Attachment 3:
Community Venture Partners Letter

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Community Venture Partners, Inc.
A Catalyst for Sustainable Solutions

December 10, 2020

Sausalito City Council
C/o Ms. Lily Whalen
City of Sausalito
324 Pine Street
Sausalito, CA 94965

Re: Comments on the Sausalito Final General Plan Update and Recirculated DEIR

Dear Ms. Whalen,

Community Venture Partners, Inc. ("CVP") is a 501(c)(3) nonprofit organization that supports community-based projects, programs and initiatives that demonstrate the highest principles of economic, social and environmental sustainability. CVP accomplishes its objectives by offering technical and financial assistance, and educational programs to community organizations, nonprofit organizations, educational institutions, and local municipalities. CVP achieves its goals by facilitating community based projects, programs and initiatives. CVP is committed to the need for a transparent public process that incorporates under-served community voices into planning and government decision-making. CVP is headquartered in Mill Valley, but its officers, board members, donors, collaborators and advisors live throughout Marin, including in Sausalito, all of whom use and enjoy the waterfront in Sausalito, regularly, including the Marinship (e.g., visit, swim, boat, dine, shop, obtain services, etc.). Our previous comment letters of 08-05-20 and 09-21-20, respectively, are also attached, resubmitted, and incorporated herein by reference, because the comments, questions, and concerns expressed in those letters remain relevant and unaddressed by the *Final General Plan Update* (the "GP Update" and the *Revised and Recirculated DEIR* (the "RDEIR"). CVP is submitting these comments in response to requests from groups of Sausalito residents and business owners who have expressed their concern about the accuracy and equity of the proposed GP Update, and the adequacy of the environmental assessments found in the RDEIR. 1

The comments in this letter are based on our review of the GP Update and the "RDEIR, published on October 20, 2020, and are primarily in response to how the programs, policies, and proposals in these documents impact the Marinship. We submit these, based on our understanding that the City intends to publish the Final EIR on December 28th, and move forward over the next several months through a process that will culminate in the approval of the new General Plan, the certification of the Final EIR, and the creation and adoption of a revised Zoning Ordinance to conform to the GP Update.

General Comments

Taken together, the GP Update and the RDEIR are certainly voluminous. If quality was judged by pounds per capita, the City of Sausalito and its consultants would get an "A." However, despite their massive bulk, both documents remain seriously flawed and wanting in required 2

details, data, and adequate impacts assessments. All of the GP Update's programs and policies are based on the assumption that future studies, assessments, and mitigation plans will result in solvable outcomes and that the required mitigations at the "project" level will be both practically and financially feasible.

We submit that this assumption is highly questionable when it comes to the Marinship.

Throughout, the GP Update acknowledges a long list of significant environmental hazards in the Marinship, the vast majority of which are unique to the Marinship and area-wide, not confined to any one parcel of land (e.g., significant subsidence, toxins in soils, failing storm drains, sewers and major infrastructure, liquefaction, and constant flooding).[1]

The GP Update also presents an equally long list of "programs and policies," many of which will require future study, assessment and evaluation/preparation of mitigation plans for environmental hazards--presumably at the "project" level.

Consequently, the RDEIR contends that because the GP Update includes its list of programs and policies, it can conclude that there are *no significant environmental impacts* in the Marinship that require mitigation. Likewise, the GP Update itself turns around and defers to the RDEIR for all considerations having to do with environmental impacts assessment and mitigation. 2 Cont.

This self-referential and endless loop conveniently avoids a litany of realities and questions that the GP Update and the RDEIR both avoid addressing. To put it simply, if this general plan was a financial plan, we would call it a Ponzi scheme.

For most of the city of Sausalito, where known environmental hazards to future development are more predictable (e.g., higher elevations, stable land, intact infrastructure, lack of flooding or toxins in solid, adequate drainage, etc.), it might be arguable that the GP Update and RDEIR's circular reasoning are adequate for this "program" phase of assessment. However, with regard to the unique, combined, existential environmental and practical challenges found in the Marinship, and the potential for significant, unmitigated environmental impacts that are neither practically nor financially feasible, it defies credulity. Please note, the previous comment letter by Laurel Collins of Watershed Sciences, dated August 5, 2020 and a new comment letter by Watershed Sciences, December 1, 2020, are attached, resubmitted, and incorporated into this comment letter, by reference because the comments, questions, and concerns expressed in those letters remain relevant and unaddressed by the prior DEIR, the Final GP Update, and the RDEIR.

The GP Update and RDEIR are filled with boilerplate, cut and paste content that does not in any way reasonably address or adequately assess the actual, known conditions in the Marinship or the City's financial capabilities to carry out the required studies and mitigations that would obviously be needed to address the long list of hazards enumerated in the GP Update.

[1] I.E., Although sea level rise is a citywide issue, the existential threat of the impacts of SLR will be far greater in the Marinship and the required mitigations will be far more complex than in most of the rest of the city, most of which is at much higher elevations.

Oddly, the Marinship Vision also fails to address these questions, which is even acknowledged by this statement on Page W-9 of the *Waterfront and Marinship Element*.

> "Environmental remediation should be a strong factor in the General Plan Update's environmental policies and implementation programs, but it is not specifically part of the Marinship vision."

3

That is a very unusual disclaimer. It's actually an admission of all the concerns expressed in this comment letter. But it is only one of many such disclaimers contained in the GP Update Appendices.

Normally, one might attribute these gaping holes in adequacy and logic to errors of judgment or even simple competence. Except, that in this case, the City has had more than enough time and hired more than enough consultants to know better. So, one can safely assume they are well aware of the implications of the GP Update's and RDEIR's serious omissions.

Recommendations

The City must revise the GP Update and RDEIR to layout out a clear sequence of studies and assessments of potentially significant environmental impacts and propose feasible mitigation plans for area-wide environmental hazards in the Marinship, as they relate to the approval, certification, and adoption schedule for the GP Update, Final EIR, and revised Zoning Ordinance, noted above, to ensure that cumulative and area-wide impacts will not be inappropriately pushed off to future project level of CEQA review of site-specific development proposals.

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The sections of this comment letter address the following topics:

- Critical Questions That Remain Unanswered;
- The City's continued obfuscation of its "HOUSING MAP" for high-density, multi-family housing in the Marinship; and
- The fallacies of the *General Plan Update Financing and Implementation Strategy Memorandum,* by M-Group.

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CRITICAL QUESTIONS THAT REMAIN UNANSWERED

The following questions and concerns remain essentially unaddressed by the GP Update or the RDEIR, with respect to the Marinship. And in spite of the GP Update's lofty, 20-year goals, existing evidence indicates that time is running out to save the Marinship from the existential threats posed by sea level rise, ongoing subsidence, and failing underground infrastructure.

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QUESTION (1): When does the City intend to actually undertake the planning studies and environmental assessments required by the GP's programs and policies for the Marinship, and when does the City intend to develop and implement the area-wide mitigation plans that will

inevitably be needed to address all of the *known*, *area-wide, significant environmental hazards* (SLR, subsidence, toxin, rising water table, flooding, failing infrastructure, etc.), which are all critical the health, safety, and well-being of the City's residents?

QUESTION (2): How will the timing and completion of the work noted in (1) above, relate to the overall schedule of approval, certification, and adoption of the GP Update, Final EIR, and Zoning Ordinance—before, during, or after? If during, how and when and in what sequence? If not before any of these steps, how can that possibly work?

In other words, how can the completion of the critical studies and assessments of the known area-wide environmental hazards in the Marinship, and the inevitable mitigations that will be required as a result of them (based on evidence that is now known), be coordinated with the timeline of approving, certifying, and adopting the new General Plan Update, the Final EIR, and the new Zoning Ordinance, when *the veracity and legitimacy* of the GP Update programs and policies, the EIR assessments and conclusions, the mitigation requirements, and zoning designations in the revised Zoning Ordinance *are fully dependent upon* on the results of those studies and assessments and the feasibility of the required mitigation plans?

This challenging question is supported by the various comment letters submitted by Community Venture Partners, MR Wolfe & Associates, and Watershed Sciences (all of which are incorporated into this comment letter by reference).

6 Cont.

There is no question that the City is fully aware of the environmental hazards and associated existential risks in the Marinship. For example, on page W-4, under *Figure 3-1: Sea Level Rise*, it states,

> "Sausalito will work towards California's state goal, as stated in the California Global Warming Solutions Act of 2006 (AB32), of reaching 80 percent below 1990 greenhouse gas emissions levels by 2050. *The city must do this while collaborating* with local and regional agencies to maintain the quality of life as well as architectural and natural characteristics of the city in a time of changing climate. City policies are informed by the Marin Bay Waterfront Adaption and Vulnerability Evaluation (BayWAVE), which also notes that sea level rise may combine "with typical hazards that already exist (e.g. liquefaction and ground shaking near fault lines, erodible soils, and heavy rainfall) to contribute to a city's vulnerability." [Emphasis added]
>
> "As Richardson's Bay encroaches on the city, *the risk of subsidence exacerbates* Sausalito's vulnerability. Areas of the city built on fill in Richardson's Bay are particularly vulnerable to the sudden or gradual sinking of land. Improved and localized subsidence data (program HS-1.9.1) and detailed liquefaction data (program HS-1.2.1) would mitigate this risk of leaching. This action of rising seas and shifting land increases the risk that industrial materials—particularly in the Marinship Waterfront—may leach into the water and negatively affect water quality. [Emphasis added]
>
> "This hazard is linked to *the possibility that industrial work may be precluded from the Marinship Waterfront if land in the neighborhood floods.* Sea level rise and climate

> change, therefore, are global phenomena with particularly acute effects in Sausalito. The General Plan has disaster preparedness policies (programs under objective HS-2, policy S-3.6, and policy S-3.7) that mitigate these risks to the social fabric, the environment, and economic sustainability in the city." [Emphasis added]

And on page W-10,

> "The General Plan Update should identify both unique infrastructure challenges and mechanisms to finance their solutions in all areas of Sausalito due to *the interconnectedness of infrastructure issues* throughout the city." [Emphasis added]

And on page LU-59,

> "h. Zoning should be considered with the necessary infrastructure improvements and impacts of sea level rise subsidence, and liquefaction in mind."

All this clearly implies that the City must do all appropriate studies, analysis, and assessments to determine impacts and mitigations, first, before the GP Update can be adopted and the Final EIR is certified, and the Zoning Ordinance revision process begins.

In addition, although the GP Update acknowledges the need for coordination with outside agencies (See page E-39; *CP-1.1.4 Marinship Infrastructure Needs*[2]), it never incorporates those needs into the GP Update approval process. Rather, it leaves it as an intangible item, without acknowledging that unless this is done prior to other approvals and certifications that coordination and cooperation will be impossible. 6 Cont.

<u>QUESTION (3):</u> Who will be responsible for doing the required studies and assessments noted in the GP Update's programs and policies?

On page CP-18, it suggests,

> "<u>CP-1.1.4 Marinship Infrastructure Needs</u>**.**
>
> "Consider coordinating with the county and other stakeholders to commission an Engineering Analysis to examine the infrastructure costs and scenarios across the Marinship area to better inform the cost/benefit choices available to the city, property owners, and businesses in the Marinship. This analysis would establish goals and identify funding sources for a study to address public access improvements (including pedestrian, bicycle, and vehicular circulation); roadway, sidewalk, and drainage improvements; and sea level rise adaptation needs, challenges and solutions. The analysis would also take into consideration the unique needs of industrial businesses in the Marinship, including heavy equipment and deliveries."

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[2] "CP-1.1.4 Marinship Infrastructure Needs. Consider coordinating with the county and other stakeholders to commission an Engineering Analysis to examine the infrastructure costs and scenarios across the Marinship area to better inform the cost/benefit choices available to the city, property owners, and businesses in the Marinship."

So, again, when does this "consideration" and "coordination" happen and in what relationship to the City's process of approving the Final GP Update, certifying the Final EIR, and drafting and adopting a new, revised Zoning Ordinance?

6 Cont.

For example, on pages W-20 to W-21, it states,

> **"**W-5.2.2 Sea Level Rise and the Marinship. Consider the city's— and particularly the Marinship's—historic assets when developing scenarios for the city's sea level rise strategy."

The GP Update and RDEIR infer that this will be done at the "project" level. But if so, how will the global, state and county wide, and area-wide environmental threats and hazards adequately assessed?

All this considered, it is just common sense that assessments and mitigation plans for area-wide environmental hazards, such as SLR, subsidence, and failing infrastructure in the Marinship, should be done before an EIR can be considered adequate or the zoning on any parcels can be considered. Yet the GP Update and RDEIR are mute on this.

Consider, for example, *FIGURE 7-11 100-YEAR FLOOD MAP WITH GEOLOGICAL INVENTORY***.** While it is commendable that the GP Update includes maps such as this one (though it fails to include subsidence zones), a feasible plan to mitigate these significant, area-wide, environmental impacts does not exist. As it is, this map, alone, indicates that major portions of the Marinship are potentially under an "existential threat" and therefore may be undevelopable, unless major mitigation measures are undertaken, prior to the final approvals, certifications, and ordinance adoptions.

7

As another example of how the GP Update fails to adequately consider relationship of known environmental hazards and the sequence of events that would be required to properly assess impacts and create mitigation plans, consider the GP Update's discussions about sea level rise.

On page S-5, it states,

> "Climate change will result in sea level rise, with 26 acres in Sausalito exposed to advancing waters over the next 15 years. The northern approach to the city could be flooded, and the Marinship is at particular risk due to the combination of sea level rise and ground subsidence as the 80-year-old fill continues to settle.
>
> "These estimates come from the Bay Waterfront Adaptation Vulnerability Evaluation (BayWAVE), a Marin County tool for projecting sea level rise and flood risk. BayWAVE projects that Marin County could experience 10 inches of sea level rise by 2030, 20 inches by 2050, and 60 inches by 2100. Sea level rise will exacerbate the impacts of other coastal hazards, such as storms, flooding, and erosion.
>
> "BayWAVE's estimates show that as much as 149 acres, or 11 percent of the city's land area, could be inundated by the end of the century. This would include most of the

> industrial land in Sausalito, which could lead to serious financial problems—particularly as many of those industrial sites may require expensive cleanup in order to prevent contaminants from entering Richardson's Bay."

This supports our claim that area-wide assessments and mitigation plans are required, immediately. But, astonishingly, the GP Update then it goes on to say,

> "Mitigation entails reducing the magnitude of climate change and its impacts. The General Plan includes policies and programs intended to mitigate the impacts of climate change through strategies that include but are not limited to reducing emissions, increasing energy efficiency, encouraging the transition from fossil fuels to renewable energy sources, and increasing carbon sequestration."

7 Cont.

Do anyone really believe that the use of bicycles, electric vehicles, recycling wood, upgrading toilets, or using renewable energy in the City of Sausalito will result in sufficient reductions in greenhouse gas emissions that will mitigate global climate change to any measurable degree, enough to qualify as a "mitigation" of SLR for imminent real estate development in the Marinship? And to infer that these and the other mitigation policies found in the *SUSTAINABILITY – CLIMATE CHANGE MITIGATION AND RESILIENCY ELEMENT* are sufficient to support the RDEIR claim that sea level rise in the Marinship is not a significant environmental impact is simply unconscionable.

QUESTION (4): Who will be responsible to pay for the costs of all of the work and coordination noted in Question 3, above, the City or individual property owners/developers?

If individual property owners/developers are to be responsible for studies and mitigation, at the project review level (as stated in *APPENDIX F - Economic Development - Redevelopment Feasibility of Regulatory Alternative in the Marinship*), how is this practical or remotely, financially feasible when every study ever done by the City -- going back to the *1985: Marinship Specific Plan Geological Background Report* and up to and including the recent *February 27, 2020 KOSMONT Sausalito Land Economics Study* analysis -- has concluded that none of the known, significant environmental hazards in the Marinship are specific to any one particular parcel, but are area-wide, involving multiple parcels in each case, and that the costs of mitigation and in the case of toxins, remediation, are so great that no individual property owner/develop can possibly be held responsible for or would be able to afford to pay the costs of the studies and mitigations that will inevitably be required?

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Yet, on page A-6 in *Appendix A* of the GP Update it makes statements that directly contradict the recommendations made by all the experts they have hired in the past 30 years, including Kosmont, all of which say no single developer can carry the costs of the required mitigations.

Under "Cost Burden" is states,

> "The burden incidence of development impact fees is upon the project developers and builders who pay the fees. Fees are a cost of development and are "internalized" into project costs in the same manner as all other development- and construction-related costs.

> *There is no direct effect of fees on development pricing*, because the markets set pricing independent of costs. However, when costs are too high for the market to bear, development may be deterred until such time as prices justify costs. All costs will influence land value, so it is often the case that landowners bear a portion of the cost of fees through lower land values (prices paid by developers or builders). So long as total development costs fall within a reasonable level, potential negative effects on development feasibility effects are manageable." [Emphasis added]

8 Cont.

This is certainly an extremely generous description of the impacts of shifting major environmental assessment and mitigation costs onto the backs of individual property owners and developers: one that I would guarantee is not shared by those same property owners and developers.

Similarly, on page E-3, under *Policy E-6.3 Marinship Engineering Study and Financing Approaches*[3]**,** the GP Update acknowledges the need for "engineering" studies and "financing" methods, but, again, it fails to acknowledge that this can only be done prior the finalizing the GP Update, certifying of the Final EIR, and drafting of a revised Zoning Ordinance for it to have any tangible value.

QUESTION (5): If studies and assessments of area-wide, significant environmental hazards *are not done prior to City's approval, certification, and adoption processes,* noted above, what happens if those studies and assessments result in the conclusion that certain Marinship parcels are undevelopable, because the financial costs or physical practicalities of the required mitigation or toxin remediation are simply infeasible? And, please keep in mind that mitigation or remediation measures may, themselves, produce other significant environmental impacts that need to be assessed and possibly mitigated. These realities suggest that the Final General Plan Update and the Final EIR cannot be approved or certified until the required studies and assessments are made and mitigation plans are determined to be physically and financially feasible, in advance.

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QUESTION (6): Finally, how does any of this relate to the ongoing review and approval of submissions of actual projects on specific parcels, by private owners/developers, throughout the time of the aforementioned approval, certification, adoption schedule and sequence? In other words, what if a proposal is submitted and approved, and then after a permit has been issued, or even before, an area-wide study results in data and evidence that shows the developer's parcel cannot be developed as proposed because of area-wide environmental hazards or needed mitigations?

The General Plan and the RDEIR are both mute on all of these reasonable questions.

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[3] "Policy E-6.3 Marinship Engineering Study and Financing Approaches**.** Consider an Engineering Study of Infrastructure Needs in the Marinship Area as recommended in the Land Economics Study. Explore financial approaches including the formation of assessment district(s) within the Marinship to address these issues and needs."

THE CITY'S INCONSISTENT STATEMENTS REGARDING HIGH-DENSITY, MULTI-FAMILY HOUSING IN THE MARINSHIP

On October 13, 2020, the City Council held back-to-back public hearings, the first addressing an update to the General Plan's Housing Element ("Housing Element 2023"), and the second the revisions to the General Plan update now under consideration. The Staff Report prepared for the Housing Element 2023 attached and referenced maps showing eight potential sites "to provide permanent supportive housing for the anchor-out community in addition to senior housing and/or workforce housing." A copy of the Staff Report and map attachments ("Attachment 7_Map of Potential Housing Sites") accompany this letter. The maps disclose that several of the eight potential housing sites, including those labeled Site #2, Site #6, and Site # 7, are in the Marinship. Site # 6 is labeled as waterfront private property, and appears to be designated "Water-Based Housing Only." However, the map does not emphatically say that no land-based housing is allowed on Site #6. Site # 7 is labeled as an existing "RV Parking Area" at 2340 Marinship Way. Site #2 is designated for housing.

The October 13 Staff Report identifying of specific land parcels evidences the City's clear intention to rezone Marinship parcels for high-density, multi-family housing. Remarkably, however, neither the GP Update nor RDEIR acknowledge that the City is considering designating sites in the Marinship for future housing projects. The RDEIR does not mention the possibility, and as a result fails to disclose or evaluate any potentially significant direct or long-term secondary, indirect impacts that could result from introducing housing into the existing industrial/arts/maritime district. 10

However, this is not just a failure to inform and engage the public, but the proposals shown on the Housing Map in the Staff Report also contradict many of the new policies and programs proposed in the GP Update, and threaten the very heart and soul of the Marinship's maritime community.

It is not idle conjecture to state that residential uses drive out industrial uses. It is, in fact, axiomatic. This planning phenomena has been observed in this country for more than 100 years. More recently, one only has to look at how multi-family housing development has transformed and driven out industrial/warehouse/manufacturing businesses in "SOMA" (South of Market Street) in San Francisco and in "SOHO" in New York City, over the past decades.

More importantly, the parcels identified as "Site 6" and "Site 7"are arguably the linchpin of the entire Marinship maritime industrial zoned businesses and home to the majority of waterfront and land-based boat building, technology, and repair businesses, including the few remaining waterfront piers, shipways,[4] haul-out facilities, and equipment and vehicles storage. Site #2, though not a waterfront site, would still have considerable negative impacts on industrial uses, for the reasons noted herein. And, at the same time, Site #2 is the perfect location for a new, larger floorplate, maritime/industrial center—the kind of space that is now severely lacking the Marinship, which is driving away existing companies that wish to expand there. If the City is serious about all the GP Update programs and policies supporting the Marinship's industrial, maritime, artisan community, there is no better place to demonstrate that than on Site #2.

[4] Again, note *CD-6.2.12 Marin Shipways*, and the possible listing of these on the California Historic Register.

The following programs and policies contained in the GP Update that would argue against land-based housing being allowed for residential use on these parcels.

On page LU-5, it states,

> "Policy LU-3.2 Marine Industrial Uses. Promote and encourage *new marine industrial uses.* [Emphasis added]
>
> "Objective LU-4 Preserve Sausalito's Waterfront Policy LU-4.1 Marinship Waterfront Uses. Promote marine industrial oriented uses that require waterfront locations and *strongly encourage the success of the existing general industrial uses* found in the Marinship waterfront area. [Emphasis added]
>
> "Policy LU-4.3 Existing Recreational Marinas and New Marine Service Boatyards. *Provide opportunities to build new marine service boatyards, encourage upgrading and allow expansion of existing marine service boatyards and maritime construction and repair facilities*, and allow for minor expansion of existing recreational marinas in the Marinship." [Emphasis added]

Sites 6 and 7 are precisely where this "new" and "upgraded" and "expanded" uses will need to be located? 10 Cont.

On page LU-7, it states

> "Objective LU-8 Protect and Enhance the Historic Marinship Policy LU-8.1 Marinship Development. *Limit deterioration of the Marinship historic assets, incompatible uses that are not ancillary, and collocation of incompatible uses in order to preserve the marine, industrial, and arts uses of the Marinship* and the historical significance of the Marinship, ensure the health and safety of the waterfront and boating community, for future members of the Sausalito community." [Emphasis added]

Again, Site 6 is the location of the last shipways and haul out areas on the waterfront. That's said, consider that on page LU-66, it states,

> "LU-8.1.2 Marine Rails ("Shipways"). Encourage the repair and maintenance of the Marinship Shipways to allow for continued use and ensure compliance with environmental regulations and other regulatory requirements. Such encouragement could include (but is not limited to) the consideration of:
>
> "a. Designating the Shipways as a national, state, or local landmark if possible.
> "b. Creation of a zoning overlay designation to protect shipyards and resources, including buildings that already have been designated as historically significant."

Also, on page LU-58, it states,

> **"**Objective LU-4 Preserve Sausalito's Waterfront Policy LU-4.1 Marinship Waterfront Uses. *Promote marine industrial oriented uses* that require waterfront locations and *strongly encourage the success of the existing general industrial use* found in the Marinship waterfront area." [Emphasis added]

And with regard to the importance of maintaining important waterfront uses in the Marinship (e.g., on Site 6), on page LU-14, it states,

> "The primary waterfront area is located in the Marinship. *In the waterfront area of the Marinship, development will be limited to water-dependent uses and those that support marine industry*." [Emphasis added]

There is nothing about housing that is "water dependent" in any way.

On page LU-58, it states,

> **"**Policy LU-4.3 Existing Recreational Marinas and New Marine Service Boatyards. Provide opportunities to build new marine service boatyards, encourage upgrading and allow expansion of existing marine service boatyards and maritime construction and repair facilities, and allow for minor expansion of existing recreational marinas in the Marinship."

10 Cont.

So, how does the City intend to do this, when their own Housing Map designates a prime maritime business area, on Site 6 and Site 7, for housing? And as the City is well-aware, the existence of the Housing Map already has property owners intentionally allowing their properties to fall into disrepair, and raising rents to drive out maritime an industrial uses, in anticipation of the kind of redevelopment shown in the City's Housing Map.

On page LU-66, under *Objective LU-8 Protect and Enhance the Historic Marinship,* it states,

> **"**Policy LU-8.1 Marinship Development. Limit deterioration of the Marinship historic assets, *incompatible uses that are not ancillary, and collocation of incompatible uses in order to preserve the marine, industrial, and arts uses of the Marinship* and the historical significance of the Marinship…"

Similarly, on page W-6, it states

> "…in the Marinship maritime businesses restore wooden boats and service critical vessels such as the San Francisco Fire Boat."

And on page W-8, it states,

> "Noisy and industrial uses are common in the Marinship waterfront, and *new development should not crowd out* these traditional uses in the neighborhood." [Emphasis added]

And on page LU-7, under *Objective LU-8 Protect and Enhance the Historic Marinship,* it states,

> **"**Policy LU-8.1 Marinship Development**.** Limit deterioration of the Marinship historic assets, *incompatible uses that are not ancillary, and collocation of incompatible uses in order to preserve the marine, industrial, and arts uses of the Marinship* and the historical significance of the Marinship, *ensure the health and safety of the waterfront* and boating community, for future members of the Sausalito community." [Emphasis added]

Therefore, it is reasonable to argue that the City's Housing Map is categorically incompatible, for sites in the Marinship, or the project description of the GP Update is incomplete.

Similarly, the *Marinship Vision*, starting on page W-8 reinforces these planning goals, when it notes, 10 Cont.

> "The Marinship is an economically sustainable working waterfront maritime and industrial neighborhood that is planned and developed with innovative solutions to sea level rise combined with regional and global sea level rise reduction and management programs."

And

> "The neighborhood is supported by updated infrastructure, has unique local neighborhood-serving services and amenities, and is home to a thriving community of artists and innovators."

And finally, on page LU-9, it states,

> "The city adopts land use controls to shape and moderate development so that the city retains its historic character, ensures appropriate infrastructure capacity, *reduces public safety hazards, and retains resident-serving uses, its artist community, and essential marine related industrial uses*. Environmental risks associated with sea level rise and flooding, subsidence, environmental contamination, urban wildfires, and geologic activity *are acute dangers that require careful land use management."* [Emphasis added]

These declarative statements pretend that the City's Housing Map does not even exist and its exclusion avoids the fact that there are horizontal inconsistencies in the City's planning programs and policies.

THE FALACIES OF THE *GENERAL PLAN UPDATE FINANCING AND IMPLEMENTATION STRATEGY MEMORANDUM* BY M-GROUP*:*

The overall approach taken by the RDEIR and the M-Group's *General Plan Update Financing and Implementation Strategy: Appendix E,* dated August 8, 2020, is to treat the inevitable, area-wide mitigation of significant environmental hazards in the Marinship and the remedial work required to minimally meet the goals of the GP Update, as if the Marinship was a generic, stable, neighborhood in a typical city with run of the mill environmental challenges, devoid of existential threats, rather than the extremely problematic area it actually is. As such, neither the generic, boilerplate "Findings" nor the financing methods proposed are adequate or appropriate for the Marinship. The approach taken is suitable for cookie-cutter situations where developers and planners are able to focus their discussions on a single plot of land and an unchallenging building environment.
The Marinship isn't even remotely like that.

For example, "Key Finding" number 2 on page 1 of the August 2020 memo is titled, "New development in the City will generate real estate value that serves as a basis for funding infrastructure improvements." This basic approach to the city's financial growth is a shopworn idea from the 1980s and 90s that is no longer relevant to how our economy operates and is being deconstructed in the 21st century. This is the method that cities like Vallejo and so many others pursued, right into bankruptcy court.

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In fact, in the Marinship, the exact opposite is the case. The City must make significant investments in infrastructure in order for private capital to show any interest in real estate development.

Reading the M-Group's Memorandum, it's hard to believe that they ever even left their offices and walked around the Marinship when they compose their memo. Their suggested methods of raising revenues through taxes, fees, special assessments, special district financing, etc. (see their Memorandum *Appendix A – Summary of Potential Funding Mechanisms*) will not be sufficient or generally available to address the unique impacts mitigations or remediation that will be required in the Marinship. And Marin voters, in particular, have shown a distinct objection, lately, to public agencies that keep coming back every two years for more and more tax revenues, special assessment, and public debt offerings, and so forth. The M-Group is apparently oblivious to this trend. However, based on the analysis or private experts, such as Watershed Sciences and other studies done to date, it is entirely possible that the costs of mitigations and remediation in the Marinship could run from the hundreds of millions to more than a billion dollars.

However, the M-Group never bothers to ask, what happens if the public just votes "no?"

This said, it is interesting to note comments found in the M-Group "Technical Memorandum," dated August 23, 2019, titled, *Economic Development/Redevelopment Feasibility of Regulatory Alternatives in the Marinship EPS#161159,* which is inserted as Appendix F, in the GP Update. On the first page is states,

> "The conclusions are based on readily available information and project assumptions applied to a set of hypothetical and relatively generic development prototypes. This *analysis is intentionally non-specific* about any single property; instead, the actual performance and outcome of a particular property or project *will depend on a variety of factors that cannot be known for certain in advance*, including project design and entitlement considerations, actual development costs, financing terms, and macro-economic trends." [Emphasis added]

And again on page 8, it states,

> "It is important to note that the building prototypes and related financial assumptions presented herein are relatively generic. Actual building design and resulting financial outcomes will be affected by variety of factors that have not been considered in detail at this point and remain subject to a high degree of uncertainty.

11 Cont.

These disclaimers basically confirm all of the critical comments in this letter. And with respect to the Marinship, it is the consultant's admission that none of what they are proposing is actually designed to address the real challenges the Marinship faces, despite its voluminous presentation, there is nothing in their more recent August 8, 2020 memo that makes any of the comments any more applicable.

Thank you in advance for your consideration.

Sincerely,

Bob Silvestri

President
Community Venture Partners, Inc.
73 Surrey Avenue
Mill Valley, CA 94941
415.381.3887
bsilvestri@communityventurepartners.org
https:www.communityventurepartners.org

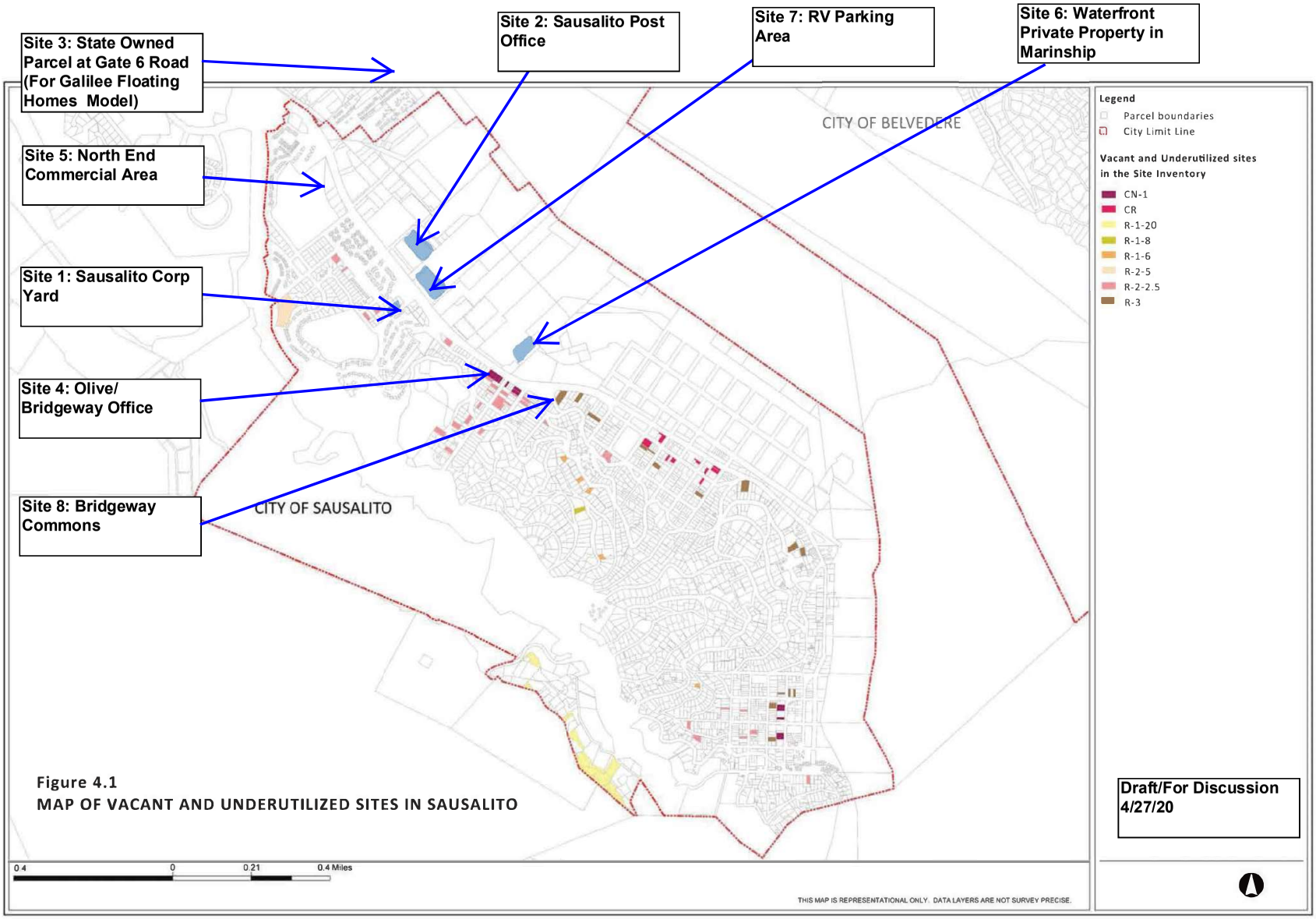


Figure 4.1
MAP OF VACANT AND UNDERUTILIZED SITES IN SAUSALITO

Draft/For Discussion
4/27/20

Site 1: Sausalito Corporation Yard

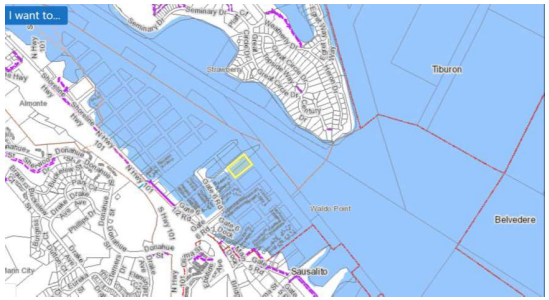
Address: 530 Nevada Street
Owner: City of Sausalito
Zoning: PI (Public Institutional)
Parcel Size: 25,500 square feet
Existing Uses: The existing buildings occupy just over one quarter of the site. There is no FAR limit in the PI zone. This site consists of two parcels.

Site 2: Sausalito Post Office

Address: 150 Harbor Drive
Owner: United States Postal Service
Zoning: PI (Public Institutional), Marinship Overlay
Parcel Size: 90,000 square feet
Existing Uses: The single story building is 13,260 square feet. There are two large parking areas, and a large warehouse area.

Galilee Floating Homes Model: Galilee Harbor is a Sausalito-based floating home community of 38 berths. It is a member-run cooperative community composed of artists, marine workers and their families, residents of Galilee Harbor are actively employed in marine and artistic occupations, including boat-building, boat repair, sail-making, marine canvas work, creative writing, theater, painting, photography and other visual arts. Many residents are low or very low income.

Site 3: State Owned Parcel at Gate 6 Road (For Galilee Floating Homes Model)
Address: APN 052-313-01
Owner: State of California
Zoning: BFC-RCR(Outside of City Limits, in the County)
Parcel Size: 95,832 square feet
Existing Uses: Water



Site 4: Olive/Bridgeway Offices

Address: 2015 Bridgeway
Owner: BHIG
Zoning: CN-1 (Commercial Residential)
Parcel Size: 12,000 square feet
Existing Uses: The existing 10,450 square foot three story (bottom-level parking) building used to be apartments but now is being used as office space. Recently on the market.

Site 5: North-End Commercial/Residential

Addresses: 2901, 2829, 2633, 2631 and 3001 Bridgeway
Owner: Various Private Property Owners
Zoning: CN-2 (Commercial Residential)
Parcel Size: Varies
Existing Uses: Variety of commercial uses in single-level buildings (restaurants, gas station, convenience store, etc). No housing currently allowed in this district.

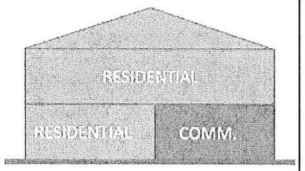
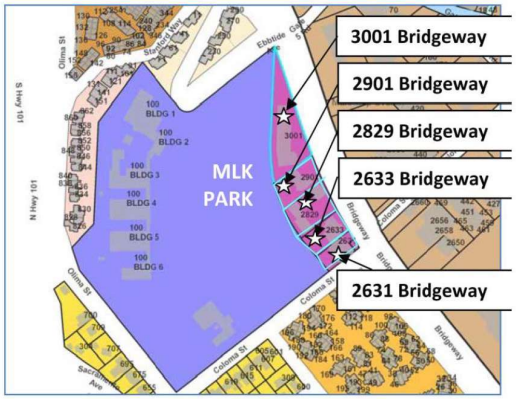
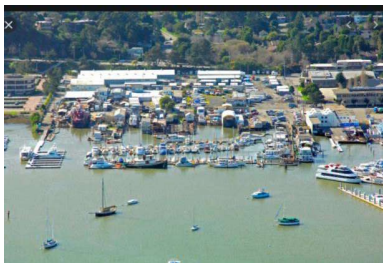


Figure 5 – Residential Overlay cross-section- single structure



Galilee Floating Homes Model: Galilee Harbor is a Sausalito-based floating home community of 38 berths. It is a member-run cooperative community composed of artists, marine workers and their families, residents of Galilee Harbor are actively employed in marine and artistic occupations, including boat-building, boat repair, sail-making, marine canvas work, creative writing, theater, painting, photography and other visual arts. Many residents are low or very low income.

<u>Site 6: Waterfront Private Property in Marinship (For Galilee Model)</u>
Address: 2350 Marinship Way
Owner: Sausalito Shipyard and Marina
Zoning: Industrial and Waterfront
Parcel Size: TBD
Existing Uses: Variety of storage, arts, marine-related uses, marina, open water



Site 7: RV Parking Area on Marinship Way

Address: 2340 Marinship Overlay
Owner: Francine Clayton
Zoning: I (Industrial), Marinship Overlay
Parcel Size: 125,888 square feet
Existing Uses: This is a strip of RV parking area across from the buildings at 2340 Marinship Way. The existing buildings total 28,684 square feet.

Site 8 "Bridgeway Commons" Site

Address: 1755 Bridgeway
Owner: Sy Jardin's Lookout LLC
Zoning: R-3 (High Density Residential)
Parcel Size: 25,264 square feet
Existing Uses: Three dilapidated structures are on the site. There is a current proposal for 16 condominium units on the site (has not received entitlement review at this point)

Date: December 01, 2020

To: Community Venture Partners, Inc.
73 Surrey Avenue
Mill Valley, CA 94941
Attn: Robert Silvestri, President
Email: communityventurepartners@comcast.net

From: Laurel Collins, Watershed Sciences
8038 Mary Ave NW
Seattle WA 98117
Email: laurelgene@comcast.net

Subject: Review of the October 27, 2020 Revised General Environmental Impact Report (SCH # 201910322) of the Sausalito Draft General Plan Update

Dear Mr. Silvestri,

Below please find an enumerated list of comments based on my review of the Revised and Recirculated General Plan Environmental Impact Report (RGEIR). Overall, I did not find any significant new studies, assessment, data, research or new citations in the RGEIR that caused me to want to retract or alter any of my original comments made in my August 5, 2020 review letter of the Draft Environmental Impact Report of the Sausalito Draft General Plan Update.

COMMENT 1.

The RGPEIR states that:

> "RGPEIR P 3.4-18
>
> "Archaeological Sensitivity Zones
>
> "Three archaeological sensitivity zones have been identified in the Environmental Quality Element of the General Plan. The potential of discovering archaeological materials would be very high within any of the three sensitivity zones. The three sensitivity zones are listed below and shown on Exhibit 3.4-1."

Zone 3 along the Marinship area is described as follows:

> "RGPEIR P 3.4-18
>
> "Zone 3. This area includes the original shoreline between Dunphy Park and Martin

Luther King School. The construction of the Marinship facility to build supply ships during World War II caused a massive filling of the marshlands found on the bay side of Bridgeway in this area. Bridgeway, which occupies high ground from its intersection with Napa Street to the west as far as approximately the intersection of Bridgeway and Nevada Street, probably marked the extent of any indigenous site placement. From Nevada Street to the Martin Luther King Park, archaeological site placement may have continued as far as Tomales Street behind the former distillery, now an area of housing (Willow and Cypress Lanes)."

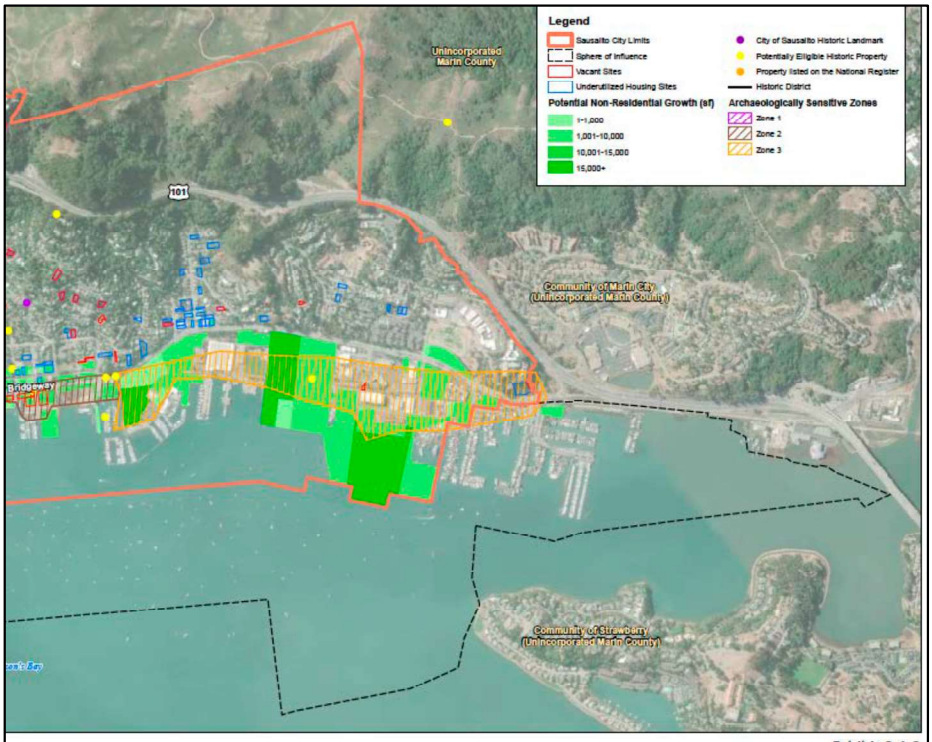


Exhibit 3.4-2
Potential Growth Areas In Relation To
Historic Resources and Archeologically Sensitive Areas

The above reference describes the area of Zone 3 as the original shoreline". The statement and mapping is the same in both the DIER and the RGPEIR. Based upon my review of historical hydrographic and topographic maps, the yellow boundary shown in RGPEIR Exhibit 3.4-2 (detail shown below) that is reported to depict the "original" shoreline is inaccurately delineated. It should be shown as I depicted it as Figure 2 (also shown below) in my August review letter.

The RGPEIR states that the potential is very high of discovering archeological materials in any of these zones. The shoreline that I mapped that is shown as a dark pink line on Figure 2 below (and that is also included in my August review letter) is based upon the earliest circa mid 1800 Coast and Geodetic Surveys Charts of hydrographic and topographic conditions. This information was compiled by the San Francisco Estuary Institute. The entire historical bay shoreline was delineated from these early charts and is available online at SFEI EcoAtlas. I have

also attached digital copies of some of the earlier Coast and Geodetic Surveys that verify the mapping they show.

As can be seen in Figure 2, both the upper and lower extent of the marsh shoreline (marsh is assumed to be at MHHW and therefore exposed at low tides and inundated at higher high tides) is located west of Bridgeway, <u>not</u> east of it as shown in the RGPEIR Exhibit 3.4-2. If the original shoreline boundary is wrong, how can Sausalito be sure that there has been adequate assessment of the significance of impacts?

This raises the question about whether the boundaries of Zones 1 and 2 are inaccurately mapped.

The RGPEIR stated:

> "RGPEIR P3.4-34
>
> "As with prehistoric archaeological resources, the waterfront has the greatest potential for buried tribal cultural resources to be present (see Exhibit 3.4-1)."

If this is the case, the shoreline (upper and lower extent relative to MHHW) needs to be adequately defined and assessed relative to the policies and protections that might exist for the sensitivity zones.

COMMENT 2.

The RGPEIR has changed the document, throughout, by adding lines at the end of each impact assessment to state the level of significance and whether mitigation is required or proposed (example given below). In almost all cases, the RDEIR concludes without evidence or appropriate assessment that no mitigation is required for potential impacts related to geology, soils, seismicity, hydrology, water quality, utilities, wildfire, Hazards and Hazardous Materials. This does not change my perspective that foreseeable and extensive mitigation will be needed to implement proposed development in the plan, and that it should be adequately assessed and evaluated ahead of time to establish whether further development is physically and economically feasible given future issues of SLR, subsidence, groundwater, storm drain, sewer, emergency egress, toxics, as well as potential impacts of excessive filling on other SLR adaptation projects along the Richardson Bay shoreline. Furthermore, the implementation of such necessary mitigation measures will itself foreseeably cause significant additional impacts.

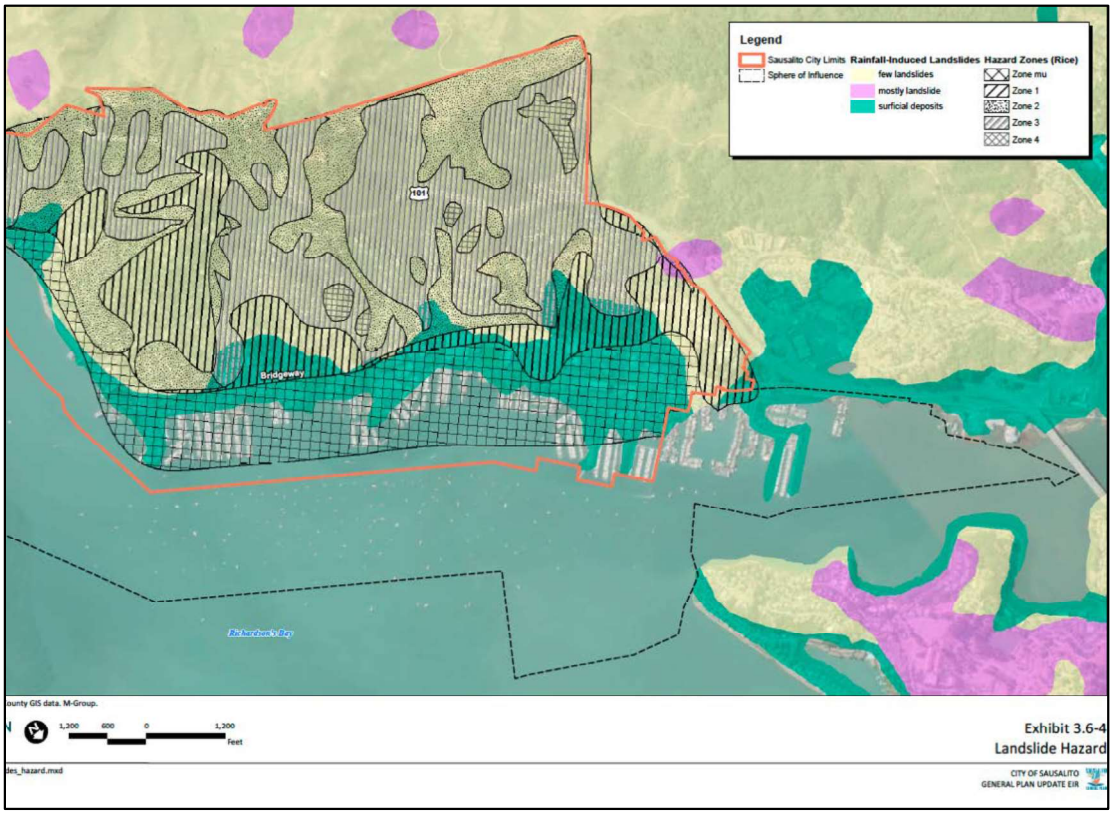
The RGPEIR does not appear to have provided or added any additional evidence, data, studies, or citations that would substantiate the claims that impacts, including impacts of required mitigation or remedial activities, will be less than significant. The RGPEIR is simply filled with unsupported assertions about existing policies and programs that would make mitigation in all cases either unnecessary or impacts less than significant, which is impossible to accept if the mitigations have not even been described.

A generic example of new RGPEIR added text that follows impact discussions is as follows:

> "Level of Significance before Mitigation
> Less than Significant
>
> "Mitigation Measures
> None Required"

COMMENT 3.

Additional information has been added to Exhibit 3.6-4 that includes more detailed landslide mapping by Rice within the Sausalito City limits. Note that the RGPEIR introduction does not mention the changes in this Exhibit. The close proximity and high density of landslide areas to Marinship further verifies my concerns that post fire erosion of streams and subsequent increased runoff, flooding, and sediment supply to Marinship is substantiated.



COMMENT 4.

Exhibits 3.16-1 and 3.16-2 have been revised to include additional Wildfire Hazard Mapping (shown below), however, the RGPEIR Introduction only mentions the latter exhibit.

In addition to the close proximity and high density of landslide areas to Marinship, their apparent location within high and very high fire hazard zones, as delineated by the new revised Wildfire Hazard Maps (shown below), further verifies concerns about significant post fire erosion hazards to Marinship that will be associated with stream erosion and increased runoff, flooding, and high sediment supply. The capacity of the storm drain conveyance system will likely be overwhelmed, creating significant hazards to people, emergency egress, and property that has still not been adequately addressed in the RGPEIR.

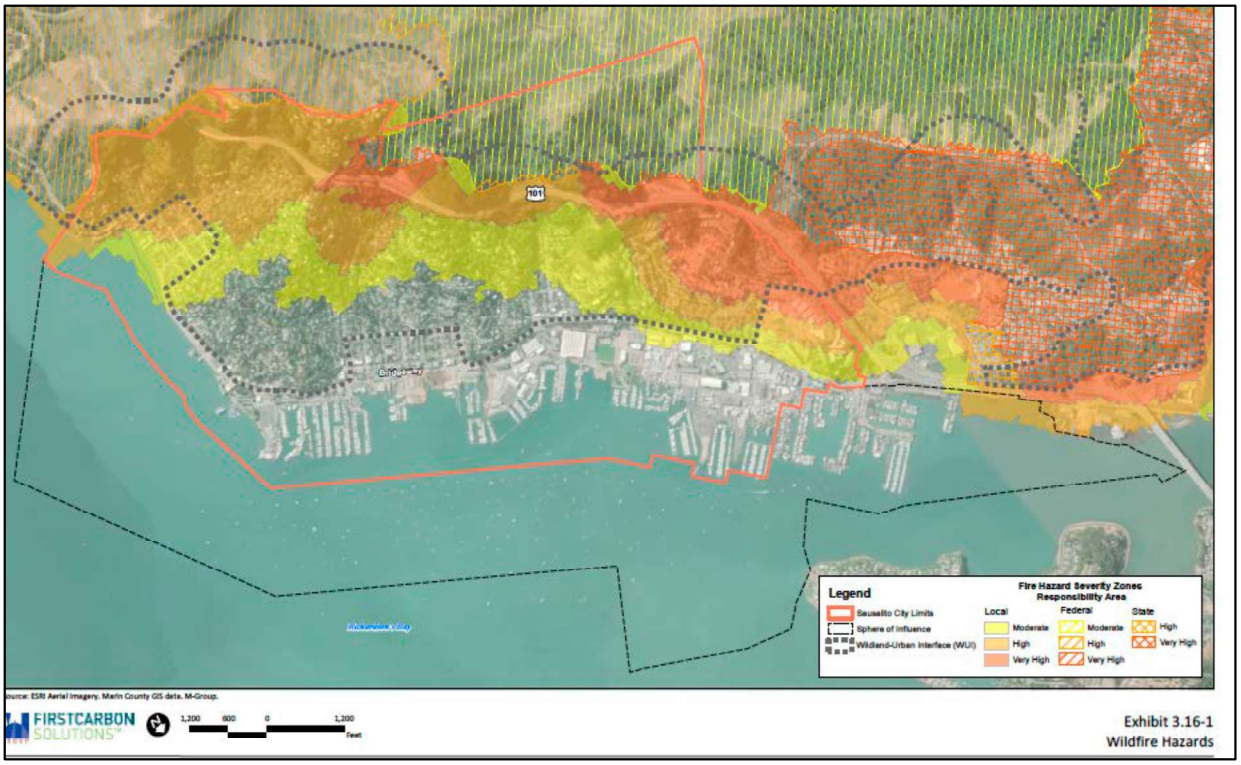


Exhibit 3.16-1
Wildfire Hazards

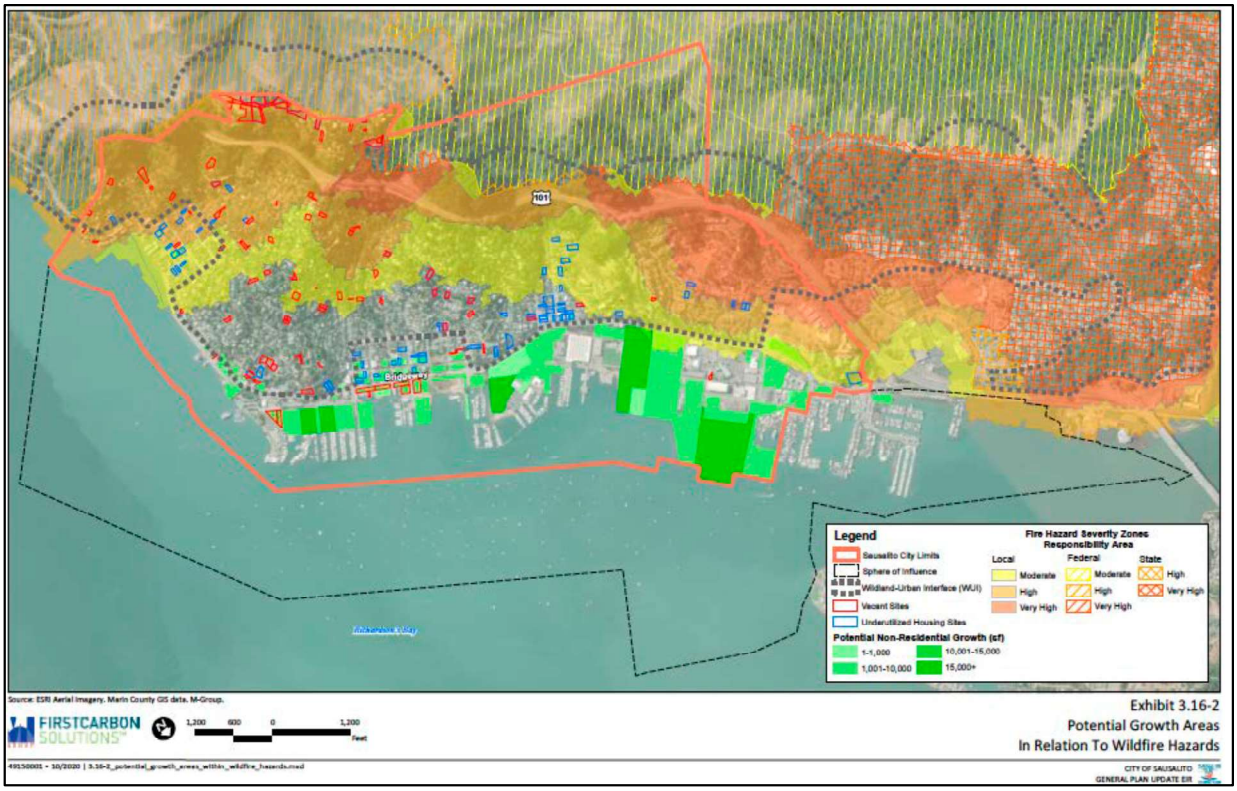


Exhibit 3.16-2
Potential Growth Areas
In Relation To Wildfire Hazards

COMMENT 5.

The RGPEIR adds the statement below in the beginning of the discussion on Geology, soils, and seismicity.

> "RGPEIR P 3.6-1
>
> "Future discretionary projects facilitated by the General Plan will be evaluated for project-specific impacts to geology and soils at the time they are proposed."

I question whether it is clear which projects in the RGPEIR will be discretionary and therefore reaffirm the need to assess potential mitigation impacts *before* the new General Plan Update and Final EIR are approved to establish whether the General Plan is practicably feasible. The RDEIR also fails to address the issue of cumulative impacts.

COMMENT 6.

The RGPEIR added the following two policies:

> "RGPEIR P 3.6-10
>
> "CD-1.6.1: Geographic Constraints. In order to enable safe use of buildings, use design guidelines discussed in HS-1.2.5 to ensure that new developments and substantial remodels work within the geographic constraints of its parcel."
>
> "Policy CD-2.3: Challenged Sites. Consider long-term risks when developing property that is or could potentially be at risk.

Given that the entire Marinship fill area will be an at-risk parcel from Sea Level Rise (SLR), subsidence, tsunami hazards, elevated groundwater, stormwater and sewage drainage dysfunction, and toxic ground water hazards (to name a few), the two previous policy statements support my assertion that existing and new development in Marinship has substantial geographic constraints in a high risk artificial environment.

COMMENT 7.

Below is a partial list of some additional new policy insertions relevant to my review:

> "RGPEIR P 3.6-12 to P 3.6-14
>
> "Policy HS-1.9: Subsidence. Identify, monitor and manage subsidence issues on at-risk parcels.

"Program HS-1.9.1: Subsidence Data. Obtain subsidence data that will be used to inform a subsidence mitigation and adaptation study (Program S-3.2.2).

"Sustainability Element

"Program S-3.2.1 Sea Level Rise Adaptation Plan. Prepare and adopt an adaptation plan for addressing sea level rise and land subsidence that minimizes the potential for displacement of residents, jobs, and other community assets, and prioritizes nature-based adaptation measures. The adaptation plan should include:

> "a) The Sea Level Rise Map, which will be created in collaboration with BayWAVE or other regional authorities on sea level rise, as a base for adaptation planning. The map will be updated periodically to reflect the most current and reliable data.
>
> "b) A "menu" approach to adaptation measures that would include but is not be limited to: managed retreat, nature-based adaptation measures, living shorelines, innovative building structures, and horizontal levees.
>
> "g) Evaluation of opportunities for retreat where practical and feasible, prioritizing undeveloped sites, areas in permanent open space, or areas that are environmentally constrained. Allow for transfer of ownership rights. Consider retreat as a last resort.
>
> "m) An economic analysis of mitigation costs versus private and public economic loss.

"Program S-3.2.2: Subsidence and Liquefaction. Complete a geologic and/or hydrographic study that describes how Sausalito's unique ground subsidence and liquefaction issues will interact with sea level rise. The study should include recommendations and implementation measures.

"Program S-3.8.3: Sausalito-Marin City Sanitation District. Require written documentation from the Sausalito-Marin City Sanitation District that there is available and adequate sewer capacity prior to project approval for those projects subject to SMCSD review.

"Program S-3.8.4: Well Water. Require written documentation from the City Engineer of proof of adequate domestic water supply (well water) if water service is not available from MMWD prior to project approval.

"Program S-3.8.5: Marin County Environmental Health Department. Require written documentation from the Marin County Environmental Health Department that there is sufficient capacity for leach fields prior to project approval in areas dependent upon septic tanks."

The addition of these programs reinforces the argument that these kinds of evaluations and assessments must be done on an area-wide basis, before any particular development proposal

can be considered. These programs are also inadequate to evaluate possible mitigation. For example, it is not described in the RDEIR how “Policy HS-1.9” would “manage” subsidence issues on at risk parcels and what the impacts of a presumed management technique would be.

To a large degree, it appears that the City of Sausalito has identified subsidence and SLR issues in the Marinship area. But toxic groundwater and its mitigation in light of the SLR, subsidence, seismic hazards, and flooding/stormdrain issues have not been properly identified as a significant hazard.

The next step before approving future development should be establishing whether development and its necessary mitigation is even feasible given what we know now. More studies after approval of the RGPEIR for at-risk parcels that could likely require managed retreat, floodwater and ground water pumping, and/or massive fill and/or levees makes no sense unless we know that these major issues, which need to be addressed in tandem and not separately, can be mitigated at all, without significant impacts.

The City must also establish whether required mitigations are financially feasible. Existing, known problems, such as ineffective storm and sewer drains and spreading of toxic flood water and contaminant ground water plumes, needs to be addressed, and potential environmental impacts evaluated, before review of any future development.

As such, programs S-3.2.2, S3.8-3, S-3.8.4, and S-3.8.5 should be done prior to acceptance of the RGPEIR.

COMMENT 8.

The new RGPEIR insertion below for discussion of Impact GEO-1 strengthens my concerns about exiting infrastructure and development in Marinship and the concerns about any new development that will either occur on existing fill or that will require a massive effort of removal and that will certainly have foreseeable impacts that have still not yet been acknowledged in the RGPEIR.

> “RGPEIR P 3.6-16
>
> “Secondary hazards may include liquefaction, seismically induced landslides, and subsidence, especially in the water front area which is largely underlain by surficial deposits that would be particularly prone to liquefaction and subsidence as shown in Exhibit 3.6-3, while hillside areas would have a higher likelihood for landslides, as shown in Exhibit 3.6-4. “

COMMENT 9.

A new Exhibit 2-4 was inserted in the RGPEIR that shows areas of potential nonresidential growth in Marinship. The map shown below shows extensive development on the artificial fill in Marinship.

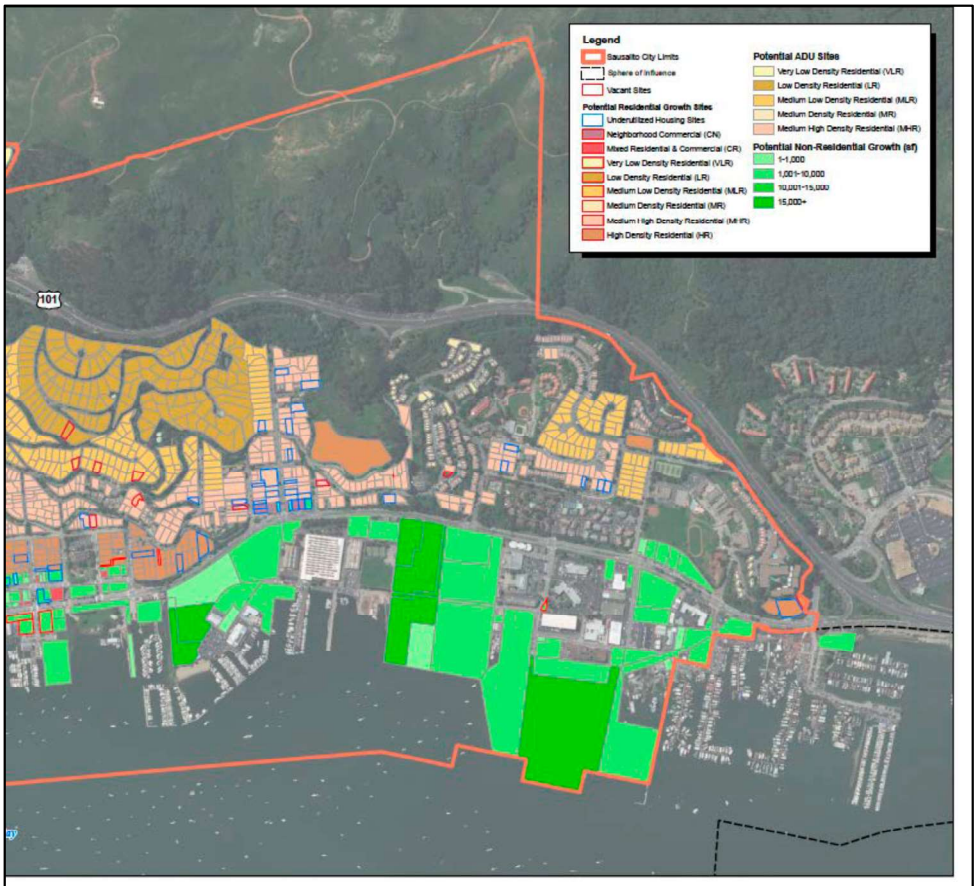


Exhibit 2-4
Potential Growth Areas

The RGPEIR inserted a new statement about Non Residential Growth:

> "RGPEIR P 2-9
>
> "Additionally, the General Plan may result in other public improvements throughout the city, such as . . . undergrounding of utilities (Policy CD-5.2); . . . "

The idea of undergrounding utilities in the Marinship area seems problematic, if not completely infeasible, in an area ridden with toxic substances, that is subsiding, that will have elevated groundwater, and is subject to SLR. At the very least, undergrounding efforts will foreseeably cause additional environmental impacts that the RGPEIR does not acknowledge or address.

To indicate throughout the RGPEIR that there will be no significant impacts defies common sense and scientific evidence.

The RGPEIR analysis of "Impact GEO-1" also includes the assertions below it that new development projects in Marinship will be evaluated on a case by case basis, yet the entire Marinship artificial fill area needs to be approached as a singular issue, *not piecemeal*.
This is because the interactions of groundwater, hazardous toxic plumes, SLR, subsidence, and stormwater/sewage drainage are interactive throughout the Marinship area – a change in one affects the others. A failure to mitigate one can cause other mitigations to fail. Fixing one component in one parcel cannot address the overall public health and safety consequences during a hazardous event or in future years with SLR.

> "RGPEIR P 3.6-18
>
> "Accordingly, future proposed projects would be subject to conducting an environmental analysis at the time a specific project is defined. In reviewing individual project applications, the city would determine which policies and programs apply, depending on the specific characteristics of the project type and/or project site during the development review process. . .
>
> "Consistent with General Plan policies, individual development projects would be required to undergo project-specific environmental review, which may require additional site-specific or project-specific measures to reduce any potential for loss, injury, or death in the event of a seismic event."

COMMENT 10.

"Impact GEO-2" added new discussions that the RGPEIR results in no significant impacts because it identifies land uses rather than specific development projects that would involve "unreasonable speculation" as indicated in the text below.

> "RGPEIR 3.6-19
>
> "The General Plan identifies future land uses, but does not describe specific development projects that will be undertaken during the 20-year planning horizon. Thus, estimating project specific impacts would involve unreasonable speculation. The General Plan includes a number of policies and programs specifically designed to protect individuals from injuries and minimize property damage resulting from land instability and geologic hazards by limiting development in certain areas and requiring increased review and mitigation where appropriate."

However, the land use planning proposed by the RGPEIR speculates that the land can be developed with no significant impacts based upon discrete programs that do not address and link the interactions and associated impacts of the existing environmental problems and/or future environmental issues as a whole. These environmental issues cannot be independently fixed.

As such, the RGPEIR is misleading with risky and potentially hazardous assertions that Marinship through all its purported policies and programs will provide Sausalito a safe future environment for people and an economic boost.

COMMENT 11.

For "Impact Geo-3," the RGPEIR has inserted additional descriptions of the previously referenced CBC policies about expansive and hazardous soils, yet it does not provide any new information or studies that alter my concerns that the removal of fill or soil in Marinship poses the potential danger of exposing and disturbing toxic soils and materials in the fill that will require mitigation, and that the assessment of impacts of mitigation have not been adequately addressed.

Adding new landfill at a higher elevation to reduce impacts of SLR, subsidence, and elevated ground water will surely require extensive remediation including fill that will be massive in volume and extensive throughout Marinship to ensure that properties can be accessed and utilized year round. This will increase the weight from new fill material on the existing bay muds, peats, and/or underlaying fill (if it is left in place), and would consequently cause immediate increase in land subsidence rates. This is a foreseeable significant impact that the RGPEIR fails to disclose or evaluate.

The impacts of large-scale removal of contaminated and/or inappropriate fill, and the mitigation of these substantial earth-moving and massive landscape altering activities needs to be assessed for all of Marinship as a whole, not piecemeal. The RGPEIR still fails to explain and identify the massive scope of what will be realistically required of the project and the foreseeable mitigation efforts that will be needed to make existing and proposed future development safe and feasible in Marinship.

COMMENT 12.

For "Impact Geo- 5, Impact Hyd-1, Impact Hyd-2, Impact Hyd-4, Impact Hyd-5, Impact Hyd-8, Impact Util-2, Impact Util-3, Impact Util -4, Impact Util-5," and "Impact Util-6," there are no substantive additions, other than further descriptions of policies and programs. These do not cause me to consider making changes to my original comments.

COMMENT 13.

General hydrology and Water quality comments in the RGPEIR have been inserted and include:

> "RGPEIR P 3.9-1
>
> "Future discretionary projects facilitated by the General Plan will be evaluated for project specific impacts to hydrology and water quality at the time they are proposed."

My comments, stated above, about the RDEIR's inappropriate piecemeal approach to impact assessment and mitigation from increased development also apply here.

COMMENT 14.

THE RGPEIR inserted the following text for "Impact Hyd-3" but still maintains that impacts are less than significant and no mitigation is required:

> "RGPEIR P3.9-20
>
> "For instance General Plan Program EQ-4.2.6 requires that new development and substantial remodels demonstrate that post development stormwater discharge does not exceed the predevelopment rate, ensuring that the potential for erosion would not be exacerbated but would rather be reduced. Program HS-1.2.1 will result in a detailed map that will identify, in part, locations identified as erosion hot spots, while Program HS-1.2.6 Hillside Ordinance, will include restrictions and heightened review for development on steep slopes that could result in the potential for erosion during construction. Policy LU-6.46.5 and Policy W-3.3, will further protect against erosion by requiring the preservation of the existing shoreline of Richardson's Bay as open shoreline and natural habitat."

It is unclear to me how the assertion that impacts are less than significant and no mitigation is required can be made and that the post development discharge rate will not exceed the predevelopment rates given that climate is changing. Rainfall rates and quantities are likely to change and it may become impossible to maintain the previous rates. The RGPEIR needs to acknowledge and address this.

COMMENT 15.

The RGPEIR inserted the following text for "Impact Hyd-6:"

> "RGPEIR P 3.9-23
>
> "Policy HS-1.11 Infrastructure and related programs require the evaluation of infrastructure and capital planning to ensure that upgrades are implemented where needed to ensure resiliency as part of the City's Capital Improvement Program. Additionally, Policy S-3.8 specifically states that future construction will proceed for only those projects that demonstrate the availability of adequate potable water, sewer, septic leach fields and storm drainage."

The availability of adequate sewer, leach fields and storm drainage should be established for Marinship <u>before</u> expanded development is approved and it should be established what the impacts will be for improving these conditions for the existing development in the context of

continuing SLR, subsidence, rising ground water, increased extent and emergence of contaminant plumes, and failing storm water and sewer drainage systems.

COMMENT 16.

The RGPEIR inserted the following text for "Impact Hyd-7:"

> "RGPEIR P 3.9-25
>
> "Additionally, the General Plan contains policies and programs to reduce the likelihood of new development within a tsunami inundation area."

It seems important to note again that the Tsunami Inundation Zones depicted in Exhibit 3.9-3 show only existing conditions and does not reflect the future expansion of Tsunami inundation zone under rising sea level conditions, influences of increased water table height, and land subsidence.

Therefore, the RGPEIR statement above would imply that the Marinship area under current conditions is not developable because of the Tsunami Zone. With future development and SLR, it is highly questionable whether it can avoid potential tsunami inundation. To accomplish that, significant and extensive landscape alteration will certainly be required.

The impacts and analysis of impacts of dealing with Tsunami Zones and how they will change in the future planning horizon have not been improved upon or sufficiently analyzed in the RGPEIR.

COMMENT 17.

Among other inserted policy/program descriptions in the RGPEIR, under "Impact Hyd-9," this sentence raises concerns:

> "RGPEIR P 3.9-27
>
> "The General Plan does not authorize any new development and the projected development in the City is allowed under the existing 1995 General Plan."

The insertion of this statement does not in any way address the concerns I expressed in my previous comment letter, and ignores the scientific evidence before the Agency.

COMMENT 18.

For "Impact Util-1," the RGPEIR inserted the following text:

> "RGPEIR P 3.15-20
>
> "New drainage infrastructure (including green drainage infrastructure) and maintaining existing culverts (through mitigating erosion and silt buildup) is key to reducing the risk of soil instability. This is an existing condition that is part of the environmental baseline, and not a condition that would result from implementation of the General Plan. Even under existing conditions, as described under Impact HYD-5, the city's stormwater system has sufficient capacity to accommodate additional stormwater runoff generated by buildout of the General Plan. The city also conducts regular maintenance and upgrades to the system to ensure that it continues to function effectively."

The new text states that the existing storm drain system has sufficient capacity to accommodate additional runoff generated by the buildout plan, yet this is inconsistent with the numerous references cited in my previous review letter that indicate that the storm drain system is outdated and contributes to flooding under certain conditions, such as King Tides or large precipitation events that coincide with high tides and/or storm surges.

Storm drain capacity will absolutely become increasingly limited and certainly contribute to more frequent flooding as SLR and subsidence diminish its ability to have stormdrain outflows in Marinship drain runoff into Richardson Bay. In addition, the interactions and influence of groundwater is not sufficiently addressed or evaluated.

Also, the RGPEIR on the same page states:

> "Should updates, improvements, replacements, or construction of new stormwater drainage infrastructure be funded or result from new development elsewhere in the service area, those subsequent infrastructure projects would be considered and analyzed for potential environmental impacts at that time, consistent with the requirements of CEQA. These storm drain improvements generally would not result in significant environmental impacts because they would be limited to maintenance, repair, and replacement of existing facilities and would not involve significant new disturbance or development. In addition, Program S-3.8.6 would require that new development not change drainage characteristics across property lines, further ensuring that storm drain work will not result in significant changes to the existing conditions."

This appears to be an extremely unrealistic underestimate of the extent to which the storm drain system would require extensive overhaul and redesign due to the need to deal with SLR (either more fill will be required or shoreline levees that would require future pumping of ground water and runoff), hazardous soils, subsidence, ground water, and assessment of capacity to deal with altered rainfall /runoff from climate change, landscape alteration, and development.

COMMENT 19.

The RGPEIR inserted new text under Section 5.2 GROWTH INDUCING IMPACTS that states:

> "RGPEIR P 5-1
>
> "There are two types of growth-inducing impacts: direct and indirect. To assess potential for growth-inducing impacts, General Plan Elements that may encourage and facilitate activities that individually or cumulatively affect the environment must be evaluated (CEQA Guidelines Section 15126.2(d)). CEQA Guidelines, as interpreted by the city, state that a significant growth-inducing impact may result if the General Plan would:
>
> "• Induce substantial population growth in an area (for example, by proposing new homes and commercial or industrial businesses beyond the land use density/ intensity envisioned in the general plan);
> "• Substantially alter the planned location, distribution, density, or growth rate of the population of an area; or
> "• Include extensions of roads or other infrastructure not assumed in the general plan or adopted capital improvements project list, when such infrastructure exceeds the needs of the project and could accommodate future developments."

The three bullet points, above, touch on the fact that all the roads for accessing the proposed and existing development in Marinship will require other infrastructure improvements that have not been adequately identified in the RGPEIR.

To make Marinship safe from the impacts of SLR, subsidence, elevated groundwater, and failing storm drain/sewer pipe conditions, there will either have to be extensive and pervasive land-fill added for roads and building sites or extensive containment levees that will require pumping facilities to deal with identified environmental hazards (including toxic groundwater and runoff that has nowhere to drain), and replacement of fill for any excavations that disturb toxic soils. These measures will foreseeably cause additional significant impacts that the RGPEIR fails to disclose or analyze.

In sum, the RDEIR does not realistically deal with the scope and magnitude or irreversible landscape alterations and extensive new infrastructure and utility redesign that will be required to protect people and property from identified risks and hazards.

With very bet regards,

Laurel Collins

Date: August 5, 2020

To: Community Venture Partners, Inc.
73 Surrey Avenue
Mill Valley, CA 94941
Attn: Robert Silvestri, President
Email: communityventurepartners@comcast.net

From: Laurel Collins, Watershed Sciences
8038 Mary Ave NW
Seattle WA 98117
Email: laurelgene@comcast.net

Subject: Review of the Draft Environmental Impact Report of the Sausalito Draft General Plan Update

Dear Mr. Silvestri,

Per your request, I conducted a technical review of the Draft Environmental Impact Report (DEIR) of the 2040 General Plan Draft Update (2040 GP) for the City of Sausalito. The DEIR evaluates the environmental impacts of increased development as proposed in both the 2040 GP and Alternatives Analysis of the DEIR. It concludes that environment impacts of increased development in Marinship will be less than significant. My technical review comments focus on environmental impacts that presently put people, buildings and infrastructure at risk with increasing probability of risk and adverse environmental impacts with the proposed increased development when the type, feasibility, and impact of necessary mitigation actions are not sufficiently identified. The Marinship Study Area (MSA) boundary for this review is outlined in yellow in Figure 1. Areas near the MSA and within the adjacent watersheds are included in comments when relevant to potential impacts or changes that should be considered in the DEIR.

I have reviewed the following technical documents for preparation of my review of the DEIR:

- City of Sausalito General Plan Public Review Draft, April 6 2020 (2040 GP);
- Geological Background Report Marinship Area Plan prepared by EIP for the City of Sausalito, 1985 (EIP'85);
- Comprehensive Existing Conditions Report, Chapter 6 Sea Level Rise and Subsidence, Sausalito Genera Plan, 2017 (GP6);
- Marin Shoreline Sea Level Rise Vulnerability Assessment prepared by BVB Consulting LLC for Marin County Department of Public Works Public Works,

June 2017 (BayWAVE);

- The Marinship Specific Plan Presented to Waterfront Steering Committee July 3, 2008 (MSP);
- Comprehensive Existing Conditions Report, Chapter 5, Environment and Infrastructure (GP5);
- Sausalito GP3 Housing Element Update 2015-2023, Adopted January 13, 2015 (GP3)
- Sea Level Rise in Sausalito: Overview of Potential Impacts to the Waterfront, October 3, 2017, Mott Macdonald, M-Group

Note that following the report title, abbreviations used in this review are shown in parenthesis. I have also used the following websites to attain environmental planning information:

- MarinMap Map Viewer - interactive county information and hazards map (MarinMap);
- Our Coast Our Future - Interactive SLR Map (OCOF);
- CoSMoS 2.1: San Francisco Bay - US Geological Survey modeling info (CoSMoS);
- Adapting to Rising Tides - interactive SLR Map (ART);
- FloodFactor Risk Analysis - interactive SLR map (FloodFactor);
- Federal Emergency Management Agency – Flood Insurance Map (FEMA);
- San Francisco Estuary EcoAtlas - interactive historical and modern landscape (SFEI);
- San Francisco Baykeeper - Sea level Rise Projection (Bay Keeper).

I. PROFESSIONAL EXPERIENCE

I have been a geomorphologist since 1981 specializing in riverine (fluvial), tidal wetland and hillslope geomorphic processes, hydrology, landslide analysis, sediment budgeting, geomorphic effects of wildfire, and anthropogenic influences on geomorphic landscape change.

I am the owner and principal scientist of Watershed Sciences, a consulting business presently operating in Seattle, Washington for 4 years, and previously in Berkeley, California, for 15 years. My opinion on environmental issues raised by the DEIR is based on my experience and scientific analyses of projects concerning geomorphic processes and land use impacts throughout Marin County, other counties throughout the Bay Area and California, and various western states in the US. During my 40 years I have worked on various stream and geomorphology related projects for Marin County Public Works, Flood Control and Water Conservation District, and Open Space District, Alameda County Flood Control and Water Conservation, East Bay Regional Park District, Contra Costa Clean Water Program, US Geological Survey, US Forest Service, California Department of Forestry, US National Park Service at Point Reyes National Seashore, Pacific Northwest Forest and USDA Range Experiment Station, San Francisco Bay Regional Water Quality Control Board, University of California at Berkeley, Lawrence Berkeley Laboratory, San Francisco Estuary Institute, and the US Department of Justice.

A specific and recent example of my experience in the Bay Area involves serving as a science and technical advisor to Marin County Open Space on their Bothin Marsh Sea Level Rise Adaptation Project. Bothin Preserve is the largest tidal marsh in the upper Richardson Bay. It is in Tam Valley, about a mile north of the MSA boundary. Planning for the future of the Bay Trail is an element of the project. The Trail is part of a multi-use pathway, built on a former railroad berm that extends into Sausalito. From 2016 to 2018, I was project lead of the analysis of Bothin Marsh Geomorphology, Ecology, and Conservation Options for Marin County Open Space. Bothin Marsh currently exhibits evidence of drowning from combined effects of loss of sediment supply, subsidence, and sea level rise (SLR).

Attached to this review is a copy of my current CV with a list of publications, reports and brief descriptions of other projects that I have been involved with.

II. SALIENT ISSUES OF CONCERN IN THE DEIR

Based on this review, my opinion is that the analysis of impacts of the proposed increased development in Marinship have not been adequately evaluated in the DEIR. As a result, potential adverse significant impacts are likely because in part,

1) future conditions within the planning horizon and beyond and how geomorphic processes of the altered environment will affect infrastructure, buildings, and safety of people in Marinship has not been addressed,

2) evaluation of certain critical impacts is missing,

3) assessment of the mitigation strategies that will be necessary to reduce potential hazards, such as SLR, creek and storm drainage, and subsidence, is missing or inadequate,

4) assessment of the environmental impacts of the potential mitigation actions is missing for the increased development, and

5) an adequate and sustainable SLR adaptation vision for Marinship is missing of what is environmentally practicable, economically feasible, and reasonably safe for continuing to maintain the existing artificial landscape that is facing mounting geologic, hydrologic, environmental, and structural hazards.

My review is broken down into several key topics that address major issues itemized below:

II.A. Under 2020 conditions, Marinship is an artificial landscape that has significant and numerous environmental risks and hazards. Their potential adverse impacts and interactions need to be fully characterized and envisioned to plan for the scope of actions needed to maintain the existing development to make it safe for people to live and work before increased development can be accommodated as proposed in the DIER. Key environmental conditions, potential hazards, and necessary mitigation impacts for existing and future conditions are incomplete or missing in the DEIR.

II.B. Combined SLR, subsidence, and elevated groundwater conditions in Marinship and elsewhere are plainly foreseeable between now and 2040. These components need to be merged with projections of future stream flooding maps to realistically evaluate environmental impacts of future developments along Richardson Bay shoreline. This can and should be documented in the DEIR.

II.C. Future increased development will require continued and increased large-scale mitigation to make it a viable environment for existing and proposed development. SLR accommodation, subsidence remediation, and other necessary infrastructure repair/relocation projects are therefore also plainly foreseeable but have not been evaluated in the DEIR.

II.D. Even if the precise details of necessary accommodation projects may not be known at this point, certainly the DEIR can identify the category or types of projects that will likely be required (sea walls, levees, dredge/fill etc.), and also the most likely locations of the projects based on projected flood areas. The DEIR does not adequately assess which mitigations will be used to minimize negative impacts in Marinship.

II.E. Since this is a plan level EIR that defers project-level impact analysis to the future as specific development proposals are brought forward, the same plan level approach should be taken with regard to future SLR/subsidence accommodation projects, which again are necessary and foreseeable.

II.F. It is critically important for the City to understand, today, whether the accommodation projects that will be required to protect the City under 2040 buildout scenario are financially feasible, whether they will be effective, and whether their own direct or indirect environmental impacts will be significant (e.g., sea wall displaces tides to other locations in the San Francisco Estuary).

II.G. In addition, the DEIR has inconsistencies and incompatibilities between different 2040 GP policies with environmental purposes/impacts (e.g. one policy calls for maintaining natural stream channels, which could undermine other policies of minimizing flood risks).

Each of these major topics are further broken down into subsections that provide supporting discussion, examples, and citations (often shown as smaller-sized and different font) from the DEIR or other reports listed in this review. My review comments address issues in the citations that are relevant to concerns about the DEIR.

II.A. Under 2020 conditions, the Marinship is an artificial landscape that has significant and numerous environmental risks and hazards.

These potential adverse impacts and interactions need to be fully characterized and envisioned to plan for the scope of actions needed to maintain the existing development to make it safe for people to live and work before increased development can be accommodated as proposed in the DIER. Key environmental conditions, potential hazards, and necessary mitigation impacts for existing and future conditions are incomplete or missing in the DEIR.

II.A-1. Background: The Marinship Landscape

The interactions of estuarine, hydrologic, geologic, climatic processes, and people have shaped and will continue to shape the landscape and watersheds of Richardson Bay. The existing development in and along most of Marinship is almost entirely on constructed artificial landfill, except for about 12.5 acres of the total 235 acres of land currently above mean higher high water (MHHW) in the MSA.

The total amount of landfill is about 103.5 acres and includes Bridgeway, the major transportation corridor into Sausalito and Marinship, sections of which are on landfill along most of the northwestern half of the MSA boundary and a few of short segments along the southwestern boundary. The remaining 119 acres within the MSA are presently open water subject to diurnal tidal fluctuations and rising sea level in Richardson Bay. An unknown portion of the 12.5 acres is likely on sandstone bedrock of Franciscan Complex Melange that was historically excavated and leveled to provide adjacent level land next to the landfill.

Attached, in the Appendix, is a brief description with accompanying graphics of some sequential changes that occurred during the filling the Richardson Bay that created the physical expression of Marinship, today. Figure 2 shows the 1856 historical coastline of Richardson Bay at about MHHW, indicated by the pink line and as depicted by the online SFEI EcoAtlas.

Tidal marshes (green polygons) and sandy beaches (yellow polygons) existed in the protected coves. In brief summary, early reclamation and filling activities first occurred on the nearshore substrata that was of variable composition and strength, initially ranging from organic rich tidal marshes, inorganic beach sands, to silty clay-rich mudflats.

As the landscape adapted to land use practices ponds and brackish wetlands evolved where drainage was poor or trapped or where the groundwater was high. Eventually, more fill was added and storm drains and ditches were needed to drain water from the uplands across and beyond the fill.

Composition of fill ranged from demolition debris (Figure 3), rock rip rap, bay mud, and soil and crushed rock from local sources. Newer fill was placed on older fill to extend the

artificial landscape bayward. The engineering of fill also changed and a multitude of piers were driven into the bay muds to support wharves to harden the land in 1942.

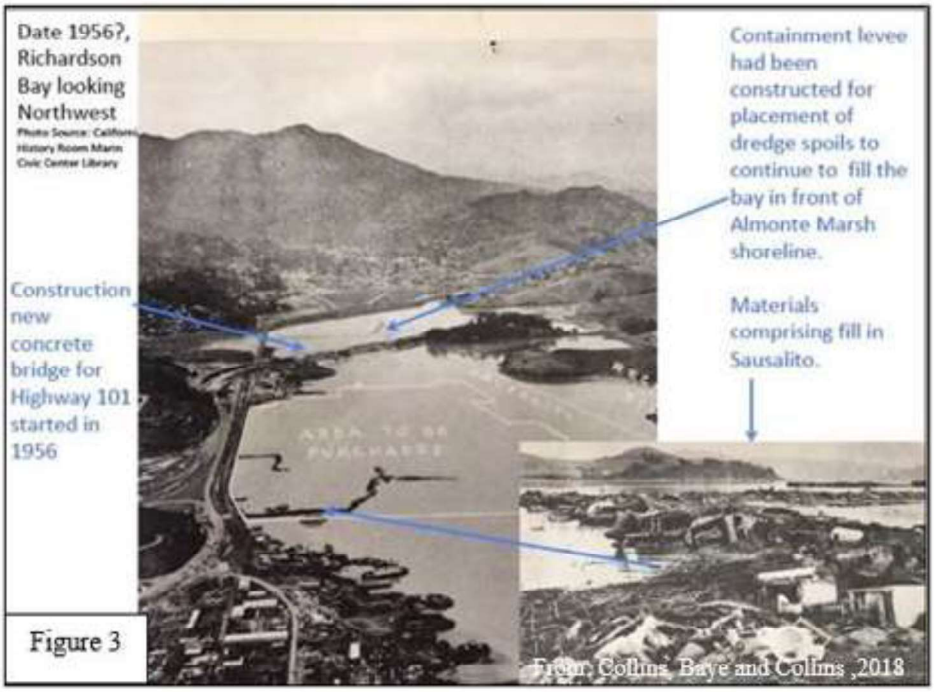


Figure 4 shows a photo of the piers, concrete debris, and wharf near Clipper Yacht Harbor.

The predominating land practices along and within Marinship changed from homesteading and local maritime commerce, to railroading, wartime ship building, to local commercial and industrial practices, many of which have contributed to the

polluted groundwater and toxic soils that exist at the site today. The aerial extent and depth to which toxic conditions is largely unknown but some specific locations have been identified and some treated. The existing buildings and their modern uses require supporting infrastructure such as storm drain, sewage pipes, electrical, gas, potable water lines, and communication lines that are situated above or below ground.

II.A-2. Land Subsidence

Hazards and safety issues pertaining to ongoing land subsidence in Marinship have been documented and are of increasing future concern. The City of Sausalito conducted an earlier investigation of the geological background of Marinship. The findings reported in EIP'85, discussed concerns about liquefaction and subsidence of the landfill. They describe on P 14 that most of Marinship is in a map unit described as MU – Bay mud that is unconsolidated, semi-fluid, and highly compressible. It has unique and severe stability problems that cause it to be highly sensitive to loads placed on it, reacting by compaction and lateral flow that result in settlement of the fill – often differential settlement - that continues for many decades where the thickness of the mud exceeds 25 feet.

The 2040 GP, on P HS-18, has also discussed the interaction of SLR and subsidence describing that subsidence "can lead to groundwater intrusion and intensify flooding and the effects of sea level rise, making development and infrastructure in these areas more vulnerable". This interaction is not discussed in the impacts analysis of the DEIR.

On P 1, EIP'85, states that

> "both static and earthquake-induced settlement also are known to be major concerns and on P 2 they describe that it is low in strength, cannot support appreciable loads without compressing and will flow laterally in response to weight (pressure) imposed from above (fill over ·mud). Peat, the most compressible component of bay mud, occurs in discontinuous lenses that compact more easily than surrounding materials and create differentials in the amount and rate of settlement under fill."

On page P 3, they continue to describe that the artificial

> "fill is highly variable material consisting of soils, silt, clay, rock waste, garbage, trash and/or dredged bay mud." They continue on P 4. to describe that "fill is subject to settlement when placed over bay mud. Artificial fill forms the surface of all of the Marinship Area that is underlain by bay mud… The stability of fill placed over bay mud is a function of the fill thickness and the thickness of the underlying mud… A considerable amount of settlement has occurred in Marinship since filling began about 40 years ago. However, because of the thickness of the mud, even near the old shorelines, and the added weight of continued development, most of the area has not yet stabilized."

On P 6, they discuss that although stability of sorts has been achieved in some of the bay side coves where the hundreds of wooden piles were driven to support ship launching activities, stability should only be considered relative because total settlement

is continuing, even though it is not as pronounced in this area as others, for example, near the 3030 Bridgeway Building.

The DEIR does not address the need for dealing with the extent and ongoing settlement issues of the Marinship area for future development. Clearly, sufficient information has been documented by others for the City that the ongoing settlement, especially in combination with the other significant hazards discussed here, (SLR, ground water, safety issues) is an existing risk that needs mitigation.

A very high rate of subsidence was reported by the Sausalito Housing Element and subsequently adopted Jan 2015 and incorporated into the Sausalito General Plan Update. On page B-29 it is reported that Marinship is sinking at a rate of between ½" to ¾" per year.

II.A-3. Sea Level Rise

GP6, on page P-1 describes that in "the San Francisco Bay Area, measured relative sea level has increased at a rate of approximately 0.2 mm per year (National Oceanographic and Atmospheric Association (NOAA), 2017)." This is generally accepted rate and used for broad-based adaption projects that establish conceptual planning horizons for SLR. This is further discussed in Section II.C of this review.

GP6 states, on P ii, that the 2040 GP should consider selecting "a modeled projection that is appropriate for Sausalito and planning for the next 20 years, such as the Marin Bay Waterfront Adaptation Vulnerability Evaluation (BayWAVE) model or other model that is found to be more accurate or appropriate to Sausalito. Land subsidence must be considered in any scenario." Using additional models as recommended in GP6 is an important recommendation and should be followed in the DEIR for reasons suggested in this review.

The BayWAVE map uses a 60" (5') projection from OCOF maps for long-term planning. In the BayWAVE maps is not clear if the target date is 2100. Marin County Open Space (MCOS) uses 66" (5.5') elevation as their planning threshold for SLR by 2100 in their SLR adaptation planning for Bothin Marsh Preserve as discussed in their report on Bothin Marsh Geomorphology, Ecology, and Conservation Options Chapter 2: Overview of Sea level Rise ad Land Management Response (Collins, LM, PR Baye, and J Collins. 2018). The online OCOF map has interactive elevation categories. The category that comes closest to MCOS's 2100 planning elevation is 68" (5.7').

Oddly, there is not an elevation category that provides the 60" (5') projections of SLR as shown in the 2016 BayWAVE report. It would be prudent for the DEIR in their impact analysis of increased development in Marinship to use the elevation of 68" (5.7') for a long-term SLR planning to 2100. This higher elevation might better represent SLR and the combined effects of the very high rate of sinking (between ½" to ¾" per year).

SLR projections of expected conditions for the 2040 planning horizon can and should be shown and fully evaluated in the DEIR. Yet, the DEIR does not show a single map for any long- or short-term planning that depicts projected flooding from SLR. Nor is there a designated section or heading in the DEIR that discusses the implications of SLR on

future impacts of development in Marinship, nor mitigations that will be needed to protect it. SLR is one of the biggest threats to dozens of municipalities all along the San Francisco Estuary and it is sorely missing in the DEIR even though other and potentially lesser risks and hazards are evaluated, e.g. earthquake, tsunami, fire, stream flooding, soil erosion, liquefaction, and landsliding.

The City had Mott MacDonald write a memo pertaining to an Overview of Potential Impacts to the Waterfront, October 3, 2017. The findings and recommendations were incorporated into the GP6 on SLR and Subsidence. On page 3 of the Mott MacDonald, M-Group memo the City was advised that the

> "General Plan could identify studies that should be completed to arm the City with the information needed to respond to SLR …and… Identify SLR as an issue of critical strategic importance to Sausalito, and/or develop specialized plans (hazard mitigation, or otherwise) that would guide the City's response to SLR."

These essential recommendations were not cited or followed as a component of the impact analysis in the DEIR. In the GP5 Environment and Infrastructure (page 165), the Mott MacDonald memo, October 3, 2017, is referenced about the

> "need to provide the City with a general overview of estimated projections that may be used to address issues associated with flood and storm events."

The DEIR does not heed the recommendations to develop plans for mitigation, nor does it provide projected SLR elevation for the target planning date of 2040. The critical requirements for protecting increased and existing development from direct and indirect SLR hazards through this planning period or beyond have never been established. As a result, the DEIR is inadequate to determine that impacts of increased development are less than significant.

The 2040 GP projected the amount of SLR for 2030, 2050, and 2100 as seen in the statement below.

Per GP5, P 167,

> "Projections for sea level rise along the greater San Francisco Bay Area shoreline range from 0.14-0.97 feet by 2030 to 0.40-1.99 feet by 2050, and 1.39-5.46 feet by 2100. These projections are becoming increasingly important for local coastal planning and resiliency. This issue bears relevancy to the City's land use planning process, infrastructure investments, and roadways improvements. In the future, the City will need to consider the interrelated land use and development criteria, as well as strategic planning priorities."

Although SLR projections are available in the GP5, a projected SLR for the end of the 2040 planning period was not established in the DEIR or used as a planning tool to evaluate requirements for protecting the existing or increased development from direct and indirect SLR hazards. Accordingly, impacts of increased development cannot be determined in the DEIR as less than significant.

II.A-4. Dredging

According to the GP3 P, p B-5, the

> "Dredged Material Management Office (DMMO) dredges Sausalito's "Raccoon Straights", the body of water running the length of the Marinship waterfront. . . . The U.S. Army Corps of Engineers has a Base Yard facility in Sausalito's Marinship area and operates hazard collection boats that patrol for debris and toxic hazards throughout the bay, removing approximately 90 tons a month1."

Issue of current or future dredging in the DEIR are not discussed. Past, present, and future impacts of dredging offshore of Marinship need to be understood and evaluated. It is not understood how much dredging is conducted, how it might influence stability of the fill shoreline, if it is used for the houseboat sites, offshore anchorages, or harbored deep draft boats that contribute to local commercial maritime enterprises. Dredging has been needed and a litigated issue at some creek/storm drain outlets at some local yacht harbors (L. Collins professional experience). If there are predictions of how sediment supply in Richardson Bay will alter local bathymetry with future climate change and SLR, the information needs to be in the DEIR or called out as a data gap.

If future dredging is needed, the environmental impacts to Marinship and future disposal sites must be determined. In addition it must be established if dredging will be needed to be a source of spoils for future levee and/or fill materials to create shoreline containment projects. Not one of these issues is discussed or evaluated in the DEIR and therefore the determination that the 2040 GP will not have adverse impacts from increased development cannot be supported.

II.A-5. Elevated Groundwater Table

The ground water table can and will likely become elevated (become shallower) with future climate change. Rainfall amount and intensity will likely change, SLR will submerge more land along with subsidence, and increased storm drain flooding from deteriorated storm drains and increased runoff from development will cumulatively impact the elevation of the groundwater table and influence the duration of soil saturation. The average elevation of the groundwater table will rise as SLR rises. Runoff will increase because there will less percolation due to ground saturation at nearshore locations such as Marinship. The effect on the inlets and outlets of increasingly submerged storm drains will contribute to increased backwater flooding at currently unidentified locations. The 2040 GP, on P HS-18, spells out the concern about the water table and its future effect on development subsidence

> "can lead to groundwater intrusion and intensify flooding and the effects of sea level rise, making development and infrastructure in these areas more vulnerable".

The DIER does not cite this information nor address concerns about the increasing water table elevation. In addition, potential impacts concerning saltwater intrusion as influenced by ongoing SLR and subsidence are not discussed or evaluated in the DEIR. Potential impacts of increased salinity on underground infrastructure is presently

undetermined on how it will affect corrosion of storm drain pipes and sewer systems (both of which have already been established to be in disrepair and need of replacement in some areas), drinking water pipes, electrical utilities and building foundations.

Differential settlement rates will continue to put underground drain and sewage structures at risk of breakage and leaks, potentially negatively impacting the waters of the SF Bay. Therefore, risks to public safety and property may exist that could be mitigated but there is no discussion or evaluation of these issues. Additionally, untreated sewage has already at times discharged to Richardson Bay. As sea level rises it will become an increasing health threat that will coincide with increased frequency of violations of local, regional, state and federal water quality standards and policies.

As sea level rises and the height of the groundwater table increases in Marinship, the potential for damages to infrastructure and risk to human safety will also increase. An elevated water table also has implications on other hazards that will also increase in severity with increasing water table. The DEIR aptly points out on P 3.6-4 "Liquefaction is more likely to occur in areas with a shallow water table." Although the DEIR shows the very high potential for liquefaction in the areas of artificial fill Exhibit 3.6-3, they do not specifically discuss the direct impacts of the water table on existing or future proposed 2040 development or how it will interact with other hazards and risks.

For example, although the DEIR does makes it clear that groundwater is contaminated with various toxic substances, they do not address how an elevated water table could spread toxic plumes to other areas, such as schools or public places, especially when the combined effects of creek flooding, increased submergence from SLR, subsidence, and deteriorated underground infrastructure will have the ability to enlarge and spread toxic plumes beyond their present extent. The DEIR has not adequately addressed existing or future potential impacts of ground water in Marinship.

II.A-6. Creek and Storm Drainage

The following citations describe existing conditions of the storm drainage system in and draining to Marinship:

Per 2040 GP, P S-9,

> "The City of Sausalito's storm drain system has been developed over the years with various types of materials from wooden box culverts, concrete culverts to corrugated metal pipe systems. Some of these systems were installed when the city was first developed and over time the system has deteriorated. In some cases, corrugated metal pipes (CMP) deteriorate to a point where there is no bottom to the culvert system and as such complete replacement is needed . . . In addition, replacement of deteriorated systems will be needed to address stormwater pipes that no longer convey water appropriately."

And GP3, P B-19,

> "In addition to the aging streets, the condition of the storm drain network is largely unknown. Numerous storm drain segments around the City are known to be in a failed state of condition and do not contain flows inside the sewer pipe."

And MSP, P 64,

> "Currently two-thirds of the Marinship area does not drain into the existing stormwater system but drains directly into Richardson Bay. Additional development of buildings, streets and parking areas in the Marinship will increase the amount of impermeable surface, thereby potentially increasing stormwater runoff. The bayside half of the Marinship is within the 100- year flood zone. The closer drainage lines are to sea level, the more difficult it becomes to achieve positive drainage without resorting to levees and lift pumps. The Marinship experiences flooding from upland drainage as well as tidal sources… Sedimentation has caused blockage of channels in the bay mud below the high tide line near Varda Landing Road, impeding drainage from this area at lower tides."

And DEIR, P 3.15-8, "Storm Drain Facilities"

> "Because of its steep terrain and proximity to Richardson's and San Francisco Bays, the City of Sausalito does not depend on a large storm drain network for flood control. Rather, the city's storm drainage infrastructure consists of a collection of catch basins, inlets and outlets, vaults, and storm drainage lines, both publicly and privately owned (Exhibit 3.15-3)."

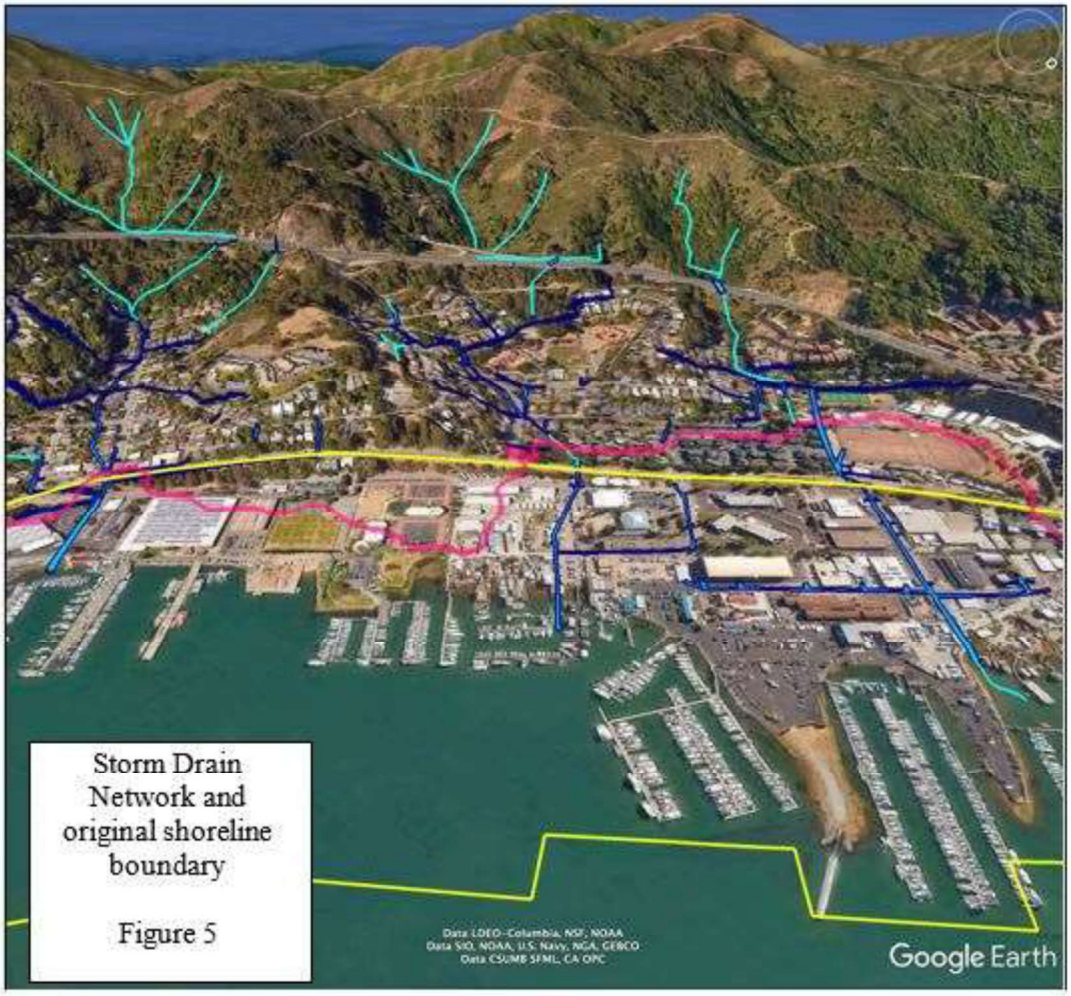
> "Stormwater runoff coming down from the hillside is conveyed through overland flow, along curbs and gutters, culverts, and smaller individual storm drainpipe networks. All stormwater is discharged into Richardson's or San Francisco Bay from overland flow or through one of at least 30 bay outlets. Most of the city's storm drain infrastructure is beyond its expected useful life."

Figure 5, below, shows some of the existing extensive storm drain network that had to be constructed to drain the hillsides above Marinship. The layout of the system is from information in MarinMap projected onto Google Earth Imagery.

The dark blue lines represent the known network of underground pipes and the light blue lines represent some of the estimated creek network of surface channels. The pink line, representing the historical 1856 shoreline, shows how far the storm drain system has to carry runoff and sediment beyond the original shoreline edge of Richardson Bay. The yellow line is the MSA boundary.

Since all the natural upland creeks uphill of Marinship now flow into the storm drain system beneath Marinship, as sea level rises, sediment deposition will change from the existing outfalls in the bay and to increasingly landward locations within the pipes as the tidal/fluvial (creek flow) transition zone migrates landward. The location of tidal/fluvial transition zones will be dependent upon changes in sea level (which functions as a base

level to outflow and elevation of the groundwater table), duration of inundation periods of tides and floods, rainfall duration and intensity, sediment load, gradient of the pipe system, and coincidence of tidal flood stage with flood stage creek.



Additionally, sedimentation will be influenced by the relative supply and size of sediment, available discharge to transport the sediment, the kind of infrastructure that contains the creek flow and its elevation relative to sea level, and capacity to transport water and sediment.

The 1856 outlets of some of the original creeks now extend more than a quarter of a mile to Richardson Bay. Figures 6 and 7 show the culvert outlet near Clipper Yacht Harbor. It transports coarse gravel-sized sediment from upland creek sources that likely extend west of Highway 101. Deposits of sediment form a delta fan at the outlet of the stormdrain in the yacht harbor. It is not known by this author if discharge from the highway is conveyed to Marinship. But local runoff is also a concern in the MSP, as indicated on P 61 that a “significant issue in the Marinship is the control of drainage runoff, a frequent source of bay water pollution.”

FIGURE 6

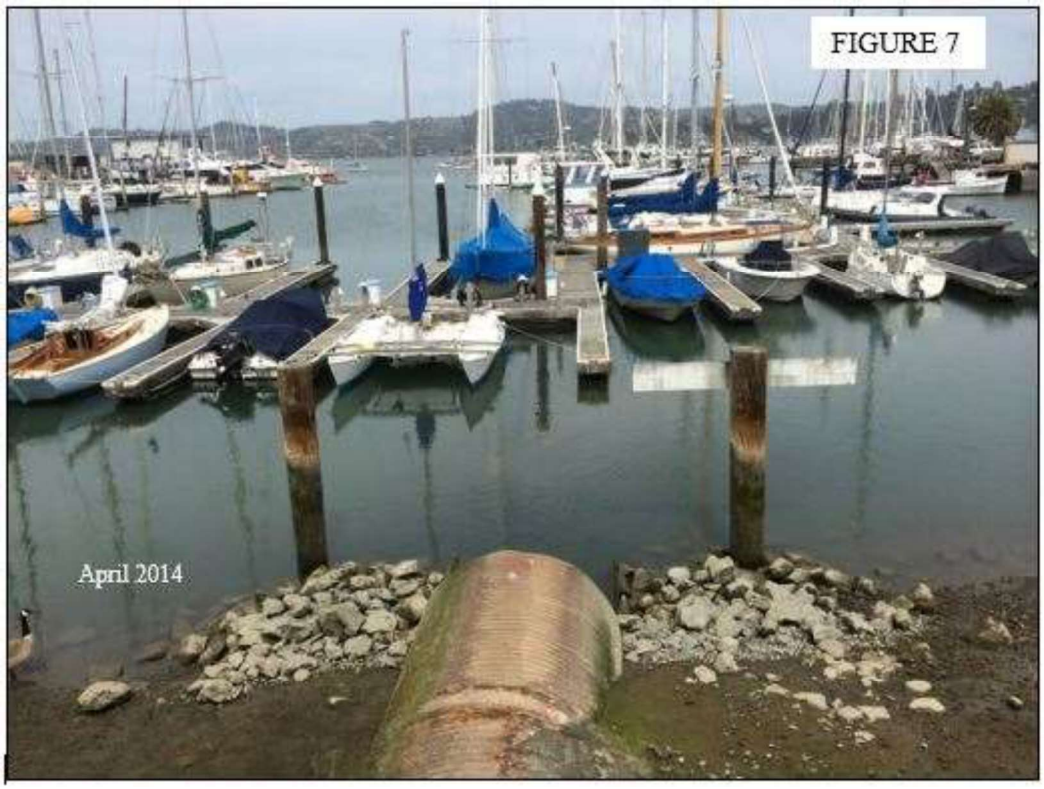


FIGURE 7

The DEIR (page 3.15-9) describes that

"most of the city's storm drain infrastructure is beyond its expected useful life".

In my opinion, the culverts risk filling with sediment and clogging in the event of erosional hazards such as landslides, high intensity rainfall, post fire runoff, as well as from combined and independent influences of SLR and subsidence. The DEIR correctly states on p 3.9-2 that "the low-lying and unprotected coastal areas of the community are subject to flooding from extreme weather events, storm surges, exceptional high tides, and sea level rise. Inadequate drainage and land subsidence also contribute to the problem of flooding".

Large amounts of urban runoff created from impervious surfaces also increases the volume of water conveyed to the storm drain system that will be increasingly unable to function and drain to Richardson Bay as designed. As sea level continues to rise, as acknowledged but not addressed as an impact in the DEIR, the present configuration of the drainage system will prevent drainage in the pipes beneath Marinship and the ground surface of the artificial fill that is proposed to become increasingly developed will have an increasingly higher water table and become periodically and increasingly inundated with some areas permanently submerged.

The adverse environmental conditions that presently exist in the storm drain system will amplify as 2040 approaches. The concerns and subsequent impacts discussed here have not been adequately characterized or evaluated in the DEIR. The probable effects of climate change on increased natural discharge to creeks and on urban runoff will further limit the inadequate carrying capacity of both water and sediment in the pipes beneath the Marinship landfill. This impact must be considered, especially as the drainage system become increasingly submerged, clogged, and decayed, decisions must be made about how to continue it use, or repair, redesign, or relocate it.

Unless the impacts are described in the DEIR it will not be possible to determine if the existing or proposed new development will be financially feasible, and safe enough to protect people from future backwater flooding and other associated health hazards.

In addition, the DEIR must address how Marinship will remove excess surface water from the following situations that will likely increase in magnitude during the 2040 planning horizon:

1. Rainfall;
2. Runoff that exceeds the capacity of deteriorated storm drains;
2. Backwater stormdrain flooding as sea level rises and as sediment clogs pipes
3. Elevated groundwater that will be creating ever-larger ponded areas, and caused by the latter 3 elements;
4. Potential overtopped shoreline from SLR, storm surges, King tides, waves, and/or Tsunami?;
5. Urban runoff from increased development in Marinship where LID practices will not be useful or appropriate.

Pumping will likely be a necessary means to drain the land and is a mitigation action discussed on P 56 of the MSP, but the feasibility, impacts, and costs for draining and maintaining the Marinship fill in perpetuity are not discussed in the DEIR.

The DIER evaluation of environmental impacts pertaining to storm drainage is deficient. It does not describe how the existing development in Marinship should deal with the existing problems that could render new development as unsafe.

II.A-7. Projected Creek Flooding

The DEIR uses FEMA Coastal Flood Hazard (herein referred to as just FEMA maps) maps to show the extent of flooding from storms that would have a 1% and 0.2% annual chance of flood hazard areas of 1% The maps were published in 2016 for conditions at that time and include the potential influence storms, stream flooding and waves as a factor that can influence the extent of flooding. Otherwise, FEMA maps do not take into account SLR or land subsidence that will continue to increase and affect the extent of flooding. The changing conditions caused by SLR and subsidence need to be an essential component of the Marinship environmental impact analysis. The changing conditions that will affect the extent, depth, and duration of flooding are complex and interactive and involve the following parameters that warrant analysis in the DEIR:

1) SLR and changing elevation of diurnal tides, King tides, size of waves, and storm surges;
2) The projected elevation of sea level by the 2040 planning horizon;
3) Change in elevation of the land due to continued subsidence of fill and/or land
4) The location and geomorphic shape of the 2040 shoreline;
5) Influence of backwater flooding as the tidal transition zone migrates landward
6) Change in location of sedimentation as the tidal transition zone migrates landward;
7) Increased height of the groundwater table that will inhibit percolation of surface waters and rainfall;
8) Influence of clogged and deteriorating storm drain system;
9) Increased runoff from increased development.

The DEIR discusses impacts relative to 2016 flooding probabilities shown on the FEMA map. On P 3.9-2 the DEIR describes that

> "Sausalito is situated at a point where the Marin Headlands meet Richardson's Bay. The resulting topography creates a sharp gradient that extends down to the city waterfront. In this context, the low-lying and unprotected coastal areas of the community are subject to flooding from extreme weather events, storm surges, exceptional high tides, and sea level rise. Inadequate drainage and land subsidence also contribute to the problem of flooding."

This description is certainly relevant to existing conditions, but not to future conditions that will not require extreme events to cause extreme flooding or continually submerged land. The FEMA map is the only flood map shown in the report, even though the DEIR says that SLR maps for planning are available in the BayWAVE report. To assess impacts of increased development for the 2040 planning period the BayWAVE maps could have been included in the analysis to attempt to show changing conditions that will affect stream flooding by 2040.

The FEMA map of Marinship shows projected stream flood levels to be lower than SLR

models, such as the OCOF maps that include important parameters in their flood potential maps such as land subsidence, wave energy, and storm surge probabilities in their SLR projections. There is a great need to merge the projections of SLR with projections of stream flooding to assess probable future conditions and associated impacts on existing and proposed development. This is discussed further in section II B of this review. Because the DEIR only used FEMA maps to assess impact, they failed to determine the significance of future flooding on the proposed development and the environmental impacts that would result from it.

II.A-8. Water Quality, Sewage, and Toxins

The combination of flooding, sea level rise, subsidence, and ground saturation has the potential to release toxins within the landfill, thereby creating a significant public health hazard. The 2040 GP, on P EQ-6, identifies a number of major pollution sources to Richardson Bay that include:

- "Treated municipal wastewater"
- "Wet weather overflows from municipal treatment plants"
- "Untreated wastewater from unsewered houseboats, liveaboards, and anchor-outs."
- "Urban water runoff, including waste deposited in roadways"
- "Sedimentation and erosion"
- "Dredging and dredged material disposal"

Without future mitigation, potential and increasing future pollution sources to the land in and near the Marinship will include:

- Tidal flooding from increased SLR in Richardson Bay;
- Urban runoff from clogged and failing storm drains;
- Sedimentation from urban creeks and clogged storm drains;
- Sewage from failing pipes;
- Erosion of toxic fill caused by increased wave amplitude and energy from SLR;
- Polluted surface water from elevated groundwater in toxic fill; and
- Soil erosion of toxic fill during creek or tidal flooding

The 2040 GP describes the following concerns about water quality and toxic conditions in Marinship:

Per GP5, P 166,

> "Stormwater runoff is the principal source of pollution entering surface and ground waters in the San Francisco Bay region. Typical pollutants include oil leaking from cars or trucks; paint or paint products; leave or yard waste; pesticides, herbicides, or fertilizers from yards and gardens; solvents and household chemicals; animal wastes, litter, or sewer leakage; and construction debris such as fresh concrete, mortar, or cement."

GP3, P B-5.

"In addition to historic and modern-day activities involving toxic and hazardous waste in northern Sausalito and, specifically, the Marinship area, flooding caused by landfill/bayfill subsidence, antiquated sewer systems, sea level rise, and cyclical tidal actions pollute sidewalks, streets, and structures with environmental contaminants such as nitrogen, herbicides, insecticides, oil, grease, toxic chemicals from urban runoff including the nearby 101 freeway, and sediment from improperly managed construction sites and erosion."

GP3, P B-2.

"Sausalito's situation is unique and especially urgent. The City of Sausalito has over 27 miles of sewer pipe, some over 60 years old. Many of these aging pipes are cracked, broken, or literally crumbling; some are made of clay. In recent years, Sausalito's antiquated pipes have caused several sewage spills releasing millions of gallons of raw sewage into Richardson's Bay."

"The sewer system and storm drains, constructed hastily during wartime, are old and substandard."

GP3, P B-3.

"According to a recent Sausalito task force study of the Marinship area and Sausalito waterfront, the Marinship endures environmental contamination from seawater intrusion and storm water run-off year-round. In the Marinship, since the end of World War II, there has been no coordinated effort to maintain or upgrade various portions of the public infrastructure system. The City has not assumed the overall responsibility of the infrastructure and has not uniformly required development projects to provide off-site general improvements."

"Sewer pipe joints have been disconnected in multiple areas because of uneven settling of the ground. Sewer lines are prone to both leaking sewage out and leaking groundwater and seawater in. Raw sewage also leaks into broken storm drains and straight into the bay. The storm sewer systems cannot handle the storm volumes and back-up during high tides."

"Sausalito's current sewer system is so inadequate that in April 2008 the U.S. Environmental Protection Agency (EPA) issued an Administrative Order mandating that the city of Sausalito assess, repair, or replace its aging sewer pipes within a specific timeframe. The EPA called for aggressive action and long-range plans to stop chronic sewage spills into Richardson's Bay."

"In addition to the EPA mandate, the city of Sausalito was sued by Northern California River Watch for violations under the Clean Water Act. In November 2008 Sausalito reached a settlement with River Watch. Sausalito is now creating and implementing plans to address its antiquated sewer system, complying with terms laid out by EPA and River Watch."

> "In addition to improving the city's sewer lines, Sausalito must also explore strategies to hasten the repair of private lateral sewer pipes on private property. Every home in Sausalito has a private lateral sewer line connecting to a city sewer line. Unfortunately, many of these private laterals are also in need of repair, and add stress to the current system."
>
> "The City has put various programs in place, such as point-of-sale assessment and mandated repair of private lateral lines when a property is sold. Still, by some estimates this strategy alone would take 60 years or more to adequately address the private lateral sewer line problem."
>
> "Sausalito's current high density is above average for Marin County and would pose a constraint under the best circumstances. However, factoring in the current state of Sausalito's situation, with miles of crumbling sewers, narrow, winding roads, and the city's close proximity to sensitive ecosystems, the prospect of increasing density becomes especially challenging."

This latter statement seems to conflict with the DEIR findings that increased development and population density would have impacts that are less than significant.

DEIR, P 3.9-4. "Stormwater Runoff"

> "Potential hazards to surface water quality include the following nonpoint pollution problems: high turbidity from sediment resulting from erosion of improperly graded construction projects, concentration of nitrates and dissolved solids from agriculture or surfacing septic tank failures, contaminated street and lawn run-off from urban areas, and warm water drainage discharges into cold water streams."

Note that creeks that drain into storm drains carry sediment that is not necessarily from construction or agriculture but from natural and accelerated erosion of the channels and hillsides that are responding to land use change.

Per GP5, P 167,

> "Tidal flooding also poses environmental pollution risks due to bay waters spilling onto roadways and draining into neighboring properties. As tidal water recede, a variety of substances are deposited. For example, flood waters in the Marinship carries with it contaminates like nitrogen from fertilizers; herbicides and insecticides, from uphill residential areas and city parks; or oil and other toxic chemicals from urban runoff and the nearby freeway. Furthermore, tidal flooding creates potential health hazards from defective sewer and storm drain systems."

These latter descriptions of the extent of pollution and toxic substance paints a picture of the existing Marinship development that is at great risk from a public health stand point and is creating adverse impacts to the surrounding Richardson Bay environment. The artificial fill of Marinship need of extensive efforts to mitigate the level of pollution that is ongoing and will only become worse with SLR and subsidence.

The DEIR, on P 3.8-16, states that the

> "proposed 2040 General Plan could result in development on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.58 and, as a result, create a significant hazard to the public or environment."

And DEIR, P 3.8-16,

> "This proposed 2040 General Plan contains policies and programs to address the inadvertent discovery of hazardous materials on project sites. Program HS-1.4.2 requires that subsurface contamination investigations at potentially contaminated sites be conducted prior to development approval. Program HS-1.4.7 requires, at minimum, a Phase 1 hazardous materials assessment for all future development or redevelopment projects on sites located within the Marinship area or on sites with a known history of industrial uses (such as gas stations)."

This last statement about investigations of contaminated sites needs to be conducted prior to development approval and that a Phase 1 hazardous materials assessment must be done for all future sites in Marinship seems to be in conflict with having the DEIR done for approval of development. The purpose of preventing approval of development before the hazardous materials assessment is done is to prevent inadvertent discovery of hazardous materials at the project site. The previous statement also seems to conflict with the next DEIR statement below that states that the new development could result in inadvertent discovery of hazardous materials, yet this is why the hazardous materials assessment is supposed to be done to prevent inadvertent hazardous discoveries before the development proceeds.

Per DEIR, P 3.8-17,

> "While development envisioned by the proposed 2040 General Plan could result in inadvertent discovery of hazardous materials, compliance with proposed 2040 General Plan policies and programs to identify potentially contaminated sites, and compliance with federal, State and local regulations regarding handling, transportation, and disposal of hazardous materials, would ensure that potential hazards to the public or environment would **be less than significant**."

Given the present sobering conditions of leaking sewage lines, polluted soils, and toxic runoff, hazardous materials in the fill, and designation of Marinship as a hazardous materials site pursuant to Government Code Section 65962.58, the future conditions of SLR and subsidence must be evaluated in the DEIR because hazardous conditions in Marinship will be exacerbated by submergence of the land. These problems must be addressed and solved before new development can be approved or considered to have less than significant impacts when the entire artificial fill either has to be protected from flooding or replaced with tons of new fill as further discussed in section IIC of this review.

II.A-9. Underground Utilities

The GP3, P B-3, states that except where

> "recent development has occurred, most of the utility systems in Marinship are approaching obsolescence."

The same issues regarding SLR, subsidence and elevated groundwater apply to concerns about how the utilizes will be impacted. Salt water intrusion may have additional negative impacts on infrastructure but this is not addressed in the DEIR. Services provided by the utilities are essential to daily needs and should be dealt with before new development proceeds. The DEIR fails to describe the extent of actions necessary to ameliorate underground utilities problems that will have increasing significant negative impacts with rising sea level and increased subsidence by 2040.

II.A-9. Regional Faulting

There is a fault that is specifically delineated on the MarinMap website that is missing in as a topic of discussion in the DEIR. See Figure 8. It is the nearest mapped fault to Marinship. It trends northwest and is located west of Bridgeway. It runs along the ridge above Marinship before it dips into the watershed of the creek that drains along Spring Street. The status and kind of fault that is mapped is unknown by this author, but its significance should be part of the discussion and evaluation in the DEIR.

The fact that it was included in the MarinMap suggest that some information might be available from recent geotechnical investigation. The significance of the fault should be addressed particularly if it could cause secondary impacts from seismic shaking or displacement that could initiate landslides and excessive sediment to the creeks that drains to the Marinship stormdrain system.

II.A-10. Seismic Hazards, Ground Surface Failure and Liquefaction

The combined effects of future SLR and subsidence that will increase the frequency and duration of flooding and saturation of the groundwater table will also increase the future negative consequences of seismic shaking and liquefaction. The inherent characteristics of the different types substrata that fill was initially placed on, plus the sequential layering of fill of varying composition on top of older fill and diverse substrata, causes Marinship to be subject to seismic hazards that can result in differential settlement, ground failure along the banks, and liquefaction.

Engineering standards were lacking at the time that most of the fill was applied. The degree and location of the responses to shaking will not be uniform. They will be difficult to accurately predict across the artificial landscape because information characterizing extant subsurface conditions is scant. With future SLR and subsidence the amount of saturation of the landfill will increase the degree of violence and potential consequences of damages to buildings and infrastructure. The effects of seismic shaking and liquefaction in fill at Marinship are described as follows in previous official reports to the City:

Per EIP'85, P1,

> "liquefaction is likely to occur during earthquake-induced ground shaking. Liquefaction is usually associated with loose, cohesionless, saturated sands". . .

And EIP'85 P1,

> "both static and earthquake-induced settlement also are known to be major concerns. The speed, amount and duration of static settlement increases with the weight of the fill and depth of the mud. Earthquake vibrations can accelerate the settlement process to such a rate that these sediments cans shift or liquefy."

Per EIP'85 P 7,

> "The specific effect that severe ground shaking would have on structures and other improvements in Marinship depends upon the nature of the structures and the stiffness and thickness of the bay mud and other soils above the bedrock. The soft bay mud would attenuate high frequency ground motions and reduce the ground surface accelerations below the levels generated in the bedrock underlying and adjacent to Marinship. However, thick deposits of bay mud would amplify ground shaking in other frequencies particularly where a high contrast occurs between the vibrational characteristics of the mud and the underlying rock."

And EIP'85 P 4,

> [Ground shaking] "would damage the utilities and surface improvements" of Marinship.

The DEIR, on P 3.6-1, discusses that earthquake

> "hazards in the City of Sausalito can be categorized as primary hazards, which include fault rupture, ground shaking, and secondary hazards. Secondary hazards may include liquefaction, seismically induced landslides, subsidence, and seismically induced water inundation. Both hazards can result in extensive property damage, personal injury, or death."

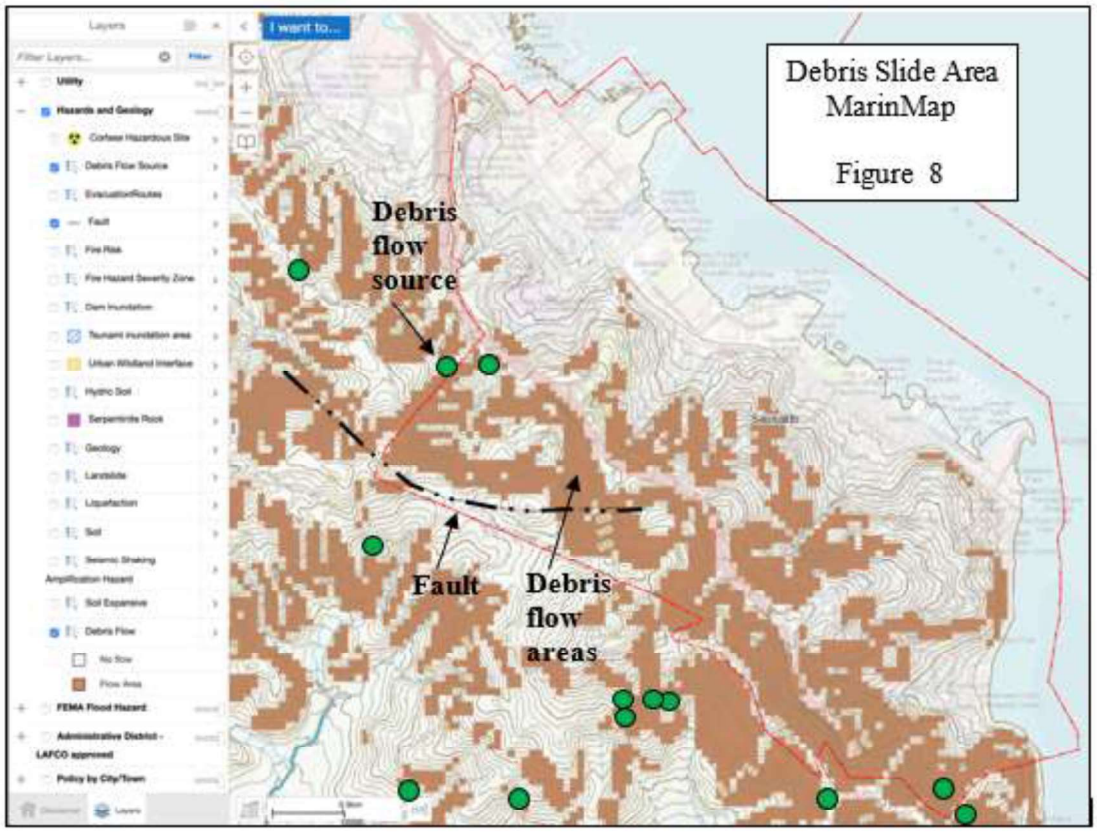
Although the DEIR aptly provides maps that show the degree of expected shaking is rated as violent throughout all of Marinship and liquefaction potential is very high except for a small portion near the southwestern segment of Bridgeway, they do not address what will be done to make existing and future development sufficiently safe from these hazards that will intensify in severity during the planning horizon because of SLR and subsidence issues. They do say, on P 3.6-13, that in many cases the City "would replace older buildings subject to seismic damage, with newer structures built to current seismic standards." However, since most of the antiquated and subsiding fill will beneath the buildings is subject to increasing future submergence and does not have the engineering strength required to meet modern building standards, its need for replacement and/or mitigation is indisputable.

The DEIR does not address this issue to sufficient degree that they can claim that development in 2040 “facilitated by the proposed 2040 General Plan, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to geology, soils, seismicity, or paleontological resources”(P 3.6-17), or that development “would not result in a significant impact related to development on unstable geologic units or soil, or result in on or offsite landslides, lateral spreading, subsidence, liquefaction, or collapse” (P 3.6-14).

The extent, scope and type of ‘reasonably foreseeable projects’ to deal with future conditions are not defined in the DEIR and their potential impacts therefore have not been evaluated.

II.A-11. Landslides and Slope Instability

A Landslides Susceptibility Map is shown in the DEIR it shows that relatively few landslides exist in the hills above Marinship. The DEIR does not show a debris slide area map that is readily available online at MarinMap website. The MarinMap, in Figure 8, shows the fairly widespread debris flows areas (brown polygons) and known debris flow sources (green dots). Willow Creek, the perennial drainage at the north end of Marinship, is identified to have two known debris flow source areas.



The impacts of debris flows with changing climate is not sufficiently addressed in the DEIR. Debris flows occurring in the hillsides could supply large quantities of sediment to the creeks and storm drain system that underlays Marinship. Under present conditions the drainage system is deteriorating. In the future it will be increasingly unable to drain

water and sediment because of issues discussed in sections II.A-3, -5 and -6 that respectively pertain to SLR, storm drains, and water table.

The impacts from future submergence of the artificial fill will minimize the capacity of the pipes to convey water and sediment. This will create adverse environmental impacts that must be addressed before accepting that Marinship can be further developed or even sustain existing development.

In addition, with climate change the frequency and susceptibility of wildfire is expected to increase. As a result, the impacts of wildfire will also increase such as loss in strength of the soils on the hillsides because of impacts to rooted vegetation that helps stabilize soils on steep slopes. Post wildfire impacts can lead to an increased debris flows and landsliding, which will increase sediment load to the creeks and storm drains.

This adds to the need to have an adequate drainage system in the Marinship that will not increase flood and sedimentation risks, as well as subsequent water quality hazards and public safety issues. The DEIR fails to identify the impacts of the projects that will be needed to deal with storm drainage, future flooding and hence the impacts of future debris flows is significant.

THE DEIR, on P 3.6-5, discusses that the

> "City Council established the Landslide Task Force on June 11, 2019. The purpose of the Landslide Task Force was to identify the needs of the city for an update and assessment of its vulnerability to future landslide disasters causing harm to the residents and property."

It will be critical for the Task Force to identify the potential runout pathways, the affected storm drains, and the depositional sites that could be influenced by various of landslides and debris flows. This needs to be done to identify properties or structures at risk to develop appropriate mitigation. Cleary these kinds of impacts will influence Marinship and the adjacent hillsides as well as other developed lowlands throughout Sausalito.

II.A-12. Soil Erosion

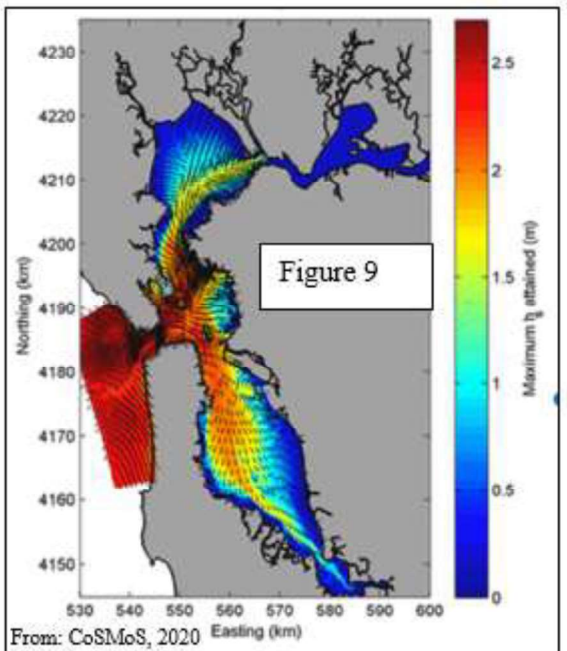
On P 3.6-5, the DEIR discusses soil erosion stating that while

> "coastal erosion can be a significant factor for development in waterfront areas, the City of Sausalito coastline has been generally protected from large ocean waves by surrounding peninsulas, and the resulting potential for coastal erosion is considered moderate to low. They also acknowledge that projected sea level rise is likely to exacerbate coastal erosion and reduce the effectiveness of the city's existing coastal erosion protection."

There is scientific literature available from USGS in their CoSMoS website that shows modeling of the existing extreme wind speeds and its future consequences with SLR around the San Francisco Bay. Extreme winds under existing conditions will produce waves that have a maximum heights reaching 2 m along parts of the Sausalito shoreline. Their map is shown in Figure 9. It shows extreme wind direction as arrows

and wave amplitude as color designations for the maximum expected wave height in meters. The color designations suggest that Richardson Bay near Marinship could attain maximum wave heights of just under 2 m (6.56‘). This information is not discussed or evaluated in the DEIR. A link is provided below.

https://www.usgs.gov/centers/pcmsc/science/CoSMoS-21-san-francisco-bay?qt-science_center_objects=0#qt-science_center_objects

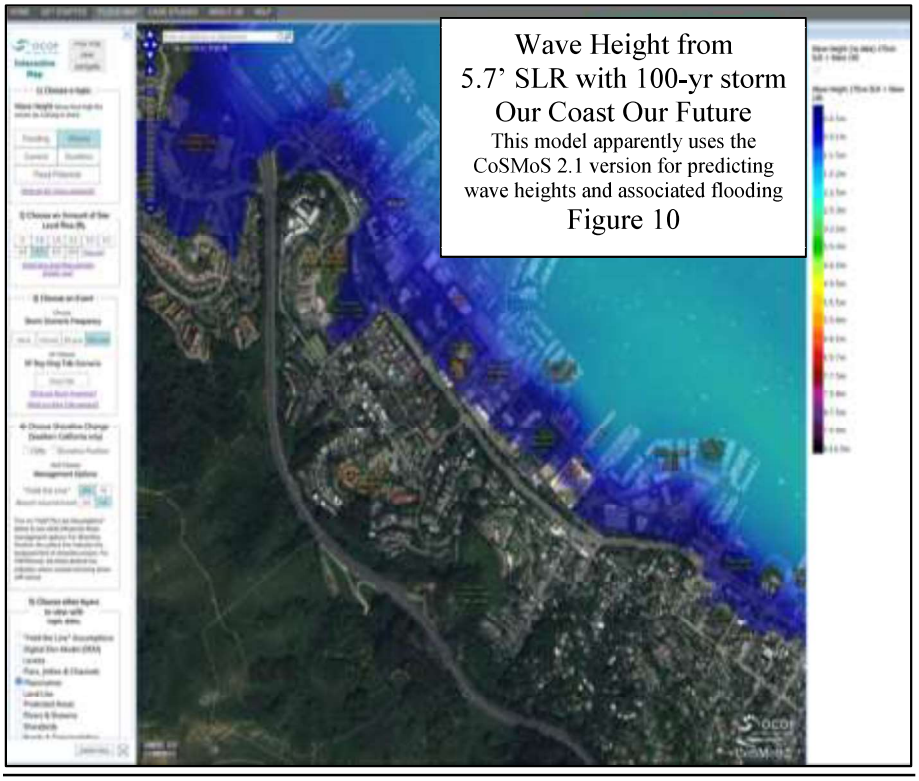


From: CoSMoS, 2020

Direction of extreme winds (black arrows, wind speed greater than 24 meters/second [m/s]) that produce maximum locally generated waves throughout San Francisco Bay (color shading). h, wave height.

The modeling of wind speed and waves allows projection of wave impacts in the future as sea level rises. As sea level rises the future wave energy on the banks of artificial fill will be subject to erosion and in need of protection. The DEIR does not address the future conditions that will create significant impacts.

The OCOF website uses the CoSMoS modeling to help predict the influence of waves on the extent of coastal inundation under future conditions of SLR. Although the DEIR refers to earlier maps in BayWAVE they do not use projections like the one shown in Figure 10 that shows the extent of flooding that could happen by year 2100 with an expected 5.7’ SLR and a coinciding 100-yr storm surge. These kinds of log-term future conditions need to be evaluated in the DEIR to establish impacts within and beyond the planning time frame.



II.A-13. Public Safety Emergency Evacuation Routes in the Event of Flooding

Public safety issues are likely to arise from individual or combined effects of SLR, King tides, creek and storm drain related flooding, elevated ground water, Tsunami, subsidence and elevated groundwater table. These flood issues will require access to emergency evacuation routes.

The DEIR, on P 3.9-3, discusses Tsunami Inundation Zones. They describe that

> "Marin County communities may be vulnerable to tsunamis because of the location and quality of the built environment. The principal exposure would be people, buildings, and infrastructure located in the low-lying potential inundation area. Especially at risk are visitors, hikers, campers, and non-residents who might be on the shore when the tsunami strikes. Tsunami hazard zones within the Planning Area are shown in Exhibit 3.9-3. In this review the same extent of the Tsunami Inundation Zone if shown in Figure 11 from MarinMap. As shown in the exhibit, the areas east of Bridgeway are most likely to become inundated in the event of a tsunami."

The map also shows that portions Bridgeway will also be inundated.

The emergency access route for Marinship and other parts of Sausalito is Bridgeway. Impact analysis of future SLR projections that should also include the effects of rising groundwater will show that more of Bridgeway and Marinship will become increasingly

flooded by 2040 and beyond. Tsunami inundation zones will also increase in extent and submerge more of Bridgeway. The DEIR does not address that this evacuation route will be nonfunctional under certain future foreseeable conditions or from potential seismic hazards that can cause violent shaking and subsequent subsidence consequences. Nor does the DEIR discuss remedies that will be necessary to provide alternative emergency routes or rerouting or elevating the Bridgeway route. Any of which would have their own environmental impacts that need to be evaluated.

Furthermore, due to the fact that many of the roads and streets within Marinship are privately owned, poorly maintained, and already showing deterioration, safe unimpaired access to Bridgeway from arterial roads in Marinship will be problematic. It is not evident that the larger scope of these issues will not have significant impacts.

The Tsunami Inundation map in the DEIR show a very high hazard and SLR models predict the greatest amount of inundation from this influence, yet the map in the DEIR only shows the extent of the high hazard inundation risk relative to present day conditions. For 2040 planning, the future extent of Tsunami flooding needs to be shown, but future conditions are not envisioned or evaluated in the DEIR.

Projections of both short- and long-term conditions must be evaluated to redesign emergency evacuation routes that will not be part of the future inundation zone. To establish whether newly proposed development will have adverse impacts, the DEIR should clearly be evaluating the spatial and temporal changes in the landscape relative to future risks, not just the static conditions of the present. This is key to minimizing risks to people, structures, and property.

Depiction of the Tsunami Inundation Zone from MarinMap can be seen in Figure 11. It shows the same extent of Tsunami inundation as indicated in Exhibit 3.9.3 of the DEIR. The tsunami inundation zone in portrayed for existing sea level conditions not for future conditions that will exist within the planning scenario of 2040 or beyond. The extent of the Tsunami Inundation for existing conditions is as high as the minimum extent of flooding form 6.6' of SLR with a 100-yr storm as depicted in the OCOF SLR maps. This means that the actual extent of the future Tsunami Inundation Zone by 2040 and beyond will be much worse than shown in the DEIR or the map below.

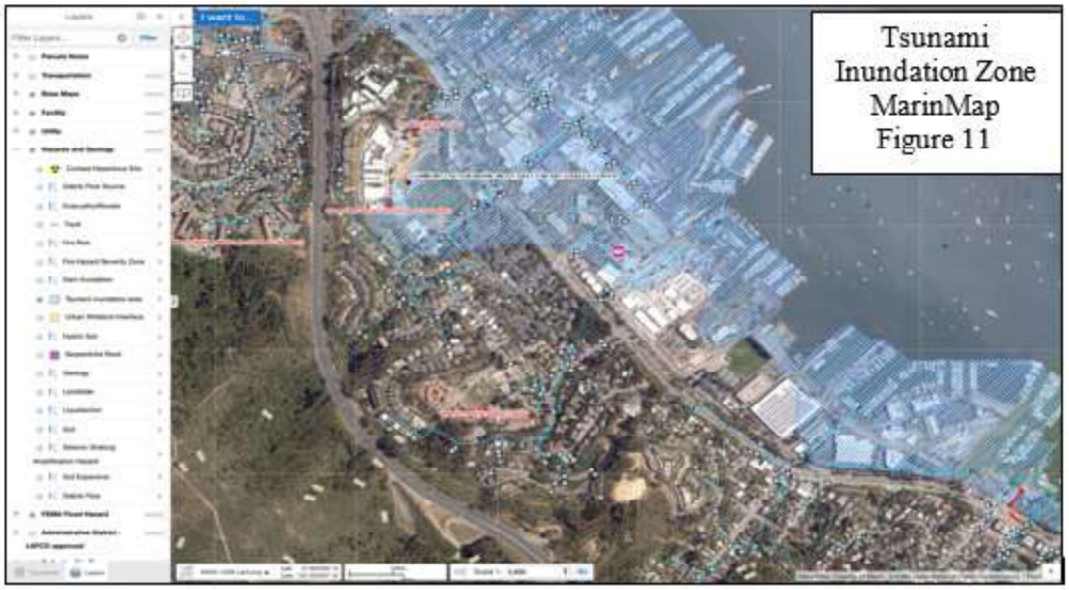
The DEIR does not discuss the impact of SLR and height of associated tsunami wave inundation that will influence the school grounds and other areas west of Bridgeway that fall within the inundation zone and clearly the Bridgeway evacuation route is submerged. Nor do they discuss realistic mitigation strategies because they have not depicted the extent of the inundation hazard. The DEIR must provide a reasonably accurate picture of conditions and hazards by 2040 to evaluate risks and assess impacts of various mitigation actions that will be essential. Without this, the impacts of altering Bridgeway and providing a safe development within the future projected tsunami flood zone are unknown and therefore cannot be deemed insignificant.

These concerns are verified by the DEIR statements below.

Per DEIR, P 3.8-17,

"Impact HAZ-5 Development facilitated by the proposed 2040 General Plan would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan."

"The routes that would be used in the event of an evacuation include Bridgeway, Spencer Avenue, Alexander Avenue, Highway 101, Donahue Street, and Shoreline Highway."



Note – the Figure 11 map was probably initially derived from https://myhazards.caloes.ca.gov/

These concerns are verified by the DEIR statements below.

Per DEIR, P 3.8-17,

> "Impact HAZ-5 Development facilitated by the proposed 2040 General Plan would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan."
>
> "The routes that would be used in the event of an evacuation include Bridgeway, Spencer Avenue, Alexander Avenue, Highway 101, Donahue Street, and Shoreline Highway."

Segments of Bridgeway will be underwater and some sort of levee protection, increased fill, or rerouting will ultimately be required. Additionally portions of Shoreline Highway in Tam Valley currently flood during King Tides and will be subject to significant flooding from SLR in the future. The DEIR needs to address the functionality of future emergency evacuation routes beyond the Sausalito City limits.

Per DEIR, P 3.8-18,

> "Most of the development facilitated by the proposed 2040 General Plan would be served by existing emergency evacuation routes, which have sufficient capacity to accommodate projected growth. Therefore, impacts would be **less than significant**."

How can the impacts be less than significant if the Bridgeway and Shoreline route will be submerged for various single and combined SLR/flooding/tsunami/subsidence scenarios? The roads in Marinship will also be submerged. The actions necessary to correct these issues will likely involve at least one of the following actions if not all will surely have significant impacts due to the scale and magnitude of the remedies needed (e.g. increased fill, extensive levee, rerouting of drainage systems and emergency routes, and disturbance of contaminated soils, etc.).

It is not possible to evaluate impacts of the 2040 GP without including the actions necessary to increase development of any kind in Marinship which is subject to various single and combined SLR/flooding/tsunami/subsidence scenarios where the protections themselves are what would cause significant impacts, direct, indirect and cumulative. The cart is being put before the horse.

Per DEIR, P 3.9-2,

> "Dam or Levee Failure Inundation Zones. The Marin County Flood Control District maintains one levee in the immediate vicinity of Sausalito, approximately 1-mile long, located east of and parallel to Highway 101. The levee ends south of the intersection at Shoreline Highway and Highway 101, near the community of Manzanita Park-and-Ride lot, and the Mill Valley-Sausalito Pathway."

The planning efforts to deal with this should be specified to determine how will it influence emergency routes from Marinship during the planning horizon.

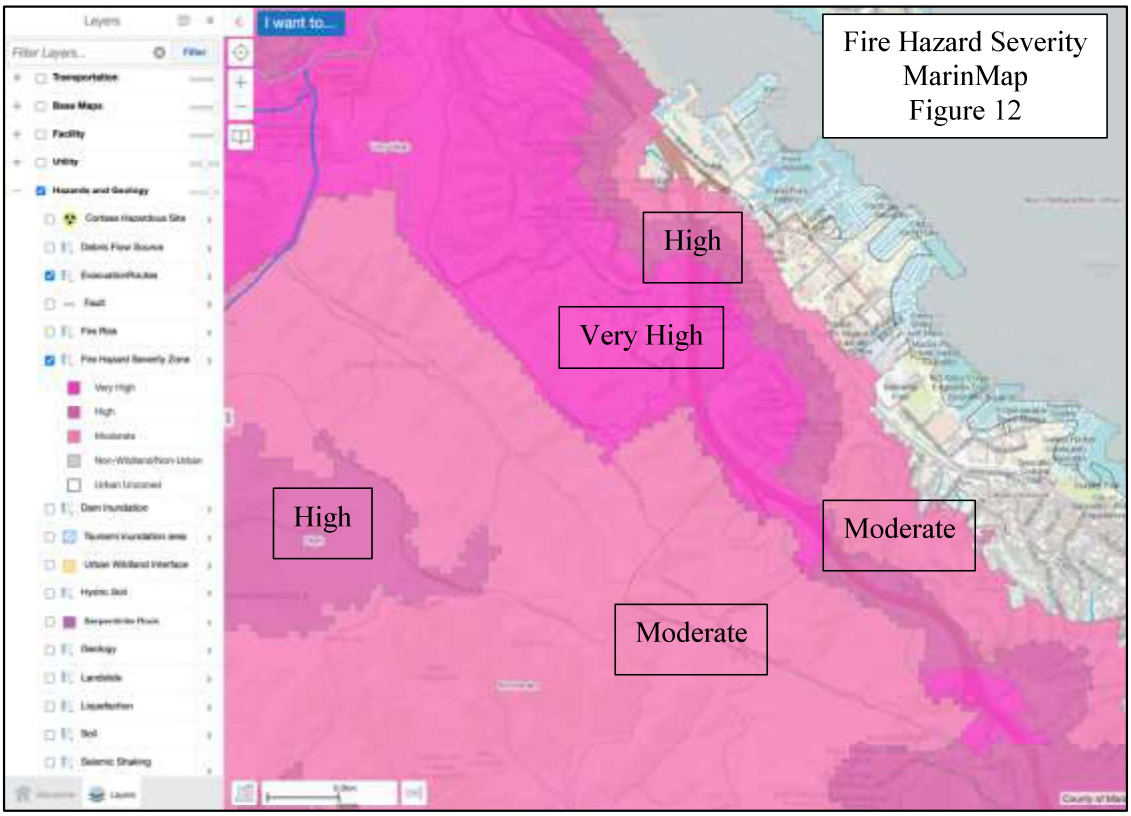
II.A-14. Fire Hazard

The DEIR, on P 1.16-1, describes that future conditions for wildfire

> "are on average becoming more frequent and more destructive due to a combination of higher temperatures, longer dry periods, and increased human development within wooded areas. The DEIR further describes that the City of Sausalito could be susceptible to wildfires due to steep topography, abundant fuel load, and climatic conditions. The nearest Very High FHSZs are just northwest of city limits in unincorporated Marin City and Tamalpais Valley."

In Exhibit 3.16-1, the DEIR shows a Wildfire Hazards map that does not agree with the extent of very high, high, and moderate fire severity hazard that has been depicted in MarinMap, as shown in Figure 12. It shows much more extensive and continuous high fire danger throughout the watersheds draining and adjacent to Marinship. Some moderate fire danger is depicted within Marinship and the northern section of Bridgeway

along Marinship is situated in moderately characterized fire hazard areas. These differences should be resolved in the DEIR and potential impacts re-analyzed.



The DEIR, on P 3.16-3, also discusses post-fire slope Instability and drainage pattern changes

> "stating that the major post-wildfire hazards in Marin County are unstable hill slopes and altered drainage patterns. Slope instability from wildfire scarring of the landscape can result in slope instability in the form of more intensive flooding, landslides, and rockslides. These post-fire slope soils and altered drainage patterns can more easily creep away downslope sides of foundations and reduce lateral support. To direct drainage, runoff from the hillside is captured and diverted into Richardson's or San Francisco Bay."

The post fire influence of landslide run-out pathways often involves excessive runoff and sediment supply for years following fire. The DEIR fails to evaluate this impact in light of the different hazard ratings shown by MarinMap and in light of the SLR and subsidence issues that will further limit transport of water and sediment in the deteriorated storm drain system.

Since the High and Very High fire categories in the Marinship watersheds also coincide with extensive areas mapped to have debris flow areas and landslides, the loss of vegetation could exacerbate debris sliding and substantially increase sediment supply to the storm drain system. This will cause impacts of unidentified magnitude from post-

fire sediment deposits of potentially toxic soils. This has not been evaluated in the DEIR relative to future landscape changes and runout pathways.

Furthermore the DEIR has not described, the impacts of future mitigation needed to fix, move, or repair the storm drain system to convey the post fire runoff been established. Without these issues resolved, impacts of future development cannot be determined to be insignificant as stated in the DEIR below.

On P 3.16-17,

> "Development facilitated by the proposed 2040 General Plan in areas located in or near State responsibility areas or lands classified as very high fire hazard severity zones would not substantially expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes."

On P 3.16-16,

> "Development facilitated by the proposed 2040 General Plan, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to wildfire."

II.B. Combined SLR subsidence, and elevated groundwater conditions in Marinship and elsewhere, are plainly foreseeable between now and 2040.

These components need to be merged with projections of future stream flooding maps to realistically evaluate environmental impacts of future developments along Richardson Bay shoreline. This can and should be documented in the DEIR.

Influences of stream flooding, storm rainfall probabilities and backwater flooding from changes in the tidal/fluvial transition zones that will cause backwater flooding are <u>not</u> factored into the SLR model but need to be considered in future development planning efforts that need realistic assessment of future impacts. At this point it is reasonable to assume the FEMA maps under-predict the future extent of flooding as sea level rises.

The OCOF maps predict SLR but do not predict the extent of stream flooding that will be effectively backed up by SLR. For effective future planning, flooding from both fluvial and tidal sources need to be modeled in combination with each other to show potential changing conditions of coastal flooding over the short- and long-term planning horizon. At the least, the DEIR should include the OCOF flood potential maps that show the extent of flooding with an element of uncertainty that is based on subsidence rates. It is important to note that subsidence rates can be expected to increase with the added weight of fill or sea water as submergence increases. This has implications for future mitigation activities where fill is placed on more fill that is situated on bay mud. Settlement of new fill that may plan to have a target elevations by a certain year might be unachievable if this is not considered. The environmental impacts relative to the amount of fill that will ultimately be needed will have to be carefully weighed.

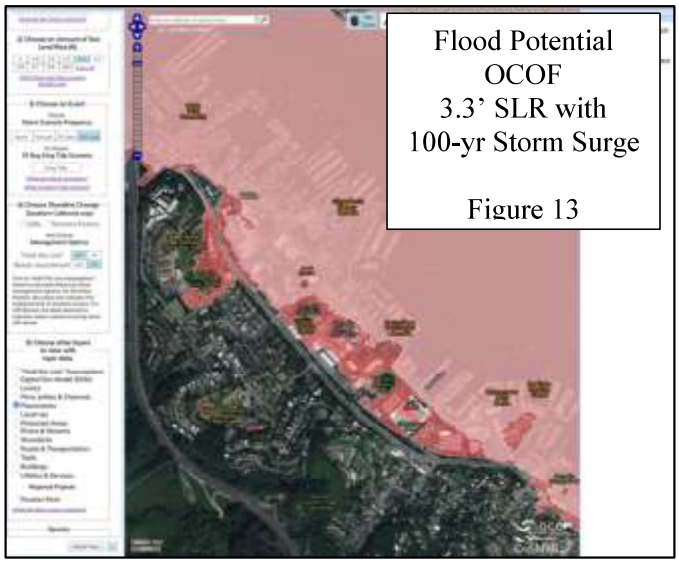
Land subsidence rates that are used as the basis of uncertainty in the OCOF maps are

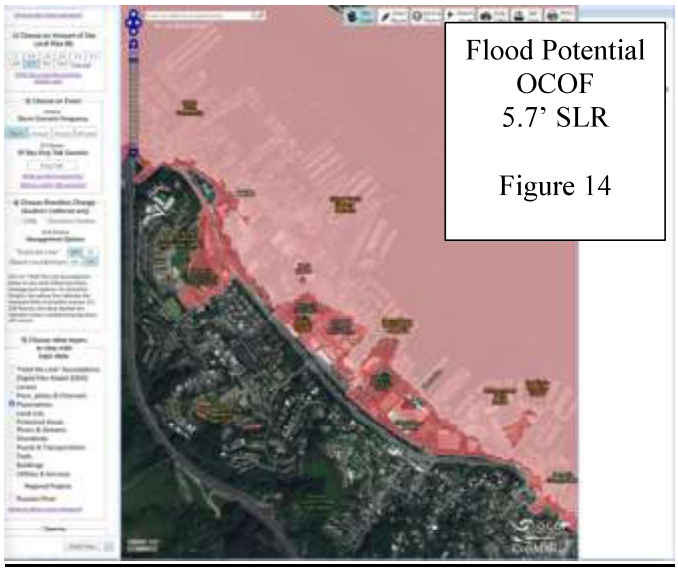
based on 20 years of InSAR satellite data that detects changes in vertical land motion. These rates are reflected in the OCOF "Flood Potential" tool that allows different forecasts of flooding. According to OCOF website: "The "Flood Potential" topic displays layers for the minimum and maximum flooding possible for a particular scenario given the uncertainty in flood predictions. These layers represent a spatially variable combination of uncertainty associated with elevation data (including tidal marsh vegetation), vertical land motion, tidal marsh accretion, and model physics."

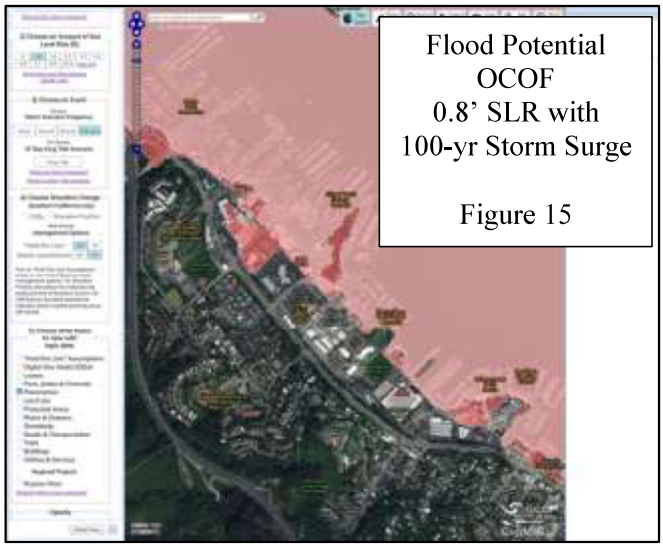
Figure 13 shows an example of the OCOF map of Flood Potential that models a 100-yr storm surge at a time when SLR is 3.3' higher, which could occur sometime between 2050 and 2100. The map shows the extent of flooding with an uncertainty estimate that ranges between the expected minimum inundation, shown as light pink, to the maximum inundation, shown in light red. This projection shows that nearly all of Marinship is under water if the maximum uncertainty about subsidence is considered. This level of projected flooding is very similar to the level of flooding shown in Figure 14 that shows a 5.7' SLR (without storm surge) that might occur by 2100. This suggests that planning for 2100 with this amount of SLR would be prudent since conditions that might mimic SLR in 2100 can occur earlier under varying conditions of subsidence and storm surges. Without the influence of stream flooding, rainfall frequencies, backwater flooding and the effects of insufficient storm drains, these flood projects should be considered conservative when it comes to hazard and impact analysis.

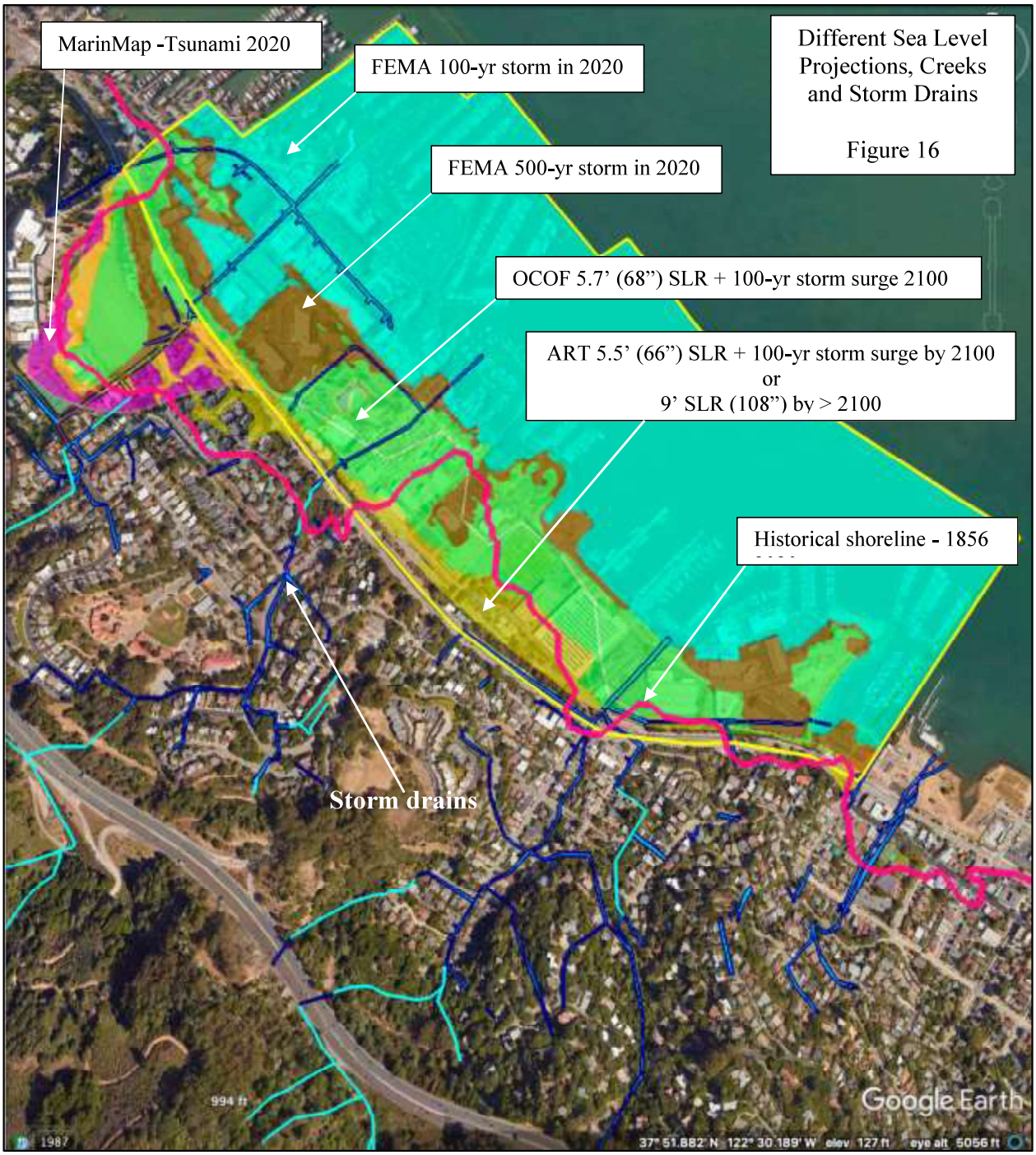
If an even more conservative scenario of a 0.8' SLR with an associated 100-yr storm surge is modeled on the OCOF website, its extent of the maximum uncertainty of flooding is relatively close to minimum estimate for the 3.3' SLR projection with a 100-storm surge shown in Figure 13, below.

Using readily available tools, such as these OCOF Flood Potential maps to assess potential impacts in Marinship, is imperative in the DEIR. Without them, it is not possible to envision the minimum level of protection from flooding or mitigation that will be needed to prevent adverse risks to people, property, and the environment. The potential maximum extent of permanent sea level inundation shown in Figures 13 and 14 exceeds the extent of flooding predicted by FEMA from both a 100-yr and 500-yr storms (0.2% probability) that could happen in 2020 as shown as turquoise and brown shading in Figure 16. Other SLR scenarios are exemplified in Figure 16 as well. Green shading represents a 5.7' SLR with a 100-yr storm surge as modeled by OCOF, while yellow shading represents a 5.5' SLR with a 100-yr storm as modeled by ART. The latter would be equivalent to a 9' SLR with no storm surge. Interestingly, the ART model shows a higher extent of flooding for 5.5' with a 100-yr storm surge than the OCOF model shows for 5.7' SLR with a 100-yr storm surge. This is because the projection from OCOF is just SLR rather than its Flood Potential projection which incorporates the maximum SLR that would be expected from subsidence. Although the Flood Potential Map is not shown here, its maximum projected extent of flooding for 5.7' SLR with a 100-yr storm surge slightly exceeds the 5.5'SLR projection from ART. This demonstrates the need to use either the OCOF Flood Potential maps or the ART maps rather than relying on the BayWAVE maps as referred to in the DEIR that only show 60" SLR with no storm surge or subsidence effects included.


Flood Potential
OCOF
3.3' SLR with
100-yr Storm Surge
Figure 13


Flood Potential
OCOF
5.7' SLR
Figure 14


Flood Potential
OCOF
0.8' SLR with
100-yr Storm Surge
Figure 15



Different Sea Level Projections, Creeks and Storm Drains

Figure 16

The extent of storm drain submergence with the different sea level rise scenarios can also be visualized in Figure 16, above.

Figure 16 also shows the extent of flooding that could occur in 2020 from an extreme Tsunami as modeled by MarinMap. Its extent of flooding exceeds that of the other projected SLR scenarios in the northwestern area beyond the Marinship boundary, otherwise within the central area of Marinship its extent would generally be between the 2020 500-yr projected flooding from FEMA and the OCOF 5.7' SLR with the 100-yr storm surge. Note that the probability of flooding from a tsunami is low and the duration

of flooding would be short compared to the duration of flooding that will increase in durations as sea level rises and that the latter has a very high probability of happening. This is why it makes more sense for the DEIR to be looking at impacts of SLR in addition to tsunami hazards.

In addition to SLR projections by BayWAVE, OCOF, and ART, projections of by FloodFactor.Com can be used to look at flood risk to individual structures. They predict that with increasing flood risk from SLR and as weather patterns change, approximately 279 properties already at risk in Sausalito will become 407 structures in 30 years.

(https://floodfactor.com/city/sausalito-california/670364_fsid)

By assigning properties a flood factor, which is an indicator of comprehensive flood risk that ranges from 1 (minimal) to 10 (extreme), they can maps the change in risk over time as shown in Figure 17. Properties with higher flood factors are more likely to flood.

FloodFactor also shows extent of SLR flooding and depth in increments of 0, 15, and 30 years for different storm probabilities. Their model combines the influences of SLR with flooding from high intensity rainfall, overflowing rivers and streams, high tides and coastal storm surge to consider a location's risk of flooding. These independent factors are coupled together to create a unified model that does not just predict SLR or creek flooding independently. Unfortunately, subsidence is not modeled.

The FLoodFactor map in Figure 18 shows a projection for year 2035 (15 years from now) of flooding that has a probability of 1%, like from a 100-yr storm. As can be seen, the extent of flooding from FloodFactor greatly exceeds flooding from the 1% and 0.2% probability storms projected by FEMA (as seen in Figure 16) for the conditions that exist now in 2020. An additional advantage of the FloodFactor model is that it shows the increments of flood depth as different color shades.

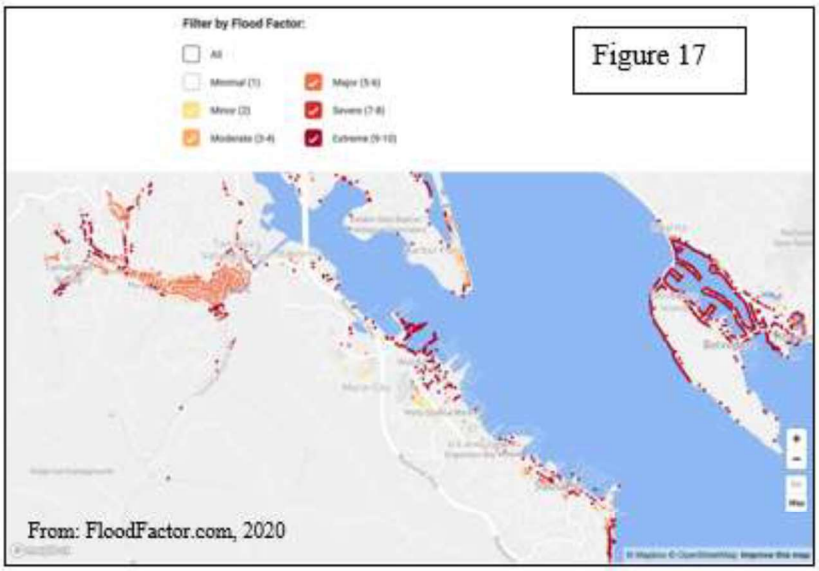
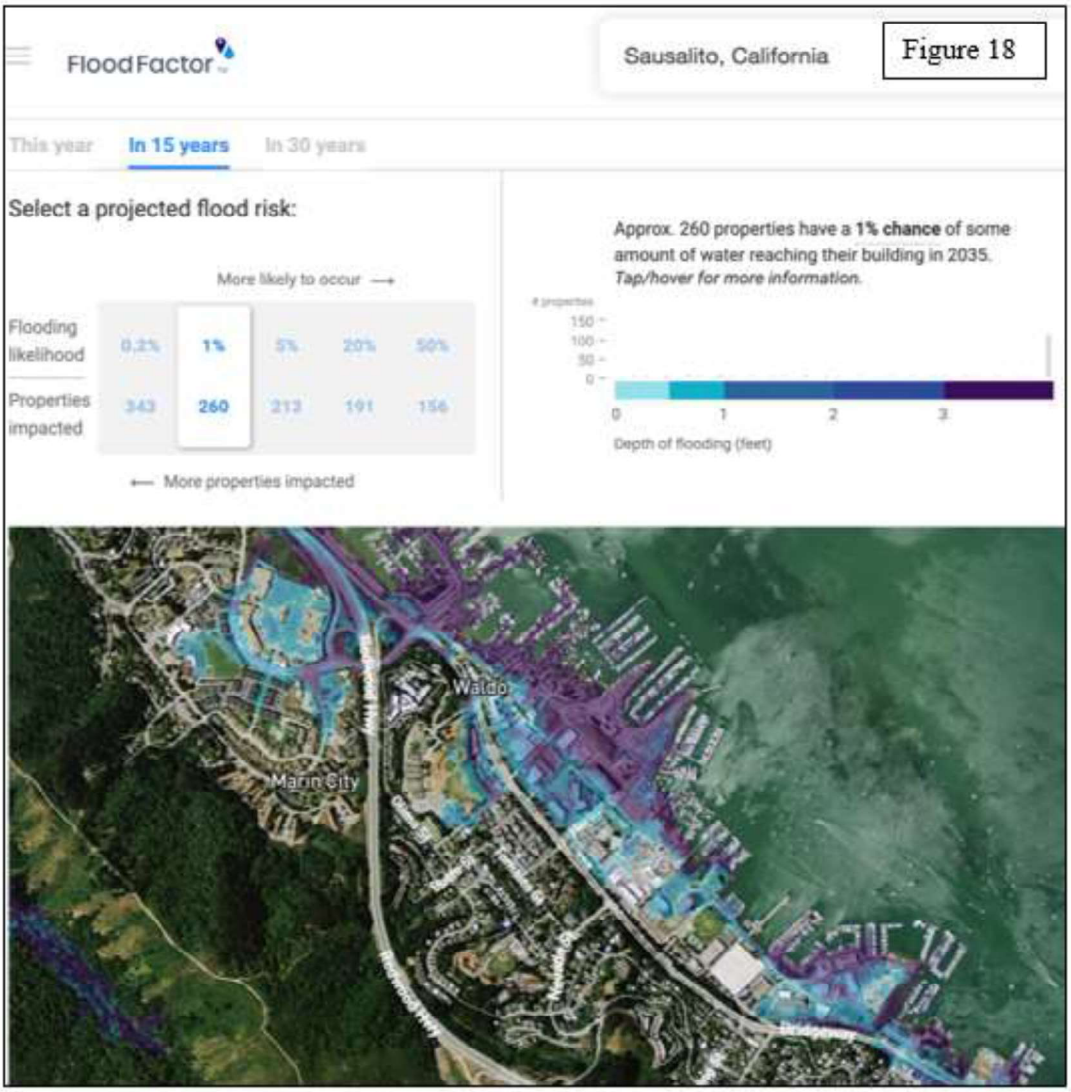


Figure 17



A variety of these kinds of maps should be used in the DEIR to assess conditions for the planning horizon of 2040 and beyond. Looking at all these easily available models will provide the best forecast of probable range of conditions within the short and long-term foreseeable future, which is clearly needed for minimizing potential environmental hazards.

The DEIR contains only two flood maps in their report to assess environmental impacts of future increased development: the FEMA map and the Tsunami Inundation Map that both reflect hazards relevant only to 2020 sea level. Although the DEIR refers to the 2017 BayWAVE maps in their report, they do not even use them for their impact analysis. For future impacts assessment, rather than using the BayWAVE maps as a sole source of information, the combination of ART or OCOF Flood Potential, and FLoodFactor interactive maps are preferred for two primary reasons:

1) BayWAVE maps were created some time ago from the OCOF model and only portray a static 60" SLR for long-term planning, and the elevation might be too low, and

2) BayWAVE used OCOF SLR scenarios rather than the OCOF Flood Potential scenarios that do not incorporate maximum extent of SLR associated with subsidence, and the maps do not portray the range of conditions that can occur from different frequencies of storm surges or precipitation events.

GP5, Chapter 6 also discusses, on Page ii, the need for

> "policies that address the risk of SLR and land subsidence within the General Plan Update time frame, while also considering that the impacts of sea level rise will extend beyond the planning horizon."

The latter suggested policy reasonably states why the DEIR should use the OCOF Flood Potential scenarios of 5.7' SLR for long-term planning to 2100 rather than just relying on projected 2040 conditions for any planning involving new construction. This is exemplified by the fact that the minimum expected flooding for 5.7' SLR, as shown in the previous Figure 14, closely approximates the minimum expected flood level shown in Figure 13 of just a 3.3' SLR with a 100-yr storm.

Since the 2040 GP is a future planning tool, it must first establish what the future conditions will be to determine potential impacts and then what mitigation actions will be necessary to make the existing landfill of Marinship safe, and if the mitigations are feasible and can be done without significant impacts. Once that is determined, the next step is to determine if the new development will create new impacts that could also become cumulative as sea level rises over the long-term planning horizon of 2100. Until these steps are accomplished, the DEIR is misguided in its approach to impact analysis of increased development. The combined influences of SLR, subsidence, and elevated ground water impacts have been documented and discussed in previous official planning documents created for the City as demonstrated in the citations below.

The GP6 describes, on P ii, that long-term settlement can exacerbate flooding and the effects of SLR. The report emphasizes the importance of combining SLR with vertical land movement (i.e. land subsidence) because it "provides a relative SLR for more realistic planning purposes". Listed below are a few of the SLR recommendations in GP6 that advised to the City in their 2040 GP to consider:

- "Policies in relation to the risk of sea level rise together with land subsidence."
- "Selecting a modeled projection that is appropriate for Sausalito and planning for the next 20 years, such as the Marin Bay Waterfront Adaptation Vulnerability Evaluation (BayWAVE) model or other model that is found to be more accurate or appropriate to Sausalito. Land subsidence must be considered in any scenario."
- "Land use policies that reflect sea level rise risk levels in affected areas."
- "Policies to establish priorities for mitigation and adaptation based on potential "assets" affected. Priority could be placed on reducing the impact associated with the risk of sea level rise based on safety risk to residents and the community, economic risk to productive lands, health risks due to

infrastructure impacts, etc."

- "Policies that address the risk of sea level rise and land subsidence within the General Plan Update time frame, while also considering that the impacts of sea level rise will extend beyond the planning horizon."

The blue highlighted remarks above are key elements that are missing in the DEIR. For example, as recommended in the first bullet the information provided by EIP'85 on P 13 regarding raising the land with more fill where settlement occurs should have been discussed in the DEIR:

> "Ground settlement would occur in any area of the project site, underlain by bay muds, where existing grades would be raised with fill."

The DEIR should have included EIP'85's discussion of how the impacts of more fill would cause more settlement:

> "As previously described, the settlement is a function of the compressibility of bay mud and the weight of the fill plus the weight of new structures."

The additional highlighted bullets draw attention to other missing information in the DEIR such as risks associated with various projected SLR scenarios, the assessment of the combined influence of subsidence and SLR, mitigation and adaptation that prioritizes community, infrastructure, public safety and economic risks, and policies that address SLR and subsidence within the 2040 planning horizon and beyond. These comments are reiterated on P 10 GP6 in their list of considerations for the 2040 GP, yet their advice was not heeded in the DEIR.

The interactions of SLR, subsidence, inadequate storm drainage and other factors are acknowledged and discussed in the GP5 but these interactions are not brought forth in the DEIR:

> GP5, P 166, "the low-lying and unprotected coastal areas of the community are subject to flooding from extreme weather events, storm surges, exceptional high tides, and sea level rise. Inadequate drainage and land subsidence also contribute to the problem of flooding."
>
> DEIR P 3.9-2. "The low-lying and unprotected coastal areas of the community are subject to flooding from extreme weather events, storm surges, exceptional high tides, and sea level rise. Inadequate drainage and land subsidence also contribute to the problem of flooding."

The impacts are foreseeable and should not be omitted from the DEIR.

II.C. Future increased development will require continued and increased large-scale mitigation to make it a viable environment for existing and proposed development.

SLR accommodation, subsidence remediation, and other necessary infrastructure repair/relocation projects are therefore also plainly foreseeable but have not been evaluated in the DEIR.

The 2040 GP states, on P 1-11, that

> Sea "level rise is of grave concern to a coastal city such as Sausalito. Sea level rise is one aspect of a multifaceted issue that includes liquefaction, subsidence, and groundwater inundation. There is no one sea level rise "solution" that Sausalito can implement, but rather a strategy (contained in Sustainability Element's Objective S-1: "Adapt to sea level rise and mitigate its effects" that addresses all facets of the issue and continually reflects new science and technology."

Discussion about the type of mitigation strategies that could be used for SLR adaptation and necessary Marinship protection for existing or future development are not provided in the Sustainability Element.

Predicted environmental conditions in Marinship from the combined effects of SLR and subsidence by the 2040 time frame of the General Plan, have not been described in the DEIR. In my opinion this is an oversight because the 2040 GP is supposed to be a future planning tool that will allow the City to determine the feasibility of new development, yet the DEIR does not establish that future development is only foreseeable with necessary mitigation. Careful and judicious assessment of the significance of environmental impacts for the palette of mitigation strategies is the only way to determine if development is possible, feasible, economical or wise by 2040.

If it is not known how the land and the geomorphic processes affecting it will change by short and long-term target dates, we cannot establish the necessary mitigations strategies to secure the safety of people and protection of property and environment. Nor will the City be able to rely on increased future revenues by proposed increased development. Assessment of how existing conditions and the variety of hazards that exist in Marinship will change over time as a result of continued SLR and subsidence is a critical element missing in the DEIR.

The following examples of statements in the DEIR exemplify the need for addressing a variety of mitigations efforts in Marinship and determining what the significance of their environmental impacts will be.

First, it is important to establish that the GP5, on P 107, states that "Policy HS-1.2: Other Geologic Hazards. Require that all geologic hazards be adequately addressed and mitigated through project development." Yet, mitigation of all hazards is not adequately addressed as will be discussed below.

Per GP5, P 113,

> "Consider the need for additional actions to address coastal erosion from wave and tidal activities, recognizing this issue is likely to be exacerbated with the onset of projected sea level rise in the Bay Area."

And GP5, P 170, "APPROACHES TO MITIGATION"

> "Approaches to mitigating the risk associated with flooding, seal level rise, subsidence, tsunami and levee or dam failure can include the use of natural features or structural engineering. Bay lands and tidal marshes, including wetlands, often provide the first line of defense to flooding. The effective buffers that these natural features create serve to dampen tidal energy thereby lowering wave heights, erosive forces, and ability to cause damage along the shoreline.
>
> "In areas with no land buffer, traditional engineering approaches may be appropriate. These may include levees and sea walls to manage risks; however, the cost and complexity of these strategies is such regional collaboration is required for implementation."

Secondly, it is important to establish that GP6 already pointed out on P i that the 1995 GP Update had two policies addressing mitigation of SLR, however limited guidance was provided with addressing impacts in Sausalito:

> • "HS-1.3 Flooding. Protect all existing and future structures, and their occupants, from the threat of potential flooding."
>
> • "HS-1.4 Shoreline Safety. Minimize the potential for personal injury and damage to shoreline property from waves and flooding."

The DEIR on P 3.9-14 purports that it conducts an analysis of mitigation in the following heading and description:

> "ANALYSIS, IMPACTS, AND MITIGATION MEASURES"
>
> "The impact analysis is based on an assessment of baseline conditions for the Sausalito Planning Area, including climate, topography, watersheds and surface waters, groundwater, and floodplains, as described above under the Existing Setting section. This analysis identifies potential impacts to hydrology and water quality from construction, operation, and maintenance activities related to future development that could occur under the proposed 2040 General Plan."

The above heading states that "mitigation measures" are part of the DEIR analysis yet the following obvious elements are missing:

- Mitigation of the landfill to reduce impacts of SLR and subsidence with regard to the changing conditions over the planning horizon;
- Mitigation of some impacts as discussed in Section II A 1-13 of this report, e.g. storm drainage, changing location of tidal/upland transition zone, backwater flooding and sedimentation, elevated groundwater table, submerged emergency evacuation routes; and
- Analysis of impacts of the mitigations.

The DEIR does not address how development would be made safe from these foreseeable impacts and therefore should be considered incomplete.

The DEIR further states, on P 3.9-14, that this

> "analysis identifies potential impacts to hydrology and water quality from construction, operation, and maintenance activities related to future development that could occur under the proposed 2040 General Plan."

It is unclear how and where the DEIR analysis identifies the impacts of SLR and climate change from the mitigation/construction efforts that will be necessary to protect existing and future development.

For example, where is the impact analysis of levees and fill and drainage rerouting that would be critical to future livability and transportation through Marinship and Bridgeway? Where is the discussion about need and impact for pumping trapped rainwater and stream overflows from behind shoreline levees? Where is the impact analysis that indicates how fill or levees, if chosen as a mitigation option, will affect subsidence rates when more weight of fill is added to land that has already dropped 5' since 1943 (Sea level in Sausalito Presentation, Feb 3 at the Bay Model

[http://sausalito.granicus.com/MediaPlayer.php?view_id=26&clip_id=584]

In concert, the combined influences of future adaptation strategies could cause adverse cumulative impacts that have not been identified or evaluated in the DEIR because needed actions for making Marinship safe have not even been realistically portrayed relative to both existing and future development. The specific mitigation impacts that warrant further discussion are followed in the following subheadings of this section of the review.

II.C-1. Possible Impacts and Mitigation of Projects for Repair, Redesign or Relocation of Creeks, Storm Drains or Other Underground Utilities

The 2040 GP, on P 2-9, describes that with climate change

> "storm drain systems may need to be modified in capacity along with other improvements to address high velocity flow events, scour, and filtration of contaminates prior to distribution of storm water to Richardson Bay. Several unfunded mandates are in place from the state of California requiring all jurisdictions to have filtration system on storm drain facilities within the next 10 years."

Inundation by Flooding in the DEIR is addressed on P 3.9-21 with the following conclusion.

> "As described under Impact HYD-6, the portions of the Sausalito Planning Area adjacent to Richardson's Bay are located within FEMA designated 100-year flood zones with a 1 percent chance of being flooded in any given year and 500-year flood zones with a 0.2 percent of being flooded in any given year. However, as

> detailed under Impact HYD-6, the proposed 2040 General Plan contains policies and programs specifically designed to address flood hazards. In addition, the Sausalito Municipal Code contains rules and regulations to reduce the risks of flooding. Further, Program HS-1.8.1 requires the city to review the effect of sea level rise, flooding, and tsunamis on parcels that have an elevation of 25 feet or less above Mean Lower Low Water level datum through the environmental review process. As such, development anticipated under the proposed 2040 General Plan located in flood hazard zones are not expected to be substantially inundated such that there would be a release of pollutants due to inundation. Therefore, potential impacts would **be less than significant**."

See all earlier comments in this report regarding tsunami inundation and models of future SLR that in my opinion make irrelevant the DEIR claim that impacts will be less than significant. Please note again that the probability of flooding shown on the FEMA maps will increase to greater than 1 percent as time goes on and climate change proceeds while the land continues to subside. The need for 'fixing' the storm drainage system has been loud and clear since it outfalls will be submerged in a relatively short timeframe. The impacts of remediation that involves repair, redesign, and/or relocation could very well be significant and cumulative because of the large scale of construction (see comment s regarding fill in section II.C-2 of this review) that will involve re-establishing a new drainage patten, disturbing contaminated soils, and disrupting people who live and work in Sausalito.

The DEIR, on P 3.16.-3, also addresses wildfire impacts and states that in

> "a post-fire scenario, development that could occur in the central portion of the Planning Area and west of Highway 101 could result in an incremental increase in secondary hazards associated with wildfires . . . the degree of secondary wildland fire hazard would not substantially change with adoption of the proposed 2040 General Plan, and current hazards would not be significantly increased. Therefore, impacts under this topic would be **less than significant**."

Since the post fire influence of landslide run-out pathways of excessive sediment supply for years following fire has not been appropriately evaluated relative to the impacts of SLR and subsidence on the submerging the storm drain system, it also follows that the necessary mitigation for the storm drain issues ant sites of potential excessive sedimentation have also not been evaluated in the DEIR.

One of the few mitigation actions that is described for creeks and streams is found on P 6 of the 2040 GP, however the potential impacts of daylighting streams is not discussed in the DEIR. It is not clear if this is a mitigation that would be proposed upstream of drainage structures beneath Marinship or if creeks would be day lighted across the Marinship fill, or relocated entirely. In any of these options, the potential impacts need to be described, e.g. increased flooding and/or exposure and disturbance of toxic soils which could result in significant negative environmental impacts.

Per 2040 GP, P EQ-6, "Creeks and Streams"

> "The City can also work with private landowners and organizations to daylight

streams and improve open drainage ways in Sausalito. This would include daylighting Willow Creek as well as converting stormwater drainage into community assets. As a green infrastructure program, this can both alleviate flooding in low-lying areas of Sausalito and improve water quality in Richardson's Bay."

And 2040 GP, on P EQ-6, states that maintaining

> "high water quality includes the maintenance of navigation ways, the restoration of tidal action and enhancement of marsh areas, the limitation of bay fill, the monitoring and abatement of contamination, and the control of residential vessels and floating structures on public trust lands."

Because the 2040 GP recommends the abatement of contamination as a mitigation action it is remiss that the DEIR did not assess the types of proposed remediation and associated impacts.

Per GP5, P 166.

> "To address sources of pollution entering surface and ground waters… the City of Sausalito's Stormwater Pollution Prevention Program targets construction and new development to retain runoff on-site and implement certain measures. The City of Sausalito's Stormwater Pollution Prevention Program targets construction and new development to retain runoff on-site and implement certain measures. The City's Stormwater Ordinance incorporates low impact development principles as conditions for permitting purposes."

Implementation of LID practice will become impactable in Marinship with SLR and increasing groundwater table elevation. There is no discussion in DEIR of how storm water runoff from existing or future increased development in Marinship will be handled. If it runs off to Richardson Bay it will create adverse negative impacts. If it is going to be pumped, the design, construction impacts and discharge locations must be described to establish feasibility and impacts as well. Without these kinds of analysis the DEIR cannot be considered adequate to evaluate the impacts of increased development.

Per DEIR, P 3.9-18,

> "Impact HYD-4 Development facilitated by the proposed 2040 General Plan would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site."

The drainage plan would need to be altered to facilitate future development and protect existing infrastructure. It will have increased discharge because of SLR and climate change as previously discussed.

Per DEIR, P 3.9-18,

> "New development or redevelopment that would be allowed by the proposed

> 2040 General Plan could incrementally increase the total impervious area within Sausalito and increase stormwater runoff, which could result in flooding. However, as described previously, implementation of proposed 2040 General Plan policies and programs and adherence to the requirements of the Sausalito Municipal Code would maximize the on-site infiltration capacity for new development and redevelopment projects and would minimize the offsite runoff that would leave those project sites."

These statements fail to recognize the impacts of SLR, subsidence, and the increased hazards they pose on existing and proposed increased development in Marinship and adjacent vicinities where LID features cannot be applied to land that is submerging or will have saturated soils from an increasingly elevating groundwater table.

Per DEIR, P 3-9-19,

> "Impact HYD-5 Development facilitated by the proposed 2040 General Plan would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff."
>
> "Development under the proposed 2040 General Plan encourages infill development and discourages development in open space areas or hillsides. New development or redevelopment that would be allowed by the proposed 2040 General Plan could incrementally increase the total impervious area within Sausalito and increase stormwater runoff, which could result in flooding, exceed stormwater drainage facility capacity, or create additional sources of polluted runoff… Chapter 11.17 of the Sausalito Municipal Code requires new or re-development projects to include operational stormwater drainage infrastructure that incorporates LID features and BMPs. Compliance with the proposed 2040 General Plan policies and programs, as well as adherence to the Sausalito Municipal Code, would maximize infiltration and rainwater retention, which would in turn reduce stormwater runoff. Therefore, impacts related to flooding, exceedances in stormwater drainage systems, or the creation of substantial additional sources of polluted runoff would be considered less than significant."

See previous comments which are applicable here.

Per DEIR, P 3-9-20,

> "Impact HYD-6 Development facilitated by the proposed 2040 General Plan would not impede or redirect flood flows. As shown in Exhibit 3.9-2, areas in the Sausalito Planning Area adjacent to Richardson's Bay are located within FEMA designated 100-year flood zones with a 1 percent chance of being flooded in any given year, and 500-year flood zones with a 0.2 percent of being flooded in any given year. The development in the city that is located further away from Richardson's Bay is located within Zone X – Area of Minimal Flood Hazard due to the elevation and distance from the shoreline."

As previously stated, the FEMA maps do not include assessment of flooding as affected

by future SLR, subsidence, climate change, backwater urban stream flooding at undersized storm drains, sediment deposition, future wave energy, and elevation of future king tides and tsunami projections. Therefore they cannot be used as a predictive tools to assess future development in zones clearly identified to be strongly affected by these ongoing processes that are considered to be of high hazard and/or concern.

Per DEIR, P 3.15-18,

> "According to the CEQA Guidelines Appendix G, the proposed 2040 General Plan would have a significant effect on water supplies, wastewater, solid waste, or stormwater conveyance if demand associated with projected growth would result in any of the following conditions:"
>
> "Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. . ."

With SLR the submerged stormdrain system will have to be altered to convey water and sediment to probable new discharge locations other than the ones that presently exist beneath, beyond, and adjacent to Marinship. The looming future need for this and how this will be accomplished has not been discussed or evaluated. If future development proceeds as planned in the 2040 GP or the DEIR, those new developments and the old ones will have to be disrupted and impacted when the storm drains do get replaced.

The DEIR cannot state that impacts will be less than significant since clearly some relocation and redesign must be done to protect Marinship from ongoing SLR and subsidence.

Per DEIR, P 33.9-16,

> "New development under the proposed 2040 General Plan could add additional areas of impervious surfaces within the Planning Area and could therefore increase the volume of pollutants that are typically associated with urban runoff into the stormwater. These pollutants can include sediments, petroleum hydrocarbons, pesticides, fertilizers, and heavy metals such as lead, zinc, and copper that tend to build up during the dry months of the year. Precipitation during the early portion of the wet season (generally from November to April) washes away most of these pollutants, resulting in high pollutant concentrations in the initial wet weather runoff. This initial runoff is referred to as the "first flush" of storm events. Subsequent periods of rain would result in less concentrated pollutant levels in the runoff."
>
> "Program EQ-4.3.3 requires that new developments or major renovations incorporate pervious surfaces to percolate stormwater runoff into groundwater. . . Program EQ-4.3.6 requires that post-development peak stormwater runoff discharge rates do not exceed the estimated pre-development rate when permitting for new development or substantial remodels."

This will not be able to be accomplished unless an extremely large volume of fill was added to Marinship to substantially elevate the ground level above the rise in elevation of both the sea level and future groundwater table. If just levee height was increased for shoreline containment, the elevated ground water table would still be a problem and toxic groundwater would need to be constantly pumped and appropriately discharged safely somewhere else. The sheer volume of water needing to be pumped would be greater because impervious surface area would be greater for increased development that cannot drain. The volume of groundwater that would need to be pumped will increase in time as sea level rises and as the land continues to subside. If it is polluted, it cannot be discharged safely to the Richardson Bay. If just more fill is added to Marinship, it needs to be explained how the storm drains and outflows will function.

The DEIR states that "future projects would comply with requirements of the Sausalito Municipal Code, and the proposed 2040 General Plan policies and programs related to water quality", but appropriate guidance is not given to deal with magnitude, scale, and combination of issues that exist within and adjacent to Marinship. The existing programs and policies are irrelevant to the actions that will be needed to continue to safely inhabit Marinship under future conditions and proposed increased uses.

On P 3.9-17, it states,

> "Therefore, future development under the proposed 2040 General Plan at operation would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. As such, implementation of the proposed 2040 General Plan would result in a less than significant impact relative to this topic."

The standards for further developing and protecting contaminated and subsiding artificial fill from the impacts of SLR and continued subsidence in areas of high flood, liquefaction, and seismic shaking hazards have not been established. The significance of impacts in trying to maintain development and even increase it cannot be addressed if they have not been acknowledged or evaluated whatsoever.

Per P 3.9-17,

> "Impact HYD-3 Development facilitated by the proposed 2040 General Plan would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site."

And P 3.9-18,

> "However, none of the future development facilitated by the proposed 2040 General Plan would require the alteration of the course of an existing stream or river."

Future development will, however, require the extensive alteration of the location and configuration of outflows from urban storm drains that carry natural perennial creek discharges from the uplands to storm drains beneath Marinship if they are to be

protected from the various impacts previously discussed, especially SLR. The current configuration of drainage system on the Marinship fill will have to be altered, the City will likely have to resort to pumping as groundwater elevation increases, as land subsides, and as sea level rises because there will be no way to drain the land. Where and how this will be accomplished must be described, including identifying where the potentially polluted water will be discharged.

Per P 3.15-5,

> "The City of Sausalito has been in the process of rehabilitating its aging sanitary sewer infrastructure."

Table 3.15-1 in the DEIR indicates that most of the sanitary sewer capital improvement projects in and near the Marinship area and Bridgeway have not been designed yet but that they are necessary. The DEIR should provide as much information as possible about the requirements, conceptual plans and mitigations that will be necessary for sewer replacement because this will certainly affect existing conditions, and future planning for other underground utilities that need replacement projects and that need to serve future development. The DIER should be requiring that a coordinated planning effort for all underground utilities needs to happen in Marinship to minimize adverse impacts and potential costs of having to redo a new project or having it fail because design elevations for SLR were not well planned or targeted for the same SLR planning horizon.

Per DEIR, P 3.15-14,

> "The order provides a consistent statewide approach to reducing sanitary sewer overflows by requiring public sewer system operators to take all feasible steps to control the volume of waste discharged into the system, to prevent sanitary sewer waste from entering the storm sewer system, and to develop a Sewer System Management Plan (SSMP). The General Waste Discharge Requirement also requires that storm sewer overflows be reported to the State Water Bard using an online reporting system. The State Water Board delegated authority to its nine RWQCBs to enforce these requirements."

And P 3.15-19,

> "Should additional wastewater collection and treatment infrastructure be needed after 2040 or as a result of some future new development elsewhere in the service area, those subsequent infrastructure projects would be considered and analyzed for potential environmental impacts consistent with the requirements of CEQA. Therefore, buildout of the proposed 2040 General Plan would not result in insufficient wastewater collection and treatment, and no new or expanded wastewater treatment facilities would be needed as part of the proposed 2040 General Plan. Thus, impacts would **be less than significant**."

The proposed capital improvement projects for the sewer upgrades in the Marinship Area have not been designed, nor have the sewers been improved. Stating in the DEIR that impacts of the 2040 GP will be less than significant to greater amounts of sewage

discharge is not possible without first evaluating how repair or replacement of the existing system will avoid significant impacts.

In addition, the DEIR needs to establish how will risks from such severe seismic shaking, liquefaction and tsunami inundation hazards, subsidence, salt water intrusion, increasing groundwater table, and increased flooding from the submerging storm drain system will affect the sewage system.

If overflows are increased by these risks, and since the DEIR does not address SLR adaptation plans to protect Marinship, it cannot be determined that future impacts of increased development will be less than significant. Present day septic pollution to Richardson Bay from disrepair and aging of the system must be addressed before future buildout can be deemed acceptable and safe with not significant impacts.

Per DEIR, P 3.15-19,

> "Storm Drain Capacity. . . implementation and buildout of the proposed 2040 General Plan would not result in the need to construct or expand stormwater collection infrastructure that have not already been described and accounted for the in the CIP. Should additional stormwater drainage infrastructure be needed after 2040 or as a result of future new development elsewhere in the service area, those subsequent infrastructure projects would be considered and analyzed for potential environmental impacts consistent with the requirements of CEQA."
>
> "Therefore, buildout of the proposed 2040 General Plan would not result in insufficient stormwater drainage infrastructure capacity, and no new or expanded stormwater drainage facilities would be needed as part of the proposed 2040 General Plan. Thus, impacts would be less than significant."

If the 2040 GP were to proceed as described the, existing and future increased development in and along Marinship would expose people and property to increased flooding, hazards, and property damages that could have been otherwise avoided through appropriate and prudent planning for the continued subsidence and SLR that will increase up to and well beyond 2040.

New development constructed within the 2040 time frame might need to be expensively repaired, modified or torn down to do some of the SLR adaptation projects (e.g. repair, redesign, and/or relocation of antiquated infrastructure) that will be essential to protect "future" Marinship.

Over 150 years of analyzed tidal data from NOAA indicate that SLR could be an average of 8.3" higher than 2012 sea level by July 2040. (https://baykeeper.org/data_viz/official-sea-level-rise-projection). The upper bound of the prediction is 17.8" and the lower bound is 3.2".

The Google Earth Map, below, (Figure 20) shows a conservative projection of 9.6" (0.8') SLR with an attendant 100-yr storm surge as projected by OCOF. The outlets of the storm drains are all submerged. The pink line shows the extent of predicted inundation by OCOF and the blue outlined rectangles show known storm drains. White arrows

show the location of the submerged outfalls. Extensive backwater flooding from the submerged storm drains that cannot drain would occur upland of the pink line. Delineation and prediction of the aerial extent of backwater flooding from these storm drains has not been established but would surely impact upstream private and public properties, transportation routes, and public safety well west of the pink line and west of portions of Bridgeway.

The extent of backwater flooding conditions in pipes and creeks, and the influence of landward sediment deposition with rising sea level has not been evaluated in the DEIR, as a result the necessary mitigation to resolve these issues is also missing.

II.C-2. Possible Impacts and Mitigation of Projects Needed for Landfill, Levees, or Sea Walls for Potential Shoreline Containment Projects

2040 GP, on P EQ-6, states that

"the Plan will encourage areas of historical fill to re-engineer existing fill and

> increase the site elevation to at least 20 feet above Mean Lower Low Water (MLLW)".

Because the City describes and encourages the actions of both re-engineering fill and placing at least more fill on re-engineered fill to accommodate the target elevation of 20' above MLLW throughout Marinship, it is remiss that the DEIR does not assess these types of proposed remediation as well as their associated impacts. It is unclear in the 2040 GP if all historical fill would be removed or just reworked. It is not apparent what the environmental impacts would be, how much toxic fill would be removed, where it would be disposed of, how much new and presumed clean fill would be required and where it would come from, and if the existing buildings on the fill and infrastructure within it would be removed. Clearly each one of these questions raises other questions about secondary impacts, costs, and timeframe that such a massive scope effort can be achieved.

The known effects and concerns about placing more fill on top of pre-existing fill has been discussed by EIP'85 in their Geologic Conditions Report to Sausalito. Hence, potential mitigation activities that will require more fill to mitigate SLR by creating shoreline protection in Marinship will have known and foreseeable environmental impacts that are readily available in the literature specific to Marinship. For example, the reported effects more subsidence occurring after more weight is added to fill needs to be discussed as part of the environmental impact analysis for protecting existing or and/or increased development. The alternatives to more fill, such as sea walls for protecting Marinship will need to have their associated impacts and feasibility evaluated as well (see soil disturbance, groundwater, and pumping issues in II.C-6).

The 2040 GP, on P EQ-6, further states the "increase in elevation of the construction site will reduce the potential exposure of people and property to the 100-year coastal flood." The 2040 GP does not make it clear if they are referring to a 100-yr storm event as shown on the FEMA maps or a 2040 projection of SLR with a 100-yr flood that that takes into account subsidence from the new fill. It is likely the former reference, but should be the latter. The City also states that if "a development site cannot be improved to such an elevation, all new construction in the areas subject to flooding will be required to prove that the lowest point of the lowest structural member maintains a minimum height consistent with the City's federally mandated Flood Plain Management program." The DEIR does not address this stipulation but should.

The citations below raise additional issues regarding the placement of more fill.

In the EIP'85, P 4,

> "The stability of fill placed over bay mud is a function of the fill thickness and the thickness of the underlying mud. For example, 10 feet of fill placed on 50 feet of mud would settle about 4.5 feet in about 200 years with 50% of the settlement occurring over the first 12 years. In contra.st, 10 feet of fill placed on 25 feet of mud would settle about 3 feet in about 20 years with 50% of the settlement occurring during the first year. In contrast, 10 feet of fill placed on 25 feet of mud would settle about 3 feet in about 20 years with 50% of the settlement occurring during the first year. A considerable amount of settlement has occurred in

Marinship since filling began about 40 years ago. However, because of the thickness of the mud, even near the old shorelines, and the added weight of continued development, most of the area has not yet stabilized."

And in the EIP'85, P 13,

"Ground settlement would occur in any area of the project site, underlain by bay muds, where existing grades would be raised with fill. As previously described, the settlement is a function of the compressibility of bay mud and the weight of the fill plus the weight of new structures."

"Settlement of imported fill (in addition to settlement of underlying mud) could also be an impact if the fill is derived from a dredged source. This would depend upon the characteristics of the dredgings. If the dredged soil is predominantly silty and clayey then the post-construction settlements could be similar to those which would occur in the bay mud."

… "differential settlement, which can be expected from a variety of sources. The type and significance of each source is shown in the following list."

- "Variations in bay mud thickness: potentially significant"
- "Presence and thickness of peat layers that remain after grading is completed: potentially significant"
- "Sloughs and drainage ditch backfills: potentially significant"
- "Finished thickness differences in fills: probably not significant"
- "Existing localized high ground: potentially significant"
- "Differences in construction history (time between projects): significant"

"The total amount of uniform settlement is important because it would control the height to which developed areas would have to be overbuilt to maintain an adequate free-board and to prevent inundation by high-tide flows or tsunamis."

And in EIP'85, P 14,

"Differential settlement would affect the design and performance of utilities, structural foundations and streets. Where differential settlement occurs over short distances, the potential significant impacts include overstressed foundations and buried utilities, wracked building superstructures, reversed gradients in gravity flow pipelines and culverts, and the development of bumps and sags in streets. Potential impacts on buildings include foundation cracking and loss of supporting capacity, possible roof and wall leaks, breaks in building service connections, and other architectural and cosmetic damage."

The MSP also makes reference to the EIP'85 report. In MSP on P 63,

> "Thicknesses of bay mud less than 10 to 12 feet would need about three years to stabilize after new fill was added before construction could begin. Settlement time increases almost exponentially with depth of mud (50 feet of mud needs about 200 years to stabilize after filling). Pile foundations should be considered when mud thickness is shallow enough to allow their economical use… Given the fluid nature of the Marinship, adding significantly to the existing dead load of one area can cause an elevation change to another. When reviewing a development application, the City will consider the potential impact on any adjacent parcels."

The EIP'85 report refers to a

> "Planning Area Map Figure 2" in Table 4 Risk Matrix but the map seems to be missing in the digital report. It is possible that much of the fill in Marinship is in the U category which was described as "existing information is insufficient to state that this use of the area currently involves an unacceptable level of risk. See explanation of precautionary arterial."

And EIP'85, P 14,

> "No part of the Marinship Planning Area is made permanently uninhabitable by its geologic conditions."
>
> "There is existing technology that could be employed to adequately protect nearly any type of development from static or dynamic natural forces (settlement, earthquake, tsunami, flood, liquefaction, wind, lateral spreading, lurching). However, at some point common sense must be applied. Even if an intensity of development were being considered that would accommodate the very expensive foundation and structural designs needed to ensure an acceptable level of risk in the fill-over-mud environment, it does not really make sense to go to those extremes if there are other options available that would consume fewer of the community's resources. Those options (other locations or other uses) should be explored first. They may be eliminated in the distant or near future, at which time some form of foundation/structural solution may become appropriate. However, it is the opinion of the consultant that simple avoidance of the "U" areas is currently the most practical solution."

The potential negative environmental impact of the mitigations must be weighed, even if costs are surmountable. The DEIR does not provide the key concerns about necessary mitigation actions that are central to the EIP'85 report. The standards and issues described in EIP'85 report still need to be met to make the artificial fill safe enough to allow increased development and protect it from contaminants, further subsidence, flooding from SLR and elevated ground water, liquefaction, and seismic shaking hazards, and failure of underground utilities, the mitigations for which have not been sufficiently described and evaluated in the DEIR. Thus, the findings of significance of environmental impacts in the DEIR are not reliable at this point.

II.C-3. Possible Impacts and Mitigation of Projects Requiring Dredging

Per the aforementioned existing hazards and impacts, dredging might be needed to mitigate SLR impacts. If it is, he DEIR needs to assess its potential impacts to Richardson Bay. For example, it needs to be determined if bathymetric alterations caused by dredging might affect future habitats, especially sensitive ones as sea level rises. The disturbance of contaminants in the bay muds will need to be mitigated. Disposal sites will also need to be determined. If dredging is going to be needed as a source of spoils for levee and/or fill materials for shoreline containment projects or shoreline protection repairs need from potential wave erosion, the DEIR will need to address and evaluate these issues.

According to the GP3 P, p B-5, the "Dredged Material Management Office (DMMO) dredges Sausalito's "Raccoon Straights", the body of water running the length of the Marinship waterfront. If there are current mitigations for this activity, they need to be described. It should be determined if there will be ongoing future need for this activity as sea level rises.

Changes from SLR will likely affect the distribution of habitat that supports eelgrass. The DEIR should evaluate the threshold of tidal range and substrate conditions that eel grass requires to assess where it might start to grow as sea level rises. This would be important to make sure that those areas do not get dredged.

It would be helpful if the DEIR discussed historical and current dredging needed offshore of Sausalito to help determine if it will be needed to maintain some nearshore amenities such as boat harbors and/or provide access for deep draft boats to various facilities or harbors in upper Richardson Bay.

Historically Upper Richardson Bay was frequently dredged to the drawbridge that used to exist along the old Redwood Highway in upper Richardson Bay as documented in MCOP report on Bothin Marsh Geomorphology, Ecology, and Conservation Options Chapter 3: Environmental History of Intertidal Habitats in Richardson Bay with Emphasis on Bothin Marsh (Collins, LM, PR Baye, and J Collins. 2018). Sediment supplied from Coyote Creek and Arroyo Corte Madera del Presidio contributes to the shallowing of Richardson Bay and the DEIR does not discuss how nearshore bathymetry will be influenced during SLR. These are important off site impacts that should be evaluated in the DEIR.

Dredging issues and its potential mitigation are adequately discussed or evaluated in the DEIR and therefore the determination that the 2040 GP will not have adverse impacts is not supported. The following citations exemplify concerns that future dredging might need mitigation especially if it affects local sensitive biological communities that are trying to adapt to changing habitat conditions because of SLR.

> DEIR, P 3.3-15, "Impact BIO-1 Development facilitated by the proposed 2040 General Plan would not have a substantial adverse effect, either directly or through habitat modifications, on candidate, sensitive, or special-status species."
>
> DEIR, P 3.3-16. "Other policies found in the general plan recognize the importance

of protecting valuable wildlife habitat. Policy W-4.2 and Program W- 4.2.2 call for preservation and enhancement of the open waters and habitats found in Richardson's Bay, which have high ecological value for marine species such as eelgrass (Exhibit 3.3-3)."

DEIR P 3.3-16. "As discussed in the Existing Setting section, no sensitive biological communities are present within the Sausalito Planning Area, and therefore, would not be impacted by implementation of the proposed 2040 General Plan."

"While not always documented as sensitive natural communities in the CNDDB, streams, rivers, estuaries, and eelgrass beds are of high concern because they provide unique aquatic habitat for many endemic species, including special-status plants, birds, invertebrates, amphibians and fish species. These aquatic habitats oftentimes qualify as protected wetlands or jurisdictional waters and are protected from disturbance through the Clean Water Act."

II.C-4. Possible Impacts and Mitigation of Projects that Disturb or Erode Toxic Soils

The potential for shore erosion increases if levees or fill are increased in height and subjected to higher wave energy from SLR. Nowhere is it stated how the Marinship area will be protected from sea level rise so it is not possible to evaluate the influence of development when surely some kind of shoreline containment will be needed. If the soils of the fill are disturbed, either through erosion or mitigation projects, especially if the mitigation projects are large-scale like what will be required for removing all the older fill, there is a chance contaminants will be released. The following citations describe issues regarding impacts and mitigation projects dealing with contaminated fill in Marinship.

GP5, P 166, "To address these sources, the City of Sausalito's Stormwater Pollution Prevention Program targets construction and new development to retain runoff on-site and implement certain measures."

It is improbable that contaminated water will be retained on site if contaminated fill is being removed. The DEIR need to describe what will be done if this kind of mitigation activity is conducted as advised by the 2040 GP.

DEIR P 3.6-15. "Impact GEO-4 Development facilitated by the proposed 2040 General Plan would not result in substantial soil erosion or the loss of topsoil."

DEIR P 3.6-16. "In addition to compliance with mandatory NPDES permit and Sausalito Municipal Code requirements, implementation of proposed 2040 General Plan policies and programs would further reduce the potential erosion and loss of topsoil from construction-related soil disturbance. As such, potential impacts related to erosion and loss of topsoil would be reduced to **less than significant levels."**

"Erosion" includes wave erosion of coastal shores. The DEIR does not make it clear how the code will protect against future wave erosion because they do not describe what will be applied to the levees or fill along the shoreline to minimize wave energy as

sea level rises.

DEIR, P 3.8-1 "HAZARDS AND HAZARDOUS MATERIALS"

"This section of the DEIR analyzes impacts associated with exposure to hazards and hazardous materials within the Planning Area, resulting from buildout of the proposed 2040 General Plan. Specifically, the analysis addresses impacts related to hazardous materials use and transportation, accidental release of hazardous materials, new development or redevelopment on contaminated sites, air traffic hazards, and interference with emergency response and evacuation plans. Common contaminants that may be present in Sausalito include lead, oil, tar, solvents, pesticides, and contaminated soil and groundwater."

DEIR, P 3.8-11. "Program HS-1.4.7: Phase 1 Reports. Require, at minimum, a Phase 1 hazardous materials assessment for all future development or redevelopment projects on sites located within the Marinship area or on sites with a known history of industrial uses (such as gas stations)."

What will be the aerial extent, depth, type, and cost of testing that will establish a threshold for determining whether it is feasible to protect existing and future development in Marinship. It is unclear if more fill is going to be placed everywhere on Marinship or if all the contaminated and historical fill is first going to be excavated and removed from site?

Alternatively it has not been clarified if high levees or flood walls are going to be used instead and if so, what will the necessary depth and extent of soil disturbance to construct the levees or walls will be for shoreline containment projects. The DEIR does not provide discussion or evaluation of these important mitigation aspects that will be needed to protect increased development.

DEIR, P 3.8-15. *Conclusion*

"While development envisioned by the proposed 2040 General Plan could result in an incremental increase in transportation, use, and disposal of hazardous materials in the Planning Area, future projects would be required to comply with requirements and regulations set forth by the USDOT, Caltrans, CHP, local CUPA, and SMFD. Therefore, impacts related to transportation, use, and disposal of hazardous materials would **be less than significant**."

Transportation of unquantified but probably calculable large quantities of contaminated fill would will have to be transported through local communities, creating construction traffic, noise and environmental disturbance. If a massive amount of fill is going to be removed the DEIR should provide quantitative estimates for the extent and volume that will be necessary to excavate, transport, and dispose at a toxic waste site. A map showing the aerial extent of proposed fill or mitigation projects should be provided, just as the extent of proposed development is mapped out. In theory it seems that an EIR should be conducted after investigations are concluded to assess the feasibility of increased development in Marinship, not preceding it where it falsely conveys that all impacts will be less than significant.

DEIR, P 3.9-21. "Inundation by Tsunami."

"Program HS-1.8.1 requires the city to review the effect of sea level rise, flooding, and tsunamis on parcels that have an elevation of 25 feet or less above Mean Lower Low Water level datum through the environmental review process. Program HS-1.9.3, requires submittal of shoreline development site plans to identify areas of the parcel subject to flooding and wave action. Lastly, as specified in Program HS-2.1.7, the city is required to develop an action plan to identify how the city will address the potential release of pollutants within the city's flood hazard and tsunami zones, should they become inundated. Therefore, potential impacts **would be less than significant**."

Reviewing the effect of sea level rise does not mitigate its impacts to less than significant. See earlier comments regarding Tsunami inundation that discuss the lack of analysis of future submergence issues relative to SLR and emergency regress routes. It is unlikely that the City's action plans to identify how the city will address the potential release of pollutants within the city's flood hazard and tsunami zones incorporates long-term actions that address greater impacts and extent of flooding and contamination by 2040 from future SLR/tsunami flooding. The future scenarios will involve longer duration of inundation and probable submergence of emergency access/evacuation routes unless there are mitigation projects proposed that are not clarified in the DEIR.

DEIR P 3.8-18. "Impact HAZ-6 Development facilitated by the proposed 2040 General Plan, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to hazards and hazardous materials."

"This analysis evaluates whether impacts of the proposed 2040 General Plan, together with impacts of cumulative development, would result in a cumulatively significant impact with respect to hazards and hazardous materials. . . under the proposed 2040 General Plan would be required to comply with requirements and regulations set forth by the USDOT, Caltrans, CHP, the local CUPA, and SMFD related to transport, use, and disposal of hazardous materials. All cumulative projects would be subject to similar requirements and regulations set forth by the same and similar agencies for each projects' own jurisdiction. Cumulative projects will also be required to implement a SWPPP and comply with the CCR during construction, site grading, excavation operations, and building demolition. For these reasons, impacts of the proposed 2040 General Plan on hazards and hazardous materials are not cumulatively considerable and the cumulative impact would **be less than significant**."

For the variety of reasons stated above the DEIR does not justify from their analysis that impacts will be less than significant from extensive excavation projects of contaminated fill, sewage and storm drain repair or relocation projects, and surface water and groundwater pumping that will likely become necessary with SLR.

II.C-5. Possible Impacts and Mitigation of Projects that Address Ground Failure, Very High Liquefaction Potential, Violent Seismic Shaking, and Landslides

The type of mitigation needed to treat potential hazards associated with ground failure have been discussed and identified by EIP'85. The projects will require soil disturbance and additional fill and EIP'85 raised concerns about cost and feasibility. Although mitigation needs are foreseeable, the DEIR did not evaluate the environmental impacts of necessary activities to protect increased or existing development in Marinship. EIP'85 raises concerns about the practicality and cost of the mitigation that would be needed.

In Table 1 on P 8 of EIP'85 a list of known hazards in Marinship was provided:

1. "Existence of younger bay muds"

2. "High water table"

3." Seismic ground shaking for Richter 8+ earthquake; weak to strong"

4."100-year flood zone"

5. "Subsidence of fill over mud"

Oddly, the high water table hazard was not evaluated in the DEIR. For example, there is no section in the DIER that addresses the potential of a rising water table and its potential effects on existing or future development and infrastructure. Nor does it discuss potential investigative actions such as borings or mitigation actions that would reduce the risks or the associated impacts that could cause adverse environmental impacts. The changing level of hazard associated with increasing height of groundwater table with SLR, as Marinship subsides, and the resulting increased saturation of Bay Mud causes seismic shaking to be called out as a concern by EIP'85. The DEIR does not identify specific or a suite of mitigation actions that will be necessary to protect existing and proposed increases in development in Marinship from ground failure or liquefaction projects from seismic shaking and landslides.

P 12. "Liquefiable Sands"

"Clean, loose, saturated sands, within 50 feet of the ground surface are the sediments most likely to cause structural damage if they liquefy Therefore, it is important that a boring used as a major data source extend at least 50 feet below ground level."

"Bay Mud/Settlement"

"The younger bay sediments include bay mud, which does not liquefy, but which can contribute to ground displacement during earthquakes. This creates a subsidence hazard. Layers or pockets of clean, loose (low density) sand occur within the younger bay sediments. This, combined with a water table depth of less than 10 feet, defines an area that is considered moderately liquefaction-prone, by the USGS"

EIP'85 P 7.

"Ground surface failure, such as lurching, can be mitigated by proper site preparation in building areas and by providing adequate building setbacks from the bay shore channel banks. Such site preparations would require re-compaction of existing fill and slope protection of additional fill. Although the techniques are well understood and are part of current engineering practices, the costs involved do not make them practical for small scale infill construction. . . If the structures on the site are no more than four stories high, the impact of ground shaking could be reduced through foundation and structural design. As with lurching prevention, foundation design may involve measures too expensive to be practical for small infill construction. Driven pile foundations would need to be scores of feet deep to pass through the soft bay mud to more substantial substrata."

DEIR P 3.6-3.

"Ground shaking is often the greatest cause of physical damage. Buildings and utility facilities may suffer severe damage or collapse if not properly designed to withstand shaking. The city's proximity to fault zones and other potentially active faults suggests a high probability that a strong earthquake will occur."

"Areas underlain by soft sediment, such as Bay Mud, are most susceptible to amplified ground shaking and damage to structures. As part of the development of several areas along the city's coastline, fill has been placed over Bay Mud, making these areas more likely to experience substantially stronger ground shaking than nearby areas underlain by bedrock at a shallow depth."

Marinship and a portion of the area to the west of the MSA has seismic shaking rated as violent and the remainder of the hills to the west are rated as very strong shaking as depicted in the DEIR Exhibit 3.6-2. The previous discussion under seismic hazards about potential differential subsidence issues that result from different types of fills and underlying substrata is not addressed in the DEIR. To ameliorate the impacts to existing or future development of strong to major seismic consequences, excavation and re-compaction of soil has been recommended by EIP'85, but the scope and magnitude of disturbance that will be required for this mitigation project of this size throughout the Marinship fill has not been described in scope or evaluated for impacts in the DEIR.

DEIR, P 3.6-4.

"Ground failure effects include landslides, rock falls, subsidence, liquefaction, and ground lurching in areas not actually ruptured by a fault. . . .ground surface displacement due to loss of strength or failure of underlying materials. . . Moisture content and groundwater levels are important in assessment of ground failure potential. . "

As climate changes and SLR continues to alter conditions by 2040 and beyond, the moisture content of the soils and fill in and around Marinship will increase the potential for ground failure, as described above in the DEIR. Mitigation for increased groundwater

will be required for a number of reasons, e.g. to protect structures, to reduce contaminant spread, to reduce flooding, to minimize seismic shaking. It will be increasingly needed as sea level rises for most of the existing Marinship landscape. Without this, the proposed future development is not protected, yet the DEIR does not provide details of the scope, magnitude and type of mitigation projects that area needed to deal with future changes in sea level over the sort- or long-term planning horizon.

DEIR, P 3.6-13.

"Impact GEO-1 Development facilitated by the proposed 2040 General Plan would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death from seismic events."

"Development under the proposed 2040 General Plan would result in additional residential and nonresidential development within the city. As such, additional residents and employees would be potentially exposed to the effects of fault rupture, seismic ground shaking, liquefaction, subsidence, and landslides from local and regional earthquakes. Structures that would be built on steep slopes could be exposed to an existing risk of landslide or, if improperly constructed, could exacerbate existing landslide conditions. New structures built under the proposed 2040 General Plan could also experience substantial damage during seismic events."

Even newer structures that comply with structural engineering standards that are built on subsiding fill of variable consistency that will become increasingly submerged from a rising groundwater table while subsiding during SLR will still be subject to seismic shaking forces that can cause liquefaction of the bay sediments beneath the fill. These hazards could isolate the community, making transportation to and from the "buildings built to code" intractable. Utilities could become severely damaged and storm drain clogging could increase if seismic shaking triggers landslides in the steep hillsides. The consequences increase with SLR. The DEIR does not state how it will alter or fix the existing fill, storm drains, utilities, and transportation corridors to mitigate for these severe hazards. Without mitigation scenarios the existing policies dictate that Marinship cannot be further developed. Without assessment of the kinds of proposed mitigation impacts of increased development in either the 2040 GP or the draft EIR cannot be determined to be less than significant.

DEIR, P 3.6-13.

"Potential structural damage and exposure of people to risk of injury or death from structural failure would be further minimized by compliance with CBC engineering design and construction measures. . . . In conclusion, compliance with mandatory CBC requirements and implementation of proposed 2040 General Plan policies and programs, would **reduce potential for loss, injury, or death in the event of a seismic event**."

It is not specified whether the compliance measures address construction on antiquated fill that plus that is subject to differential settlement, is subsiding, is subject to inundation from SLR, Tsunami inundation, that contains known and unknown contaminant sites

and pervasive toxic materials used in construct of the initial fill. It is not clear what compliance requires to mitigation all these issues and if SLR by 2040 will not cause significant impacts to structures. A SLR threshold of elevation should be identified for establishing the minimum ground elevation for grading of fill for construction of buildings. These issues are not satisfactorily addressed or evaluated in the DEIR to claim that impacts would be reduced to less than significant.

DEIR, P 3.6-14.

> "Impact GEO-2 Development facilitated by the proposed 2040 General Plan would not result in a significant impact related to development on unstable geologic units or soil, or result in on or offsite landslides, lateral spreading, subsidence, liquefaction, or collapse."

> "Certain geologic units present in the Sausalito Planning Area could have the potential for landslides, slope instability, and liquefaction. Other geologic hazards, such as subsidence, lateral spreading, or collapse, could also be present in the Planning Area. Development allowed under the proposed 2040 General Plan could occur within areas containing unstable geologic units. One of the 2040 GP recommendations was to map local geology and geologic hazards for both slope stability and seismic hazards. The hazard maps would assist the city in identifying public drainage systems that need updates and repairs. The maps are also likely to identify open space areas upslope of city infrastructure or residential structures that have a potential for failure. Such areas could then be prioritized for stabilization measures to minimize or eliminate future failures."

If this is the case, then it would be wise to do an analysis of the requirements first to establish if the hazards can be mitigated before zoning an area developable and conducting an EIR. Use the maps to establish what is developable, state the mitigation requirements, and then conduct the EIR. This has not been done in the DEIR. No mitigation requirements or projects for minimizing the hazards of liquefaction and seismic shaking of the Marinship fill has been described.

DEIR, P 3.6-14

> "Other geologic hazards, such as subsidence, lateral spreading, or collapse, could also be present in the Planning Area. Development allowed under the proposed 2040 General Plan could occur within areas containing unstable geologic units."

The fill has been identified as subsiding, subject to violent earthquake shaking and liquefaction, and flooding from SLR, where the additional elevated groundwater table will increase the negative consequences of liquefaction. Its description defines it as an unstable unit.

On P 3.6-15, the DEIR determines

> "that with implementation of the programs in the 2040 General Plan that "With the implementation of the policies and programs in the proposed 2040 General Plan, as well as applicable State and local codes, potential impacts as associated

ground instability or failure **would be less than significant**."

This determination is unfounded because a description and evaluation of implementation projects and their impacts is not evaluated in the DEIR. The DEIR should describe the mitigation needed and potential impact s of stabilizing the expanse of fill or decide not to develop it. Accommodating SLR by to building new tidal marsh habitat is an alternative action to consider. That could have environmental benefits.

DEIR P 3.6-15.

"New development constructed on expansive soils could be subject to damage or become unstable when underlying soil shrinks or swells. There is generally a low to moderate risk of damage from expansive soils throughout most of the city, though risk of damage is moderate to high in low-lying areas along Richardson's Bay. Typical measures to treat hazardous soil conditions involve removal, proper fill selection, and compaction. In cases where soil remediation is not feasible, the CBC requires structural reinforcement of foundations to resist expansive soil forces. Compliance with requirements of the CBC would reduce impacts related to expansive soils to a **less than significant level**."

Mitigation of removal of fill or soil poses the potential danger of exposing and disturbing toxic soils and materials in the fill. Also, increasing the weight of material on the existing fill could subsequently increase subsidence rates of the underlaying bay muds, marsh peats and other variable types of fill. The mitigation of removing contaminated fill and placing new it has impacts of its own that need to assessment in the DEIR. This has not been done.

DEIR P 3.9-21. "Inundation by Flooding"

"As described under Impact HYD-6, the portions of the Sausalito Planning Area adjacent to Richardson's Bay are located within FEMA designated 100-year flood zones with a 1 percent chance of being flooded in any given year and 500-year flood zones with a 0.2 percent of being flooded in any given year. However, as detailed under Impact HYD-6, the proposed 2040 General Plan contains policies and programs specifically designed to address flood hazards. In addition, the Sausalito Municipal Code contains rules and regulations to reduce the risks of flooding. Further, Program HS-1.8.1 requires the city to review the effect of sea level rise, flooding, and tsunamis on parcels that have an elevation of 25 feet or less above Mean Lower Low Water level datum through the environmental review process. As such, development anticipated under the proposed 2040 General Plan located in flood hazard zones are not expected to be substantially inundated such that there would be a release of pollutants due to inundation. Therefore, potential impacts would **be less than significant**."

All earlier comments regarding tsunami inundation and the need for models of future SLR that help predict long- and short-term flooding apply here. Future grading elevations will be needed and the flood maps should be used to help determine what those likely elevations will be and what the extent of flooding will be. Without these kind f tools appropriate mitigation cannot be realized. The FEMA map does not serve the

DIER well as tool that guides the DEIR well, because it obscures the determination of the impacts by not providing a picture of the future.

II.C-6. Possible Impacts and Mitigation of Projects for Future Pumping to Drain Flooded Land and Dewatering of Contaminated Surface and Groundwater

With climate change and SLR, groundwater will become elevated. If fill is not elevated, the ground will be increasingly submerged, if sea walls or levees are used to contain the land from the SLR pumping of groundwater, from trapped rainfall, and flooding from storm drains, will be needed. Even if the contaminated fill is entirely replaced with clean engineered fill, storm runoff from the urban landscape will likely contain contaminants. If the fill is not replaced and if the sewer and storm drain system is not redesigned or relocated, the emerging groundwater will probably be highly contaminated and pose a significant health threat. If fill is used, there may be places where it is not high enough and storm and rain water will still get trapped and pumping will still be a necessity. Needs for pumping and/or dewatering the saturated ground will increase with SLR.

The DEIR needs to evaluate the kinds of mitigation projects that will address these issues and then evaluate the potential impacts of the projects. Until this is accomplished the determinations by the DEIR that the 2040 GP will not have significant environmental impacts are unsound.

The citations below refer to potential mitigations discussed in the DEIR that pertain to dewatering and pumping.

DEIR, P 3.3-17.

"Subsequent development under the proposed 2040 General Plan, primarily adjacent Richardson's Bay, could result in direct or indirect effects on estuarine habitat and other sensitive marine communities. Federally protected wetlands and other Waters of the United States and/or State could be affected through direct removal, filling, hydrological interruption (including dewatering), alteration of bed and bank, and other construction-related activities."

DEIR, P 3.3-18.

"2040 General Plan includes policies and programs designed to protect riparian habitat and other sensitive natural communities, as well as protect wetlands and Waters of the United States and/or Waters of the State. Policy W-4.2 and Program W-4.2.2 require the preservation and enhancement of open waters and ecosystem of Richardson's and San Francisco Bays. Policy W-4.3 calls for the preservation of the undeveloped open shoreline and shoreline habitat."

The very likely need to create shoreline containment projects along the Marinship shoreline will require dredging or potential buildup of levee or fill material in the baylands protected by the State of California. Since no kind of SLR adaptation or containment strategies are discussed in the DEIR for making the 2040 GP feasible, the potential impacts of hydrological interruption and construction related activities on

protected Waters of the State cannot be ascertained.

Per DEIR, P 3.9-15. "Dewatering"

> "Construction activities associated with future development, including excavation and trenching, may encounter shallow groundwater. If shallow groundwater is encountered, dewatering of the excavation or trenching site may be required. If improperly managed, these dewatering activities could result in discharge of contaminated groundwater."

As sea level rises and water table elevation increases, the likelihood of spreading contaminant plumes to other areas will also increase, including to areas west of Bridgeway. It is not apparent that the DEIR did any kind of analysis of the effects of groundwater that will rise and increase in elevation in the fill with SLR, adversely affecting the existing and proposed Marinship development. The enlarging extent and volume of groundwater will spread contaminants as plumes and as groundwater converts to surface water when soils are saturated. Increased water at building foundations, the potential effects on other infrastructure, and the hampering of transportation needs to be described and evaluated in the DEIR, so that mitigation can be considered for potential pump facilities and disposal. Once the groundwater table is the same level as the surface of the fill, there will be far more runoff to pump because water cannot percolate into already saturated ground. The volume of the water that will need to be pumped and disposed of will probably increase over the planning horizon because of the influence of SLR. Dewatering may also have to be very focused toward some of the known contaminant hazard sites.

Other concerns listed by the DEIR exemplify the potential need for pumping and dewatering.

DEIR, P 3.6-4,

> "Liquefaction is more likely to occur in areas with a shallow water table."

DEIR, P 3.9-22,

> "Impact HYD-8 Development facilitated by the proposed 2040 General Plan would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan." . . ."construction and operation of development facilitated by the proposed 2040 General Plan would be required to comply with CWA, the proposed 2040 General Plan policies and programs, the Sausalito Municipal Code, and the mandatory NPDES permit requirements. Therefore, future development under the proposed 2040 General Plan at construction and operation would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality, in compliance with the San Francisco Bay Basin Plan. As such, implementation of the proposed 2040 General Plan would result in a **less than significant impact relative to this topic."**

It is not possible to state this unless mitigation strategies are evaluated.

DEIR, P 3.9-22,

> "Cumulative development contributes to an incremental increase in impervious surfaces that could introduce pollutants that are typically associated with urban runoff into the stormwater and/or contribute to cumulative flood conditions in the watersheds. Cumulative development could also contribute to water quality impacts in the watersheds from construction activities."

II.C-7. Possible Impacts and Mitigation needed for Repair, Redesign, or Realignment of Bridgeway

The following citations provide background information about Bridgeway along the west edge of the MSA boundary.

DEIR, P 3.10-8,

> "The proposed 2040 General Plan would retain the existing roadway patterns and does not propose any new major roadways or other physical features that would create new barriers to connectivity in the Planning Area. Further, development under the proposed 2040 General Plan would be located on sites either developed, underutilized, or near existing residential, commercial, and industrial uses."

It is uncertain how retaining Bridgeway and other roads in Marinship will be accomplished when its frequency of flooding will increase with future subsidence, SLR, backwater flooding, and high groundwater. As depicted in Figure 16 and Figure 21 there are numbers of SLR scenarios that show Bridgeway will be flooded or submerged. This may happen sooner than later because of problems with the antiquated failing storm drains in the subsiding fill. The storm drain system needs to be redesigned in coordination with redesign of Bridgeway, in the DEIR, to deal with the essential needs of reducing flood hazards and maintaining Bridgeway as a designated emergency evacuation route for Marinship and Sausalito. Flooding will essentially render Bridgeway as a barriers unless redesign or relocation mitigation actions are taken. If fill, levees, or sea walls are used to protect Bridgeway – the previous discussion of lack of impact and mitigation analysis applies to the DEIR. As seen in the statements below, the DEIR does not address the need of addressing impacts of increasing SLR, groundwater, subsidence and poor storm drainage, thus they do not conduct an analysis of impacts of projects to remedy these hazards that will be unquestionably needed for the 2040 planning horizon if not sooner, otherwise the increased development in Marinship will be at undue risk.

DEIR, P 3.10-10,

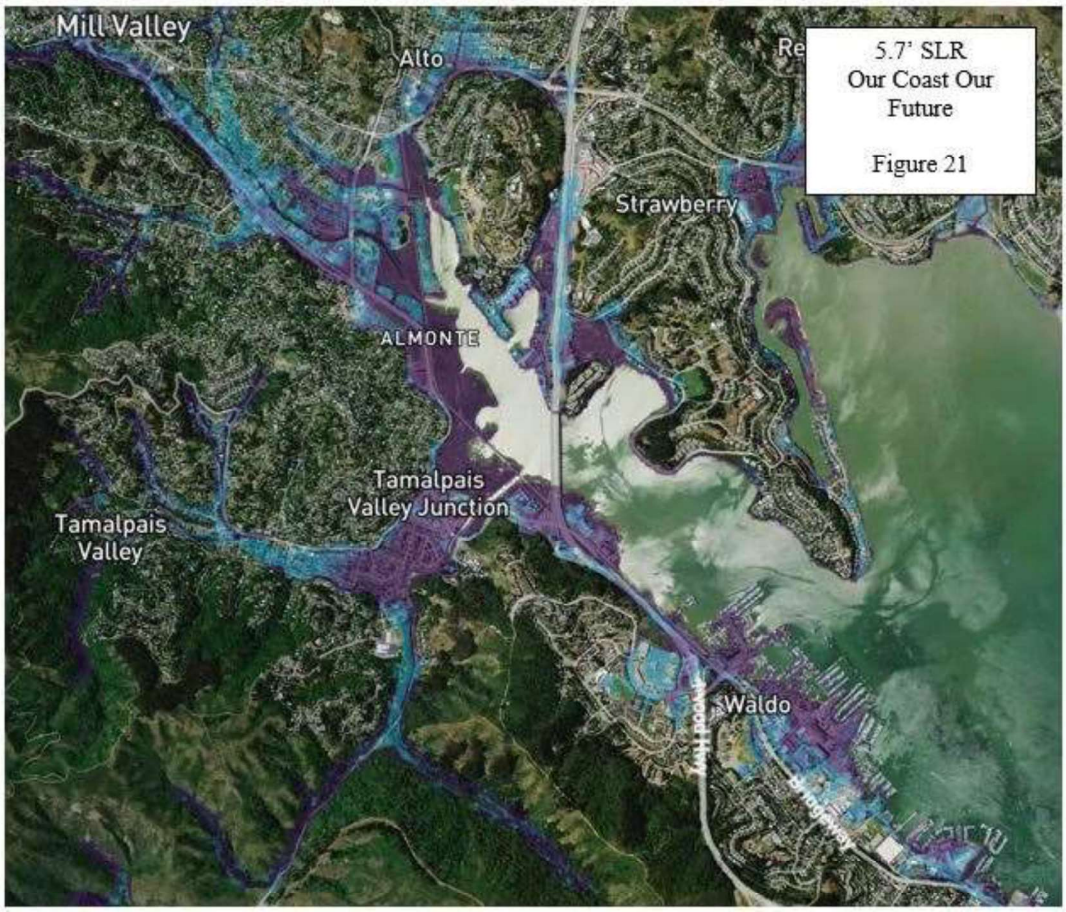
> "Impact LUP-3 Development facilitated by the proposed 2040 General Plan, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to land use."

> "This analysis evaluates whether the impacts of the proposed 2040 General Plan, together with the impacts of cumulative development, could result in a cumulatively

significant impact with respect to land use. This analysis then considers whether incremental contribution of impacts associated with the implementation of the proposed 2040 General Plan would be significant. Impacts LUP-1 and LUP-2, implementation of the proposed 2040 General Plan would not physically divide an established community or conflict with any land use plan, policy, or regulation within or outside the City of Sausalito, adopted for the purpose of avoiding or mitigating an environmental effect. As such, development anticipated under the proposed 2040 General Plan would not create substantial land use impacts."

"Development is likely to continue occurring in the surrounding Cities of Mill Valley, Tiburon, Larkspur, and San Rafael. However, most of this development would take place in urbanized areas as in-fill development and not require significant land use changes that would create land use conflicts, nor would they divide existing communities."

The DEIR should describe how the various transportation corridors such as Shoreline Highway State Route 1 and Highway 101 near Manzanita Marsh in other municipalities such as Tam Valley and Mill Valley will adapt, especially where SLR is already causing well-documented submergence. The findings in the citations above are challenging to accept in light of the essential needs of mitigation that will shortly be required to keep people out of harm's way. Figure 21 shows the extensive amount of flooding from a FloodFactor 30 projection from now with a 100 year storm. These future projections are not discussed or considered in the DEIR.



DEIR P 3.14. – 16.

"According to the CEQA Guidelines Appendix G, the proposed project would have a significant impact on transportation if it would:"

- "Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities;"
- "Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b);"
- "Substantially increase hazards due to a geometric design feature (e.g., sharp curves or
  dangerous intersections) or incompatible uses (e.g., farm equipment); or"
- "Result in inadequate emergency access."

Within the planning horizon of 2040 and beyond, emergency evacuation access will be inadequate under certain SLR storm surge and precipitation scenarios. Marinship, nearby areas, and segments of Bridgeway will also be affected by other sources of flooding such as backwater from creek and storm drains. These issues, as discussed previously in this review, are not fully addressed in the DEIR for impacts of likely mitigation that will be needed for clean up in the event of flooding or for projects to relocate and/or elevate the road to prevent future flooding and subsidence.

Transportation and hiking/biking along the Bay Trail system needs to be considered as well. The Bay Trail connects with other municipalities and jurisdictions, such as MCOS to the north of Coyote Creek in Tam Valley. MCOS is currently planning a SLR Adaptation Project in Bothin Preserve where the Bay Trail runs along the shoreline. The Trail is frequently flooded during higher tides and King tides. They are developing plans that might have alterations in the present alignment of trail.

It is not stated in the DEIR how the 2040 GP will adapt the Bay Trail or other transportation corridors to SLR to prevent flooding by the 2040 planning horizon and beyond.

In my opinion, there should be concerns about accepting the conclusions of the DEIR, because it could result in inadequate emergency access and potentially conflict with other SLR adaptation plans, programs, or ordinances addressing the circulation system, which would not be in compliance with CEQA guidelines.

II.C-8. Possible Cumulative Impacts from Tidal Prism Displacement Effect from Potential Shoreline Containment Projects needed for SLR/Subsidence Mitigation

The construction of higher levees and placement of higher landfill can cause tidal prism displacement that can have impacts elsewhere. This has been established and discussed in published literature by Ruo-Qian Wang, Mark Stacey, Liv Muir Meltzner

Herdman, Patrick L. Barnard & Li Erikson in *The Influence of Sea Level Rise on the Regional Interdependence of Coastal Infrastructure* (March 2018), available at (https://doi.org/10.1002/2017EF000742).

Their study examined the impact of local shoreline development on regional flood risks and considers SLR scenarios of up to 1.5 m (69") using a large-scale numerical model for San Francisco Estuary. The purpose was to better understand the influence of local estuarine shoreline infrastructure planning on associated SLR flood risk. They show that measures to prevent flooding along an embayment shoreline in one location or sub-region may increase inundation elsewhere in the estuary and that particular protection actions can have disproportionate impacts at others.

The network of interactions were found to occur not only within sub-basins of the Estuary, but also across the greater geographic extent from one end of the Bay to the other, and local jurisdictions may have either reciprocal relationships with or asymmetric impacts on one another. Importantly, the nature of the interaction network is now seen to evolve with SLR. Interactions are purely sub-regional at current sea level, but with higher sea level (e.g., 3.28' of SLR), not only do the sub regional interdependencies strengthen but regional interdependences also emerge.

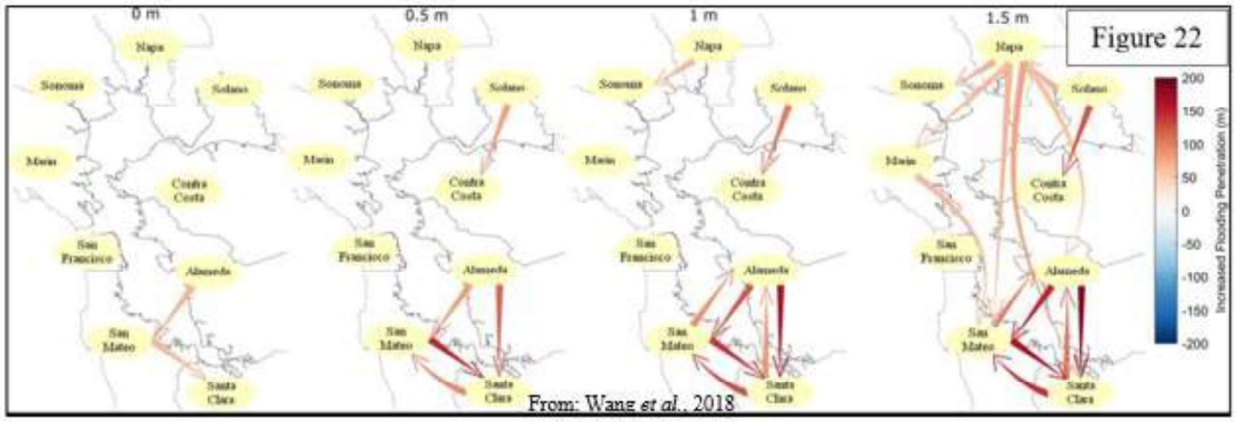
Wang *et al.* broadly characterized future shoreline protection strategies as two types: accommodation and containment.

"Accommodation" refers to a shoreline strategy that allows rising coastal waters to inundate new areas (make way for the bay), which in many cases will create broad shallow regions along the estuarine perimeter. "Containment" refers to strategies that maintain existing shorelines through the construction of barriers to contain the estuarine waters based on the current configuration of the shoreline. The distinction between accommodation and containment becomes particularly pronounced under modeling scenarios of future sea levels, where increases in water levels would lead the estuarine waters, if not contained, to inundate new regions.

For the purpose of this review and this hydrodynamic effect is here referred to as the "tidal prism deflection effect" that occurs from extensive shoreline containment actions that may involve higher levees, extensive and higher land fill, and /or sea walls. These are the kind of remedies that will likely be under consideration for the future of Sausalito shoreline and the artificial fill of Marinship.

In the diagram below, Wang *et al.* show the increasing impact between the 9 Bay Area Counties if one of them protects their entire shoreline by containment methods. The red arrows show linkages when the penetration distance of new landward inundation is greater than 197' (60 m). Wang *et al. show f*our scenarios in Figure 22. Different sea level rise projections of 0 m (present day sea level), 0.5 m (1.64'), 1.0 m (3.28'), and 1.5m (4.92). The arrow points to the county that receives elevated sea level impacts and the thick opposite end is at the county that takes full containment action of its shoreline. The color of the arrow shows the average penetration distance of the total flood water change, and the scale and color bar to the right is show the distance of increased SLR penetration. In general, as sea levels rise, the effects of shoreline interventions become larger and more geographically distributed.

Their model shows that Alameda County perhaps provides the most glaring example of this dynamic, as the impacts on water level are highly localized under current sea levels, but the influence of the county maintaining its shoreline begins to extend throughout the Bay and becomes increasingly intense in the southern part of the Bay, as sea level is increased by 1 or 1.5 m over the present day. The model shows that if all of the Marin County applied shoreline containment, San Mateo County would have impacts, whereas Marin County would have impacts if all of the Napa County shoreline was contained. These cumulative impacts are not discussed or evaluated in the DEIR.



From: Wang *et al.*, 2018

Clearly, it would be unwise not to evaluate the impacts of needed accommodation or containment strategies within the nearby local municipalities of Marin County and the regional jurisdictions along the shoreline of the San Francisco Estuary. An appropriate effort for planning for SLR and for developing city-wide general plans will require extensive inter and intra county collaboration to prevent unwanted and unexpected impacts of local SLR protection efforts.

Specific to Richardson Bay, the question must be raised about whether the tidal prism deflection effect for containing the Sausalito shoreline could influence SLR and other planned marsh adaptation or containment plans and specs at other locations in upper or eastern Richardson Bay. This potential cumulative and off-site impact of increased development in Marinship which would clearly need some kind of containment strategy has not been evaluated in the DEIR. The impacts could potentially have adverse impacts to marsh restoration projects that are being planned in nearby Marin Open Space Bothin Marsh that is already showing signs of increased submergence, and could potentially influence sensitive and/or threatened species in other Richardson Bay marsh locations such as Manzanita Marsh.

DEIR, P 3.3-14,

"The proposed project would have a significant impact related to biological resources if it would:"

- "Have a substantial adverse effect, either directly or indirectly through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;"

The DEIR should clarify if sensitive species could be affected by the tidal prism displacement effect from necessary changes that would have to be implemented for shoreline containment (increased levee and/or fill heights) to protect existing and future Marinship development. This is not evaluated in the DEIR.

DEIR, P 3.3-14,

- "Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS;"

- "Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;"

The tidal prism displacement effect could adversely influence sensitive communities in other marshes in Richardson Bay or accelerate the rate drowning of tidal wetlands that are already at risk in upper Richardson Bay. This is not evaluated in the DEIR.

DEIR, P 3.3-14.

"Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan."

It is not clear how proposed increases in development and the shoreline containment projects that will be necessary to protect them will impact other local to regional conservation plans, because the potential protection strategies are not discussed in the DEIR.

DEIR, P 3.3-19,

"Impact BIO-6 Development facilitated by the proposed 2040 General Plan, in combination with past, present, and reasonably foreseeable projects, would not result insignificant cumulative impacts with respect to biological resources."

"This analysis evaluates whether the impacts of the proposed 2040 General Plan, together with the impacts of cumulative development, would result in a cumulatively significant impact on special-status species; wetlands and other Waters of the Unites States and/or State; or other biological resources protected by federal, State, or local regulations or policies. This analysis also determines if the impacts are significant on special status species. . . . Additional development may also contribute to degradation of the aquatic habitat found in Richardson's and San Francisco Bay throughout the region, including the Sausalito Planning Area. The proposed 2040 General Plan proposes no substantive changes in land use that would result in significant impacts to biological resources. . . Therefore, cumulative impacts would be less than significant."

The DEIR analysis fails to consider the impacts of displaced tidal prism and potential necessary dredging and/or fill extending into protected State waters for potential necessary flood protection if levees are needed and land fill is altered along the Marinship shoreline. It also fails to consider the influence of increased weight of fill (needed for flood protection) on increasing subsidence rates and therefore increasing potential flood frequency that has been evaluated and predicted by others (FloodFactor, ART, and OCOF for example), which could change in rate based upon increased weight of fill and and/or increased tidal prism.

The DEIR should address whether the sphere of influence should be greater due to the potential displaced tidal prism effect if levee and fill height for shoreline containment is used to protect against flooding. This is not discussed in DEIR.

> DEIR, P 3.6-17,
>
> "Impact GEO-7 Development facilitated by the proposed 2040 General Plan, in combination with past, present, and reasonably foreseeable projects, would **not result in significant cumulative impacts** with respect to geology, soils, seismicity, or paleontological resources."

If mediations projects are not conducted to replace and elevate the Marinship fill, storm drains, and leaking sewage pipes continued subsidence and SLR will cause cumulative impact to Richardson Bay and the Marinship development. If mediation projects are conducted on all these issues, the DEIR has not established what they will be or if cumulative impacts will occur. Moreover, the displace tidal prism effect has not been determined to establish if it will have negative impacts on sensitive habitat, particularly in upper Richardson Bay where marshes are already showing negative effects of SLR.

> DEIR, P 3.9-23,
>
> "Impact HYD-9 Development facilitated by the proposed 2040 General Plan, in combination with past, present, and reasonably foreseeable projects, would **not result in significant cumulative impacts** with respect to hydrology and water quality."
>
> "This analysis evaluates whether the impacts of the proposed 2040 General Plan, together with the impacts of cumulative development, would result in a cumulatively significant impact on hydrology or water quality. This analysis then considers whether incremental contribution of the impacts associated with the implementation of the proposed 2040 General Plan would be significant. Both conditions must apply for cumulative impacts to rise to the level of significance. Cumulative development contributes to an incremental increase in impervious surfaces that could introduce pollutants that are typically associated with urban runoff into the stormwater and/or contribute to cumulative flood conditions in the watersheds."
>
> "Cumulative development could also contribute to water quality impacts in the watersheds from construction activities."
>
> . . . "potential changes related to stormwater quality, stormwater flows, drainage,

impervious surfaces, and flooding would be minimized by the implementation of stormwater control measures, retention basins, infiltration, and LID measures, and review by the city's Public Works Department to integrate measures to reduce potential flooding impacts… All cumulative projects would be subject to similar permit requirements and would be required to comply with city ordinances and proposed 2040 General Plan policies, as well as other water quality regulations that control construction-related and operational discharge of pollutants in stormwater...The water quality regulations implemented by the RWQCB take a basin-wide approach and consider water quality impairment in a regional context… For these reasons, impacts of the proposed 2040 General Plan on hydrology and water quality are not cumulatively considerable and the cumulative impact would **be less than significant."**

See earlier comments throughout this review that deal with actions that will be necessary that are not discussed in the DEIR to make development in Marinship safe such that cumulative impacts would not occur.

DEIR, P 3.15-34,

"Impact UTIL-6 Development facilitated by the proposed 2040 General Plan, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to water supply, wastewater, solid waste, and storm drain facilities."

DEIR, P 3.15-36,

"All cumulative projects would be required to comply with city/County ordinances and proposed 2040 General Plan policies, as well as other regulations that minimize stormwater runoff, such as the Clean Water Act. For these reasons, impacts of the proposed 2040 General Plan on storm drain facilities are not cumulatively considerable and the cumulative impact would be **less than significant.**"

The *Projected Conditions* 2040 map shown in Figure 16, demonstrates a cumulative impact of flooding if the storm drain facilities are not evaluated and remedied for SLR and for subsidence that will occur by 2040 and years beyond. It also does not account for the increased elevation of the water table which will inhibit percolation and inhibit the use of many LID policies and practices in the Marinship area.

The influence of sediment deposition within the culverts and their reduced capacity must be considered and evaluated for flood impacts and maintenance frequency and cost in years leading to the projected 2040 planning period. The impacts of backwater flooding will be cumulative because they will impact among other things, transportation, public safety, private property, public property, sediment disposal and potentially toxic disposal, and soil disturbance for repairs or relocation.

II.D. Even if the precise details of necessary accommodation projects may not be known at this point, certainly the DEIR can identify the category or types of projects that will likely be required (sea walls, levees, dredge/fill etc.), and also the most likely locations of the projects based on projected flood areas.

The DEIR does not adequately address which mitigations will be used to minimize existing or future negative impacts in Marinship.

Other local Bay Area projects use SLR projections to develop long and short-term planning actions and strategies. For example, Santa Clara County is looking to use levees in their "Shoreline Protection Levee Project" for the South Bay, while the Metropolitan Transportation Commission is looking into rerouting the highway in their Highway 37 adaptation Study in the North Bay, and MCOS in their "Bothin Marsh SLR Adaptation Project," in Richardson Bay, is looking at modifying or removing some levees, rerouting Coyote Creek Flood Control canal back into the Bothin Marsh to enhance sediment deposition at the backshore, and possibly rerouting or elevating the Bay Trail.

Using forecast models and a suite of mitigation options is essential for future planning efforts. More local planners are relying on them to assess the multitude of issues that will progressively challenge daily life, commerce, economy, and public safety in the Bay Area. SLR scenario planning should be part of the DEIR analysis as well

Mitigation methods for protecting Sausalito's existing nearshore and waterfront developments from SLR, flooding, and subsidence are not discussed or evaluated whatsoever in the DEIR. Whether likely future shoreline containment projects will be constructed to protect the existing and/or proposed new developments should be conveyed to the public.

An array of mitigation tools should be considered with potential impacts determined both locally and collaboratively to establish if could affect other local or Bay-wide projects or vice versa. These steps would be prudent in the DEIR.

The 2040 GP proposes that the City further explore ways to mitigate wave action hazards. The mitigation actions suggested include:

2040 GP, P HS-18,

1. "Requiring engineering reports for breakwaters, including wave suppressers, wave dampers, floating breakwaters."

2. "Promoting and improving tidal flats to dissipate wave energy."

3. "Requiring all new piers to be oriented to protect property from dangerous winds from standard events."

4. "Encouraging the proper maintenance and reconstruction of existing protective barriers for marinas."

The compiled list of mitigation actions, provides a variety of mitigation options and practices that have come up in various official Sausalito reports, listed on P 1 of this review. They provide a virtual toolbox of considerations. The DIER does not, however, comprehensively evaluate them individually as potential beneficial options for increasing development in Marinship, nor do they weight their potential negative environmental impacts.

A number of the listed items were provided in the 2040 GP *Sustainability* that seem to have a noticeable focus on beneficial environmental mitigations that could improve tidal habitat, while buffering upland developed from excessive wave energy.

The compilation is from various sources listed on P 1 of this review.

- Levees
- Engineered fill
- Sea walls
- Lift pumps
- Wave suppressers,
- Wave dampers,
- Floating breakwaters
- Reorientation of piers
- Maintenance and reconstruction of existing protective barriers
- Dredging
- Modify storm drain capacity
- Upgrade in the sewer system
- Filtration system on storm drains in 10-years
- Managed retreat
- Nature based adaptation measures
- Living shorelines
- Horizontal levees
- Hardline armoring

On page P S-1 of the 2040 GP an important policy directive is provided about planning for SLR:

> "Policy S-1.6. SLR Adaptation Plan. Proactively pursue planning and implementation of adaptation and mitigation strategies for sea level rise and land subsidence. "

In my opinion, this would be wisely done before the DEIR is conducted and potentially approved for increased development in an area that might be unfit. Alternatively, the DEIR could take on the SLR adaptation planning as an element of their analysis, but this was not done, causing the impact assessment to fall short. Even though the impacts need was foreseeable and clearly necessary for mitigation actions.

In DEIR, P 2-11, *Sustainability Element*

> "The Sustainability Element includes objectives to adapt to SLR and mitigate its effects locally, as well as promote sustainable development and resource conservation that will have broader effects throughout the region and globally."

The DEIR does not present mitigation strategies only objectives. It is difficult to tell if the objectives will have committed or little follow-through. Since mitigation strategies to adapt to SLR and other hazards are not presented in the DEIR, nor their impacts evaluated, it is not possible to determined that the environmental impacts of increased development proposed in the 2040 GP will be less than significant, especially when a full array of very large-scale mitigation actions are considered necessary by the City.

II.E. Since this is a plan level EIR that defers project-level impact analysis to the future as specific development proposals are brought forward, the same plan level approach should be taken with regard to future SLR/subsidence accommodation projects, which again are necessary and reasonably foreseeable.

When the impact analysis of the DEIR is based upon existing 2020 conditions, but SLR and climate are expected to change the environmental landscape, there is a significant miscalculation. The environmental conditions by 2040 and beyond must be understood and portrayed accurately plan and assess the impacts that will exist at that time.

Future change is not sufficiently characterized or used in the DEIR. Instead the DEIR relies on 2020 hazards and does not project how the risks will increase or decrease, how they will potentially synergistically amplify or have positive feedback loops, e.g., the more subsident the land, the higher the sea level relative to the land, and the heavier the weight of the water on the land, therefore the more the subsidence. Future conditions should be the basis of plans not existing conditions. "Plans" are by their very nature for the future, and future conditions show how the existing conditions must be mitigated to minimize future risks. Preparing the DEIR before the analysis of mitigation scenarios and environmental change analysis is a flawed strategy.

The DEIR states their objectives below:

> DEIR, P 2-3,
>
> "For the purpose of this Draft EIR analysis, the following objectives have been identified for the proposed 2040 General Plan:"
>
> - "Safeguard the natural environment and ensure community health, safety, and resilience, including addressing the inherent risks of climate change, sea level rise, and subsidence."
> - "Seek innovative and sustainable solutions to sea level rise in collaboration with County and regional agencies and innovators, to sustain the quality of life in Sausalito and its active waterfront uses."

These objectives have not been met by the DEIR with regard to SLR and subsidence because it fails to spell out what physical actions the City will take to protect existing and new development in Marinship from the impacts of SLR and subsidence. The DEIR does not prioritize which actions must come first in order to minimize mistakes from poor panning or insufficient infrastructure upgrading and relocation that will minimize disturbance e of contaminated fill. It does not provide a target ground elevation to a target date or hazard inundation level, (e.g. a 5.7' SLR with a 100-yr storm surge and a 100-yr precipitation event by year 2100). Potential SLR adaptation scenarios are not even suggested in the DEIR. Thus, it must be assumed that the City will increase development under the existing conditions of the landfill without doing the long awaited and necessary remedial actions to minimize current risks and health hazards.

Remedial actions are necessary for addressing the antiquated storm and sewage drains and the landfill that will become increasingly submerged and unstable from SLR, failed storm drainage, subsidence and rising groundwater. The water will have nowhere to drain so it will collect in the Marinship. The variable composition of fill and its underlying substrata will still present severe risks from seismic shaking, liquefaction and ground failure hazards, as well as the spread of toxic contaminant plumes from raising groundwater. Accepting the DEIR as it stands, will put more people, property and the environment at risk unless remedial actions are planned or evaluated for impacts and actually demonstrated through better science that they will be insignificant.

The advice of the GP5 should be a guide to the DEIR and then well-followed:

> GP5, P 171,
>
> "General Plans are designed to operate over a 20-year time horizon. Sea level rise policies that may be considered within the current General Plan Update should be implementable and responsive to sea level rise impacts within this timeframe. However, sea level rise is a global force that will continue to be an issue beyond the timeframe of the General Plan Update. Therefore, explore policies that prepare the community for the next set of steps to respond to sea level rise beyond 2040."
>
> The DEIR need to first get a realistic picture of conditions and risk in 2040 to make sure they are not negatively influenced as soon as 2050.

II.F. It is critically important for the City to understand today whether the accommodation projects that will be required to protect the City under 2040 buildout scenario are financially feasible, whether they will be effective, and whether their own direct or indirect environmental impacts will be significant (e. g. sea wall displaces tides to other locations in the San Francisco Estuary).

The 2040 GP and DEIR cannot rightly claim to be able to sustain existing infrastructure through 2040 under the existing and failing 2020 infrastructure conditions. Nor can they evaluate risks and impacts by using present day 2020 flood maps, rather than using best available 2040 projections that combine and reflect the interactions of the variety of influences of SLR, subsidence, rising groundwater, creek flooding and associated storm frequency, wave energy and amplitude, King tides, backwater stormdrain flooding, potential sediment deposition sites, and changing tidal/fluvial transitions zone.

All of this would take a huge modeling effort but, fortunately, there are readily available tools that can give snapshots of bits and pieces of the future. Careful planners can then set their vision of the future.

DEIR, P 3.15-19,

"In addition, most new development accommodated under the proposed 2040 General Plan is expected to be infill and under the proposed 2040 General Plan is expected to be infill and would rely on the existing distribution network that has sufficient capacity to convey available water supplies."

The previous statement demonstrates the lack of understanding of how future conditions will render the present day storm drain system ineffective. Since the storm drain is already described as failing, attempting to send any more runoff to it will likely fail miserably. Without pumping, the Marinship will function as a low-lying drainage catchment. If not redesigned and/or relocated, the Marinship or somewhere upstream near drainage pipe inlets will be at increasing risk of flooding.

DEIR, P 3.15-18 & 19, "The following impact analysis is based on an assessment of existing and future conditions for the Sausalito Planning Area related to water supplies, wastewater treatment capacity, landfill capacity, and storm drain capacity. This analysis identifies potential impacts to water supply, wastewater, solid waste, and storm drains based on development anticipated from buildout of the proposed 2040 General Plan."

As previously stated, the DEIR analysis does <u>not</u> appear to realistically deal with the future issues associated with SLR, subsidence, and their combined influence on the functionality of the storm drains in and along the Marinship area. In addition, the DEIR does not deal with how the Marinship will be protected from flooding by these processes, e.g., the changing location of the fluvial/tidal transition zone that will cause sediment deposition within the pipes and exacerbate backwater flooding.

The Preferred Alternative in the DEIR is #3. It still proposes increased development over existing conditions, but the amount is less than the build out proposed by the 2040 GP or Alternative 2. Alternative 3 has decreased commercial and industrial development more than Alternative 2. Alternative 1 is no project. A brief description follows below of Alternative 3, also designated as the Preferred Alternative.

DEIR, P 4-19, "ALTERNATIVE 3 —DEVELOPMENT"

"Under this alternative, commercial and industrial development would see an increase from existing conditions, but to a lesser degree than the buildout projected in General Plan 2040. The land use designation areas throughout the Planning Area associated this alternative are depicted on Exhibit 4-3 and include: Central Commercial (CC), Mixed Residential & Commercial (CR), Neighborhood Commercial (CN), Waterfront (W), and Industrial (I). This alternative would be more reflective of the city's recent development activity, particularly in industrial areas of the Marinship and commercial areas in the downtown."

The DEIR determined that the additional alternatives would all to have less than significant impacts even though they varied in the number of structures and people that will be subject to future SLR/subsidence impacts and other increasing future risks as discussed throughout this review.

The concerns about Alternatives 2 and 3 are essentially the same: they do not provide a feasible solution for protecting people, property, and the environment from significant impacts under changing climatic conditions of SLR and local conditions of high subsidence rates of contaminated fill and decrepit storm drains and sewage system.

Therefore, the 2040 GP and DEIR cannot rightly claim to be able to sustain existing infrastructure through 2040, based on any reasonable evidence and reports regarding the existing and failing 2020 infrastructure conditions. How the storm drain will function during potential 2020 creek flooding shown on the FEMA maps has not been explained, irrespective of SLR flooding in the future.

For 2040, the DEIR has not tried to evaluate how much bigger in magnitude a 100-yr storm will be than one in 2020, though the shoreline position of where the river meets the sea will be different. The individual counties and municipalities will need to know about each other's projects to prevent unanticipated higher sea level from tidal prism displacement effects of extensive containment projects, such as sea walls, that figuratively push water elsewhere and inadvertently make it someone else's problem. This could happen, for example, where a design elevation of new fill was not designed high enough to accommodate a calculable amount of tidal prism displacement from a project across the bay, or another example could be a tidal marsh restoration project that did not design enough wave dissipation to prevent unanticipated wave erosion and habitat loss from calculable higher amplitude waves associated with displaced tidal prism.

The City should communicate and share the specs and sum total extent of shoreline containment projects to other Bay Area entities that may be planning projects of their own as well.

II.G. The DEIR has inconsistencies and incompatibilities between different GP policies with environmental purposes/impacts (e.g. one policy calls for maintaining natural stream channels, which could undermine other policies of minimizing flood risks).

Sausalito's GP6 report on Sea Level Rise and Subsidence provides key findings related to SLR projections and their implications for the 2040 GP, for areas created by filling in the Bay, such as the Marinship, they suggest:

GP6, P ii,

"Combining SLR with vertical land movement (i.e. land subsidence) provides a Relative SLR for more realistic planning purposes. Based on the SLR projections for Sausalito, the General Plan Update should consider: "

- "Policies to address sea level rise and subsidence impacts on historic sites"
- "Policies that address the risk of sea level rise and land subsidence within the General Plan Update time frame, while also considering that the impacts of sea level rise will extend beyond the planning horizon."
- "Policies in relation to the risk of sea level rise together with land subsidence."
- "Participation in regional efforts to address the risk of sea level rise."
- "Priority could be placed on reducing the impact associated with the risk of sea level rise based on safety risk to residents and the community, economic risk to productive lands, health risks due to infrastructure impacts, etc."

As exemplified throughout this report, the sound policy advice asserted in GP6 is not realized in the DEIR, since it does not try to address subsidence and link it to SLR, or rising ground water issues. It also does not show a methodology of how it is weighing the risk of sea level rise based on safety risk to residents and the community, economic risk to productive lands, or health risks due to infrastructure impacts, as stated in the above Policy.

Furthermore, the DEIR does not provide or discuss the recommendations prepared by EIP'85 for in their report on Geological Background of Marinship.

On P 14 they state that

> "Differential settlement would affect the design and performance of utilities, structural foundations and streets. Where differential settlement occurs over short distances, the potential significant impacts include overstressed foundations and buried utilities, wracked building superstructures, reversed gradients in gravity flow pipelines and culverts, and the development of bumps and sags in streets. Potential impacts on buildings include foundation cracking and loss of supporting capacity, possible roof and wall leaks, breaks in building service connections, and other architectural and cosmetic damage."

They delineate the fill in the Marinship on their planning area map, as a unit designated as MU and define it as follows:

> "Bay mud has unique and severe stability problems that are not comparable to those of the uplands. Bay mud is unconsolidated, semi-fluid, and highly compressible. It is highly sensitive to loads placed on it, reacting by compaction and lateral flow to cause settlement of the fill -- often differential settlement -- that continues for many decades where the thickness of the mud exceeds about 25 feet."

EIP'85 concludes by discussing feasibility, common sense, and practicality:

> "No part of the Marinship Planning Area is made permanently uninhabitable by its geologic conditions. There is existing technology that could be employed to

> adequately protect nearly any type of development from static or dynamic natural forces (settlement, earthquake, tsunami, flood, liquefaction, wind, lateral spreading, lurching). However, at some point common sense must be applied. Even if an intensity of development were being considered that would accommodate the very expensive foundation and structural designs needed to ensure an acceptable level of risk in the fill-over-mud environment, it does not really make sense to go to those extremes if there are other options available that would consume fewer of the community's resources. Those options (other locations or other uses) should be explored first."

The comments from EIP'85 do not include the additional effects of SLR, because it was not perceived as a threat at that time, but now that it is, it adds an immense burden of effort and cost to properly characterizing how risks and known hazards will change, not just for increasing development but for potentially increasing in time as SLR changes the environment.

The DEIR fails to adequately address the recognized and existing risks of failing fill and infrastructure. It also does not meet the need of projecting the amplification and interaction of these reasonably foreseeable problems into the future with combined SLR interactions. As a result the DEIR cannot adequately determine that impacts from increased development will be less than significant.

The DEIR fails to adequately assess, study, or otherwise analyze the potentially significant impacts of toxic contamination in the Marinship. As such, approving the DEIR for development in Marinship seems to go against Program HI-1.44.2 policy that requires contaminant investigation to proceed approval of development. The cart has been put before the horse in that the DEIR has found that all impacts relative to toxic contamination will be less than significant before a field investigation has ever been conducted.

> DEIR, P 3.3-18,
>
> "Future development under the proposed 2040 General Plan would comply with adopted State, federal, and local regulations for the protection of sensitive natural communities, including riparian habitat, wetlands, and Waters of the United States and/or State. In addition, future projects would comply with requirements of the Sausalito Municipal Code and the proposed 2040 General Plan policies and programs related to the protection of these biological resources. Therefore, future development under the proposed 2040 General Plan would not result in significant adverse effects"

The policies to protect the environment may be inadequate to protect it under SLR and land subsidence conditions that will require increased levee heights and land fill to protect against flooding. The land alterations that may be necessary for containment projects could have cumulative, off-site impacts from the tidal range displacement effect and/or dredging and fill with State Waters. Without description of what will be done to make Marinship safe and livable, findings of less than significant adverse effects in the DEIR cannot be scientifically supported.

Since the DEIR is in the process by which development could be approved, there should be contamination investigations preceding the approval of increased development. This is in keeping with existing DEIR P 3.8-16, Program HS-1.4.2 that "requires that subsurface contamination investigations at potentially contaminated sites be conducted prior to development approval."

The approval of increased development is not compliant with the above Program. This is another example of the DEIR putting the cart before the horse in that it is approving development and asserting that impacts will be less than significant prior to conducting an investigation of the aerial extent and depth of contamination in Marinship.

DEIR, P 3.9-10,

"Policy W-4.2: Bay Waters. Preserve and enhance the wetlands, open waters, and ecosystem of Richardson's and San Francisco Bays and utilize these landscapes for sea level rise mitigation."

I am not aware of discussion in the DEIR of proposed actions for mitigating for SLR that would be consistent with this policy.

DEIR, P 3.9-10,

"Policy EQ-4.2: Regional Collaboration. Work together with regional, County, State, and Federal actors on water quality and sea level rise issues of common concern."

It is not clear that the City is doing this relative to the GP 2040 or if is intended after the DEIR is approved, which could then be a problem without having assessed the impacts of protecting existing and future developments.

DEIR, P 3.9-10,

"Program EQ-4.2.6: Flood Insurance. Continue participation in FEMA's National Flood Insurance Program (NFIP) and the Community Rating System to improve resilience and reduce flood damage."

The FEMA maps are not designed to protect the shoreline areas form SLR. They are necessary and useful for existing conditions. The DEIR must show future landscape conditions under different SLR scenarios to improve resilience and reduce flood damage.

DEIR, P 3.9-11,

"Program EQ-4.3.3: Pervious Surfaces. Encourage pervious surfaces in new developments or major renovations to the maximum extent feasible to percolate stormwater runoff into groundwater without impacting subsurface stability."

Applying LID (low impact development) policies and increasing infiltration will become increasing difficult or useless as the groundwater table along and within Marinship

elevates due to SLR and climate change.

DEIR, EQ-4.3.4,

"Ordinance Amendment (Impervious Surfaces). Consider modifications to the definition of impervious surface regulations in the Zoning Ordinance to ensure that pervious surfaces are encouraged."

Increasing pervious surfaces will not be beneficial in areas subject to elevated groundwater table along and within Marinship as sea level rises.

DEIR, P 3.9-11,

"Policy EQ-4.6: Creeks and Drainage Ways. Promote the natural integrity of creeks and/or drainageways as riparian habitat, wildlife corridors, and to protect residents from flooding and other hazards."

"Program EQ-4.6.4: Daylighting Creeks. Initiate or support daylighting projects to increase riparian habitat and reduce runoff."

It is problematic as to whether these policies and programs are compatible with increasing the development of the Marinship, without some explanation of how drainage would be conveyed without adverse impacts associated with the future constraints of elevated groundwater table, SLR flooding, and subsidence.

DEIR, P 3.9-11,

"Policy HS-1.8: Flooding. Manage the threat of flooding for existing and future structures and their occupants."

The DEIR does nor clarify how it will manage the threat of flooding in the Marinship. The specifics about this and the analysis of impacts are not obvious.

DEIR, P 3.9-11,

"Program HS-1.8.1: Zoning Ordinance (Tsunami Hazards). Continue to review the effect of sea level rise, flooding, and tsunamis on parcels that have an elevation of 25 feet or less above Mean Lower Low Water level datum through the environmental review process."

Continuing review does not lay out a plan of mitigation actions to resolve hazards and impacts. It should be explained what was the basis of choosing 25' as a threshold of interest.

DEIR, P 3.9-11,

"Program HS-1.8.2: 100-Year Flood Zone Mapping. Update the "100-year" flood area map, as shown on Map 7-3 [of the General Plan], as new information becomes available from the Federal Emergency Management Agency or the

U.S. Department of Housing and Urban Development. Housing and Urban Development."

Available data from additional SLR models already indicate that the Marinship and areas west of Bridgeway will be severely affected by SLR, Tsunami, and local stream flooding, therefore the GP 2040 planned development should not be approved without acceptable evaluation of SLR threats and associated mitigation concepts, feasibility analysis, and plans that fully describe the associated impacts of the concepts, including conveyance of upland stream and storm drain water, sediment conveyance and deposition, emergency transportation routes, and the amount of fill, levee, or flood wall protection that would be necessary to protect existing and future development and infrastructure.

DEIR, P 3.9-12,

"Program HS-1.9.4: Wind Waves. Support BCDC in exploring ways to reduce the effects of wind waves on the shoreline and waterborne uses."

The DEIR does not use SLR information in their report that shows the future effects of predicted wave energy as sea level rises (CoSMoS, OCOF). The previous 4 policy and programs are what should be done before the 2040 GP so that a vision of what is realistic and attainable can be developed and implemented.

DEIR, P 3.10-12,

"Policy S-4.1: Adequacy of Facilities. Allow construction to proceed for only those projects that demonstrate the availability of adequate potable water, sewer, septic leach fields and storm drainage."

The DEIR has not provided any plan or discussion of how the existing creek/urban storm drainage that exists beneath the fill at the Marinship will be able to function as sea level rises or during predicted modern flood scenarios that include storm surges, King tides, and 100-yr storm events. These modern predictions do not include the influence of continued subsidence and its influence on the increased depth of flooding that will result, climate change on the increased height of the water table that will inhibit percolation and increase the need for surface drainage, and the influence of backwater flooding as the tidal transition zone of the head of tide moves upland and as the location of associated sediment deposition within storm drain systems reduces the capacity of the underground pipes to convey water beneath the Marinship.

Adaptation planning must occur before a DEIR can adequately provide an impact assessment of future development.

III. CONCLUSION

The environmental and economic toll and feasibility of maintaining Marinship must be established before increased development can be approved.

The analytic disconnect of adequately assessing future environmental conditions renders the DEIR to be of little use to assess or determine the environmental impacts of increased development proposed in the 2040 GP or the proposed DEIR Alternatives. Actual conditions in 2040 may be such that mitigation of impacts might not be feasible at all because of potential other economic demands. Based upon the listed concerns in this review, the DEIR has not established that adverse impacts of the 2040 GP will be less than significant. Consider DEIR, P 5-2. "SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES"

> "As mandated by CEQA Guidelines Section 15126.2(c), the EIR must address significant irreversible environmental changes that would result from implementation of the project. Specifically, such an irreversible environmental change would occur if:"
>
> - "The proposed 2040 General Plan would involve a large commitment of nonrenewable resources;"
> - "Irreversible damage can result from environmental accidents associated with the proposed 2040 General Plan; and"
> - "The proposed consumption of resources is not justified (e.g., the proposed 2040 General Plan results in the wasteful use of energy)."

This raises the question of how the Marinship will be protected from the various hazards. SLR and subsidence issues will require an expansive plan for protection and/or adaptation and massive amounts of fill for levee construction and/or to raise clean re-engineered fill to 20 feet or more above MLLW, after contaminated and old fill is removed and storm drains, sewage and other underground utilities are redesigned or removed. Ideally, this would all be timed with redesign of Bridgeway and coordinated with other project designs around the bay. There is no big vision or discussion of what the plan will be for these projects, how much additional artificial fill will be needed to protect the existing artificial landscape, where the material will come from, how it will be transported and applied to the site, how much it will cost, and what the overall impacts will be of such a large-scale earthmoving effort will be. There is no long-term projection for the life of the project. Planning for SLR adaptation would be far more prudent at this time than planning for increased development. The DEIR should be guiding the City of Sausalito in this effort rather than avoiding the topic.

With very best regards,

Laurel Collins

APPENDIX
TO
REVIEW OF THE DRAFT ENVIRONMENTAL IMPACT REPORT
OF THE
SAUSALITO DRAFT GENERAL PLAN UPDATE

August 5, 2020

By Laurel Collins
Watershed Sciences

Historically, prior to the mid 1800s, the Marinship Study Area (MSA) only had about 12.5 acres of land within it. The MSA boundary is the yellow line shown in Figure A1. The rest of the area within the MSA was subject to tidal processes along marshes, beaches, mudflats, and open water of a much larger Richardson Bay at that time. The pink line in Figure A1 defines the historical 1857 upland shoreline at about mean higher high water (MHHW) as surveyed and surveyed by A.D. Bache in his map of the Entrance to San Francisco Bay, California, and as also depicted as the historical shoreline in the online EcoAtlas of the San Francisco Estuary Institute (https://ecoatlas.org/regions/ecoregion/bay-delta).

The extent of tidal marshlands in Figure A1 is shown as green-shaded polygons. Sandy beach is yellow-shaded polygons. Blue lines show the shoreline portion of creek outlets and the blue polygon west of the MSA shows a pond, probably fresh water. Although the full extent of the creeks were not mapped, they extended into the steep hillsides of the watersheds above the marshes and transported water, sediment and nutrients to Richardson Bay contributing to the diverse array of habitat at their outlets.

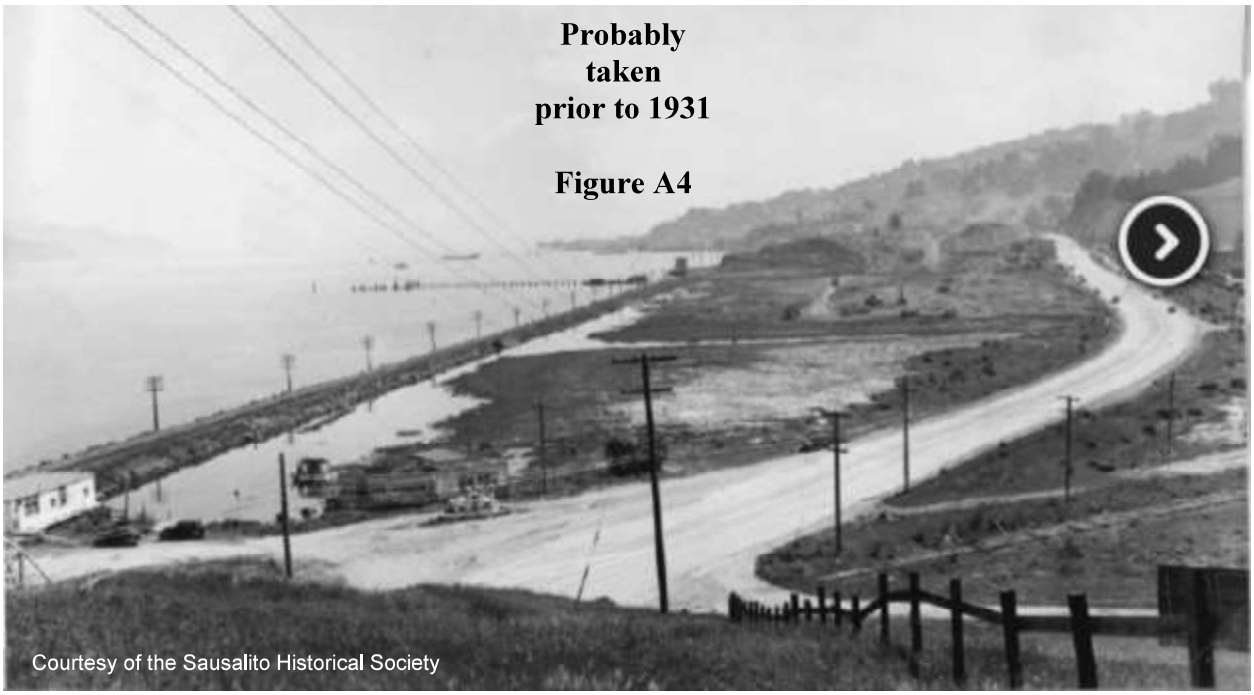
Following the 1850s marsh reclamation activities and incremental filling and leveeing of Richardson Bay started forming the rudimentary underpinnings of artificial landfill in Marinship. As land practices evolved from initial maritime support and homesteading, to ranching, agriculture, commercial enterprise and wartime support, the transportation needs of people increased and the amount of fill in Marinship started extending beyond the tidal marshes into the tidal mudflats and Bay. For example, in Figure A2 the light grey polygons show fill over the former southwestern marsh had already been added by 1883 as shown by Hilgard (1883 San Francisco Bay Entrance map of the Coast and

Geodetic Survey). The land was created to support railroading including a trestle that crossed Richardson Bay to Strawberry Point. By 1899 the USGS San Francisco Quadrangle indicates the RR trestle had been abandoned and a new northwesterly layout of RR tracks was constructed offshore along the mudflats toward Mill Valley. Fill for a solid RR berm crossed offshore of the small Sausalito tidal embayments that existed along the waterfront, creating isolated tidal ponds that required drainage beneath short bridges along the RR berm. The ponds problem became brackish .

From 1915 (as indicated by USGS Survey Atlas Sheets San Francisco and Vicinity, CA) through at least 1931(as indicated by Aerial Photograph C1595-5) the amount of fill increased between what is now Bridgeway (along the western yellow line of the MSA boundary) and the RR berm as shown in the Figure A3. Piers (pink lines) leading to deep water were the only structures that extended eastward beyond the RR berm. The

trestle to Strawberry Point was gone. It is clear that the substratum that fill has been placed on is of variable engineering strength and composition, ranging from mudflats, sandy beaches, peat rich marshlands, and seasonal brackish wetlands. Moreover, the composition, strength of the fill material, and potential toxics contained in it is not fully known throughout much of the modern Marinship area.

The photograph in Figure A4, from the Sausalito Historical Society, probably represents the conditions sometime prior to 1931. It is a view looking southeastward toward the piers shown in pink in Figure A3.

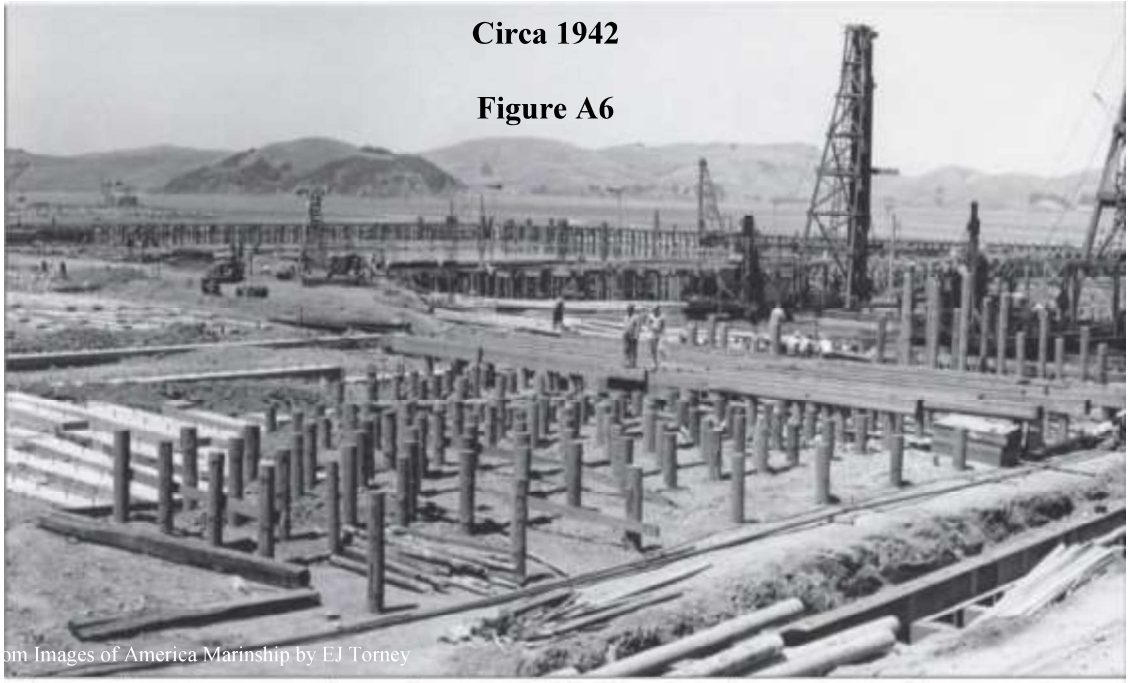


The image in Figure A5 shows the 1931 aerial photograph from (http://mil.library.ucsb.edu/ap_indexes/FrameFinder/). It shows the extensive trainyard built on fill in the southeastern segment of Marinship. The type of material used for the fill is not known by this author, but it was placed on former peat marsh, sands, and mudflat that can have different rates of settlement when compressed by the weight of fill. Creek drainage from the uplands seen in the middle of the ponded tidal wetland at low tide in the image above is obscured by high tide in the 1931 image below, but the location of creek outlets and the culverts (pipes) that drain the creeks underneath roads and fill are indicated as blue rectangles outlined in black. The location of the one in the southwest section of Marinship is not clear and therefore is estimated. As development of the uplands proceeded natural creeks were converted to a network of ditches and pipes. As fill in Marinship was placed bayward, the creek drains had to be piped beneath the fill and extend to the new shoreline. The pre-1850 shoreline is indicated by the pink line. As a result of increasing the length of the creeks to new outlet positions, transport of the attendant sediment load to the Richardson Bay became increasingly difficult because the gradient of the drain system had to flatten. Pipes that were undersized or filled with sediment contributed to localized flooding.

Starting around 1942, more artificial fill was added to the once deeper mudflats east of the RR berm to support the wartime ship building industry. In Figure A6 the amount of pilings, fill, and construction needed to support ship buildings was immense and took years to construct. The photo in Figure 6 is from Images of America Marinship by EJ Torney (published by Arcadia Publishing, S. Carolina, 2018). The online link follow:

https://www.google.com/books/edition/Marinship/VDJyDwAAQBAJ?hl=en&gbpv=1&dq=history+sausalito&printsec=frontcover

In addition to the undergrounds works that can be seen in the bottom right corner of Figure A6, dredging of bay muds for more fill can also be seen in in the left middle corner of the photo.



This most historic panorama shows a closer view of the shipways under construction. Shipway No. 6 is seen to the right, being readied to receive the first sheets of keel steel to be laid for the *William A. Richardson*. Planks that will be part of Shipway No. 6 are pictured on the right, laid on support beams. Shipway No. 5 is being formed on the left. Shipway No. 5 support beams are being positioned on pilings. Pile drivers are busy at work building the foundation for the lower part

This is an aerial view looking north at the Marinship site. The photograph, which was donated to the Sausalito Historical Society by Steve Bechtel, shows the shipyard in full production. Bechtel proudly displayed the image in his office for many years. On the lower left is a cluster of buildings surrounding the Outfitting Docks, which are easily identified by the eight tankers at the docks. At the Outfitting Docks, ships are loaded with the supplies needed for operation at sea. Above the Outfitting Docks are the areas of the shipyard where steel plates are fabricated into ship parts to be assembled into a ship on the shipways. Bridgeway, then known as State Highway, runs along the west side of the shipyard. Marin City, built to house shipyard workers, is beyond at the top of the picture.

During the peak of shipbuilding, Torney provides another image from his book showing what Marinship looked like under full shipbuilding operation as shown in Figure A7.

Figure A8 shows the extent of fill by 1952, as determined from aerial photographic Flight DRH, Frame 1K- 5 (http://mil.library.ucsb.edu/ap_indexes/FrameFinder/) The fill in place by 1952 is shown as charcoal-colored polygons. A portion of Bridgeway appears to have been elevated on piers along a section of the former hillside that was excavated and leveled to accommodate for space needed for developing the shipbuilding facilities. This can be seen in Figure A7. It is likely that much of the excavated material was Franciscan Complex Melange, that in the adjacent hill by USGS in their USGS Scientific Investigations Map 2918. It seems plausible that much of this bedrock type was used as fill in Marinship in some of the designated areas shown as filled by 1952 in Figure A8. This introduced an additional substrate type rather than bay-related sediments that now characterizes the ground within the MSA. When buildings or infrastructure such as roads, drains, utilities, and buildings straddle bedrock and fill, there can be differential

rates of settlement. Additionally, different types of responses to seismic shaking and liquefaction can be expected, which can result in ongoing maintenance problems to underground infrastructures, such as utilities and storm drains, or costly damages to buildings and transportation corridors, which also increase risk to public safety. Different types of fill on different types of substratum are among some of the reasons why areas of fill on bay muds are shown on MarinMap to be rated as both violent for seismic shaking and high hazard for liquefaction.

The Figure A8 shows the existing extensive storm drain network, also available on MarinMap, that had to be constructed to drain the hillsides above Marinship. Present conditions of the storm drain system in Marinship are generally considered antiquated.

Since all the natural upland creeks uphill of Marinship now flow into the storm drain system beneath Marinship, as sea level rises, sediment deposition will change from the existing outfall locations in the bay and will increasingly occur landward within the pipes at the tidal/fluvial (creek flow) transition zone. The location will be dependent upon changes in sea level (which functions as a base level to outflow and elevation of the groundwater table), duration of inundation periods of tides and floods, rainfall duration and intensity, sediment load, and coincidence of tidal flood stage with creek flood stage. Additionally, the location of sedimentation will be influenced by the relative supply and size of sediment, available discharge to transport the sediment, the kind of infrastructure that contains the creek flow, and its elevation relative to sea level that effects the energy gradient (stream slope) and ability to move water and move sediment.

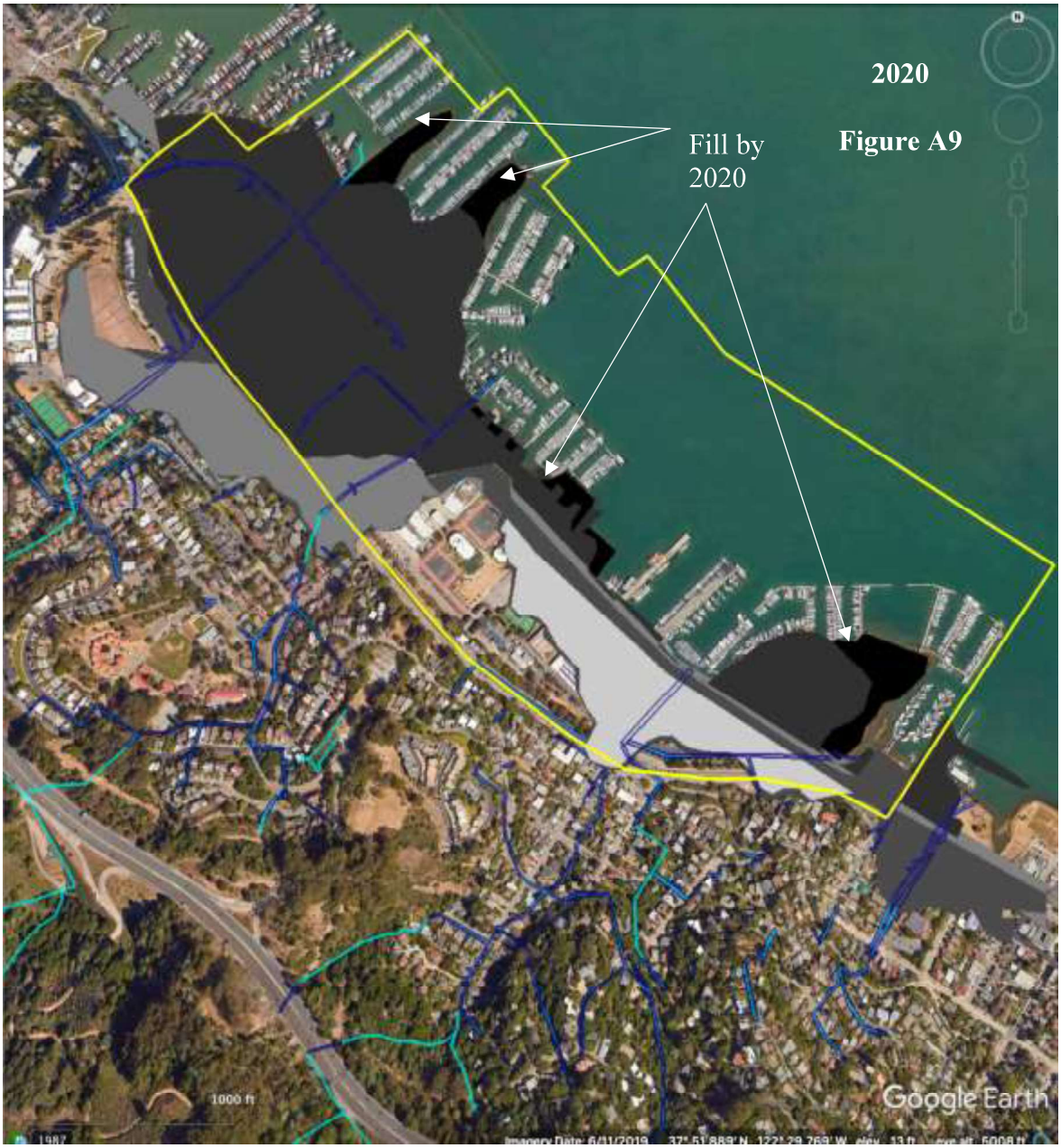
The outlets of some of the original creeks now extend more than a quarter of a mile from their original shoreline to Richardson Bay. They risk filling with sediment in the event of erosional hazards such landslides, high intensity rainfall, and postfire runoff. Large amounts of urban runoff created by from impervious surfaces increase the volume of water conveyed to the storm drain system that will be increasingly unable to function and drain to Richardson Bay. As sea level continues to rise, the present configuration of the drainage system will prevent drainage in the pipes beneath Marinship and the ground surface of the artificial fill that will have an increasingly higher water table and become periodically and increasingly inundated with some areas becoming permanently submerged.

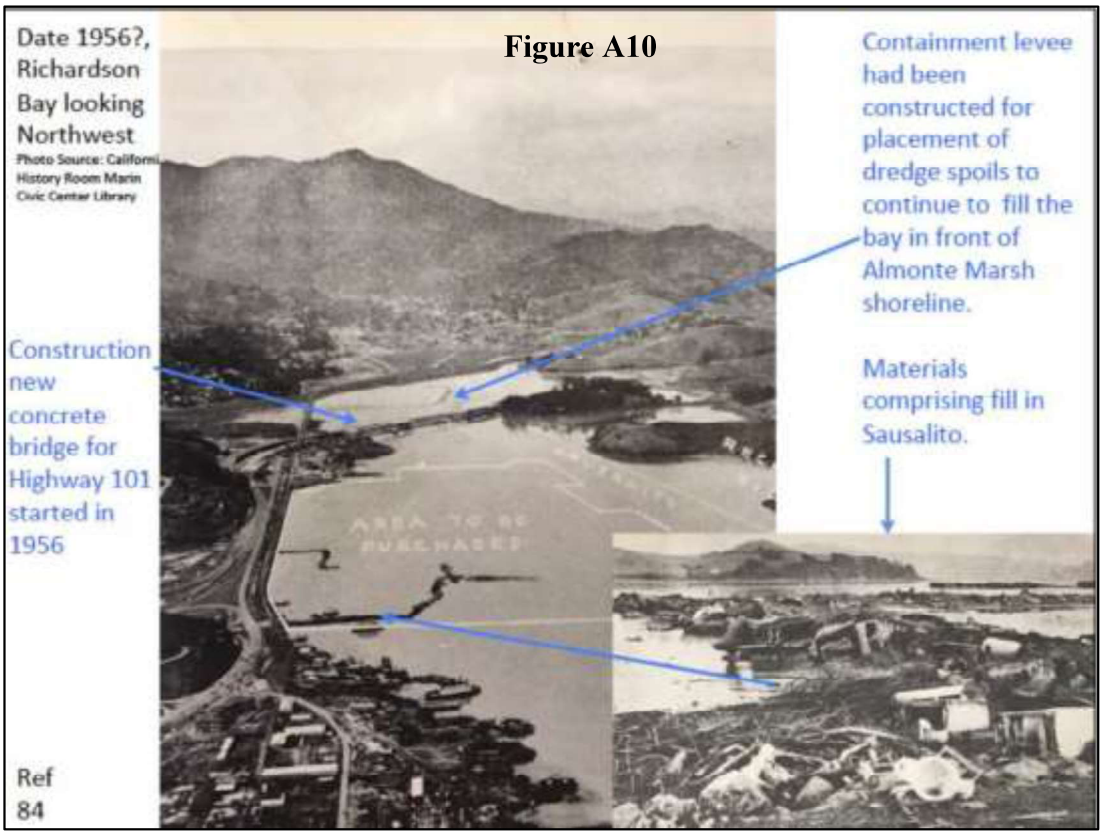
The extent of fill by 2020 has increased slightly and Figure A9 shows the locations of post 1952 fill depicted as black polygons. By 2020 the ship building industry was gone and Marinship changed to support various industrial, commercial, public institutional, waterfront and houseboat usages.

Up to perhaps about the mid-1960s, much of Richardson Bay was slated to be filled for future housing developments in upper Richardson Bay. Prior to the mid-1960s all sorts of household junk, automobiles, and demolition debris were being used to form the base for new fill along the developing waterfront and harbors. This is exemplified in Figure that shows the type of debris that was being placed on the mudflats just north of the MSA and the extent of proposed fill in Richardson Bay. The image in Figure A10 is from

the Marin County Opens Space Report on Bothin Marsh Geomorphology, Ecology, and Conservation Options, Chapter 3 Environmental History (L. Collins, P. Baye, and J. Collins, 2018) (https://www.onetam.org/sites/default/files/pdfs/BothinMarshGeomorphologyEcologyandConservationOptions.pdf)

This kind of debris has been documented in nearby Bothin Preserve in Tam Valley.





The 1935 photo from Sausalito Historical Society in Figure A11 shows a picture of the past, but possible forecast of the future in downtown Sausalito if steps are not taken to envisions the future.

A future vision of Marinship needs to be developed that is adaptable to future change.

As an example of one of many possible concepts, the Marinship could become a large gently mounded island with variable elevation targeted to serve different land usages and functions with changing conditions. It could be accessed by bridges or causeways from a redesigned Bridgeway that could also be an elevated causeway, allowing upland storm drainage and creeks to flow beneath it and connect to the Bay rather than flow beneath Marinship or across it.

The storm and creek drainages would be able to adapt to a changing and increasingly submerged shoreline between the Marinship Island and the mainland. Small delta fans could be designed to deposit sediment and build upward the backshore on the landward side of the area between Marinship Island and the mainland. The Marinship Island mound could have gentle topography designed to shed runoff into the Bay from gentle swales with no pipes. Broad flattish sloping inlets could be shaped to become new marsh while other sections of the island could be re-engineered with clean fill to support some amount of commercial development, harbors, parks, and shoreline habitat.

Pumps would not be needed to drain trapped rainwater, as in the case of using full levees or sea walls to surround Marinship. Urban storm flooding would be resolved. Sewage system and utilities would be redesigned to meet changing conditions. Designing in low elevation marshes could function as wave buffer and energy dissipation for wave against the newly established landward shoreline.

Of course the new re-engineered fill would have to be clean and environmental impacts would have to be evaluated for all the mitigation activities.

Laurel M. Collins

Geomorphologist/Owner Watershed Sciences, 8038 Mary Ave NW, Seattle, WA 98117

(510) 384-2371, laurelgene@comcast.net

AREAS OF EXPERTISE

- Fluvial Geomorphology
- Tidal Wetland Geomorphology
- Sediment Budgeting
- Landslide Mapping
- Stream Mapping
- Landscape Aerial Photo Interpretation
- Geomorphic Effects of Wildfire and Land Use Impacts
- Historical Landscape Analysis
- Stream Restoration Design
- Environmental Impact Assessment
- Sea Level Rise Impacts and Adaptation

EDUCATION

University of California at Berkeley, B.A., Earth Sciences, Dept. Geology and Geophysics, 1981

PROFESSIONAL HISTORY

Watershed Sciences, Owner, 2001- to date

San Francisco Estuary

REPRESENTATIVE EXPERIENCE

Ms. Collins has been a geomorphologist since 1981 specializing in fluvial and tidal wetland geomorphology, sediment budgeting, landslide analysis, stream monitoring and mapping, analysis of geomorphic impacts and change from natural and anthropogenic influences, analyses of the influence of wildfire and silvicultural activities on erosional processes, and interpretation of historical geography. Ms. Collins is the owner of Watershed Sciences located originally located in Berkeley, California, and recently relocated to Seattle, Washington. Ms. Collins has conducted stream, sediment, and landslide analyses in many local Bay Area watersheds as well as many regions throughout California and other western states. She has published results of her research, and has served as an Expert Witness for various legal cases in California, Montana, Oregon, and Colorado.

PROJECTS OF WATERSHED SCIENCES

As Owner/Director of Watershed Sciences consulting firm established September 2001, the following projects Ms. Collins has been directly involved with the following projects:

- Watershed assessment of impacts of sea level rise, recent flood events, legacy land use of logging and agricultural practices, and landscape risk assessment of the Martin Griffin Preserve, near Bolinas Lagoon Marin County, California, funded by Audubon Canyon Ranch.
- Development of geomorphic and ecological understanding of past and present conditions and tidal/hydrological processes of Bothin Marsh, Mill Valley, California, to provide recommendations and conceptual strategies for future resource management relative to sea level rise affecting the San Francisco Bay during the next 100 years. Funded by Marin County Open Space District, California.
- Public and video presentation entitled “Of Marsh and Men” about the historical conditions and legacy land use impacts on modern Bothin Marsh and historical Coyote Creek Marsh for the Mill Valley Library, California.
- Investigation of geomorphic and hydrologic conditions and development of alternatives to redesign State Route 1 at the north end of Bolinas Lagoon, California, to reduce flooding and sea level rise impacts, while enhancing

Institute, Environmental Scientist, 1999-2001

Independent Consultant, Environmental Sciences, 1989-2001

University of California, Staff Researcher for Dr. Luna Leopold, Department of Geology and Geophysics 1984-2001

Lawrence Berkeley Laboratory, Senior Research Associate, 1992-1993

East Bay Regional Park District, Resource Analyst 1983-1986, Geologist, 1986-1991

Center for Natural Resource Studies, John Muir Institute, Environmental Scientist, 1980-1983

U.S. Geological Survey, Hydrologic Field Assistant, 1980-1982

California Department of Forestry, Field Assistant, 1979-1980

California Academy of Sciences, Paleontology Department Student Assistant, 1978.

FORMER AFFILIATIONS

American Geophysical Union, 1986-1991

Geological Society of America, 1983-2001

California Forest Soils Council, 1980-1991

stream and estuarine tidal resources. The North End Bolinas Lagoon Project was subcontracted with AECOM, Oakland, California and funded by Marin County Parks and Open Space.

- Investigation of sedimentation and hydraulic geometry design of historical and modern tidal channels in San Francisco Bay marshes to minimize the need for dredging by increasing the opportunities for self-maintenance of Las Galinas and Corte Madera Creek tidal sloughs in Marin County, for Marin County Public Works, Calif.
- Development of expert opinion for the Montana Dept. of Justice and Bloomquist Law Firm, P.C., Helena Montana, to develop historical conditions of the Clark Fork, Madison, and Missouri Rivers at the time of statehood.
- Development of historic and modern landslide and slope conditions along existing development in Terra Linda for Ragghianti / Freitas LLP, San Rafael, California.
- Consulting on field recognition of bankfull conditions and methods of hydraulic geometry analyses in Santa Clara Valley for the Santa Clara Valley Water District, Calif.
- Preparation of a sediment budget and sediment source analysis for Jewel Lake Dam in Tilden Regional Park, subcontracted to NewFields River Basin Services LLC and funded by the East Bay Regional Park District, California. Development of conceptual plans to provide a bypass channel at the existing dam to provide downstream sediment transport and upstream fish migration.
- Development of regional bankfull geometry design curves for Wildcat, San Francisquito, and Pescadero Creeks for California's State Water Resource Control Board's Integrated Regional Watershed Management Program.
- Preparation of Expert Testimony on historical and modern flooding conditions of San Antonio Creek, Marin County, for Shapiro, Galvin, Shapiro, and Moran Law Offices.
- Analyses and PowerPoint presentation of historical conditions and tidal marsh changes in Novato Creek Watershed for the Marin Flood Control and Water Conservation District.
- Collaboration and research on fire regime, native landscape management, and climate change in the Quiroste Valley, California, with Dr. Kent Lightfoot, Department of Anthropology, University of California at Berkeley.
- Preparation of a video presentation on the historical conditions and legacy land use impacts on stream conditions in Corte Madera and San Anselmo Creeks for Marin Flood Control and Water Conservation District.
- Preparation of Expert Testimony on historical and modern conditions of a tidal marsh meander bend at Petaluma

TEACHING

Watershed Analyses, Sierra Nevada Field Station, San Francisco State, 1998-2003

Hydrology Summer Field Course, Teton Science School, 1991 and 1996

CURRENT AND PREVIOUS ADVISORY ROLLS

Science and Technical Advisor Bothin Marsh for Marin County Open Space.

Bolinas Wye Technical Wetlands Advisory Committee for Marin County Open Space

Technical Advisor development of Historical Ecology of the Sonoma and Petaluma Watersheds for projects with Sonoma Resource Conservation District, for San Francisco Estuary Institute.

Technical Advisor Committee for development of a Vineyard Waiver, for the San Francisco Bay Regional Water Quality Control Board

Technical Advisor Committee for Management of Lagunitas Creek, Marin Municipal Water District

South Bay Salt Pond Marsh concerning Redwood Landfill Case for Hanson Bridgett, LLC.

- Development of expert opinion for the Law Offices of Michael Graff for various projects involving impacts of silvicultural practices in the Tahoe National Forest, the influence off off-highway vehicles in National Forest lands, and the environmental impacts of various proposed developments in the Bay Area.
- Evaluation of impacts and quantification of sediment supply from the 2005 flood in Sonoma Watershed for the San Francisco Bay Area Regional Water Quality Control Board and the Sonoma Ecology Center.
- Analyses of historic channel conditions of Whitehouse Creek in Quiroste Valley, San Mateo County, during the time of native habitation by developing a stratigraphic timeline based upon geomorphic conditions and carbon dating. Research was conducted for the Anthropology Department, University of California at Berkeley.
- Development of expert opinion and testimony for the law firm of Ragghianti Freitas, and the Town of San Anselmo on a case concerning flooding of San Anselmo/Corte Madera Creek, Marin County, California.
- Development of reference reach channel geometry of Arroyo de la Laguna, Pleaseanton, for restoration planning by the Urban Creeks Council, Berkeley, California.
- Analyses of sediment sources and landslide mapping for preparation of a TMDL in Sonoma Creek watershed for the Sonoma Ecology Center and the San Francisco Bay Area Regional Water Quality Control Board.
- Development of regional curves for assessing bankfull channel geometry in Marin and Sonoma Counties for US EPA.
- Collection of channel geometry and bankfull stage conditions on Arroyo de la Laguna, Alameda County, for the Natural Resource Conservation Service offices located in Livermore, CA.
- Lidar and GIS analysis of logging roads along the Eel River, Ca, for University of Minnesota and University of California at Berkeley.
- Development of expert opinion for San Francisco law firm of Murphy, Parson, Bradley, and Feeney on a case assessing causation of a landslide in Moraga.
- Development of action plan and methodologies for conducting a sediment budget analysis on Alameda Creek for Alameda County.
- Geomorphic analysis and landslide mapping of Crow, Norris and Bolinas Creeks to assess impacts of land use practices and natural processes for Alameda County Flood Control and Water Conservation District, California.

Restoration Project, Sediment Workshop Leader, County of Alameda

Science Review Group Napa Watershed Project for the San Francisco Estuary Institute

Pescadero Creek Technical Advisory Committee, San Mateo Resource Conservation District

San Pablo/Wildcat Technical Design Advisory Council, City San Pablo

Hill Area Fuel Reduction Committee, for University of California at Berkeley

Mayors Task Force of Forestry and Vegetation, for City of Oakland

- Development of expert opinion and testimony for determining of natural versus artificial conditions of the Mitchell Slough of the Bitterroot River, Montana, for Doney, Crowley, Bloomquist, Payne, Uda PC, Missoula Montana.
- Evaluation of sediment sources and development of conceptual plans for reducing sedimentation in Eden Creek for Alameda County Flood Control and Water Conservation District, California.
- A sediment source analysis and sediment budget in Sonoma Watershed for the San Francisco Bay Area Regional Water Quality Control Board and the Sonoma Ecology Center, California.
- Assessment of flooding and geomorphic change in the lower Sonoma Creek Watershed for the Coastal Conservancy and Southern Sonoma Resource Conservation District, California.
- Geomorphic assessment of long-term processes associated with reservoir stability and the maintenance of red–legged frog breeding habitat of Point Reyes National Seashore, U.S.N.P.S.
- Geologic, geomorphic, and landslide mapping of Strawberry Canyon in Berkeley, California, for the Committee to Minimize Toxic Waste and Urban Creeks Council, California.
- Preliminary assessment of opportunities and constraints for restoration and fish barrier removal in lower Ignacio Creek (Arroyo San Jose), Marin County for Friends of Ignacio Creek and City of Novato.
- Development of conceptual plans for restoration and geomorphic analysis of lower Wildcat Creek for City of San Pablo and Urban Creeks Council.
- Survey of longitudinal profile of lower Carriger Creek, Sonoma County, for the Southern Sonoma Resource Conservation District, California.
- Geomorphic analysis and landslide mapping of silvicultural impacts on sediment supply of Sulphur Creek, Plumas County, for the US Forest Service and Plumas Corporation, Quincey, California.
- Geomorphic analysis of lower Carriger Creek for the Klamath River Information System, William Kier Associates, California.
- Stratigraphic analysis, carbon dating, and history of geomorphic change at Last Chance Creek near Stone Dairy in the Feather River watershed, Plumas County, for the Plumas Corporation, Quincey, California.

PROJECTS FROM PREVIOUS EMPLOYMENT

As Geomorphologist for the San Francisco Estuary Institute, Ms. Collins:

- Developed of a "Watershed Science Approach" for field methodologies to assess and analyze changes in the delivery of water and sediment as affected by Euro-American land use practices in California.
- Conducted a scientific study of physical processes and land use impacts in Wildcat Creek, Contra Costa County, for the San Francisco Estuary Institute. Developed a field-based methodology for quantifying natural versus man-related sediment supplies.
- Applied the Watershed Science Approach to San Antonio Creek, Marin County, for the Southern Sonoma Resource Conservation District.
- Applied the Watershed Science Approach to Carriger Creek, Sonoma County for the Southern Sonoma Resource Conservation District.

As an Independent Consulting Geomorphologist, Ms. Collins served as the following:

- Consulting Geomorphologist for the Napa Resource Conservation District to establish and help educate different stewardship groups and to develop protocols to collect data on stream geometry to monitor channel change.
- Consulting Fluvial Geomorphologist Geomorphology Consultant for AECOS and Institute for Sustainable Development to conduct a watershed analysis for Waimanalo Creek, Waimanalo, and Mokapu Channel, Marine Corps Base, Oahu.
- Fluvial and Tidal Geomorphology Consultant for Marin County Flood Control District to conduct a watershed analysis of Novato Creek, Marin County, with special focus on sedimentation and sediment sources to the Novato Flood Control Project.
- Fluvial Geomorphology Researcher contracting with the Point Reyes National Seashore, to conduct research and monitoring of the second and third year hydrologic and geomorphic effects of the 1995 Vision Fire on Muddy hollow Creek, Marin County.
- Fluvial Geomorphology Researcher for the West Marin Environmental Action Committee to conduct research and monitoring of the first year effects of the 1995 Vision Fire in the Inverness Ridge, Marin County.
- Teacher with Dr. Luna B. Leopold and Dr. Scott McBain for the Teton Science School, Jackson, Wyoming at the Hydrology Workshop on fluvial hydrology, field methods and watershed analysis.

- Fluvial Geomorphology Consultant to U. S. Department of Justice for research on Reserved Water Rights Case on the effects of water diversion on the Fraser River, Lostman Creek, and Indian Creek, Colorado, plus expert testimony.
- Fluvial Geomorphology Consultant to EA Engineering, to perform watershed analyses for a 100-Year Sustained Yield Program for the Noyo River, Mendocino County. Analyses included documentation of channel conditions, determining impacts of logging upon hydrology and fluvial geomorphology of coho salmon habitat, sediment production and landsliding; and advising policy makers on ways to reduce future impacts from timber harvesting.
- Fluvial Geomorphology Consultant to U.S.F.S., to determine the Holocene and recent geomorphic history of the South Fork Kern River in Monache Meadows, Southern Sierra Nevada, Inyo National Forest. Analysis was conducted of flood frequency; channel incision and sediment transport regimes and related to climate change and land use practices for the last 200 years.
- Geomorphology Consultant to law firm of Lossing and Elston, San Francisco, to prepare expert testimony on the effects of fire upon slope stability, landsliding, runoff and erosion.

As a Staff Researcher in the Department of Geology and Geophysics, University of California at Berkeley, Ms. Collins was involved with the following:

- Fluvial geomorphology research for the Pacific Southwest Forest and Range Experiment Station, U.S.F.S. to produce detailed stream maps, longitudinal profiles, and cross sections within and outside of cattle exclosures in the Golden Trout Wilderness, Inyo National Forest, California.
- Tidal marsh geomorphology and hydrology research in the Petaluma Marsh, Sonoma County.
- Fluvial hydrology research on braided channels in regions of Wyoming and Idaho.

As a Senior Research Associate for Lawrence Berkeley National Laboratory Ms. Collins conducted geologic field mapping investigations, analyzed reports and prepared a report on site characteristics for the LBNL Hazardous Waste Handling Storage Facility in Strawberry Canyon, Berkeley, California.

As a teacher for San Francisco State Sierra Nevada Field Station Ms. Collins prepared curricula and lectures for a course in stream restoration, watershed analysis, and

stream monitoring techniques for San Francisco California State University.

As District Geologist for East Bay Regional Park District, Oakland, California, Ms. Collins responsibilities included identification and analysis of geological and landslide hazards; direction of geologic and hydrologic research programs; publication of research findings; formulation of District policy for fuel break management, and resource management relative to hydrologic and geologic issues; preparation of expert testimony; preparation and review of Environmental Impact Reports; assessment and restoration of steelhead habitat in Wildcat Creek, Berkeley Hills.

As Geologist/Hydrologist for the Center for Natural Resource Studies, John Muir Institute, Inc., Berkeley, Ms. Collins conducted field studies and analyses of flood effects and instream flow requirements of San Lorenzo River, Santa Cruz, California; assessed geologic hazards and evaluated fish habitat in Grider Creek, Klamath National Forest; assessed cumulative impacts of silvicultural practices in the Sierra National Forest; assessed the effects of silvicultural practices on site productivity in California forest lands; and published research findings.

As Hydrologic Field Assistant for Water Resources Division, US Geological Survey, Menlo Park, Ms. Collins conducted field studies and analyzed 1) earthflows in Redwood National Park, California; 2) river morphology as effected by volcanic activity, Mt. St. Helens, Washington; 3) interactions among hillslope and stream processes in the San Lorenzo River, Santa Cruz, California. Findings were published.

As Student Assistant for the California Department of Forestry, Sacramento, Ms. Collins conducted field studies and analyzed the effects of logging activities and the effectiveness of the Forest Practice Regulations on rates of erosion in private forest lands throughout California.

As Student Assistant for Geology Department, California Academy of Sciences, San Francisco, Ms. Collins assisted with the curation of fossil genera of ammonites and echinoids for Dr. Peter Rhoda.

REFERENCES

Dr. William Dietrich, Department of Planetary Sciences, University of California at Berkeley,

bill@eps.berkeley.edu

Dr. David Rosgen, Wildland Hydrology, Fort Collins, Colorado, dave@wildlandhydrology.com

Roger Levanthal, Marin County Public Works, San Rafael, California, roger.leventhal@gmail.com

PUBLICATIONS AND REPORTS

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2. Coats, R., L. Collins, J. Florsheim, D. Kaufman, 1982. Landsliding, Channel Change, and Sediment Transport in Zayante Creek and the Lower San Lorenzo River, 1982 Water Year and Implications for Management of the Stream Resource for the California State Water Resources Control Board.
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Community Venture Partners, Inc.
A Catalyst for Sustainable Solutions

August 5, 2020

Ms. Lily Whalen
Director of Community Development
City of Sausalito
324 Pine Street
Sausalito, CA 94965

Re: Comments on the Sausalito 2040 Draft General Plan Update and the Draft Environmental Impact Report with regard to housing in the Marinship

Dear Ms. Whalen,

This comment letter is focused on the *Sausalito 2040 Draft General Plan Update* (the "GP Update") and the Draft Environmental Impact Report (the "DEIR") as they relate to policies and programs that effect the Marinship. The challenges and issues involved in future development in the Marinship are as complex as you'll find anywhere in the country, particularly, as it would relate to high-density, multifamily housing development.

Let me preface my comments by disclosing that as an architect and real estate developer, I've participated in the development of almost 2,000 of units of very low income, Section 8 housing, across the West in places like Casper, Wyoming, Las Vegas, Nevada, Denver, Colorado, Aurora, Colorado, Tulsa, Oklahoma, Victoria, Texas, Kennewick, Washington, San Diego, California, and others. As a writer, I've published investigative pieces about the neglect by the Marin Housing Authority and the Marin Board of Supervisors that has subjected hundreds of Marin City families to live in substandard conditions, for decades, at the Golden Gate Village apartments. In addition, our nonprofit, Community Venture Partners, Inc., is currently working with the Lifehouse Agency and Eden Housing on developing 32 units of affordable housing for very low income Marin residents with disabilities.

However, this comment is neither for nor against "housing," categorically. It is an analysis of land use, environmental impacts, economics, and real estate finance. It considers multifamily housing within the context of the overall circumstances in the Marinship, today, and over the next 20 years that the 2040 Plan is intended to serve.

PREFACE:

> It has come to our attention that the Sausalito City Council recently conducted a motion and vote to change the Sausalito 2040 General Plan Update policy on housing in the Marinship and voted 4-1 to eliminate all language that "barred land-based housing in the Marinship," as reported by the SF Chronicle. This significant change in public policy was not reported out to the public in any reasonable way (there is no notice on the 2040 GP Update/DEIR city webpages), so that those who were preparing their comments on the GP Update or the DEIR could respond to it.

It is axiomatic (and, frankly, common sense) that when an agency publishes a "Draft" General Plan and DEIR, designate a "public comment period" (per CEQA), it *cannot* change the policies contained in that GP Update (and the DEIR assumptions as a consequence) *during that public comment period,* without notifying the public and extending the public comment period deadline.

It is our opinion that this action by the City was improper, in violation of CEQA Guidelines, and a violation of the City's obligation to conduct its dealings with the public, in good faith. This motion and vote by the City Council has had a "material" effect on the "project description" and raises serious questions as to its completeness and adequacy, under CEQA 15124. Similarly, because the DEIR is wholly dependent upon a "clear" and "stable" project description, our ability and the public's ability to comment intelligently on the GP Update and the DEIR are significantly impaired.

Specifically, at the time of the publication of the GP Update and the DEIR, for comment, there was no advocacy position taken in either document as to the City's present or future policy position on "housing in the Marinship." However, the City is now clear advocating for housing as a matter of public policy, has this has materially changed the project description.

This comment letter was drafted prior to our knowledge of the actions by the Sausalito City Council, noted above, and so does not reflect our full analysis, opinion, or objections to this matter or the introduction of housing in the Marnship.

Housing in the Marinship

The State of California is currently pressuring on cities to meet their prescribed Regional Housing Needs Assessment housing quotas. Unfortunately, as reported by the Embarcadero Institute, in order to make new projects "pencil," new development is disproportionately and increasingly creating more and more luxury housing units,[1] but very little affordable housing. The GP Update acknowledges that the Marinship is Sausalito's "working waterfront" and, as such, it is unique in all of Marin County. Residential development is not presently permitted. Neither are hotels, large-scaled retail, or entertainment uses, and offices are grandfathered, non-conforming uses that can only be expanded under highly restricted circumstances.

In addition, the *Sausalito 2040 General Plan Update* talks about "preserving" and "supporting" the Marinship and its unique character. The Plan is filled with supportive statements, such as,

Objective LU-3. Promote and Enhance Industrial Economic Viability

Policy LU-3.1. Marinship Industrial. Encourage industrial use of the Marinship as described in Table 1-1, General Plan Land Use Categories, and shown on the General Plan Land Use Map, Figure 1-1

Policy LU-3.2. Marine Industrial Uses. Promote and encourage new marine industrial uses.

[1] The Embarcadero Institute

> *Policy LU-3.3. New General Industrial Uses.* Promote new general industrial uses that are small scale, low traffic generating, non-polluting, and contribute to the economic sustainability of the Marinship.
>
> *Policy LU-3.4. Marinship Preservation.* Preserve the heritage, history, and existing vibrant industrial community.
>
> *The Waterfront Element, Page W-8.* "Noisy and industrial uses are common in the Marinship Waterfront, and new development should not crowd out these traditional uses in the neighborhood.

The subsections of the Plan's Land Use section also contain a long list or reassuring statements about facilitating "the interrelated nature of the Marinship's maritime, light industrial, and artist communities," and accommodating "the stipulations of Ordinance 1022, the Fair Traffic Limits Initiative," and other such restrictions and conditions contained in the Marinship Specific Plan.

However, the City's actions blatantly contradict all of these assurances.

The "One-Way Communication" Study

The *Sausalito 2040 General Plan Update* makes no mention of housing in the Marinship other than references to existing housing units, liveaboards, houseboats, and the occasional, industry-related live-work unit. Although the GP Update does say that zoning and land use will be re-examined during what it calls a "public process to revise the zoning ordinance to incorporate land use policies and development regulations contained in the 1989 Marinship Specific Plan" (See LU-4.2.1. Zoning Ordinance), there is no mention of actually changing major parcels in the Marinship into residential zoning or proposals for high-density, multifamily development.

In other words, a layperson reading the GP Update documents could not be faulted for coming away with the impression that adding residential, high-density zoning was off the table, and certainly not something that the city was actively working on. Yet, while the City has been holding public hearings to discuss and take comment on the *Sausalito 2040 General Plan Update,* at which they have attested to that layperson's assumptions about preserving the Marinship's status quo, it appears that they have been working behind closed doors and out of the public's eye, to do the opposite.

CVP obtained a copy of the memo, entitled a "One-Way Communication," from the Sausalito Community Development Department to the Sausalito City Council, dated June 11, 2020 (attached), which laid out a site-specific proposal (the "Housing Study") for rezoning some of the largest parcels of land in the heart of the Marinship, for residential high-density, multifamily housing development.

Some of the potential development sites in this housing study, include *Site 2: Sausalito Post Office at 150 Harbor Drive* (owned by the US Postal Service), *Site 6: Waterfront Private Property in Marinship at 2350 Marinship Way* (the Sausalito Shipyard and Marina; zoned industrial and waterfront), and *Site 7: RV Parking Area on Marinship Way at 2340 Marinship Overlay* (zoned industrial).

In our opinion, the City has been intentionally misleading the public at public hearings when questions about residential projects in the Marinship come up, by failing to disclose the existence of this Housing Study and the City's clearly stated intentions in it.

It is also obvious that this study is not just a casual effort. It states that it was undertaken

> "In response to an inquiry from Senator McGuire regarding where such housing could potentially be located, assuming zoning and logistical issues could be resolved,"

And it is being done now

> "in anticipation of financial support from the State of California in the form of competitive housing grants available as early as 2021."

The existence of this Housing Study combined with the City's recent vote, as described in the Preface, above (the City's commitment to remove all obstacles to developing housing in the Marinship), reinforces our position that the City is now in violation of CEQA. The City of Sausalito (the "lead agency") has already made its "decision" (by a motion and vote) to pursue developing housing in the Marinship, without disclosure to the public, in contradiction to the policies and programs found in the published version of the Draft General Plan Update and DEIR, and without any study, assessment, or supporting facts to determine if the impacts of this policy change, regarding significant, unmitigated environmental impacts.

<u>Impacts of Housing in the Marinship</u>

The potential impacts of adding residential zoning in the Marinship would be significant. As former city official in Sausalito confided,

> "Without a manufacturing and light industrial base, we have condemned our working middle class to anemic service industry dead-end part-time "jobs" and revolving-door pay. The minute housing is approved in the Marinship, its manufacturing, light industry, working waterfront is a goner, because no one wants to open their window to the sounds and smells of a true working waterfront.
>
> "A shipyard welding bolts on an Alcatraz ferry is quaint until you live a half mile away. Those new residents will start complaining as soon as they turn the key. Sausalito will lose so much, not only its history, but its economic diversity and employment base."

There is little question that this assessment is correct. Residential development, hotels, entertainment, consumer retailing, and restaurants, by necessity, cater to the higher end of the market and drive out gritty industry, manufacturing, maritime services that are dirty, messy, smelly, and noisy.

One need look no further than the decimation of manufacturing and industrial services in San Francisco's Mission District, and the wholesale displacement of lower-income, local residents and small, family-owned businesses over the past decade, to prove that point. What were once cohesive and essential, blue collar, working-class neighborhoods have been completely replaced

by what's now marketed as "vibrant, walkable, and hip," which means they are soulless and generic. The introduction of high-density, multifamily housing in the Marinship would inevitably be followed by a demand for hospitality, retail, entertainment, and dining, and will basically guarantee the same fate.

Economic Impacts

According to the data published in the GP Update, the Marinship is the workhorse of the City. It accounts for 41% of Sausalito's overall commercial tax revenues…

TABLE 9-2: TAX REVENUE BY DISTRICT

District	Estimated % of Total	Estimated Total
Marinship	41%	$805,600
Mixed Residential & Commercial	10%	$207,900
Central Commercial	13%	$256,700
Neighborhood Commercial	28%	$554,300
Other	9%	$174,500
Total	100%	$1,999,000

Source: Land Economics Study of Sausalito, Kosmont Companies (March 2020)

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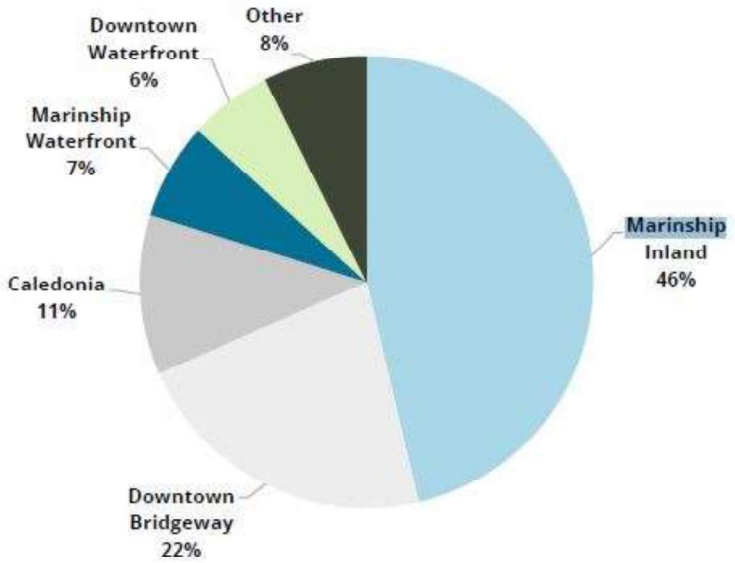
…and 53% of the entire City's business property tax revenues.

FIGURE 9-5: PROPERTY TAX REVENUES



In other words, the current mix of zoned uses in the Marinship is the City's big moneymaker: something that should not be tampered with. In addition, the Marinship's ability to expand and

grow these existing industrial / manufacturing / artisan uses looks very promising in this age of hi-tech, rapid prototyping and micro-manufacturing.
It makes little sense, therefore, to take the City's highest revenue-producing area and turn it into housing. The City has far better opportunities to do that elsewhere.

DEIR Comments

CEQA is an evidence-based statute. That said, the Draft EIR fails to adequately assess potentially significant unmitigated impacts on the basis of any reasonable assessment of readily available evidence. In fact, the DEIR actually is devoid of any assessment of any impacts, at all. The City's consultant simply went down the CEQA "impacts" checklist, acknowledged the issues, and then offered unsubstantiated conclusions that impacts were all less than significant. These unsupported conclusions were reached without any specific studies, data, or other assessment of the facts.

Simply put, the DEIR does not provide any "evidence" for its conclusions, as it is defined under CEQA. Both the Sausalito 2040 Draft General Plan Update and the Draft EIR,

1. Rely solely on past data created by others without any assessment of its applicability the the Marinship;

2. Draw conclusions about future development capacity based on conditions as they are today, without extrapolating existing data, forward, over the next 20 years; and

3. Examine and discuss each individual environmental issue (flooding, sea level rise, subsidence, toxins, etc.) and their potential impacts, separately, without assessing the reasonably foreseeable cumulative impacts of these environmental issues in combination with each other.

As such, the DEIR's assessment of "reasonably foreseeable" impacts is inadequate. As just one example among many, in the CEQA Guidelines, in discussing whether or not an agency's CEQA process was adequate,[2] it notes,

> "This may be found when the agency has… reached conclusions that are unsupported by substantial evidence. …A court must examine whether the EIR contained sufficient analysis to support its significance conclusion, An EIR missing sufficient analysis to support its conclusions fails to meet CEQA's "function of facilitating 'informed agency decision making and informed public participation.' (Citation omitted) An EIR must include "sufficient detail to enable those who did not participate in its preparation to understand and to consider meaningfully the issues the proposed project raises."

Similarly, in *Save Our Heritage Organisation v. City of San Diego* (October 24, 2018) — Cal.App.5th the Court noted,

> "If the agency's reasons are not supported by substantial evidence, a project opponent could challenge and a court could set aside the agency's determination."

[2] Summary of Key 2018 CEQA Court Cases, page XXV

The City has a legal obligation, and moreover, it has a moral and ethical obligation to its residents, to transparently present and assess the reasonably foreseeable consequences of all aspects of their 20 years plan.

Since the City clearly intends to develop high-density, multifamily housing on specific sites in the Marinship, as evidenced by the *One Way Communication* study, it needs to clearly indicate that in the *Sausalito 2040 General Plan Update* and assess the potentially significant, unmitigated impacts of that housing, now, in the DIER, so that the public has the opportunity to comment.

The existence of the high-density, multifamily Housing Study and the recent vote by the Sausalito City Council to endorse housing in the Marinship, indicates that the DEIR's "project description" is incomplete and, consequently, the DEIR's assessment of impacts is inadequate.

Per CEQA Guidelines §15124

> "An accurate, stable and finite project description is an essential element of an informative and legally sufficient EIR under CEQA." "(See CEQA Guidelines §15124, citing *County of Inyo v. City of Los Angeles* (1977) 71 Cal. App.3d 185, 199 [139 Cal. Rptr. 396].)

Several courts have invalidated EIRs for their failure to provide an adequate Project Description. For example, in *Friends of the Eel River v. Sonoma County Water Agency* (2003) 108 Cal. App. 4th 859, the California Supreme Court found that an EIR was invalid because it omitted a meaningful discussion of the conditions in the northern part of the proposed water supply system. (See also *Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal. 3d 376.)

Other appellate court decisions on project description hold that where the project description makes public participation difficult, the EIR is not legally adequate. These curtailed and inadequate characterizations of the Project were enough to mislead the public and thwart the EIR process. As noted in *County of Inyo v. City of Los Angeles*, supra, 71 Cal.App.3d 185, when an EIR contains unstable or shifting descriptions of the project, meaningful public participation is stultified. "A curtailed, enigmatic or unstable project description draws a red herring across the path of public input." (Id. at pp. 197–198 [holding that although the "ill-conceived, initial project description" did not carry over into impacts section of EIR, the shifting description did "vitiate the city's EIR process as a vehicle for intelligent public participation"].) *(San Joaquin Raptor Rescue Center v. County of Merced)* (2007) 149 Cal.App.4th 645, 656.

> Per *15124. PROJECT DESCRIPTION*
>
> "A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary."

Accordingly, the Housing Study to add high-density, multifamily housing to specific sites in the Marinship must be included in the Draft EIR so that the public can understand the project. To remedy this defect and in an effort to be fully transparent, the City should disclose its true intentions now, because with this plan in the works, it is "reasonably foreseeable" that it will result in direct physical changes in the environment.

With this addition of information, the DEIR needs to reconsider and expand its consideration of the resultant combined cumulative impacts of housing development, per *15355. CUMULATIVE IMPACTS.*

Putting the public in harm's way

The Marinship is uniquely different from almost anywhere else in Marin, in that it faces every conceivable hydrological, geological, environmental, life safety, and infrastructure challenge possible. The short-list of these challenges includes:

- Tidal flooding zones;
- Sea level rise;
- Tsunami inundation zones (highest hazard zone category);
- Subsidence / sinking;
- Liquefaction and "violent shaking" earthquake hazards(highest hazard zone category) ;
- Toxins in the soils;
- Soils instability from underground water flows;
- Negative air and water quality impacts of future development;
- Failing underground infrastructure (sewers, water lines, etc.); and
- Lack of adequate emergency access and egress due to all of the above and because many streets are privately owned and often poorly maintained;

Consider page ES-1 of the *Executive Summary* of The Sausalito 2040 General Plan Update Draft EIR, which states

> "Public agencies are charged with the duty to consider and minimize environmental impacts of proposed development where feasible and have the obligation to balance economic, environmental, and social factors."

And under *Project Description, 2.5 Objectives* of the proposed 2040 General Plan, Page, 2-4,

> "Safeguard the natural environment and ensure community health, safety, and resilience, including addressing the inherent risks of climate change, sea level rise, and subsidence."

This considered, it is simply common sense that the cumulative combined impacts of the hazards and conditions listed above be addressed, now. Furthermore, the intensity of many of these hazards is predicted to only get worse. For housing, in particular, this amounts to an existential threat to near-future habitability.

The comments and conclusions found in the GP Update/DEIR comment letter by our consulting expert, Laurel Collins of Watershed Sciences, submitted under separate cover, are hereby incorporated into this letter.

Significant environmental hazards are not adequately addressed

Significant tidal flooding in the Marinship is already the norm along the waterfront during the winter months. Residents regularly encounter up to a foot of standing water on Gate 5 Road. But there are many other immediate concerns.

For example, the *Sausalito 2040 General Plan Update Draft,* under *Flooding*, in the *HEALTH, SAFETY, AND COMMUNITY RESILIENCE ELEMENT*, page HS-18, states,

> "Subsidence is an issue throughout the city, but it is of concern in the Marinship which is ***sinking at a rate of 0.5 to 0.75 inches per year*** according to the Waterfront and Marinship Committee's 2010 Sausalito Waterfront and Marinship Vision. Subsidence can lead to groundwater intrusion and intensify flooding and the effects of sea level rise, making development and infrastructure in these areas more vulnerable." [Emphasis added][3]

This means that a good portion of the Marinship that is already underwater in normal tidal flooding events, will be 10" to 15" lower than it is today, 20 years from now. That equates to almost 2 feet of flood water, on average, at high tides. How will utilities, emergency access, storm drains and old, broken, waste sewage lines function under those conditions? Will toxins in the soils back up into overflowing drains in nearby residential and commercial areas? These potential impacts don't even take into consideration the effects of sea level rise. Where is the assessment of these reasonably foreseeable impacts in the DEIR?

According to *The Sausalito 2040 General Plan Update's Sustainability Element*, Page S-5,

> "BayWAVE projects that Marin County could experience 10 inches of sea level rise by 2030, 20 inches by 2050, and 60 inches by 2100. Sea level rise will exacerbate the impacts of other coastal hazards, such as storms, flooding, and erosion."

The Sustainability Element goes on to say,

> "BayWAVE's estimates show Sausalito with as much as 149 acres, or 11 percent of the City's land area, exposed by the end of the century. **This would include most of the industrial land in Sausalito, which could lead to serious financial problems –** particularly as many of those industrial sites may require expensive cleanup in order to prevent contaminants from entering Richardson Bay. Sea level rise could be understood as an existential issue for Sausalito." [Emphasis added]

This is intended to be *a 20-year plan*. Yet, the evidence suggests that major parts of the Marinship will be under about 3 feet of water in 10 years and almost 4 feet of water in 20 years, during a *normal*, winter, king tide, when sea level rise is factored in.

[3] Corroborated in the Sausalito 2015 General Plan Housing Element.

More importantly, it's readily acknowledged in the GP Update and elsewhere that the cost of mitigating combined development and existential threats facing the Marinship are staggering and more than any one project developer can possibly bear. Even the Kosmont Study, which is essentially pro-development, notes that

> "…major infrastructure projects - such as sea level rise protection, subsidence stabilization, and utilities, roads, sidewalks, and lighting **- cannot be completed by any individual parcel owner**."[Emphasis added]

The GP Update ignores the combination of these reasonably foreseeable consequences, makes no actual assessments or analysis of the potential impacts in the DEIR, and offers no tangible solutions other than to say future committees should "study" it and develop a plan.

Please note that all of the proposed, high-density, multifamily housing sites identified in the Community Development Department's "one way communications" housing study are severely impacted.

Housing laws and development financing

The implications of the aforementioned challenges are more than just the costs and the threats to lives and property. In my opinion, it's going to become much harder to finance real estate development of any kind in places like the Marinship.

Housing development is an increasingly complicated business and the myriad of new laws recently passed in Sacramento put significant pressure on cities to build high-density housing in any areas that are zoned for residential development. But, there are many other factors that determine development feasibility, other than zoning.

By and large, affordable housing projects will not "pencil" (show enough profits for investors) or be able obtain construction and permanent financing (show enough net operating revenues to lenders) unless the project can benefit from the variety of density bonuses, grants, tax credits, removal of local zoning restrictions (height, FAR, parking, setbacks, etc.), and most recently what is called "streamlining." Streamlining means that a project gets "ministerial" review by the city's zoning administrator—no public hearings, required.

The Department of Housing and Community Development (HCD), in Sacramento, recently determined that the City of Sausalito made sufficient progress toward its lower (very low and low) income housing goals but made insufficient progress toward its above-moderate income housing "goals" (in its state mandated quota). Therefore, as you know, HCD has determined that the City is subject to Senate Bill 35 streamlining for proposed developments with at least 10% affordability (rents from 30% to 120% of Sausalito's median income, which is over $100,000).

There is also, currently, a major push in Sacramento to add even more layers of state laws to eliminate local control of planning and zoning and permitting. However, with regard to the Marinship, what is being overlooked in the Sausalito General Plan Update, is that all of the new laws before the State Legislature, and the other 18 housing laws that Newsom signed last year, which grant all types of development incentives, *do not apply to development in flood zones or other hazard zones.*

For example, in Senate Bill 35, *SEC. 3. Section 65913.4. (a) (6),* it notes that a proposal is eligible for "streamlining," ***so long as it is not located in*** a "coastal zone," considered "wetlands" (US waters), in a "delineated earthquake fault zone," or "within a flood plain as determined by maps promulgated by the Federal Emergency Management Agency."

This exclusion of projects in flood zones also applies to SB 330, the Housing Crisis Act of 2019, which is much loved by organizations who sue cities for failing to build enough housing.

In SB 330, *SEC. 8. Section 65941.1*. (a) (8) it notes that a proposal is eligible for the ability to enforce private development rights ***so long as it is not located in*** "(B) Wetlands, as defined in the United States Fish and Wildlife Service Manual, Part 660 FW 2 (June 21, 1993) or "(D) A special flood hazard area subject to inundation by the 1 percent annual chance flood (100-year flood) as determined by the Federal Emergency Management Agency in any official maps published by the Federal Emergency Management Agency."

More than two thirds of the Marinship currently sits in the 100-year flood zone and that area will probably increase significantly in the next FEMA map update.

Even Senate Bill 375 (Steinberg), passed in 2018--the law that launched the "Sustainable Communities Strategy" concept—states, under *Section 65080.1 (a)(7),* that its provisions do not apply in

> "an area subject to flooding where a development project would not, at the time of development in the judgment of the agency, meet the requirements of the National Flood Insurance Program."

At a time when the Inspector General is investigating FEMA for insuring lost causes, how long will most of the Marinship be able to even qualify for affordable flood insurance?

Without a developer being able to take advantage of the benefits of all this legislation, financial feasibility will essentially be impossible. And even if one could argue that a project were feasible, it is increasingly unlikely that a bank will finance it or that it would be able to obtain insurance against the other hazards on the list, above. It's taken a long time but climate change is finally being taken seriously by those who can end up holding the bag: banks and insurance companies. And litigation, based on liabilities due to climate change, is also seeing more success.

Furthermore, it is looking increasingly unlikely that the federal government and HCD will approve Low Income Housing Tax Credits being issued to projects that could be impacted by flooding and sea level rise. The possibility of financial loss and loss of lives is mounting.

Finally, affordable housing development approvals typically require deed restrictions and covenants whereby the developers/owners have to affirm that they will provide and maintain the units they build, as affordable, for periods as long as 50 years.

How does a developer or the City do that in good faith, if they know a property will be inundated in less than 20 years?

So, under the circumstances and knowing all of this in advance, why would the City of Sausalito choose to risk promoting housing in the Marinship?

Thank you for your time and consideration.

Sincerely,

Bob Silvestri

President
Community Venture Partners, Inc.

Cc: Mark Wolfe
Laurel Collins

Community Venture Partners, Inc.
A Catalyst for Sustainable Solutions

September 21, 2020

Sausalito City Council
C/o Ms. Lily Whalen
City of Sausalito
324 Pine Street
Sausalito, CA 94965

Re: Comments on the Sausalito 2040 Draft General Plan Update

Dear Sausalito City Council,

The following letter is a compilation of two articles that have been published on the Marin Post. I am submitting them as a comment on the Sausalito 2040 Draft General Plan Update.

Thank you in advance for your consideration.

Sincerely,

Bob Silvestri

President
Community Venture Partners, Inc.
73 Surrey Avenue
Mill Valley, CA 94941
415.381.3887
bsilvestri@communityventurepartners.org
https:www.communityventurepartners.org

The Future of the Marinship: PART I

"Make no small plans for they have no power to stir the soul." ~ Niccolo Machiavelli

It's a flaw of human nature that when faced with uncertainty, at a time when bold action is needed, we tend to put our heads down and retreat into rigid formalities and counter-productive thinking. This is enabled by a false sense of security because we believe that the future will somehow "just work out," because it always has.

But what if it doesn't?

Change is coming to the Marinship and the economic forces and overwhelming environmental forces at play indicate that it will be dramatic. What remains to be seen is whether it will be for the better or for the worse. That will take careful and deliberate decision making and planning.

Unfortunately, at government agencies, like most large organizations, decades of repetition based on unchallenged fundamental assumptions become enshrined as "best practices." Past methods are relied upon, without question, and copied and pasted thoughtlessly until a city's planning process devolves into an exercise in going through the motions rather than clear-eyed analysis and reinvention.

Ironically, what is often considered a demonstration of operating "efficiency" by those inside government is experienced as unresponsive and bureaucratic by those on the outside. But the opinions of these "outsiders" sometimes offer more clarity than is found within.

Evolutionary biologist Stephen Jay Gould studied sudden, unexpected change: dramatic events that are rarely foreseen but seem obvious in hindsight. He called this punctuated equilibrium. This is similar to Malcolm Gladwell's concept of "tipping points"--where suddenly our basic assumptions are challenged.

Like it or not, a tipping point is approaching for the Marinship.

The Marinship: A once in a lifetime opportunity to leap ahead into the 21st century economy

The Marinship in Sausalito represents one of the most unique opportunities available to any city, anywhere. This expansive swath of waterfront on one of the most magnificent bodies of protected, deep channel waterways in the western United States, in proximity to one of the

world's greatest cities, in a region that has one of the world's most dynamic economies, remains unmatched.

This has nurtured a thriving working waterfront community of trades and craftspeople, artists and artisans, inventors, fabricators, designers, engineers, entrepreneurs, shipbuilders, and an endless variety of light industrial and micro-manufacturing businesses and services providers.

At the same time, the Marinship faces some of the most formidable, existential challenges found anywhere, which include sea level rise, significant land subsidence, and rapidly failing infrastructure. A detailed analysis of this is found in recently published articles by Watershed Sciences and Community Venture Partners, in response to release of Sausalito's General Plan Update Draft Environmental Impact Report (DEIR).

These challenges are reaching a point where addressing them in a sustainable way is becoming critical to the future of the Marinship, its property values, its ability to attract private capital and retain jobs, and even to the solvency of the City itself and its ability to generate tax sufficient revenues in the years ahead.

So we need to ask, in the face of all this, how is Sausalito addressing the Marinship's challenges and capitalizing on Marinship's unique potential? Based on the published draft of the Sausalito General Plan Update for 2040, the answer is… like a deer in the headlights.

The City's General Plan Update kicks the can down the road with proclamations of good intentions. But this is no time for small-minded tinkering.

The 21st century redefinition of "industry" and "work"

The Bay Area Economic Council recently published the following analysis of the state of industry and the manufacturing sector in its Economic Report, entitled, *Reinventing Manufacturing.*

> "Technology is revolutionizing manufacturing processes through innovations in 3D printing, robotics and big data (the Internet of Things) – often based on innovations that come from California. A range of factors, including rising labor costs in China, are leading some manufacturers to bring production home. California is in a good position to capture much of this growth, **but needs policies that support and incentivize investment**." [Emphasis added]

> "With more manufacturing jobs than any other state, California has a diverse manufacturing base. Its innovation ecosystem, which has led to links between manufacturers and technology companies, makes it particularly well-positioned to take advantage of a resurgent interest in domestic manufacturing. **This is especially true for products of an advanced technological nature and products that depend on custom design and rapid response to markets**." [Emphasis added]

As it stands, Marinship's unique advantages, described above, combined with its existing industrial, manufacturing, and artisan zoning, and rare capabilities to serve maritime uses, mean that it is extraordinarily well-positioned to compete in this 21st century economy, held back only by a lack of vision and political leadership.

The federal government (MARAD) clearly recognizes the importance of having robust and thriving maritime industries, which it describes as follows:

> "Shipyard activities include ship construction, repair, conversion and alteration, as well as the production of prefabricated ship and barge sections and other specialized services. **The industry also includes manufacturing and other facilities outside of the shipyard, which provide parts or services for shipbuilding activities** within a shipyard, including routine maintenance and repair services from floating dry-docks not connected with a shipyard." [Emphasis added]

As noted by the American Maritime Partnership,

> "America's domestic maritime industry is responsible for almost 650,000 jobs and over $150 billion in annual economic output, according to a recent study conducted by Price Waterhouse Coopers for the Transportation Institute."

And add to that another $43 billion per year for the pleasure boating industry, according to the National Maritime Manufacturers Association.

The Marinship has the potential to be a jewel in Northern California's crown, attracting artisans, technology companies, light industry, manufacturing, maritime uses, and the ancillary support services they need. But the realization of this potential will diminish with each passing year, unless the City acts decisively to put a "stake in the ground" and declare itself open for business.

Otherwise, the Marinship will fall victim to over-reliance on the more challenging and outdated economics of tourism, bricks and mortar retailing, restaurants, and entertainment (think "Pier 39") being proposed by the Kosmont Group. Add to that the pressure from state agencies to promote high-density housing programs that are designed to leave local governments holding the bag when the bill for the cost of related public services comes due, and you have a perfect storm. Under this scenario, the Marinship as we know it, will cease to exist and a golden opportunity will be lost.

Past is not prologue for city planning in the 21st century

Cities, like many other human enterprises these days, are being re-imagined, not just in reaction to the global pandemic, but because of technology and based on what the pandemic has taught employers and entrepreneurs about the nature of work, the definition of what a "job" is, how productivity is measured, and how this impacts profits. And for most cities, jobs, and particularly well-paying jobs that have a future in our new economy, are essential.

No one is claiming that working in offices or flying on airlines are a thing of the past. They will find a way to come back stronger than ever. But, being overly dependent upon consumption-driven business models will not ensure an economically sustainable future. Retailing, tourism, traditional entertainment, and the economics of supply chain management will never be quite the same, again. And the definition of what is considered "industrial" is also changing.

For example, new industries such as indoor, super high-yield, water-stingy, climate controlled, vertical aquaponic and hydroponic farming is no longer an "agricultural" zoning use, but instead is a green, carbon neutral, internally recycling, high-tech industry in its own right that never even touches the ground. Similarly, the line between artist, artisan, craftsman, and micro-manufacturer is blurring considerably with the advent of 3D printing, collaborative virtual design teams, and rapid prototyping.

Bob Machuca, a district manager with the Los Angeles Economic Development Corp., was recently quoted as saying that

> "Manufacturing firms are looking for different skill sets these days that require innovation and problem solving. The days of conveyor-belt workers and smoke-polluting operations are largely gone."

That said, the job market is pretty dismal right now and job growth is weak, particularly for blue collar workers. But in Marin County, this was true even before the pandemic. In January of 2020 the California Employment Development Department had predicted an anemic 1.28% (compounded) jobs growth per year for Marin, over the next ten years. And even that projection is now in jeopardy.

As things are, Marin has been rapidly swapping out quality, high-paying jobs for low-paying service jobs, even while a qualified, educated, local labor pool remains available. And the Marinship, a rare, industrial zoned waterfront area with attractive freeway access is not living up to its potential because there are no tangible incentives in place to invite investment by property owners or to entice third party investors to support its core economy. The resultant revenue stagnation will eventually reduce the City's financial capacity to address the increasingly onerous hydrological, geological, and environmental challenges, creating a vicious downward spiral that, at some point, may be unstoppable.

Meanwhile, against this backdrop, Sausalito's Marinship is losing or is in danger of losing some of the innovative, 21st century, technology companies it already has: companies like Engineered Fluids and others--exactly the kinds of companies the City should be working overtime to help stay.

Engineered Fluids, for example, is a cutting-edge, micro-manufacturing and scientific research and technology company, on the verge of expanding and adding dozens of new jobs to the local economy. But, Engineered Fluids can't find anywhere in the Marinship to relocate and they can't expand where they are because the area's infrastructure is so antiquated that they can't even get enough electrical power to run their operations. To add insult to injury, their rents were jacked up by more than 100%, possibly to make way for an illegal entertainment use.

So, unless Engineered Fluids can find a location, immediately, it will be forced to move away. In my opinion, this is a direct short-term consequence of the City's long-term failure to address infrastructure deterioration, implement coherent public policy to support industrial/manufacturing businesses in the Marinship, and attract private investment. Moreover, it's primarily a failure of imagination and understanding of markets and economics.

This kind of failing is epidemic in Marin. It is all enabled by our cities' civic structure, whereby, through no fault of any particular individual, government affairs are decided by City Councils led by short-term, unpaid volunteers, who are well-intended but often unqualified in the required expertise: a dynamic that is simply incapable of long-term planning and execution.

I'm told that, to date, Sausalito's response to the plight of Engineered Fluids has included sincere expressions of concern, but they are not powerless to do something about it: maybe not in time to help Engineered Fluids, but for other companies that will face the same fate in the future.

Positive change will not just happen because of a General Plan Update process

Without clear, supportive planning, public funding, and financial incentives for private capital to participate, nothing in the Marinship will change for the better. Private investment capital is not in the business of being charitable, but it is often readily available to work for the common good as long as a framework exists that is dependable and therefore profitable.

Believe it or not many developers what to do the right thing, even if only to cut down their time to entitlements by a few years. But programs, policies, and incentives need to be in place, first.

At a time when Sausalito should be doubling down on investment and developing financial incentives to support the Marinship's industrial, manufacturing, artisan, and maritime heritage and doing everything it can to attract and retain 21st century businesses, by default, they are enabling the Marinship's demise.

However, in order to turn the tide, the city is going to have to embrace the Marinship's biggest challenge, first.

The Future of the Marinship: Part II - Innovation

"An artist is someone who's doing pure research" ~ Boz Scaggs

It's always fascinated me that the minute some of the most practical, hard-nosed, and money-driven among us become rich, the first thing they do is buy art: something created by some of the least practical, most intuitive, and least money-driven people on the planet. I interpret this as an unconscious admission that their soul is aching for something that feels authentic. Or, as Pablo Picasso put it, "Art is the lie that reveals the truth."

Industrial designers, tradespersons, software engineers, craftspersons, precision die-cutters, entrepreneurs developing new methods of servicing San Francisco fireboats, or someone converting pleasure boats to hybrid-electric power are, like artists, each in their own way, a part of the creative community. Their jobs may be less formal than the 9 to 5 world, but their work has value far beyond what can be surmised from a snapshot accounting ledger or a simplistic study like the one the Kosmont Group submitted.

The question before the City is how to properly value these stakeholders and plan accordingly.

In Part I of this series, I presented economic arguments for why the City should invest time and money to ensure the future of the Marinship's industrial / manufacturing / maritime / artisan community. You may agree or disagree, but maybe we can agree that planning decisions need to be made based on facts. What makes no sense is for the the City to continue to allow the tail to wag the dog, where planning is driven by randomly generated, private development proposals that result in a haphazard conglomeration of uses, based on the belief that "pay-as-you-go" is a viable growth process.

The City's approach to assessing the Marinship's considerable physical challenges, so far, has focused too much on recording the "wish lists" of the various stakeholder groups (e.g., in the 2015 *Placeworks Assessment Report*), but avoided the feasibility of fulfilling any of them.

Under its current methodology, the City is betting (against all odds and historical precedent) that it will be able to address the Marinship's enormous existential threats from sea level rise, land subsidence, coastal erosion, a rising, saline water table, flooding, and failing infrastructure (water and sewer lines, storm drains, and roadways) by transferring the costs of mitigation and maintenance onto the shoulders of individual landowners and developers.

Every consultant the City has hired over the past 35 years has stated, unequivocally, that the costs and resources needed to address and remediate the geological, hydrological, and public

services challenges in the Marinship are far beyond the capacity of any one private owner or developer, or fixable on a case by case basis. The stark reality is that there is no middle ground for piecemeal responses. The existential challenges in the Marinship will only grow worse with time, and in some cases exponentially. Only a comprehensive, city-led effort can hope to "stem the tide."[1]

To put it plainly, the City's "unplanned" plan is not a plan. It's a triumph of hope over reason.

All the studies, committees, and workshops in the world will not change that. Sausalito needs to face forward and embrace the responsibility for the mitigation of Marinship's environmental challenges, head-on, with eyes wide open. Anything less is *putting the cart before the horse* and will not only fail to support the future of the working waterfront community but will sabotage any other kind of growth and development, as well.

Even if you disagree about what the future of the Marinship might be or want to see it filled with amusement parks, Ferris wheels, fast food restaurants, and gleaming condo towers, the challenges facing that development are the same.

The *Placeworks Report*, for example, identifies "Inability to attract investment" and "Critical need for infrastructure improvement" as the Marinship's two major "Weaknesses."

This shouldn't surprise anyone.

No sensible, profit-motivated, private investor, who is made fully aware of the extent of the area-wide hydrological, geological, environmental, and infrastructure challenges in the Marinship, and the associated costs of mitigation, is going to make a significant financial investment there, without some assurance that the City, itself, has an overall plan in place to address them. The *inaction* embedded in the City's General Plan Update doesn't even come close to addressing that need.

Sausalito has spent untold millions of dollars over the past decades hiring consultants to *assess* the Marinship. Those consultants have been augmented by legions of committees, workshops, study groups, and so on. But, while all these repetitious studies and reports pile up and gather dust on the shelf, none of this has resulted in a single tangible improvement, other than essential maintenance when something completely breaks down.

No more studies or opinion surveys are required. The time to organize committees and announce high-minded "policies" has passed.

It's time for the City to roll up its sleeves and start.

Innovation Zones

A group of local business owners, property owners, and individuals called the Sausalito Working Waterfront (SWW), describe themselves as

> "A network of maritime workers, business owners, property owners, employees, artists, craftspeople, inventors, artisans, educators, and many Sausalito residents who are concerned for the future of this unique community and its historic legacy."

They describe their vision for the Marinship as

> "An area whose primary goal is to preserve and enhance maritime, light industrial, and artistic uses and jobs. These uses define the backbone of Sausalito's cultural heritage."

You can read more about the SWW by clicking here. The SWW has been promoting the socio-economic, environmental, and cultural value of the Marinship, for some time. As I've noted in previous articles, they have reminded the City that the Marinship provides unique services that are not available anywhere else in the San Francisco Bay. For example,

> "Currently, San Francisco Fireboats, SF Airport Fireboats, Alcatraz Ferries, Commercial fishing Boats from Half-Moon Bay, The Matthew Turner Tall Ship and most other large local and bay area commercial and recreational vessels up to 250 tons are hauled out in Sausalito."

Going forward, the major campaign they are urging the City to undertake is to designate the Marinship working waterfront as an "enterprise" or "innovation" zone.

"Innovation" is, of course, a very attractive word. I doubt anyone is against promoting innovation. But, how does one turn aspirations into reality?

An enterprise or innovation zone is defined as a designated area where policies to encourage economic growth and business development are codified. These policies generally offer things such as tax concessions, financial assistance, and project approval fast-tracking to attract public and private investment and promote the uses that are desired. And enterprise zone can also be used to finance the rehabilitation of infrastructure and the costs of mitigating major environmental challenges.

Some of the tools that have been employed to bring about desired outcomes, include,

- Zoning regulation concessions and floor area bonuses (FAR) to attract and allow desired businesses to grow in place;
- Reduced property taxes to offset upfront investment and rehabilitation expenses;
- Reduced project entitlement/permitting fees;
- A Planned Unit Development (PUD) process to invite creative development proposals;
- Specific regulations (not just zoning) that guide businesses and provide direction for the City's annual operating and capital improvement budgets;

- Cooperative grant and loan programs available through arrangements by a City agency with third-party funders and investors (e.g., banks, finance companies, bond underwriters, etc.);

- Offering debt co-insurance offered through an arrangement with regional insurers, to decrease construction and mortgage lender risk;

- Shared infrastructure rehabilitation and upgrading costs, funded through arrangements with federal and state agencies; and

- Facilitating access to working capital and long-term investment partners.

Examples of waterfront enterprise or innovation zones are not hard to find. The rehabilitation of Port Everett in Washington, for example, though obviously a much larger undertaking, had similar priorities. Their Plan emphasized that their "top priority is to modernize the Seaport to meet 21st-century infrastructure demands." This included developing specific business plans "to guide [public and private] capital investments". They offered many of the types of incentives noted above.

Similarly, under New Jersey's "Urban Enterprise Program" a participant is allowed the right to purchase certain targeted items or services without paying local sales tax. Certain businesses are allotted Tax credits for hiring new employees or making capital investments to support targeted uses. Other programs in Colorado, Ohio, and elsewhere offer similar tax credits and cost offsets for targeted investments, real estate renovation, and job training, as well as exemption from occupancy taxes and entitlement fees if the investment supports targeted uses or agreed upon infrastructure improvements (public benefits).

Some zones around the country even offer participation in employee health insurance programs available through arrangements made with for-profit corporate and foundations.

But, I can already hear the pushback even before going into details and specifics. That pushback is summed up as, "That sounds expensive! And, "We don't have that kind of money!"

I've been involved with raising large sums of money in grants, loans, and subsidies, for nonprofit causes and for-profit ventures, for decades, and I can assure you that this pushback response is *100% incorrect.*

If every noble cause or eventually profitable venture began with that premise, hardly anything would ever be accomplished anywhere in the world. Ideas and well-conceived business plans come first. Money is attracted to sound ideas and when it comes to government programs and foundation PRI ("Program Related Investment"), funding seeks to address opportunities to fulfill their goals, which are not about making a quick buck.

Put another way, if you don't have anything to sell, you're never going to find anyone to buy it. And there will be no "innovation" without funding.

So, what do you have to sell?

At the moment, the City of Sausalito has nothing to sell to anybody. They have no tangible plans, no projects, and no campaign to promote. As it is, they couldn't even attract seed funding to take the first steps toward having any of those. So far, all the City has done is spin in place, spending precious funds on endless studies, workgroups, and consultants, all of which seem to result in recommendations that are quickly forgotten.

At this rate, the Marinship will be under three feet of water before the City can even decide to buy a bucket to put the water in.

The first step toward preserving the future of the Marinship, regardless of what version of the future one supports, is to hire a team of engineers and construction management advisors to develop what might be called a "Preliminary Infrastructure Improvement and Environmental Mitigation Work Plan" (a "Work Plan") to address the challenges facing the Marinship.

The deliverables of this first phase include engineering analysis, surveying, and testing to evaluate the scope of work required (i.e., subsidence measurement, soils core samples, toxicity testing, infrastructure capacity testing, etc.), identifying the work tasks required, and suggest task sequencing, developing a preliminary work staging plan, an estimated project timeline, a proposed project management plan, a schedule of contractors and consultants required, costs breakdowns, and whatever else is needed to arrive at a point where the City has actual projects to evaluate, with viable alternatives, and a reasonable sense of the risks and rewards and the relative, estimated costs of each.

This Work Plan would give City the ability to publish RFQs (Requests for Qualifications) and RFPs (Requests for Proposals) to move to the next phase and receive project proposals, design/build proposals, and/or bids for specific work items. [2]

Yes, that will cost money. But sources for that funding are available.

The *simultaneous commitment to create* a "Marinship Enterprise Zone" would greatly expand the scope of those potential funding sources.

This undertaking, these first steps, are so fundamentally important to the future of the Marinship and, therefore, the financial viability of the City that final planning decisions and any zoning changes being contemplated need to be postponed until this Work Plan is in place because the process of creating the Plan will likely have unforeseeable implications about those decisions and changes.

So, a Work Plan is the first step. However, in order to do that, two critical components need to be in place.

These are,

(1) Leadership: Determining who the individuals are who will lead the team that will drive this process forward; and

(2) An Entity that can access and receive funding from every possible available for-profit or nonprofit source.

A Vehicle for Change

There is nothing that can replace the continuity of dedicated leadership. But, to execute an undertaking on this scale, individual efforts will need organizational and institutional support. The type of entity that can best take full advantage of the myriad of ways to fund and finance such an undertaking is a government-sponsored agency. Therefore, it is logical to propose that the City establish a new community foundation to be that entity, governed by a board that includes elected leaders and prominent community leaders, business owners, and property owners.

Its funding would be entirely separate and fire-walled from the City's General Fund and its governance would be independent, though, obviously, it cannot reasonably function or succeed without the City's full cooperation and political support.

Such an entity would have the ability to seek funding in the form of grants, loans, subsidies, pass-through funding, and collaborative for-profit and nonprofit partnerships. This "Sausalito Marinship Foundation," if you will, would be an appropriate vehicle to advance the mission of economic, cultural, and environmental stewardship of the Marinship.

Fundraising and Collaboration

In my decades of raising funds for for-profit and nonprofit endeavors, I've learned that there is a myriad of ways nonprofits, for-profits, corporations, government agencies, and other institutions can work together in structured financial collaborations for mutual benefit. There is no one correct way. There are also professional nonprofit assistance organizations, right here in the Bay Area, that regularly raise hundreds of millions of dollars, and sometimes even billions, to support cities, counties, and major institutions (universities, hospitals, etc.), who have a demonstrable need and can make a convincing case for funding it.

I also believe current political forces suggest that funding for infrastructure rehabilitation and sea-level rise mitigation is about to become a major area of interest for government and private funders.

Fundraising is a journey. Cold calls result in learning about the current funding environment. Some lead to referrals to other prospects and networks, and grants managers often refer callers to other grants managers, who are funding what you're doing. Government agencies help determine the funding options available. And funding often comes from the most unexpected places.

Even if the funding sought is just to take the first step of creating the Work Plan, a community foundation can approach state and federal agencies, private corporations, and nonprofit foundations for grants and collaborative assistance to accomplish that, so long as they are presented with clearly articulate Work Plan.

In other words, it all starts with having a story to "sell."

The following are just a few examples of funding sources that may be available to fund a Marinship Infrastructure Improvement and Environmental Mitigation Work Plan, led by a newly formed Sausalito Marinship Foundation.

It is by no means an exhaustive list, but only meant to suggest places to begin.

The US Department of Commerce Economic Development Administration makes grants (up to $3 million) to jump-start infrastructure engineering and improvements. As noted in their guidelines,

> *The Economic Development Administration's (EDA's) mission is to lead the Federal economic development agenda by promoting innovation and competitiveness, preparing American regions for economic growth and success in the worldwide economy. EDA fulfills this mission through strategic investments and partnerships that create the regional economic ecosystems required to foster globally competitive regions throughout the United States. EDA supports development in economically distressed areas of the United States by fostering job creation and attracting private investment. Specifically, under the Economic Development Assistance programs (EDAP) Federal Funding Opportunity (FFO) announcement, EDA will make construction, non-construction, and revolving loan fund investments under the Public Works and Economic Adjustment Assistance (EAA) Programs.*

EDA's Economic Development Assistance Programs support economic development, job creation, and private investment for eligible activities. Their two categories of funding are for public works and economic adjustment assistance, both of which include infrastructure projects like what's needed in the Marinship.

The 2020 EDA Public Works and Economic Adjustment Assistance Programs, including the CARES Act Funding, offer cooperative agreement grants of up to $30 million to "provide investments that support construction, non-construction, planning, technical assistance, and revolving loan fund projects."

And the Program will,

> "support work in Opportunity Zones and will support the mission of the Department by, among other things, leading to the creation and retention of jobs and increased private investment, advancing innovation, enhancing the manufacturing capacities of regions, providing workforce development opportunities, and growing ecosystems that attract foreign direct investment."

The FEMA "Building Resilient Infrastructure and Communities" program has a budget of $500 million to provide funds

> "For the purpose of implementing a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on federal funding from future disasters."

The National Science Foundation's Civil Infrastructure Systems grants program funds "research necessary for designing, constructing, managing, maintaining, operation, and protecting efficient, resilient, and sustainable civil infrastructure systems. Research that pertains to transportation systems, construction engineering, infrastructure systems, and infrastructure management." This includes maritime and waterfront projects.

HUD's National Resource Network "Strong Cities, Strong Communities" program offers similar grants to help cities tackle large-scale, economic challenges. Innovative solutions "may be applied to capacity issues related to local economic development, land use, transportation, workforce development, community development, and public safety."

Similarly, the US Department of Transportation recently announced a fund to provide grants for infrastructure improvements, and we can expect that funding to grow in the coming year.

Finally, the Environmental Protection Agency offers a variety of "Green Infrastructure Funding Opportunities," including funding for "Water Infrastructure Finance and Innovation."

Properly presented, the Marinship's hydrological, geological, and environmental, sea-level rise, and subsidence issues and a plan to address them would certainly qualify for many of these types of funding assistance.

Government agencies are, of course, the most obvious prospects, but the world of private and corporate foundations is vast, eclectic, and extremely unpredictable. The good news is that the San Francisco Bay Area probably has more recently established, modestly-sized (less than $25 million in assets) private foundations than anywhere on the planet.

New Cities, for example, is a nonprofit aggregator organization that offers a variety of types of assistance under its "Financing Urban Infrastructure Initiative." And there are dozens of website aggregators that list smaller, private grantmakers ($1 million and under), like Wells Fargo Bank, to help agencies find support for coastal waterfront initiatives. Major, private funding aggregators like the Tides Foundation and the Marin Community Foundation also participate in and manage networks of corporate and private funders.

Enterprise Zone Incentives

When it comes to partnerships and funding to support incentives to private investors in enterprise zones, The California Office of Business and Economic Development is a place to start. California offers the "California Competes Income Tax Credit" program, which is "available to businesses who want to relocate, stay, or grow in California." And the California Alternative

Energy and Advanced Transportation Financing Authority (CAEATFA), which offers "advanced transportation and manufacturing sales and use tax exemption:" a tax exclusion to manufacturers that promote alternative energy and advanced transportation solutions (maritime being one of them).

These programs are designed to stimulate and guide public and private investment. A Sausalito Marinship Foundation could work to build strong relationships with local corporate foundations and technology partners, and organizations like the California Capital Financial Development Corporation and act as a liaison and a funding clearinghouse for businesses the enterprise zone wishes to retain or attract.

Each type of land use has its own universe of funders and collaborators, and its own unique financing methods and hybrid for-profit/nonprofit collaborative arrangements at its disposal. For example, regarding the Marinship's maritime uses, there are avenues for partnerships and collaboration with nationally respected organizations, such as the National Working Waterfront Network, and learn from case studies they publish about how other cities have used innovative finance, found grants, issued bonds, and created ballot measures to achieve their goals.

Time to Begin

Sausalito has a once in a lifetime opportunity to save the Marinship. But it won't last, forever. In twenty years, having failed to act boldly and proactively, the present unmitigated, environmental, and infrastructure challenges will likely have become so overwhelming that mitigation may no longer be financially feasible. If the City mismanages its growth and planning policies, today, it could potentially lead to a fatal flight of private capital and threaten the viability of land-based development in the Marinship, in the future.

Great things can be accomplished. But, they don't happen by accident. It's always the result of a relentless, methodical process.

The first step is to decide to begin it.

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[1] *Geological Background Report - Marinship Specific Plan* – December 1985; Kosmont Group Study - 2020

[2] Similarly, the *2015 Placeworks Report* directed the City to "Inventory and characterize the condition of physical infrastructure (roads, civil, above water and underwater), and identify current and future vulnerabilities. Analyze vertical change in sediment in the Marinship (based on available data) to identify "trouble spots," and forecast potential on-going subsidence and how it might affect infrastructure and potential development plans on land and at the water's edge. Identify the range of sea-level rise currently predicted in Richardson Bay and assess potential impacts to facilities above and in the water and to land-based civil infrastructure including roads, sewer, power, potable water and storm water facilities."

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