COMMUNITY DEVELOPMENT AGENCY PLANNING DIVISION

October 17, 2018

TO: Marin County Planning Commission

SUBJECT: Appeal of the Tarigo Design Review and Second Unit Draft Initial Study Assessor's Parcel: 168-034-14 21 Barranca Road, Lagunitas

Dear Planning Commissioners,

Since the distribution of the previous staff memo, the applicant submitted a letter to Supervisor Rodoni on October 8, 2018 (attachment 1) with a number of assertions, which are addressed below. Further, staff has provided clarifications and additional information below about CEQA and Marin County Code requirements.

Response to Applicant's Letter

The October 8th letter from the applicant states: "The errors contained in the Initial Study could easily have been avoided by allowing us an opportunity to comment on the data before it was issued, which then required us to appeal, and now to pay County staff \$128/hr to fix their own mistakes, notably the citing of an outdated 2014 hydrology report prejudicially impugning the hydraulic performance of the bridge, and two errors inflating proposed TIA by nearly 3000sf. The former remains uncorrected and appears to remain the primary basis for requiring an EIR, while the latter two have been corrected but with no change to the required mitigation measure which cited the need to lower TIA as the basis for it."

The applicants assert that it was an error for the Initial Study to reference a hydrology report that was submitted in 2014, when updates to that report had been submitted at later dates. This is incorrect; Public Works staff carefully reviewed all of the hydrological information submitted and the conclusions in the Initial Study reflect their review. In addition, the reference list attached at the end of the Initial Study has been revised to reflect all of the reports, but there are no substantive revisions necessary to the Initial Study.

The applicants also assert that planning staff did not provide them with an opportunity to comment the data before it was issued. This is not the case. Planning staff sent the project description to the applicant for review with a request that they inform us of any inaccuracies before staff continued with the impact analysis. The applicants did not submit any objections to the project description. As soon as the impacts analysis was complete, staff sent the entire Initial Study to the applicants, which they subsequently appealed.

The applicants have also asserted that the "TIA" indicated in the Initial Study was incorrect. This is not the case. The impervious surface calculations were based on the information submitted with the application, which called for Tufftrak being used as a surface material. Tufftrak may be either pervious or impervious depending on how it is installed. Since the application materials did not specify the coefficient of runoff from the Tufftrak, and CEQA calls for the worst case scenario to be evaluated, the Initial Study correctly assumed that the Tufftrak would be impervious. As noted previously, the applicants did not object to the project description provided to them for comment. While there was no factual error in the Initial Study, the applicants provided supplemental materials regarding the existing and proposed lot coverage after the Planning Commission hearing proposing to install the Tufftrak in a manner that avoids additional lot coverage. This proposal essentially mirrors a portion of the mitigation measure's requirements, and therefore staff has revised the Initial Study based on the new information submitted by the applicants.

In summary, there were no misrepresentations or factual errors made in the Initial Study, but it has been revised based on new information submitted by the applicants.

Further Code Clarification

The previous supplemental memo referenced Marin County Code (MCC) section 24.04.520(d), which relates to bridge design and freeboard requirements. Determinations on exception requests are appealable to the Planning Commission.

However Mitigation Measures 1.B.1 and 1.B.2 are also based on a Department of Public Works (DPW) staff determination using MCC 11.08.

MCC section 11.08.00 Purpose of chapter states: "nonindigenous material of whatsoever kind which, at any time, interferes with the free and unobstructed flow of water in any creek constitutes a public nuisance and is subject to summary abatement,"

MCC section 11.08.010 - Interfering with water flow states "It is unlawful for any person to dump or place, or to permit to be dumped or placed, deposited, maintained or accumulated in any natural watercourse on public or private property any debris, garbage, rubbish, trash, brush, timber, dirt, fill, rocks, waste piles, or any other commodity whatsoever which obstructs, prevents, divers, or tends to obstruct, prevent or divert the normal, natural or ordinary flow of water in such watercourse."

MCC section 11.08.020 contains the following substantive standard: "Every owner of property in the district shall, at all times, keep all creeks or portions thereof which flow upon, over, or across, the property of the owner free and clear of debris, rubbish, or any other unnatural obstruction which measurably reduces the hydraulic capacity of the creek."

MCC section 11.08.040 - Free flow of water required—Issuance of building permits.

"Before issuing any building permit for the erection or construction of any building or structure, the building inspector shall determine whether or not such structure or building would interfere with free flow of any water in any creek in the county. If in the opinion of the building inspector such building or structure would interfere with the flow of water in any season, the building permit shall not be issued until the applicant or owner of the premises involved has made ample provisions for the free flow of water in the channel of the creek. The building permit may be issued only after provision for the flow of water has been completed or upon the posting of a bond to complete such work within such time and within such amount as the building inspector may require."

MCC Section 11.08.050 states: "The construction, placement, alteration or repair of any structure described in Section 11.08.050 shall not be commenced until a creek permit has been applied for and obtained from the director of public works (hereinafter referred to as director) as provided herein."

MCC Section 11.08.050 goes on to state: "If the proposed construction is included in work which requires a building permit or any other permit issued by the county, the director of public works may waive the requirements of this section, if all conditions which would be required by the director of public works hereunder or in applicable provisions of Chapter 23.09 are made conditions of the other permit issued by the county."

Section 11.08.050 allows for a Creek Permit to be waived to a Building Permit only if the proposed development meets all the substantive requirements for Creek Permits, which would be the case if the mitigation measures continue to include locating the bridge abutments outside of the stream channel and meeting the freeboard requirements. However, if the Planning Commission overrides the mitigation measures and does not require the bridge to be rebuilt up to code, then a Creek Permit will be required.

With respect to the appeal rights related to Creek Permits, MCC section 11.08.060 states: "Any person dissatisfied with any action herein taken by the director may appeal the same to the board of supervisors, in writing, within ten days after notification thereof. The board shall conduct a hearing on such appeal and its decision shall be final."

In other words, only the Board has the authority to override the substantive requirements of a Creek Permit.

MCC 11.08.070 - Structures deemed nuisance when.

"Any retaining wall, bulkhead or other similar structure hereafter constructed without a permit as required by Section 11.08.060 shall be deemed a public nuisance and may be abated in accordance with Chapter 1.05."

Important Note Regarding the CEQA determination

Should the Planning Commission choose to override DPW's interpretation of MCC 24.04 and 24.15 and the corresponding necessity of Mitigation Measures MM 1.B.1 and 1.B.2, there still remains an unmitigated impact in the Draft Initial Study and, therefore, an EIR would be required, pursuant to State CEQA Guidelines Section 15064(a)(1). Our current record contains substantial evidence that the project may have a significant effect on the environment, regardless of the code interpretation. Substantial evidence includes facts, reasonable assumption predicated on facts, and expert opinion supported by facts (State CEQA Guidelines Section 15384). It is the expert opinion of our DPW staff that without removal of the unpermitted bridge, as required in Mitigation Measures 1.B.1 and 1.B.2, the project could result in significant impacts to the physical environment. The legal standard is that an EIR is required if a fair argument, based on substantial evidence, exists that a project may have a significant effect on the environment that cannot be mitigated. Once a fair argument exists, it generally does not

matter how much evidence supports the opposite conclusion of a less than significant effect. Given this, despite the contradicting opinion of the applicant's hydrologist, DPW staff's expert opinion alone is enough to require preparation of an EIR if the impacts are not mitigated to a less than significant level in the Draft Initial Study. That is the outcome of a disagreement among experts. If the Draft Initial Study does not include adequate mitigation measures or if the applicant continues to decline to agree to the existing mitigation measures identified in the Draft Initial Study, then the project does not qualify for a Draft Mitigated Negative Declaration.

ATTACHMENTS:

- 1. Email from applicant received October 5, 2018
- 2. Email from Ana Hilda Mosher with letter from applicant dated October 8, 2018
- 3. Track-changed reference page from the Initial Study
- 4. Email from Sarah Phillips with Marin Resource Conservation District received October 9, 2018
- 5. Email from Aldo Tarigo received October 11, 2018 with corresponding attachments
- 6. Three emails from Aldo Tarigo received October 15, 2018 with corresponding attachments
- 7. Email from Aldo Tarigo received October 16, 2018

From: Aldo Tarigo <aldo.arch@gmail.com>
Sent: Friday, October 05, 2018 5:13 PM
To: Taylor, Tammy <TTaylor@marincounty.org>
Cc: Adrienne Terrass <aterrass@gmail.com>; Reid, Rachel <rreid@marincounty.org>; Tejirian, Jeremy <JTejirian@marincounty.org>
Subject: Re: Tarigo Initial Study- Track Changes

HI Tammy,

Given the track record on this project thus far, I can't say I'm surprised by the retention of the requirement to remove the heart of our project, namely the Studio, in its entirety, but what now is the basis for its removal? The project shows a net reduction in impervious area by 1698 sf, consistent with CWP policy, and re-development is consistent with ARP-2 zoning. This basic understanding of the project goes back to work with the original planner, Lorene Jackson. Also, all of the potential runoff is collected and routed through the rain garden.

In addition, there has been no correction of the reference to the outdated 2014 hydrology report. In part, it is based upon outdated site parameters and prior to the removal of the creek wall, which have a profound impact on the hydraulics of the bridge. It has been superseded by the 2016 report and the Nov 2017 supplement, and we do not authorize its use.

BTW, the requested funds were mailed today. Aldo

On Fri, Oct 5, 2018 at 12:19 PM Taylor, Tammy <<u>TTaylor@marincounty.org</u>> wrote:

Hi Aldo,

I am attaching the track-changed initial study for your project, having made the corrections that you had requested in your correspondence. I will also send the track-changed pages to the

Planning Commission in advance of the upcoming hearing on Monday, October 22nd. Exhibit B has been modified in accordance with the changes to the Mitigation Measure, and I have attached it here for your reference as well. If you have any questions, please let me know.

Thank you,

Tammy Taylor PLANNER

County of Marin Community Development Agency 3501 Civic Center Drive, Suite 308 San Rafael, CA 94903 415 473 7873 T 415 473 7880 F CRS Dial 711 ttaylor@marincounty.org

Email Disclaimer: <u>https://www.marincounty.org/main/disclaimers</u>

From:Taylor, TammyTo:Lo-Lew, VivianSubject:FW: 21 Barranca second thoughtsDate:Tuesday, October 16, 2018 11:10:39 AMAttachments:21 Barranca Rd second thoughts.pdf

-----Original Message-----From: Mosher, Ana Hilda Sent: Monday, October 08, 2018 8:24 AM To: Taylor, Tammy <TTaylor@marincounty.org>;

ANA HILDA MOSHER SENIOR SECRETARY/PLANNING COMMISSION SECRETARY

County of Marin Community Development Agency 3501 Civic Center Drive, Suite 308 San Rafael, CA 94903 415 473 6278T 415 473 7880 F 415 473 2255 TTY CRS Dial 711 amosher@marincounty.org STAY CONNECTED:

"Please consider the environment before printing this email or attachments"

-----Original Message-----From: Adrienne Terrass <aterrass@gmail.com> Sent: Monday, October 08, 2018 1:21 AM To: Rodoni, Dennis <DRodoni@marincounty.org> Cc: Cordova, Lorenzo <LCordova@marincounty.org>; Tejirian, Jeremy <JTejirian@marincounty.org>; Rojas, Raul <RRojas@marincounty.org>; tlai@mairincounty.org; Mosher, Ana Hilda <AMosher@marincounty.org>; Aldo Tarigo <aldo.arch@gmail.com> Subject: 21 Barranca second thoughts

Dear Supervisor Rodoni,

Following up on my letter of September 20, 2018, I've attached an update. Please let me know what you are able to find out regarding the anticipated 2007 CWP. I'll look forward to your reply.

Sincerely, Adrienne Terrass October 8, 2018

Dennis Rodoni Marin County Board of Supervisors 3501 Civic Center Drive, Suite 329 San Rafael, CA 94903

Dear Supervisor Rodoni,

I wish to apologize for the final line of our letter of September 20, 2018, which was added in a misguided moment of pique in frustration over a longstanding situation related to but not entirely germane to our plea to you. We replaced our bridge without a permit, for understandable reasons under pressing circumstances, and it has cost us an extraordinarily expensive decade and infringed our freedom to rebuild our utterly dilapidated house; it was not a concerted strategy to get away with something that would otherwise be denied permission, as in the situation I referred to in that letter. I had evidently worked myself into activist mode, otherwise suppressed, inappropriate to our appeal for your help, and I regret any affront I caused to anyone. I hope you will find it forgivable if not excusable, and I wish I had caught it before sending it. Aldo joins me in wishing we had simply restated our request for your assistance in obtaining fair treatment for citizens trying to negotiate a complicated civil process, without yet again being delayed by the ongoing politics surrounding the 2007 Countywide Plan.

In any case, time is very much of the essence for us to gain approval for our project before the timeline of the Cumulative Impacts Analysis and the CWP overtakes us and requires we repeat a process which has already cost far too much time and money to be reasonable. There has been no advantage in being under 1994 rules, nor are we exploiting an opportunity to evade those of 2007; we designed our project to meet or exceed the intent of the 2007 CWP, and feel our proposal would contribute a very substantial improvement to the creek environment both onsite and downstream. Yet Jeremy Tejirian stated at our PC hearing that if a court ruling is made while we are still in this process, the Initial Study would have to be rewritten to update to 2007 regulations, at further expense and delay. After so much of both already, together with DPW's obstruction, this would be a travesty of civil procedure. He also acknowledged that the "bringing forward" of the IS had been delayed to allow comparison to the draft CIA in coming up with the mitigations to be required for our project, mitigations only necessitated by their foundation on erroneous data.

The errors contained in the Initial Study could easily have been avoided by allowing us an opportunity to comment on the data before it was issued, which then required us to appeal, and now to pay County staff \$128/hr to fix their own mistakes, notably the citing of an outdated 2014 hydrology report prejudicially impugning the hydraulic performance of the bridge, and two errors inflating proposed TIA by nearly 3000sf. The former remains uncorrected and appears to remain the primary basis for requiring an EIR, while the latter two have been corrected but with no change to the required mitigation measure which cited the need to lower TIA as the basis for it. As we continue to address these misrepresentations, we need your help to ensure our project will not be further delayed by a court ruling. We need a detailed account of the sequence of events expected to ensue in the legal and political process regarding the CWP, and specifically need to be informed as soon as it is known of the court date for any ruling which could put us under different regulations. We have heard tell of this timeline taking anywhere from a month or two to a year or more. As your constituents, we hope you will take this request to heart.

The outcome of a meeting between our hydrology engineers and DPW was as follows: "Marin County DPW maintains the recommendation and proposed mitigations related to the bridge, regardless of any further supporting hydrologic information or analysis. The primary issue is the bridge is located within

the banks of the channel and is in direct violation of the County code..... Further, it is unclear if the preparation of an EIR document would result in any different outcome."

MCC §24.04.875 - Vehicular bridges - includes the discretionary statement "wherever possible," specifying: "vehicular bridges over streams protected under Marin countywide plan stream conservation policies shall be designed wherever possible to cantilever over the watercourse to minimize disturbance of the stream." Our property is a place where it would not be possible, but markedly infeasible, yielding a massive structure dramatically over-scaled for the site at over twice the size, doubling the environmentally undesirable TIA, be problematic on approach, weigh 94 tons, and cause drainage issues for the house which don't currently exist.

This refusal to look at code factually cannot possibly amount to the "substantial evidence of significant impact" claimed to exist and be sufficiently compelling to require an EIR, so we need your assistance to find out just what the evidence being claimed is so that we can weigh our legal options. We will insist that CEQA is applied as intended, and it should be noted that there is a burden of proof on the Lead Agency to provide "substantial evidence of significant impact" to require an EIR.

We hope the Planning Commissioners and the Supervisors will insist on an impartial assessment of the data in the record as is required by CEQA and will rule based on real evidence unhindered by the doubt sown by staff regarding the actual performance of our project.

We'll follow up in a few days, Thank you for your consideration to these matters.

Sincerely,

Adrienne Terrass 21 Barranca Rd., Lagunitas

Cc: Jeremy Tejirian, Raoul Rojas, Tom Lai, Ana Mosher, Marin Planning Commission, Lorenzo Cordova

http://www.marinmap.org/Geocortex/Essentials/Marinmap/Web/Viewer.aspx?Site= MMDataViewer.

- 28. Lagunitas School District, official website, available online at http://lagunitas.org. Accessed March 20, 2018.
- 29. Marin County Fire Department, Woodacre Fire Station, available online at http://www.marincounty.org/depts/fr/divisions/operations/stations/woodacre. Accessed March 20, 2018.
- 30. Marin County Sheriff Department, official website, available online at https://www.marinsheriff.org/about-us/field-service-bureau/patrol-division. Accessed March 20, 2018.
- 31. Marin County Department of Public Works. Inter-office memorandum, by David Nicholson. May 9, 2012.
- 32. Marin County Code Title 11, 22 (2013), 24, and 34.
- 33. <u>CSW/Stuber Stroeh Engineering Group, Inc. Tarigo Hydrology and Hydraulic Analysis, including Supplemental Hydrological and Hydraulic Calculations. Revised December 19, 2016, and supplemented on August 1, 2017 and November 30, 2017. Analysis for 21 Barranca Road, Lagunitas, CA. Received January 25, 2017, August 2, 2017 and December 15, 2017 respectively. <u>CSW/Stuber-Stroech Engineering Group, Inc. 2014. Hydrology and Hydraulic Analysis for 21 Barranca Road, Lagunitas, CA. Received January 25, 2017, August 2, 2017, CSW/Stuber-Stroech Engineering Group, Inc. 2014. Hydrology and Hydraulic Analysis for 21 Barranca Road, Lagunitas, CA. September 2, 2014.</u></u>
- 34. Tarigo Design Review plans, including civil engineering plans, architectural plans, and landscape plan, received March 6, 2018.
- 35. Marin County Williamson Act FY 2016/2016 Map, CDA—Planning Division online map at: ftp://ftp.consrv.ca.gov/pub/dlrp/wa/Marin_15_16_WA.pdf
- CalRecycle, Facility/Site Summary Details: Redwood Sanitary Landfill (21AA0001), available online at: http://www.calrecycle.ca.gov/SWFacilities/Directory/21-AA-0001/Detail/. Accessed MARCH 26, 2018.
- 37. CSW/Stuber-Stroech Engineering Group, Inc. 2017. Tarigo Hydrology, Supplemental Hydrological and Hydraulic Calculations. November 30, 2017.
- 38. Marin County Department of Public Works. Inter-office memorandum, by Roger Bray. March 15, 2018.

From: Tejirian, Jeremy
Sent: Friday, October 12, 2018 10:27 AM
To: Taylor, Tammy <TTaylor@marincounty.org>; Reid, Rachel <rreid@marincounty.org>
Subject: FW: Tarigo at 21 Barranca Rd._Lagunitas

From: Sarah Phillips <<u>sarah@marinrcd.org</u>>
Sent: Tuesday, October 09, 2018 6:40 PM
To: Davidson, Berenice <<u>BDavidson@marincounty.org</u>>; Tejirian, Jeremy
<<u>JTejirian@marincounty.org</u>>
Cc: Aldo Tarigo <<u>aldo.arch@gmail.com</u>>; Lai, Thomas <<u>TLai@marincounty.org</u>>
Subject: Tarigo at 21 Barranca Rd._Lagunitas

Good Evening All,

I'm emailing with regard to the project located at **21 Barranca Rd. Lagunitas, CA**. Mr. Tarigo recently contacted the Marin RCD to update me that his project is still on hold despite the two Marin Project Coordination (MPC) meetings he attended (1/21/15 and 5/4/17), the regulatory site visit that I coordinated and facilitated on June 15, 2017 (notes attached), and a recent hearing before the Planning Commission.

To the best of my understanding, this remodeling/home improvement project is on hold until the bridge is approved by Land Development and that Land Development requires that the bridge allow for 2' of free board from water surface elevation (WSE) to the bottom of the bridge, during a 100-year flood event. During the regulatory site visit last summer, Michael Napolitano (a well-known hydrologist and fluvial geomorphologist for the SF Regional Water Quality Control Board or SF RWQCB) provided consult to Mr. Tarigo during and after the site visit regarding the use of more appropriate hydrological models in order to more accurately look at the hydraulics for the project area, which by doing so, seemed to allow for the required amount of free board Land Development is requiring.

I also understand that Ms. Davidson cannot issue a permit for the bridge without state and federal permits acquired and provided in advance of her approval. As it stands, Mr. Tarigo did not obtain state and federal permits to construct his bridge. CA Dept of Fish & Wildlife (CDFW) **cannot** retropermit projects but if they find them egregious enough, they'll impose a violation via a visit from their game warden, which they have not nor intend to do with Mr. Tarigo for the construction of the bridge. A regulator from CDFW was present at the site visit and did not request for proof of permits

for the bridge and was in fact well aware that the bridge was unpermitted by the CDFW agency. SF RWQCB **does** carry out retro-permits however, they have never asked that Mr. Tarigo submit materials to retro permit his bridge despite the SF RWQCB being present and aware of the bridge discussed during the two MPC meetings and one of their regulators having attended the site visit last year. Army Corps of Engineers is aware of the complexities around this project and has not requested that Mr. Tarigo submit an application for a 404 Permit. Finally, National Marine Fisheries Service was also present at the site visit last summer and did not request that Mr. Tarigo go through a retro-permitting process.

I would be happy to reach out to each of the regulators who have jurisdiction over the bridge that was constructed to get their feedback, if it would be productive in resolving issues holding this project back. Again, the regulators are all aware of this unpermitted bridge, they saw it during the site visit and they still did not ask Mr. and Mrs. Tarigo to submit permit applications to retro-permit the bridge.

All of that being said, I am simply following up on this project in effort to support the creekside landowner per his recent request and in trying to be helpful to local County regulators in obtaining the requested/necessary information they need in order to move this project forward. I am hopeful that some level of resolution can be found regarding the complexities around this project. Please let me know how I may be of better service to each of you.

FYI: Regulatory Site Visit Attendees 6/15/2017

- Roger Bray, Marin County Land Development
- Jocelyn Drake, Marin County CDA
- Rob Carson, Marin County DPW
- Rick Rogers, NMFS NOAA
- Nicole Fairley, SF RWQCB
- Michael Napolitano, SF RWQCB
- James Hansen, CDFW
- Ryan Watanabe, CDFW
- Sarah Phillips, Marin RCD
- Mr. and Mrs. Tarigo
- Roberta Morganstern, ACOE (I cannot recall if she was present or not as I'm still waiting to hear back from her about her attendance at that field visit)

Kind Regards,

Sarah Phillips

Urban Streams Program Manager Marin Resource Conservation District PO Box 1146 Point Reyes Station, CA 94956 t 415.663.1170 ext 302 f 415.663.0421 <u>Sarah@marinrcd.org</u> <u>www.marinrcd.org</u>

"A less than perfect solution that everyone develops and buys into, protects the resources better than the "perfect solution" that we [the agency] develop and no one complies with." –CA Fish and Wildlife Enforcement Officer

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Site Visit on June 15, 2017 Aldo & Adrianne Tarigo 21 Barranca Rd. Lagunitas, CA Prepared By: Sarah Phillips at Marin RCD

Challenge

Homeowners need a building permit to remodel home but cannot get that permit until the unpermitted bridge on the property is first retroactively permitted. For the bridge to be permitted, it needs to pass the 100 year flood event which means having to conduct some actions upstream and downstream of the bridge to obtain sufficient freeboard for water conveyance passing under the bridge.

Options

- Remove section of concrete retaining wall to then slope bank back to 2:1 and vegetate appropriately (need to resolve the 20' buffer issue with county's flood control district requirements)
- Remove dam immediately downstream of bridge
- Dredge creek bottom in specific area(s) to add capacity of water to pass below bridge according to requirements

1st Stop (furthest upstream): County culvert

- Concrete culvert will be replaced by the County
- Not a high priority
- Will pass 100-year flood event once replaced
- Will need to ensure to maintain bed elevation to prevent headcutting and upstream incision

Downstream 20'-30'

- Noted mass wasting on right bank
- Seemingly self-stabilized and mostly consists of cohesive compacted clay
- No need to do anything other than potentially planting trees along top of bank
- Noted active bed mobility, little embeddedness
- Substantial grade control exists via exposed bedrock and mature bay laurel trees (*Umbellularia californica*)

Suggested Changes to Design

- Do not construct a swale
- Potentially look into adding a berm along the top of the new 2:1 sloped bank postremoval of the designated section of retaining wall, plant thereafter with appropriate native riparian species (this will need to be worked out with DPW's flood control district regarding the mandatory 20' set back)

Final Recommendations

The TR55 model may be overestimating the 100-year flow event. If the hydrology report can demonstrate the existing bridge can pass the 100-year flow, then mitigation actions are not necessary.

Recommended by SFRWQCB:

---Hydrologist needs to look at the 90% confidence intervals around the estimated 100year peek

---Have hydrologist cross check the model comparing it to local gage data (i.e. San Geronimo Creek MMWD gage per Balance Hydrologics)

---Hydrologist may reach out to Mike Napolitano at SF Regional Water Quality Control Board to confirm what concise queries need to be made

Michael.Napolitano@waterboards.ca.gov (510) 622-2397

If by adding the confidence intervals, the bridge still cannot pass the 100-year flood event, then have hydrologist rerun the model to look at results of how specific actions allow conveyance below bridge:

- First have the consultant look only at the partial removal of the concrete retaining wall to create a 2:1 sloped bank to see if that will meet the requirements for conveyance of the 100-year flood event. This action will allow more capacity for the creek and will serve as an ecological improvement.
- 2. Then, if that is not enough, add in the removal of the dam immediately downstream of bridge to see if those two combined actions will meet the requirements for conveyance of the 100-year flood event
- 3. Finally, if those two actions are not enough, then ultimately add in the third piece of strategic dredging to ensure meeting the requirements for conveyance of the 100-year flood event
 - a. If calculations show that dredging is required, look into whether the project can be carried out in two phases 1) retaining wall removal for 2:1 slope and dam removal in year I then follow up the next year with phase II which would be dredging. This was suggested because it is possible that by removing the dam, the channel may self-dredge after winter events thus allowing required conveyance and not requiring dredging after all

From:	Taylor, Tammy
To:	Lo-Lew, Vivian
Subject:	FW: 21 Barranca documents
Date:	Tuesday, October 16, 2018 11:14:13 AM
Attachments:	Bridge Construction 2018.10.22.pdf Binder-calcs-2018-10-08 - stamped and signed.pdf

From: Aldo Tarigo <aldo.arch@gmail.com>
Sent: Thursday, October 11, 2018 4:21 PM
To: Taylor, Tammy <TTaylor@marincounty.org>
Subject: 21 Barranca documents

Hi Tammy, Attached are two PDF files in support of the structural design of the bridge. Aldo



21 Barranca Road Site Plan



Barranca Creek Partial Site Plan Removal of Existing Creek Wall North of Bridge



Old and New Bridge Plans As submitted in 2012.



Bridge Structural Long Section As submitted in 2012.



Bridge Structural Cross Sections As submitted in 2012.



Old Wood Bridge at Barranca Creek Condition of bridge in 1994



Old Wood Bridge at Barranca Creek Condition of bridge in 2006



Old Wood Bridge at Barranca Creek Condition of bridge in 2006 showing deterioration just before the collapse of one of the principle support logs.



Removal of Old Wood Bridge, Sept. 2006 Blue tarp prevented debris from falling into creek.



New Concrete Bridge Construction, October 2006

Scaffolding and lower slab reinforcing per plan: #6 span bars at 8", #4 cross bars at 12", and #4 bars at center to tie the slabs together.



New Concrete Bridge Construction, October 2006 Placement of key stones tied to reinforcing. Note double layer of footing reinforcing in lower right.



New Concrete Bridge Construction, October 2006 Showing scaffolding, plastic barrier and clear water below.



New Concrete Bridge Construction, October 2006 Addition of form work for 8" perimeter stem wall.



New Concrete Bridge Construction, October 2006 Placement of concrete in lower slab. Note work at highest industry standards.



New Concrete Bridge Construction, October 2006 Completed first pour showing #4 tying bars to be bent over and connected to upper slab reinforcing



New Concrete Bridge Construction, October 2006 Completed first pour showing cavity to receive gravel fill.



Completed Structural Concrete Bridge, February 2007 Upper slab poured and forms removed in early November 2006.



Dam and Completed Structural Bridge, February 2007 Note generous height and span. Bridge is 12" thick at mid span and weighs 43 tons.



Finished Bridge South Face Shown during a peak storm event in December 2012


Bridge Span Over Barranca Creek Bridge abutments sit on exposed bedrock, 30" above creek bottom.



Drill Rig Crossing Bridge, November 2008 Drill rig weighs about 60,000 lbs.



Drill Rig Crossing Bridge, November 2008 Showing scale of drill rig relative to the bridge.



Stone Work on South Curb, January 2012 South curb was completed before DPW demand to stop work.



Bridge and Dam on Barranca Creek at 21 Barranca Rd January 2015

James F. Knowles ^{CONSULTING ENGINEER} 1260 BRIGHTON AVENUE, #120 ALBANY, CA 94706 510-504-2973

JOB NO	. 06-	101 st	нО
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BY	JFK	DATE	10-08-18

STRUCTURAL CALCULATIONS FOR THE CREEK BRIDGE AT THE TARIGO/TERRASS RESIDENCE 21 BARRANCA ROAD LAGUNITAS, CALIFORNIA



Frank Knowles CONSULTING ENGINEER 905 PIERCE STREET ALBANY, CA 94706

Tarigo Residence Stone Bridge

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DETERMINE LOADS to STRUCTURE

k := 1000 lbf Units:

Properties

 $t_{\text{deck}} \coloneqq 6 \text{ in } t_{\text{arch}} \coloneqq 8 \text{ in } b \coloneqq 12 \text{ ft}$ $\delta_c := 160 \text{ pcf}$ Concrete: $\delta_{gr} := 140 \text{ pcf}$ Gravel Fill:

 $\delta_{st} := 175 \text{ pcf}$ $t_{face} := 4 \text{ in}$ (thickness of stone facing) Stone:

Dead Loads

Concrete:	$\mathbf{p}_{\text{deck}} \coloneqq \mathbf{\delta}_{c} \left(\mathbf{t}_{\text{deck}} \right)$	$\mathbf{p}_{arch} \coloneqq \delta_{c} \left(\mathbf{t}_{arch} \right)$
	$p_{deck} = 80.00 \text{ psf}$	$p_{arch} = 106.67 \text{ psf}$

Gravel Fill:	$A_{tri} := 4.07 \text{ ft}^2$	(Area of triangular shaped gravel fill)	$\omega_{\text{grvl}} \coloneqq A_{\text{tri}} \delta_{\text{gr}}$	$\omega_{\text{grvl}} = 569.80 \text{ plf}$
Stone:	w _{curb} := 8 in (Width of Stone curb)	h _{curb} ≔ 10 in (Height of Stone curb)	$\omega_{\text{stn}} \coloneqq (w_{\text{curb}}) (h_{\text{cur}})$ $\omega_{\text{stn}} = 97.22 \text{ plf}$	b) δ_{st}
	$p_{face} := \delta_{st} (t_{face})$	p _{face} = 58.33 psf	$A_{face} := 7.31 \text{ ft}^2$ (A st	area of triangular naped stone facing)

Axel Loads

 $P_{tr} := 30 \text{ k}$ Firetruck: Firetruck load is 30 tons. Axel load is half of the full load. Frank Knowles CONSULTING ENGINEER 905 PIERCE STREET ALBANY, CA 94706

Tarigo Residence Stone Bridge

JOB	NO. <u>06-1</u>	01	SH.	<u>1.1.2</u>
NO.		OF		
BY	<u>JFK</u>	DAT	<u>Е 4</u>	-29-06
_		RE\	/: <u>1</u> 0	-08-18

ANALYSIS of ROAD DECK

Properties: b = 12.00 ft $L_{deck} := 9 \text{ ft} + 6.5 \text{ in}$ (Span from end to middle of arch)

Ultimate Loads:

 $UP_{tr} := 1.7 P_{tr}$

 $UP_{tr} = 51.00 \text{ k}$

$$U\omega_{deck} := 1.4 \left[\left(p_{deck} b \right) + \left(2 \omega_{stn} \right) \right] \qquad U\omega_{deck} = 1.62 \text{ klf}$$

$$UM := \frac{UP_{tr} L_{deck}}{4} + \frac{U\omega_{deck} L_{deck}^2}{8} \qquad UM = 1680.59 \text{ k} \cdot \text{in}$$

Determine Reinforcing per USD

Properties:

 $f_c \coloneqq 3000 \text{ psi} \qquad f_y \coloneqq 60 \text{ ksi} \qquad \varphi \coloneqq 0.9 \qquad \beta_1 \coloneqq 0.85 \qquad \text{Let: } j \coloneqq 0.9$

Minimum & Maximum Steel:

$$\rho_{\min} \coloneqq \max\left(\frac{3}{f_y} \sqrt{\frac{f_c}{psi}} psi, \frac{200}{f_y} psi\right) \quad \rho_{\min} = 0.0033 \qquad \rho_{\max} \coloneqq 0.75 \left[\frac{0.85 \ \beta_1 \ f_c}{f_y} \left(\frac{87000}{87000 + \frac{f_y}{psi}}\right)\right] \quad \rho_{\max} = 0.0160$$

Ultimate Moment:

Properties:

 $t_{deck} = 6.00 \text{ in}$ $d := t_{deck} - 1.5 \text{ in}$ d = 4.50 in $UM = 1680.59 \text{ k} \cdot \text{in}$

Required Steel for Bending:

$$A_{s.req} \coloneqq \frac{UM}{j \ d \ (\phi \ f_y) \ b} \qquad A_{s.req} = 0.64 \ \frac{in^2}{ft} \qquad A_{s.min} \coloneqq d \ \rho_{min} \qquad A_{s.min} = 0.18 \ \frac{in^2}{ft}$$

$$A_{s.b} \coloneqq \left[\min\left(\frac{4}{3} \ A_{s.req}, A_{s.min}\right) \ if \ A_{s.req} \le A_{s.min} \\ A_{s.req} \ if \ A_{s.min} < A_{s.req} \le A_{s.max} \\ \exists NDETERMINATE'' \ otherwise \qquad A_{s.b} = 0.64 \ \frac{in^2}{ft} \\ A_{s.b} = 0.64 \ \frac{in^2}{ft} \\ provided \ steel = \frac{0.44in^2}{8in} = 0.66 \frac{in^2}{ft}$$

Frank Knowles Consulting Engineer 905 PIERCE STREET ALBANY, CA 94706 Tarigo Residence Stone Bridge

JOB	NO. <u>06-</u> 1	01	s	Н.	1.1.3
NO.		OF			
BY	JFK	DAT	ΓE	4	-29-06
		RE\	/:	10	-08-18

ANALYSIS of ARCH

Properties: b = 12.00 ft $t_{arch} = 8.00 \text{ in}$

Determine Reaction at Base of Arch with Axel Load at apex:

Deck:	$p_{deck} = 80.00 \text{ psf}$	$L_{deck} = 9.54 \text{ft}$	$\mathbf{R}_{deck} \coloneqq \mathbf{p}_{deck} \left(\mathbf{L}_{deck} \right)$	$R_{deck} = 0.76 \frac{k}{ft}$
Curbs:	$\omega_{\rm stn} = 97.22 {\rm plf}$		$R_{curb} \coloneqq 2 \ \omega_{stn} \left(\frac{L_{deck}}{b}\right)$	$R_{curb} = 0.15 \frac{k}{ft}$
Gravel:	$\omega_{\text{grvl}} = 569.80 \text{ plf}$		$R_{grvl} \coloneqq \omega_{grvl}$	$R_{grvl} = 0.57 \frac{k}{ft}$
Facing:	$p_{face} = 58.33 \text{ psf}$	$A_{face} = 7.31 \text{ft}^{2.00}$	$R_{face} \coloneqq 2 p_{face} \frac{(A_{face})}{b}$	$R_{face} = 0.07 \frac{k}{ft}$
Truck:	$P_{tr} = 30000.00 lbf$		$R_{truck} \coloneqq \frac{P_{tr}}{2 b}$	$R_{truck} = 1.25 \frac{k}{ft}$
Arch:	p _{arch} = 106.67 psf	$L_{arch} \coloneqq 13 \text{ ft} + 8.59 \text{ in}$	$R_{arch} := p_{arch} \frac{L_{arch}}{2}$	$R_{arch} = 0.73 \frac{k}{ft}$
Total:	$R_{vrt} := R_{deck} + R_{curb} +$	$R_{grvl} + R_{face} + R_{truck} + H_{face}$	Rarch	$R_{vrt} = 3.54 \frac{k}{ft}$

Determine Horizontal Reaction

 $\theta := 32.7 \text{ deg}$ $R_{hrz} := \frac{R_{vrt}}{tan(\theta)}$ $R_{hrz} = 5.51 \frac{k}{ft}$

From:	<u>Taylor, Tammy</u>		
То:	Lo-Lew, Vivian		
Subject:	FW: Tarigo Project documents		
Date:	Tuesday, October 16, 2018 11:13:35 AM		
Attachments:	Hydrology essay 2018.10.22.pdf		
	Creek Drainage Setback 2018.10.22.pdf		
	CEOA commentary 2018 10 22 pdf		

Sarah Phillips email and field notes.pdf

From: Aldo Tarigo <aldo.arch@gmail.com>
Sent: Monday, October 15, 2018 8:45 AM
To: Taylor, Tammy <TTaylor@marincounty.org>
Subject: Tarigo Project documents

Good morning Tammy,

Attached are 3 documents related to the upcoming Planning Commission hearing. In addition, I've included a copy of the email and field notes sent to the County from the Urban Streams Program Manager, Sarah Phillips. You should already have it, but I'm just making sure. I'll send you my visual presentation in the next email. This should be it for us, except for an arborist's report on the bay tree, which should come later today.

Thank you,

Aldo

Toward the creation of an accurate hydrological model

In 2014, the hydrology report generated by CSW/ST2 using the TR-55 rational method and HEC-RAS computer modeling showed the 100-yr event overflowing the creek bank well upstream of the bridge, due to the existing narrow channel. However, it also showed a significant drop in water level as the flow entered the much wider bridge opening. Never having seen any water levels close to this height in all the years of living on the property and witnessing many storms, we were surprised by this assessment. It was suggested by DPW that we consider the removal of the retaining wall upstream of the bridge that caused the creek to be so narrow, and the removal of the dam downstream. The project was revised, and a new hydrology report was generated showing that the bridge met the required 24" of freeboard. However, a site visit of state and federal agencies made clear just how difficult it would be to receive permission to dredge the creek after removal of the dam. At that time, we learned from the state geomorphologist that the modeled flow seemed to be at least 30% higher than what it should be based on locally measured storm data. CSW/ST2 then investigated other accepted modeling methods, primarily the USGS Magnitude and Frequency Method (2012) based on regional regression equations derived from precipitation and runoff data collected at stream gaging stations throughout California, and the Flow Transference Method which uses a locally gaged stream in the same watershed to adjust the 100-yr flow estimate by comparing the difference in the drainage areas between the gaged and ungaged locations (figure A). This provided a guideline to calibrate the TR-55 model to fit the actual site conditions. CSW/ST2 used the lower end of the NOAA precipitation data 90% confidence interval to calibrate its model. (This should not be interpreted as changing the mean, but rather that there is 90% confidence that the mean precipitation falls within the interval.) With the creek wall removed and the dam remaining, the new modeling in the 2017 updated report showed an average minimum of 28" of freeboard above the 100-yr flow, and 24.5" per the calibrated TR-55 model.

Proper calibration of the model is considered an essential best practice where local data is available. The USACE guidelines for use of its modeling programs explicitly makes this clear: From the HEC-RAS publication, "Hydrologic modification analysis should preferentially use observed data for a baseline and modeled data secondarily. The use of observed data provides an accurate picture of actual hydrologic conditions under existing circumstances and operations at that time." And from the HEC-HMS publication, "Each method that is included in HEC-HMS has parameters. The value of each parameter must be specified to fit the model to a particular watershed or channel before the model can be used for estimating runoff or routing hydrographs. Some parameters may be established from observation of physical properties of a watershed or channels, while others must be estimated by calibration-trial and error fitting." In another section, they direct that "if the necessary data or other resources are not available to calibrate the method, then it should not be selected, regardless of its academic appeal or reported use elsewhere." Numerous readily available sources on the internet describe the need for proper calibration and model validation, including CalFire, FEMA, and USACE-Florida. Model calibration for local vineyard projects is the norm.

The CalFire report generated in 2004 and updated in 2017, a highly respected design guide for watercourse crossings, compares the various hydrologic modeling methods described earlier and in part makes the following conclusions;

• "In general, flow transference methods are preferred for determining 100-yr flood flows in drainage basins where nearby long-term stream gaging station data are available, because local streamflow data

are more likely to represent drainage-basin characteristics that determine peak flows than analytical relationships or regional regression equations."

- "Because hillslopes in the watershed contribute runoff through subsurface flow and saturation overland flow, both of which respond more slowly than Horton overland flow, methods that assume runoff is generated primarily by Horton are likely to underestimate flow times and so overestimate peak discharges." TR-55 assumes that runoff is generated by Horton overland flow, which occurs when the land has exceeded infiltration capacity and depression storage capacity, and typically only occurs within disturbed/compacted areas of forested watersheds. In reality, a combination of much slower subsurface flow and saturation overland flow are the flow paths that dominate runoff routing in relatively undisturbed forested watersheds, such as the Arroyo/Barranca basin.
- They recommend that indirect modeling methods such as TR-55 and the rational method "be generally limited to watersheds less than 100 acres, and never be used for basins greater than 200 acres." The watershed behind the bridge at 21 Barranca Rd is 259 acres.

In summary, the CalFire recommended modeling approach underscores why the TR-55 method likely over predicts the 100-yr flow in our creek, and why the other approaches based on extrapolation from the local San Geronimo gage and/or the USGS method are expected to produce much more accurate estimates of the 100-yr flow.

Local site data confirms the calibrated model. The 50-yr rain event at the end of 2005 proved timely and very important in its use as local evidence. We know that the bridge was in an extremely fragile condition and surely would have washed away if enveloped in flood water. Instead, the 50-yr rain flow passed safely under the bridge, establishing an effective baseline water surface elevation of no higher than 2'-9" above the creek bottom. It should be noted that the bridge also survived the extreme rain event of 1982. In addition, the 100-yr elevation is higher than it should be due to the constricted creek channel upstream, which is alleviated in the post project condition. The Log Pearson graph (figure B) generated from data gathered at Lagunitas Bridge, 1 mile downstream, plots measured rain events on a curve and projects a 100-yr event at that location. The important item to note is that the 100-yr flow is about 10% higher than the 50-yr flow. Translating this data point to our location, the projected 100-yr flow would be 10% or so greater than the flow observed in 2005. A corresponding 10% increase in water surface elevation would add about 4", although the actual number would be less because an increase in flow leads to an increase in velocity; more water through the same space. This correlates very closely with the results arrived at in the 2017 hydrology report. We are in a small watershed that simply cannot generate the runoff required for flooding and historically has never done so. It's interesting to note that projecting the Log Pearson graph to a 1000-yr event, the net flow is only about 20% greater than the 100-yr flow, and so a few inches higher, would still pass easily under the new bridge.

The 2017 hydrology report also compares the bridge to a non-bridge condition in order to study the effects of bridge structure on stream flow. The bridge abutments are within inches of the original and sit on natural rock outcroppings approximately 30" above the creek bottom. The model shows that the velocity along the abutments is reduced versus the non-bridge condition and shows a modest increase in the center of the channel. However, there is little overall difference in 100-yr water velocity between bridge and no bridge condition, and is less than that currently generated by the narrow upstream creek channel as it passes under the bridge. As the hydrograph generated from the TR-55 model shows (figure C), as the 100-yr water level rises and then falls, the length of time the flow is in contact with the abutments is less than 25 minutes. In other words, there is less than a 1% chance annually that the abutments would be in the stream flow for one half hour. Due to their location on exposed bedrock and very short time of immersion, the potential for scour caused by the abutments on the surrounding bedrock are well within the ability of the rock to withstand these forces, as they have done for over 100 years. Additionally, as acknowledged in the Initial Study, the biology report finds no sign of erosion or scour.



SAN GERONIMO AND BARRANCA CREEK WATERSHEDS

SHOWING TRIBUTARY AREA BEHIND BARRANCA CREEK BRIDGE AND LAGUNITAS ROAD BRIDGE.



Figure 3-6. Annual peak discharges for San Geronimo Creek at the Lagunitas Road bridge.



Figure 3-7. Flood frequency curve for the San Geronimo Creek at Lagunitas Road bridge (WY 1980-2006).

Figure B

Hydrograph Report



Figure C

Creek Drainage Setback

The residence at 21 Barranca Rd sits on a highly constrained site. The heart of the trapezoidal property is taken up by the Y-shaped convergence of 2 creeks and drainage setbacks for an effective width of 68' to 72' at any given point. To the east along Barranca Rd, the MMWD water main is just outside of the property line and requires a 25' setback. The area reserved for the leach field just to the north is as far from the creek as possible, per EHS requirement, and has to be 10' from any structure. The sewer line needs to run between the house and the MMWD setback to the septic tank in the south garden. The new garage and second unit are constrained on the east by a heritage live oak tree. Great effort was made to stay within the existing footprint as much as possible as recommended by Planning at the outset. A small portion of the proposed Studio, 115 sf, is 5'-9" into the 20' drainage setback on a fully developed area, mostly within the existing footprint. The existing legal non-conforming encroachment is 12'-6".

Per mitigation measure 1.B.1, the requirement to remove the heart of our project, namely the Studio, in its entirety, is baffling. As stated in the Initial Study, the project is consistent with the AG3 land use designation and the development standards established for ARP-2 zoning. Consistent with CWP policy, the project proposes no net increase in impervious area, but rather a substantial decrease. A portion of the existing impervious area is being relocated from close proximity to the creek to an area outside of the drainage setback for the garage footprint. Except for the request to reconstruct a portion of the house in the drainage setback, this basic understanding of general project conformity goes back to negotiation with the original planner, Lorene Jackson.

Considering the encroachment on the 20' setback apart from it's environmental function, we believe that the commingling of Design Review with the Initial Study leads to an unreasonable assessment of the project, as they address substantially different considerations. Under the 1994 Countywide Plan, Policy EQ-2.4 – Land Uses in Stream Conservation Areas, reconstruction of an existing structure is permitted within the SCA. Rebuilding a portion of the existing residence within the creek setback is therefore not inconsistent with a negative declaration of environmental impact, in terms of measurable impact on the environment. In Planned District Zoning, the only limit is structure height. Functionally a drainage setback as addressed above, the MCC section 24.04.560 requirement of a minimum 20 ft setback from a watercourse top-of-bank is neither a zoning nor an environmental issue and should not be considered in that light. Rather, it is an engineering problem that has a solution.

As a means of maximizing improvement of the overall ecological function, we feel strongly that the whole of the design should be considered on its merits in terms of net impact rather than on location at an arbitrarily fixed distance from the creek. The portion of the structure in the setback is mostly in the location of the existing 2nd unit, with a small area of new foot print on a previous parking area on the site of an old carport, over compacted road base. To the west and south, we are proposing the restoration of the creek riparian corridor by voluntarily removing 1698 sf of lot coverage, mostly within the 20' setback, beyond what would be required to preserve the balance in net project TIA, by replacing it with functioning soil and native plants. Compared to the 115 sf, this would result in a voluntary mitigation ratio of 15:1. In addition, to preserve the function of the drainage setback to prevent direct runoff into

the creek, we are diverting the rain falling on this roof area, as well as the rest of the house, to a voluntary rain garden to the south, more than 40' from the creek. Because this portion of the structure is on previously developed land, the biological assessment finds no potential for environmental impact. The project also includes restoration of the creek bank and habitat to the north, which further enhances the net positive benefit to the creek environment. We hope it is evident how much thought has gone into maximizing the contribution to improving ecological function, while remaining within the existing footprint as much as possible.

The studio portion of the design is very important to us as a working space for our professions of architect and artist, and is part of a carefully composed whole. Although providing a modest amount of southern exposure for solar gain, it would represent 36% of total southern exposure, passively heating what would be a much used central space with little need for mechanical heating. As budget allows, we plan on working toward a project-wide carbon neutral footprint as much as possible. Taking advantage of natural solar heating is a large part of that equation.

The design for the reconstruction of 21 Barranca Road is a project we've been working on for many years, carefully balancing our needs with a strong desire and an ethical responsibility to return the property to benign ecological function, as much as in our power to do. In 25 years, we have restored our yard with great effort, removing great piles of debris and non-native plants, at times sifting the soil to remove glass, metal and plastic. We have improved soil conditions throughout and encouraged the return of native species. The result of this effort is what County planners initially described when we applied for permit as "one of the few unspoiled reaches of Barranca Creek." Now is the time to take the next, greater step to return the majority of the drainage setback to a natural state, move the septic system away from the creek as far as possible, and recreate a residence that is energy efficient and as benign in its impact as possible.



PROPERTY CONSTRAINTS CREEK AND DRAINAGE SETBACKS DOMINATE 1.55 ACRE SITE.



LOCAL SITE CONSTRAINTS

SITE DRAINAGE, UTILITY AND SEPTIC SETBACKS, AS WELL AS PRESERVATION OF HERITAGE LIVE OAK, HIGHLY CONSTRAIN BUILDABLE AREA.

EXISTING AND PROPOSED SETBACK ENCROACHMENT SETBACK IS 20' FROM TOP OF BANK, OR EFFECTIVELY ABOUT 30' FROM EDGE OF CREEK



Interpretation of CEQA as applied to our project

Although neither of us is a CEQA attorney, the following excerpts of the code express our understanding of the ways in which CEQA applies to our project, with commentary on omissions and misinterpretations made in its application. Specific sections of text, from <u>http://resources.ca.gov/ceqa/</u> <u>guidelines/art5.html</u>, if deleted, have in our estimation either been applied properly or are not applicable. Per CEQA, it should be kept in mind that significant environmental impacts, direct or indirect, consist of actual physical changes. Please mouse over highlighted text for associated comments.

Article 5. Preliminary Review of Projects and Conduct of Initial Study

Sections 15060 to 15065

15060. Preliminary Review

Discussion: This section describes the actions required of the Lead Agency when it receives an application for a project. This section is necessary in order to save time that could otherwise be spent if the agency ignored environmental issues for the first 30 days of reviewing the application.

Public Resources Code Section 21080.1, subdivision (b), requires the lead agency, upon the request of the project applicant, to provide for consultation with responsible and trustee agencies before the filing of an application. The consultation is to cover the range of actions, potential alternatives, mitigation measures, and any potential and significant effects on the environment of the project.

15060.5. Preapplication Consultation

Discussion: This section incorporates the provisions of Public Resources Code Section 21080.1 enabling a project proponent to request a preapplication meeting with the lead agency to discuss their project. <u>The lead</u> agency is responsible for holding the meeting and may ask the California Office of Permit Assistance for help in identifying state and regional agencies that may be interested in the proposed project.

15063. Initial Study

(a) Following preliminary review, the Lead Agency shall conduct an Initial Study to determine if the project may have a significant effect on the environment. If the Lead Agency can determine that an EIR will clearly be required for the project, an Initial Study is not required but may still be desirable.

(3) An initial study may rely upon expert opinion supported by facts, technical studies or other substantial evidence to document its findings. However, an initial study is neither intended nor required to include the level of detail included in an EIR.

(b) Results.

(1) If the agency determines that there is substantial evidence that any aspect of the project, either individually or cumulatively, may cause a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial, the Lead Agency shall do one of the following:

(2) The Lead Agency shall prepare a Negative Declaration if there is no substantial evidence that the project or any of its aspects may cause a significant effect on the environment.

- (c) **Purposes.** The purposes of an Initial Study are to:
 - (1) Provide the Lead Agency with information to use as the basis for deciding whether to prepare an EIR or a Negative Declaration.
 - (2) Enable an applicant or Lead Agency to modify a project, mitigating adverse impacts before an EIR is prepared, thereby enabling the project to qualify for a Negative Declaration.
 - (4) Facilitate environmental assessment early in the design of a project;
 - (5) Provide documentation of the factual basis for the finding in a Negative Declaration that a project will not have a significant effect on the environment;
 - (7) Determine whether a previously prepared EIR could be used with the project.
- (d) Contents. An Initial Study shall contain in brief form:
 - (4) A discussion of the ways to mitigate the significant effects identified, if any;
 - (5) An examination of whether the project would be consistent with existing zoning, plans, and other applicable land use controls;
- (e) Submission of Data.
- (f) Format.

(g) Consultation. As soon as a Lead Agency has determined that an Initial Study will be required for the project, the Lead Agency shall consult informally with all Responsible Agencies and all Trustee Agencies responsible for resources affected by the project to obtain the recommendations of those agencies as to whether an EIR or a Negative Declaration should be prepared. During or immediately after preparation of an Initial Study for a private project, the Lead Agency may consult with the applicant to determine if the applicant is willing to modify the project to reduce or avoid the significant effects identified in the Initial Study.

Discussion: The purpose of this section is to describe the process, contents, and use of the Initial Study. This is a device not mentioned in the statute itself. The Initial Study is necessary in order to provide the factual and analytical basis for a Negative Declaration or to focus an EIR on the significant effects of a project. This section is also necessary to authorize and encourage the use of a number of efficiencies including using a Negative Decla-

ration when the project proponent has changed his proposal in order to mitigate or avoid the significant effects identified in an Initial Study.

This section also clarifies that the individual conclusions reached by an initial study must be based on some evidence. Entries on a checklist or other form should be briefly explained to indicate the basis for determinations. These explanations are not intended to be as detailed as an EIR. (*Leonoff v. Monterey County Board of Supervisors* (1990) 222 Cal.App.3d 1337).

Since a lead agency must consider all impacts of a project, consultation provides access to the expertise of other agencies in evaluating a project. In *Sundstrom v. Mendocino* (1988) 202 Cal. App. 3d 296, the court held that "some degree of interdisciplinary consultation may be necessary on an initial study as well as in preparation of an EIR." It also stated that an agency must provide the information it used to reach its conclusions and that a checklist unsupported by data and facts is not sufficient for an adequate Initial Study. In *Antioch v. Pittsburg* (1986) 187 Cal. App. 3d 1325, the court cited *City of Carmel-by-the-Sea v. Board of Supervisors of Monterey County* 183 Cal. App. 3d 229, to emphasize the importance of considering in the initial study all the activities and impacts involved in planning, implementation, and operation of a project.

15064. Determining the Significance of the Environmental Effects Caused by a Project

(a) Determining whether a project may have a significant effect plays a critical role in the CEQA process.

(b) The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting. For example, an activity which may not be significant in an urban area may be significant in a rural area.

(e) Economic and social changes

(f) The decision as to whether a project may have one or more significant effects shall be based on substantial evidence in the record of the lead agency.

- (3) If the lead agency determines there is no substantial evidence that the project may have a significant effect on the environment, the lead agency shall prepare a negative declaration (*Friends of B Street v. City of Hayward* (1980)106Cal.App. 3d.
- (4) The existence of public controversy over the environmental effects of a project will not require preparation of an EIR if there is no substantial evidence before the agency that the project may have a significant effect on the environment.
- (5) Argument, speculation, unsubstantiated opinion or narrative, or evidence that is clearly inaccurate or erroneous, or evidence that is not credible, shall not constitute substantial evidence. Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion support by facts.

(h) Cumulative impact

- (1) When assessing whether a cumulative effect requires an EIR, the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable.
 "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.
- (2) A lead agency may determine in an initial study that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant. When a project might contribute to a significant cumulative impact, but the contribution will be rendered less than cumulatively considerable through mitigation measures set forth in a mitigated negative declaration, the initial study shall briefly indicate and explain how the contribution has been rendered less than cumulatively considerable.
- (4) The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable.

15064.7. Thresholds of Significance.

(a) Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant.

15065. Mandatory Findings of Significance

(b)(1) Where, prior to the commencement of preliminary review of an environmental document, a project proponent agrees to mitigation measures or project modifications that would avoid any significant effect on the environment specified by subdivision (a) or would mitigate the significant effect to a point where clearly no significant effect on the environment would occur, a lead agency need not prepare an environmental impact report solely because, without mitigation, the environmental effects at issue would have been significant.

For original CEQA source, see following link: http://resources.ca.gov/ceqa/guidelines/art5.html



Aldo Tarigo <aldo.arch@gmail.com>

Tue, Oct 9, 2018 at 6:40 PM

Tarigo at 21 Barranca Rd._Lagunitas

Sarah Phillips <sarah@marinrcd.org>

To: "Davidson, Berenice" <BDavidson@marincounty.org>, Jeremy Tejirian <JTejirian@marincounty.org> Cc: Aldo Tarigo <aldo.arch@gmail.com>, "Tom Lai (tlai@marincounty.org)" <tlai@marincounty.org>

Good Evening All,

I'm emailing with regard to the project located at **21 Barranca Rd. Lagunitas, CA**. Mr. Tarigo recently contacted the Marin RCD to update me that his project is still on hold despite the two Marin Project Coordination (MPC) meetings he attended (1/21/15 and 5/4/17), the regulatory site visit that I coordinated and facilitated on June 15, 2017 (notes attached), and a recent hearing before the Planning Commission.

To the best of my understanding, this remodeling/home improvement project is on hold until the bridge is approved by Land Development and that Land Development requires that the bridge allow for 2' of free board from water surface elevation (WSE) to the bottom of the bridge, during a 100-year flood event. During the regulatory site visit last summer, Michael Napolitano (a well-known hydrologist and fluvial geomorphologist for the SF Regional Water Quality Control Board or SF RWQCB) provided consult to Mr. Tarigo during and after the site visit regarding the use of more appropriate hydrological models in order to more accurately look at the hydraulics for the project area, which by doing so, seemed to allow for the required amount of free board Land Development is requiring.

I also understand that Ms. Davidson cannot issue a permit for the bridge without state and federal permits acquired and provided in advance of her approval. As it stands, Mr. Tarigo did not obtain state and federal permits to construct his bridge. CA Dept of Fish & Wildlife (CDFW) **cannot** retro-permit projects but if they find them egregious enough, they'll impose a violation via a visit from their game warden, which they have not nor intend to do with Mr. Tarigo for the construction of the bridge. A regulator from CDFW was present at the site visit and did not request for proof of permits for the bridge and was in fact well aware that the bridge was unpermitted by the CDFW agency. SF RWQCB **does** carry out retro-permits however, they have never asked that Mr. Tarigo submit materials to retro permit his bridge despite the SF RWQCB being present and aware of the bridge discussed during the two MPC meetings and one of their regulators having attended the site visit last year. Army Corps of Engineers is aware of the complexities around this project and has not requested that Mr. Tarigo submit an application for a 404 Permit. Finally, National Marine Fisheries Service was also present at the site visit last summer and did not request that Mr. Tarigo go through a retro-permitting process.

I would be happy to reach out to each of the regulators who have jurisdiction over the bridge that was constructed to get their feedback, if it would be productive in resolving issues holding this project back. Again, the regulators are all aware of this unpermitted bridge, they saw it during the site visit and they still did not ask Mr. and Mrs. Tarigo to submit permit applications to retro-permit the bridge.

All of that being said, I am simply following up on this project in effort to support the creekside landowner per his recent request and in trying to be helpful to local County regulators in obtaining the requested/necessary information they need in order to move this project forward. I am hopeful that some level of resolution can be found regarding the complexities around this project. Please let me know how I may be of better service to each of you.

FYI: Regulatory Site Visit Attendees 6/15/2017

- Roger Bray, Marin County Land Development
- · Jocelyn Drake, Marin County CDA
- Rob Carson, Marin County DPW
- Rick Rogers, NMFS NOAA
- · Nicole Fairley, SF RWQCB
- Michael Napolitano, SF RWQCB
- James Hansen, CDFW
- Ryan Watanabe, CDFW
- Sarah Phillips, Marin RCD
- · Mr. and Mrs. Tarigo

Roberta Morganstern, ACOE (I cannot recall if she was present or not as I'm still waiting to hear back from her about her attendance at that field visit)

Kind Regards,

Sarah Phillips

Urban Streams Program Manager

Marin Resource Conservation District

PO Box 1146

Point Reyes Station, CA 94956

t 415.663.1170 ext 302

f 415.663.0421

Sarah@marinrcd.org

www.marinrcd.org

"A less than perfect solution that everyone develops and buys into, protects the resources better than the "perfect solution" that we [the agency] develop and no one complies with." –CA Fish and Wildlife Enforcement Officer

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Resource_Regulatory_Site Visit_Aldo Tarigo 21 Barranca Rd. Lagunitas.docx 24K

Site Visit on June 15, 2017 Aldo & Adrianne Tarigo 21 Barranca Rd. Lagunitas, CA Prepared By: Sarah Phillips at Marin RCD

Challenge

Homeowners need a building permit to remodel home but cannot get that permit until the unpermitted bridge on the property is first retroactively permitted. For the bridge to be permitted, it needs to pass the 100 year flood event which means having to conduct some actions upstream and downstream of the bridge to obtain sufficient freeboard for water conveyance passing under the bridge.

Options

- Remove section of concrete retaining wall to then slope bank back to 2:1 and vegetate appropriately (need to resolve the 20' buffer issue with county's flood control district requirements)
- Remove dam immediately downstream of bridge
- Dredge creek bottom in specific area(s) to add capacity of water to pass below bridge according to requirements

1st Stop (furthest upstream): County culvert

- Concrete culvert will be replaced by the County
- Not a high priority
- Will pass 100-year flood event once replaced
- Will need to ensure to maintain bed elevation to prevent headcutting and upstream incision

Downstream 20'-30'

- Noted mass wasting on right bank
- Seemingly self-stabilized and mostly consists of cohesive compacted clay
- No need to do anything other than potentially planting trees along top of bank
- Noted active bed mobility, little embeddedness
- Substantial grade control exists via exposed bedrock and mature bay laurel trees (*Umbellularia californica*)

Suggested Changes to Design

- Do not construct a swale
- Potentially look into adding a berm along the top of the new 2:1 sloped bank postremoval of the designated section of retaining wall, plant thereafter with appropriate native riparian species (this will need to be worked out with DPW's flood control district regarding the mandatory 20' set back)

Final Recommendations

The TR55 model may be overestimating the 100-year flow event. If the hydrology report can demonstrate the existing bridge can pass the 100-year flow, then mitigation actions are not necessary.

Recommended by SFRWQCB:

---Hydrologist needs to look at the 90% confidence intervals around the estimated 100year peek

---Have hydrologist cross check the model comparing it to local gage data (i.e. San Geronimo Creek MMWD gage per Balance Hydrologics)

---Hydrologist may reach out to Mike Napolitano at SF Regional Water Quality Control Board to confirm what concise queries need to be made

Michael.Napolitano@waterboards.ca.gov (510) 622-2397

If by adding the confidence intervals, the bridge still cannot pass the 100-year flood event, then have hydrologist rerun the model to look at results of how specific actions allow conveyance below bridge:

- First have the consultant look only at the partial removal of the concrete retaining wall to create a 2:1 sloped bank to see if that will meet the requirements for conveyance of the 100-year flood event. This action will allow more capacity for the creek and will serve as an ecological improvement.
- 2. Then, if that is not enough, add in the removal of the dam immediately downstream of bridge to see if those two combined actions will meet the requirements for conveyance of the 100-year flood event
- 3. Finally, if those two actions are not enough, then ultimately add in the third piece of strategic dredging to ensure meeting the requirements for conveyance of the 100-year flood event
 - a. If calculations show that dredging is required, look into whether the project can be carried out in two phases 1) retaining wall removal for 2:1 slope and dam removal in year I then follow up the next year with phase II which would be dredging. This was suggested because it is possible that by removing the dam, the channel may self-dredge after winter events thus allowing required conveyance and not requiring dredging after all

<u>Taylor, Tammy</u>
Lo-Lew, Vivian
FW: Tarigo Project letter from CSW/ST2
Tuesday, October 16, 2018 11:13:06 AM
2018-10-15 (666774.1) Letter.pdf

From: Aldo Tarigo <aldo.arch@gmail.com>
Sent: Monday, October 15, 2018 3:55 PM
To: Taylor, Tammy <TTaylor@marincounty.org>
Subject: Tarigo Project letter from CSW/ST2

Hi Tammy,

I forgot to mention that this letter was coming as well. Aldo



45 Leveroni Court Novato, CA 94949 www.cswst2.com 415.883.9850 Fax: 415.883.9835 Novato Petaluma Redwood City Sacramento

CSW/Stuber Stroeh Engineering Group, Inc.

Engineers | Land Planners | Surveyors | Landscape Architects

Date: October 15, 2018 File: 6.667.74.1

Mr. Aldo Tarigo P.O. Box 383 Lagunitas, CA 94938

RE: TARIGO HYDROLOGY

Dear Aldo:

This letter is written in response to the comments by Marin County Department of Public Works in their Inter-Office Memorandum dated March 15, 2018, specifically comment 2 regarding the use of the lower bounds of the NOAA Atlas 14 Vol. 6, version 2 (NOAA Atlas 14) precipitation frequency being not normal engineering practice for calculating 100-year storm runoff and is less conservative than using the median value for calculating runoff.

The use of the lower bounds of the NOAA Atlas 14 precipitation frequency within the TR-55 method reflected an effort to calibrate the calculations so that the resulting peak flow aligned with predictions by local data and regional studies prepared in the time since the TR-55 method was published.

The TR-55 Method was published in 1975 and revised in 1986. It has been and continues to be a valuable tool to estimate peak flow where no local data is available. However, an observation was provided, that was made during a meeting in 2017 with local agencies at the project site, that the results of the TR-55 method used in previous versions of our study may have been overestimating peak flow.

The documents we reviewed and calculations we performed to substantiate the use of the lower bounds of the NOAA Atlas 14 precipitation frequency in the TR-55 method were provided in our 2017 revised report. The documents and calculations are as follows:

First, the report, "San Geronimo Valley Salmon Enhancement Plan Existing Conditions" prepared for the Marin County Department of Public Works by Stillwater Sciences in January 2009 was examined for local estimates of the 100-year flow in San Geronimo Creek at Lagunitas Road. Barranca Creek is tributary to San Geronimo Creek. A peak flow, which was calculated based on a ratio of watershed area, also called flow transference, was provided in the 2017 report for comparison to the TR-55 method results.

A second report published in 2012, containing an engineering method which is used to calculate flood flow in California based on regression equations, and which was developed from data collected throughout California, was reviewed and a peak flow provided for comparison to the TR-55 and flow transference method results. The report was "Methods for Determining



Mr. Aldo Tarigo October 15, 2018 Page 2

Magnitude and Frequency of Floods in California, Based on Data through Water Year 2006" by the U.S. Geological Survey in cooperation with the Federal Emergency Management Agency.

The results of the three methods were as follows below in Table 1, and the two highest peak flows were incorporated into the hydraulic model. The model indicated the bridge has more than 2 feet of clearance during a 100-year storm frequency event.

Table 1

Method	100-Year Peak Runoff (Q ₁₀₀)
USGS Regression Equation	182 cfs
Flow Transference Method	192 cfs
TR-55 using lower bound of NOAA 90%	248.5 cfs
Confidence Interval for Precipitation	

While the result of the USGS Regression Equation calculation was the lowest of the three Q_{100} values and was not used to calculate clearance in the hydraulic model, the result of this method further substantiates that the TR-55 results from our reports prior to 2017 may have been overestimating peak flow at the project site.

The USGS Regression Equation, of which the results are presented in Table 1, above, is a practice of normal engineering to determine 100-year peak flow for watersheds of similar size and characteristic to the watershed tributary to the creek flowing through the 21 Barranca Road property.

Reports which discuss the applicability and recommend the USGS Regression Equation method include:

"Designing Watercourse Crossings for Passage of 100-Year Flood Flows, Wood and Sediment" by the California Natural Resources Agency Department of Forestry and Fire Protection, August 2017,

and;

"Evaluation of Methods Used for Estimating Selected Streamflow Statistics, and Flood Frequency and Magnitude, for Small Basins in North Coastal California" by the US Geological Survey in cooperation with the California State Water Resources Control Board in 2004.

Also, in the time since the 2017 report, we have encountered that the Santa Cruz County Department of Public Works, as outlined in their 2018 edition of their Design Criteria, allows the use of the USGS Regression Equation for watersheds larger than 200 acres. According to the County of Santa Cruz Design Criteria¹, while the USGS Regression Equation may be used to

¹ "County of Santa Cruz Design Criteria Containing Standards for the Construction of Streets, Storm Drains, Sanitary Sewers, Water Systems, Driveways within the Unincorporated Portion of Santa Cruz County", February 2018 Edition



Mr. Aldo Tarigo October 15, 2018 Page 3

calculate storm runoff, they indicate to increase the result by 25% as a factor of safety. It is unclear from Santa Cruz County DPW's design criteria why the safety factor is applied.

As there is a statement in the 2004 report² that the Regression Equations for the North Coast Region of California, of which Marin County is within, perform reasonably well, we are not recommending to revise our results to incorporate a safety factor. However, for examination, if there were a 25% safety factor included with the Regression Equation result for 21 Barranca Road, the resulting peak flow would be as seen in Table 2:

Table 2

Method	100-Year Peak Runoff (Q ₁₀₀)
USGS Regression Equation	182 cfs
Flow Transference Method	192 cfs
USGS Regression Equation with hypothetical	227.5 cfs
25% Safety Factor	
TR-55 Method using the lower bound of the NOAA 90%	248.5 cfs
Confidence Interval for Precipitation	

The USGS Regression Equation method is a method of normal engineering practice which was developed using regional (northern California) and local (Marin County) data sources². As with the 248.5 cfs and 192 cfs peak flow results, using 227.5 cfs from the hypothetically-safety-factored USGS Regression Equation, in the hydraulic model, would result in the bridge meeting the code criteria to have 2' or more of clearance between the bridge soffit and 100-year water surface. Additionally, the 248.5 cfs from the TR-55 method in our revised November 2017 report, which was 36.5% greater than the 182 cfs from the USGS Regression Equation, and for which the minimum calculated clearance was 2.03', provided a conservative estimate of flow for the 100-year storm frequency event.

Please let me know if there are any questions.

Sincerely,

CSW/STUBER-STROEH ENGINEERING GROUP, INC.



² "Evaluation of Methods Used for Estimating Selected Streamflow Statistics, and Flood Frequency and Magnitude, for Small Basins in North Coastal California" by the US Geological Survey in cooperation with the California State Water Resources Control Board in 2004

From: Aldo Tarigo <aldo.arch@gmail.com>
Sent: Monday, October 15, 2018 10:00 PM
To: Taylor, Tammy <TTaylor@marincounty.org>
Subject: Tarigo Project presentation

Hi Tammy,

I'm terribly sorry, but I've discovered an error in my presentation file. The version I sent has an old chart that should have been updated. Please exchange it with the one attached. Again, I'm sorry for any inconvenience.

Aldo

Tarigo/Terrass Residence Planning Commission Presentation October 22, 2018



Locksley Hall (Blanding House) Walker & Moody Architects 2005



Locksley Hall (Blanding House) Walker & Moody Architects 2005


Locksley Hall (Blanding House) Under construction 2000



Old Wood Bridge at Barranca Creek Condition of bridge in 2006



Barranca Creek Partial Site Plan New concrete bridge and regraded creek bank upstream



Bridge Structural Long Section As submitted in 2012.



Drill Rig Crossing Bridge, November 2008 Showing scale of drill rig relative to the bridge.



Dam and Completed Structural Bridge, February 2007 Note generous height and span. Bridge is 12" thick at mid span and weighs 43 tons.



Flood Water Overtopping Bridge

Water surface elevation if flood water were to reach surface at center of bridge span. The entire yard would be under 24" to 30" of water.



Old Wood Bridge at Barranca Creek Creek near full volume showing still ample freeboard and no sign of flooding.



High Water Event in 2012 High water in narrowest park of creek, no where near top of wall.



High Water Event in 2012 Typical local flooding downstream of bridge and dam.



High Water Event in 2012 Typical annual peak event. Overlaid on bridge drawing, freeboard measures 42". State of California California Natural Resources Agency Department of Forestry and Fire Protection



Designing Watercourse Crossings for Passage of 100-Year Flood Flows, Wood, and Sediment (Updated 2017)

California Forestry Report No. 1 (revised) Peter Cafferata, Donald Lindsay, Thomas Spittler, Michael Wopat, Greg Bundros, Sam Flanagan, Drew Coe, and William Short August 2017





100-yr Flow at Concrete Bridge

Water surface elevation based upon TR-55 and SGC-SEP models by CSW/ST2.



Old Wood Bridge at Barranca Creek Condition of bridge in 2006 showing deterioration just before the collapse of one of the principle support logs.





Figure 3-6. Annual peak discharges for San Geronimo Creek at the Lagunitas Road bridge.



Figure 3-7. Flood frequency curve for the San Geronimo Creek at Lagunitas Road bridge (WY 1980-2006).

30 January 2009



100-yr Flow at Concrete Bridge

Water surface elevation based upon TR-55 and SGC-SEP models by CSW/ST2.



SAN GERONIMO AND BARRANCA CREEK WATERSHEDS

SHOWING TRIBUTARY AREA BEHIND BARRANCA CREEK BRIDGE AND LAGUNITAS ROAD BRIDGE.







100-yr Flow at Concrete Bridge

Water surface elevation based upon TR-55 and SGC-SEP models by CSW/ST2.



Bridge Over Barranca Creek at 21 Barranca Bridge Abutments Sit On Exposed Bedrock, 30" above creek bottom.



100-yr Hydrograph

Showing time of concentration of the 100-yr event from the TR-55 model.



Big Bridge Section

Compares original wood bridge, current concrete bridge, and bridge designed to meet DPW requirements.



Big Bridge Site Plan

Conflict between ramp and required house drainage - would have to raise house 2ft minimum to meet code.



Condition of dam in 2015



Condition of dam in 2018

The thin layer of cement cover has washed away, causing the underlying stone rubble to erode ever further upstream. The overhang is now as much as 24". Without structural support, collapse is just a matter of time.



Arroyo Road Bridge at Barranca Outlet Side



Comparison with Arroyo Road Bridge

Showing cross sectional areas roughly equal. Note that Arroyo Rd bridge must take combined flow of both Barranca Creek and a similarly sized tributary. Barranca Creek bridge has a greater soffit height.



High Water Event in 2012 Typical annual peak event. Overlaid on bridge drawing, freeboard measures 42".



Fire on Mt. Barnabe, September 10, 2018 One mile from 21 Barranca Road.



PROPERTY CONSTRAINTS CREEK AND DRAINAGE SETBACKS DOMINATE 1.55 ACRE SITE.



LOCAL SITE CONSTRAINTS

SITE DRAINAGE, UTILITY AND SEPTIC SETBACKS, AS WELL AS PRESERVATION OF HERITAGE LIVE OAK, HIGHLY CONSTRAIN BUILDABLE AREA.

EXISTING AND PROPOSED SETBACK ENCROACHMENT SETBACK IS 20' FROM TOP OF BANK, OR EFFECTIVELY ABOUT 30' FROM EDGE OF CREEK





ALTERNATE HOUSE FOOTPRINT SOUTH END ROTATED TO THE EAST 5'-10". DRAINAGE SETBACK ENCROACHMENT REDUCED TO 3'-0".

Taylor, Tammy

From:	Aldo Tarigo <aldo.arch@gmail.com></aldo.arch@gmail.com>
Sent:	Tuesday, October 16, 2018 11:15 AM
То:	Taylor, Tammy
Subject:	21 Barranca documents
Attachments:	21 Barranca Rd. Bay Report.pdf

Hi Tammy,

Please find the attached aborist's report for the bay tree proposed to be removed. Aldo

PC ATTACHMENT #7

Client: Aldo Tarigo



ARBORIST REPORT

For

21 Barranca Rd., Lagunitas, 94938

PURPOSE

Urban Forestry Associates (UFA) was hired to assess one California bay laurel tree located within the footprint of a planned stream bank improvement project. Zach Vought of UFA performed a site inspection to assess the tree on October 9, 2018.

SCOPE OF WORK AND LIMITATIONS

Urban Forestry Associates has no personal or monetary interest in the outcome of this investigation. All observations regarding trees in this report were made by UFA, independently, based on our education and experience. All determinations of health condition, structural condition, or hazard potential of a tree or trees at issue are based on our best professional judgment. The health and hazard assessments in this report are limited by the visual nature of the assessment. Defects may be obscured by soil, brush, vines, aerial foliage, branches, multiple trunks or other trees. Even structurally sound, healthy trees are wind thrown during severe storms or other weather events. Consequently, a conclusion that a tree does not require corrective surgery or removal is not a guarantee of no risk, hazard, or sound health.

OBSERVATIONS

Tree 1

Species	California bay laurel (Umbellularia californica)	
Size	37.4" DBH ¹ qualifying as "Heritage" per Marin County Tree Regulations	
Location	(Figure 1) East side of creek bank approximately 20 feet west of the home. The tree targets the home.	
Targets	The home at 21 Barranca.	
Condition	The tree is mature and displays a limited canopy relative to its trunk diameter due to aggressive pruning. The tree was topped in the distant past at approximately 20 feet above grade. The canopy is now composed of long vertically oriented stems arising from the area where topping cuts were made. Such stems are inherently weak, as decay typically forms in the exposed wood (cut face) and new growth is attached to the outmost living wood tissues.	
	Advanced decay of the lower and upper portions of the main trunk, through sounding by hammer (producing hollow resonance) and exploration with a 4' metal probe (Figure 2,3). Multiple mature Ganoderma species decay fungus fruiting bodies were observed on the tree. Ganoderma decays chiefly internal supportive wood tissues (heartwood). The disease is well-established in the tree.	
Conclusion	While the subject tree qualifies as a "heritage", the title does not reflect its condition or utility in the landscape, mostly due to its suboptimal structural condition. The tree currently poses	

¹ Trunk diameter (in inches) measured across the long axis of the main stem at 4.5' above grade from the upslope side of the tree.

October 16, 2018

Urban Forestry Associates, Inc.

moderate risk to the Tarigo property to advanced degradation of internal wood tissues, increasing the probability of stem failure and impact to the home. For these reasons, and due to the tree's location within planned stream flow improvement project, removing the tree is a reasonable option to abate the risk and allow for the stream work to be completed.

Recom'd Whole tree removal to abate the risk.



Figure 1



Figure 2. Large decay fungus fruiting body near major limbs. Distinct hollow resonance was produced while sounding this area by hammer.


Figure 3. 4-foot long, red metal probe confirming at least 3-foot wide decay column in main trunk.