2.17 HYDROLOGY AND WATER QUALITY

2.17.1 SEA LEVEL RISE

Comments

I am writing to provide you with our staff’s initial comments on portions of the Treasure Island Draft Environmental Impact Report pertaining to sea level rise. We will be providing further comments on or before the comment submission deadline of August 26, 2010, but I wanted to convey our overall support for the manner in which the issue of sea level rise is being addressed in the Treasure Island project.

We are proud that BCDC has been recognized as a leader in the development of sea level rise policy for the Bay Area. As part of our work, we actively participated with other departments in the California Natural Resources Agency in drafting the State of California’s interagency 2009 Climate Adaptation Strategy, and we are currently working on amendments to our Commission’s San Francisco Bay Plan to address this critical issue.

The Treasure Island project has already earned praise from local, state, national, and international governmental agencies and NGO’s for its innovative approach to sea level rise and general sustainability measures. For example, as the attached letter indicates, Governor Schwarzenegger has recognized the City’s approach on the Treasure Island project for its compliance and consistency with the State of California’s Climate Adaptation Strategy.

Our staff has worked closely with the Treasure Island Development Authority (TIDA) and the project developer, Treasure Island Community Development, LLC (TICD), for the past three years on potential sea level rise issues and adaptation strategies to address this challenge. The TIDA’s and TICD’s ability to understand the complexities that must be confronted on this critical long-term issue has been impressive. In addition, their technical and engineering responses have been well thought-out and innovative, and their commitment to long-term adaption strategies, including funding those strategies, will ensure that this ABAG Priority Development Area will be well positioned to protect the community from future sea level rise. The implementation of the proposed anticipatory design and adaptive management approach offers the promise of becoming an example of techniques for sea level rise protection for other communities in the Bay Area and beyond. (Will Travis, Executive Director, San Francisco Bay Conservation and Development Commission) [1.1]

The proposed adaptive management strategy also includes monitoring and a decision-making framework to initiate the adaptive strategy measures. As proposed, the Project includes over 5-miles of trails and a variety of other public amenities directly adjacent to the shoreline. The Commission’s Bay Plan policies regarding public access state, in part, that all fill projects “should increase public access to the Bay to the maximum extent feasible” and, further, that public access areas should be maintained over time. While the public access along the shoreline has been designed with a development setback to allow any future increases in elevation to accommodate higher sea level rise elevations, Section IV.O states that during large rain events occurring simultaneously with 100-year tides the adaptive strategies approach would allowing ponding to occur for 1 to 3 hours next to the levees. Due to the location of the public access along the entire shoreline around Treasure Island, we are concerned about the impact of the ponding on the usability of the public access.
Further, if sea level rises beyond 36 inches, it can be assumed that over time the levees would need to be raised and, likely, widened at the base, thereby partly or entirely obstructing the public’s view of the Bay from inland areas, encroaching upon and reducing the area devoted for public use, and impacting the overall public access experience. In light of these potential impacts on the access area, the adaptive management approach should address these issues before the overtopping of the levees occurs without compromising the views of the Bay from the shoreline public access areas. While we are aware of the existing site constrains, seawalls are not the preferred adaptive management tool. Therefore, we are also concerned about the use and location of sea walls as an adaptation approach along the shoreline and how these sea walls would be modified in the future for a sea level rise greater than 36-inches. (Karen Weiss, Coastal Program Analyst, San Francisco Bay Conservation and Development Commission) [17.2]

BCDC released a series of maps showing areas vulnerable to 16 inches of sea level rise at mid-century and 55 inches by the end of the century. The map for Treasure Island is attached and shows areas subject to 55 inches of sea level rise, whereas the DEIR assumes sea level rise of 36 inches with 6 inches of freeboard (Hydrology and Water Quality page IV.O.29); therefore, it appears that the DEIR’s analysis is inadequate. It is unknown if the attached map accounts for the perimeter berm in the modeling. The BCDC’s and the DEIR’s (again at Hydrology and Water Quality page IV.O.29) estimates only represent sea level rise in the next century; however, it is reasonable to assume that additional sea level rise will occur within the lifespan of the Project, which is expected to exceed a century. Therefore, it seems the DEIR did not adequately analyze a sea level rise of 55 inches or the risks to public safety for the lifetime of the Project (i.e. after 100 years).

In fact, Impacts HY-11 and HY-12 find that these concerns regarding tsunamis and sea-level rise are “…less than significant.” The “less than significant” determination is without any justification or scientific (basis) discussion; indeed, it flies in the face of the clear facts stated and delineated on the attached Treasure Island Map and the findings of the California Coastal Commission (Addendum to Commission Meeting for Friday, June 12, 2009 – North Coast District Item F4a, Local Coastal Program Amendment No. CRC MAJ-1-09; Costa Norte) – i.e., tsunami resilience design proposes a minimum sea level rise rate of three feet per century. These findings also mention that tsunami hazard maps should account for sea level rates of three to six feet per century.

Moreover, no definitive publication has been produced that addresses sea level rise, making it impossible to determine the appropriate height of the berm. It is conceivable that, during the lifetime of the Project, the sea level may increase more than the Project’s contemplated berm designed height; again, the DEIR fails to address this probability.

Sea level rise is especially problematic for Treasure Island because of its low elevation; thus, as water levels rise around Treasure Island, the shallow ground water table would be affected. This obvious fact/consequence may alter the liquefaction potential, structural foundations, and the perimeter berm affecting the Project, its viability and the safety of its inhabitants. Indeed, the implications of placing a community behind an inadequately designed (i.e., insufficient width, height and structural materials) perimeter berm could create problems that will be deferred to the future and costly to the detriment of the Project’s inhabitants and San Francisco’s taxpayers of. Proper, detailed, worst-case scenario future planning for sea level rise is technically feasible from an engineering and geologic perspective; however, the maintenance/repair/improvement costs in the future may be excessive and unrealistic. As such, these potential significant impacts must be fully addressed and mitigated at the full cost and liability of the Project’s developer.
Furthermore, it seems the Project provides no study of alternative berm systems. Key to this analysis is that, although a soil/rock based system will be much cheaper for the developer to construct at the beginning of the Project, the completed structure will be very expensive to maintain; in addition, it cannot be easily raised/expanded, except at great difficulty and cost – to someone or entity other than the Project’s developer. A study for a superior alternative such as an "Amsterdam Dam" (paraphrased) [i.e., a core-tin, [sic] steel-plate, bulkwork system, anchored by foundation piles, as in Discovery Bay, California], and should have been included in the DEIR - it is a system that, although more costly to first install, can be easily expanded (i.e., its height raised) to address sea level rise if the foundation piles are of a sufficient diameter and driven to a bedrock depth. Normally and understandably, a developer does not want to pay for the very large, front-end costs, but rather seeks to have has little money in the system as possible and then “back-end load” the maintenance and future expansion onto the residents and public via a reclamation district; such a district will mostly likely fail if it does not conservatively estimate and collect very large future assessments. (Nick S. Rossi, Esq., representing Kenneth and Roseanna Masters) [19.3]

1) SERIOUS INADEQUACIES IN ADDRESSING, AND FAILURES TO ACCOUNT FOR, PROJECTED SEA LEVEL RISE

As is now commonly understood and established by widespread and overwhelming scientific consensus, the Earth’s oceans and the San Francisco Bay are now undergoing sea level rise due to planetary climate warming.

Until very recently, science policy groups, including and especially the Intergovernmental Panel on Climate Change (IPCC) had been projecting that the worst case scenario for global sea level rise would be no higher than 1.5 meters by the year 2100.

However new data and reports released in November 2009 indicate that the worst case scenario for global sea level rise is now projected to be at least 2 meters by the year 2100. More importantly, NASA’s James Hansen, widely recognized as the preeminent climate change expert on Earth, argued credibly as early as 2007 that worst case scenario sea level rise will instead be 5 meters by the year 2100. In light of the fact that the IPCC’s predictions of sea level rise from just two years ago have been found to be inadequate by an entire one half meter, and that James Hansen had previously argued in 2007 that the IPCC’s projections were indeed inadequate, Hansen’s projection of a worst case scenario of 5 meters sea level rise by the year 2100, must now be assumed as the guide for all plans for the Treasure Island and Yerba Buena Island Redevelopment Plan.

The following reports, with referenced data, prove this case:

- On Nov 22, 2009 NASA released new satellite gravimetric data from a 7 year study of Antarctica showing that the massive East Antarctic Ice Sheet, which scientists previously thought was gaining in volume, is suddenly (as of 2006) undergoing rapid and widespread melting. See http://www.guardian.co.uk/environment/2009/nov/22/east-antarctic-ice-sheet-nasa

The NASA study report itself can be ordered from Nature Geoscience at http://www.nature.com/ngeo/journal/v2/n12/full/ngeo694.html This research also shows massive new and more rapid melting in West Antarctica and Greenland. Quantified analysis of how this dramatic increase in melting will measurably impact sea level rise is shown in the next item.

- As of November 24, 2009, in a report entitled ‘The Copenhagen Diagnosis’, even historically overly equivocal IPCC scientists revised their sea level rise projections to a possible 2 meters (6.5 feet) by the year 2100. This report can be accessed at
http://www.copenhagendiagnosis.org/download/default.html The section of the report which describes the new sea level rise projections is on page 37 and 38 of the document.

- In a March 2007 report, NASA’s James Hansen, who first alerted the general public and policy makers to the global climate crisis, discusses the probability of a 5 meter (16.25 feet) sea level rise. See Hansen’s report at: http://www.iop.org/EJ/article/1748-9326/2/2/024002/erl7_2_024002.html Note that Hansen’s report is speculative by nature, simply because ice sheet melting and other data will not exist to prove the case that he argues, until that level of melting is already happening. However, given that the NASA gravimetric data noted above shows that Antarctic and Greenland ice sheets are currently undergoing rapidly accelerating melting at previously unforeseen rates (and at rates which continue to accelerate even further) there is absolutely no reason whatsoever to doubt Hansen’s predictions; especially in light of the fact that Hansen’s past predictions have consistently proved to be correct.

CONCLUSIONS - SEA RISE:

Since James Hansen’s prediction of a worst case 5 meter sea level rise by the year 2100 is highly credible, it is, at the very least, the standard of a predicted 5 meter rise which must be used as the worst case guideline for all plans for the Treasure Island and Yerba Buena Island Redevelopment Plan.

More importantly, good engineering practice (especially when dealing with a factor with such high unpredictability and potentially severe and costly outcomes as climate induced sea level rise) would call for at least an additional 100% margin of safety over worst case projections to be adopted for the Treasure Island and Yerba Buena Island Redevelopment Plan. This means that the safest standard for assumed worst case sea level rise in the project would be at least 10 meters (32.5 feet) of sea level rise by the year 2100. Even if planners were to use the likely far too equivocal 2 meter worst case sea rise projection in The Copenhagen Diagnosis, an additional 100% margin of safety would still demand a minimum 4 meter rise assumption.

Since the project plans and DEIR for the Treasure Island and Yerba Buena Island Redevelopment Plan have not taken into account the November 2009 reports noted above, and since planners and drafters were apparently unaware of Hansen’s earlier and even more serious 5 meter rise projection, the project plans and DEIR are therefore utterly inadequate in addressing and including sufficiently high sea level rise projections.

The DEIR cites findings of agencies such as the San Francisco Bay Conservation and Development Commission (these agencies themselves relying on data that is not sufficiently current) as a justification of its own findings. Clearly, citing any given agency’s findings which are not sufficiently current, regardless of the recognized authority of that agency, is not in any way adequate for a proper DEIR.

Specific Inadequacies

The section of the DEIR which deals most comprehensively with sea level rise; IV.O. ‘Hydrology and Water Quality’, has numerous entries on sea level rise. In every instance, the core predictions and plans referenced in the DEIR are dramatically overwhelmed by even the new minimum worst case scenario described above of 2 meters (78 inches) rise by the year 2100. Most of the DEIR and project plan sections mentioning sea level rise assume a maximum of 36 inches sea level rise, and the highest specific potential rise addressed in the plan is 55 inches.

Furthermore, while the DEIR claims that the project plans allow for sea rise higher than 55 inches to be addressed through ‘adaptive management’ none of the references to this ‘adaptive management’ plan engage in any concrete scoping whatsoever of specifically enumerated
hypothetical heights of rise, exactly how such rise would be mitigated, and exactly how specifically quantified funding would be assured in order to guarantee that such mitigation would in fact take place. The so-called ‘elements’ and ‘activities’ of the ‘adaptive management’ plan are described in the DEIR beginning on page IV.O.33. under the heading ‘Adaptive Management Strategy’ and ending on page IV.O.35. under the heading ‘Reporting Requirements’. The total lack of specificity in this section is absolutely unacceptable.

The DEIR must be revised to describe a clear response strategy for specific higher sea rise levels of at least each progressive 6 inch increment above 36 inches, progressing all the way up to, at least, James Hansen’s hypothetical 5 meter rise. Specific cost projections must be provided for each of these scenarios. And clear, detailed, and fully plausible funding mechanisms which will finance necessary mitigations must be described and quantified.

Most importantly, it is conceivable that some given level of sea rise above two meters might make any sufficient, safe and affordable mitigation effectively impossible to achieve while still proceeding with the Treasure Island and Yerba Buena Island Redevelopment Plan. The revised section must give a clear projection of the specific threshold sea level rise at which such effective impossibility of mitigation will occur. This revised section must clearly detail sufficient ongoing assessment strategies to identify promptly when this threshold appears likely to in fact be reached, and accordingly, must provide a clear exit strategy for ceasing operations under the Treasure Island and Yerba Buena Island Redevelopment Plan, to instead adopt the ‘No Project Alternative’ as described in the DEIR. (Eric Brooks, Sustainability Chair, San Francisco Green Party) [30.1]

Another highly troubling aspect of the DEIR and project plan’s neglect of sea level rise assessments is in their failure to sufficiently address potential sea level rise interaction with hazardous materials in and on the project site.

In ‘Implications of Sea Level Rise for Hazardous Waste Sites in Coastal Floodplains’ (see http://www.epa.gov/climatechange/effects/downloads/Challenge_chapter9.pdf) the authors establish clearly the extensive dangerous interactions that can occur as sea level rise exacerbates flooding and triggers other negative impacts in hazardous waste sites, such as those in the Treasure Island and Yerba Buena Island Redevelopment Plan.

Yet astoundingly, of the pertinent DEIR sections, neither IV.N. ‘Geology’; IV.O. ‘Hydrology and Water Quality’; nor IV. P. ‘Hazards’ assess in any comprehensive or substantial way the very serious dangers of potential interactions between sea level rise and the numerous hazardous materials and residues in the project plan area.

It is crucial that comprehensive detailed assessments of such potential interactions be included in the DEIR and project plan; assessments which assume the full spectrum of 2 to 5 meters sea level rise projected above.

And regardless of the findings of such new assessments, the dramatic sea level rise scenarios projected above, especially if also exacerbated by earthquake liquefaction, could so overwhelm the project area that unforeseen and unavoidable extremely dangerous leaching, flushing, mixing, out-gassing and dispersion of a veritable toxic soup of hazardous materials could take place in the project area. It is therefore imperative that all hazardous materials be completely removed from the entire project area before any development is permitted to proceed. Under a scenario of sea level rise between 2 and 5 meters, no capping, other on-site containment, or ‘Institutional Controls’ for any hazardous wastes can be adequate to ensure the prevention of unacceptably dangerous leaching, flushing, mixing, out-gassing and dispersion of hazardous materials; all
which in turn would lead to the inevitable poisoning of the environment, animals, and people, living in, working in, and visiting the area. (Eric Brooks, Sustainability Chair, San Francisco Green Party) [30.3]

All Other Sections Of DEIR Are Dramatically Impacted By New Sea Rise Projections And Must Therefore Be Revised

Every -other- section of the DEIR and the project plan referenced, is fundamentally impacted by sea level rise; and in light of the much higher worst case 2 to 5 meter sea level rise projections now shown to be warranted, the -entire- DEIR, its appendices, and the project plan that it references, must likewise be carefully reexamined and revised to account for the much higher potential sea level rise impacts indicated by these new projections.

To get a sense of why such a detailed and comprehensive reassessment is necessary, see the following online interactive sea level rise projection maps:

The Project Area At 2 Meters Sea Level Rise: http://flood.firetree.net/?ll=37.8240,-122.3724&z=2&m=2

The Project Area At 5 Meters Sea Level Rise: http://flood.firetree.net/?ll=37.8240,-122.3724&z=2&m=5

Even at the minimum 2 meter rise worst case assumption, the sea inundations into the project area clearly and profoundly impact the entire project in fundamental ways that are not adequately addressed in the DEIR and the referenced project plan. The 5 meter projection map is undeniably astounding in its implications. Such sea rise would likely mandate that a ‘No Project Alternative’ be adopted. (Eric Brooks, Sustainability Chair, San Francisco Green Party) [30.4]

A map showing the effect of sea level rise on Trust holdings would be helpful. (Jennifer Clary, President, San Francisco Tomorrow) [38.29]

Moreover, notwithstanding the failure to define and regulate a perimeter berm as a levee, it is axiomatic that a perimeter berm serves the same function as a levee. The Federal Emergency Management Agency (“FEMA”) has defined a levee in the National Flood Insurance Program (NFIP) regulations at 44 CFR as “… a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding.” Its primary function is flood protection.

Here, the DEIR fails to properly evaluate the long term consequences of placing a community that is subject to sea level rise and flooding, with a limited ability to seek refuge from flooding events. In particular, FEMA manages the National Flood Insurance Program (“NFIP”), which is a cornerstone strategy for preparing communities for flood disasters. As part of that strategy, FEMA has developed certain certification criteria to confirm that levee systems are designed and constructed to an appropriate level for their needs and risk tolerance; moreover, these criteria ensure that these levees are adequately maintained and otherwise perform properly.

The levee owner is responsible for providing documentation to show that the levee meets these criteria. If a levee meets FEMA criteria, then the flood hazard map will show the area behind the levee as a moderate-risk zone. If it does not, then the map will show the area as a high-risk area, or Special Flood Hazard Area (“SFHA”). The SFHA is the area subject to inundation by the 1 percent annual-chance flood (FEMA, 2010).
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The responsibility for seeking levee certification is that of the local agency with jurisdiction over the floodplain in question. The local agency may perform the certification analysis with staff or consultants, or may request such technical determination by others. FEMA does not certify levees; instead, FEMA is the recipient of levee certification determination documentation forwarded by the local agency. If levee certification documentation is found to be in order, then FEMA will accredit the levee and the associated flood insurance rate maps depicting flood hazard will show the floodplain areas as protected from the base (regulatory) flood (FEMA, 2010).

On February 24, 2006, following sustained heavy rainfall and runoff, Governor Arnold Schwarzenegger declared a State of Emergency for California’s levee system, commissioning up to $500 million of state funds to repair and evaluate state/federal project levees. This declaration was a necessary step in preventing possible catastrophic consequences of Hurricane Katrina-like proportions. Following the emergency declaration, Governor Schwarzenegger directed the California Department of Water Resources to secure the necessary means to fast-track repairs of critical erosion sites. Levees or other flood prevention structures should not be used as a means to encourage the development in flood prone areas. At the core of this debate should be determining what level of risk to public safety is acceptable. Levees require regular maintenance to retain their level of protection. The fact is that levees can and do decay over time, and maintenance can become a serious challenge. When levees do fail, or are overtopped, they fail catastrophically (FEMA, 2010). The aforesaid/above-discourse dramatically illustrates the DEIR’s failure to properly evaluate the long-term consequences of the Project being subject to sea-level rise and flooding with a minimal ability to seek refuge from flooding events. (Nick S. Rossi, Esq., representing Kenneth and Roseanna Masters) [19.4]

The DEIR (at IV. Environmental Setting and Impacts, O. Hydrology and Water Quality, Page IV.O.33) proposes an adaptive management strategy implemented by Treasure Island Development Authority (“TIDA”). By properly naming the perimeter berm as a levee, another level of accredited management structure would exist to ensure that necessary maintenance is conducted appropriately and timely. However, as noted above, failure to require that the berm be certified as a levee under and otherwise subject to FEMA jurisdiction creates an unnecessary risk of flooding in the future due to lack of maintenance; this risk will ultimately increase maintenance costs and safety risks to property owners/residents. In addition, it should be noted that most lenders will not provide any purchase or construction financing without proper FEMA certification and recognition. The developer’s attempt to use sleight of hand to falsely label the berm as anything other than a levee should not go unaddressed – the obvious motivation is greed and not the best interests of the Project’s future inhabitants.

Consistent with the above, there should be great consternation about the creation of a funding mechanism for the berm maintenance based on fees assessed by property owners/homeowners; the failure of the berm because of improper design or underfunded maintenance will have a significant impact. Considering the Project’s significant affordable housing component/population, it seems unrealistic that the Treasure Island population alone would be able to afford the studies and/or any future repairs. Moreover, there has been no analysis of how the property owners would be able to afford the consequences of a catastrophic failure of any part of the perimeter berm, unless San Francisco’s taxpayers are willing to share this burden. As currently proposed, in light of this inadequately proposed rock berm and undefined repair/maintenance obligation, it is obvious that the Project is susceptible to a “Katrina”-like disaster. If the awareness of climate change and other causes of profound environmental variances lead to additional pressures upon levees and flood control systems (and their failures), then courts will find themselves entangled in property owner claims asserted against government
entities. If government flood control structures are not designated and built to accommodate the anticipated changes in the environment, and the inevitable results associated with them, then the government will face increasing liability burdens with the taxpayers will bear the full economic burden. The aforesaid significant impact was not addressed in the DEIR. (Nick S. Rossi, Esq., representing Kenneth and Roseanna Masters) [19.6]

In the previous staff reports, and I reference you to the addendum to the Commission meeting for Friday June 2nd, 2012 -- 2009, North Coast District, Item F4A, Local Coastal Program Amendment, No. CRCMAJ-1-09, Costo Norday.

For the SUMI Reliance design purposes, a minimum sea level rate of 3 feet per century is going to be used. You mention in the report that the Tsunami hazards should account for sea levels of 3 to 6 feet per century; however, the project plans are accommodating only 36 inches of sea level rise plus an additional 6 inches of freeboard. You can find this reference in the Hydrology and Water Quality page, section 4, No. 29. However, we believe it won’t be adequate for the lifetime of the project.

No definitive publication has been produced in the report that addresses the sea level rise, making it impossible to determine the appropriate height. It’s conceivable that during the lifetime of the project, the sea level may increase more than the project design. Sea level is especially problematic for Treasure Island. (Nick S. Rossi, representing Ken Masters) [TR.5.2]

Venice is one area where you look at the future of the environment, where you work, look at Venice during parts of the year and the tide, the high tide and low tide, it floods St. Mark’s Square in those areas. But I think we also look at the document here. Someone brought the issue about global warming and the issues of global warming and tides. In the next hundred years or so, how many feet will it go up? Or if you look at a hundred-year-flood area, I think the document addresses that adequately. (William Lee, Planning Commission) [TR.24.2]

Response

The future potential for sea level rise to affect the Proposed Project is discussed in the EIR in Section IV.O, Hydrology and Water Quality, pp. IV.O.30-IV.O.35. As discussed there, a comprehensive review of scientifically credible literature was completed as part of the background research for the Proposed Project. Peer-reviewed documents that represented widely recognized credible sources and were relevant to future potential sea level rise at the project site were selected for review. Additional studies were also reviewed to assess ongoing developments in the climate science community. As discussed in greater detail on EIR p. IV.O.31, the current state of the science indicates that the most likely rates of potential sea level rise range in magnitude from 12 to 55 inches by 2100. The San Francisco Bay Conservation and Development Commission (“BCDC”) recommends consideration of a 16-inch sea level rise by

2050 and a 55-inch sea level rise by 2100. As discussed in the EIR, these estimates of sea level rise are not intended to represent every possible sea level rise scenario. Many other estimates of potential sea level rise exist, posited by qualified researchers, with projections that range from much lower to substantially higher than those considered. Exceptionally high estimates of potential sea level rise associated with potential instability of the Greenland and Antarctic ice sheets have also been discussed in the literature. However, potential contributions to future sea level rise from ice melt from all sources (including Greenland and Antarctic ice sheet thinning and ice shelf calving) have not been definitively established and are not widely accepted by the scientific community. Therefore these factors are considered speculative. Nevertheless, potentially higher levels of sea level rise beyond the current planning-level estimates on which the Proposed Project has based its initial improvements, while not quantified for purposes of the EIR analysis, would be addressed by the adaptive management strategy that is included in the EIR and discussed below.

As discussed on EIR pp. IV.O.32-IV.O.35, the Proposed Project would involve implementation of a range of elements that would accommodate future sea level rise. These include:

1. Immediate improvements and protective measures: raising the perimeter berm to prevent overtopping for up to 16 inches of sea level rise, raising infrastructure and proposed buildings to 36-42 inches above the current 100-year high tide elevation, and improvements to storm drain designs to accommodate up to 16 inches of sea level rise;

2. Implementation of an Adaptive Management Strategy that would include an ongoing monitoring program to review sea level rise data, an institutional framework for decision-making in support of future sea level rise protection measures, and a mechanism for paying costs of the Adaptive Management Strategy, including implementation of recommended new infrastructure, facilities, and management activities.

With adherence to these elements, the Proposed Project would ensure implementation of sufficient infrastructure to meet the effects of climate change, while protecting the community from potential risks of flooding and ocean/bay inundation. Proposed near-term and long-term future facilities would be required to meet applicable Federal, State, and local regulations, and to comply with permitting conditions, both in support of environmental protection and public safety.

The Proposed Project’s adaptive management strategy is a key element of the long-term strategy to counter the potential effects of sea level rise on Treasure Island and Yerba Buena Island. As discussed above, the predicted rates of future sea level rise vary substantially. Selecting a single sea level rise scenario is therefore problematic. Selecting a scenario that is too low could potentially result in damage to proposed facilities from sea level rise in the near term. Selecting a

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scenario that is high or very high, in an effort to conservatively plan for the potential worst case scenario, could lead to the over-installation of infrastructure that might never be needed and would come at a substantial cost – in terms of the amount of money, effort, and time required to install such infrastructure, in the environmental impacts that would be incurred as a result of installing such infrastructure, and in the costs to operate and maintain such infrastructure over a prolonged period of time when it is not in active use. For instance, near-term installation of high berms to protect against several meters of sea level rise would result in substantial additional environmental impacts along the margins of Treasure Island, potentially increasing the intensity of impacts to biological resources, stormwater drainage, water quality, air quality emissions, aesthetics and visual resources, and public access and recreation. According to available and widely accepted scientific studies and literature, the probability for exceedingly high rates of sea level rise to occur (more than 16 inches by 2050 or 55 inches by 2100) is low. Thus, substantially increasing the intensity of other environmental impacts to protect against very high rates of future sea level rise, when there is relatively little evidence in support of those high rates, is unwarranted.

In light of these considerations, the adaptive management strategy was chosen as the most reasonable, reliable, and feasible way to ensure long-term future protection of the project site. Under the adaptive management strategy, the best available sea level rise projections would be evaluated on an ongoing basis. Sea level rise prediction models and studies will become more sophisticated and more accurate over time, and current sea level rise projections will likely be replaced or refined as a result. Thus, the adaptive management strategy would include monitoring the actual rate of sea level rise locally and analyzing sea level rise prediction models and studies to ensure the best possible management outcome for the Proposed Project.

In terms of the potential for ponding to result along public access areas around the shoreline of Treasure Island, the comment correctly states that some shoreline areas could potentially become partially inundated in the future for short periods of time, following large rainstorm events that occur simultaneously with extreme high tides. Under existing conditions, some ponding does occur, and the Proposed Project would not increase ponding. However, public access under current conditions is more limited than it would be in the future. Therefore, current ponding on Treasure Island does not necessarily interfere with public access in the same manner as temporary ponding could potentially impact public access in the future. Inundation would potentially result in a temporary impact on recreational uses of the shoreline trail during periods of temporary flooding. However, as discussed on EIR p. IV.O.34, ponding is anticipated to be limited in duration, would occur at times of substantial rainfall when public use is generally limited, and is not anticipated to result in a long-term loss of public access. In the event that ponding continues in a manner that substantially affects beneficial use of the shoreline areas, the EIR provides the Treasure Island Development Authority (“TIDA”) with a range of options to consider, in order to address the problem. These options are discussed on EIR p. IV.O.34.
One comment questions the potential environmental and visual impacts that would result from implementing the recommendations of the adaptive management strategy, should sea level rise continue beyond 36 inches. Depending upon the extent of sea level rise, installing additional protective berms or other features could result in environmental impacts. The precise construction details of the sea-level-rise-related infrastructure and management updates that would be implemented under the adaptive management strategy are not known at present and therefore cannot be analyzed in detail, but EIR p. IV.O.34 discusses several options for raising the perimeter berm in the future, should sea level rise warrant it. Those options include raising portions of the public access trail along the perimeter berm to maintain beneficial uses such as views. Future actions taken under the adaptive management strategy would be subject to permit conditions imposed by the various permitting agencies, such as the U.S. Army Corps of Engineers, the Regional Water Quality Control Board, and BCDC, prior to implementation, including environmental review as appropriate. Additional measures would be implemented as warranted to minimize environmental impacts of proposed facilities, as required in these permits and environmental review documents.

One comment questions the use of sea walls along the perimeter and whether they can be raised to address future sea level rise. Structural design of seawalls and bulkheads is fairly standard in the engineering practice, and raising or replacing a vertical wall is possible without significant constraints. This is done routinely along commercial waterfront properties, such as waterfronts and marinas, and is the most probable scenario for retrofitting the San Francisco waterfront that is largely protected by seawalls at present.

As discussed on EIR p. IV.O.35, operations under the adaptive management strategy would be funded by either a dedicated tax assessment or an allocation of a portion of Mello-Roos tax assessments. Due to the flexible nature of the adaptive management strategy and the uncertainty in sea level rise rates, the precise amount of money that would be required to fund future upgrades will not be known for some time, and details regarding potential economic effects of such assessments of the future viability of the Proposed Project are not required in a CEQA document.

The amount of affordable housing included in the Proposed Project is higher than required in the San Francisco Planning Code §415 but is not so great as to make the Proposed Project infeasible. The need for maintenance and upgraded utilities in the future, including features related to tidal flooding and sea level rise, was taken into account as the land plan was developed. There is no expectation that the City’s General Fund would be used to fund the adaptive management strategy. The upfront capital costs of the Proposed Project are paid for (in their simplest terms) using three sources: private capital, bonds supported by public tax increment financing, and bonds supported by a Community Facilities District (“CFD”). The first has no taxpayer burden. The second mechanism relies on the powers of redevelopment to redirect the 1 percent ad
valorem property tax from other State and local uses to the redevelopment project area. This does not increase property taxes paid by individual property owners within the project area. The last source, the CFD, does impose a tax assessment on property within the project area to pay for infrastructure improvements, including the geotechnical improvements. Homeowners who choose to purchase a home in the area will have full knowledge of this assessment (see the response in Subsection 2.23.1, Fiscal and Economic Effect of Geotechnical Stabilization, in Section 2.23, Fiscal Economic Issues, for a discussion of the effects of the proposed CFD on households in affordable units, including existing residents in affordable units who remain on the Islands during and after construction of the Proposed Project). The CFD assessment would require residents of the project area to help pay (over a long time period) for the infrastructure from which they benefit, and would not require San Francisco taxpayers at large to contribute.

One comment requests a map showing the effect of sea level rise on Tidelands Trust lands. As discussed above and on EIR pp. IV.O.30-IV.O.35, the amount of future sea level rise is a subject of substantial debate among experts. The consensus among the environmental community is that future potential sea level rise is likely to fall within a range of scientifically-based estimates, but there is a general recognition that precise estimates are not possible at this time. Therefore, producing a map that accurately represents the extent of inundation due to climate change would be speculative. The Proposed Project includes features intended to prevent flooding, including flooding from sea level rise, as discussed above. Therefore, there is no expectation that sea level rise would permanently affect Tidelands Trust lands (see the first comment and response in Subsection 2.2.1, Tidelands Trust, in Section 2.2, Plans and Policies). However, if the commenter is interested in the potential effects of a specific level of sea level rise that is not tied to a particular timeframe or any of the improvements included in the Proposed Project, BCDC has provided a series of maps that document the land area that would be inundated as a result of 16 and 55 inches of sea level rise. The following website provides a map of the central San Francisco Bay, including the project site, as it would be affected by 16 and 55 inch sea level rise scenarios: http://www.bcdc.ca.gov/planning/climate_change/maps/16_55/cbay.pdf (accessed October 20, 2010). A copy of the relevant portion of the map is reproduced in Figure C&R-1: Shoreline Areas Vulnerable to Sea Level Rise, Central San Francisco Bay, on the following page. It is important to note that these maps are based on existing conditions and do not reflect the initial improvements that would be constructed as part of the Proposed Project or over time under the Proposed Project’s adaptive management strategy.

Regarding hazardous materials on site, sea level rise could potentially result in an increase in groundwater levels on site, which could potentially affect the distribution and extent of groundwater pollution plumes on site. However, as discussed in EIR Section IV.P, Hazards and Hazardous Materials, current/ongoing and anticipated continued groundwater cleanup efforts on Treasure Island are expected to substantially reduce pollutant loading in groundwater on site and groundwater pollutant levels, and the potential effects of those pollutants are anticipated to decline.
Area vulnerable to an approximate 16 inch sea level rise

Area vulnerable to an approximate 55 inch sea level rise

NORTH

San Francisco Bay

San Francisco

Oakland

San Francisco Bay

SOURCE: San Francisco Bay Conservation and Development Commission
substantially over time as sea level rise occurs. Additionally, proposed ground-level increases would increase the distance between the island’s surface and underlying groundwater pollutants, and improvements to the existing protective berms around the island would reduce the likelihood of Bay water washing over (overtopping) the berm as well as seepage from entering groundwater.

One comment raises the issue of alternative berm systems, indicating that the EIR does not evaluate alternative berm systems, such as steel plate or vertical bulkhead systems, and suggests that this was not done because soil and rock berm systems are inexpensive. These systems were not considered because the Proposed Project does not include removing and replacing the entire existing berm. However, EIR p. IV.O.34 identifies several alternative means for modifying the perimeter as some of the adaptive strategies that could be used in the future. Other systems, such as steel plates or bulkheads, could also be evaluated as part of consideration of future actions within the adaptive management strategy. These systems are not analyzed in the EIR, however, because they are not proposed as part of the Proposed Project, but may be under consideration at some future time as part of the adaptive management strategy. Proposals for such alternative systems would be subject to environmental review under CEQA as appropriate, as well as permit conditions imposed by the various permitting agencies including the U.S. Army Corps of Engineers, the Regional Water Quality Control Board, and BCDC, prior to implementation.

Comments regarding levees compared to berms correctly define a levee as “a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding.” The Proposed Project would not depend on the perimeter berm to function as a levee to protect the developed area from flooding; rather, the perimeter berm provides protection against wave overtopping and storm surges. The finish grades of the development areas would be raised 36 inches above the current 100-year high tide elevation, as described on EIR p. IV.O.29, meaning that development would be outside the flood hazard zone and the perimeter berm would not be subject to levee standards. As discussed on EIR p. IV.O.40, TIDA would apply for a Conditional Letter of Map Revision/Letter of Map Revision (explained on EIR pp. IV.O.11-IV.O.12) to establish that the developed areas would be excluded from the 100-year flood plain. No levee would be required to protect the area from flooding. The perimeter berm would continue to provide protection against wave overtopping during periods of storm-driven waves.

For more information on how sea level rise could affect the Proposed Project’s geotechnical stability, including liquefaction potential and structural foundations, please refer to EIR Section IV.N, Geology and Soils, pp. IV.N.28-IV.N.29; to pp. IV.O.32-IV.O.35 and p. IV.O.49; and to the responses in Subsection 2.16.1, Geotechnical Stabilization, and Subsection 2.16.2, Seismic, in Section 2.16, Geology and Soils, of this Comments and Responses document.
2.17.1.1 Stormwater and Wastewater Discharge

Comment

Sea Level Rise. It is not clear that the impacts of sea level rise on the wastewater and stormwater systems has been adequately assessed. The document does note that additional pumping may be needed, but doesn’t explain how stormwater and wastewater will be discharged during storm surges and high tides as mean sea level increases. How will the system be protected from seawater intrusion during high tides and storm surges? The San Francisco Public Utilities Commission already sees saltwater intrusion in its system 6-8 times per year. It anticipates having to install baffles to block intrusion by 2015, and, as sea level rises, closing its nearshore outfalls and pumping all of the stormwater flows to the treatment plants and offshore outfalls. (Jennifer Clary, President, San Francisco Tomorrow) [38.37]

Response

As indicated in EIR Section IV.O, Hydrology and Water Quality, on p. IV.O.44, the Proposed Project would include a new or updated wastewater treatment plant that would treat wastewater from both Treasure Island and Yerba Buena Island, and discharge into San Francisco Bay. Discharges from the new or upgraded plant would be handled by the existing discharge facilities – that is, using the discharge pipeline that is already installed between the wastewater treatment plant and the Bay. These outlet facilities are submerged. It is estimated that the existing configuration of these discharge facilities would be able to continue to provide gravity drainage of treated wastewater for up to 3 feet of increase in sea level. If sea level were to rise to a level that the existing facilities could not handle, pumps could be required to enable discharge of treated wastewater. Installation of such facilities would be accounted for under the adaptive management strategy, discussed on EIR pp. IV.O.33-IV.O.35. Gate valves and backflow preventer valves would continue to prevent intrusion of sea water into the system.

For stormwater, existing stormwater facilities would be upgraded under the Proposed Project. As indicated on EIR p. IV.O.49, the upgraded storm drainage systems would be sufficient to permit stormwater drainage into the Bay by gravity with up to 16 inches of sea level rise. Installation of proposed facilities would allow for upgrade in the event that additional sea level rise was anticipated or observed. Thus, within the framework of the adaptive management strategy, larger or upgraded stormwater pumps and associated facilities would be added to the proposed facilities to enable stormwater discharge, even under a very high sea level rise scenario. See the response in Subsection 2.10.1, Baseline Assumptions, in Section 2.10, Greenhouse Gas Emissions, of this Comments and Responses document, for a discussion of the potential change in greenhouse gas emissions associated with future additional pumping for stormwater and wastewater discharges.
2.17.2 FLOODING

Comment

One transportation-related element does appear to be missing from the analysis and the EIR. No mention is made in the Transportation section of an emergency evacuation plan. Page 29 of the Hydrology and Water Quality section states that engineered fill would be used to raise the ground level before constructing new buildings. After raising the ground level, the “finished floor elevations would likely range from 12.6 feet to 14.5 feet NAVD88 [North American Vertical Datum of 1988].” Also in the Hydrology and Water Quality section, it is revealed that the “maximum run-up conditions for combined astronomical tides, storm surge, waves, and tsunami would be 10.0 to 16.3 feet NAVD88.”

Despite the fact that the floor area is lower than the maximum run-up conditions, page 48 of the Hydrology and Water Quality section states that the proposed project would not be susceptible to inundation because the proposed project includes strengthening and raising the protective berms around the perimeter of Treasure Island. However, perimeter protective berms are not mentioned under Proposed Flood Improvements on pages 29 and 30 of the Hydrology and Water Quality section. When the berm is mentioned in the Executive Summary, the proposed height is not included. The Project Description does, however, reveal that the existing 10–14 ft berm would need to be strengthened and raised to heights of “about 14 to 16 feet.” (Saul Bloom, Arc Ecology)

Response

The comment is correct in stating that a maximum run-up condition of 16.3 feet would exceed the minimum finished floor elevation of between 12.6 and 14.5 feet. However, as discussed in EIR Section IV.O, Hydrology and Water Quality, on p. IV.O.7, the higher 16.3-foot run-up values are relevant only to the very northern portion of Treasure Island, in an area where buildings installed at the indicated minimum finished floor elevations would not be located. Additional detail is provided in the Treasure Island Coastal Flooding Study. As discussed on p. iii of that document, the maximum crest elevation of 16.3 feet NAVD is indicated for the north reach of Treasure Island, with an overtopping rate of 0.2 cubic feet per second per 1,000 feet of berm. The southwest reach of Treasure Island, where most development is proposed, would have a crest elevation of 13.9 feet NAVD, and an overtopping rate of 2.1 cubic feet per second per 1,000 feet of berm. As discussed on EIR p. IV.O.29, topographically lower portions of Treasure Island that would contain open space may experience localized temporary ponding associated with large rain events that co-occur with 100-year high tides. However, these areas would not include residences or other buildings, and such an event would be consistent with planned programming and management for the affected open space areas. Thus, residential, commercial, and other built areas would be protected from flooding under the Proposed Project, while periodic flooding would be permitted in some open space areas.


2.17.3 DREDGING

Comment

Dredging. While a proposed dredging plan is not included in the DEIR, the option to dredge at the project site is discussed in Section IV.O page 18 and 37. The Commission’s dredging policies state, in part that dredging should be authorized with the Commission can find that “dredging is needed to serve a water-oriented use or other important public purpose, such as navigational safety” and “the siting and design of the project will result in the minimum dredging volume necessary for the project.” The FEIR should clearly outline the proposed dredging at the project site, and how the goals of the project can be achieved while minimizing the volume of dredged material. The FEIR should also address dredging and disposal issues recognizing that (1) the Dredged Material Management Office has not taken action on any proposed dredging on site, and (2) the Commission’s policy preference is for beneficial reuse of dredged material, where feasible. (Karen Weiss, Coastal Program Analyst, San Francisco Bay Conservation and Development Commission) [17.22]

Response

Regulations and requirements governing dredging associated with the Proposed Project are discussed in EIR Section IV.O, Hydrology and Water Quality, on pp. IV.O.17-IV.O.19, including discussions of the Dredged Material Management Office and requirements under the Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region, Management Plan (“LTMS Management Plan”). Potential impacts associated with proposed dredging are discussed on EIR p. IV.O.37, including a discussion/outline of which proposed facilities would require dredging, potential impacts, and permit conditions that would be applied to dredging under the Proposed Project. As discussed, adherence to the conditions associated with required permits, including a BCDC Dredging Permit, a U.S. Army Corps of Engineers dredging permit, and a Clean Water Act Section 401 certification, would, together, implement the requirements discussed under the LTMS Management Plan.

Dredging associated with the Proposed Project would be for construction of the new Ferry Terminal and construction of the Treasure Island Sailing Center launch facility, both of which would be consistent with BCDC policies that restrict dredging to water-oriented uses or other important public purposes, and subject to BCDC’s permit requirements. Although the amount of dredging cannot be precisely specified until the project design stage, it is anticipated to range from approximately 33,500 to 36,000 cubic yards. The Sailing Center dredging would account for a small portion of the total dredged amount, ranging from about 1,500 to 3,700 cubic yards.
The proposed siting of the Ferry Terminal and Sailing Center would not result in materially more dredging than if either were sited elsewhere within the Project Area, and would satisfy the BCDC policy to site and design the Proposed Project in a manner to minimize dredging. BCDC would review the final design and make a determination that the Proposed Project meets these policies before a dredging permit could be issued.

Therefore, potential dredging-related impacts and associated issues raised by the comment, including management/disposal of dredge spoils, would be reduced as a result of adhering to required permits. Details, such as the potential for beneficial re-use of dredge spoils, and locations for that re-use, would be subject to substantial input from permitting agencies during the permitting process. Attempting to establish the details of permitting outcomes when permits are not yet in process would be speculative. Potential impacts would be minimized to less-than-significant levels by adhering to the requirements of the LTMS Management Plan and associated regulations and permit requirements, as discussed on EIR pp. IV.O.35-IV.O.37. Please also see the response in Subsection 2.16.3, Perimeter Berm Maintenance, in Section 2.16, Geology and Soils, of this Comments and Responses document, regarding Bay fill.

2.17.4 WATER QUALITY SETTING

Comment

Water Quality Impairments. The list of 303 (d) impairments for San Francisco Bay in the vicinity of Treasure Island should include Polycyclic Aromatic Hydrocarbons (PAHs) – see 2006 CWA Section 303 (d) list of Water Quality Limited Segments. (Jennifer Clary, President, San Francisco Tomorrow) [38.39]

Response

The list of 303 (d) water quality impairments that are relevant to the Proposed Project is shown in EIR Section IV.O, Hydrology and Water Quality, on p. IV.O.15, near the end of the first full paragraph. The comment indicates that an additional class of water quality constituent, polycyclic aromatic hydrocarbons (“PAHs”), should also be included on this list. However, the most recent approved 303 (d) list for the San Francisco Bay area in the vicinity of the Proposed Project does not include PAHs. Therefore, no updates to the EIR are warranted.

2.17.5 CUMULATIVE IMPACTS

Comment

The increase in air pollution (primarily from cars) and water pollution (from construction and storm water discharge) are downplayed in the DEIR and not adequately considered in the cumulative impacts analysis. We ask that these sections be revised and released for additional review and comment by the public. *(Mike Lynes, Conservation Director, Golden Gate Audubon Society)* [32.32]

Response

Potential sources of construction related water quality pollution are discussed in detail in EIR Section IV.O, Hydrology and Water Quality, on pp. IV.O.35-IV.O.37. As discussed therein, construction activities would include the use of heavy equipment that would disturb existing soils and that could result in the release of hydrocarbons, coolants, cement washout, and various other water quality constituents. Construction adjacent to or within the San Francisco Bay could release sediment and other construction-related pollutants directly into Bay waters. Construction-related pollutants could also potentially affect groundwater. However, as discussed on EIR pp. IV.O.36-IV.O.37, all landside construction activity on site would be required to adhere to the conditions of an NPDES General Permit for Construction Activities, while construction activities within the Bay would be required to adhere to various sediment and pollutant minimization requirements, as discussed in detail on EIR p. IV.O.36.

Potential cumulative water quality effects are discussed on EIR p. IV.O.50. As discussed on that page, a cumulatively considerable impact for construction-related water quality is not anticipated. As discussed on EIR p. IV.O.15, water quality in San Francisco Bay is considered impaired for chlordane, DDT, dieldrin, dioxin compounds (including 2,3, 7,8-TCDD), exotic (e.g., non-native) species, furan compounds, mercury, PCBs, PCBs (dioxin-like), and selenium. None of the construction activities on site would contribute additional loadings of these compounds to the San Francisco Bay. Additionally, as discussed on EIR p. IV.O.50, construction activities for other cumulative projects are not expected to degrade water quality such that a new impairment would occur. Any residual construction related water quality emissions from the Proposed Project would not be cumulatively considerable. Therefore, recirculation of the Draft EIR pursuant to CEQA Guidelines is not required. Under CEQA Guidelines Section 15088.5, recirculation would be required if new information is considered significant. Recirculation is not required if new information clarifies, amplifies, or makes insignificant modifications to an adequate EIR. In this instance, significant new information has not become available with respect to cumulative water quality impacts.
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See the response in Subsection 2.9.6, Cumulative Impacts, in Section 2.9, Air Quality, of this Comments and Responses document, for a response to the comment on cumulative air quality impacts.

2.17.6 REGULATIONS AND REGULATORY FRAMEWORK

Comments

Water Quality. The DEIR identifies various activities, including remediation, dredging, construction (earth moving, grading, and excavation), and operational work at the project site that could result in impacts, including erosion, turbidity, etc. The DEIR lists strategies to mitigate potential water quality impacts, including the application of Best Management Practices (BMPs) and certification by the San Francisco Bay Regional Water Quality Control Board (RWQCB). The DEIR does not include the San Francisco Bay Plan’s policies on Water Quality. The Bay Plan Water Quality Policy No. 1 states, “[b]ay water pollution should be prevented to the greatest extent feasible. The Bay’s tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality. The Bay Plan’s Water Quality Policy No. 2 states, in part, that “[w]ater quality in all parts of the Bay should be maintained…and…and protected from all harmful or potentially harmful pollutants,” and, further, that the RWQCB’s recommendations provide “the basis for carrying out the Commission’s water quality responsibilities.” Pursuant to this policy, the RWQCB certification would need to be obtained in order for the Commission to file a permit application or federal consistency determination. (Karen Weiss, Coastal Program Analyst, San Francisco Bay Conservation and Development Commission) [17.21]

The following regulations (and others) applicable to the Project were adopted for the specific purpose of avoiding environmental effects on biological resources. In addition to the materials contained in Chapter IV of the DEIR, please answer the following as to the regulations listed below: (1) On what factual basis does the DEIR conclude that the project does not conflict with each of these regulations? (2) What are the results of the required consultations with the applicable regulatory agency(ies), including the dates of these consultations? . . .

- Section 404 of the Federal Clean Water Act (CWA)
- Rivers and Harbors Act (Vedica Puri, President, Telegraph Hill Dwellers) [39.16]

Response

Federal, State, and local regulations that are relevant to the analysis of hydrology and water quality are discussed in EIR Section IV.O, Hydrology and Water Quality, on pp. IV.O.11-IV.O.22. Generally speaking, the regulations cited in Comment 39.16 require adherence to a permitting process in order to maintain compliance for regulated activities. For instance, Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act both require acquisition of permits prior to the commencement of certain activities (e.g., placement or discharge of fill, alteration of navigable waterways, etc). Compliance with these regulations is achieved during a permitting process, in which proposed regulated activities are reviewed, required compliance measures and permit conditions are applied, and eventually a permit is either granted or denied. Because any project activities governed by Section 10 of the Rivers and Harbors Act and Section
404 of the Clean Water Act would be legally required to obtain permits under those laws and their applicable regulations to ensure regulatory compliance, the EIR concludes that the Proposed Project would not conflict with these laws and regulations.

One comment notes that the *San Francisco Bay Plan*, promulgated by BCDC, was not included in the Hydrology and Water Quality Setting section of the EIR, in the “Regulatory Framework” subsection. The comment is correct. There is a detailed discussion of relevant policies of the *San Francisco Bay Plan* in EIR Chapter III, Plans and Policies, on pp. III.9-III.12. The third paragraph on p. III.11 summarizes the general policies in the *Bay Plan* related to water quality. In response to the comment, the following text is inserted on EIR p. IV.O.20, immediately prior to the heading, “Local”:

**Regional**

**San Francisco Bay Plan**

The San Francisco Bay Conservation and Development Commission has promulgated the *San Francisco Bay Plan* in order to support environmental protection of San Francisco Bay in consideration of the Bay as a valuable natural asset (see Chapter III, Plans and Policies, pp. III.9-III.12). The following policies contained in the *Bay Plan* are relevant to water quality:

**Water Quality Policy 1:** Bay water pollution should be prevented to the greatest extent feasible. The Bay’s tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses.

**Water Quality Policy 2:** Water quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the San Francisco Bay Regional Water Quality Control Board’s Water Quality Control Plan, San Francisco Bay Basin and should be protected from all harmful or potentially harmful pollutants. The policies, recommendations, decisions, advice and authority of the State Water Resources Control Board and the Regional Board, should be the basis for carrying out the Commission’s water quality responsibilities.

**Water Quality Policy 3:** New projects should be sited, designed, constructed and maintained to prevent or, if prevention is infeasible, to minimize the discharge of pollutants into the Bay by: (a) controlling pollutant sources at the project site; (b) using construction materials that contain nonpolluting materials; and (c) applying appropriate, accepted and effective best management practices, especially where water dispersion is poor and near shellfish beds and other significant biotic resources.

**Water Quality Policy 6:** To protect the Bay and its tributaries from the water quality impacts of nonpoint source pollution, new development should be sited and designed consistent with standards in municipal stormwater permits and state and regional stormwater management guidelines, where applicable, and with the protection of Bay...
resources. To offset impacts from increased impervious areas and land disturbances, vegetated swales, permeable pavement materials, preservation of existing trees and vegetation, planting native vegetation and other appropriate measures should be evaluated and implemented where appropriate.