



tel: 916.455.7300 · fax: 916.244.7300  
1010 F Street, Suite 100 · Sacramento, CA 95814

November 2, 2015

**SENT VIA EMAIL (warriors@sfgov.org)**

Tiffany Bohee  
c/o Brett Bollinger  
San Francisco Planning Department  
1650 Mission Street, Suite 400  
San Francisco, CA 94103

**RE: Comments on Environmental Review for Warriors Event Center and  
Mixed-Use Development at Mission Bay Blocks 29-32**

Dear Ms. Bohee:

This firm represents the Mission Bay Alliance (the “Alliance”) with respect to the Warriors Event Center Project (“Project”). These comments address the Final Subsequent Environmental Impact Report for the Event Center and Mixed Use Development at Mission Bay Blocks 29-32 (“FSEIR”) as well as the Project itself.

**1. Tiering**

The FSEIR attempts to justify the City’s decision not to provide any analysis of about half of the topics normally addressed in an EIR. The FSEIR initially reviews the conditions under which tiering under CEQA Guidelines section 15152 is permissible. Under section 15151, subdivision (g), impacts must “have been examined at a sufficient level of detail in the prior [EIR] to enable those effects to be mitigated or avoided . . . .”

The FSEIR also points out that the 1990 and 1998 EIRs were program EIRs under CEQA Guidelines section 15168, and that reliance on program EIRs is permissible in certain circumstances. Significantly, the FSEIR claims that the current project is within the scope of the Mission Bay Plan that was previously analyzed. Comments by the Alliance and others establish that the Notice of Preparation (“NOP”)/Initial Study (“IS”) inappropriately scoped out impacts for which there was inadequate analysis in the previous documents.

The FSEIR claims that the current project is consistent with the Mission Bay South Plan and/or within the scope of the program EIRs certified for the Mission Bay area. Yet comments from the public establish that, contrary to the City’s assertions, the proposed arena and event center is inconsistent with the Mission Bay South Plan and

inadequately analyzed in the prior EIRs. As such, this case is similar to *Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307, 1320-1321, where a proposed gravel operation was found not to be within the scope of the long-term plan, and that a tiered EIR was required.

The FSEIR also attempts to refute the applicability of the fair argument standard. This discussion overlooks the major differences between the project described in the 1998 FSEIR (evaluating effects of developing Mission Bay plan area as described in 1998) and the Warriors Event Center and Mixed Use Development now being proposed, make this a new project, precluding reliance on the 1990 and 1998 environmental analyses. (See *Sierra Club v. County of Sonoma*, *supra*, 6 Cal.App.4th at 1320-1321.) Under separate cover, the Alliance has submitted additional analysis explaining: (1) why the project is inconsistent with the Mission Bay South Plan and would require an amendment; and (2) alternatively, why a variance would be necessary to locate the project within the Mission Bay South Plan area.

The case of *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1113 did not address a situation such as this where tiering is attempted for a new project that is inconsistent with the previously analyzed project. Thus it cannot stand for the proposition that the analysis in the NOP/IS of impacts that were not addressed would be subject to the substantial evidence standard. The simple inclusion of the NOP/IS in the DSEIR does not address this issue.

Even if the substantial evidence standard applies, public comments on the DSEIR demonstrate there are changes in circumstances since the 1998 SEIR involving, and significant new information showing, new significant effects not previously identified in the 1998 SEIR and substantial increases in the severity of significant effects that were previously identified in the 1998 SEIR. For example, biological resources exist on the site now that were not present in 1990 or 1998; thus, destruction of these resources creates a new, potentially significant impact. Similarly, contaminated soils are now present on the site due to backfilling that were not there previously. Construction and operation of the project would expose receptors to levels that exceed those levels that are considered safe. Similarly, seismic safety standards are completely different than in 1990 or 1998; moreover, the use proposed is a public assembly use, which was also not contemplated in 1990 or 1998.

Thus, the FSEIR improperly tiers from the 1990 and 1998 EIRs with respect to several resource areas, as described in Alliance and other public comments. This error defeats the public disclosure requirements of CEQA and misleads the public. In particular, if the 1990 and 1998 EIRs had actually analyzed the currently proposed

project, there would be no need for the reams of new analysis presented by the City on these topics, none of which are within the four corners of the FSEIR.

## **2. AB 900**

Although the Project previously received certification from the Governor's office under AB 900, that law has very specific procedural requirements with which the City has failed to comply.

As previously noted, the City has failed to make the record of proceeding available online as required by Public Resources Code section 21186 ("Section 21186"). In response to clear evidence of the City's failure to post online all required documents as required by Section 21186, the City now takes the legal position in the FSEIR that the City is somehow allowed to create two administrative records – one that is posted online as required by Section 21186, and a more expansive record that satisfies the requirements of Public Resources Code section 21167.6, subdivision (e)(10). This interpretation is contrary to the plain language of the Section 21186, which requires the City to timely post online all documents that will comprise the administrative record ultimately certified by the City. Any contrary interpretation would be absurd in light of the accelerated litigation briefing schedule provided by AB 900. Accordingly, the City's actions to flout its duties under AB 900 affirmatively prejudices any potential CEQA petitioner, and represents an intentional misuse of AB 900.

As the City knows full well, a motion to augment the record as provided by AB 900 will not adequately mitigate that prejudice where, as here, the lead agency knowingly and intentionally creates two separate administrative records – one for posting online and a second for ultimate certification – specifically in order to frustrate any future legal challenges. The only effective remedy in this instance is for the City to recirculate the DSEIR along with all documents comprising the administrative record in compliance with AB 900, which the Alliance calls upon the City to do.

## **3. Greenhouse Gas Emissions**

The Alliance, among others, commented that the DSEIR's analysis of greenhouse gas ("GHG") emissions relied on the Project's defective AB 900 analysis to conclude that the Project had net zero GHG emissions. The FSEIR's response to these comments falls well below its duty of good faith.

Rather than candidly acknowledge that the DSEIR relied upon the analytical methodology followed in the AB 900 certification, which was fatally flawed, the City

now attempts to distance itself from that analysis with a misleading claim that public commenters were somehow “confuse[d]” about the relationship between the AB 900 analysis and the DSEIR’s analysis. (FSEIR, p. 13.14-5.) This response is nonsense. The public was not confused. To the contrary, public commenters correctly noted that the DSEIR expressly relied upon the AB 900 analysis to repeatedly represent that the Project would result in no net additional GHG emissions. To wit:

Construction activities would also result in temporary increases in GHG emissions. However, as described above under Regulatory Framework, the proposed project is a certified environmental leadership project under AB 900, and CARB has determined that the project would not result in any net additional GHG emissions due in part to the voluntary purchase of carbon credits by the project sponsor.

...

Thus, the Governor’s certification of the proposed project as a leadership project further supports the determination that the proposed project would not have a significant impact on global climate change due to GHG emissions . . .

[A]nd because the proposed project would not result in any net additional GHG emissions, the project would not contribute to cumulative GHG emissions impacts.

(FSEIR, p. 14-123-125.)

Thus, there is no “confusion” by the public. And the City’s attempt to eliminate this clear analysis in the FSEIR is evidence of the City’s attempt to deceive the public regarding the Project’s true GHG emissions. The DSEIR unquestionably asserted that the Project’s GHG emissions had been quantified, and were a net zero. The assumptions and analysis supporting the DSEIR’s conclusion is demonstrably flawed. As a result, the City has a legal duty under CEQA to publicly acknowledge and correct that flawed analysis. The City has not yet done this, which renders the FSEIR misleading and therefore defective as an informational document.

Rather than correct the DSEIR’s defective GHG analysis, the City disingenuously sidesteps the issue by claiming that the FSEIR is now engaging in a purely “qualitative” analysis of GHG emissions rather than a “quantitative” analysis, as allowed by the CEQA Guidelines. (FSEIR, 13.14-5.) While it is true that the referenced CEQA Guidelines permit an agency to use a qualitative analysis for GHG emissions in certain instances, this same guideline also advises, “A lead agency should make a good-faith effort, based on the extent possible on scientific and factual data.” (CEQA Guidelines, § 15064.4,

subd. (a).) Further a lead agency “shall have discretion to determine, in the context of a particular project, whether to” “use a model or methodology to quantify” GHG emissions or to “rely on a qualitative analysis.” (CEQA Guidelines, § 15064.4, subd. (a)(1), (2).)

As explained in the attached letter by SCS Engineers ample information was available that allows the City to quantify the Project’s GHG emissions, consistent with regulatory guidance. (See Exhibit 1, SCS Engineers Memorandum dated November 2, 2015.) Thus, while the City might ordinarily have discretion to utilize a qualitative analysis, that discretion is constrained because extensive quantitative data has already been prepared for the Project that was readily available to the City. (*Berkeley Keep Jets Over the Bay Committee v. Board of Board Commissioners of the City of Oakland* (2001) 91 Cal.App.4th 1344, 1371 (*Berkeley Keep Jets*) (agency abused discretion by not quantifying project’s air emissions).) As in *Berkeley Keep Jets*, the City’s failure to accurately disclose the Project’s GHG emissions, and its evasive responses to comments asking for an adequate analysis, fail to satisfy its duty under CEQA.

One of the major defects in the DSEIR’s GHG analysis was to exclude emissions associated with operation of the two office towers by claiming that this Project component is somehow “vested.” Though, the DSEIR never acknowledges that fact. (FSEIR, p. 13.4-11-12.) The FSEIR openly “acknowledge[s]” this critical defect.

The City’s response fails the good faith standard. First, it is telling that the City never even attempts to explain in the FSEIR how the office uses are “vested” in response to comment directly challenging that assumption. Second, even if the towers were somehow “vested,” which they most surely are not, it is well established that a CEQA document must analyze the “whole of the action.” (CEQA Guidelines, § 15378.) Unrealized hypothetical “permitted” or “vested” rights are not excluded from analysis of a project’s impacts. (*Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 320.) Third, excluding the towers’ GHG emissions establishes that the SEIR is premised on an inconsistent project description because the FSEIR analyzes the towers’ impacts in other resources areas. (*County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 197.) As just one example, the new CEQA Guidelines Appendix F analysis expressly includes energy requirements from the two towers. (FSEIR, 13.23-10.) If the towers were “vested” and therefore excluded from analysis, the DSEIR also would not analyze the tower’s impacts in other resources areas either.

In conclusion, the FSEIR’s analysis of GHG is fundamentally flawed and fails as an informational document. The responses to comments are evasive and misleading, and fail to satisfy the City’s duty of good faith. Further, the information submitted by the

Alliance constitutes substantial evidence of a fair argument that the Project will have a significant adverse effect on GHG emissions.

#### 4. Wind and Shadow

MBA previously commented that the DSEIR failed to analyze the Project's impact on on-site open space, which renders it defective as an informational document. (FSEIR, p. 13.15-1.) The FSEIR's response to this comment is not made in good faith, and instead is intended to conceal a significant impact (and thereby avoid recirculation) and improperly deferred mitigation.

The FSEIR first suggests that the open space provided on-site is somehow exempted from analysis because it consists of "publically [sic] accessible but private recreational areas." (FSEIR, p. 13.15-1.) This characterization, however, is inconsistent with the FSEIR's characterization of this open space as counting towards the Project's requirement to construct 0.46 acres of open space for each 1.0 acre of development area, which the FSEIR characterizes as "directly serv[ing] the project's demand for recreational facilities." (FSEIR, p. 13.16-3.) It is also inconsistent with the project applicant's own application materials, which provide:

##### DESIGN NARRATIVE: OPEN SPACE

The goals of the landscape design at Blocks 29-32 are to develop a unique place identity, *to connect new public spaces to the larger neighborhood, and to serve as a local and regional amenity. In addition to maximizing the quality of public space amenities for visitors and community members*, the landscape design also incorporates a diverse array of sustainability strategies.

...

##### Third Street Gardens and Plazas

...

This space is intended to both facilitate a porous connection between the street and the main plaza *and serve as an independent public space*.

...

##### Main Plaza

The main plaza is designed to accommodate seasonal programming and large events for the Bay Area community, as well as *function as a quality public space for the local neighborhood*. To accomplish this, the space is designed with maximum flexibility at its heart. Large-scale occupiable movable planters can be rearranged to accommodate various programs.

Generous lawn panels and a few large specimen trees will create a neighborhood park atmosphere during non-event times.

(Golden State Warriors Even Center and Mixed-Use Development Combined Basic Concept/Schematic Design Submittal, Blocks 29-32: Open Space, Gatehouse & Parking and Loading, p. 5 (emphasis added).)

In other words, the FSEIR characterizes this open space as “private” to avoid a wind analysis, but “public” for purposes of dismissing impacts to recreational facilities. The FSEIR’s characterization of this space as “private” is also inconsistent with the project applicant’s repeated representations about this space. This type of shifting project description is misleading and thwarts informed decision-making. (*County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 197.)

What is more, the FSEIR’s attempt to narrow the scope of the required wind analysis by reference to Planning Code section 148 is misplaced. Indeed, if one were to simply apply the scope of that code section directly, it would not apply at all because the Project is being developed in a redevelopment area. Here, the 1998 Mitigation Monitoring and Reporting Program did not limit the application of a wind analysis to only those instances where Section 148 would apply on its own terms, but rather much more broadly:

Require a qualified wind consultant to review specific designs for buildings 100 feet or more in height for potential wind effects. The Redevelopment Agency would conduct wind review of high-rise structures above 100 ft. Wind tunnel testing would also be required unless, upon review by a qualified wind consultant, and with concurrence by the Agency, it is determined that the exposure, massing, and orientation of buildings are such that impacts, based on a 26-mile-per-hour hazard for a single hour of the year criterion, will not occur. The purpose of the wind tunnel studies is to determine design-specific impacts based on the above hazard criterion and to provide a basis for design modifications to mitigate these impacts. Projects within Mission Bay, including UCSF, would be required to meet this standard or to mitigate exceedances through building design.

(1998 EIR, p. VI.6., mitigation measure D.7.)

Thus, by its own terms this mitigation measure applies to “high-rise structures above 100 ft.” within any land use designation, and the scope of the affected area to review is in no way limited to “public open space” rather than so-called “private open

space.” Nor is there any explanation that the scope of affected area is to be limited by Section 148.

The FSEIR’s misrepresentation on this issue is important because the FSEIR acknowledges that the Project would “exceed the wind hazard criterion” at no less than “three test points on the project site,” but promptly dismisses the significance of those exceedances because “wind effects at these locations are not considered significant impacts on the environment.” (FSEIR, p. 13.15-3.) The FSEIR reaches this strained legal conclusion, however, in order to avoid the factual issue that the de facto mitigation offered for that significant impact is impermissibly deferred under CEQA.

In short, the FSEIR undertakes a tortured legal analysis in order to conceal from the public the Project’s significant wind impacts on public open spaces within the Project. The SEIR must be recirculated to disclose this significant impact.

## **5. Recreation**

The Alliance previously commented that the DSEIR’s project description, including the routine influx of up to 18,000 people up to 225 times a year, refuted the DSEIR’s conclusory assertion that the Project’s demand for recreational facilities “would generally be consistent with that described in the Mission Bay FSEIR.” The FSEIR fails to provide a good faith response to this comment. Rather than actually cite any report or analysis, the FSEIR merely restates its prior unsubstantiated claim. (DSEIR, p. 13.16-2.) Thus, there is no evidence whatsoever supporting this conclusion.

In the absence of any meaningful analysis regarding the Project’s demand for recreational facilities, the FSEIR claims that the Project will not substantially degrade Bayfront Park in part because of “the inclusion of on-site publically accessible open space proposed by the project that would directly serve the project’s demand for recreational facilities.” (FSEIR, 13.16-3.) Yet this characterization of the Project’s “open space” is inconsistent with the FSEIR’s treatment of these areas in its wind analysis, which it characterizes as “publicly accessible but private recreational areas,” (FSEIR, 13.15-1.) The FSEIR’s inconsistent treatment of this important component of the Project thwarts informed decision-making and public participation.

The FSEIR also fails to respond in good faith to comments about hazardous materials exposure associated with construction and occupancy of Bayfront Park. The City first claims that Bayfront Park is somehow a separate CEQA project notwithstanding the fact that its existence is triggered by construction of the arena. (FSEIR, 13.16-4.) Setting aside the FSEIR’s attempted legal obfuscation, the FSEIR then conclusively



asserts that all issues of hazardous materials are satisfied because a Risk Management Plan (“RMP”) has been approved for the area. (FSEIR, 13.16-5.) This response, however, ignores that the RMP itself is not sufficiently protective of human health because it is: (i) premised on outdated screening levels that are significantly higher than now utilized; (ii) does not address contaminated soil that was subsequently imported onto the Project site; and (iii) does not even address several contaminants that have been recently identified onsite at levels well above current screening levels.

In summary, the information submitted by the Alliance constitutes substantial evidence of a fair argument that the Project will have a significant adverse effect on recreational facilities. In the alternative, per CEQA section 21166 and CEQA Guidelines section 15162, the facts described above constitute a change in circumstances since the 1998 SEIR involving, and significant new information showing, a new significant effect not previously analyzed in the 1998 SEIR. Under either standard, the City must prepare and circulate for public comment an environmental impact report to review the Project’s impacts on recreational facilities.

## **6. Geology and Soils**

According to the FSEIR, all the concerns raised by the public can be addressed in the future by application of regulatory requirements. Furthermore, the FSEIR explains that design detail can be developed after certification of an EIR. Taking the theory advanced in the FSEIR to its logical conclusion, it would appear unnecessary to analyze impacts related to Geology and Soils at all.<sup>1</sup> This begs the question of what the purpose of an EIR, which is to:

Identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided.

(Pub. Resources Code, § 21002.1, subd. (a).) The implementing CEQA Guidelines then describe how an EIR should consider and discuss significant impacts of a project. (CEQA Guidelines, § 15162.) To assist in that process, the Office of Planning and

---

<sup>1</sup> Indeed, there have been efforts to alter CEQA so that there would be no need to analyze an impact at all if there was an applicable regulatory standard. This “standards-based” approach to CEQA “reform” was abandoned after one of its main champions, former Senator Michael Rubio, resigned from the Legislature to take a government-affairs job with Chevron in early 2013.

Research has also provided a sample checklist in CEQA Guidelines Appendix G for Geology and Soils, among other impacts.

The 1998 SEIR did include a detailed analysis of then-existing conditions and then-existing standards as they applied to the land uses contemplated in the Mission Bay Plan area. As explained elsewhere, the 1998 SEIR did not analyze any development such as the Arena and Entertainment Center. Comments on the current DSEIR explain that the currently proposed use is completely different than the previously contemplated uses for the site. Additionally, standards regarding seismic safety and construction methodology have changed since 1998. Last, the actual conditions on the site have changed, as large quantities of contaminated soil were removed from the site, and 80,000 cubic yards of other (apparently also contaminated) materials were backfilled into the site from elsewhere in Mission Bay.

According to the City's interpretation of CEQA, all of these details can be addressed after certification of the EIR. This approach, however, skips over the analysis and mitigation process that is essential to the EIR process. In this case, that process occurred in 1990 and 1998, and as essentially accepted in the FSEIR, the applicable standards are very different now as compared to at that time. Relying on this outdated analysis, as updated by numerous documents prepared outside of the public review process and outside the current SFEIR fails to meet the informational purposes of CEQA. While tiering is permissible in certain circumstances, its use in these circumstances defeats the public information purposes of CEQA.

Though it did not specifically address the same tiering issues as are present here, the California Supreme Court's opinion in *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal. 4th 412, 443 is instructive:

The audience to whom an EIR must communicate is not the reviewing court but the public and the government officials deciding on the project. That a party's briefs to the court may explain or supplement matters that are obscure or incomplete in the EIR, for example, is irrelevant, because the public and decision makers did not have the briefs available at the time the project was reviewed and approved. The question is therefore not whether the project's significant environmental effects can be clearly explained, but whether they were.

Here, the analyses in the 1990 and 1998 are no longer pertinent. The City admits that none of the mitigation measures developed during that time even apply now. Subsequent brief descriptions in the IS/NOP also fail to characterize the full nature and extent of the seismic and other hazards that will result from construction of the Project. Now, the FSEIR includes yet additional analysis and information regarding how impacts related to Geology and Soils will be addressed later through regulatory processes alone. This review process does not clearly explain the effects of the Project to the public.<sup>2</sup>

In addition to this overarching flaw in the City's approach to analyzing impacts related to Geology and Soils, BSK Associates has also prepared a technical memorandum responding to several of the responses provided in the FSEIR concerning Geology and Soils and related Hydrological impacts from tsunami and sea level rise risks. (BSK Geology Report attached as Exhibit 2.) This additional information further demonstrates the need to prepare a stand-alone, publicly comprehensible analysis of these environmental impacts prior to making any decision about the Project.

In summary, the information submitted by the Alliance constitutes substantial evidence of a fair argument that the Project will have a significant adverse Geology and Soils impacts. In the alternative, per CEQA section 21166 and CEQA Guidelines section 15162, the facts described above constitute a change in circumstances since the 1998 SEIR involving, and significant new information showing, a new significant effect not previously analyzed in the 1998 SEIR. Under either standard, the City must prepare and circulate for public comment an environmental impact report to review the Project's impacts concerning geology and soils.

## **7. Hazards and Hazardous Materials**

New information and/or changes in circumstances have occurred in the area of hazards and hazardous materials that require recirculation. Although the NOP/IS determined that no additional analysis was required of these issues in the DSEIR, changed circumstances and/or new information following the 1998 SEIR requires recirculation of the DEIR that includes adequate analysis and disclosure of the Project's potentially significant impacts with respect to hazards and hazardous materials.

---

<sup>2</sup> This same deficiency applies to all of the resource areas for which there was no new analysis in the DSEIR.

First, the DSEIR did not previously acknowledge the presence of asbestos on-site. Following release of the DSEIR, the Bay Area Air Quality Management District staff sampled the existing stockpiles on-site, which identified the presence of asbestos above regulatory limits. In response to this newfound asbestos in onsite soils, the applicant was required to prepare an asbestos dust monitoring plan in order to mitigate the significant public health risk. The new asbestos dust monitoring plan, dated October 9, 2015, was released to the public very recently. The newly-discovered presence of asbestos in soils onsite, not previously disclosed in the DSEIR, represents a new significant impact of the Project that requires recirculation.

Second, following release of the NOP/IS,<sup>3</sup> the applicant's consult prepared a Phase II report that identified significant additional contamination in soils onsite. The Phase II report shows that significant amounts of both previously existing and subsequently-imported hazardous waste remain on the site today. Backfill used in this area contained Class 1 and 2 hazardous materials that were not present before the excavation and partial removal of petroleum contaminated materials. These materials are not addressed in the 1998 RMP or 2006 Revised RMP. The FSEIR now acknowledges the existence of this contaminated backfill (FSEIR, 13.22-20), which was withheld from public disclosure in the NOP/IS and RDEIR.

The presence of newly-revealed contamination, viewed in isolation, represents new information and/or a changed circumstance requiring analysis and disclosure in a recirculated DSEIR. What is more, however, the Alliance retained an independent toxicologist to compare the results of the Phase II to the health screening levels in the 1998 RMP (and included in the 2006 RRMP) and current standards. The report prepared by Damian Applied Toxicology, LLC ("DAT"): (1) provides updated screening levels for the constituents at the site; (2) provides newly applicable screening levels that did not exist at the time of the 1998 EIR; (3) compares the new and old screening levels; and (4) compares the updated screening levels to the most recent site investigation data from the Project site. (See DAT Report, submitted to City on October 20, 2015.)

The DAT Report shows that the prior screening levels are completely outdated and do not protect public health. Using updated screening levels that address a wide range of relevant potential receptors and exposure pathways, the DAT Report concludes that 19 chemicals (18 in soil and 1 in groundwater) that were detected in the 2015 Phase II investigation at the site exceed at least one screening level. Thus, present contamination poses potentially significant hazards due to impacts to the shallow water table, risks to

---

<sup>3</sup> Hazards and Hazardous Materials is one of the subjects determined by the City to not warrant any analysis in the DSEIR.

construction workers exposed to site soils, including backfill, risks to commercial workers at the planned development project, and risks from transport and disposal of this hazardous waste, to the extent it may be taken off site. These hazards are not addressed in the RMP/RRMP, and represent new significant impacts that require recirculation of the DSEIR.

The FSEIR mischaracterizes the record in an attempt to dismiss the significance of this newly-discovered contamination that is well above screening levels. First, the FSEIR suggests that it is contamination is not the result of subsequent activities at the Project site, stating, “The fill unit is . . . likely related to debris from the 1906 earthquake and resulting fire.” (FSEIR, 13.22-21.) This statement is misleading because it conceals from the public the fact, recognized in both the applicant’s Phase II report and the prior BSK report, that this material was deposited onto the Project site in approximately 2005 following excavation to remediate petroleum free-product found onsite. (Phase II report, p. 6; BSK Hazardous Materials Report dated July 22, 2015, p. 3.) Thus, available facts indicate that this contaminated soil was the result of activities that took place following the 1998 SEIR, not the 1906 earthquake.

The City also attempts to dismiss the significance of this contamination by asserting, “[T]he Phase II ESA determined that these concentrations are not considered a health concern to construction workers.” (FSEIR, 13.22-21.) First, it is the function of a health risk assessment, and not a Phase II environmental site assessment, to make a determination of human health risk. Indeed, the completely inappropriate and inadequate nature of this conclusion in the Phase II is demonstrated with clarity in the DAT Report, discussed above, establishing that some of these contaminants are found in this fill material at up to ten times current screening levels. The City’s misstatements on these critical human health issues fall well below its duty of good faith.

Finally, it is noted that the FSEIR repeatedly relies on compliance with the existing 1999 RMP under the San Francisco Bay Regional Water Quality Control Board (“RWQCB”) oversight to ensure that impacts are less than significant. (FSEIR, 13.22-8 – 12.) In addition to establishing that the RMP itself is outdated and no longer adequate to protect human health, the attached correspondence establishes that oversight by the RWQCB is no longer adequate to effectively manage the site for the protection of construction workers and the public. (See Exhibit 3, letter to Dept. of Toxic Substances Control dated October 23, 2015.)

In summary, the information submitted by the Alliance constitutes substantial evidence of a fair argument that the Project will have a significant adverse effect regarding hazardous materials. In the alternative, per CEQA section 21166 and CEQA

Guidelines section 15162, the facts described above constitute a change in circumstances since the 1998 SEIR involving, and significant new information showing, a new significant effect not previously analyzed in the 1998 SEIR. Under either standard, the City must prepare and circulate for public comment an environmental impact report to review the Project's impacts on hazardous materials.

## **8. Urban Decay**

The Alliance previously commented that the DSEIR ignored altogether the potentially significant urban decay impacts associated with eliminating NBA events at the existing Oracle Arena. Rather than prepare the required analysis in good faith and recirculate the RDEIR with this new information as required by CEQA, the City instead hired a consultant to prepare a *post hoc* rationalization for why no analysis was required in the first place. (See FSEIR, Appendix UD.) The Alliance has again retained its independent expert, Dr. Philip King, to review the FSEIR's analysis. Dr. King's report is attached hereto as Exhibit 4, and incorporated by reference. As explained by Dr. King, the FSEIR's analysis is riddled with methodological errors and does not actually respond to Dr. King's original analysis explaining why it is a potentially significant impact requiring analysis.

## **9. Flawed and Misleading Approach to Analyzing and Mitigating the Project's Transportation Impacts**

Buried within the "project description" are *de facto* mitigation measures for the Project's impacts on transportation. More specifically, these mitigation measures include both one-time capital improvements and ongoing expenditures as set forth in the Transportation Management Plan ("TMP") and Transit Service Plan ("TSP"). The City's strategy of conflating analysis of the Project's design features and mitigation measures violates CEQA. (See, e.g., *Lotus v. Department of Transportation* (2014) 223 Cal.App.4th 645; see comments by Smith Engineering and Management dated November 2, 2015, pp. 2-3.) The prejudice associated with the City's strategy, other than simply obscuring the City's massive public subsidy for the Project, is that the EIR "fail[s] to consider whether other possible mitigation measures would be more effective." (*Id.* at 657.)

The City also appears to rely on the incorporation of these plans into the project description in order to conceal from the public the City's failure to require full mitigation of the Project's impacts from the applicant. It is a bedrock principle of environmental law that development projects should mitigate their environmental impacts to the extent feasible. With respect to the Project's transportation impacts, however, the City deviates

from this principle and instead adopts an odd, ad hoc “fair share” fee program to mitigate project-level impacts. (*Anderson First Coalition v. City of Anderson* (2005) 130 Cal.App.4th 1173 (“*Anderson First*”).) As a threshold matter, the SEIR never clearly discloses to the public that it essentially relies upon “fair share” payments from the Project in order to mitigate its project-level transportation impacts, which renders the SEIR defective as an informational document. Had the SEIR done so, it would have been apparent that the SEIR failed to disclose necessary information about this fair share program.

The payment of a “fair share” impact fees may constitute adequate mitigation if they “are part of a reasonable plan of actual mitigation that the relevant agency commits itself to implementing.” (*Ibid.*) The *Anderson First* decision identified the information that is required in an EIR to establish the adequacy of a “fair share” mitigation measure, which includes the following:

- (i) An identification of the required improvement;
- (ii) An estimate of the cost of the required improvement;
- (iii) Sufficient information to determine how much the project would pay towards the improvement; and
- (iv) The fees must be part of a reasonable, enforceable plan or program sufficiently tied to the actual mitigation of the impacts at issue.

(*Anderson First, supra*, 130 Cal.App.4th at 1188-89.)

The SEIR fails to provide this necessary information. While the SEIR mentions the TMP and TSP as addressing the Project’s transportation impacts, the SEIR fails to identify the total costs of the improvements, the Project’s allocated contribution, and the enforceable plan or program to contribute the Project’s “fair share.”

The SFMTA spreadsheet entitled “Capital and Operating Cost Estimates for the Event Center and Mixed Use Development at Mission Bay Blocks 29-32 (The Project),” dated October 13, 2015, is instructive. (See Exhibit 5.) Considering only one-time “capital uses” and “capital uses allocation to project,” (i.e., excluding ongoing costs to mitigate the Project’s transportation impacts), it reveals that the total cost of these improvements is \$64,663,474, and the Project’s fair share allocation is \$61,898,909. Of the amount “allocated” to the Project, however, only \$27,390,335 will actually be paid by the project applicant. Thus, the Project is contributing less than 50% of its allocated fair share contribution that is necessary to mitigate the Project’s transportation impacts. To make matters worse, only \$19,434,536 is coming from an existing and enforceable

impact fee program. The balance of the project applicant's contribution, approximately \$7,955,799, is the result of the City's voluntary redirection of General Fund revenues.

In other words, rather than simply require the project applicant to be responsible for the capital improvements needed to mitigate its project-level impacts, the City establishes some fair share fee program and then does not even require the applicant to pay the fair share fee – instead voluntarily giving up General Fund revenues that are intended to support other Citywide programs and services. By cloaking this deficient mitigation strategy as a design feature of the Project, the City never engages in a meaningful analysis of potentially feasible mitigation measures involving the project applicant actually mitigating these project-level impacts.

A similar deficiency applies to the Project's ongoing costs to mitigate its project-level transportation impacts. Total ongoing annual costs to mitigate the Project's transportation impacts are estimated at \$8,209,318 in FY18-18. Of this amount, \$2,773,110 in revenue is not paid from an enforceable impact fee program but rather re-directed from the General Fund. What more, significant additional City revenues, which are not even generated by the Project but rather "allocated" to the Project such as off-site parking and hotel tax, will be re-allocated to pay for the Project's ongoing mitigation for project-level transportation impacts. These reallocations of General Fund revenues cannot constitute an enforceable plan that is subject to future discretionary actions by the Board of Supervisors. Even the future adoption of the so-called Mission Bay Transportation Improvement Fund is inadequate to ensure future reallocations of General Fund revenues because the present Board of Supervisors cannot bind by mere ordinance the discretion of future Boards. (*McMahan v. City and County of San Francisco* (2005) 127 Cal.App.4th 1368.)

In short, the City is inexplicably failing to require the applicant to bear responsibility for fully mitigating its own project-level impacts. Rather, the City is setting up a flawed *de facto* fair share fee program to pay for these project-level mitigations, and redirecting revenues generated by the Project and elsewhere to cover the funding gap for these mitigation measures. This deficiency is nowhere disclosed to the public in the SEIR. The City may not rely on the preparation of various "plans" as a smokescreen to conceal from the public the Project's failure to mitigate its own project-level impacts and massive public subsidy needed to make up for that deficiency. The SEIR is misleading, and fails as an informational document with respect to mitigation for transportation impacts.

The City's action to mitigate the Project's transportation impacts is also an undisclosed public subsidy that triggers substantive and procedural mandates by the City



Tiffany Bohee  
Brett Bollinger  
November 2, 2015  
Page 17 of 17

before committing to such subsidy. (See Exhibit 6, report by Marin Economic Consulting dated November 2, 2015.) More specifically, these subsidies include committing to direct General Fund revenues to pay for light rail cars, construction of transportation improvements, public safety and traffic officers, etc., and “allocating” parking/hotel tax revenues from other properties to pay these expenses. California law requires the City to notice and hold a public hearing before committing to such subsidies. The City is also required to provide detailed information about the purpose, nature, extent and effect of such subsidies prior to commitment. The City has failed to comply with these substantive and procedural mandates prior to approving this public subsidy.

\* \* \*

Please feel free to contact my office with any questions.

Very truly yours,

**SOLURI MESERVE**  
A Law Corporation

By:   
Patrick M. Soluri

cc: Chris Kern (chris.kern@sfgov.org)  
Brett Bollinger (Brett.Bollinger@sfgov.org)

Attachments:

- Exhibit 1: Memorandum from SCS Engineers dated November 2, 2015
- Exhibit 2: Geology Report from BSK Associates dated November 2, 2015
- Exhibit 3: Letter from Soluri Meserve to DTSC dated October 23, 2015
- Exhibit 4: Memorandum from Dr. Philip King dated November 2, 2015
- Exhibit 5: SMFTA spreadsheet entitled, “Capital and Operating Cost Estimates for the Event Center and Mixed Use Development at Mission Bay Blocks 29-32 (The Project),” dated October 13, 2015
- Exhibit 6: Report from Marin Economic Consulting dated November 2, 2015

# **EXHIBIT 1**

## SCS ENGINEERS

November 2, 2015  
File No. 01215159.00

### MEMORANDUM

TO: Osha Meserve, Soluri Meserve

FROM: Patrick S. Sullivan, SCS Engineers  
John Henkelman, SCS Engineers

SUBJECT: Response to Comments on Greenhouse Gas Analysis for Golden State Warriors Event Center

SCS Engineers (SCS) has reviewed the greenhouse gas (GHG) analysis and Responses to Comments prepared for the proposed Golden State Warriors (GSW) Event Center (Project). The GHG analysis was performed and included in the Draft Subsequent Environmental Impact Report (SEIR) to demonstrate that the GHG emissions would not be significant for purposes of the California Environmental Quality Act (CEQA). The analysis also included references to the analysis performed for Assembly Bill 900 (AB900) certification, including that it would result in “no net increase” in GHG emissions. SCS has performed many GHG analyses for purposes of permitting, mandatory reporting, verification, CEQA and other requirements. The resumes of Patrick Sullivan and John Henkelman are provided as an attachment.

The documents reviewed include the following:

- *Application for CEQA Streamlining: GHG Emissions Methodology and Documentation*, Environ 2015
- *Application for Environmental Leadership Development Project, Golden State Warriors, Event Center and Mixed-Use Development at Mission Bay Blocks 29-32*, Golden State Warriors 2015
- *ARB Staff Evaluation for Golden State Warriors Event Center and Mixed-Use Development at Mission Bay Blocks 29-32*, ARB Staff 2015
- *Event Center and Mixed-Use Development at Mission Bay Blocks 29-32 Draft Subsequent EIR*, Office of Community Investment and Infrastructure, October 23, 2015

SCS does not agree with the conclusion that Project GHG emissions have been adequately addressed in the SEIR. The Responses to Comments dismiss criticism of the analysis performed for AB900 and indicate that the SEIR concludes that GHG emissions are not significant based on a qualitative analysis. SCS believes this level of analysis is inconsistent with existing guidance, that it fails to provide an accurate representation of the emissions from the project, and the inclusion of the AB900 analysis is misleading.



## EXISTING GHG GUIDANCE

The SEIR is not consistent with guidance from regulatory agencies such as Bay Area Air Quality Management District (BAAQMD) or organizations such as the California Air Pollution Control Officers Association (CAPCOA).

The BAAQMD is the regulatory body for the San Francisco Air Basin (SFAB), which includes the Project location. The BAAQMD has issued CEQA guidelines in its *California Environmental Quality Act Air Quality Guidelines* (BAAQMD, May 2012) document (BAAQMD Guidance) that include guidance on the assessment of GHG. While the BAAQMD is no longer recommending the thresholds in that document, the BAAQMD has indicated that other elements of that guidance can be utilized by planning agencies. That 2012 BAAQMD Guidance recommends the quantification of GHG emissions from projects for purposes of CEQA and states that “Emissions should be estimated in terms of carbon dioxide equivalent.”

CAPCOA is an organization of air pollution control officers from all local air districts in California. It is not a regulatory agency, but it has provided guidance for agencies throughout the state on air pollution, air toxics, and climate change. CAPCOA issued *CEQA and Climate Change* (CAPCOA, January 2008). That guidance states that:

“...the defensibility of a CEQA analysis rests on the following concerns:

- Whether the public agency has sufficiently analyzed the environmental consequences to enable decision makes to make an intelligent decision;
- Whether the conclusion of the public agency are supported by substantial evidence in the administrative record; and
- Whether the agency has made a good faith effort to disclose significant effects.”

The SEIR fails to meet these criteria because it has not sufficiently analyzed the environmental consequences, provided evidence of the conclusion, or made a good faith effort to disclose significant effects. As SCS noted in a memorandum dated July 20, 2015, the AB900 analysis of the Project is fundamentally flawed and inconsistent with California GHG policies. The SEIR does not sufficiently analyze GHG impacts from the Project other than by referencing the flawed AB900 analysis. Without quantification or more robust analysis of the actual GHG emissions from the Project, the public agency does not have sufficient information to make a decision, and the agency has not made a good faith effort to disclose significant effects.

Both the BAAQMD and CAPCOA have proposed quantitative GHG emission thresholds for purposes of determining significance for purposes of CEQA. While neither threshold is binding, the SEIR should compare the GHG emissions from the Project to the BAAQMD and CAPCOA thresholds to enable the public and policy makers to gauge the significance of GHG emissions.

## GHG QUANTIFICATION

The SEIR has failed to quantify GHG emissions. If the Project is not relying on the AB900 analysis, as Response GHG-2 of the SEIR indicates, then no quantification of GHG emissions from the Project has been performed. Without quantification of the GHG emissions, the public agency cannot adequately determine whether how much GHG will be emitted by the Project relative to proposed significance thresholds, local GHG emissions, or other GHG sources.

As evidenced by the AB900 analysis, the tools to quantify GHG emissions exist. While the accounting methodology in the AB900 analysis is fundamentally flawed, the inventory methodology used in the analysis is generally appropriate for the quantification of GHG emissions from the Project. The BAAQMD Guidance lists several models that can be used by project proponents to quantify GHG emissions, including the Urban Emission Model (URBEMIS) and BAAQMD GHG Model (BGM). Voluntary registries such as The Climate Reserve (TCR) have also developed GHG quantification methodologies.

## MISLEADING USE OF AB900 ANALYSIS

Response GHG-2 of the SEIR indicates that the SEIR is not relying on the AB900 analysis to demonstrate that GHG emissions are not significant, yet the SEIR makes repeated references to the AB900 analysis to support claims that GHG emissions are not significant. The AB900 analysis and the SEIR GHG analysis “have separate and distinct requirements and purposes,” as stated on page 13.14-5. Thus, the AB900 analysis cannot and should not be relied upon by the SEIR as quantification of the GHG emissions from the Project. Nor should it be used to support conclusions for CEQA purposes unless it can be demonstrated that it is consistent with CEQA requirements for a GHG analysis. The SEIR has not provided evidence that the AB900 analysis can or should be used to support conclusions about the significance of GHG emissions from the Project. The AB900 analysis is fundamentally flawed for purposes of CEQA for reasons described in the July 20, 2015 Memorandum provided by SCS.

Impact C-GG-1 states that “As part of the AB900 application, the project sponsor has committed to purchase carbon credits from a qualified GHG emissions broker in an amount to offset all GHG emissions from project construction and operations.” This statement is misleading because it implies that the AB900 analysis is a sufficient analysis of the Project for CEQA purposes and that the Improvement Measure I-C-GG-1 provided consistent with the AB900 analysis is sufficient for CEQA purposes. The AB900 analysis uses inappropriate boundaries to analyze the GHG emissions and cannot be used for CEQA purposes. The SEIR appears to recognize the flaws of the AB900 analysis in suggesting it was not relied upon, but then it does just that – relies upon the AB900 analysis.

## CONCLUSIONS

The Response to Comments in the SEIR indicate that the AB900 analysis is not being relied upon for CEQA purposes to demonstrate that GHG emissions from the Project are less than significant. If the AB900 analysis is not being relied upon, the SEIR has provided no quantification of GHG emissions for CEQA purposes and has misleadingly referred to the AB900 analysis to support the conclusion that GHG emissions are not significant. For reasons stated in the July 20, 2015 memorandum from SCS, the AB900 analysis of GHG emissions from the Project is fundamentally flawed and cannot be relied upon for CEQA purposes of determining significance.

GHG analysis used to support the determination that the Project met the requirements of CEQA or AB900 is insufficient to demonstrate that the GHG emissions from the Project will be net zero or less than significant under CEQA for the following reasons:

- The SEIR fails to provide an appropriate quantification of GHG emissions for CEQA purposes. In the response to comments regarding the use of the AB900 analysis, the SEIR indicates that the AB900 analysis is not being used as the basis for evaluating GHG emissions from the Project.
- The AB900 analysis omits planned office towers from the GHG emission calculation, as specifically noted on SEIR Vol. 4, p.13.4-11. Because it omits these towers, the GHG quantification is inappropriate for use as a CEQA baseline.
- The GHG analysis makes unsupported assumptions about Oracle Arena, trip linkage, and energy use which artificially lower the expected GHG emissions from the Project and do not provide an accurate evaluation of the GHG emissions that can be expected to result from the Project.
- The GHG analysis does not require project monitoring and periodic GHG reporting to assure the accuracy of the projected emissions.
- The GHG offsets proposed as a mitigation measure are not required to be consistent with California GHG reduction goals and policies, could be used for other projects, and may not ever be required for the operational emissions.
- Without the accurate quantification of GHG emissions from the Project, the amount of necessary offsets cannot be determined.

# **EXHIBIT 2**



3140 Gold Camp Drive, Suite 160  
Rancho Cordova, CA 95670  
P 916.853.9293  
F 916.853.9297 [www.bskassociates.com](http://www.bskassociates.com)

Via U.S. Mail and Email (Osha Meserve [osha@semlawyers.com](mailto:osha@semlawyers.com))

November 2, 2015

BSK Project Number E09066015

Soluri Meserve  
1822 21st Street, Suite 202  
Sacramento, CA 95811

Subject: Review  
Responses to Comments (October 23, 2015)  
Event Center and Mixed-Use Development at Mission Bay Blocks 29-32  
Mission Bay Project  
San Francisco, California

Dear Ms. Meserve:

At the request of Soluri Meserve, BSK Associates (BSK) reviewed the following documents:

**Responses to Comments, Event Center and Mixed-Use Development at Mission Bay Blocks 29-32, Volume 5, Section 13.20, Geology and Soils, dated October 23, 2015 and Volume 5. Section 13.21.9, Tsunami Risks**

Our review was limited to Geology, Engineering Geology and Seismic related aspects of the subject documents. The following items #1 to #7 presents our comments based on a review of the Responses to Comments pages 13.20-1 to 13.20-26; and items #8 to #10 present our comments based on our review of pages 13.21.35 to 13.21.42.

1. Response GEO-1, page 13.20-10 states "The 2014 Langan Treadwell Rollo (LTR) Geotechnical Evaluation provides recommendations regarding foundation and building design in order to comply with applicable codes. These recommendations will be incorporated into the design of the event center and other buildings, including the sub-surface facilities and the designs will be submitted to the DBI for its approval." On page 11 of the 2014 LTR report included the following "The conclusions and recommendations presented herein are preliminary and should not be relied upon for design." Therefore, the 2014 LTR cannot be used for design. Design features which may be required for Geotechnical Engineering purposes, that have not been confirmed may be highly variable and may result in significant environmental impacts. For illustration a design that calls for a deep foundation on drilled piers/piles has dramatically different impacts than a design that uses soil densification or in-situ treatments.
2. Response GEO-1, page 13.20-12 states "Seismic design provisions of current building codes generally prescribe minimum lateral forces, applied statically to the structure, combined with the gravity forces of dead and live loads. Therefore, structures designed in accordance with the



San Francisco Building Code are designed to: (1) resist minor earthquakes without damage, (2) resist moderate earthquakes without structural damage but with some nonstructural damage, and (3) resist major earthquakes without collapse but with some structural as well as nonstructural damage.” This statement is not correct and does not apply to sites, such as Mission Bay Blocks 29-32, that are located on soft soils or liquefiable soils. Seismic response of structures located on soft or liquefiable soils is non-linear and requires a site specific seismic response analysis (See ASCE 7-10, Section 20.3.1).

3. Numerous responses throughout Section 13.20, presented local and state building code requirements as mitigation measures for various geologic hazards that are present at the site. This approach of utilizing design level mitigation that will be prepared at a later date, may be a valid method for a simple project located on stiff soils where changes in design have minor impact. The proposed structure is highly complex, with problematic subsurface conditions that will require significant ground modifications that could themselves have potentially significant impacts on the surrounding area. Based on the size and complexity of the structure, the impacts and cumulative impacts need to be determined during the CEQA process such that the impacts of the building methods can be fully evaluated. See #1 for a construction related example that may have variable environmental impacts.
4. GEO-2 page 13.20-18, states “Further, as discussed in more detail in Section 13.22, Hazards and Hazardous Materials, Response HAZ-3, San Francisco emergency response procedures and evacuation routes are addressed in Impact HZ-3 of the Initial Study (pp. 119 through 121). As summarized in that impact analysis, the City has a published Emergency Response Plan dated 2010 and prepared by the Department of Emergency Management subsequent to publication of the 1998 Mission Bay FSEIR as part of the City’s Emergency Management Program.” Our review of the reference provided, did not disclose any method or actions that the City or County could take or has taken to prevent geohazard impacts, such as liquefaction induced sand boils that may develop along the surface streets surrounding the project. Sand boils that may occur during an earthquake could result in significant settlements that would render the roads unusable for evacuation or emergency response. This issue has not been evaluated and considering that 18,000 people may be trying to evacuate from the area into unusable roads, this is a significant impact that has not been addressed. State and local building codes do not have provisions for evaluating and mitigating liquefaction hazards to may occur under roadways, therefore utilizing building codes during the design phase to address this issue would not be effective.
5. GEO-2 page 13.20-18, states “The required extent of removal and replacement with engineered fill would be determined on the basis of the site-specific geotechnical investigation discussed on p. 87 of the Initial Study and would be conducted in accordance with the Site Permit process described in Response GEO-1.” See our response #3 above.
6. GEO-3 pages 13.20-20 to 13.20-21, See our response #3 above.
7. GEO-4 pages 13.20-21 to 13.20-23, See our response #3 above.

8. HYD-8 page 13.21-40, states "The Initial Study did not specifically identify the expected tsunami inundation elevation at the project site. However, subsequent to publication of the SEIR, a more detailed analysis of tsunami risks at the project site has been conducted to determine the maximum inundation elevation associated with a tsunami run-up of 5.9 feet (based on analysis of existing Bay Area tsunami studies). This detailed site-specific analysis indicates that the maximum inundation elevation for the tsunami hazard area in the project vicinity would be -0.3 feet SFD (11.2 feet NAVD88)". Our review of the referenced site-specific analysis<sup>1</sup> indicates that a site specific Tsunami Hazard Analysis was not performed for the project site. The run-up values presented in the ESA summary of Existing Tsunami Hazard Mapping data was based on a 2006 report that was performed for Marine Oil Terminals in San Francisco Bay. The 2006 report is appropriate for a regional analysis, but it is not a site-specific analysis for the project site. The Maximum Tsunami Inundation elevation of 11.2 feet presented in the August 18, 2015 ESA memorandum appears to over-reaching the intent and the accuracy of data obtained from an analysis performed for another site.
9. HYD-8 page 13.21-41 states "Regarding the consideration of sea level rise and extreme tides in estimates of tsunami risks, the detailed analysis described above determined the maximum inundation elevation by adding the maximum tsunami wave height of 5.9 feet to the mean high water (MHW) tidal datum of 5.29 feet NAVD88. The MHW is calculated as the average of all high water heights observed over the National Tidal Datum Epoch. This is consistent with the state mapping. To calculate tsunami inundation elevations associated with extreme high tides and sea level rise as suggested by the comments would be speculative". California Governor's Executive Order S-13-08, which was issued on November 14, 2008 set policy with respect to sea level rise such that sea level rise should be incorporated into inundation analysis for planning, and accounting for sea level rise is not only not speculative, but was used for the project's own 100-year storm analysis that incorporated sea level rise through 2100 (Impact HY-7 of the SEIR, pp. 5.9-41 through 5.9-44)
10. HYD-8 page 13.21-41 "The comment also suggests a different methodology should have been used to analyze tsunami risk. The commenter's disagreement over the methodology used in the SEIR is noted. Under the "substantial evidence" standard, such disagreement does not mean the methodology used in the SEIR is inadequate or that addition analysis is required." There does not appear to be disagreement that the use of the out-dated Tsunami Hazard analysis in the 1998 EIR is not appropriate for the current project. This is clearly evident with Lead Agency's submittal of the August 18, 2015 memorandum as a new "detailed site-specific analysis".


Our review was limited to the Geology, Engineering Geology and Seismic related aspects as they relate to the development as described in the reports made available for review.

---

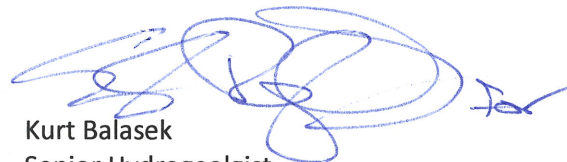
<sup>1</sup> Environmental Science Associates. Summary of Existing Tsunami Hazard Mapping in the Vicinity of the Proposed Golden State Warriors Mission Bay Project and Refined Limits of Maximum Anticipated Hazard. August 18, 2015

We appreciate the opportunity to be of service to Soluri Meserve and trust that this correspondence provides you with the information necessary at this time. Please contact us with questions regarding the review comments presented this letter.

Respectfully submitted,  
BSK Associates



Martin B. Cline, CEG  
Senior Engineering Geologist



Kurt Balasek  
Senior Hydrogeologist

# **EXHIBIT 3**



October 23, 2015

**SENT BY U.S. MAIL & EMAIL (Karen.Toth@dtsc.ca.gov)**

Karen Toth  
Department of Toxic Substances Control  
700 Heinz Avenue, Suite 200  
Berkeley, 94710-2721

**RE: Mission Bay Development Contamination – Request for Immediate Oversight**

Dear Ms. Toth:

This letter is submitted on behalf of the Mission Bay Alliance<sup>1</sup> (“MBA”) regarding potential ongoing threat of exposure to Class I and Class II hazardous materials at the proposed Golden State Warriors Arena and Entertainment Center (“project”) located in Mission Bay, San Francisco.<sup>2</sup> The Final Environmental Impact Report was released today<sup>3</sup> and the project is currently scheduled for approval on November 3, 2015 by the Office of Community Investment and Infrastructure; ground disturbing activities could occur soon after that. As explained below, the San Francisco Regional Water Quality Control Board (“Board”) has failed to adequately manage the risks posed by the site. Thus, MBA respectfully requests that Department of Toxic Substances Control (“DTSC”) immediately take over the hazardous materials management at this site to protect human health and the environment.

**Jurisdictional Discussion**

In 1997, the California EPA Site Designation Committee designated the Board as the administering agency for the site.<sup>4</sup> This site appears to be covered under the Board’s

---

<sup>1</sup> The Mission Bay Alliance is an organization dedicated to preserving the environment in the Mission Bay area of San Francisco with respect to the project known as the Event Center and Mixed Use Development at Mission Bay Blocks 29-32 (a.k.a. Warriors Arena and Entertainment Center).

<sup>2</sup> The subject area bounded by 16th Street, 3rd Street, Illinois Street and Terry A. Francois Boulevard, which are blocks 29-32 located in San Francisco, California; approximate Latitude/Longitude: 37.76797 N-122.38753 E.

<sup>3</sup> See <http://www.sf-planning.org/index.aspx?page=1828>.

<sup>4</sup> Cal EPA Site Designation Committee Resolution No. 97-10, June 26, 1997.

open case number 38S0044, Mission Bay Development Area for threats of Diesel, Gasoline, Heating Oil/Fuel Oil and Lead, which appears to overlap with and include a portion of open case number 38S004, Pier 64 Metals/Heavy Metals, Petroleum/Fuels/Oils, Polycyclic Aromatic Hydrocarbons (PAHs). Order number R2-2005-0028 was later rescinded for separate phase petroleum hydrocarbon products. Those cases and Orders have been used to attempt by the project proponent to describe a site as fully suitable for immediate development and construction without any further environmental analysis.

### Site Description

This site is currently a complex of pits, bare ground, parking lots, wetland features, and poorly covered soil stockpiles. Some of the stockpile covers have visible damage, with plants poking through them and large tears, exposing friable piles of materials, which appear to have been previously identified as contaminated by a variety of toxic and hazardous chemicals.

This site was previously used for “bulk fuel storage and distribution; railroad operations; a machine shop; boilerhouse; steel mill; well casing manufacturer; warehousing, shipping and receiving operations for a variety of products; fruit cannery, junk yards vehicle parking and maintenance facilities and a ready-mix concrete facility.” (Notice of Preparation/Initial Study “NOP/IS,” p. 115.)<sup>5</sup> Even the 1998 Supplemental Environmental Impact Report (“1998 SEIR”) acknowledged that the Project site could contain other contaminants and that insufficient surveys at that time had been performed to characterize the contamination and resulting risk. (1998 SEIR, pp. V.J.1 – 110.)<sup>6</sup> With respect to metals, for example, the 1998 SEIR stated, “All 17 metals that were included in the list of analytes tested . . . were detected in varying concentrations in soil throughout Mission Bay South.” (1998 SEIR, p. V.J.36.) The same was true for asbestos and creosote as well. (1998 SEIR, pp. V.J.15 – 16.)

Some limited new information has been developed by the site developer, including the Phase II Environmental Site Assessment prepared by Langan Treadwell Rollo, dated June 2015 (“2015 Phase II Report”), that identifies additional contamination following the 1998 SEIR. (Exhibit A, BSK HazMat Report, comments A3, A4, B3, B4.) The 2015

---

<sup>5</sup> Available at: [http://gsweventcenter.com/Pre-Draft\\_SEIR\\_CEQA/2014\\_1119\\_NOP.pdf](http://gsweventcenter.com/Pre-Draft_SEIR_CEQA/2014_1119_NOP.pdf)

<sup>6</sup> Available at: [http://gsweventcenter.com/MissionBay\\_1998/1998\\_0917\\_MISSIONBAY\\_%20SEIR\\_VOL\\_IIA.pdf](http://gsweventcenter.com/MissionBay_1998/1998_0917_MISSIONBAY_%20SEIR_VOL_IIA.pdf)

Phase II Report analysis itself is suspect, given the inconsistency and variation in sampling intervals, incomplete and episodic list of analytes, and even more importantly, frequency of analyte application. Regardless, it demonstrates significant hazardous chemical impacts to site soils, which require the DTSC's review.

Based in part upon review of the 2015 Phase II Report, the BSK HazMat Report explains that additional hazardous waste materials were actually imported onto the Project site during petroleum hydrocarbon remediation activities in 2005. Specifically, contaminated construction debris and other hazardous waste were used as backfill in 2005 in apparent violation of the Mission Bay remedial management plan ("RMP" or the revised-remedial management plan "RRMP"). (BSK HazMat Report, comments A3, B5.) While the prior Mission Bay RMP/RRMP (as modified) may have allowed the movement and reuse of certain levels of contaminated soils, "DTSC's determination does not apply to building debris or waste soils or other waste materials for any necessary remediation activities." (BSK HazMat Report, comments A3.) In other words, while the occurrence of petroleum hydrocarbon contamination may have been reduced as a result of subsequent remediation activities, the occurrence and associated risk posed by other forms of contamination actually *increased* following the 1998 SEIR. While the 1998 SEIR could not have addressed this new contamination because it occurred in 2005, this does not excuse the omission of this critical information from the NOP/IS and DSEIR.

The Bay Area Air Quality Management District ("BAAQMD") recently collected a sample from one of the poorly managed stockpiles at the site and identified that it contained asbestos above the regulatory limits. This single site inspection by an independent regulator identified a new hazard that had never been identified or disclosed by the Board. Some of these materials appear to be present in the storm drains and on the street itself. The Best Management Practices ("BMPs") to reduce or eliminate these releases are in poor and unmaintained condition for months despite a formal request by our firm to the Board to meet the legal requirements.

#### Board's Failure to Provide Oversight

While reviewing publicly available documents about the site, we found that there have been citizen complaints, as well as complaints from the City of San Francisco and the Port, which eventually the Board issued a Notice to Comply in 2002. It appears that the last site visit by the Board staff was on July 16, 2013 for Site Visit/Inspection/Sampling, but that information is not on GeoTracker or in the files received through a Public Records Act request. Further, the Board issued on March 18, 2015, a courtesy notice to Catellus for failure to submit timely information to GeoTracker by April 20, 2015. These documents have not been posted. We are also aware of

additional soil and groundwater sampling by various consultants at the site since 2015, which are not posted on the Geotracker website. (See Exhibit A, BSK Technical Memorandum.) In addition, review of the Storm Water Multiple Application and Report Tracking System (“SMARTS”) website, shows what appears to be a pattern of the Board’s acceptance of incomplete and/or incorrect material for the site’s Stormwater Management, and a failure to require annual reports.

Reviewing the minimal pattern of documentation (6 memos, including the citizen complaint) and site inspections (only 1) since 2005, it appears that there has been no site management by the Board for the *entire* Mission Bay Redevelopment Area. Even if the site’s activities were consistent with the RMP/RMMP, that does not excuse the need for continued site control under the Clean Air Act and Clean Water Act, and the need to protect human health and the environment.

The overall development area has had multiple releases to the environment from historic activities, and it is entirely unclear how and whether risks would be managed during project construction. Though the Board has authority over the clean-up activities, it has consistently failed to exercise its due diligence in the protection of human health and the environment from both the original hazardous materials, as well as the remobilized material from its remedial operations. Indeed, it appears that the complex comingling of hazardous materials at the site has resulted from poor site investigation and characterization, within-site hazardous material tracking, backfilling, and site control. In addition, there is little to no control of its waste and site control process ranging from site inspections, reviews, and documentation. Either the Board never completed any of those activities, or it failed to document them. As such, the Board has proven that it is incapable as acting as an effective site lead. As the Board has failed to carry out its duties, action by DTSC is now necessary to protect public health and the environment.

#### Risks from Currently Proposed Project

The NOP/IS prepared for the currently proposed project<sup>7</sup> asserts that there is no remaining soil and groundwater contamination issue because, following the 1998 SEIR, remediation occurred in compliance with the Board Order R2-2005-028, which was ultimately rescinded in 2014. (NOP/IS, pp. 117-118.) What the NOP/IS fails to mention, however, is that Order R2-2005-028 and the subsequent remediation effort *solely*

---

<sup>7</sup> Though Hazards and Hazardous Materials are discussed briefly in the NOP/IS, the DSEIR prepared for the project does not address Hazards and Hazardous materials impacts and instead relies entirely on the analysis provided in the 1998 SEIR.



addressed petroleum contamination, and no other contaminants onsite.<sup>8</sup> Nor did it address the use of backfill contaminated with other constituents. The site has not been cleaned up for heavy metals, PAH or PCBs.

The limited nature of the prior remediation effort is further demonstrated in the subsequently-prepared RRMP dated August 2006 ("2006 RRMP"). As the BSK HazMat Report explained:

[T]here was no discussion of the semivolatile organic chemicals that were detected in soil and groundwater at the site. Summary tables presented in Appendix A of the RMP indicate that polycyclic aromatic hydrocarbons (PAHs) were detected in the soil at various locations and in groundwater collected from MW-11. A possible source and significance of the PAHs was not presented in the RMP.

(BSK HazMat Report, comment B2.)

The 2015 Phase II Report shows that significant amounts of both previously-existing and subsequently-imported hazardous waste remain on the site today. Backfill used in this area contained Class 1 and 2 hazardous materials that were not present before the excavation and partial removal of petroleum contaminated materials. These materials are not addressed in the RMP/RMMP. The Board allowed this material to be placed in direct contact with the groundwater and it was only identified after MBA independently researched this question with its own consultants. (Exhibit A, BSK HazMat Report, comments A3, B5.) Substantial further investigation is necessary to assess the extent and nature of the groundwater contamination created by the backfill materials. The Board still has not addressed this issue.

The presence of this existing hazardous waste raises many unaddressed issues. First, it appears that this hazardous waste will need to be excavated and removed in order to construct the proposed project: "Significant volumes of soil

---

<sup>8</sup> This RWQCB's subsequent Order R2-2014-0022 was limited in scope, and explained that the prior order only "address[ed] the existence of separate phase petroleum hydrocarbons products." Further, Order R2-2014-0022 also clearly focused on petroleum contamination explained that rescission of that prior order was appropriate because, "Post-remediation groundwater monitoring has shown that the residual petroleum products have very limited impact on the groundwater beneath the site." (Order R2-2014-0022.)

classified as hazardous waste will need to be transported offsite and disposed at an appropriate facility causing significant additional impacts during the construction phase.” (Exhibit A, BSK Hazmat Report, comment C1.) The maximum depth of excavation on-site would be approximately 30 feet below San Francisco City Datum; this would require approximately 350,000 cubic yards of soils onsite to be excavated and removed from the site. (2015 NOP/IS, p. 17.) It is not clear how the NOP/IS estimate was derived, or how it relates to the actual excavation needed for purposes of removing contaminated soils.

The large quantity of soil that is known to be contaminated with Class 1 and 2 hazardous waste has not been managed safely to this point, and is likely to be shuffled around the site and the surrounding area. Specifically, the soil may be used as backfill, and for berms both onsite and at the City’s Bayfront Park (3.2 acres of open space). The Board has not identified how the material is tracked and segregated at the site, or why contaminated backfill was placed at the site during the petroleum cleanup activities.

Additionally, the health risk screening levels in the 1998 RMP (and included in the 2006 RRMP) are also extremely outdated and do not adequately protect the public. MBA retained an independent toxicologist to investigate the applicability and effectiveness of the screening levels in the RMP/RMMP that were relied upon for the proposed development project. The attached report prepared by Damian Applied Toxicology, LLC (“Damian”): (1) provides updated screening levels for the constituents at the site; (2) provides newly applicable screening levels that did not exist at the time of the 1998 EIR; (3) compares the new and old screening levels; and (4) compares the updated screening levels to the most recent site investigation data from the Project site. (See Exhibit B, Damian Report.) The Damian Report shows that the prior screening levels are completely outdated and do not protect public health. Using updated screening levels that address a wide range of relevant potential receptors and exposure pathways, the Damian Report concludes that 19 chemicals (18 in soil and 1 in groundwater) that were detected in the 2015 Phase II investigation at the site exceed at least one screening level.

Thus, present contamination poses potentially significant hazards due to impacts to the shallow water table, risks to construction workers exposed to site soils, including backfill, risks to commercial workers at the planned development project, and risks from transport and disposal of this hazardous waste, to the extent it may be taken off site. These hazards are not addressed in the RMP/RRMP.

Karen Toth  
Department of Toxic Substances Control  
October 23, 2015  
Page 7 of 7

Request for Immediate Action

Because of the threat posed by ongoing releases of known Class 1 and 2 hazardous materials, and the immediate plans to conduct major earth moving activities at the site prior to having appropriate regulatory controls in place, MBA requests that DTSC re-engage as direct overseer of hazardous materials at the site. Such oversight could include independent sampling of the stockpile materials, requiring replacement and maintenance of the BMPs, and updating of the site BMP and waste management policies under the RMP/RRMP. We further request that DTSC use the attached Damian Applied Toxicology, LLC updated screening levels analysis as a part of its examination to ensure that human health and the environment are protected.

Please contact me with any questions regarding the information contained in this letter. I would also respectfully request a response within one week to this time-sensitive request for oversight.

Very truly yours,

**SOLURI MESERVE**  
A Law Corporation

By:   
Osha R. Meserve

ORM/mre

Attachments: Exhibit A, BSK HazMat Report  
Exhibit B, Damian Applied Toxicology, LLC Report

# **EXHIBIT A**



3140 Gold Camp Drive, Suite 160  
Rancho Cordova, CA 95670  
P 916.853.9293  
F 916.853.9297 [www.bskassociates.com](http://www.bskassociates.com)

Via U.S. Mail and Email (Osha Meserve [osha@semlawyers.com](mailto:osha@semlawyers.com))

July 22, 2015

BSK Project Number E0906601S

Soluri Meserve  
1010 F Street, Suite 100  
Sacramento, CA 95814

Subject: Draft Review  
Hazardous Materials  
Mission Bay Project  
San Francisco, California

Dear Ms. Meserve:

At the request of Soluri Meserve, BSK Associates (BSK) reviewed the following documents:

**A. Mission Bay Subsequent Environmental Impact Report, Dated September 17, 1998, Sections:**

- Chapter V.J.1 to V.J.109, Environmental Setting and Impacts, Contaminated Soils and Groundwater

**B. Risk Management Plan (RMP), Mission Bay Area San Francisco, California, Dated May 11, 1999, Prepared by Environ Corporation and Revised Risk Management Plan, August 2006 Prepared by BBL Environmental Services, Inc.**

**C. Notice of Preparation of an Environmental Impact Report, Event Center and Mixed-Use Development at Mission Bay Blocks 29-32, Dated November 19, 2014**

- Pages 106 to 122

**D. Draft Subsequent Environmental Impact Report, Blocks 29-32, June 5, 2015**

- Pages 1-60 to 1-62, Summary of Impacts and Mitigation Measures, Hazards and Hazardous Materials
- Page 5-1
- Page 6-5

The following section (A1 to A4) presents our comments based on a review of the Mission Bay Subsequent Environmental Impact Report, Dated September 17, 1998

A1. Section V.J.42, Under Existing Human Health Risks, states " ENVIRON compared the maximum concentration of chemicals detected in the soil anywhere in the Project Area to the risk-based preliminary remediation goals (PRGs) developed by U.S. EPA Region IX for the protection of industrial land uses (Region IX Industrial PRGs)." EPA PRGs are currently not considered appropriate for use in the San Francisco Bay Area as site screening levels. PRGs have been replaced by Environmental Screening Levels (ESLs) developed by the San Francisco Bay Regional Water Quality Control Board in 2013 (SFBRWQCB, 2013). The ESL user guide (SFBRWQCB, 2013) identified significant differences between EPA PRGs and SFBRWQCB ESLs, listed below:

"The U.S. EPA Regional Screening Levels or RSLs (formerly PRGs; U.S. EPA, 2013d) address human health concerns associated with direct exposure to chemicals in soil, but do not address ecological concerns. Exposure routes and receptors not addressed by the RSLs, but included in the ESLs are listed below:

- direct-exposure screening levels for construction and trench workers' exposure to subsurface soils;
- groundwater screening levels for vapor intrusion;
- groundwater screening levels for the protection of aquatic habitats/surface water quality
- soil screening levels for urban area ecological concerns;
- soil and groundwater ceiling levels to address potential presence of Non-Aqueous Phase Liquids (NAPL) and nuisance odor concerns
- soil and groundwater screening levels for Total Petroleum Hydrocarbons (TPH)."

Using PRGs would lead to significant gaps in determining the risks from impacts with respect to vapor intrusion, of aquatic habitats/surface water quality and urban area ecological concerns.

A2. Section V.J.43 first paragraph states: "The upper numerical limit of a calculated statistical average of the concentration of each COPIC in the exposed soils was compared with Region IX Industrial PRGs to determine if any PRGs were exceeded." The appropriate use of an averaged concentration typically involves a robust statistical analysis based on a statistically sufficient number of samples with respect to the area size and requires normally distributed values. The number of samples utilized in the analysis appears to be insufficient considering the large area of the project.

A3. Section V.J.53 last paragraphs states: As discussed in more detail in "General Soil Movement and Transport During Construction," below, DTSC has determined that soils excavated during construction in the Mission Bay Project Area can be moved around and reused in the Project Area without triggering hazardous waste management requirements, provided the soils are managed in accordance with RMP measures. However, DTSC's determination does not apply to building demolition debris or waste soils or other waste materials from any necessary remediation activities. In the event these wastes contain levels of constituents that would result

in their classification as hazardous waste, the hazardous waste regulations described above would apply to those materials.”

Based on our review of the boring logs recent Phase II Environmental Site Assessment (Langan, 2015), it appears that soil with construction debris was used as fill during the 2005 remediation effort for the Pier 64 clean-up. Our review of the Langan 2015 report boring log soil descriptions indicates that near surface soils at boring locations LB-8, LB-12, LB-26 and LB-29 contain brick fragments. These borings were completed in the area of the Pier 64 clean-up that reportedly removed petroleum impacted soil to a depth of 9 feet and filled in the area (Langan 2015). Furthermore, as stated in B7 below, the area of fill from the Pier 64 clean-up may contain soil impacted with soluble lead that would classify it as a California Hazardous Waste.

The presence of brick, that is probably demolition debris, and soluble lead in the fill material placed during the Pier 64 clean-up effort, indicates that the Risk Management Plan (RMP) or implementation of the RMP, was ineffective and did not comply with the DTSC determination listed above.

- A4. Section V.J.83 under Human Health Risk Assessment states: “The SSTLs were developed using methods consistent with the Risk-Based Corrective Action (RBCA) methodology, as developed by the American Society for Testing and Materials (ASTM) and described in ASTM E-1739, ‘Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites, 1995’.”

Use of the RBCA methodology may be valid for areas impacted with petroleum hydrocarbon related releases. In other non-petroleum release areas, chemicals-of-concern, such as metals and PAHs not related to petroleum hydrocarbons were detected in soil or groundwater. Use of SSTLs developed for petroleum site based RBCA for non-petroleum related constituents may not be a valid approach. Furthermore, 1995 ASTM E 1739-95 standard under Section 1.1 Scope states: “Ecological risk assessment, as discussed in this guide, is a qualitative evaluation of the actual or potential impacts to environmental (nonhuman) receptors.”

#### **Summary of Review 1998 - Mission Bay Subsequent Environmental Impact Report**

The Mission Bay Subsequent Environmental Impact Report (SEIR), dated September 17, 1998 utilized screening level methods (EPA PRGs) that would not be adequate for current site clean-up standards and would not be appropriate for use on non-petroleum related constituents. The number of samples utilized in the analysis appears to be insufficient considering the large area of the project. Risk Management Plan (RMP) or implementation of the RMP, was ineffective and did not comply with the DTSC determination. Furthermore, the methodology used to develop site risk screening values did not properly incorporate ecological receptors. Given these changes and deficiencies, with consideration of current site conditions, a re-evaluation using current methods and standards of the environmental impacts and risks is required.

The following section (B1 to B7) presents our comments based on a review of the Risk Management Plan (RMP), Dated May 11, 1999 and Revised RMP dated August 2006.

- B1. Page 2-1, there was no discussion of the semivolatile organic chemicals that were detected in soil and groundwater at the site. Summary tables presented in Appendix A of the RMP indicate that polycyclic aromatic hydrocarbons (PAHs) were detected in the soil at various locations and in groundwater collected from MW-11. A possible source and significance of the PAHs was not presented in the RMP.
- B2. Page 2-2, the RMP states “No chemicals were detected at concentrations that would pose a threat to human health or the aquatic ecosystem following the completion of the planned development, with the potential exception of the Free Product Area.” Based on our review of the receptors presented in Appendix E, Tables E-1, E-2, E-3 and E-4, it appears that ecologic receptors were not included in the risk assessment.
- B3. Page 3-2, Section 3.2 states: “In addition, mean chemical concentrations in surface soil (estimated by calculating the 95 percent upper confidence limit (UCL) of the arithmetic mean) were below the ITLs developed under assumptions of long-term (i.e., 25 to 30 years) direct contact pathways (i.e., soil ingestion and dermal contact).” The use of mean concentrations typically involves a robust statistical analysis based on a statistically sufficient number of samples with respect to the area size. The number of samples utilized in the analysis appears to be insufficient considering the large area of the project. Furthermore, the depth of soil sampling was limited to samples collected at less than five feet below the ground surface (bgs). Proposed developments may require excavating soil to depths significantly deeper than 5 feet bgs. This may expose receptors to soils that have not been adequately characterized. The recent Phase II Environmental Site Assessment (Langan, 2015) performed additional soil sampling at Blocks 29 to 32 and found “The fill unit was characterized as either a State of California Class I hazardous material based on soluble chromium, lead, and nickel concentrations or a Class II non-hazardous material, likely related to debris from the 1906 earthquake and resulting fire.” Designation of the site soils as California Class I hazardous waste is a significant change from what was presented in the 1998 RMP. Additional impacts that would result from excavating and transportation of a large volume of soil for off-site disposal at a Class I disposal site were not evaluated in the 1998 Subsequent Environmental Impact Report (SEIR).
- B4. Page 4-1, Section 4.1 states: “As described below in Section 4.3.11, additional sampling may be required on individual development parcels in order to comply with the Ordinance Requirements for Analyzing the Soil for Hazardous Wastes in Appendix F. Depending on the results obtained during any additional sampling, supplemental management measures, in addition to the management measures identified below, may be required on a parcel-by-parcel basis.” The RMP specified a deferred sample and analysis protocol to a later date and as stated in section A4 above, deferred analysis may produce dramatically different results. Significant volumes of soil classified as hazardous waste will need to be transported off-site and disposed at an appropriate facility causing significant additional impacts during the construction phase.
- B5. Section 4.3.5.3 indicates that excavated soil may be re-used as fill on-site. There is no contingency for the handling of excavated wooden piles or railroad ties that may be treated with wood preservatives (creosote) that may be classified as a RCRA hazardous waste. Creosote



often contains polycyclic aromatic hydrocarbons (PAHs), some of which are listed RCRA hazardous waste constituents.

- B6. Section 4.3.5.3 allows for re-use of soils that may potentially be hazardous waste as fill inside the RMP. Based on our review of the recent Phase II Environmental Site Assessment (Langan, 2015), it appears that soil with elevated lead levels were used as fill during the 2005 remediation effort for the Pier 64 clean-up. Shallow soil samples collected from Langan Treadwell Rollo borings LB-12, LB-13, LB-26, LB-27, LB-28, LB-29 and LB-30 had results of soluble lead (California Waste Extraction Test) above the California Soluble Threshold Limit Concentration (STLC) that would classify the soil as hazardous waste. These soil samples were collected in the Pier 64 clean-up fill area (See Figure 2 of Langan 2015 report) at depths of less than 9 feet below the ground surface (bgs). The Pier 64 clean-up reportedly removed petroleum impacted soil to a depth of 9 feet and filled in the area (Langan 2015). The re-use of soil that is classified as hazard waste resulted in a significant volume of soil that, if excavated and removed from the RMP area will need to be transported off-site and disposed at an appropriate facility. These are new and additional impacts not previously incorporated into the impact analysis. These additional impacts must be incorporated into additional risks to receptors outside the RMP as well as additional traffic, noise, and air contaminants.
- B7. Page 4-22 states "If the levels are below the relevant health-based Site Specific Target Levels (SSTLs), and the RWQCB concludes that the potential for ecological impacts is insignificant and does not require mitigation, then soil removal activities will not be required and the soil may be temporarily stored elsewhere pending reuse in the RMP Area." Based on our review of the receptors presented in Appendix E, Tables E-1, E-2, E-3 and E-4, it appears that ecologic receptors were not included in the risk assessment.

#### **Summary of Review 1999 - Risk Management Plan**

The Risk Management Plan (RMP), dated May 11, 1999 and Revised RMP dated August 2006 failed to properly identify possible sources and significance of the PAHs and did not have disposal protocols for PAH containing wastes. The site specific target levels developed for the site did not include ecological receptors. The RMP utilized an insufficient number of samples and questionable statistical analysis techniques considering the large area of the project. The RMP did not have developed protocols for addressing off-site disposal of large volumes of soil that is currently classified as California Class I Hazardous Waste.

The following section (C1 to C2) presents our comments based on a review of Notice of Preparation of an Environmental Impact Report/Initial Study (NOP/IS), Dated November 19, 2014.

- C1. Page 106 under Topics: 16. Hazards and Hazardous Material – Would the project: a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? Is listed as "No New or More Severe Significant Effects." As stated in A4 above this is in direct conflict with the findings of the recent Phase II Environmental Site Assessment (Langan 2015). Significant volumes of soil classified as hazardous waste will

need to be transported off-site and disposed at an appropriate facility causing significant additional impacts during the construction phase. The transportation of hazardous waste off-site will increase the potential for items b) and c) on page 106. Excavation and transportation of soil to a Class I hazardous waste disposal site would significantly increase the potential for release of hazardous materials during the loading, excavation and transportation process. The additional trucking will cause additional exposures to exhaust fumes, traffic and noise. The additional impacts related to off-site transportation of hazardous waste will require further evaluation.

- C2. Page 114 introduces Mitigation Measure M-HZ-1b: “Geologic Investigation and Dust Mitigation Plan for Naturally Occurring Asbestos.” M-HZ-1b is a new mitigation measure for an impact that was not addressed in the 1998 SEIR. The new hazards associated with Naturally Occurring Asbestos (NOA) conflicts with the designation of “No New or More Severe Significant Effects” on items 16 a), 16 b) and 16 c) listed on page 106 of the NOP.

#### **Summary of Review 2014 Notice of Preparation of an Environmental Impact Report (NOP)**

The Notice of Preparation (NOP), dated November 19, 2014 failed to identify new or more severe significant effects with respect to the large volume of soil classified as Class I hazardous waste that will require off-site disposal at a Class I Hazardous Waste Disposal Facility. New mitigation measures for naturally occurring asbestos were not properly identified as new or more severe significant effects.

The following section (D1 to C4) presents our comments based on a review of the Draft Subsequent Environmental Impact Report, Blocks 29-32, June 5, 2015.

- D1. Page 1-61 under Hazards and Hazardous Materials, Initial Study Section E16, does not include the findings in the recent Phase II Environmental Site Assessment (Langan, 2015) with respect to significant volumes of soil classified as hazardous waste that will need to be transported off-site and disposed at an appropriate facility causing significant additional impacts during the construction phase. These additional impacts were not previously included in the impact analysis.
- D2. Page 1-61 Impact HZ-2, under Mission Bay FSEIR Mitigation Measure J.2, the RWQCB is listed as the agency responsible for reviewing risk evaluations for a public school or child care facility. The Department of Toxic Substances Control (DTSC) School Property Evaluation and Cleanup Division is the responsible agency for assessing, investigating and cleaning up proposed school sites (DTSC, 2015).
- D3. Page 5.1-1 under 5.1.1 Scope of Analysis, Issues Scoped Out in the Initial Study, states “The Initial Study determined that the following topics were adequately analyzed in the Mission Bay FSEIR such that the proposed project would have no new significant impacts or no substantially more severe significant impacts than those previously found significant on these resources:... Hazards and Hazardous Materials;...” As stated in C1 above significant volumes of soil classified as hazardous waste will need to be transported off-site and disposed at an appropriate facility

## Martin B. Cline, C.E.G. – Project Geologist

---

LiDAR to develop a Digital Elevation Model (DEM) for 21 linear miles of Putah Creek for USACE NWP-27 and for a Regional General Permit.

*Cache Creek Plans, Yolo County, CA* – Provided GIS support. LiDAR vegetation analysis for patch and trajectory modeling, as well as channel migration studies, to technical advisors for approximately 19.5 miles of restoration planning for the Cache Creek Yolo County Resource Management Planning Area.

### Professional Organizations

American Society of Civil Engineers

Association of Environmental and Engineering Geologists

ASFE - Professional Firms Practicing in the Geosciences

URISA-Northern California Urban and Regional Information Systems Association

## Kurt Balasek, PG, CHG, QSD – Senior Hydrogeologist



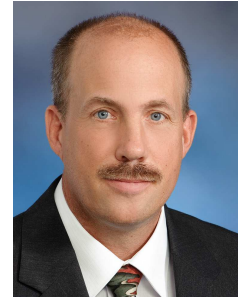
### **Professional Background:**

Mr. Balasek is the Sacramento Senior Hydrogeologist for BSK. He has more than 25 years experience providing geologic, hydrogeologic and environmental consulting to western U.S. businesses and government agencies. His experience includes managing teams of scientists and engineers on projects ranging from large-scale brownfield developments, CEQA compliance and groundwater studies. He has provided project management of water resource evaluations and conjunctive use studies, as well as numerous petroleum hydrocarbon-related groundwater contamination investigations and remedial designs. Mr. Balasek has completed geologic hazard studies for proposed school sites in accordance with the Office of State Architect requirements and has completed detailed geologic surface mapping assignments in the foothills of the Sierra Nevada.

Mr. Balasek has spent his career working to evaluate hundreds of properties for the purposes of development, redevelopment and preservation as conservation easements. Conducting or leading these evaluations has given Mr. Balasek vast experience preparing site investigation strategies with an emphasis toward negotiating with regulatory agencies regarding future land use. Mr. Balasek has worked with redevelopment teams in numerous northern California cities and extensively under EPA community-wide assessment grants in the Cities of West Sacramento, Esparto, and Rancho Cordova. He has worked with local, State, and Federal agencies in evaluating a wide range of environmental contaminated and lighted, assessing community needs, and using tools to develop site cleanup goals. His skills of using land use covenants and maintenance tools provides for blighted property that have led to showcases community revitalization efforts. Mr. Balasek has completed numerous landfill characterization studies and provided detailed analysis to assist in consolidation and clean closure decision making.

### **Representative Project Experience:**

***City of Rancho Cordova, California, Community Redevelopment Agency, Brownfield Assessments***-Mr. Balasek provided senior management oversight on a community-wide assessment of over 460 properties in Rancho Cordova, California. Approximately 30 parcels warranting Phase I and/or Phase II Environmental Site Assessments (ESAs) were identified. To date, a Phase I and II ESA were conducted on two parcels of a planned community college campus.



### Qualifications

#### **Registrations:**

Professional Geologist,  
California, No. 6162

Certified Hydrogeologist,  
California, No. 299

#### **Education:**

MS, Hydrogeology,  
California State University, Chico  
1989

BA, Geology. University of  
California, Santa Barbara, 1985

#### **Experience:**

BSK Associates 2009

1991-2009, Wallace-Kuhl  
Director of Environmental  
Services

1989 – 1991 Terrestrial Tech.  
Senior Staff Hydrogeologist

***Putah Creek Park North Bank Improvement Project, California***–The North Bank Improvement Project stemmed from a federal appropriation of 2 million dollars to enhance the Solano County Transportation Department’s automobile bridge replacement at the City of Winters. The project funds are administered by **CalTrans** so extensive coordination with this agency regarding project description and permitting has been a substantial portion of this project. The project was developed by the City of Winters. Mr. Balasek and his team were initially tasked with obtaining the biological opinion for mitigation as it related to disturbance of Valley Elderberry shrubs. Instead of purchasing mitigation credits from a Service-approved mitigation bank, Mr. Balasek and his staff devised a unique plan to develop a small on-site mitigation area within the Winters Putah Creek Nature Park. If approved, the mitigation area will provide enough mitigation credits to offset the Solano County Bridge project, the north bank improvement project and a proposed pedestrian bridge. Money will be set aside for maintenance of the mitigation area in perpetuity but will enable the project proponents to mitigate habitat damage locally and keep local control of the money. To develop this plan, Mr. Balasek and his team developed the financial model to predict the amount of money required to establish a non-wasting endowment. This model was submitted to USFWS and is undergoing review. U.S. Representative Mike Thompson and his staff are involved in the project and are assisting with negotiations with USFWS.

***Winters Putah Creek Park Revised Master Plan CEQA Support- Winters, California***–Mr. Balasek and his team prepared the Initial Study/Mitigated Negative Declaration (IS/MND) based on the revised master plan for Winters Putah Creek Park. This document was compiled in advance of implementing several projects outlined in the park master plan. The document was reviewed by the Winters City Council and adopted by the Winters planning commission without comment by the trustee agencies and with only one comment from the public. The document framed the foundation for environmental permitting for all of the following restoration-related projects.

***City of West Sacramento, Housing and Community Investment Division, West Sacramento, California***–Mr. Balasek has managed several Environmental Projects for the City of West Sacramento, including: West Capitol Corridor Study, 427 “C” Street, Tower Court, Sacramento Generator, and Vlad’s Toyota.

***City of Winters PG&E Training Center, Winters California***–During critical property negotiations, due diligence studies revealed the historic presence of an underground fuel storage tank. Mr. Balasek was retained by the City on an emergency basis to advise City Council and staff. Mr. Balasek mobilized BSK resources and conducted a comprehensive, soil, groundwater and soil vapor investigation on the site. Mr. Balasek also advised the City throughout the project and represented the City in numerous negotiations with PG&E. As a result of a well planned and executed investigation, a \$70 million state-of-the-art training facility project is moving through the CEQA process and is scheduled to break ground late in 2015. This project is a huge success for the small City of Winters and will act as a catalyst for a downtown hotel project. Mr. Balasek’s work in the field and at the negotiating table were a key part of the success of this project.

***Stockton Worknet Center, Stockton, California***–Provided project management for a contaminated site. The site characterization and remediation was funded by a State of California Brownfield Grant. The source of contamination was determined to have come from a pipeline located under railroad tracks. Removal and backfill of soil from an excavation that was 35 feet wide by 400 feet long was completed prior to construction of the new center.

***River City Baseball – River Cats Stadium, West Sacramento, California***–The site was located adjacent to a chemical mixing plant and as part of the owner’s due diligence an environmental assessment was conducted. Contamination of volatile organics was determined and remediation followed. Based on these findings the foundation design was also adjusted to accommodate shallow groundwater. Based on Mr. Balasek’s recommendation, Gorsorb™, a passive form of soil vapor testing, was used to delineate the contamination. A Risk Assessment report was provided to determine if the level of contamination exposure based on the properties intended use. All this work was completed at an accelerated pace to facilitate construction.

***Colusa County, Three UST Sites, Colusa, California***–Underground storage tanks at the County Sheriff’s Department, Central Services, and County Jail were removed soil and water samples were tested for contamination. As project manager, Mr. Balasek managed the team who provided soil excavation and shallow groundwater monitoring for petroleum hydrocarbons. The three projects took place concurrently resulting in a cost savings to the county.

***Sacramento International Airport Terminal Construction, Sacramento, California***–Mr. Balasek and his team installed monitoring wells and conducted aquifer performance tests in advance of massive dewatering efforts to facilitated construction at the new Sacramento International Airport Terminal project. Data developed from this study was used to quantify discharge volumes and evaluate water quality. The data was subsequently used as the basis for dewatering design related to a large basement structure extending approximately 17 feet below grade for the entire terminal building as well as subterranean tunnel structures. The new Sacramento Terminal opened in the fall of 2011.

***Yolo Ranch Agricultural Landfill Remediation, Yolo County, California***–Provided project management and oversight during landfill excavation and remediation. This project involved careful coordination with regulatory personnel from the Illegal Abandoned Landfill Group at the former California Integrated Waste Management Board to remove and/or encapsulate a wide range of ag-related waste in the Yolo ByPass. The work involved remediation and subsequent site closure of an agricultural landfill adjacent to sensitive natural habitats. This work was done as part of a property transaction and demonstrated creative problem solving that included an on-site solution which saved the client tens of thousands of dollars.

## Kurt M. Balasek, PG, CHG, QSD– Senior Hydrogeologist

**Butte County, California**–Mr. Balasek and his team conducted the base-line hydrogeologic analysis of the site vicinity in support of the gravel mining permit application submitted to Butte County. Mr. Balasek's team also conducted the slope stability evaluations for the propose mine. Both technical documents were used to support an EIR commissioned by Butte County on behalf of the project proponent. In addition, Mr. Balasek's team provided consultation on pit capture and anadromous fish entrapment if high water resulted in overtopping of the pit. The work also involved analyzing resource data to identify the bottom of economically recoverable resource.

**Cold Spring Rancheria, Tollhouse, California**–Mr. Balasek oversaw the preparation of a comprehensive long range water development program for the Cold Springs Rancheria. This program examined available surface and groundwater resources, outlined potential problems with existing infrastructure and water rights and prioritize projects for improvement. Mr. Balasek and his staff also prepared a revised Quality Assurance Assessment Plan (QAAP) for the Rancheria that outlined procedures for all field sampling activities. These plans were funded by the Bureau of Indian Affairs and are required planning documents in advance of project implementation funding.

### **Professional Organizations**

American Society of Civil Engineers  
Association of Environmental and Engineering Geologists  
ASFE - Professional Firms Practicing in the Geosciences  
Water Resource Association of Yolo County  
Winters Education Foundation  
City of Winters, Putah Creek Park Committee  
Solano Resource Conservation District  
Groundwater Resources Association of California

# **EXHIBIT B**



October 20, 2015

Ms. Osha Meserve  
Soluri Meserve  
1010 F Street, Suite 100  
Sacramento, California 95814

Subject: Updated Soil and Groundwater Screening Levels for the Golden State Warriors Arena Construction Project in the Mission Bay South Redevelopment Plan Area, San Francisco

Dear Ms. Meserve:

Your office requested that **Damian Applied Toxicology, LLC (DAT)** develop updated soil and groundwater screening levels for the Golden State Warriors Arena Construction Project and compare those values to both the previous screening levels and site investigation data presented in the *Phase II Environmental Site Assessment* (Phase II) (Langan Treadwell and Rollo [LTR], 2015).

Screening levels are levels of a chemical in environmental media, for example soil or groundwater, which are considered safe for long-term exposure. Screening levels are developed based on the environmental media of interest, the exposed population of interest (e.g. residents or commercial workers), and the relevant exposure pathway (e.g. drinking water for groundwater or dermal contact with soil). Screening levels may be developed to protect human health or ecological receptors (e.g. aquatic and terrestrial wildlife). In most cases, regulatory agencies have already developed screening levels for certain chemicals in soil or water. However, in some cases (e.g. construction workers) no such screening levels have been developed and a risk assessor must develop new screening levels using scientifically-defensible methods and assumptions. Typically, such methods and assumptions are obtained from the United States Environmental Protection Agency (USEPA), the state agency responsible for review of health risk assessments, or a combination of the two.

The previous screening levels were originally presented in the *Risk Management Plan, Mission Bay Area, San Francisco, California* (RMP) (ENVIRON, 1999), and were referenced without revision in the *Revised Risk Management Plan* (BBL, 2006). Risk-based screening levels change fairly rapidly over time due to new developments in the toxicological science underlying such levels, as well as state and federal risk assessment policy changes. In addition, in most cases, screening levels become more stringent over time, not less so. Thus, in the 16 years since the 1999 RMP was prepared many of the originally proposed screening levels have become obsolete and are no longer adequately protective. Finally, the original screening levels did not address construction workers, exposure of indoor workers to volatile chemicals via vapor intrusion, or ecological risks. The purposes of this report therefore, are: 1) to update the 1999 screening levels, 2) provide new screening levels to address ecorisk, construction workers and vapor intrusion, 3) compare the new screening levels to the previous screening levels, and 4) compare the new screening levels to the most recent site investigation data as presented in the Phase II report (LTR, 2015). The following sets of screening levels were therefore developed for all of the chemicals originally listed in the 1999 RMP (as shown in Appendices B and E from that report):

- Soil screening levels for off-site (nearby) residents and on-site commercial workers
- Soil screening levels for on-site construction workers

- Soil screening levels to protect ecological receptors (terrestrial wildlife)
- Groundwater screening levels for drinking water
- Groundwater screening levels to protect indoor workers from vapor intrusion
- Groundwater screening levels to protect aquatic life

Note that since no residential development is planned for the arena project site, screening levels were not developed for on-site residential use.

## **SCREENING LEVEL DEVELOPMENT**

Details regarding the development of the screening levels are provided below.

### **Soil Screening Levels for Off-Site Residents and On-Site Commercial Workers**

Off-site residents located close to the site were identified as a potential receptor population in the 1999 RMP. This receptor would not have direct contact with site soils by either inadvertent ingestion or dermal contact but may be exposed to chemicals released into the air either by resuspension of soil particulates (for non-volatile chemicals such as metals) or by volatilization (volatile chemicals such as benzene). On-site commercial workers, on the other hand, would be directly exposed to site soils by soil ingestion, dermal contact and inhalation.

Updated soil screening levels for these receptors were obtained primarily from the latest version of the United States Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) (USEPA, 2015). However, if a corresponding Department of Toxic Substance Control (DTSC) value was available for a particular chemical that value was used preferentially (DTSC, 2015). For the off-site resident, exposed only via inhalation, the Inhalation Screening Level was used. It is important to note that both children and adults are taken into consideration in the development of the residential screening levels and the most stringent value protective of both the adult and child was used. For the on-site commercial worker, the screening level reflecting all soil exposure pathways was used. For carcinogenic chemicals the lower of the cancer or non-cancer risk-based value was used. The resulting values for non-volatile chemicals are shown in Table 1. Table 1 shows that many of the updated screening levels (particularly for the on-site commercial worker) are well below (more stringent than) the older 1999 screening levels (as indicated in yellow highlight).

It should be noted that the screening level for arsenic (12 mg/kg) is not health risk-based. The value of 12 mg/kg is based on the upper bound of naturally occurring arsenic in California (Bradford et al., 1996). By convention in California, a background-based value for arsenic is normally used as the screening level for arsenic at contaminated sites instead of a health risk-based value (California Environmental Protection Agency [CalEPA], 2005). This is because a strictly health risk-based value would be well below naturally occurring background levels.

The screening level for lead for on-site commercial workers is the California Human Health Screening Level (CHHSL) of 320 mg/kg (Office of Environmental Health Hazard Assessment [OEHHHA], 2009). The same value is also protective of off-site residents as the contribution of inhalation exposure to lead is negligible relative to soil ingestion (DTSC, 2011), and off-site residents would only be exposed via inhalation.

Updated screening levels for volatile chemicals in soil are shown in Table 2. Table 2 shows that virtually all of the updated screening levels for both off-site resident and on-site commercial worker are well below the older 1999 screening levels (as indicated in yellow highlight).

### **Soil Screening Levels for On-Site Construction Workers**

The 1999 RMP did not address construction workers. However, construction workers have higher levels of exposure to soils than either residents or commercial workers. Therefore, screening levels for this receptor population are warranted.

Neither USEPA nor any California regulatory agency has developed risk-based screening levels for construction workers. However, USEPA has established calculation methods for developing such levels (USEPA, 2002 and 2015), and the California DTSC has established default exposure parameters for construction worker risk assessment that can be used in the USEPA equations. The soil construction worker equations presented in USEPA (2015) were used to calculate soil screening levels for the construction worker. Screening levels were calculated assuming worker exposure via soil ingestion, dermal contact with soil, and inhalation. The screening levels were calculated using the DTSC exposure parameters shown in Table 3. Toxicity criteria used in the calculations were obtained first from DTSC (2015), and if not available from DTSC (2015), from USEPA (2015). For carcinogenic chemicals the lower of the cancer or non-cancer risk-based value is shown as the final recommended screening value. The resulting screening levels for non-volatile chemicals are shown in Table 4. Note that the screening level for arsenic was assumed to be 12 mg/kg, as discussed previously. The screening level for lead for on-site construction workers was assumed to be the commercial/industrial worker CHHSL of 320 mg/kg (OEHHA, 2009). Screening levels for volatile chemicals are shown in Table 5.

### **Soil Screening Levels for Protection of Ecological Receptors**

The 1999 RMP did not include any ecorisk-based soil screening levels, therefore, ecorisk-based soil screening levels for the protection of terrestrial wildlife were obtained from key USEPA references. Available screening levels for non-volatile chemicals and volatile chemicals are shown in Tables 6 and 7, respectively.

### **Groundwater Screening Levels Based on Drinking Water Exposure**

Groundwater screening levels based on human drinking water exposure were considered to be the State of California enforceable drinking water standard, that is, the Maximum Contaminant Level (MCL) (CalEPA, 2015). However, if an MCL was not available for a particular chemical the USEPA RSL for tapwater ingestion was used (USEPA, 2015). The updated groundwater screening levels are shown in Table 8.

### **Groundwater Screening Levels to Protect Indoor Workers from Vapor Intrusion**

The 1999 RMP did not include screening levels to protect indoor workers from vapor intrusion due to volatile chemicals in groundwater. The San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), as part of its Environmental Screening Level (ESL) program, has developed groundwater screening levels to protect workers from this type of chemical exposure (SFBRWQCB, 2013). These values are shown in Table 9.

## Groundwater Screening Levels for the Protection of Aquatic Life

The 1999 RMP also did not provide screening levels for the protection of aquatic life from contaminated groundwater. There is a potential for groundwater on the site to daylight or infiltrate into freshwater or estuarine wetlands. Therefore, groundwater screening levels protective of aquatic life were obtained for each of these aquatic habitat types from SFBRWQCB (2013). These values are shown in Table 10.

## COMPARISON OF PHASE II DATA TO UPDATED SCREENING LEVELS

Table 11 compares the updated soil screening levels to the maximum soil concentration reported in the Phase II (LTR, 2015). In the Phase II, soils were analyzed in some cases to a maximum depth of 31 ft below ground surface (bgs), but in all cases to at least 10 ft. However, with the exception of barium, the maximum concentrations were all detected within 10 ft bgs. The maximum detected concentration of barium was found at 20 ft; however, this value did not exceed any screening level.

Only those chemicals exceeding at least one of the updated screening levels are shown. Table 11 shows that 18 chemicals exceed at least one of the new screening levels and many of these chemicals exceed more than one screening value. Chemicals exceeding at least two screening levels include arsenic, benzo(a)pyrene, cadmium, lead, and nickel. The greatest exceedances of a screening level were due to lead and nickel. Arsenic was only slightly exceeded (maximum of 13 mg/kg compared to a screening level of 12 mg/kg).

Table 12 shows those chemicals which exceed at least one of the updated groundwater screening levels. Based on the Phase II data, only benzene exceeded a groundwater screening level, and this was based on drinking water exposure.

In summary, using updated screening levels that address a wide range of relevant potential receptors and exposure pathways, 19 chemicals (18 in soil and 1 in groundwater) detected in the Phase II exceed at least one screening level. Of particular importance are lead and nickel due to the significant exceedances of these two chemicals.

## CLOSING

Thank you for this opportunity to provide you with our services. Please don't hesitate to call or email should you have any questions or comments regarding this report.

Sincerely,



Paul Damian PhD, MPH, DABT  
Principal  
Board Certified Toxicologist  
**DAMIANAPPLIEDTOXICOLOGY, LLC**  
530-220-0454  
pdamian@appliedtox.com

## REFERENCES

- BBL. 2006. Revised Risk Management Plan. Former Petroleum Terminals and Related Pipelines Located at Pier 64 and the Vicinity, City and County of San Francisco, California.
- Bradford, G.R., Chang, A.C., Page, A.L., Bakhtar, D., Frampton, J.A. and H. Wright. 1996. Background Concentrations of Trace and Major Elements in California Soils. University of California-Riverside.
- CalEPA. 2005. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. Sacramento.
- CalEPA. 2015. MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants. August 10, 2015. Accessed via the Internet at: [www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/MCLsandPHGs.shtml](http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.shtml)
- DTSC. 2011. User's Guide to LeadSpread 8 and Recommendations for Evaluation of Lead Exposures in Adults.
- DTSC. 2013. Preliminary Endangerment Assessment Guidance Manual. Sacramento.
- DTSC. 2014. Human Health Risk Assessment (HHRA) Note. HERO HHRA Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities. Issue Date: September 30, 2014. Sacramento.
- DTSC. 2015. Human Health Risk Assessment (HHRA) Note. HERO HHRA Note Number 3: DTSC-Modified Screening Levels (DTSC-SLs). Release Date: May, 2015. Sacramento.
- ENVIRON. 1999. Risk Management Plan. Mission Bay Area. San Francisco, California. Emeryville.
- LTR. 2015. Phase II Environmental Site Assessment. Golden State Warriors Arena, Blocks 29-32, Mission Bay, San Francisco, California. San Francisco.
- OEHHA. 2009. Revised California Human Health Screening Levels for Lead. Sacramento.
- SFBRWQCB. 2013. User's Guide: Derivation and Application of Environmental Screening Levels. Oakland.
- USEPA. 2001. Supplemental Guidance to RAGS: Region 4 Bulletins, Ecological Risk Assessment. Accessed via the Internet at: [www.epa.gov/region4/superfund/programs/riskassess/ecolbul.html](http://www.epa.gov/region4/superfund/programs/riskassess/ecolbul.html)
- USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. Washington, D.C.
- USEPA. 2005a. Ecological Soil Screening Levels for Antimony. Interim Final. OSWER Directive 9285.7-61. Washington, D.C.

USEPA. 2005b. Ecological Soil Screening Levels for Arsenic. Interim Final. OSWER Directive 9285.7-62. Washington, D.C.

USEPA. 2005c. Ecological Soil Screening Levels for Barium. Interim Final. OSWER Directive 9285.7-63. Washington, D.C.

USEPA. 2005d. Ecological Soil Screening Levels for Beryllium. Interim Final. OSWER Directive 9285.7-64. Washington, D.C.

USEPA. 2005e. Ecological Soil Screening Levels for Cadmium. Interim Final. OSWER Directive 9285.7-65. Washington, D.C.

USEPA. 2005f. Ecological Soil Screening Levels for Chromium. Interim Final. OSWER Directive 9285.7-66. Washington, D.C.

USEPA. 2005g. Ecological Soil Screening Levels for Cobalt. Interim Final. OSWER Directive 9285.7-67. Washington, D.C.

USEPA. 2005h. Ecological Soil Screening Levels for Lead. Interim Final. OSWER Directive 9285.7-70. Washington, D.C.

USEPA. 2005i. Ecological Soil Screening Levels for Vanadium. Interim Final. OSWER Directive 9285.7-75. Washington, D.C.

USEPA. 2006. Ecological Soil Screening Levels for Silver. Interim Final. OSWER Directive 9285.7-77. Washington, D.C.

USEPA. 2007a. Ecological Soil Screening Levels for Copper. Interim Final. OSWER Directive 9285.7-68. Washington, D.C.

USEPA. 2007b. Ecological Soil Screening Levels for Nickel. Interim Final. OSWER Directive 9285.7-76. Washington, D.C.

USEPA. 2007c. Ecological Soil Screening Levels for Selenium. Interim Final. OSWER Directive 9285.7-72. Washington, D.C.

USEPA. 2007d. Ecological Soil Screening Levels for Zinc. Interim Final. OSWER Directive 9285.7-73. Washington, D.C.

USEPA. 2015. Regional Screening Table. June 2015 (Accessed via the Internet at: [http://www.epa.gov/reg3hwmd/risk/human/rb-concentration\\_table/](http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/))

Table 1

**Updated and Previous Health Risk-Based Soil Screening Levels for the Off-Site Resident and On-Site Commercial Worker  
Non-Volatile Chemicals**

Chemical	Screening Level (mg/kg)			
	Off-Site (Nearby) Resident Updated <sup>1</sup>	Off-Site (Nearby) Resident Previous <sup>2</sup>	On-Site Commercial Worker Updated <sup>1</sup>	On-Site Commercial Worker Previous <sup>2</sup>
<i>Polycyclic Aromatic Hydrocarbons</i>				
Acenaphthene	NA	1,880,000	45,000	69,000
Acenaphthylene	NA	1,250,000	NA	46,000
Anthracene	NA	9,390,000	230,000	347,000
Benz(a)anthracene	41	3,448	2.9	27
Benzo(g,h,i)perylene	NA	1,250,000	NA	46,000
Benzo(a)pyrene	1,300	345	0.29	2.7
Benzo(b)fluoranthene	13,000	3,448	2.9	27
Benzo(k)fluoranthene <sup>3</sup>	34,700	3,448	1.3	27
Chrysene <sup>3</sup>	1,680	34,000	13	272
Dibenz(a,h)anthracene	1,100	328	0.29	7.9
Fluoranthene	NA	1,250,000	30,000	46,000
Fluorene	NA	1,250,000	30,000	46,000
Indeno(1,2,3-cd)pyrene	13,000	3,448	2.9	27
2-Methylnaphthalene	NA	1,250,000	3,000	46,000
Naphthalene	3.8	1,250,000	17	46,000
Phenanthrene	NA	9,390,000	NA	347,000
Pyrene	NA	939,000	23,000	35,000
<i>Polychlorinated Biphenyls (as Aroclor 1254)</i>				
	4.1	NA	0.97	NA
<i>Petroleum Hydrocarbons<sup>4</sup></i>				
TPH-Gasoline	NA	1,720,000	500	74,000
TPH-Diesel	NA	16,000,000	110	686,000
TPH-Motor Oil	NA	126,000,000	500	5,420,000
<i>Metals</i>				
Antimony (as trioxide)	280,000	12,514	1,200,000	764
Arsenic <sup>5</sup>	1,160	112	12	29
Barium	710,000	4,380	220,000	12,949
Beryllium <sup>3</sup>	1,590	160	21	12
Cadmium <sup>3</sup>	909	90	5.7	191
Chromium (as trivalent) <sup>3</sup>	NA	31,285,714	270,000	1,910,423
Chromium (as hexavalent)	16	2.6	6.3	5.4
Cobalt	420	9,073	350	23,640
Copper	NA	1,157,571	47,000	70,686
Lead <sup>5</sup>	320	10,748	320	4,203
Mercury <sup>3</sup> (as elemental)	0.96	2,691	3.9	164
Molybdenum	NA	156,429	5,800	9,552
Nickel (as soluble salts)	14,700	1,478	1,500	3,145
Selenium	28,000,000	156,429	5,800	9,552
Silver	NA	156,429	5,800	9,552
Thallium (as soluble salts)	NA	2,503	12	153
Vanadium <sup>3</sup>	142,000	219,000	1,500	13,373
Zinc	NA	9,385,714	350,000	573,127

Notes:

<sup>1</sup>All values obtained from the USEPA Regional Screening Levels (USEPA, 2015) unless otherwise noted. Values for off-site resident reflect inhalation exposure only. Values for on-site commercial worker reflect exposure from soil ingestion, inhalation and dermal contact.

<sup>2</sup>Values obtained from ENVIRON (1999).

<sup>3</sup>Values obtained from DTSC (2015).

<sup>4</sup>Values are Environmental Screening Levels (ESLs) obtained from SFBWQCB (2013).

<sup>5</sup>See text.

NA = Not available.

Yellow highlight indicates that the updated screening level is lower (more stringent) than the corresponding ENVIRON (1999) screening level.



Table 2

**Updated and Previous Health Risk-Based Soil Screening Levels for the Off-Site Resident and On-Site Commercial Worker  
Volatile Chemicals**

Chemical	Screening Level (mg/kg)			
	Off-Site (Nearby) Resident Updated <sup>1</sup>	Off-Site (Nearby) Resident Previous <sup>2</sup>	On-Site Commercial Worker Updated <sup>1</sup>	On-Site Commercial Worker Previous <sup>2</sup>
Acetone	440,000	71,000	670,000	330,000
Benzene <sup>3</sup>	0.35	63	1.4	77
2-Butanone (Methyl ethyl ketone)	64,000	180,000	190,000	800,000
Carbon disulfide	850	11,000	3,500	54,000
Chlorobenzene	340	1,100	1,300	5,600
Chloroform	0.32	340	1.4	410
1,1-Dichloroethane <sup>3</sup>	3.7	1,100	16	1,400
1,2-Dichloroethylene (cis) <sup>3</sup>	21	540	86	2,700
1,2-Dichloroethylene (trans) <sup>3</sup>	212	1,100	860	5,500
Ethylbenzene	6.4	16,000	25	78,000
2-Hexanone (Methyl butyl ketone)	420	370	1,300	1,800
Methylene chloride <sup>3</sup>	6.2	1,900	24	2,300
Styrene	9,700	19,000	35,000	81,000
Tetrachloroethene <sup>3</sup>	1.1	300	2.7	360
Toluene <sup>3</sup>	1,360	6,200	5,400	31,000
1,1,1-Trichloroethane <sup>3</sup>	1,740	15,000	7,300	77,000
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	1,600,000	NA	8,000,000
Trichloroethylene	1.1	630	6.0	760
Trichlorofluoromethane	760	16,000	3,100	80,000
Vinyl chloride <sup>3</sup>	0.03	23	0.15	28
Xylenes	570	110,000	2,400	550,000

Notes:

<sup>1</sup>All values obtained from the USEPA Regional Screening Levels (USEPA, 2015) unless otherwise indicated. Values for off-site resident reflect inhalation exposure only. Values for on-site commercial worker reflect exposure from soil ingestion, inhalation and dermal contact.

<sup>2</sup>Values obtained from ENVIRON (1999).

<sup>3</sup>Updated values obtained from DTSC (2015).

Yellow highlight indicates that the updated screening level is lower (more stringent) than the corresponding ENVIRON (1999) screening level.



**Table 3****Exposure Parameters Used to Calculate Soil Screening Levels for Construction Workers**

Exposure Parameter	Value
Body weight (kg)	80
Exposure duration (years)	1
Averaging time (days)	
Non-carcinogenic chemicals	365
Carcinogenic chemicals	25,550
Exposure frequency (days/year)	250
Soil ingestion rate (mg/day)	330
Particulate emission factor (m <sup>3</sup> /kg)	1.00E+06
Skin surface area (cm <sup>2</sup> )	6,032
Soil adherence factor (mg/cm <sup>2</sup> )	0.8

Source: DTSC (2014).

Table 4

**Soil Screening Levels for the On-Site Construction Worker  
Non-Volatile Chemicals**

Chemical	Non-Cancer Toxicity Criteria <sup>1</sup>		Cancer Toxicity Criteria <sup>1</sup>		ABS <sub>GI</sub> (unitless)	ABS <sub>D</sub> (unitless)	Non-Cancer Screening Level (mg/kg)	Cancer Screening Level (mg/kg)	Final (Lowest) Screening Level (mg/kg)
	RfD <sub>o</sub> (mg/kg-day)	RfC (mg/m <sup>3</sup> )	CSF <sub>o</sub> (mg/kg-day) <sup>-1</sup>	IUR (μg/m <sup>3</sup> ) <sup>-1</sup>					
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	6.0E-02	NA	NA	NA	1	0.13	7.3E+03	NA	7.3E+03
Acenaphthylene	NA	NA	NA	NA	1	0.13	NA	NA	NA
Anthracene	3.0E-01	NA	NA	NA	1	0.13	3.7E+04	NA	3.7E+04
Benz(a)anthracene	NA	NA	7.3E-01	1.1E-04	1	0.13	NA	1.2E+01	1.2E+01
Benzo(g,h,i)perylene	NA	NA	NA	NA	1	0.13	NA	NA	NA
Benzo(a)pyrene	NA	NA	7.3E+00	1.1E-03	1	0.13	NA	1.2E+00	1.2E+00
Benzo(b)fluoranthene	NA	NA	7.3E-01	1.1E-04	1	0.13	NA	1.2E+01	1.2E+01
Benzo(k)fluoranthene <sup>2</sup>	NA	NA	1.2E+00	1.1E-04	1	0.13	NA	7.1E+00	7.1E+00
Chrysene <sup>2</sup>	NA	NA	1.2E-01	1.1E-05	1	0.13	NA	7.1E+01	7.1E+01
Dibenz(a,h)anthracene	NA	NA	7.3E+00	1.2E-03	1	0.13	NA	1.2E+00	1.2E+00
Fluoranthene	4.0E-02	NA	NA	NA	1	0.13	4.9E+03	NA	4.9E+03
Fluorene	4.0E-02	NA	NA	NA	1	0.13	4.9E+03	NA	4.9E+03
Indeno(1,2,3-cd)pyrene	NA	NA	7.3E-01	1.1E-04	1	0.13	NA	1.2E+01	1.2E+01
2-Methylnaphthalene	4.0E-03	NA	NA	NA	1	0.13	4.9E+02	NA	4.9E+02
Naphthalene	2.0E-02	3.0E-03	NA	3.4E-05	1	0.13	2.1E+03	9.0E+06	2.1E+03
Phenanthrene	NA	NA	NA	NA	1	0.13	NA	NA	NA
Pyrene	3.0E-02	NA	NA	NA	1	0.13	3.7E+03	NA	3.7E+03
Polychlorinated Biphenyls (as Aroclor 1254)									
	2.0E-05	NA	2.00E+00	5.70E-04	1	0.14	2.3E+00	4.1E+00	2.3E+00
Metals									
Antimony (as trioxide)	4.0E-04	2.0E-04	NC	NC	0.15	0.01	6.6E+01	NC	6.6E+01
Arsenic <sup>3</sup>									1.2E+01
Barium	2.0E-01	5.0E-04	NC	NC	0.07	0.01	2.0E+03	NC	2.0E+03
Beryllium <sup>2</sup>	2.0E-04	7.0E-06	NC	2.4E-03	0.007	0.01	2.9E+00	1.3E+05	2.9E+00
Cadmium <sup>2</sup>	6.3E-06	1.0E-05	NC	4.2E-03	0.025	0.001	1.4E+00	7.3E+04	1.4E+00
Chromium (trivalent) <sup>2</sup>	1.5E+00	NA	NC	NC	0.013	0.01	4.3E+04	NC	4.3E+04
Chromium (hexavalent) <sup>2</sup>	3.0E-03	1.0E-04	5.0E-01	1.5E-01	0.025	0.01	1.1E+02	4.8E+01	4.8E+01
Cobalt	3.0E-04	6.0E-06	NC	9.0E-03	1.00	0.01	2.0E+01	3.4E+04	2.0E+01
Copper	4.0E-02	NA	NC	NC	1.00	0.01	1.2E+04	NC	1.2E+04
Lead <sup>3</sup>									3.2E+02
Mercury <sup>2</sup> (as elemental)	1.6E-04	3.0E-05	NC	NC	1.00	0.01	3.6E+01	NC	3.6E+01
Molybdenum	5.0E-03	NA	NC	NC	1.00	0.01	1.5E+03	NC	1.5E+03
Nickel (as soluble salts) <sup>2</sup>	1.1E-02	1.4E-05	NC	2.6E-04	0.04	0.01	5.7E+01	1.2E+06	5.7E+01
Selenium	5.0E-03	2.0E-02	NC	NC	1.00	0.01	1.5E+03	NC	1.5E+03
Silver	5.0E-03	NA	NC	NC	0.04	0.01	3.8E+02	NC	3.8E+02
Thallium (as soluble salts)	1.0E-05	NA	NC	NC	1.00	0.01	3.1E+00	NC	3.1E+00
Vanadium <sup>2</sup>	5.0E-03	1.0E-04	NC	NC	0.03	0.01	1.7E+02	NC	1.7E+02
Zinc	3.0E-01	NA	NC	NC	1.00	0.01	9.3E+04	NC	9.3E+04

Notes:

<sup>1</sup>Toxicity criteria obtained from DTSC (2015) first and USEPA (2015) if not available from DTSC (2015).<sup>2</sup>Toxicity criteria obtained from DTSC (2015).<sup>3</sup>See text.RfD<sub>o</sub> = Reference Dose for ingestion exposure, RfC = Reference Concentration for inhalation exposure, CSF<sub>o</sub> = Cancer Slope Factor for ingestion exposure to carcinogens, IUR = Inhalation Unit Risk for inhalation exposure to carcinogensABS<sub>GI</sub> = Gastrointestinal absorption efficiency. Obtained from USEPA (2015).ABS<sub>D</sub> = Dermal absorption efficiency. Obtained from USEPA (2015) (PAHs) and DTSC (2013) (metals).

NC = Not carcinogenic.

NA = Not available.

Table 5

**Soil Screening Levels for the On-Site Construction Worker  
Volatile Chemicals**

Chemical	Non-Cancer Toxicity Criteria <sup>1</sup>		Cancer Toxicity Criteria <sup>1</sup>		Volatilization Factor <sup>3</sup> (m <sup>3</sup> /kg)	Non-Cancer Screening Level (mg/kg)	Cancer Screening Level (mg/kg)	Final (Lowest) Screening Level (mg/kg)
	RfD <sub>o</sub> (mg/kg-day)	RfC (mg/m <sup>3</sup> )	CSF <sub>o</sub> (mg/kg-day) <sup>-1</sup>	IUR (µg/m <sup>3</sup> ) <sup>-1</sup>				
Acetone	9.0E-01	3.1E+01	NC	NC	1.4E+04	2.7E+05	NC	2.7E+05
Benzene <sup>2</sup>	4.0E-03	3.0E-03	1.0E-01	2.9E-05	3.5E+03	4.5E+01	2.5E+02	4.5E+01
2-Butanone (Methyl ethyl ketone)	6.0E-01	5.0E+00	NC	NC	1.2E+04	1.2E+05	NC	1.2E+05
Carbon disulfide	1.0E-01	7.0E-01	NC	NC	1.2E+03	3.3E+03	NC	3.3E+03
Chlorobenzene	2.0E-02	5.0E-02	NC	NC	6.5E+03	1.2E+03	NC	1.2E+03
Chloroform	1.0E-02	9.8E-02	3.1E-02	2.3E-05	2.6E+03	8.5E+02	7.8E+02	7.8E+02
1,1-Dichloroethane <sup>2</sup>	2.0E-01	8.0E-01	5.7E-03	1.6E-06	2.1E+03	6.7E+03	4.3E+03	4.3E+03
1,2-Dichloroethylene (cis) <sup>2</sup>	2.0E-03	8.0E-03	NC	NC	2.5E+03	7.8E+01	NC	7.8E+01
1,2-Dichloroethylene (trans) <sup>2</sup>	2.0E-02	8.0E-02	NC	NC	1.7E+03	5.5E+02	NC	5.5E+02
Ethylbenzene	1.0E-01	1.0E+00	1.1E-02	2.5E-06	5.7E+03	1.5E+04	2.2E+03	2.2E+03
2-Hexanone (Methyl butyl ketone)	5.0E-03	3.0E-02	NC	NC	NA	NA	NA	NA
Methylene chloride <sup>2</sup>	6.0E-03	4.0E-01	1.4E-02	1.0E-06	2.2E+03	1.4E+03	1.8E+03	1.4E+03
Styrene	2.0E-01	1.0E+00	NC	NC	9.4E+03	2.6E+04	NC	2.6E+04
Tetrachloroethene <sup>2</sup>	6.0E-03	3.5E-02	5.4E-01	5.9E-06	2.4E+03	3.1E+02	4.6E+01	4.6E+01
Toluene <sup>2</sup>	8.0E-02	3.0E-01	NC	NC	4.3E+03	4.7E+03	NC	4.7E+03
1,1,1-Trichloroethane <sup>2</sup>	2.0E+00	1.0E+00	NC	NC	1.7E+03	7.4E+03	NC	7.4E+03
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethylene	5.0E-04	2.0E-03	4.6E-02	4.1E-06	2.2E+03	1.7E+01	5.4E+02	1.7E+01
Trichlorofluoromethane	3.0E-01	7.0E-01	NC	NC	1.0E+03	3.0E+03	NC	3.0E+03
Vinyl chloride <sup>2</sup>	3.0E-03	1.0E-01	2.7E-01	7.8E-05	9.6E+02	3.0E+02	9.0E+01	9.0E+01
Xylenes	2.0E-01	1.0E-01	NC	NC	6.5E+03	2.7E+03	NC	2.7E+03

Notes:

<sup>1</sup>Toxicity criteria obtained from DTSC (2015) first and USEPA (2015) if not available from DTSC (2015)<sup>2</sup>Toxicity criteria obtained from DTSC (2015).<sup>3</sup>Volatilization factors obtained from USEPA (2015).RfD<sub>o</sub> = Reference Dose for ingestion exposure, RfC = Reference Concentration for inhalation exposure, CSF<sub>o</sub> = Cancer Slope Factor for ingestion exposure to carcinogens, IUR = Inhalation Unit Risk for inhalation exposure to carcinogens

NC = Not carcinogenic.

NA = Not available.

Table 6

**Ecorisk-Based Soil Screening Levels (Protection of Terrestrial Wildlife)**  
**Non-Volatile Chemicals**

Chemical	Soil Screening Level (mg/kg)	Reference
<i>Polycyclic Aromatic Hydrocarbons</i>		
Acenaphthene	20	USEPA (2001)
Acenaphthylene	NA	
Anthracene	0.1	USEPA (2001)
Benz(a)anthracene	NA	
Benzo(g,h,i)perylene	NA	
Benzo(a)pyrene	0.1	USEPA (2001)
Benzo(b)fluoranthene	NA	
Benzo(k)fluoranthene	NA	
Chrysene	NA	
Dibenz(a,h)anthracene	NA	
Fluoranthene	0.1	USEPA (2001)
Fluorene	NA	
Indeno(1,2,3-cd)pyrene	NA	
2-Methylnaphthalene	NA	
Naphthalene	0.1	USEPA (2001)
Phenanthrene	0.1	USEPA (2001)
Pyrene	0.1	USEPA (2001)
<i>Metals</i>		
Antimony	0.27	USEPA (2005a)
Arsenic	43	USEPA (2005b)
Barium	2000	USEPA (2005c)
Beryllium	21	USEPA (2005d)
Cadmium	0.36	USEPA (2005e)
Chromium (trivalent)	26	USEPA (2005f)
Chromium (hexavalent)	130	USEPA (2005f)
Cobalt	120	USEPA (2005g)
Copper	28	USEPA(2007a)
Lead	11	USEPA (2005h)
Mercury	NA	
Molybdenum	NA	
Nickel	130	USEPA (2007b)
Selenium	0.63	USEPA (2007c)
Silver	4.2	USEPA (2006)
Thallium	NA	
Vanadium	7.8	USEPA (2005i)
Zinc	46	USEPA (2007d)
<i>Polychlorinated Biphenyls</i> (as total)		
	0.02	USEPA (2001)
<i>Petroleum Hydrocarbons</i>		
TPH-Gasoline	20	USEPA (2001)
TPH-Diesel	NA	
TPH-Motor Oil	NA	

Notes:

NA = Not available.

**Table 7**

**Ecorisk-Based Soil Screening Levels (Protection of Terrestrial Wildlife)  
Volatile Chemicals**

<b>Chemical</b>	<b>Soil Screening Level (mg/kg)</b>	<b>Reference</b>
Acetone	NA	USEPA (2001)
Benzene	0.05	
2-Butanone (Methyl ethyl ketone)	NA	
Carbon disulfide	NA	
Chlorobenzene	0.05	USEPA (2001)
Chloroform	0.001	USEPA (2001)
1,1-Dichloroethane	NA	USEPA (2001)
1,2-Dichloroethylene (cis)	NA	
1,2-Dichloroethylene (trans)	NA	
Ethylbenzene	0.05	
2-Hexanone (Methyl butyl ketone)	NA	USEPA (2001)
Methylene chloride	2	
Styrene	0.1	
Tetrachloroethene	0.01	
Toluene	0.05	USEPA (2001)
1,1,1-Trichloroethane	NA	USEPA (2001)
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	
Trichloroethylene	0.001	
Trichlorofluoromethane	NA	
Vinyl chloride	0.01	USEPA (2001)
Xylenes	0.05	USEPA (2001)

Notes:

NA = Not available.

Table 8

Human Health-Based Groundwater Screening Levels<sup>1</sup>

Chemical	Groundwater Screening Level (µg/L)	Basis	Reference
Acetone	14,000	USEPA RSL	USEPA (2015)
Benzene	1	CA MCL	CalEPA (2015)
2-Butanone (Methyl ethyl ketone)	5,600	USEPA RSL	USEPA (2015)
Carbon disulfide	810	USEPA RSL	USEPA (2015)
Chlorobenzene	70	CA MCL	CalEPA (2015)
Chloroform	0.22	USEPA RSL	USEPA (2015)
1,1-Dichloroethane	5	CA MCL	CalEPA (2015)
1,2-Dichloroethylene (cis)	6	CA MCL	CalEPA (2015)
1,2-Dichloroethylene (trans)	10	CA MCL	CalEPA (2015)
Ethylbenzene	300	CA MCL	CalEPA (2015)
2-Hexanone (Methyl butyl ketone)	38	USEPA RSL	USEPA (2015)
Methylene chloride	5	CA MCL	CalEPA (2015)
Styrene	100	CA MCL	CalEPA (2015)
Tetrachloroethene	5	CA MCL	CalEPA (2015)
Toluene	150	CA MCL	CalEPA (2015)
1,1,1-Trichloroethane	200	CA MCL	CalEPA (2015)
1,1,2-Trichloro-1,2,2-trifluoroethane	1,200	CA MCL	CalEPA (2015)
Trichloroethylene	5	CA MCL	CalEPA (2015)
Trichlorofluoromethane	150	CA MCL	CalEPA (2015)
Vinyl chloride	0.5	CA MCL	CalEPA (2015)
Xylenes	1,750	CA MCL	CalEPA (2015)

Notes:

<sup>1</sup>Based on drinking water ingestion.

USEPA RSL = USEPA Regional Screening Level for tapwater ingestion.

CA MCL = California Maximum Contaminant Level (drinking water standard).

NA = Not available.

Table 9

## Groundwater Screening Levels to Protect Indoor Workers from Vapor Intrusion

Chemical	Screening Level (µg/L) <sup>1</sup>
Acetone	NA
Benzene	270
2-Butanone (Methyl ethyl ketone)	200,000,000
Carbon disulfide	NA
Chlorobenzene	NA
Chloroform	1,700
1,1-Dichloroethane	NA
1,2-Dichloroethylene (cis)	26,000
1,2-Dichloroethylene (trans)	120,000
Ethylbenzene	3,100
2-Hexanone (Methyl butyl ketone)	NA
Methylene chloride	26,000
Styrene	NA
Tetrachloroethene	640
Toluene	NA
1,1,1-Trichloroethane	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	NA
Trichloroethylene	1,300
Trichlorofluoromethane	NA
Vinyl chloride	18
Xylenes	NA

<sup>1</sup>Values are Environmental Screening Levels (ESLs) from SFBWQCB (2013) for fine-coarse mix soil types, commercial/industrial land use.

NA = Not available.

Table 10

Ecorisk-Based Groundwater Screening Levels (Protection of Aquatic Life)<sup>1</sup>

Chemical	Groundwater Screening Level <sup>2</sup> (µg/L)	
	Freshwater Habitat	Estuary Habitat
Acetone	1,500	1,500
Benzene	46	46
2-Butanone (Methyl ethyl ketone)	14,000	14,000
Carbon disulfide	NA	NA
Chlorobenzene	25	25
Chloroform	620	620
1,1-Dichloroethane	47	47
1,2-Dichloroethylene (cis)	590	590
1,2-Dichloroethylene (trans)	590	590
Ethylbenzene	290	43
2-Hexanone (Methyl butyl ketone)	NA	NA
Methylene chloride	2,200	2,200
Styrene	100	100
Tetrachloroethene	120	120
Toluene	130	130
1,1,1-Trichloroethane	62	62
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA
Trichloroethylene	360	360
Trichlorofluoromethane	NA	NA
Vinyl chloride	780	780
Xylenes	100	100

Notes:

<sup>1</sup>Groundwater screening levels assume groundwater daylighting in either freshwater or estuarine wetlands.<sup>2</sup>Values shown are Environmental Screening Levels (ESLs) from SFRWQCB (2013).

NA = Not available.



Table 11

**Comparison of Updated Soil Screening Levels to Maximum Soil Concentrations Reported in the  
June 2015 Phase II Environmental Site Assessment**

Chemical	Maximum Concentration at Any Soil Depth <sup>2</sup> (mg/kg)	Screening Level Exceeded <sup>1</sup>			
		Off-Site (Nearby) Resident	On-Site Commercial Worker	Construction Worker	Ecorisk (Terrestrial Wildlife)
<i>Polycyclic Aromatic Hydrocarbons</i>					
Anthracene	0.14				X (0.1)
Benzo(a)pyrene	2.1		X (0.29)	X (1.2)	X (0.1)
Fluoranthene	0.72				X (0.1)
Naphthalene	0.74				X (0.1)
Phenanthrene	0.39				X (0.1)
Pyrene	0.9				X (0.1)
<i>Metals</i>					
Antimony	4.1				X (0.27)
Arsenic	13		X (12)	X (12)	
Cadmium	1.7			X (1.4)	X (0.36)
Chromium (as trivalent) <sup>3</sup>	1,800				X (26)
Cobalt	93			X (20)	
Copper	110				X (28)
Lead	1,500		X (320)	X (320)	X (11)
Nickel	2,400		X (1,500)	X (57)	X (130)
Vanadium	50				X (7.8)
Zinc	420				X (46)
<i>Petroleum Hydrocarbons</i>					
TPH-Diesel	1,300		X (110)		
TPH- Motor oil	1,800		X (500)		

<sup>1</sup>Screening level shown in parenthesis.

<sup>2</sup>See text.

<sup>3</sup>Assumed to be trivalent chromium.

**Table 12**

**Comparison of Updated Groundwater Screening Levels to Maximum Groundwater Concentrations Reported in the  
June 2015 Phase II Environmental Site Assessment**

Chemical	Maximum Groundwater Concentration (µg/L)	Screening Level Exceeded <sup>1</sup>		
		Drinking Water Groundwater Screening Level	Vapor Intrusion - Commercial Worker	Ecorisk Screening Level (Protection of Aquatic Life)
Benzene	4.4	X (1)		

<sup>1</sup>Screening level shown in parenthesis.

# **EXHIBIT 4**

November 2, 2015

**Memo**

To: Patrick Soluri, Attorney at Law

From: Philip King, Ph.D.

Re: Urban Decay Analysis of Proposed Movement of Golden State Warriors from Oakland to San Francisco

Upon your request, I examined the reply to my July 13, 2015 memo prepared to analyze potential for urban decay stemming from the move of the Golden State Warriors (GSW) from Oracle Stadium in Oakland to a new stadium in San Francisco. Unfortunately, the consultants mischaracterized many of the arguments that I presented. This memo will provide my responses to ALH's comments in detail. Here are the key points:

- ALH argues that I do not provide a definition of urban decay. My discussion of the definition of urban decay was limited because the legal definition of urban decay is well-understood by now. ALH provides a definition of urban decay which is consistent with my understanding. The differences between my expert opinion and ALH's have nothing to do with the definition of urban decay, but its significance in this case. It is my professional opinion that the loss of spending and jobs will exacerbate urban decay in this area, which the City itself designated as "blighted."
- ALH conflates revenues and spending and argues that my analysis left out key revenue sources, in particular TV revenues. While it is true that we did not specifically mention TV revenues, our data (from Forbes) on the GSW spending would include *all* revenue sources including TV revenues.
- ALH argues that the move of the GSW from Oakland will not lead to a transfer of jobs. They cite the lower cost of living in the East Bay. However, an analysis of commuter patterns provided below indicates that, in fact, the percentage of workers who commute from the East Bay to San Francisco is relatively small and consistent with our analysis.
- ALH argues that another team will be attracted to the area and cites the City of Oakland's Coliseum Redevelopment Area. However, numerous articles in Bay Area newspapers and the professional sports media indicate that this plan has struggled to gain support from developers who would be needed to finance the project or the two major professional sports teams who use the adjacent Oakland Coliseum, the Oakland A's and the Oakland Raiders. Indeed the Oakland Raiders are one of three candidates widely touted to move (back) to Los Angeles, which has no NFL team.

In more detail, here are my responses to the ALH memo.

- In it's memo ALH states that:

"Dr. King's memo does not include a definition of urban decay. Generally speaking, urban decay is characterized by physical deterioration to properties or structures that is so prevalent, substantial, and lasting a significant period of time that it impairs the proper utilization of the properties and structures, and the health, safety, and welfare of the surrounding community. The focus of CEQA review is on whether a project will result in impacts on the physical environment. CEQA directs the lead agency to consider economic effects, to the extent those effects have the potential to culminate in physical environmental effects (CEQA Guidelines, § 15131). Characteristics of physical deterioration contributing to urban decay include abandoned buildings, boarded doors and windows, parked trucks and long-term unauthorized use of the properties and parking lots, extensive or offensive graffiti painted on buildings, dumping of refuse or overturned dumpsters on properties, dead trees and shrubbery, and uncontrolled weed growth. This is the context of urban decay that ALH Economics deems relevant to the response herein."

I agree my memo did not spend a great deal of time defining urban decay since the legal literature here is reasonably clear. I accept ALH's definition.

- In their memo ALH states:

"Dr. King's analysis is based on the assumption that all Warrior's revenues derive from ticket sales to patrons living in the East Bay, San Francisco, and the Peninsula. However, there are numerous other revenue sources, such as merchandise sales and media revenues, and ALH Economics found that only 76% of ticket sales originate from the areas identified by Dr. King. Further, Dr. King's analysis of a generalized economic impact on Alameda County does not lead to the conclusion that urban decay will result in a specific location."

My analysis was based on an estimate of spending derived from Forbes magazine, which ALH did not dispute. (Since ALH has better access to this data I assume they would have disputed this figure if it were too high.)

The confusion that runs like a thread through the ALF report is as follows: they confuse the sources of spending at Warriors games with economic impact that this spending causes within Alameda County. They do this in two ways:

- First, the place of residence of those who attend Warriors games (whether they come from the East or West Bay) is totally irrelevant. Whether these fans are from Oakland or New York City, what matters is that whereas before

their money was being spent in Alameda County, this money is now being spent in San Francisco.

- Second, my report took the sources of Warriors' revenue as irrelevant, and focused instead upon the ways in which this revenue was spent by the organization. Thus, for the purposes of our report, whether that money came from ticket sales, TV contracts, or concession stands of various kinds was totally beside the point. What mattered to us was whether the money was going to local employees, players' salaries or reinvested within the organization.
- Further, there are, however, numerous ways in which the ALH report misrepresents these figures and the nature of IMPLAN analyses in general.
  - First, IMPLAN uses the same methodology as all U.S. government calculations for GDP, etc. in that the employment numbers represent the location of the jobs themselves and not the residence of the person who perform those jobs. Even if many of these employees will not have to relocate or find a new job, their job still moves from one county to another.<sup>1</sup>
  - Second, the employment numbers provided by IMPLAN do not directly translate into the full-time job estimates (FTE) provided in other EIRs. Within IMPLAN, each job within the professional sports/spectator industry is roughly equivalent to 85% of 1 FTE.<sup>2</sup>
  - Third, the employment numbers do NOT represent the number of people directly employed by the Warriors organization, but also include those employed by other companies (concession stands, parking attendants, etc.)).<sup>3</sup>
  - Our original report generously assumed that 74% of the Warriors annual spending was non-local (or "leaked") in nature. While the ALH report criticized the arbitrary nature of these leakage estimates, a proper remedy of this point, again, works against the ALH's stated goal. The non-arbitrary approach which ALH seems to advocate would have us acknowledge that the leakage rates that are native to the professional sports/spectator industry are already built into the IMPLAN model. Such an analysis would estimate a much larger economic impact.<sup>4</sup>

---

<sup>1</sup> Contrary to what the ALH report suggests, only 3.14% of those employed within Alameda County reside within SF, while only 12.16% of those employed within SF commute from Alameda County.

<http://www.vitalsigns.mtc.ca.gov/commute-patterns#chart-0>

<sup>2</sup> [https://implan.com/index.php?view=document&alias=4-536-fte-a-employment-compensation-conversion-table&category\\_slug=536&layout=default&option=com\\_docman&Itemid=1764](https://implan.com/index.php?view=document&alias=4-536-fte-a-employment-compensation-conversion-table&category_slug=536&layout=default&option=com_docman&Itemid=1764)

<sup>3</sup> Compare to the estimated 771 jobs that are provided by the A's.

[https://salsa.wiredforchange.com/o/5782/images/FinalStadiumReport\\_04.21.10.pdf](https://salsa.wiredforchange.com/o/5782/images/FinalStadiumReport_04.21.10.pdf)

<sup>4</sup> See <http://www.santaclara.org/pdf/49er-Stadium-Impact-Study.pdf> in which this same reasoning is applied to the 49er's new stadium.

- ALH argues that the move of the GSW from Oakland will not lead to a transfer of jobs. They cite the lower cost of living in the East Bay. The statistics they provide, however, only distract from other, more directly relevant data. The US Census Bureau keeps statistics on commuting within the Bay Area. Only 12.16% of people working in San Francisco commute from Alameda County, which is consistent with our analysis.<sup>5</sup>
- ALH argues that the departure of the Golden State Warriors is not an issue since the City of Oakland's Coliseum Redevelopment Area will bring in other sports teams. However, the local news media, as well as the sports media, have covered this issue extensively and it's clear that the City of Oakland, while enthusiastic about bringing in another sports team, is having difficulty finding a private developer to fund the project. This project is estimated by one source (cited below) to cost \$400 million.
  - Several new media articles within the last month indicate that developers are reluctant to invest money in the Oakland Coliseum Redevelopment Area. This RDA is particularly problematic since the Oakland Raiders have been widely mentioned in the media as possible candidates to move to their old home in Los Angeles, or elsewhere. The Raiders could also move to Levi's stadium in Santa Clara, where the 49ers play, though this idea is unpopular.
  - Here are two recent quotes:
 

-“Oakland's most recent stadium proposal — Mayor Jean Quan's Coliseum City retail-office-housing scheme — sank without a trace when neither the Raiders nor A's would climb aboard.”<sup>6</sup>

“The Raiders share a clearly substandard facility with Major League Baseball's Oakland Athletics and, simply, there is no plan. A potential financing partner, Floyd Kephart, dropped out, leaving a \$400 million funding gap that neither Oakland city officials nor Alameda county officials can figure out how to fill. There still remains the remote possibility of the Raiders sharing Levi's Stadium with the 49ers, although both teams loathe that idea. The Raiders seem a certain candidate for relocation.”<sup>7</sup>

---

<sup>5</sup> See <http://www.vitalsigns.mtc.ca.gov/commute-patterns#chart-0>

<sup>6</sup> See San Francisco Chronicle: “Oakland mayor trying to put together new stadium deal for Raiders By Matier & Ross, October 30, 2015 Updated: November 1, 2015 12:35am, <http://www.sfchronicle.com/bayarea/matier-ross/article/Oakland-mayor-trying-to-put-together-new-stadium-6602228.php>.

<sup>7</sup> See The Race for L.A. Heats Up, <http://mmqb.si.com/mmqb/2015/10/22/nfl-los-angeles-relocation-stadiums-chargers-rams-raiders>.

- Contrary to ALH's rosy analysis, the City of Oakland has struggled to find support for this plan.<sup>8</sup> Thus any conclusion that the Orcale Arena can find another sports team is speculation.

**Consequently, in my professional opinion, ALH's responses fail to deal directly with my analysis. On the issue of other sports teams entering the market, the evidence as it stands today indicates that it's unlikely in the foreseeable future that another NBA team will locate to Oakland (and ALH provides no evidence that any team is interested). Further, the possibility of the Oakland Raiders moving would exacerbate the situation. While the City of Oakland is clearly eager to get a new NBA franchise, the media reports indicate that the City's efforts have not been fruitful and any discussion of future teams occupying that space is speculative.**

---

<sup>8</sup> See also San Francisco Chronicle: "Oakland dumping Coliseum development: What's next for Raiders?," By Matier & Ross, September 19, 2015



# **EXHIBIT 5**

	ESTIMATED COST		5-Year Plan				
	FY13-14 \$	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19	Total 5-Year Plan
		1	2	3	4	5	
PRELIMINARY CAPITAL USES							
Transit Investments							
(4) New Light Rail Vehicles	\$18,300,287	-	-	-	21,000,000	-	\$21,000,000
Installation of (3) single crossovers							
Conceptual Engineering Phase	\$176,134	\$182,299	\$0	\$0	\$0	\$0	\$182,299
Detail Design Phase	\$469,691	\$486,130	\$0	\$0	\$0	\$0	\$486,130
Construction Phase	\$7,058,715	\$0	\$0	\$7,826,123	\$0	\$0	\$7,826,123
Bus Substitution Cost	\$650,000	\$0	\$0	\$720,667	\$0	\$0	\$720,667
Total Installation of single crossovers	\$8,354,540	\$668,429	\$0	\$8,546,790	\$0	\$0	\$9,215,219
(Allocation to projects 70%)	\$5,848,178	\$467,900	\$0	\$5,982,753	\$0	\$0	\$6,450,653
Construct new Center Boarding platform 16.6 feet x 320 feet							
Conceptual Engineering Phase	\$500,000	\$0	\$535,613	\$0	\$0	\$0	\$535,613
Detail Design Phase	\$1,500,000	\$0	\$1,606,838	\$0	\$0	\$0	\$1,606,838
Construction Phase	\$17,000,000	\$0	\$0	\$18,848,204	\$0	\$0	\$18,848,204
Bus Substitution Cost	\$3,500,000	\$0	\$0	\$3,880,513	\$0	\$0	\$3,880,513
Total UCSF platform Center Platform	\$22,500,000	\$0	\$2,142,450	\$22,728,716	\$0	\$0	\$24,871,166
Power augments to idling "event" trains	\$6,800,000			\$7,539,282			\$7,539,282
Total Transit Investments	\$55,954,827	\$668,429	\$2,142,450	\$38,814,788	\$21,000,000	\$0	\$62,625,667
Total Transit Investments - Allocation to Project	\$53,448,465	\$467,900	\$2,142,450	\$36,250,751	\$21,000,000	\$0	\$59,861,101
Traffic/Signals Engineering Investments							
CCTV Cameras @ 5 locations	\$175,000	-	\$65,613	\$126,117	-	-	\$191,729
Variable Message Signs (VMT)	\$405,000	-	\$151,846	\$291,870	-	-	\$443,716
Traffic Signals (South Street and Terry Francois Boulevard, and 16th Street and Terry Francois Boulevard, and Illinois Street / M	\$1,200,000	-	\$449,915	\$864,800	-	-	\$1,314,714
Transportation Management Center Network Upgrades	\$80,000	-	\$29,994	\$57,653	-	-	\$87,648
Total Traffic/Signals Engineering Investments	\$1,860,000	\$0	\$697,367	\$1,340,440	\$0	\$0	\$2,037,807
Mariposa Street Restriping Study	\$20,000		\$20,000				\$20,000
Total Estimated Capital Uses	\$57,814,827	\$ 668,429	\$ 2,839,817	\$ 40,155,228	\$21,000,000	\$ -	\$64,663,474
Total Estimated Capital Uses Allocation to Project	\$55,308,465	\$ 467,900	\$ 2,839,817	\$ 37,591,191	\$ 21,000,000	\$ -	\$ 61,898,909
PRELIMINARY CAPITAL SOURCES							
In Lieu TIDF (SFMTA)	\$17,436,000	-	-	-	\$19,434,536	-	\$19,434,536
General Fund Capital Sources (see Financial Feasibility Study)	\$7,955,799	\$0	\$3,390,000	\$2,255,583	\$2,310,216	\$0	\$7,955,799
Total Estimated Capital Sources	\$25,391,799	\$0	\$3,390,000	\$2,255,583	\$21,744,752	\$0	\$27,390,335
CAPITAL SOURCES LESS USES	(\$32,423,028)	(\$668,429)	\$550,183	(\$37,899,645)	\$744,752	\$0	(\$37,273,139)
CAPITAL SOURCES LESS USES ALLOCATION TO PROJECT	(\$29,916,666)	(\$467,900)	\$550,183	(\$35,335,608)	\$744,752	\$0	(\$34,508,573)

	ESTIMATED COST FY13-14 \$	FY14-15	FY15-16	FY16-17	5-Year Plan FY17-18	FY18-19	Total 5-Year Plan
PRELIMINARY OPERATING COSTS							
<u>Transit Operating Costs by Event Type</u>							
Annual Transit Costs: Playoff Basketball Games (16)	\$536,670	-	-	-	\$307,920	\$637,395	
Annual Transit Costs: Basketball Games (43)	\$1,442,300	-	-	-	\$827,536	\$1,713,000	
Annual Transit Costs: Concerts (30)	\$654,000	-	-	-	\$375,240	\$776,747	
Annual Transit Costs: Convention, Theater, Shows & Other Sporting Events (131)	\$916,300	-	-	-	\$525,738	\$1,088,277	
<b>Total Transit Operating Costs (89 large events plus 131 other events/Year)</b>	<b>\$3,549,270</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,036,434</b>	<b>\$4,215,419</b>	1, 4, 7
<u>Enforcement Operating Costs by Event Type</u>							
Annual Enforcement Operating Costs: Playoff Basketball Games (16)	334,941	-	-	-	\$192,176	\$397,805	
Annual Enforcement Operating Costs: Basketball Games (43)	\$ 900,155	-	-	-	\$516,474	\$1,069,101	
Annual Enforcement Operating Costs: Concerts (30)	\$ 628,015	-	-	-	\$360,331	\$745,885	
Annual Enforcement Operating Costs: Local Hospital Access Plan (52)	\$ 110,933	-	-	-	\$63,649	\$131,754	
Annual Enforcement Operating Costs: Convention, Theater, Shows & Other Sporting Events (131)	\$ 918,794	-	-	-	\$527,168	\$1,091,239	
<b>Total Enforcement Operating Costs (89 large events, 52 LHAP and 131 other events/Year)</b>	<b>\$ 2,892,838</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,659,799</b>	<b>\$3,435,784</b>	1,5,7
<u>Mitigation Measure Cost</u>							
Additional PCOs for events 12,500 and over (MM TR-2a)	\$ 226,967	-	-	-	\$130,225	\$269,565	
Additional PCOs during overlapping events (MM TR-11a)	\$ 11,476	-	-	-	\$6,584	\$13,630	
Additional Strategies to Reduce Transportation Impacts of Overlapping Events (M-TR-11c)	\$ 11,476	-	-	-	\$6,584	\$13,630	
Transit Demand Accommodation (22 Fillmore)	\$220,000	-	-	-	\$126,228	\$261,291	
<b>Total Mitigation Measure Operating Costs</b>	<b>\$ 469,918</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$269,621</b>	<b>\$558,115</b>	5,7,8
<b>Total Operating Cost</b>	<b>\$6,912,026</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$3,965,854</b>	<b>\$8,209,318</b>	
PRELIMINARY OPERATING SOURCES							
						\$2,030,448	
<u>Transit Sources Assumptions by Event Type</u>							
Annual Transit Fares: Basketball Games (59)	\$396,947	-	-	-	\$221,223	\$454,612	
Annual Transit Fares: Concerts (30)	\$148,800	-	-	-	\$82,928	\$170,417	
Annual Transit Fares: Convention, Theater, Shows & Other Sporting Events (131)	\$322,800	-	-	-	\$179,900	\$369,694	
<b>Total Annual Transit Fares</b>	<b>\$868,547</b>	<b>-</b>	<b>\$0</b>	<b>\$0</b>	<b>\$484,050</b>	<b>\$994,723</b>	1, 6, 7
<u>Special Event Parking Sources by Event Type</u>							
Annual Parking Revenues: Basketball Games (59)	\$411,037	-	-	-	\$229,075	\$470,750	
Annual Parking Revenues: Concerts (30)	\$156,243	-	-	-	\$87,076	\$178,941	
Annual Parking Revenues: Convention, Theater, Shows & Other Sporting Events (131)	\$337,067	-	-	-	\$187,851	\$386,034	
<b>Total Annual Incremental Parking Revenues</b>	<b>\$904,347</b>	<b>-</b>	<b>\$0</b>	<b>\$0</b>	<b>\$504,002</b>	<b>\$1,035,724</b>	1, 6, 7
<u>Other SFMTA Revenues</u>							
<b>Total Other SFMTA Revenue (See Financial Feasibility Study)</b>	<b>\$ 2,981,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,379,142</b>	<b>\$3,405,761</b>	
<u>General Fund Sources - Mission Bay Transportation Improvement Fund</u>							
<b>Total General Fund Sources (See Financial Feasibility Study)</b>	<b>\$2,158,132</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,598,660</b>	<b>\$ 2,773,110</b>	7, 10
<b>Total Operating Sources</b>	<b>\$6,912,026</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$3,965,854</b>	<b>\$8,209,318</b>	
<b>OPERATING SOURCES and LESS USES</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	

**Notes:**
<sup>1</sup> Total estimated 220 events/year for calculating the operating costs and revenue;

<sup>2</sup> Costs based on FY2014 \$ and inflated to FY2019 \$ with 3.5% increase annually;

<sup>3</sup> The proposed plan includes purchasing 4 additional trains and shifting 2 two cars from another route(s) at the end of the PM commute period. This could increase crowding in other parts of the system;

<sup>4</sup> Transit estimates based on 35% mode share;

<sup>5</sup> Enforcement time at overtime rates;

<sup>6</sup> Estimated transit revenue based on 57% of regular service revenues - equal to other special events. Estimated parking revenue assumes special event zone equivalent to half core, premium zone for AT&T park. 2.75% annual inflation;

<sup>7</sup> FY17-18 operating revenue and expense are calculated for half year instead of full year as the Warrior's Areana is projected to be open for events starting January 2017;

<sup>8</sup> Operating cost for mitigation measurer M-TR-2a: areawide wayfinding plan for parking facilities service the Event Center and M-TR-4a additional Muni service to accommodate transit demand;

<sup>9</sup> Capital Funding source: 1) TIDF is paid at Certificate of Occupancy in FY17-18; 2)Construction related taxes include sales taxes and gross receipts, projections from Controller

<sup>10</sup> General fund sources based on Controller's Estimates

# **EXHIBIT 6**

# Warriors Stadium Economics: Uncertainty and Alternatives

*Produced by:*

**Marin Economic Consulting**

Jon Haveman, Principal

415-336-5705

[Jon@MarinEconomicConsulting.com](mailto:Jon@MarinEconomicConsulting.com)

November 2, 2015

# Contents

Executive Summary	3
Key Findings	4
1: Introduction	5
2: Benefits and Costs of Hosting the Warriors	6
– Benefits/Revenues	6
– Costs	8
– Net Benefits	9
3: On the Economics of Biotech as an Alternative	10
4: Questioning the Benefits and Costs of the GSW Project	16
– Hotel/Motel Occupancy Tax	17
– Parking	18
– Net Benefits	18
5: Some Sensitivity Analysis	19
6: Re-Evaluating the Net Benefits of Hosting the Warriors	20
APPENDIX: Details of Annual Revenue Calculations for Biotech in Comparison with the Warriors Project	22

## Executive Summary

In order for the Golden State Warriors (GSW) to move to San Francisco, the City must make significant infrastructure investments in transit and commit to providing over \$6 million in support each year that the new arena operates. Although estimates of the costs to the City and estimates of City revenues exist, a cash flow analysis of this project has not been produced. Nor has the project been subject to a comparison with plausible alternatives. With a project of this magnitude and with the significant external costs imposed on San Francisco, it is deserving of such an analysis.

This report provides both a cash flow analysis of the arena development and a comparison with a plausible alternative. It also provides a discussion of some of the assumed revenues associated with the project. In particular, the assumptions regarding hotel/motel tax revenues and parking taxes are optimistic. The reality could be millions of dollars less than expected.

Although the cash flow analysis suggests that the project will turn a surplus of revenue in the fourth year of arena operations, a comparison with an alternative development suggests that from a financial perspective the City could do much better. If a biotech facility were constructed in place of the arena, it is possible that City revenues over the course of 22 years (two years of construction and 20 years of operation) could be more than \$39.9 million higher in net present discounted value terms, or \$1.8 million per year over 22 years. This comparison is with a conservative investment. With a more aggressive development option, the net present discounted value of revenues could be as much as \$150 million higher, or nearly \$7 million per year.

It is worth noting that the effective subsidy provided by the City of San Francisco to provide transit infrastructure and traffic mediation amounts to roughly \$150 million over the same 22 years, again in present discounted value terms. Were this subsidy not necessary, the Warriors development project would have a revenue impact to the City comparable to that of the more aggressive development option. Unfortunately, the Warriors development project requires the extensive subsidy while a biotechnology center would not. The biotechnology center, whether using conservative or aggressive assumptions, provides greater net revenues to the City of San Francisco than does the development including the Arena, by between \$1.8 and \$7 million per year.

These figures can be thought of as the amount that San Franciscans are paying to bring the Warriors to town. It is the amount of revenues that the City would forgo with the GSW project, relative to a plausible alternative. This is not to say that the project is a bad idea, but merely to point out what is being given up in order to accommodate the Warriors' move.

## Key Findings

1. A cash flow analysis of the arena through the first twenty years of operation suggests net revenues for San Francisco of \$96 million. This is net of City expenses of approximately \$150 million during this time for transit and traffic mitigation.
2. This \$150 million of City spending in support of the Arena represents an implicit subsidy to the project. The City is funding transit infrastructure and the mitigation of traffic and transportation issues related to the functioning of the arena.
3. Although the Arena generates significant revenues for San Francisco, the City's costs will exceed its revenues from the development for at least the first three years of Arena operation, putting the taxpayers on the hook for the difference.
4. There are elements of the estimates of City revenues that are filled with uncertainty. In particular, the hotel/motel and parking revenues are highly speculative. This uncertainty may imply a broader burden for City taxpayers.
5. If hotel/motel revenues are overstated by half, which is possible, that would reduce City revenues by \$13.2 million in the first 20 years of Arena operation.
6. If an alternative development, one suited to biotechnology, were pursued, the City's net revenues would be nearly \$40 million higher and possibly as much as \$150 million higher over 22 years, or \$7 million per year.
7. An alternative development would have considerably larger economic impacts for the rest of the San Francisco Economy than would an arena, and would generate significantly more jobs, more than 2,000 on-site. Oracle Arena currently generates just 494 jobs.
8. An alternative development would generate as much as \$1 billion in direct economic activity on-site and perhaps as much as an additional \$1 billion in ancillary benefits to the broader San Francisco economy.
9. Forgoing the biotechnology development and pursuing the Arena reduces net revenues to the City of San Francisco by \$2 to \$7 million per year.



## 1: Introduction

In 2017, the Golden State Warriors are expected to begin playing in San Francisco. Although this is an exciting development for the City of San Francisco, the economics of the Warriors presence in the City are unclear. There are likely to be significant revenue benefits for the City, but welcoming the Warriors will also involve significant infrastructure investments and ongoing expenses for the City and County of San Francisco. The net effects of these revenues and costs have not been adequately addressed.<sup>1</sup>

It is not clear whether San Francisco is importing a lucrative asset or a financial burden; that is, it is not clear whether the revenues associated with the Warriors play in San Francisco exceed the considerable upfront investments that the City must make. It is also an open question as to what exactly the City might be giving up in order to host the Warriors. The 12-acre parcel on which the arena is to be built is a valuable piece of real estate. In 2010, Salesforce paid \$278 million for a 14-acre site that includes the property in question. The property, located as it is across the street from UCSF and near a variety of biotech companies, seems a likely candidate for a biotech friendly building.<sup>2</sup> Were this to happen, it would yield significant benefits for the City. Whether or not these financial benefits exceed those associated with the Warriors is the subject of this report.

The report proceeds to review the costs and benefits associated with the Warriors, as they have been made public. This is followed by an estimate of the likely benefits of a biotech development occupying the same space. The benefits of the GSW plan are then examined from a perspective of robustness, whether or not they are likely to come to pass.

This report provides a cash flow analysis of the GSW project and compares that analysis with an alternative development that includes a biotechnology-oriented commercial structure in place of the arena. The GSW project is cash flow positive, but not until at least the fourth year of operations. Relative to the alternative development, even after 20 years of operating, the GSW project falls short in terms of net government revenues by approximately \$39.9 million, or \$1.8 million per year over 22 years. Alternative developments, with more aggressive assumptions, though still plausible, suggest that City revenues could increase by as much as \$151.6 million after 22 years, or \$6.9 million per year, without the need for heavy subsidization on the part of the City in the early years. From a purely financial perspective, the GSW project is a significant drain on City revenues relative to what alternative developments might yield.<sup>3</sup>

---

<sup>1</sup> Accepting the team also results in a significant revenue hole for the City of Oakland in that most events that currently take place at Oracle Arena are projected to move to the new arena.

<sup>2</sup> Its neighbors would include UCSF, Celgene Corporation, National Multiple Sclerosis Society, venBio, Nurix, Clovis Oncology, FibroGen, and Illumina, among others.

<sup>3</sup> The methodology used in this report is comparable to the methods and assumptions used by EPS in producing its fiscal impact analysis of the GSW arena. The Appendix provides a set of tables that indicate where common assumptions are used.

## 2: Benefits and Costs of Hosting the Warriors

### — Benefits/Revenues

As with any economic activity, there are certainly financial benefits for the City of San Francisco associated with hosting the Warriors. A report has been produced for the City of San Francisco that provides a fiscal analysis of the GSW project.<sup>4</sup> These benefits are derived from one-time revenues from the purchase of the land and arena construction and ongoing benefits associated with the events that the stadium hosts. The ongoing benefits also include revenues from commercial and retail activity built into the project, as well as parking revenues both on-site and off-site and off-site hotel and motel taxes. Table 1 provides a summary of an estimate of those benefits. Annually, stadium, retail, and office operations associated with the development are estimated to provide just over \$14.1 million in revenues to the City of San Francisco.

**Table 1. Summary of San Francisco Revenues from Ongoing Stadium Operations**  
(Thousands of 2014 dollars)

<b>Annual Project-Generated Revenues</b>	<b>General Fund Revenues</b>	<b>Dedicated and Restricted Accounts</b>	<b>All Accounts</b>
<b>Revenues From on-Site Businesses</b>	\$9,626 (84%)	\$1,883 (73%)	\$11,509 (82%)
<b>Revenues From off-Site Hotels and Parking</b>	\$1,887 (16%)	\$714 (27%)	\$2,601 (18%)
<b>Total Annual Project-Generated Revenues</b>	<b>\$11,513 (100%)</b>	<b>\$2,597 (100%)</b>	<b>\$14,110 (100%)</b>

Source: EPS and Keyser Marston Associates

Of these \$14.1 million in revenues, \$11.5 million are associated with the arena and on-site businesses. Although the majority of these revenues accrue to the general fund (\$9.6 million), nearly \$2 million goes directly to dedicated and restricted accounts. At the same time, nearly \$2.6 million are estimated to be from off-site sources, \$714 thousand of which are destined for dedicated and restricted accounts.

Table 2 provides estimates of detailed categories of revenues associated with ongoing economic activity once the development is completed. The largest categories of revenue include the stadium admission tax (\$4.3 million), gross receipts taxes (\$2.5 million) property taxes (\$2.5 million, including both general fund and MTA revenues), hotel/motel or transient occupancy taxes (\$1.7 million), and parking taxes (\$2.4 million). These five categories account for the vast majority of revenues associated with the development.

As mentioned, there will also be one-time revenues associated with the construction of the arena and the accompanying office and retail space (Table 3). These benefits amount to just over \$27.6 million, the vast majority of which is associated with the TIDE, or Transportation Impact Development

<sup>4</sup>Economic Planning Systems, *San Francisco Multi-Purpose Venue Project - Fiscal Impact Analysis: Revenues*, 9/25/15. (EPS)

**Table 2. Details of San Francisco Revenues from Ongoing Stadium Operations  
(2014 dollars)**

Item	Amount
<b>Annual General Revenue</b>	
Property Tax (General Fund)	\$912,000
Property Tax in Lieu of VLF	\$868,000
Sales Tax	\$521,000
Hotel/Motel Tax (General Fund)	\$1,667,000
Parking Tax	\$482,000
Stadium Admission Tax	\$4,336,000
<i>Gross Receipts Tax</i>	
On-site	\$2,431,000
Off-site	\$42,000
Utility User Tax	\$254,000
Subtotal	\$11,513,000
<b>Annual Other Dedicated and Restricted Revenue</b>	
Special Fund Property Taxes (Children's, Library, and Open Space)	\$148,000
Public Safety Sales Tax	\$260,000
San Francisco County Transportation Authority Sales Tax	\$260,000
MTA Parking Tax	\$1,929,000
Subtotal	\$2,597,000
<b>Total Ongoing Revenues</b>	<b>\$14,110,000</b>

Source: EPS, 9/25/15, Table 1

Fee.<sup>5</sup> Another significant source of one-time revenue comes in the form of a Property Transfer Tax, \$4.2 million. Sales taxes and gross receipts taxes collected during construction add another \$5.4 million.

<sup>5</sup>[http://www.sf-planning.org/ftp/files/legislative\\_changes/new\\_code\\_summaries/120523\\_TIDF\\_Transportation\\_Impact\\_Development\\_Fee\\_Update.pdf](http://www.sf-planning.org/ftp/files/legislative_changes/new_code_summaries/120523_TIDF_Transportation_Impact_Development_Fee_Update.pdf) Medical and Health Services, and Retail/Entertainment economic activity categories was increased to \$13.30 per square foot, except that the rate for museums, a subcategory of CIE, are \$11.05 per square foot, a reduction from the current amount. The rate for the Management, Information and Professional Services (MIPS) and Visitor Services economic activity categories was increased to \$12.64 per square foot, and the rate for the Production/Distribution/Repair (PDR) category was reduced to \$6.80 per square foot.

**Table 3. Summary of One-Time Revenues from Stadium Construction (2014 dollars)**

Item	Difference
<b>City Fees</b> (per gross building sq. ft.)	
Child Care	\$662,000
Transit Impact Development Fee	\$17,436,000
<b>Other One-Time Revenues</b>	
Sales Taxes During Construction	\$2,355,000
Gross Receipts Tax During Construction	\$2,953,000
Property Transfer Tax from Initial Land Sale	\$4,200,000
<b>Total One-Time Revenues</b>	<b>\$27,605,000</b>

Source: EPS, 9/25/15, Table 2. Revised by Marin Economic Consulting to reflect changes in Table A-6 of the EPS report.

## — Costs

As with the benefits, there are also one-time and ongoing costs. The one-time costs are primarily those associated with enhancing transportation infrastructure and amount to \$55.3 million.<sup>6</sup> These costs include Transit Investments (the purchase of light rail vehicles), the installation of crossovers, the construction of a new center boarding platform, power augments to idling event trains, traffic/signals engineering investments, and a Mariposa Street restriping study.

These expenses are spread out over a four-year period, with the vast majority of expenses occurring in the 2016-17 MTA fiscal year. A major expenditure on light rail vehicles is slated to take place in the 2017-18 FY, when the Event Center begins operating. The costs to MTA are heavily loaded in the early years of the project, before ongoing revenues have begun. Estimated one-time revenues will be available during this time to cover expenses, but they will fall short of the total by approximately \$30.2 million.<sup>7</sup> This difference will be covered by contributions from San Francisco's General Fund, whether all at once or through the financing of these expenditures that are net of revenues.

Table 4 provides the details of the City's estimates of ongoing expenses related to the operation of the Event Center. As of early October, estimated annual net ongoing costs associated with operations at the Event Center amount to \$6.2 million.<sup>8</sup> The vast majority, \$5.1 million, are associated transit costs. It is worth noting that this estimate has decreased by \$0.4 million between May and

<sup>6</sup>One-time costs are from SFMTA, **Capital and Operating Cost Estimates for the Event Center and Mixed Use Development at Mission Bay Blocks 29-32**, 10/6/2015. Estimates are in 2014 dollars.

<sup>7</sup>This figure is the difference between \$57.8 million, the total estimated capital uses estimate (not just that allocated to the project), and the total one-time revenues from Table 3.

<sup>8</sup>Ibid. The word "net" is included because the City has estimated revenues from fares and parking from riders going to events at the arena. These revenues amount to approximately \$1.8 million, split roughly evenly between the two sources.

October of this year. Other expenses are reported as they were presented in May, including nearly \$1 million in additional policing, and \$200 thousand in expenses incurred by DPW.

**Table 4. Ongoing Costs of the Arena (millions of 2014 dollars)**

Agency	May 18 Estimates	October 6 Revisions
SFMTA	\$5.5	\$5.1
SFPD	\$0.9	
DPW	\$0.2	
<b>Total</b>	<b>\$6.6</b>	<b>\$6.2</b>

Source: Golden State Warriors Arena: Event Management  
OCII Commission Presentation, May 18, 2015,  
and MTA, October 6, 2015.

## — Net Benefits

The project comes with considerable costs and benefits. Both upfront net costs and ongoing net revenues are considerable. It is our view that the original EPS report was incomplete in not considering the implications of the project over time. It failed to provide a comparison of overall costs and benefits associated with the GSW project. The reviewer, Keyser Marston Associates, appeared to agree with the EPS approach, saying that a "cash flow approach is appropriate to evaluate a multi-phase project, which does not apply to this project." We respectfully disagree. There are two stages to this project: first, the one-time infrastructure investments and revenue implications of construction and parcel purchase, and second, the ongoing costs and revenues. The project's benefits to the City come inherently in two stages. If both stages yielded a net benefit, the need for a cash flow approach would not be nearly as acute. As the first stage is significantly negative, the overall net benefits must be evaluated over time in order to properly evaluate the project.

This has not been publicly done. Here, we consider a 20-year period following the construction of the Event Center. Given that many of these revenues accrue many years in the future, it is necessary to discount them to today's dollars. The bottom line is the present discounted value of the net stream of revenues to the City of San Francisco.

Assumptions crucial to the present value discount calculation:

1. Discount Rate: 4.0%
2. Rate of inflation: 2.5% (2% for property taxes, as per Proposition 13)

Table 5 provides an estimate of the present discounted value of net revenues to the City of San Francisco, using estimates from the EPS report of September 25, 2015 and from documents from the City of San Francisco. Once the facility has been operating for 20 years, net revenues are ex-

pected to be on the order of \$95.7 million, or approximately \$4.3 million per year over a 22-year period including two years of construction and 20 years of operation. This estimate includes the upfront expenses incurred by the City as well as the ongoing expenses associated with event traffic mitigation.

**Table 5. Net Benefits of GSW Event Center Project over 22 years (Millions of Present Discounted 2014 dollars)**

	Benefits	Costs	Net Benefits
One-Time	\$27.6	\$55.3	-\$27.7
Ongoing	\$221.4	\$98.0	\$123.4
<b>Total</b>	<b>\$249.1</b>	<b>\$153.3</b>	<b>\$95.7</b>

Source: Calculations by Marin Economic Consulting.

The project pencils out as estimated. This calculus, however, begs two important questions:

1. This is a 12-acre plot of land in the middle of a biotechnology hub. Are there better uses for this land from a revenue perspective?
2. Estimating the costs associated with event management is a more certain endeavor than estimating the benefits. How certain is it that the benefits will materialize?

For a project of this magnitude, it is vitally important to evaluate the potential for plausible alternatives to provide more benefits than the project in question. It is also important to consider robustness tests for the revenues in question. Neither of these issues has been publicly addressed. This report will present plausible revenues associated with an alternative development, a space designed with biotech in mind, and will discuss weak points in the revenue estimates presented above.

### 3: On the Economics of Biotech as an Alternative

When evaluating the benefits of an economic endeavor, an exploration of alternatives is vital to understanding the full implications of an investment. Suppose that instead of building a 750,000-square-foot arena, the amount of commercial space on the property were doubled. In this section, we consider such an investment. In this exercise, we follow as closely as possible the assumptions contained in the EPS estimate of revenues associated with the GSW project.

Important assumptions associated with this analysis include:

1. Instead of a 750,000-square-foot arena, a commercial facility is constructed that provides 522,000 square feet of space. This constitutes an exact doubling of the commercial space in the GSW plan. This alternative development is otherwise comparable to the Warriors plan, including the original commercial, retail, and parking structures.

2. The space is designed with biotechnology in mind, which brings with it significant laboratory space. As such, it has a relatively high amount of space per worker associated with it: 250 square feet per employee.<sup>9</sup>
3. The transaction price for the land is unchanged at \$172.5 million.<sup>10</sup>
4. It is assumed that just two-thirds of the biotech revenues generated onsite are subject to gross receipts taxation in San Francisco.<sup>11</sup>
5. It is also assumed that a commercial facility would have ancillary benefits in terms of indirect and induced economic activity in San Francisco. Consistent with the EPS report, it is assumed that 90% of the ancillary output generated is subject to the Gross Receipts Tax.<sup>12</sup>

With the addition of these assumptions, an exercise analogous to that undertaken by EPS is performed for the new development. The new development includes the same retail revenues and costs, the same parking revenues, and essentially double the revenues associated with commercial development. Doubling the office space and maintaining other assets leads to an assessed value of at least \$605.5 million. This is considerably less than the project's assessed value with an arena.

Support for the notion that this construction is feasible comes not only from the 750,000-square-foot arena that the buildings will be replacing, but also from a similar planned development. UCSF was planning to build 500,000 square feet on four acres of blocks 33-34, right next to the site.<sup>13</sup> A new building of the size being considered is clearly feasible on the space currently to be occupied by the arena.

Table 5 presents a comparison of the one-time revenues and expenditures associated with the Event Center versus doubling the commercial space on the 12-acre property. While the Event Center brings with it a need for considerable infrastructure to accommodate the development, it is not clear that a doubling of the commercial space does. Accordingly, the Event Center brings with it a net upfront cost of \$37.5 million, relative to a commercial facility in place of the Center.

---

<sup>9</sup>This is an extremely conservative assumption. Some estimates suggest that a ratio of 150 to 11 is possible. This would considerably increase employment and hence output at the site, increasing the resulting income to both City residents and City coffers.

<sup>10</sup>The actual transaction price has been announced as \$150 million. San Francisco Times, **Warriors buy Mission Bay arena site from Salesforce**, 10/13/2015. In this analysis, the transaction price is kept at \$172.5 million to maintain comparability with the original EPS study. The change in sales price does have an effect on revenue estimates, but the effect is the same for both the Warriors plan and for the alternative, so it does not affect comparisons between the two.

<sup>11</sup>There are several avenues through which revenues may be exempt from gross receipts taxes in San Francisco. This analysis is extremely conservative in assuming that this is more likely the case for biotechnology firms (perhaps because of significant revenues accruing through pass-through companies) than for firms in other industries.

<sup>12</sup>Estimates of these benefits are derived from the 2013 San Francisco County model of IMPLAN. It should be noted that the EPS report does not provide estimates of the ancillary effects of the commercial aspect of the current project. This report similarly omits those benefits for the existing commercial development, but does include them for the commercial property that could be built in place of the stadium. These ancillary benefits are also reduced by one-half to provide a conservative estimate of the development's contribution to net revenues.

<sup>13</sup>UCSF, **Salesforce in talks for S.F. Mission Bay land deal**, SFGate, March 15, 2014.

**Table 5. Summary of One-Time Revenues from Development**  
(Thousands of 2014 Dollars)

Category	Biotech	GSW Arena	Difference
Property Transfer Tax	4,200	4,200	0
City Fees - TIDF	10,902	17,436	-6,534
- Child Care	1,263	662	601
Construction			
- Sales Taxes	1,617	2,354	-737
- Gross Receipts Taxes	2,028	2,953	-925
<b>Total</b>	20,010	27,605	-7,595
<b>One-Time Expenses Associated with Development</b>			
Infrastructure Improvements	10,901	55,308	-44,407
<b>Net One-Time Revenues Associated with Development</b>			
Immediate Net Revenue Impact	9,108	-28,410	37,518

Source: EPS Report (9/25/15) and calculations by Marin Economic Consulting.

Although capital expenditures related to the Event Center are significantly higher than the revenues brought in through the TIDF, such is not expected to be the case for additional commercial space. The TIDF was put in place with developments such as this alternative in mind. Therefore, the transit costs associated with the development are better approximated using the TIDF taxation formula. The TIDF collected from the hypothetical alternative development (including the commercial, retail and parking in the GSW project) will serve as our estimate of related transit costs, \$10,901.

In the analysis above, the sales price for the property on which the event center and accompanying commercial and retail structures will be built is the same as in the EPS report: \$172,546,000. Property transfer tax would result regardless of the purchaser and the end use, but conceivably at a higher price. Salesforce originally paid \$278 million dollars for 14 acres (including the space in question) in 2010. The current sales price is \$172.5 million for 12 acres (actual is \$150 million). The plot of land in question represents the majority of the plot originally purchased by Salesforce, and is the largest single contiguous piece. Property values have also increased substantially since the original purchase by Salesforce.<sup>14</sup> It seems likely then that the value of the land would have increased significantly over the last five years as San Francisco is currently starved for commercial real estate. In the end, the price that the Warriors have paid for the land is surprisingly low. It represents the bulk of a property that was valued at \$278 million in 2010 and market values have only increased in the intervening years. Therefore, the actual market value of the land may well be higher than the price the Warriors have been offered and have paid, with correspondingly higher transfer taxes resulting from some alternative development.

<sup>14</sup> **Salesforce.com Is Said to Plan Sale of San Francisco Land**, Bloomberg Business, March 11, 2014.



Table 6 provides an analysis of the annual City revenues and expenses that can be attributed to each of the projects.<sup>15</sup> The first column is for the alternative development which targets the biotechnology industry. The second column reflects estimates regarding the current Golden State Warriors project, and the final column presents the difference in expected revenue between the two.

**Table 6. Summary of Annual Revenues and Expenses (in Thousands of 2014 Dollars)**

Category	Biotech	GSW Arena	Difference
<b>Annual Direct General Revenue</b>			
Property Tax (General Fund)	\$603	\$912	-\$309
Property Tax in Lieu of VLF	\$570	\$868	-\$298
Sales Tax	\$253	\$521	-\$268
Hotel/Motel Tax (General Fund)	\$0	\$1,667	-\$1,667
Parking Tax	\$243	\$482	-\$239
Stadium Admission Tax	\$0	\$4,336	-\$4,336
Gross Receipts Tax			
On-site	\$4,078	\$2,431	\$1,647
Off-site	\$0	\$42	-\$42
Utility User Tax	\$249	\$254	-\$5
<b>Subtotal</b>	\$5,996	\$11,513	-\$5,517
<b>Annual Other Dedicated and Restricted Direct Revenue</b>			
Special Fund Property Taxes (Children's, Library, and Open Space)	\$98	\$148	-\$50
Public Safety Sales Tax	\$127	\$260	-\$133
San Francisco County Transportation Authority Sales Tax	\$127	\$260	-\$133
MTA Parking Tax	\$971	\$1,929	-\$958
<b>Subtotal</b>	\$1,322	\$2,597	-\$1,275
<b>Total Revenues</b>	\$7,318	\$14,110	-\$6,792
<b>Annual Development-Related Expenses</b>			
SFMTA	\$0	\$5,100	-\$5,100
SFPD	\$0	\$900	-\$900
DPW	\$0	\$200	-\$200
<b>Total Expenses</b>	\$0	\$6,200	-\$6,200
<b>Net Annual Revenues</b>	\$7,318	\$7,910	-\$592
<b>Ancillary Benefits Associated with Each Project</b>			
Gross Receipts Tax	\$754	\$0	\$754
<b>Total Annual Net Revenue Expectation</b>	\$8,071	\$7,910	\$162

Source: EPS Report and calculations by Marin Economic Consulting.

In most categories, the annual revenues are greater for the Event Center than for a development with additional commercial space. The exception is in the Gross Receipts Taxes, where a biotech firm occupies the additional commercial space. Taken as a whole, annual revenues from a purely

<sup>15</sup>This alternative is chosen because it will allow the use of most of the EPS parameters and assumptions in producing annual revenues for the alternative project. See the Appendix for a comparison of calculations between this project and the EPS report.

commercial development are \$6.8 million less than for the project under consideration. Once the expenses related to the activities at the Event Center are taken into consideration, annual net revenues are nearly identical. However, expanding the commercial element of the development has considerable ancillary benefits. Most economic functions both make purchases from the broader economy and also compensate workers, who then in turn make purchases from the broader economy. The gross receipts taxes associated with output in the San Francisco economy that is related to activities in the additional commercial space are estimated to be \$754,000 per year.<sup>16</sup> Once these benefits have been considered, the commercial development results in \$162,000 more in revenues annually than would the arena (last line of Table 6). From a net revenue perspective, a commercial development dominates the Event Center.

As discussed above, merely calculating the one-time costs and an estimate of the ongoing revenue is insufficient. Were it sufficient, a commercial project focused on biotech would clearly dominate the current project. Table 7 provides an evaluation of the 22-year net benefits of an alternative development with space devoted to biotechnology comparable to the evaluation for the current project.

**Table 7. Net Benefits of Alternative Developments after 22 Years**  
(Millions of Present Discounted 2014 Dollars)

	Biotechnology		Net Benefits		
	Benefits	Costs	Biotech	GSW	Difference
One-Time	\$20.0	\$10.9	\$9.1	-\$27.7	\$36.8
Ongoing	\$126.5	\$0.0	\$126.5	\$123.4	\$3.1
<b>Total</b>	<b>\$146.5</b>	<b>\$10.9</b>	<b>\$135.6</b>	<b>\$95.7</b>	<b>\$39.9</b>

Source: Calculations by Marin Economic Consulting

According to these calculations, an alternative development would provide an extra \$39.9 million in revenues for the City of San Francisco (as in Table 7). Net present discounted revenues for the project with an Event Center are \$95.7 million, while a project with commercial space devoted to attracting biotechnology firms has a discounted value of net revenues expected to be \$135.6 million, a difference of \$39.9 million dollars, or an additional \$1.8 million each year on average over the 22 years.

From a cash flow perspective, there is a deep hole early on with the Event Center. The first three columns of Table 8 present annual present discounted flows of revenues into San Francisco City coffers. The final three columns provide a cash flow, or cumulative contribution to City coffers. Several things are immediately apparent from the table:

1. The Event Center puts an enormous hole in the City's budget in the first year (row 1, column 4).

<sup>16</sup>This is half of what is implied by IMPLAN in order to maintain the conservative nature of these estimates.

2. Substituting a commercial development is cash flow positive in the first year (row 3, column 5).
3. It will take four years of operation of the Event Center to dig the City out of the hole (column 6).
4. Although the gap in annual discounted net revenue closes over time, it remains significant even in year 20 (last row, column 4).
5. In year 20 of Event Center operations, there remains a surplus of revenue in the amount of \$39.9 million for the biotechnology development (last row, last column), which continues to grow in subsequent years.

A final issue that differentiates a biotechnology-centric development over an arena is one of economic impact. It is clear from the economics literature that sports stadiums and arenas provide little economic boost to the local economy. At the same time, it is clear that these facilities are responsible for generating some local economic activity. The failure to add to a region's economy is because they tend to displace other entertainment purchases from the broader economy rather than to stimulate new spending. An individual may go to a basketball game instead of to a play, opera, symphony, or rock concert. These facilities are therefore not additive to the economy.

Nonetheless, it has been estimated that economic activity associated with Oracle Arena accounts for \$44.9 million in economic Activity and 494 jobs in Alameda County.<sup>17</sup> It seems likely that the impact of the new arena will be of a similar magnitude.

By comparison, a 522,000 square foot biotechnology facility, with a ratio of space to employee of 250 to 1 can accommodate more than 2,000 employees. That represents four times more employment for biotechnology than for the Arena. It is also consistent with an estimate of economic output on the order of \$1 billion, an order of magnitude higher than for the Arena. Accordingly, the biotechnology development can serve as a much more significant engine of economic growth for the region than can the new event center. Ancillary (indirect and induced) economic benefits for the City of San Francisco are estimated to similarly be in excess of \$1 billion. The gross receipts tax implications for the City of San Francisco are conservatively estimated to be \$754,000 per year.<sup>18</sup>

---

<sup>17</sup>Memo to Patrick Soluri, Attorney at Law, from Philip King, Ph.D., regarding Urban Decay Analysis of Proposed Relocation of Golden State Warriors from Oakland to San Francisco, page 9.

<sup>18</sup>These estimates are from the 2013 San Francisco County model of IMPLAN and have been scaled to 2014 dollars. The actual estimates of ancillary output generated were divided by two in order to keep the estimates conservative. The actual revenues could be significantly greater.

**Table 8. Stream of Net Revenues over Time**  
(Thousands of 2014 Discounted Dollars)

Year	Annual			Cumulative		
	Biotech	GSW	Difference	Biotech	GSW	Difference
<b>One-Time Net Revenues:</b>						
2016	\$9,108	-\$27,704	\$36,812	\$9,108	-\$27,704	\$36,812
<b>Start of Ongoing Revenues:</b>						
2017	\$7,600	\$7,440	\$160	\$16,708	-\$20,264	\$36,972
2018	\$7,450	\$7,290	\$160	\$24,158	-\$12,974	\$37,132
2019	\$7,302	\$7,142	\$160	\$31,460	-\$5,831	\$37,292
2020	\$7,157	\$6,998	\$159	\$38,618	\$1,167	\$37,451
2021	\$7,016	\$6,857	\$159	\$45,633	\$8,024	\$37,609
2022	\$6,877	\$6,718	\$158	\$52,510	\$14,742	\$37,768
2023	\$6,740	\$6,583	\$157	\$59,250	\$21,325	\$37,925
2024	\$6,607	\$6,450	\$157	\$65,857	\$27,775	\$38,082
2025	\$6,476	\$6,320	\$156	\$72,333	\$34,095	\$38,238
2026	\$6,348	\$6,192	\$155	\$78,681	\$40,288	\$38,393
2027	\$6,222	\$6,068	\$154	\$84,903	\$46,355	\$38,547
2028	\$6,099	\$5,945	\$154	\$91,001	\$52,300	\$38,701
2029	\$5,978	\$5,825	\$153	\$96,979	\$58,126	\$38,854
2030	\$5,860	\$5,708	\$152	\$102,839	\$63,834	\$39,006
2031	\$5,744	\$5,593	\$151	\$108,583	\$69,427	\$39,157
2032	\$5,630	\$5,480	\$150	\$114,213	\$74,907	\$39,307
2033	\$5,519	\$5,370	\$149	\$119,732	\$80,277	\$39,456
2034	\$5,410	\$5,262	\$148	\$125,142	\$85,538	\$39,603
2035	\$5,303	\$5,156	\$147	\$130,444	\$90,694	\$39,750
<b>Year 20 of Event Center operation:</b>						
2036	\$5,198	\$5,052	\$146	\$135,642	\$95,746	\$39,896

Source: Marin Economic Consulting

## 4: Questioning the Benefits and Costs of the GSW Project

There are few guarantees with economic endeavors. Assuming that the conditions that exist today will exist tomorrow, the day after that, or 20 years from now is of dubious merit. Conditions change. The level of success of a basketball team ebbs and flows (though hopefully not for the Warriors), the economy grows and shrinks, modes of transportation change, and the availability of hotel rooms may decline as demand grows but supply does not.

This certainly holds true for the construction of an arena. While it is quite likely that the Warriors will play at the arena for the foreseeable future and experience a high level of success for some time, it is not certain that the estimated revenues will materialize. As a case in point, the EPS study assumes a sales price for the land of \$172,546,000. It has just been announced that the sales price was \$150,000,000. That represents a reduction in sales price of 13%, with a corresponding reduc-

tion in revenues that are tied to the sales price: transfer taxes and ongoing property taxes. Although the long-term implications of a decline in ongoing property taxes is likely small, the transfer tax is reduced from \$4.2 million to \$3.65 million, a reduction in one-time revenues of \$549,000. Granted, this is just one percent of the one-time transit costs associated with the project, but it is more than half a million dollars no longer available for other city needs.

Two categories of revenue are particularly suspect: hotels and parking. With regard to hotels, it is not immediately clear that moving the venue from Oakland to San Francisco will necessarily lead to a significant increase in demand for hotel rooms in San Francisco. With regard to parking, the demand for parking ebbs and flows with the economy. It is also likely that demand for parking will decline significantly in the coming years. Estimates included in the EPS report are therefore likely biased upward and those revenues will not fully materialize.

## — Hotel/Motel Occupancy Tax

There are primarily two concerns related to forecasts of increased demand for hotel rooms in San Francisco resulting from the construction of the Event Center. First, San Francisco hotel occupancy rates for much of the year are very high, implying little excess capacity to be filled by basketball fans. During times of high demand for hotel rooms in San Francisco, many of those staying overnight for an event at the arena may choose to stay outside of the City. Alternatively, the demand resulting from arena events may well divert others to hotel rooms outside of the City. Second, it is also likely that many overnight visitors for the Warriors games currently stay in San Francisco, despite attending a game played in Oakland. Despite the change of venue to San Francisco, it is not clear that this shift will result in a significant net increase in demand for San Francisco hotel rooms.

The EPS estimates of revenues associated with the GSW project indicate an increase in hotel room occupancy. However, San Francisco is generally regarded as having a significant shortage of hotel rooms and to be operating near full capacity. Indeed, occupancy rates for San Francisco are high by any standard. San Francisco ranks third nationally in occupancy rates; New York is ranked #1.

The EPS report assumes that 10% of Event Center attendees are potential overnight visitors but that only half of them will constitute new demand for hotel rooms in San Francisco. This assumption represents an increase in demand for hotel rooms of approximately 50,000. However, it is likely that many current overnight visitors to Oracle Arena stay in San Francisco. It is entirely possible that a new arena will have a much smaller net impact on the demand for hotel rooms in San Francisco. This puts some \$1.7 million in expected additional revenues in question. If half of this demand does not materialize, or is displacement of other demand for hotel rooms in the City, this could reduce overall revenues by half, or by \$800,000 to \$900,000 in each year of operation, amounting to more than \$13 million in present discounted terms over 20 years of arena operation.

## — Parking

Going forward, the use of personal vehicles and hence the demand for parking, as well as transit services, is going to be subject to significant disruption. In particular, ride-sharing services continue to grow, especially in San Francisco. With the use of these vehicles, the demand for parking at an event site will likely decline. There is also growing evidence that autonomous vehicles will be available in the near future. Several automobile and tech companies have announced a target date of 2020 for making these cars, or cars with this capacity, available to the general public. The growth of ride-sharing and the development of autonomous vehicles will likely reduce the demand for parking, particularly the demand related to attending events. The advent of autonomous cars being used in car-sharing will significantly increase the rate at which parking demand declines. Current estimates are that the Event Center will result in the demand for parking spaces on the order of 422,000 per year. Some of this demand for parking is likely to evaporate over time.

There could also be a significant decline in the demand for public transportation resulting from increased car-sharing. This has several implications. First, planned investments in infrastructure designed to expand transit availability to serve events may be rendered to some extent obsolete as people move away from transit and toward the use of autonomous vehicles, whether shared or privately owned. This represents a move away from transit toward private vehicles. Despite the projected decline in parking demand, this represents increased need for traffic mitigation of some sort. There will likely be an increase in vehicular traffic to and from the Event Center that could have implications for the arena's neighbors.

With the advent of autonomous vehicles and greater use of ride-sharing services, it is possible that demand for parking could decline significantly over the coming years. If we assume that it declines at a rate of 1% each year, that would reduce revenues associated with parking by \$3.8 million over the 20-year time horizon. It will also reduce parking demand for a biotechnology development, but by less, just \$1.9 million over 20 years. Should parking demand decline more quickly (5%/year), revenues could decline by as much as \$15 million

## — Net Benefits

The point of this discussion is that estimated revenues are suspect, while estimated costs are much more likely accurate. Fixed investments, in particular, are known and not subject to market whims. However in this case, there are unknowns lurking in the cost estimates. It is likely that the revenue implications are biased high, resulting in uncertainty over their future stream with more downside risk than upside. It is already the case that actual one-time revenues have turned out to be less than anticipated (such as the transfer tax, which was lower by \$549,000) and that the City has revised its

estimates of one-time costs upward (by nearly \$16 million) and its estimates of ongoing expenses upward (by \$1.4 million in each year). Clearly, there is great uncertainty in almost all of these estimates.

## 5: Some Sensitivity Analysis

In each case, the revenue estimates relating to the GSW project and the revenue estimates relating to a biotechnology center are uncertain. It is therefore worthwhile to experiment with basic assumptions to better understand the implications for City revenues. Table 9 offers some evidence for the implications of particular assumptions. We provide four separate alternatives that relax in different ways the assumptions inherent in the baseline analysis. The top line of the table presents the baseline results of the analysis, the estimates of present discounted net revenues accruing to the City (corresponding to the last row in Table 7). In the case of the biotechnology development net present discounted revenues are \$135.6 million whereas they are just \$95.7 million for the GSW project, a difference of \$39.9 million.

**Table 9. Summary of Net Present Discounted Value Associated with Alternatives (22 Years, 2015-2036)  
Comparing the Multi-Purpose Venue with a Biotechnology Center (Millions)**

Item	Biotech	GSW	Difference	
			Over 22 Years	Per Year
Baseline	\$135.6	\$95.7	\$39.9	\$1.8
Alternative 1	\$135.6	\$82.6	\$53.1	\$2.4
- Hotel/Motel Revenues are overstated by 50% in EPS report		<i>OverBaseline :</i>	\$13.2	
Alternative 2	\$147.0	\$95.7	\$51.2	\$2.3
- Area to employee ratio for Biotech of 200/1		<i>OverBaseline :</i>	\$11.3	
Alternative 3	\$154.5	\$95.7	\$58.7	\$2.7
- Add 200,000 sq ft to New Commercial Space (722,000 total)		<i>OverBaseline :</i>	\$18.0	
Alternative 4 (Extreme)	\$234.2	\$82.6	\$151.6	\$6.9
- Area to employee ratio for Biotech of 150/1		<i>OverBaseline :</i>	\$111.7	
- 100% of Biotech revenues are subject to GRT				
- Hotel/Motel Revenues are overstated by 50%				
- Add 200,000 sq ft to New Commercial Space (722,000 total)				

Source: Marin Economic Consulting

The first alternative scenario assumes that one-half of the demand for hotel rooms in San Francisco fails to materialize with the GSW project. This results in a reduction of approximately \$13.2 million

in net present discounted revenues. The revenues associated with the biotechnology development are unchanged because there are no transient occupancy tax revenues assumed to occur.

The second alternative assumes a greater density of employment in the new commercial facility, leaving the existing commercial plans constant. If there are 200 square feet per employee, rather than 250, revenues associated with the new facility increase by more than \$11.3 million relative to the baseline. This increase in revenue stems largely from an increase in the output produced by the building's occupants, resulting in increased gross receipts tax revenues. It also increases the occupants interactions with the broader San Francisco economy, having a positive impact on ancillary benefits. Further reducing the space per employee will have correspondingly larger increases in revenues.

A third alternative assumes a larger facility is constructed, with 722,000 square feet of space rather than 522,000 square feet of space. This increases the number of employees working in the space by nearly 40%, holding the assumption that 250 square feet per employee is required. With greater space comes increased employment and increased output and increased demand for the output of the rest of the San Francisco economy. Accordingly, revenues are estimated to increase by nearly \$18.0 million with an expanded space. Under this scenario, the net discounted value of City revenues increases by \$58.7 million relative to the GSW project. Even larger spaces would have a correspondingly larger impact on City revenues.

Finally, an extreme alternative is offered. Alternative 4 allows for a 150 to 1 ratio of square feet to employees, assumes that all of the revenues accruing to the biotech occupants are subject to the GRT, reduces by one-half assumed hotel/motel TOT revenues associated with the Event Center, and involves a building with 722,000 square feet. Under this alternative, City revenues increase by \$111.7 million relative to the baseline, with biotechnology revenues exceeding GSW revenues by nearly \$151.6 million over 22 years and \$6.9 million per year.

These alternatives are not put forward to suggest that there is \$151.6 million being left on the table (though there may be), but rather to illustrate the range of differences that underlying assumptions can make. At the same time, even the extreme alternative is plausible.

## **6: Re-Evaluating the Net Benefits of Hosting the Warriors**

There are two fundamental points made in this report:

1. Estimates of costs and revenues are highly speculative, and the evidence suggests that there is more downside risk to the GSW project than upside.
2. There is significant revenue that is forgone by the City in order to bring the Warriors to town.



Both of these points raise significant questions about the Warriors arena project from a financial perspective. First, how comfortable are taxpayers in their understanding of the implications of this development? Second, is this the right development?

The respective answers are "not very" and "quite possibly no." There is uncertainty in the information available and replacing the Event Center in the project with additional commercial space has the potential to increase City revenues significantly.

Another way of thinking about the differences in revenues between the GSW project and a biotechnology development is that these differences reflect the price the City is paying in order to bring the Warriors to town. There are certainly other more tangible costs, but these costs are also real.

The above analysis indicates that even with relatively conservative assumptions, in particular those surrounding employment in the new development and the size of the new development, a biotechnology center would increase City revenues significantly relative to the Event Center. Under the baseline scenario, the difference is \$39.9 million over 22 years. Under the most extreme, yet plausible, scenario presented, an additional \$151.6 million could be raised over the 22-year period. This analysis presents a range of increases of between \$1.8 and \$6.9 million per year. It should be noted that the extreme alternative does not include the possibility of a larger facility. Were it to do so, the forgone annual revenues would be significantly higher. This suggests that the City of San Francisco is likely paying more than \$1.8 million and possibly upwards of \$7 million per year in forgone revenues in each of the next 22 years to accommodate the Warriors.

Every economic development represents a choice. That choice is between the proposed development and plausible alternatives. The City has chosen to pursue a basketball team without exploring or disclosing the relative merits of the project compared with plausible alternatives. This report is not designed to condemn the choice, but rather to better inform the debate on the implications of this choice.

## APPENDIX: Details of Annual Revenue Calculations for Biotech in Comparison with the Warriors Project

This appendix provides tables illustrating key differences in the assumptions and results between the analysis presented in the EPS report of 9/25/15 and the biotechnology project discussed in the text. The tables very closely mirror those in the EPS report and reproduce assumptions and results from that report. Some tables are not applicable to the biotechnology project and are omitted. In particular, Tables A-9 through A-11 are omitted. It should also be noted that these tables have not been updated to reflect the actual purchase price paid by the Warriors. It does, however, include updates to the City's estimates of one-time and ongoing costs.

**Table A-1. San Francisco Revenue Summary (Thousands of 2014 dollars)**  
**Comparing the Multi-Purpose Venue with a Biotechnology Center**

Item	GSW	Biotech	Difference
<b>Annual General Revenue</b>			
Property Tax (General Fund)	\$912	\$603	-\$309
Property Tax in Lieu of VLF	\$868	\$570	-\$298
Sales Tax	\$521	\$253	-\$268
Hotel/Motel Tax (General Fund)	\$1,667	\$0	-\$1,667
Parking Tax	\$482	\$243	-\$239
Stadium Admission Tax	\$4,336	\$0	-\$4,336
<i>Gross Receipts Tax</i>			
On-site	\$2,431	\$4,078	\$1,647
Off-site	\$42	\$0	-\$42
Utility User Tax	\$254	\$249	-\$5
Subtotal	\$11,513	\$5,996	-\$5,517
<b>Annual Other Dedicated and Restricted Revenue</b>			
Special Fund Property Taxes (Children's, Library, and Open Space)	\$148	\$98	-\$50
Public Safety Sales Tax	\$260	\$127	-\$133
San Francisco County Transportation Authority Sales Tax	\$260	\$127	-\$133
MTA Parking Tax	\$1,929	\$971	-\$958
Subtotal	\$2,597	\$1,322	-\$1,275
<b>TOTAL REVENUES</b>	<b>\$14,110</b>	<b>\$7,318</b>	<b>-\$6,792</b>

Source: EPS and Marin Economic Consulting

**Table A-2. San Francisco City One-Time Fee Revenue Summary (2014 dollars)**  
**Comparing the Multi-Purpose Venue with a Biotechnology Center**

Item	GSW	Biotech	Difference
New Gross Building Area (sq.ft.)		1, 156, 500	
<b>City Fees</b> (per gross building sq.ft.)			
Child Care	\$661, 870	\$1, 263, 240	\$601, 370
Transit Impact Development Fee	\$17, 435, 765	\$10, 901, 655	−\$6, 534, 110
<b>Total Development Impact Fee</b>	\$18, 097, 635	\$12, 164, 895	−\$5, 932, 740
<b>Other In-Lieu Impact Fees</b>			
<b>Other One-Time Revenues</b>			
Sales Taxes During Construction	\$2, 354, 634	\$1, 617, 159	−\$737, 475
Gross Receipts Tax During Construction	\$2, 953, 050	\$2, 027, 835	−\$925, 215
Property Transfer Tax from Initial Land Sale	\$4, 200, 000	\$4, 200, 000	\$0

Source: EPS and Marin Economic Consulting

Note: The gross building area for the biotechnology development includes four commercial buildings with 1,044,000 square feet and retail of 112,500 square feet.

**Table A-3. San Francisco Property Tax Estimates (2014 dollars)  
Comparing the Multi-Purpose Venue with a Biotechnology Center**

Item	Assumptions	GSW	Biotech	Difference
<b>Secured Assessed Value</b>				
Multi-Purpose Venue		\$550,000,000	\$0	\$550,000,000
<b>Other Development</b>				
Event Management/Team Operations Space		\$14,500,000	\$0	\$14,500,000
Retail		\$41,343,750	\$41,343,750	\$0
Office		\$302,760,000	\$605,520,000	-\$302,760,000
Parking		\$33,250,000	\$33,250,000	\$0
Subtotal		\$941,853,750	\$680,113,750	\$261,740,000
<b>New Taxable Value</b>				
Gross Secured Possessory Interest/Property Tax	1.0% of new AV	\$9,418,538	\$6,801,138	\$2,617,400
Unsecured Tax from the Warriors		\$183,333	\$0	\$183,333
Unsecured Tax from Other Uses		\$391,854	\$0	\$391,854
Subtotal		\$9,993,725	\$6,801,138	\$3,192,587
(less) Existing Taxes		-\$1,795,169	-\$1,795,169	\$0
Total		\$8,198,556	\$5,005,969	\$3,192,587
<b>Property Tax</b>				
Tier 1 Property Tax Pass Through	20.00%	\$1,639,711	\$1,001,194	\$638,517
Tier 2 Property Tax Pass Through	16.8%	\$1,377,357	\$841,003	\$536,355
Tier 1 and 2 Property Tax Pass Throughs	36.80%	\$3,017,068	\$1,842,196	\$1,174,872
Net New General Fund Share (after ERAF)	55.59% property tax tier 1 pass through	\$911,515	\$556,564	\$354,952
Special Funds	9.00% property tax tier 1 pass through	\$147,574	\$90,107	\$57,467
SF Unified School District	7.70% property tax pass through	\$232,314	\$141,849	\$90,465
Affordable Housing Set Aside		\$1,639,711	\$1,001,194	\$638,517

Source: EPS and Marin Economic Consulting

**Table A-4. Property Tax in Lieu of VLF Estimates (2014 dollars)**  
**Comparing the Multi-Purpose Venue with a Biotechnology Center**

Item	GSW	Biotech	Difference
Citywide Total Assessed Value (millions \$)	\$172,489	\$172,489	
Total Assessed Value of Project (millions of \$)	\$941.85	\$680.11	\$261.74
(less) Existing Value	-\$179.52	-\$179.52	
Net Increase in Project Assessed Value (millions \$)	\$762.34	\$500.59	\$261.75
Growth in Citywide AV due to Project	0.442%	0.290%	
Total Property Tax in Lieu of Vehicle License Fee (VLF) (FY2014-15)	\$196,480,000	\$196,480,000	
<b>New Property Tax in Lieu of VLF</b>	<b>\$868,372</b>	<b>\$570,220</b>	<b>\$298,152</b>

Source: EPS and Marin Economic Consulting

**Table A-5. Property Transfer Tax (2014 dollars)**  
**Comparing the Multi-Purpose Venue with a Biotechnology Center**

Item	Assumptions	GSW	Biotech
One-Time Transfer Tax			
Estimated Land Sale		\$172,546,000	\$172,546,000
<b>One-Time Transfer Tax</b>	<b>\$24.34 per \$1,000 value</b>	<b>\$4,199,770</b>	<b>\$4,199,770</b>

Source: EPS and Marin Economic Consulting

Note: The actual transaction price for the property is \$150 million.

**Table A-6. Sales Tax Estimate (thousands of 2014 dollars)**  
**Comparing the Multi-Purpose Venue with a Biotechnology Center**

Item	Assumptions	GSW	Biotech	Difference
<b>Taxable Sales from Multi-Purpose Venue</b>				
Warriors Game Concessions and Merchandise	\$21.60 per attendee	\$15,768		
Other Event Concessions	\$11.00 per attendee	\$12,859		
Total		\$28,627		
Sales Tax to General Fund	1.0% of taxable sales	\$286		
(less) Existing Sales Shift		-\$18		
Net New Sales Tax		\$267		
<b>Taxable Sales From Commercial Space</b>				
Retail	\$450 per sq ft	\$50,625	\$50,625	\$0
Sales Tax to San Francisco	1.0% of taxable sales	\$506	\$506	\$0
(less) Shift From Existing Sales		-\$253	-\$253	\$0
Net New Sales Tax		\$253	\$253	\$0
<b>Annual Sales Tax after Shift of Existing Sales</b>				
Sales Tax to the City General Fund	1.00%	\$521	\$253	-\$268
Public Safety Sales Tax	0.50% of taxable sales	\$260	\$126	-\$133
San Francisco County Transportation Authority	0.50% of taxable sales	\$260	\$127	-\$134
SF Public Financing Authority (Schools)	0.25% of taxable sales	\$130	\$63	-\$67
<b>One-Time Sales Taxes on Construction Materials and Supplies</b>				
New Taxable Value		\$941,854	\$680,114	-\$261,740
Supply/Materials Portion of Development Value	50.00%	\$470,927	\$340,057	-\$130,870
San Francisco Capture of Taxable Sales	50.00%	\$235,463	\$170,028	-\$65,435
Sales Tax to San Francisco	1.0% of taxable sales	\$2,355	\$1,700	-\$654

Source: EPS and Marin Economic Consulting

**Table A-7. Transient Occupancy Tax Estimates Estimate (2014 dollars)**  
**The implications of over-estimating hotel and motel occupancy.**

Item	Assumptions	GSW	50% of GSW	Difference
<b>Overnight Attendees in San Francisco for Multi-Purpose Venue Events</b>				
Events per Year		205	205	0
Total Turnstile Attendance		1,899,000	1,899,000	0
Potential Overnight Visitors		189,900	189,900	0
Net New Overnight Visitors	50% (25%)	94,950	47,475	-47,475
Hotel Room Demand	1.90 people per room	49,974	24,987	-24,987
Off-Site Hotel/Motel Room Proceeds	\$238 per-room night	\$11,907,203	\$5,946,868	-\$5,960,335
<b>Total Hotel/Motel Tax Revenue</b>	14% of room revenue	\$1,667,012	\$832,562	-\$834,450

Source: EPS and Marin Economic Consulting

**Table A-8. Parking Tax Estimates (2014 dollars)**  
**Comparing the Multi-Purpose Venue with a Biotechnology Center**

Item	Assumptions	GSW	Assumptions	50% of GSW	Difference
<b>Total Spaces On-Site</b>		950		950	
<b>Parking Revenues On-Site</b>					
Total					
(less) Vacancy	\$25 per day 30%	\$8,668,750 -\$2,600,625	\$20 per day 30%	\$6,935,000 -\$2,080,500	
Total		\$6,068,125		\$4,854,500	
<b>Spaces Off-Site</b>					
Annual Demand (spaces)		\$178,791			\$0
Total Parking Revenue	\$20 per day	\$3,575,821			\$0
<b>San Francisco Parking Tax</b>					
Parking Tax Allocation to Gen'l Fund/Special Projects	25% of annual revenue	\$2,410,987	25% of annual revenue	\$1,213,625	-\$1,197,362
Parking Tax Allocation to Municipal Transportation Fund	20% of tax proceeds	\$482,197	20% of tax proceeds	\$242,725	-\$239,472
	80% of tax proceeds	\$1,928,789	80% of tax proceeds	\$970,900	-\$957,889

Source: EPS and Marin Economic Consulting

**Table A-12. Parking Tax Estimates (2014 dollars)**  
**Comparing the Multi-Purpose Venue with a Biotechnology Center**

Item	Assumptions	GSW	Biotech	Difference
<b>Arena Utility Cost</b>		\$1,490,000	\$0	−\$1,490,000
<b>Other Uses</b>				
Retail	\$2.87 per sq.ft.	\$322,875	\$322,875	\$0
Office (Including Event Management and Team Operations)	\$2.87 per sq.ft.	\$1,569,890	\$2,996,280	\$1,426,390
Total Annual Commercial Utility Cost		\$3,382,765	\$3,319,155	−\$63,610
<b>Utility User Tax</b>	7.5% of commercial utility cost	\$253,707	\$248,937	−\$4,771

Source: EPS and Marin Economic Consulting