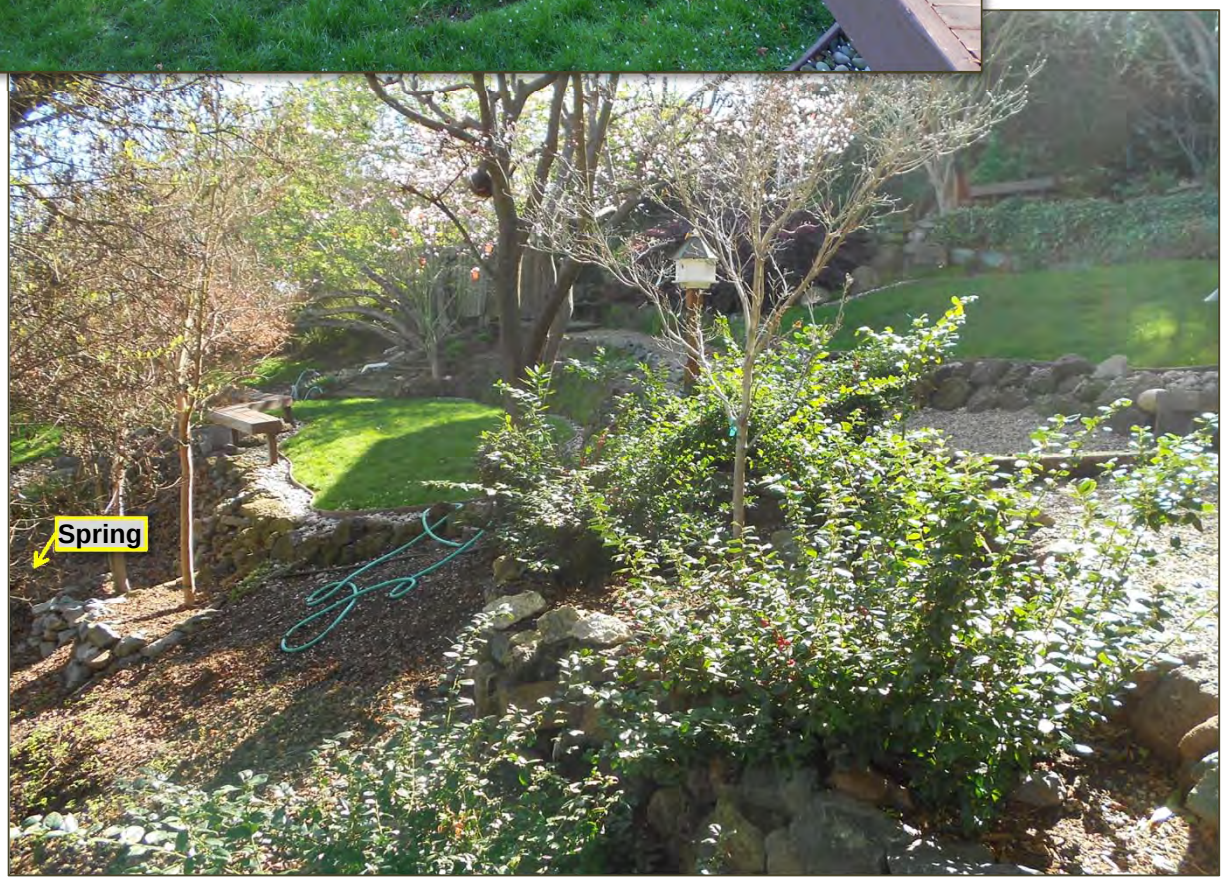

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Figure 3. Upper portion of APN 051-022-310, Redwood City, California. Spring discharge starts off the photo, about 20 feet downslope of benched grass area. Photos taken looking east from Enea/Charlebois property, APN 051-022-180.

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Figure 4. Shallow groundwater on February 13, 2014 at property line of Enea/Charlebois parcel, APN 051-022-180, Redwood City, California. Spring discharge starts just off the photo and near-surface groundwater is found along property line.

Upper portion of spring

Center portion of spring

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Figure 5. Spring discharge on February 13, 2014 at APN 051-022-310, Redwood City, California. Spring discharge collecting in the asphalt ditch of Los Cerros Road was estimated at less than one gallon per minute.

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Figure 6. Lower portion of spring on APN 051-022-310, Redwood City, California. Groundwater discharges at the upper portion of the parcel and flows downslope to a ditch along Los Cerros Road.

Canyon stream west of Enea / Charlebois property above Los Cerros Rd.

Drainage on Los Cerros Rd. from spring

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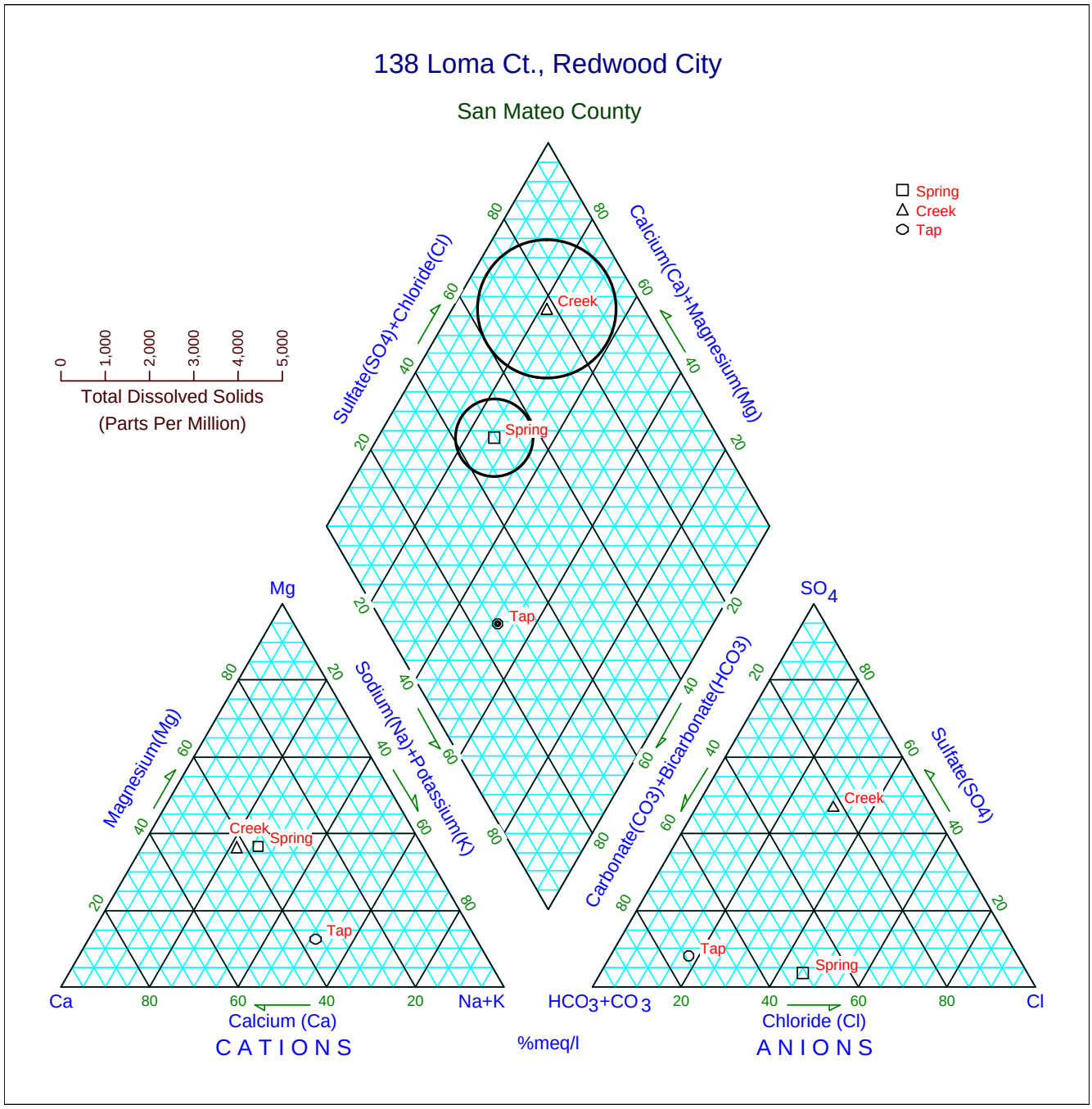
Figure 7. Surface flow on February 13, 2014 near Enea/Charlebois property, APN 051-022-180, Redwood City, California. Surface flow was estimated at less than one gpm at both locations. Water quality samples were collected from both sources (the spring sample from the central portion of the spring).



This diagram shows cations in the ternary graph on the left and anions on the right graph. The diamond graph in the center illustrates both cations and anions. Hardness dominated water plots to the left and top of the diamond graph, soft monovalent-salt dominated water to the right, and soft alkaline water towards the bottom. The radius of circle around the plotted points represents the concentration of dissolved solids, calibrated to the scale shown.

Figure 8. Piper diagram illustrating ionic signatures of water samples collected at close vicinity to Enea/Charlebois property, APN 051-022-180, 738 Loma Ct., Redwood City, California

ANALYTICAL LABORATORY REPORT

ANALYTICAL CHEMISTS
and
BACTERIOLOGISTS
Approved by State of California

SOIL CONTROL LAB

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FAX: 831-724-3188

Balance Hydrologics Inc.
800 Bancroft Way, Suite 101
Berkeley, CA 94710-2227
Attn: Mark Woyshner

Work Order #: 4020393
Reporting Date: March 26, 2014

Date Received: February 14, 2014
Project # / Name: 214016 / 738 Loma Ct., Redwood City, CA
Water System #: NA
Sample Identification: 214016:20140213 - Spring, sampled 2/13/2014 2:00:00PM
Sampler Name / Co.: Mark Woyshner / Balance Hydrologics Inc.
Matrix: Water
Laboratory #: 4020393-01

	Results	Units	RL	State Drinking Water Limits [1]	Analysis Method	Date Analyzed	Flags
General Mineral							
pH	7.7	pH Units	0.1	-	SM4500-H+ B	02/14/14	
Specific Conductance (EC)	1200	uS/cm	1.0	1600	SM2510B	02/14/14	
Hydroxide as OH	ND	mg/L	2.0	-	SM 2320B	02/14/14	
Carbonate as CO3	ND	mg/L	2.0	-	SM 2320B	02/14/14	
Bicarbonate as HCO3	400	mg/L	2.0	-	SM 2320B	02/14/14	
Total Alkalinity as CaCO3	330	mg/L	2.0	-	SM 2320B	02/14/14	
Hardness	510	mg/L	5.0	-	SM 2340 B	02/20/14	
Total Dissolved Solids	700	mg/L	10	1000	SM2540C	02/17/14	
Nitrate as NO3	5.8	mg/L	1.0	45	EPA 300.0	02/14/14	
Chloride	210	mg/L	1.0	500	EPA 300.0	02/14/14	
Sulfate as SO4	23	mg/L	1.0	500	EPA 300.0	02/14/14	
Fluoride	0.93	mg/L	0.10	2	EPA 300.0	02/14/14	
Calcium	100	mg/L	0.50	-	EPA 200.7	02/20/14	
Magnesium	60	mg/L	0.50	-	EPA 200.7	02/20/14	
Potassium	1.5	mg/L	0.50	-	EPA 200.7	02/20/14	
Sodium	80	mg/L	0.50	-	EPA 200.7	02/20/14	
Iron	ND	ug/L	50	300	EPA 200.7	02/20/14	
Manganese	28	ug/L	20	50	EPA 200.7	02/20/14	
Copper	ND	ug/L	50	1000	EPA 200.7	02/20/14	
Zinc	ND	ug/L	50	5000	EPA 200.7	02/20/14	
Inorganics							
Nitrate+Nitrite as N	1.3	mg/L	0.10	10	EPA 300.0	02/14/14	
Arsenic	ND	ug/L	2.0	10	EPA 200.8	02/25/14	
Barium	170	ug/L	100	1000	EPA 200.7	02/20/14	

RL - are levels down to which we can quantify with reliability, a result below this level is reported as "ND" for Not Detected.
State Drinking Water Limits[1] - as listed by California Administrative Code, Title 22.
* - a * in the left hand margin of the report means that particular constituent is above the California Drinking Water Limits.

Mike Galloway

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Work Order #: 4020393
Reporting Date: March 26, 2014

Date Received: February 14, 2014
Project # / Name: 214016 / 738 Loma Ct., Redwood City, CA
Water System #: NA
Sample Identification: 214016:20140213 - Spring, sampled 2/13/2014 2:00:00PM
Sampler Name / Co.: Mark Woyshner / Balance Hydrologics Inc.
Matrix: Water
Laboratory #: 4020393-01

	Results	Units	RL	State Drinking Water Limits [1]	Analysis Method	Date Analyzed	Flags
Inorganics							
Boron	100	ug/L	100	-	EPA 200.7	02/20/14	
Cadmium	ND	ug/L	1.0	5	EPA 200.8	02/25/14	
Chromium	ND	ug/L	1.0	50	EPA 200.8	02/25/14	
Cyanide (total)	ND	ug/L	100	200	SM 4500-CN F	02/19/14	
Lead	ND	ug/L	5.0	15	EPA 200.8	02/25/14	
Mercury	ND	ug/L	1.0	2	EPA 245.1	02/17/14	
Selenium	ND	ug/L	5.0	50	EPA 200.8	02/25/14	
Silver	ND	ug/L	10	100	EPA 200.8	02/25/14	
MBAS (Surfactants)	ND	mg/L	0.025	0.5	SM5540C	02/14/14	
Aluminum	ND	ug/L	50	1000	EPA 200.7	02/20/14	
Antimony	ND	ug/L	6.0	6	EPA 200.8	02/25/14	
Beryllium	ND	ug/L	1.0	4	EPA 200.7	02/20/14	
Nickel	ND	ug/L	10	100	EPA 200.7	02/20/14	
Thallium	1.5	ug/L	1.0	2	EPA 200.8	02/25/14	
Nitrite as N	ND	mg/L	0.10	1	EPA 300.0	02/14/14	

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Attn: Mark Woyshner

Work Order #: 4020393
Reporting Date: March 26, 2014

Date Received: February 14, 2014
Project # / Name: 214016 / 738 Loma Ct., Redwood City, CA
Water System #: NA
Sample Identification: 214016:20140213 - Creek, sampled 2/13/2014 1:30:00PM
Sampler Name / Co.: Mark Woyshner / Balance Hydrologics Inc.
Matrix: Water
Laboratory #: 4020393-02

	Results	Units	RL	State Drinking Water Limits [1]	Analysis Method	Date Analyzed	Flags
General Mineral							
pH	7.9	pH Units	0.1	-	SM4500-H+ B	02/14/14	
* Specific Conductance (EC)	2000	uS/cm	1.0	1600	SM2510B	02/14/14	
Hydroxide as OH	ND	mg/L	2.0	-	SM 2320B	02/14/14	
Carbonate as CO3	ND	mg/L	2.0	-	SM 2320B	02/14/14	
Bicarbonate as HCO3	320	mg/L	2.0	-	SM 2320B	02/14/14	
Total Alkalinity as CaCO3	260	mg/L	2.0	-	SM 2320B	02/14/14	
Hardness	980	mg/L	5.0	-	SM 2340 B	02/20/14	
* Total Dissolved Solids	1500	mg/L	10	1000	SM2540C	02/17/14	
Nitrate as NO3	ND	mg/L	1.0	45	EPA 300.0	02/14/14	
Chloride	260	mg/L	2.0	500	EPA 300.0	02/14/14	
* Sulfate as SO4	540	mg/L	2.0	500	EPA 300.0	02/14/14	
Fluoride	0.45	mg/L	0.20	2	EPA 300.0	02/14/14	
Calcium	210	mg/L	0.50	-	EPA 200.7	02/20/14	
Magnesium	110	mg/L	0.50	-	EPA 200.7	02/20/14	
Potassium	4.0	mg/L	0.50	-	EPA 200.7	02/20/14	
Sodium	120	mg/L	0.50	-	EPA 200.7	02/20/14	
Iron	280	ug/L	50	300	EPA 200.7	02/20/14	
* Manganese	120	ug/L	20	50	EPA 200.7	02/20/14	
Copper	ND	ug/L	50	1000	EPA 200.7	02/20/14	
Zinc	ND	ug/L	50	5000	EPA 200.7	02/20/14	

RL - are levels down to which we can quantify with reliability, a result below this level is reported as "ND" for Not Detected.
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Date Received: February 14, 2014
Project # / Name: 214016 / 738 Loma Ct., Redwood City, CA
Water System #: NA
Sample Identification: 214016:20140213 - Tap, sampled 2/13/2014 2:30:00PM
Sampler Name / Co.: Mark Woyshner / Balance Hydrologics Inc
Matrix: Water
Laboratory #: 4020393-03

	Results	Units	RL	State Drinking Water Limits [1]	Analysis Method	Date Analyzed	Flags
General Mineral							
pH	9.1	pH Units	0.1	-	SM4500-H+ B	02/14/14	
Specific Conductance (EC)	63	uS/cm	1.0	1600	SM2510B	02/14/14	
Hydroxide as OH	ND	mg/L	2.0	-	SM 2320B	02/14/14	
Carbonate as CO3	4.3	mg/L	2.0	-	SM 2320B	02/14/14	
Bicarbonate as HCO3	20	mg/L	2.0	-	SM 2320B	02/14/14	
Total Alkalinity as CaCO3	23	mg/L	2.0	-	SM 2320B	02/14/14	
Hardness	14	mg/L	5.0	-	SM 2340 B	02/20/14	
Total Dissolved Solids	37	mg/L	10	1000	SM2540C	02/17/14	
Nitrate as NO3	ND	mg/L	1.0	45	EPA 300.0	02/14/14	
Chloride	4.8	mg/L	1.0	500	EPA 300.0	02/14/14	
Sulfate as SO4	3.0	mg/L	1.0	500	EPA 300.0	02/14/14	
Fluoride	0.79	mg/L	0.10	2	EPA 300.0	02/14/14	
Calcium	4.0	mg/L	0.50	-	EPA 200.7	02/20/14	
Magnesium	0.84	mg/L	0.50	-	EPA 200.7	02/20/14	
Potassium	ND	mg/L	0.50	-	EPA 200.7	02/20/14	
Sodium	6.5	mg/L	0.50	-	EPA 200.7	02/20/14	
Iron	ND	ug/L	50	300	EPA 200.7	02/20/14	
Manganese	ND	ug/L	20	50	EPA 200.7	02/20/14	
Copper	ND	ug/L	50	1000	EPA 200.7	02/20/14	
Zinc	ND	ug/L	50	5000	EPA 200.7	02/20/14	

RL - are levels down to which we can quantify with reliability, a result below this level is reported as "ND" for Not Detected.
State Drinking Water Limits[1] - as listed by California Administrative Code, Title 22.
* - a * in the left hand margin of the report means that particular constituent is above the California Drinking Water Limits.

Mike Galloway

KILIK
GENERAL ENGINEERING

Kilik General Engineering
1060 Minnesota Ave., Ste. 1
San Jose, CA 95125
Ph.: (408)298-0111 Fax: (408)280-6821
Website: www.kilikengineering.com
CCL # A-928944

San Mateo County Building Dept.
455 County Center
Redwood City, CA 94063

June 12, 2023

RE: 0 Los Cerros APN 051 022 310
Emergency Subdrain/interceptor drain

On March 6, 2023, I inspected the vacant parcel at 0 Los Cerros, apn 051022310, owned by Denise Enea and found a saturated hillside and a slip out on the upper steep southwest quadrant of the hillside. The scarp of the slip out was 20 ft. from the adjoining property line with 634 Palomar Dr. The toe of the slip out was at the top of a 2018 landslide repair. Large tree roots were exposed and protruding out of the void. The slip out was exacerbated by storm water flowing from 634 Palomar Dr. My recommendation was to install an emergency interceptor/subdrain to collect any water flowing onto 0 Los Cerros and above the new slide area. This new slide was located directly above a previous extensive landslide which occurred on the same 0 Los Cerros parcel and Kilik Engineering repaired in 2018.

Per the owner's request, Kilik Engineering installed an emergency interceptor/subdrain per the Bld 2023-00624 SMC permitted plan, 180' of 4" PVC SDR-35 subdrain along the property line with an associated catch basin. The depth of the interceptor drain is a minimum of 12" and maximum of 18".

All work has been completed per the submitted plan and specifications. The drain is functioning well during storm conditions. No work was conducted on adjacent properties and the source of the storm water has not been resolved.

It is my professional recommendation that no water of any kind be added to the hillside which can expose the new slip out or the extensive landslide repair of 2018 to additional water. A prolific underground spring flows through the hillside and additional water cannot be sustained. During wet years and storm conditions the hillside and drains should be monitored for any adverse changes. Repairing any large reoccurring slides in the future may not be possible on the 0 Los Cerros parcel.

Sincerely,

Alan Kilik
Kilik General Engineering

Gmail

Denise Charlebois <decharlebois1@gmail.com>

San Mateo County Septic Complaint/Potential Repair- 616 Palomar Dr., Redwood City

1 message

Emily Pfeifer <epfeifer@smcgov.org> Mon, Jun 12, 2023 at 4:08 PM
To: "decharlebois1@gmail.com" <decharlebois1@gmail.com>

Hello,

Please see the following information regarding the current complaint/potential repair at 616 Palomar Dr., Redwood City:

-Environmental Health received a complaint in April that water was running into a neighboring property from the direction of 616 Palomar Dr. The complainant believed the water may be wastewater runoff from a nearby septic system.

-Environmental Health sampled the water and received results that, while not definitive, indicated the possibility of partially treated effluent within the water runoff.

-The owner has been and is currently working with an Onsite Wastewater Treatment System (OWTS) professional to determine the cause of the issue. A dye test will be run of the system to follow the path of the effluent within the septic system and identify if any surfacing effluent is coming from this septic system.

I advise also waiting for the results of the records request as more information could potentially be provided there.

Please let me know if you have any questions.

Thank you,

Emily Pfeifer, REHS (she/her)

Environmental Health Specialist

Environmental Health Services

2000 Alameda de las Pulgas Suite 100

San Mateo, CA 94403

San Mateo County Health

Work Cell: (650) 465-2825

Main Office: (650) 372-6200

Work Schedule: Monday to Friday from 7:00am-4:30pm, with every other Friday off

epfeifer@smcgov.org

smchealth.org
facebook.com/smchealth
twitter.com/smchealth

GCD Inc.

Focused Site Drainage Assessment

738 Loma Court, Redwood City, CA

04/13/2023

GEOTECHNICAL CONSTRUCTION & DESIGN, INC.
7236 Via Mimosa, San Jose, CA. 95135
Email: gcdinc94@aol.com Cell: 408.812.4355

April 13, 2023

Ms. Denise Charlebois
738 Loma Court
Redwood City, CA

REGARDING: FOCUSED SITE DRAINAGE ANALYSIS
738 LOMA COURT, REDWOOD CITY, CA.

Dear Ms. Charlebois,

In response to your request, we have prepared the following focused site drainage analysis report your use. Our inspection was made, and this focused site drainage analysis report was prepared by a trained and experienced, licensed Professional Engineer and General Engineering Contractor.

Our reconnaissance, performed on April 11, 2023, was focused on and limited to a visual inspection and analysis of site drainage conditions as well as the preparation of this report. The professional opinions offered are based on our observations of apparent conditions existing at the time of the inspection (latent and concealed defects and deficiencies are excluded). Document search and review, destructive testing, subsurface investigation, structural calculation, geologic study and seismic analysis, as well as the preparation of engineering specifications and construction drawings for any recommended repairs or improvements are beyond the scope of services provided. However, we did review the drainage studies prepared Atlas, ltr. dtd. 10/04/23 and Balance Hydrologics, ltr. dtd. 05/07/23 & rpt. dtd. 04/16/14. The information derived from these reports (See Appendix 3) in combination with the observations made in the course of our reconnaissance of the site form the basis for the recommendations and conclusions presented here-in-after.

PLEASE READ THIS REPORT CAREFULLY, A FULL UNDERSTANDING OF THE INFORMATION IT CONTAINS MAY BE CRITICAL TO THE CONTINUED EXCELLENT PERFORMENCE OF THE SITE'S DRAINAGE CONTROL SYSTEMS AND THE SUCCESSFUL OUTCOME OF ANY RECOMMENDED OR PLANNED IMPROVEMENTS!

CURRENT OBSERVATIONS: We found the site's drainage system to be clean and in good serviceable condition. Its performance was documented with a video recording made under storm conditions. Our review of the video found the drainage systems to be functioning well in directing and capturing surface flow.

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Our reconnaissance of the site (both the upper and lower parcels) found that it has been provided with a comprehensive and robust drainage control system that includes area drains, subdrains, catch basins and gutter drains (see appendix 1). The site's extensive drainage control system has been augmented with well thought out hardscaping and landscaping i.e., terraced and drained retaining walls, storm water diversion swales, ground cover, shrubs, and trees.

The extensive drainage control systems appear to have been properly installed and are well maintained. Further, they have proven to be successful in keeping your property stable, particularly on the lower parcel with its recent (2017) land slide repair area. Moreover, it is critical that any modifications which can introduce moisture to the soil or significantly change the present waterflow must be engineered to ensure the current stability of your property is not degraded. Specifically, the steep grades on your property and the springs under it as well as surface drainage patterns on the adjacent parcels must be maintained in their current configuration or, if modified, surface and subsurface flow across or under your property must not be increased.

MAINTENANCE: The site drainage system will require continuing care which should be incorporated into your property maintenance program. Specifically:

1. Gutters, down spouts, catch basins and gutter drains should be cleaned and the free flow of all buried drain lines should be verified at the beginning and middle of each winter season (I did not flow test the system).

2. Area drainage should be observed during rainy periods and steps taken to direct all surface flow away from the structure and into the drainage control system.

3. I recommend that, if the drains become clogged, a video survey of the condition of your buried drainage control system be considered. The work should document and resolve any blockages or pipe failures.

4. I recommend monitoring surface flow during storm conditions with local regrading as necessary to eliminate any puddle areas at the home's perimeter and to direct surface flow away from the structure and into the yard area drain inlets. In addition, you may want to consider adding area drains in the low planter beds along the homes front foundation line and replacing your small plastic yard area drain inlets larger inlets.

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Unanticipated subsurface conditions may develop during the life of the structure that cannot be predicted from the limited visual inspection performed. Our inspection, oral comments and this report are not intended to be used as a guarantee or warranty, expressed or implied, regarding the adequacy, performance or condition of any inspected structure. During the life of the structure, there may develop unanticipated subsurface conditions that cannot be predicted from the limited visual inspection performed. This report is not a compliance inspection or certification for past or present governmental codes or regulations of any kind.

This report is not a complete distress survey nor is it intended for use as a complete description of the property. It is intended to provide information regarding current site drainage conditions and to outline appropriate improvements for your consideration. Our observations have been made using the degree of care and skill originally exercised, under similar conditions, by reputable Professional Engineers practicing in this area. No other warranty, expressed or implied, is made.

ARBITRATION OF DISPUTES: ANY CONTROVERSY OR CLAIM FOR DAMAGES ARISING OUT OF OR RELATING TO THIS CONDITION ASSESSMENT OR ANY WORK PERFORMED IN CONNECTION THEREWITH INCLUDING BUT NOT LIMITED TO NEGLIGENCE, ERRORS OR OMISSION SHALL BE SETTLED IN ACCORDANCE WITH THE CONSTRUCTION INDUSTRY ARBITRATION RULES OF THE AMERICAN ARBITRATION ASSOCIATION OR ALTERNATE DISPUTE RESOLUTION FORM ACCEPTABLE TO ALL PARTIES.

CONTRACTOR LICENSING INFORMATION: STATE LAW REQUIRES ANYONE WHO CONTRACTS TO DO CONSTRUCTION WORK TO BE LICENSED BY THE CONTRACTORS STATE LICENSE BOARD IN THE LICENSE CATEGORY IN WHICH THE CONTRACTOR IS GOING TO BE WORKING IF THE TOTAL PRICE ON THE JOB IS $300 OR MORE (INCLUDING LABOR AND MATERIALS).

IF YOU CONTRACT WITH SOMEONE WHO DOES NOT HAVE A LICENSE, THE CONTRACTORS STATE LICENSE BOARD MAY BE UNABLE TO ASSIST YOU WITH A COMPLAINT. YOUR ONLY REMEDY AGAINST AN UNLICENSED CONTRACTOR MAY BE IN CIVIL COURT AND YOU MAY BE LIABLE FOR DAMAGES ARISING OUT OF ANY INJURIES TO THE CONTRACTOR OR HIS OR HER EMPLOYEES.

THE BOARD HAS COMPLETE INFORMATION ON THE HISTORY OF LICENSED CONTRACTORS, INCLUDING ANY POSSIBLE SUSPENSIONS, REVOCATIONS, JUDGMENTS, AND CITATIONS. THE BOARD HAS OFFICES THROUGHOUT CALIFORNIA. PLEASE CHECK THE GOVERNMENT PAGES ON THE WHITE PAGES FOR THE OFFICE NEAREST OR CALL 1-800-321-CSLB FOR MORE INFORMATION.

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Acceptance and use of this report bind the parties to the limitation and conditions included in it. Should GCD and/or its agents or employees be found liable for any loss or damages resulting from a failure to perform any of its obligations, including and not limited to negligence, breach of contract, or otherwise, then the liability of GCD and/or its agents or employees, shall be limited to a sue equal to 5 times the amount of the fee paid by the Customer for the inspection and this condition assessment report. It has been a pleasure providing you with a focused inspection and site drainage evaluation and this report. Please do not hesitate to call if we may be of further assistance or if you have any questions or concerns.

Very truly yours,

George E. Drew, P.E., GCD, INC.

California Professional Engineer, license #C 20681
General Engineering Contractor license #A 64788
Member, American Society of Civil Engineers I.D
Member, National Society of Professional Engineers
Member, Structural Engineers Assoc. of Central California
Certified Inspection Engineer (BIECI)

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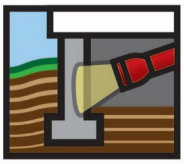

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APPENDIX

1. **Plot Plan**
2. **Photos**
3. **Expert Comments**
4. **Inspection Agreement and Contract for Services (3 pages)**

Invoice

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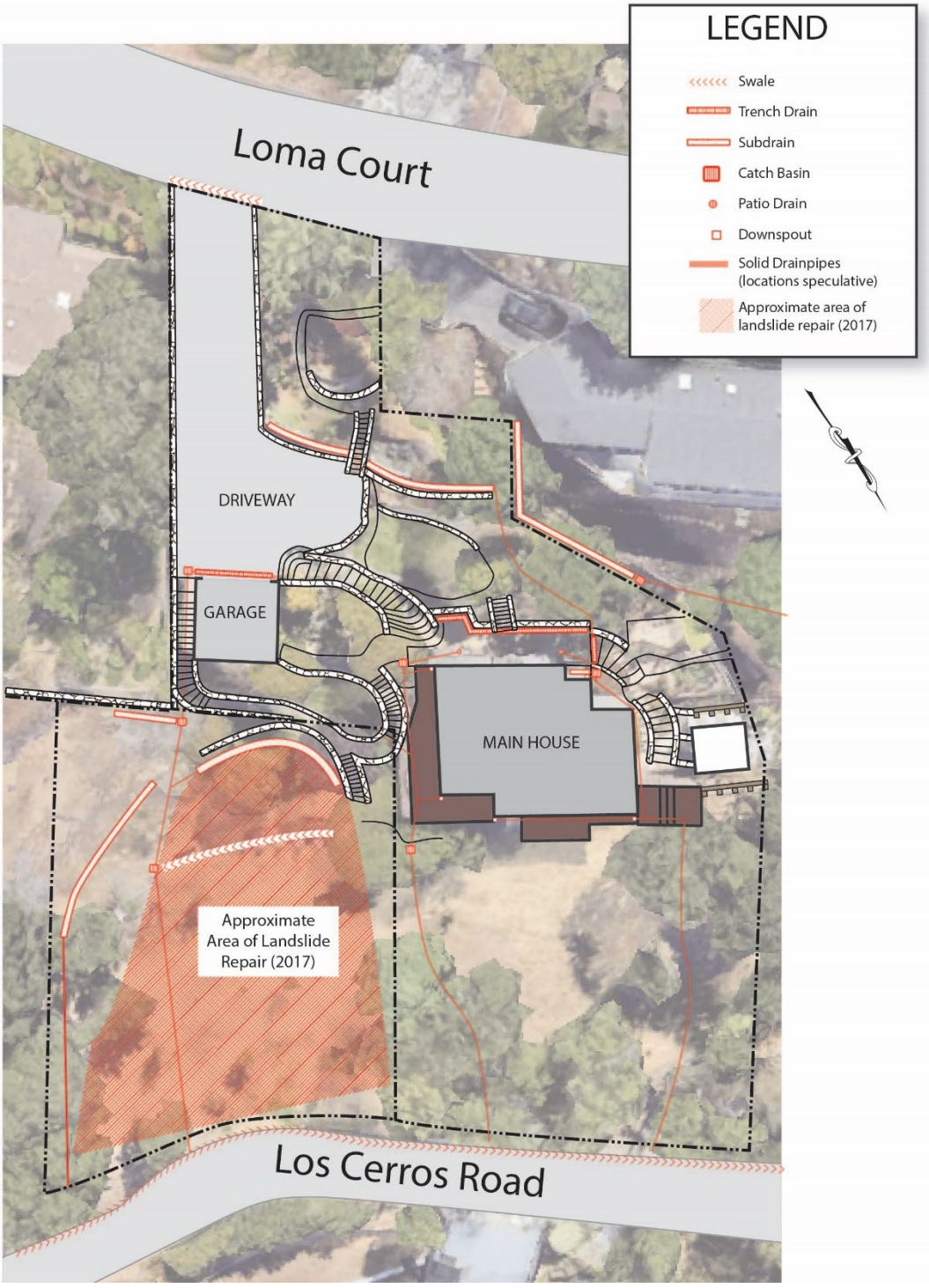
SITE DRAINAGE SYSTEMS

SHOWN AS OVERLAY ON 2D GOOGLE EARTH RENDERING
SHOWING THE EXTENSIVE DRAINAGE CONTROL SYSTEMS:



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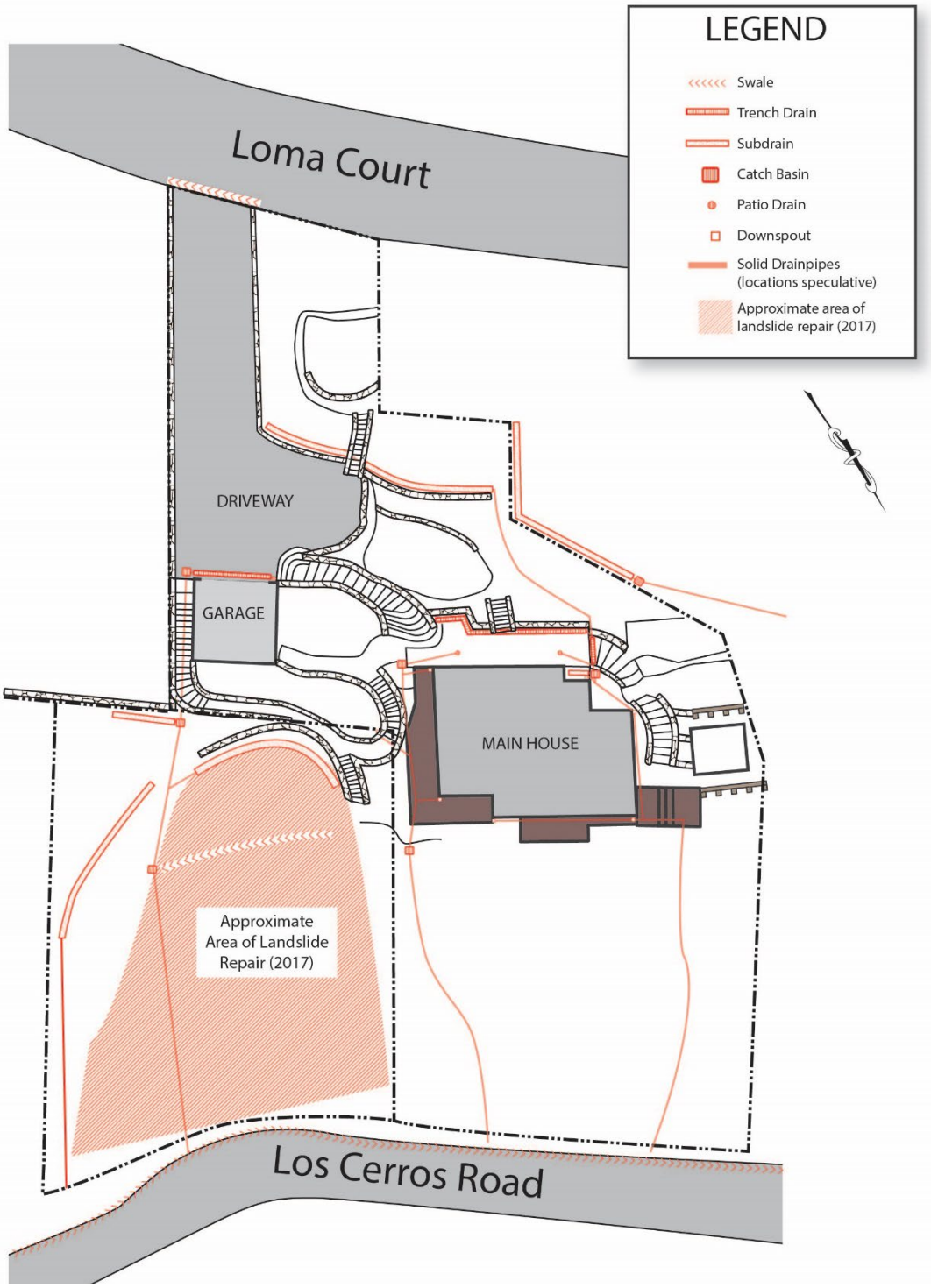
SITE DRAINAGE SYSTEMS

SHOWING THE EXTENSIVE DRAINAGE CONTROL SYSTEMS:



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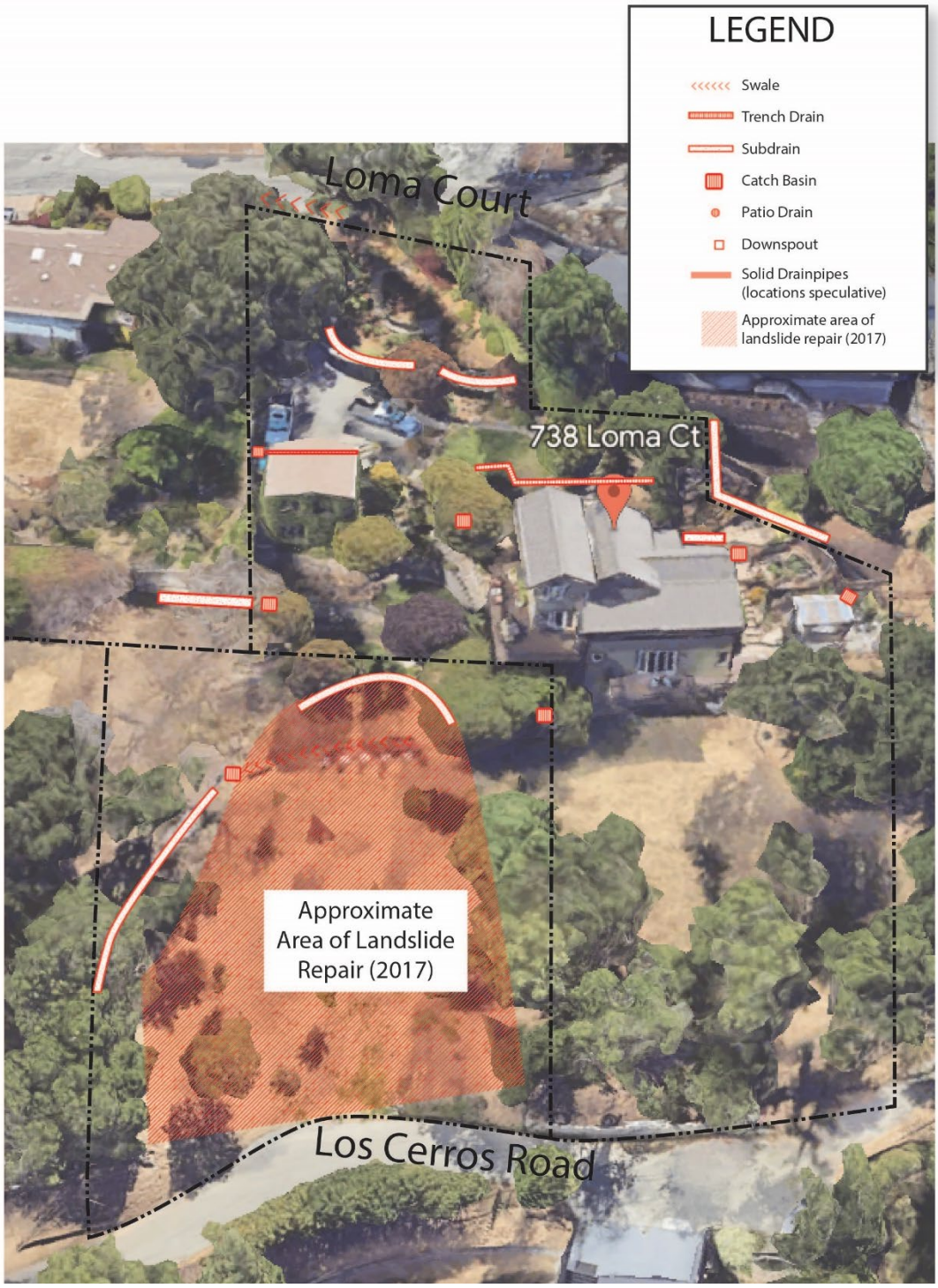
SITE DRAINAGE SYSTEMS

SHOWN AS OVERLAY ON 3D IMAGE TO SHOW SLOPE AND LOCATIONS OF DRAINAGE CONTROL SYSTEMS:



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PHOTOS

PHOTO 1:
Trench drain at end of driveway

PHOTO 2:
Drainage swale at the top of the driveway

PHOTO 3:
Area drain at end of flagstone and gravel walkway

PHOTO 4:
Trench drain and patio drains at front entry patio

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PHOTOS

PHOTO 4:
Spring pipe at bottom of landslide area: constant spring water flow

PHOTO 5:
Terraced and drained retaining walls

PHOTO 7:
Repaired landslide area

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EXPERT COMMENTS

Expert	Partial quote	Source	Profession	State/Professional Registrat'n No.
Jeff Lea	"…given the need for root systems to help maintain a fragile ground surface and for transpiration to help remove subsurface water from the hillside"	Lea, 2014	Civil Engineer	CE31678
Richard Smith	"My concern is that the removal of these trees would further decrease the stability of the slope and hillside. . . Also, the amount of water that these trees uptake daily is significant in dewatering the hillside. Any moisture that can naturally be removed from these has a significant value. Trees are an integral part of slope stabilization alone, and with an already saturate soil environment year-round. It is my recommendation that these trees remain."	Smith, 2022	Arborist	ISA WE-87645A
Alan Kilik	". . .I advise extreme caution and believe that changing any of the surrounding uphill surface or underground conditions will have an effect on the water that exists in this slope and will negatively impact the longevity of the hillside repair."	Kilik, 2017	Engineering Contractor	CCL #A-928944
Joseph Michelucci	" . . .the existing ground cover, small trees, bushes . . .have enhanced the stability of the area."	Petroff and Michelucci, 2015	Geotechnical Engineer	GE593

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EXPERT COMMENTS FROM
BALANCE HYD. LTR. DTD. 3/7/23
BY BERRY HECHT, CEG 1245

Inadequate Response to Third Party Review

The process of impact review and planning for suitable mitigation is also stymied by inadequate responses to the third-party review. As appropriate for a project of this complexity and a three-story residential structure three times the size typical of the Palomar Park area (and presumably much heavier and generating more effluent), the County commissioned a third-party review by the Cotton Shires firm, a suitable source, which requested identified gaps in the analysis. The Cotton Shires review plainly asked:

a. how much more water from site drainage and the leachfield will be put into the hillside?

b. in which direction(s) will it flow?

c. how deeply will it flow, given the hillside containing much water,

d. will the additional water and the grading for the structures affect the stability of the house or adjoining lots and structures.

The applicant was asked to drill as deeply as necessary and conduct tests to get the needed data.

Atlas responded with a 12-page letter which basically did not answer these questions.

The Planning Department and the community still have no calculations of how much effluent and drainage will enter the slope, whether the drainage and the effluent will surface and enter the surficial drainageways or the repaired landslide(s) or potential impacts to downslope drainageways and residents. The response hypothesizes that septic effluent will all flow into sandstone beds with 'adverse drainage' which seems inconsistent with their cross-section A-A', and contains no information about the depth or fluctuations of groundwater levels – information logically essential to answering the question of how much addition groundwater flow will result and which direction it will move, specifically toward known instabilities. There is no more information on depth of groundwater despite specific requests to drill deep enough to answer the questions of the third-party reviewers. The response also contends that runoff from the driveway and appurtenances at 738 Loma Court is responsible for much of the water in the slope, a contention which conflicts with the reality of our salinity measurements, as noted above. In our opinion, the impact review is not complete until these basic and reasonable questions have received a response.

Proposed Mitigation

Some of the measures proposed for mitigation by County staff seem to simply miss the point, not addressing the impact or potential threat.

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GCD Inc.

EXPERT COMMENTS FROM BALANCE HYD. LTR. DTD. 3/7/23 BY BERRY HECHT, CEG 1245

CONCLUSIONS:

1. The various parcels lie within a large, complex landslide area including about 20-30 homesites in Palomar Road and Los Cerros Road area of unincorporated San Mateo. The landslide, previously unmapped but consistent with evidence in the Seismic Safety element of the San Mateo County General Plan, showed evidence of stability over periods of decades prior to disturbance of construction of roads and homes during the early- to mid-1950s. Once the slide's profile was broken with excavations, landsliding has been chronic, occurring nearly every decade. Percolation for septic and drainage systems have added to local groundwater pool, and removal of larger trees seems to have further expanded it.

2. Landsliding is associated with wet years or periods of wet years. Nearly every year or years of above-average precipitation has resulted in at least one documented instability large enough to warrant a geotechnical report or road construction project. Most such wet periods were less profound than the pre-development wet periods of 1937-8 and 1940 - 1943, when no instabilities appear evident in aerial photographs. In its current configuration, slopes appear to go unstable when a relatively nominal amount of rainfall is added to the ground.

3. The proposed project requires substantial grading, cumulatively adding to post-development instability of the compound slide area. Additionally, it will be served by a septic system and leachfield, discharging a substantial amount of water to the landslide complex every year; it will also place a swimming pool at the head of one known near-surface slide, which if ruptures and drained suddenly will discharge many thousands of gallons of water aggravating even a minor instability associated with ongoing slope movement and/or ground shaking.

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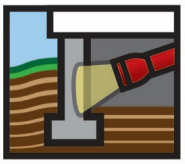

GCD Inc.

Inspection Agreement and Contract for Services

SCOPE OF SERVICES

GCD, INC. ("GCD") has been engaged by the undersigned client(s) to inspect the home's portico and thereafter issue a report as to the observations made by the inspector. GCD's inspection report is based on a visual reconnaissance of the structure. GCD does not perform, nor is it engaged in the performance of, a home inspection as defined by Business and Professions Code Section 7195 et. seq.

LIMITATIONS OF WARRANTY/DISCLAIMER AND STATUTE OF LIMITATIONS

It is hereby acknowledged that there may be hidden or obscured conditions that are not observed by the inspector and seasonal environmental and soil conditions that may change after the inspection. GCD warrants that the services provided are within the reasonable standard of care provided by other engineers practicing in this area and offering similar services. No other warranty expressed or implied is made. This report does not include an analysis of the presence of any environmental hazards including, but not limited to toxins, mold, carcinogens, hazardous materials, and contaminants in the soil, water, and air. GCD's site reconnaissance visually identifies actual conditions only at those points where and when observed. This report is based on conditions that exist at the time of GCD's inspection, no warranty or guarantee can be made as to future conditions. It is hereby agreed that the time to begin legal action for a claim under this contract shall not exceed two years from the date of the inspection.

LIQUIDATED DAMAGES

It is understood and agreed to by the client(s) that GCD is not an insurer and the amounts payable to GCD for its services by the client are not sufficient for GCD to assume the risk of consequential or other damages to the client(s) for any act of negligence, omission or commission. From the nature of the services to be performed it is hereby agreed that it is impractical and extremely difficult to fix actual damages in the event of an act of negligence, omission or commission, if any, which may result these services. If GCD should be found liable for loss or damage due to an act of omission of commission or for breach of this contract, its liability shall be limited to no more than five (5) times the amount paid by client for the services performed under this contract as liquidated damages. It is hereby agreed and understood that said amount agreed to as liquidated damages are not a penalty, irrespective of cause or origin of the loss or damage. Alternatively, the client may request in writing that the aforementioned limitation of liability clause be excluded or modified for an appropriate increase in the inspection fee. If the client selects this alternative, he or she must contact GCD for a quote as to the increased inspection fee and/or any other desired modification to the services provided or the terms under which they are offered. A separate written agreement must be executed to facilitate the selection of this alternative and until said writing is executed by both parties, the liquidated damages provisions set forth in the previous paragraph shall remain in full force and effect.

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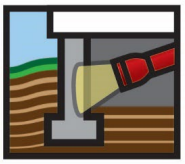


GCD Inc.

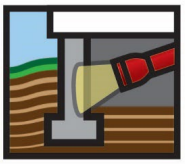
DISPUTE RESOLUTION

ANY DISPUTE OR CLAIM BETWEEN THE CLIENT(S) AND GCD AND/OR ITS AGENTS, OR AFFILIATES ARISING OUT OF THIS CONTRACT, THE OBSERVATIONS SET FORTH THEREIN OR THE RESULTING REPORT SHALL BE SUBMITTED FIRST TO MEDIATION BEFORE A MUTUALLY ACCEPTABLE MEDIATOR. IF THE DISPUTE OR CLAIM IS NOT RESOLVED BY MEDIATION, THE DISPUTE OR CLAIM WILL THEN BE SUBMITTED TO AND DECIDED BY NEUTRAL BINDING ARBITRATION IN ACCORDANCE WITH CHAPTER 3, TITLE 9 OF THE CALIFORNIA CODE OF CIVIL PROCEDURES (C.C.P. 1282, ET SEQ.). UPON SELECTION OF AN ARBITRATOR, THE PARTIES SHALL AGREE UPON THE LIMIT AND EXTENT OF NECESSARY DISCOVERY PRIOR TO THE HEARING. THE PARTIES SHALL AGREE UPON THE SELECTION OF AN ARBITRATOR WHO SHALL BE EITHER A RETIRED SUPERIOR COURT JUDGE, A LICENSED CALIFORNIA ATTORNEY WITH AT LEAST TEN (10) YEARS OF REAL ESTATE LITIGATION EXPERIENCE, A LICENSED GENERAL ENGINEERING CONTRACTOR OR LICENSED PROFESSIONAL ENGINEER WITH AT LEAST FIVE YEARS OF EXPERIENCE AS DEFINED IN BUSINESS AND PROFESSIONAL CODE 7195 ET SEQ. THE ARBITRATION SHALL TAKE PLACE IN THE COUNTY WHERE THE PROPERTY IS LOCATED. TO THE EXTENT THE PARTIES CANNOT AGREE UPON AN ARBITRATOR, ONE OR BOTH OF THE PARTIES MAY PETITION THE SUPERIOR COURT IN THE COUNTY WHERE THE PROPERTY IS LOCATED TO COMPEL ARBITRATION AND MAY IN SAID PETITION REQUEST THE COURT TO APPOINT A NEUTRAL ARBITRATOR. THE PREVAILING PARTY IN ANY ARBITRATION UNDER THIS ARBITRATION AGREEMENT SHALL BE ENTITLED TO RECOVERY OF ATTORNEY'S FEES AND COSTS INCURRED IN THE ARBITRATION AND THOSE RELATED TO ANY PETITION TO COMPEL ARBITRATION OR APPOINT AN ARBITRATOR, IF ONE IS NECESSARY. JUDGMENT ON THE AWARD RENDERED BY THE ARBITRATOR MAY BE ENTERED IN ANY COURT HAVING JURISDICTION.

IMPORTANT NOTICE

YOU ARE AGREEING TO HAVE ANY DISPUTE ARISING OUT OF THE MATTERS IN THIS AGREEMENT DECIDED BY NEUTRAL BINDING ARBITRATION AS PROVIDED BY CALIFORNIA LAW AND YOU ARE GIVING UP ANY RIGHTS YOU MIGHT POSSESS TO HAVE THE DISPUTE LITIGATED IN A COURT OF LAW OR BY JURY TRIAL. BY SIGNING IN THE SPACE BELOW YOU ARE GIVING UP YOUR RIGHTS TO CIVIL DISCOVERY AND YOUR RIGHTS TO AN APPEAL SINCE THE GROUNDS FOR AN APPEAL OF THE DECISION RENDERED MAY BE LIMITED. BY SIGNING BELOW, YOU ARE SPECIFICALLY AGREEING TO THE SCOPE OF SERVICES, LIMITATION OF LIABILITY AND DISPUTE RESOLUTION PROVISIONS, AND ALL CONDITIONS AS DESCRIBED ON THIS CONTRACT.

GEOTECHNICAL CONSTRUCTION & DESIGN, INC.
7236 Via Mimosa, San Jose, CA. 95135
Email: gcdinc94@aol.com Cell: 408.812.4355



GCD Inc.

IF THIS AGREEMENT IS NOT SIGNED WITHIN THREE (3) CALENDAR DAYS OF THE INSPECTION BY THE CLIENT OR THEIR AUTHORIZED AGENT, THE INSPECTION AND/OR REPORT WILL CARRY NO WARRANTY OR GUARANTEE AS TO ITS CONTENTS, AND NO ONE SHALL BE ENTITLED TO RELY ON ITS CONTENTS FOR ANY PURPOSE. THIS AGREEMENT SHALL BE CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF CALIFORNIA.

CLIENT REVIEW AND INTERPRETATION OF TERM

The client acknowledges that he/she had the opportunity to review the entirety of this contract. Client further agrees that he/she will not later contend that any ambiguity should be construed against GCD as the purported drafter of the Agreement.

WE HAVE READ AND UNDERSTAND THE FOREGOING:

CLIENT(S): _____ DATE: _____/_____/_____

INSPECTOR: _____ DATE: _____/_____/_____

GEOTECHNICAL CONSTRUCTION & DESIGN, INC.
7236 Via Mimosa, San Jose, CA. 95135
Email: gcdinc94@aol.com Cell: 408.812.4355

GCD Inc.

INVOICE

April 13, 2023

Ms. Denise Charlebois
738 Loma Court
Redwood City, CA

Phone: 650 740 9883
Email: DeCharlebiois1@Gmail.com

DESCRIPTION OF SERVICES:
FOCUSED SITE DRAINAGE ASSESSMENT
738 LOMA COURT, REDWOOD CITY, CA.

TOTAL AMOUNT DUE: $1,000.00

TERMS: Please include report no. (J23-139) on check payable to **GCD** & send to: **GCD, 7236 Via Mimosa, San Jose, CA 95135**, Total due within 7 days.

It's been a pleasure doing business with you. Thanks for the work! And, don't hesitate to call me if you have any questions or concerns.

George

408 812 4355

GEOTECHNICAL CONSTRUCTION & DESIGN, INC.
7236 Via Mimosa, San Jose, CA. 95135
Email: gcdinc94@aol.com Cell: 408.812.4355

Tree Recommendations

Arborist Report for Denise Enea

Report Prepared By:

Richard Smith
I.S.A. Certified Arborist #WE-8745A
Tree Risk Assessor Qualified

Contents

BACKGROUND

On November 3, 2022, I, Richard Smith, Certified Arborist No. WE-8745A, was called out to inspect multiple trees at different locations.

ASSIGNMENT

- Inspect these trees regarding the impact they are having on these properties.
- Provide report outlining findings and recommendations

LIMTITS OF THE ASSIGNMENT

No aerial inspection, trenching or resistance drilling was performed.

No Biological tests were performed.

Only a visual inspection from the ground was performed.

PURPOSE AND USE OF THIS REPORT

The purpose of this report is to provide comments/recommendations regarding to these trees in question.

OBSERVATIONS

I was called out to observe the trees bordering the property line of Mrs. Enea's property at 738 Loma Court and 0 Los Cerros, Redwood City. The bordering property is 634 Palomar Drive Redwood City, CA October 21st 2022.

I observed the trees in question located on the lower South East portion of the neighboring property 634 Palomar Dr. bordering Mrs. Enea's Property. The trees are primarily Quercus agrifolia with one Aesculus califiornica, and one Umbularia californica.

I pulled up a previous arborist report from the County website that was created for the 634 Palomar Drive, Redwood city. This report was submitted from the Tree management experts and was included in the architechtural report from M-design Architecture.This report identified the trees on the property, showed the proposed new home construction, and recommended trees for removal due to construction.

Background on the 634 Palomar Drive property and the neighbors property 738 Loma Court and 0 Los Cerros. These are neighboring properties above Palomar road and have a history of significant landslides, and loss of homes. The landslides have been occurring as far back as the 1940's , and as recently as 2018. The landslides are primarily caused by the steep terrain with a significant water source from a spring located approximately 100' above 738 Loma Court. There are documented findings of seepage year round onto Palomar road, below both 634 Palomar road and the property that borders Palomar road from 738 Loma Court. The seepage from the spring fans out considerably in a North South direction as it drains downhill towards Palomar road.

The trees that are identified for removal in the report from the Tree management experts along the property line. The report referred to is dated 12/1/2020
My concern is the specific trees referred to in the report identifying trees #14, 15, 16, 17. These trees are called out for removal being within the footprint of construction of the proposed new home construction and septic line installation.

The five trees in this area are mature trees, except for the 5" diameter Bay laurel. These trees consist of (3) Quercus agrifolia "Oak", (2) Aesculus californica "Buckeye", and one Umbellularia californica "Bay laurel". I assessed these trees from the property line and all are in good to fair condition. They are situated primarily within 3 to 7 feet of the property boundary lines bordering the properties.

Site overview for lots and slide area. (Appendix A: Site Overview)

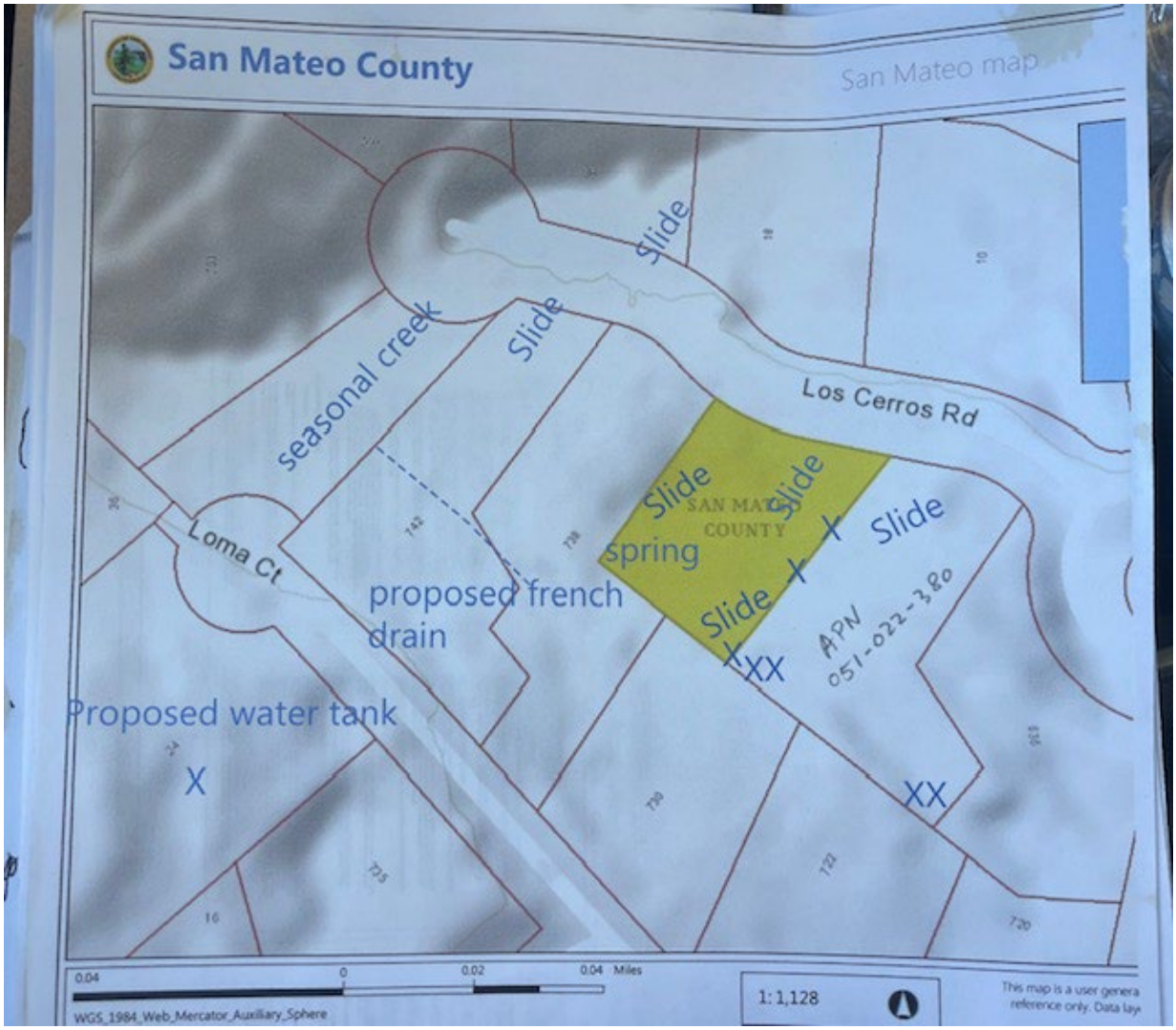
RECOMMENDATIONS

My concern is that the removal of these trees would further decrease the stability of the slope and hillside. As evidenced in pictures of the most current landslide on the 0 Los Cerros and 738 Loma court property. The slide directly below the trees and their root zones that were established, leaving the trees intact and the slope in that area partially unmoved. Also the amount of water that these trees uptake daily is significant in dewatering the hillside. Any moisture that can naturally be removed from these slopes has a significant value.

Trees are an integral part of slope stabilization alone, and with an already saturated soil environment year round. It is my recommendation that these trees remain.

It is my opinion that the footprint of the septic lines and the house plans should be moved to substantiate the preservation of these trees, and their very important role in preserving the hillside and protection of both properties.

APPPENDIX A: SITE OVERVIEW



Site overview for lots and slide area.

APPPENDIX B: TREE PHOTOGRAPHS


CAUTION

Photos of the trees involved.

QUALIFICATIONS, ASSUMPTIONS, AND LIMITING CONDITIONS

Any legal description provided to the arborist is assumed to be correct. Any titles or ownership of properties are assumed to be good and marketable. All property is appraised or evaluated as though free and clear, under responsible ownership and competent management.

All property is presumed to be in conformance with applicable codes, ordinances, statutes, or other regulations.

Care has been taken to obtain information from reliable sources. However, the arborist cannot be responsible for the accuracy of information provided by others.

The arborist shall not be required to give testimony or attend meetings, hearings, conferences, mediations, arbitrations, or trials by reason of this report unless subsequent contractual arraignments are made, including payment of an additional fee for such service.

This report and any appraisal value expressed herein represent the opinion of the arborist, and the arborist fee is not contingent upon the reporting of a specified appraised value, a stipulated result, or the occurrence of a subsequent event.

Sketches, drawings, and photographs in this report are intended for use as visual aids, are not necessarily to scale, and should not be construed as engineering or architectural reports or surveys. The reproduction of information generated by architects, engineers, or other consultants on any sketches, drawings, or photographs is only for coordination and ease of reference. Inclusion of said information with any drawings or other documents does not constitute a representation as to the sufficiency or accuracy of said information.

Unless otherwise expressed: a) this report covers only examined items and their condition at the time of inspection; and b) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee,

expressed or implied, that structural problems or deficiencies of plants or property may not arise in the future.

CERTIFICATION OF PERFORMANCE

I, Richard Smith, Certify:

That I have personally inspected the tree(s) and/or the property referred to in this report, and have states my findings accurately. The extent of the evaluation and/or appraisal is stated in the attached report and Terms of Assignment;

That I have no current or prospective interest in the vegetation or the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved;

That the analysis, opinions and conclusions stated herein are my own;

That my analysis, opinions, and conclusions were developed and this report has been prepared according to commonly accepted Arboricultural practices;

That no one provided significant professional assistance to the arborist, except as indicated in the report.

That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party, nor upon the results of the assessment, the attainment of stipulated results, or the occurrence of any other subsequent events;

I further certify that I am an I.S.A. Certified Arborist in good standing with The International Society of Arboriculture. I hold a valid Qualified Applicators License with California Department of Pesticide Regulation. I have been involved with the practice of Arboriculture and the care and study of trees since 1997.

Richard Smith

I.S.A. Certified Arborist WE-8745A

Tree Risk Assessor Qualified

COUNTY OF SAN MATEO
PLANNING AND BUILDING

County Government Center
455 County Center, 2nd Floor
Redwood City, CA 94063
650-363-4161 T
650-363-4849 F
planning.smcgov.org

VIO2012-00127

Summary of Case Activity

APN: 051022380

ADDRESS: LOS CERROS & PALOMAR, PALOMAR PARK

Possible grading

Activity	Date Assigned	Done By	Status	Status Date
Case Closed	06/12/2013	Michael Crivello	DONE	06/12/2013
Case closed PLN2013-00056 to correct violation				
Miscellaneous Action	03/07/2013	Summer Burlison	DONE	03/07/2013
3/7/13 SSB - See PLN2013-00056 to address this violoation. Mr. Guilbot, submitted Grading Exemption application on 2/11/13.				
Correspondence Received	01/02/2013	Michael Crivello	DONE	01/02/2013
Letter giving Tony Guilhot to act on property owners behalf.				
Miscellaneous Action	01/02/2013	Summer Burlison	DONE	01/02/2013
Owner, Bob Kirk, came in to counter requesting extension on VIO notice. He has calls in to civil engineers but due to holidays he's not gotten any responses yet. Ana S. approved an extension until 1/18/2013.				
Meeting	12/21/2012	Camille Leung	DONE	12/21/2012
1/18/13 CML - Daniel has installed erosion control per plan & photos submitted. He will install additional EC per civil enginner (fiber rools downslope of disturbance) within 7 days. He still needs to submit EIF form & C3/C6 form (civil will need to provide grading quantities & fill out C3/C6 form), within 7 days. 12/21/12 CML - Met with tenant (Daniel Guilhot) at the counter. Requested the following to determine if a grading permit or ther permit is required. He shall provide this information within the time frame given by Mike C.: - Erosion Control to be applied ASAP. - EIF form with grading quantities by civil engineer. - C3/C6 form to see area of disturbance by civil engineer. - Site plan showing area of grading signed by a civil engineer.				
Received Telephone Call	12/20/2012	Olivia Boo	LOOK	12/20/2012
Received call from owner at counter. He asked how to rectify situation. Per Lisa I asked him to submit an erosion control plan prepared by a civil engineer & sent him soft copy of the C.3/C.6 forms & the general erosion & sediment control form. He said his neighbor who did the non-permitted activity will be fixing the situation. I asked him to write a letter that he must give to his neighbor authorizing his neighbor to work on his behalf.				
Notc Of A/V and Nuis. (1) Sent	12/13/2012	Michael Crivello	DONE	12/13/2012
Follow-up Inspection	12/10/2012	Michael Crivello	DONE	12/10/2012
Met with property owners and inspected property, the access road to the upper property was covered in loose soil and appeared to have fresh fill added to it. Mr. Kirk (property owner confirmed that the road appeared to be wider than before and that the fill placed at the top was new. He stated that he did not authorize this work to be done, his neighbor at 636 Palomar took it upon himself to widen and place fill on the road. The neighbor (Tony 636 Palomar) stated that he placed no more than one foot of fill on road and only widened it slightly. Tony has placed some burlap down on the slopes along with straw wattles to control erosion. At the bottom of the slope there is approximately 2 plus feet of dirt being held by 4?x8? sheets of plywood.				
Inspection - 100 Followup Inspection	12/10/2012	Michael Crivello	Done	12/10/2012
Follow-up Inspection	12/04/2012	Michael Crivello	DONE	12/04/2012

Activity	Date Assigned	Done By	Status	Status Date
Drive by of property and saw gate open, stopped and attempted contact with property owner at 636 Palomar, steps to front door did not appear safe, shouted numerous times but knowone answered. I did see that a cement block retaining wall was being put in approx. height is 8 feet, also the dirt road appears to be slipping down the hill. There are numerous wide cracks in the dirt and it was extremely soft to walk on. Additionally there are tarps everywhere in an attempt to control run-off, however I saw no errosion control measures in place.				
Inspection - 100 Followup Inspection	12/04/2012	Michael Crivello	Done	12/04/2012
Received Telephone Call	12/04/2012	Michael Crivello	DONE	12/04/2012
Call from Rob Kirk, stating that he will meet me Friday 12/7/2012 at the property.				
Assign PRIORITY 3	11/20/2012	Michael Crivello	DONE	11/20/2012
Case Opened	11/20/2012	Michael Crivello	DONE	11/20/2012
Complaint Received	11/20/2012	Michael Crivello	DONE	11/20/2012
Field Inspection	11/20/2012	Michael Crivello	DONE	11/20/2012
No access to property				
Inspection - 001 Initial Inspection	11/20/2012	Michael Crivello	Done	11/20/2012
Research Ownership	11/20/2012	Michael Crivello	DONE	11/20/2012
SEE CASE NOTES	01/28/2013	HISTORICAL	No Disp	01/01/1900
see notes				

HEALTH SERVICES AGENCY

APN
051 022 430

June 10, 2008

Ms. Lisa Costa Sanders
Planner
Community Development Department
600 Elm Street
San Carlos, CA 94070

Subject: 21 Estrada Place Palomar Park, CA 94062

Dear Ms. Sanders:

Environmental Health has received complaints of failing septic system that have been confirmed at the above referenced address. Effluent was observed overflowing the land onto the street and is creating a public health threat.

Due to the nature of the drain field area for this lot (small) and the age of the septic system which is approximately 50 years old, it is unlikely that the system can be repaired. In fact several attempts have been made by the owner to remedy the failing system unfortunately, it continued to fail mainly because there is insufficient useable area on the property.

Since this house is located in a sewered area and there is a Public Sewer with 200 feet, the Unified Plumbing Code prohibits the issuance of a septic repair permit. Since the existing septic system is not functioning properly and therefore is a threat to public health, I am hereby requesting that the City of San Carlos make a connection to public sewer available for this property once the owner has paid all the appropriate fees.

If there are any questions regarding this matter, please do not hesitate to contact me at 650-372-6249.

Sincerely,

Panaka Chea, REHS
Land Use Program
San Mateo County
Environmental Health