

San Francisco Bay Conservation and Development Commission

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TO: All Commissioners and Alternates

FROM: Lawrence J. Goldzband, Executive Director (415/352-3653; larry.goldzband@bcdc.ca.gov)
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SUBJECT: Draft Minutes of February 21, 2019 Commission Meeting

1. **Call to Order.** The meeting was called to order by Chair Wasserman at the Bay Area Metro Center, 375 Beale Street, Board Room, First Floor, San Francisco, California at 1:04 p.m.

2. **Roll Call.** Present were: Chair Wasserman, Vice Chair Halsted, Commissioners Addiego, Ahn (arrived at 1:16 p.m.), Butt, Chan (represented by Alternate Gilmore), Cortese (represented by Alternate Scharff), Gorin, Lucchesi (represented by Alternate Pemberton - departed at 3:18 p.m.), McGrath, Peskin, Pine, Ranchod (represented by Alternate Nelson - departed at 1:27 p.m.), Sears, Spering (represented by Alternate Vasquez), Tavares (represented by Alternate Nguyen), Techel, Wagenknecht and Zwissler (represented by Alternate Holzman). Senate Representative Skinner (represented by Alternate McCoy) was also present.

Chair Wasserman announced that a quorum was present.

Not present were Commissioners: Senate Rules Committee (Alvarado), U.S. Army Corps of Engineers (Bottoms), Department of Finance (Finn), Contra Costa County (Gioia), Governor (Randolph), Secretary for Resources (Vacant) and U.S. Environmental Protection Agency (Ziegler)

3. **Public Comment Period.** Chair Wasserman called for public comment on subjects that were not on the agenda.

Ms. Eva was recognized: We need to set minimum standards for BCDC Commissioners. I spoke at the last meeting about the conflict of interest of BCDC Commissioner Kate Sears regarding her ownership of shares in the serial polluter and human-rights violator Royal Dutch Shell while giving millions of dollars of contracts to Shell in 2014.

This resulted in an investigation by California's Fair Political Practices Commission. There was an international boycott of Shell and its affiliates after the murder of activist Ken Saro-Wiwa.

Commissioner Sears' office claimed that the RDS shares were an inheritance from Commissioner Sear's deceased mother. The Ogoni Nine were murdered by agents of Royal Dutch Shell in 1995 and lawsuits were filed in 1996. In 2009 the cases were heard and the matter was widely reported.

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Her office informed us that Commissioner Sears divested the portfolio of all fossil-fuel, industry stocks when the issue of those holdings was called to her attention. Sears held the shares for seven years despite concerns voiced by constituents. She divested these stocks the week that she was informed that the California FPPC was investigating the matter.

I hope to address Commissioner Sears' serial disregard for the health and environmental concerns of black constituents in her own district during the next meeting.

Environmental justice is a critical component of a climate movement. I will be taking up Commissioner Sears' appointment to BCDC with the county of Marin which did appoint Sears.

I ask Commissioners on BCDC to think about how her appointment harms the credibility of BCDC. The climate clock is ticking and BCDC will need to clean house. I thank you for your time.

Chair Wasserman stated: We normally don't respond to public comment. But if Commissioner Sears would like to respond I would give her that opportunity.

Commissioner Sears addressed the Commission: I appreciate that Chair Wasserman. Since the speaker has been in with us for two meetings in a row I think it is appropriate and I would like to make a statement.

In one of my many assignments as a Marin County Supervisor I serve on the Board of Marin Clean Energy or MCE. As chair of the MCE Board of Directors I am authorized by the Board to execute short-term, power-purchase agreements for energy.

In that capacity in November of 2014 I signed a contract between MCE and Shell Energy North America. The contract provided for the purchase of hydro-electric power pursuant to MCE's Integrated Resources Plan which the MCE Board had approved in 2012.

Shell Energy North America is a subsidiary of Royal Dutch Shell.

When my mother passed away in 2010 I inherited stock that she and my father had owned in Royal Dutch Shell. Although I properly disclosed the stock in my annual Form 700 I did not actively trade it and I did not recall that I owned the stock when I was asked to execute the contract between MCE and Shell Energy North America.

In the spring of 2017 an individual who is a long-time opponent of MCE and other community-choice, energy programs filed a complaint with the FPPC asserting that I had a conflict of interest at the time I signed the contract as chair of MCE.

The FPPC found that I had quote, "No intent to conceal, deceive or mislead" end quote. And that I had timely disclosed the stock on my Form 700.

The FPPC also acknowledged that I divested my Royal Dutch Shell stock on May 15th of 2017 in order to eliminate the potential for future conflicts related to Shell Energy North America.

You might be interested to know that I divested all of the energy stocks in my portfolio at the time I divested the Royal Dutch Shell stock.

On October 19th 2017 three FPPC commissioners voted to close the case with a warning letter and no penalty. The one remaining commissioner voted to dismiss the matter without even a warning letter. Thank you for the opportunity.

Chair Wasserman moved to Approval of the Minutes.

4. Approval of Minutes of the February 7, 2019 Meeting. Chair Wasserman asked for a motion and a second to adopt the minutes of February 7, 2019.

MOTION: Commissioner Wagenknecht moved approval of the Minutes, seconded by Commissioner McGrath.

VOTE: The motion carried with a vote of 17-0-1 with Commissioners Addiego, Butt, Gilmore, Scharff, Gorin, Pemberton, McGrath, Pine, Nelson, Sears, Vasquez, Nguyen, Techel, Wagenknecht, Holzman, Vice Chair Halsted and Chair Wasserman voting, "YES", no "NO", votes and Commissioner Peskin abstaining.

5. Report of the Chair. Chair Wasserman reported on the following:

There were two articles in today's New York Times that were interesting in themselves and in combination. One article was an opinion letter signed by the former Secretary General of the United Nations and Francis Suarez the Mayor of Miami talking about the steps that Miami has taken to address rising sea level which is a very current problem in Florida along the coast and particularly in Miami.

And Miami is passing a 400 million dollar bond to take action to address that issue. They don't really go into the details of how they are doing that because it is tough when your soil is so porous that the sea simply comes up through it.

It was a positive note in people taking action to adapt to rising sea level and the recognition that this needed to be done.

The other article is not quite so optimistic. It is a report by two New York Times reporters on the New Green Deal being advanced in Congress. And the headline is, "New Green Deal is Technologically Possible – Its Political Prospects are Another Question". And it goes on to address what has been said about the New Green Deal and what hasn't because there are a lot of details yet to be presented in that proposal.

And it talks about the political difficulties and the likelihood that one party will use it to ridicule the action and the people who support it. But the critical piece that it addresses particularly as a bookend to the letter on Miami is time is getting short. If we do not undertake the kinds of steps addressed in the Green New Deal in terms of mitigation as well as adaptation we will be inundated.

The good news is the debate is there and it is taking place on the front pages of the New York Times. People, I would assume, are paying attention.

The bad news is we still have a lot to do to create the political will to actually spend the money and take the actions we are going to have to take to address this problem.

a. **Enforcement Committee Hearing.** I would now like to ask Commissioner Gilmore to report on the enforcement hearing that was held this morning.

Commissioner Gilmore presented the following: The Enforcement Committee met on a cease and desist order regarding the Salt River Dredging Company. The Committee voted unanimously to support the staff's recommendation of the cease and desist order.

The second item was a briefing regarding anchor-outs in Richardson Bay. It was a very informative and spirited discussion about the issues presented by the Anchor-Outs and BCDC's potential role and what the local jurisdictions are doing to address the issue.

There was a lot of information presented in a short period of time. And the Enforcement Committee directed staff to agendize another discussion for the Enforcement Committee so we could have a little bit more time to sort through all of the information before formulating a recommendation or if we bring a recommendation back to the entire Commission.

And that is my report.

b. **Bay Fill Policy Commissioner Working Group.** Chair Wasserman continued: I would ask Commissioner Nelson to report on the Bay Fill Policy Working Group meeting that was held this morning.

Commissioner Nelson reported the following: Apropos of the Chair's opening comments about the two New York Times articles, the mission of the Working Group is to make sure that the Commission has the policies, laws and programs in place to make sure that we are addressing the challenge of rising sea level in a timely and ambitious way.

And the good news is that we are just entering a really exciting and important new phase. This is the point at which we start coming to you and the public and engaging you in a really substantive way in the discussion about how we need to amend the Bay Plan.

We spent the morning discussing preparations for our Fill for Habitat Workshop at our upcoming March 21st Commission meeting. We spent our time today discussing the agenda for that meeting and the posters that staff is preparing as well as the draft report that staff is putting together for that workshop. And we are all looking forward to receiving a robust, public input on how we need to and can best amend the Bay Plan to meet the challenge the Chair was just discussing.

Chair Wasserman continued: The Executive Director has suggested I take on a role that is very difficult for me to think about taking on. I have in my hand the list. (Chair Wasserman held a sheet up – laughter by attendees) It is a list of the Commissioners who have not yet completed their ethics requirements. Five of those people are sitting up here today. There are 12 others who are not here.

Please – complete the ethics. It is really not that painful.

c. **Next BCDC Meeting.** Our next meeting will be held in on March 7th, when we expect to:

- (1) Consider revising the Descriptive Notice for the Fill for Habitat Bay Plan Amendment.
- (2) To take a vote on the proposed change to the Solano County Component of the Suisun Marsh Local Protection Program that was discussed at our February 7th meeting.
- (3) Vote on the proposed Alameda Landing Project that we will hear about today.
- (4) Hold a briefing on the Port of San Francisco’s recent Request for Information on potential waterfront projects.
- (5) Hold another science briefing to support the Fill for Habitat Amendment.

Executive Director Goldzband interjected: Staff may add one more item to that agenda which is the actual Commission discussion on the Salt River Dredging enforcement issue. And that is a “may” because we don’t know if we have the ability to do that or the time to do it.

d. **Ex-Parte Communications.** Chair Wasserman continued: It is time if anybody wishes to put on the public record here any ex-parte communications they have received. There are no administrative hearings on our agenda today.

Commissioner Peskin reported the following: Mr. Chairman I don’t think this is an ex-parte communication but out of an abundance of caution I was briefed by the Port of San Francisco yesterday with regard to the briefing that we will receive today on Item 10.

Chair Wasserman announced: That concludes my report and I turn to the Executive Director to see how he may amuse us. (Laughter)

6. **Executive Director’s Report.** Report of the Executive Director. Executive Director Goldzband reported: I will do my best, thank you.

That was a lot of rain last week along with hail and sleet where we live and a great double rainbow on Sunday. Fortunately, the storm occurred after the King Tides; imagine what would have happened if they were concurrent.

As a result it rained out a few high school baseball games. But as my mother would say - today you have to wait out the storm to see the sun shine and we can be grateful for that.

a. **Budget and Staffing.** I want to introduce you to Samantha Cohen, our newest BCDC employee. (Stood and was recognized) Samantha has joined the Planning Division and will be working on the Adapting to Rising Tides team.

Unfortunately, just as we gain a new staffer we are losing two. Adam Fullerton of our Planning Division will be leaving us at the end of this month to return to the plains of New Mexico to be closer to family and figure out his next career move. While there are few better places to do just that we shall miss Adam who is running our East Contra Costa County ART Project. And, we're losing Lisa Chu, our receptionist. (Stood and was recognized) Lisa is moving farther south to be closer to her family. You all know Lisa as the person who cajoles, begs, and otherwise almost commands you to respond to her quorum calls. I may have to take over that. We shall miss both of these BCDC staffers and we'll need to fill those positions as soon as possible.

b. **Policy.** Steve Goldbeck and I have continued our treks to Sacramento and we continue to receive very positive feedback about the Governor's budget proposal and our need for a relatively small increase beyond that. Our Assembly budget hearing will take place during the last week of March and the Senate budget hearing will occur in April.

I'd like Chief Counsel Marc Zeppetello to give us an update on our litigation against the U.S. Army Corps of Engineers.

Chief Counsel Zeppetello addressed the Commission: As a brief background, particularly for new Commissioners, in September of 2016 the Commission filed a lawsuit in federal, District Court against the Corps of Engineers for the Corps' failure to comply or statements that it would not comply with a number of conditions that were imposed by the Commission on the Corps' consistency determination for its Operation and Maintenance Dredging Program for the federal, navigation channels.

The two substantive conditions were that the Corps beneficially re-use a minimum of 40 percent of the dredged material. And the second condition was a requirement that the Corps reduce the use of hydraulic dredges to one channel per year.

The case raises a number of legal issues under the Coastal Zone Management Act (CZMA), the Clean Water Act and a Corps of Engineers regulation called the, Federal Standard which the Corps interprets as allowing it to select the least-costly, environmentally-acceptable, dredging, disposal method and either allows or obligates it to refuse to comply with conditions imposed by the Commission under the CZMA or the Water Board under the Clean Water Act.

Baykeeper intervened in the case soon after it was filed. After about two years of arguing about the record BCDC and Baykeeper made a motion to supplement the record and as a result of that most of the documents that we had wanted that the Corps had previously refused to put in the record had been put in the record.

On February 13th BCDC and Baykeeper filed a motion for summary judgement in the case. The federal government will be filing its motion for summary judgement and brief on April 9th. Each side will get a reply brief and the Court has scheduled oral argument in the case for July 18th.

We expect that after this briefing and oral argument the Court's decision will resolve the case one way or another, at least at the District Court level.

That is my report. Thank you.

Executive Director Goldzband continued: Marc also has reminded me that BCDC will publish a notice of proposed rulemaking in about a week that will allow the Commission to move forward with the proposal requested by the Department of Finance to double BCDC's permit application fees. We plan to schedule a public hearing on that proposal for the Commission's April 18, 2019 meeting. And we will keep you informed and we will make sure that the interested parties list is as robust as possible and make sure you have the ability to send out that notice to all of your friends, neighbors, interested parties et cetera.

You have in your packet a letter signed by 17 separate organizations that was sent to three members of the State Legislature, including ex officio Commissioner Senator Nancy Skinner, regarding potential legislation by Assembly Member Rob Bonta that could affect how BCDC and other state agencies analyze plans proposed by the Oakland Athletics to build a ballpark and mixed-use development on the Howard Terminal site in the Port of Oakland.

BCDC and the State Lands Commission are working hard to ensure that our two agencies align our messages to the Legislature and to the A's. And BCDC is consulting with the Attorney General's office regarding how best to approach any such legislation.

In addition, the Athletics have requested to brief the Design Review Board on their plans and that could take place as early as next month.

While staff has met with the A's several times, we only just received a copy of proposed legislation late last week as well as the drawings on which that proposal may be based. Therefore, staff has not yet prepared a formal recommendation on the potential legislation for the Commission but you may receive one in the near future.

Finally – I urge you to not only complete any ethics training but also your FPPC Form 700s as soon as possible.

That concludes my report, Chair Wasserman, and I'm happy to answer any questions.

Chair Wasserman asked: Questions for the Executive Director? (No questions were voiced)

7. **Consideration of Administrative Matters.** Chair Wasserman stated there were no listings on administrative matters.

8. **Public Hearing on Alameda Landing Waterfront Mixed-Use Development Project; BCDC Permit Application No. 2018.004.00.** Chair Wasserman announced: Item 8 is a public hearing regarding the proposed residential, commercial, and retail development at Alameda Landing. The staff recommendation and vote on this item will be held at a subsequent meeting. Rebecca Coates-Maldoon will introduce the project.

Principal Permit Analyst Coates-Maldoon addressed the Commission: On February 8th you were mailed a summary of a request by Catellus Alameda Development and the Successor Agency to the Community Improvement Commission of the City of Alameda to develop a mixed-use neighborhood and Waterfront Park at Mitchell Avenue and 5th Street in the City of Alameda.

The proposed project would involve work within and outside of the Commission's jurisdiction including construction of up to 400 units of residential housing, approximately 5,000 square feet of retail and commercial spaces and approximately 5.43 acres of new public-access areas.

The project would be built over a period of about six years. At build-out there would be approximately 615 to 975 new residents and workers at the site daily as well as additional visitors at the retail shops and the Waterfront Park.

The 22.8 acre, project site is located in the city of Alameda's northern waterfront. It is bounded by the Estuary to the north, maritime industrial uses to the west, residential and retail to the south and a boat storage and marina facility to the east.

The project site is directly across the Oakland Alameda Estuary from Jack London Square, and the project would continue a view corridor running from 5th Street that would align with Broadway in the city of Oakland.

The site is a former industrial area which includes an existing, concrete wharf running the length of the site's shoreline. As the applicants will further describe, a Waterfront Park would be built on top of the existing wharf.

The site also includes two warehouses that would be demolished.

The project would involve a small amount of Bay fill. Fill would be required to install a small, public-access dock and for minor pile repairs that would take place beneath the wharf structure.

In total the project would result in 5.43 acres of new public access which is roughly 24 percent of the total project site.

The residential and retail development would be located over the approximately 17.4 acre remainder of the site.

The project involves re-use of an existing, concrete wharf and adjacent areas as an approximately 4.6-acre Waterfront Park; as the applicants will further describe, the Park would include a promenade and plaza area with a segment of the Bay Trail running the length of the site.

The Park would also include a dock system consisting of a public boat dock, kayak-launch platform and water-shuttle launch platform.

Additionally the Park would include two pocket parks at the interface of the residential development, with the exact location to be determined after the residential plan is finalized. The Waterfront Park would also include 18 public shoreline parking spaces.

The project also includes an approximately 0.83-acre western greenway, a 50-foot-wide, public-access corridor including a 12-foot-wide, multi-purpose trail.

Finally, the project would include five, dedicated, view corridors through the site with views to the Bay or opposite shoreline.

The project would be developed in phases. The construction timeline is anticipated to be about two years for the Waterfront Park and about six years for the residential development.

The applicants have expressed to staff that their hope and intent is to construct the entirety of the Waterfront Park-including the areas shown in green and blue-at the onset of the project, with completion around April 2021.

However, the phasing schedule proposed by the applicants would allow the Waterfront Park to be constructed in phases and could allow for portions of the residential development to be finished and occupied before the corresponding Waterfront Park phase would be open to the public.

Phase 1 of the residential and retail project is shown in yellow. Construction for the Phase 1 Waterfront Park, shown here in green, would be completed prior to issuance of building permits for Phase 2, shown in purple.

Based on this timeline, the Phase 1 residential development could potentially be completed and occupied before the completion of Phase 1 public-access improvements.

Phase 2 of the Waterfront Park, shown in blue, would be completed prior to issuance of building permits for the last 20 percent of the residential units.

Base on this timeline up to 80 percent of the residential development could potentially be completed and occupied before completion of the Phase 2 public-access improvements.

The western greenway would be developed as part of the Phase 2 residential development.

Again, the applicants indicate that their hope and intent is to construct the Waterfront Park at the onset of the project.

The Commission may wish to consider the phasing proposed by the applicants in that delays to the residential and retail portions of the project might occur such that a substantial portion of the upland development could be completed prior to opening of one of both phases of the Waterfront Park.

The project raises issues for the Commission to consider related to sea level rise. It is important to note at the onset that the relevant Bay Plan policies focus on the Commission's review of sea level rise on public-access components of this project, not the upland residential development.

In the application summary you will see that the analysis relies on the best available science found in the State of California's 2018 Sea Level Rise Guidance Document, shown here.

The 2018 Guidance lets decision makers consider the appropriate level of risk aversion to employ when it considers the project; that is – is a low, medium-to-high, or extreme level of risk aversion appropriate? To help decide, you can use factors such as how critical the asset might be to a community or its ability to adapt over time.

The following analysis will rely on the State's projections for a project where a medium-to-high level of risk aversion is appropriate.

Staff believes this is the right risk category for the following reasons. First, there is limited ability to relocate required shoreline public access to an upland location should the shoreline experience flooding in the future, as the residential development is located as close as 10 feet from the edge of the Waterfront Park.

Second, the majority of the public access is located on a historic wharf deck that is not easily adapted. The applicants indicate that raising its grade in the future is financially infeasible.

The State Guidance therefore tells us to plan for 1.9 feet of sea level rise by 2050. After 2050, if global greenhouse emissions are curbed consistent with the 2015 Paris Agreement-a low-emissions scenario-5.7 feet of sea level rise is anticipated to occur at 2100.

If global emissions are not aggressively reduced and a business-as-usual scenario occurs-a high-emissions scenario-6.9 feet of sea level rise is anticipated to occur at 2100.

I am going to walk you through a series of cross-sections and site plans that staff created that show how these projections look at the project site.

All of the following slides will assume a low-emissions scenario in which coordinated, global cuts to emissions occur.

Under a high-emissions, or business-as-usual, scenario, the same flooding would occur but would begin to happen earlier and more extreme and frequent flooding at the end of the century would be anticipated.

Here is a big storm day in 2050. The dark blue shows projected mean higher water and the dotted blue shows the contribution from the storm event.

The project is not anticipated to experience flooding from sea level rise at mid-century. The elevation of the wharf structure is over a foot above the projected water level at 2050 during a 100-year storm event with anticipated sea level rise.

This slide shows the projected, new, mean higher high water mark at 2100. As you see the water level is still below the wharf deck on a typical, sunny day. However, portions of the project site are anticipated to be subject to occasional flooding during periods of particularly high tides and during extreme storm events.

The applicants estimate that the Waterfront Park components on the existing wharf could be impacted by approximately 33 tides per year at the end of the century.

This slide shows projected conditions at 2100 during a King Tide or a one-year storm event. Portions of the Waterfront Park, which represents the majority of the public access provided as part of the project, could experience several inches of flooding during the largest tides and storm events such as one and two-year storms.

This slide shows a flood with a one-percent chance of occurring at 2100. The Commission routinely looks at this 100-year flood to understand what an extreme-but-possible scenario would look like.

In such an event, the Waterfront Park could be flooded by over two feet of sea level rise. This would affect not only the low-lying areas of the wharf deck but the more elevated portions of the public access adjacent to the residential development.

Here is the same extreme scenario in plan view. This shows the areas of the Waterfront Park that could be susceptible to flooding under some combination of tidal and storm scenarios at the end of the century, again using a low-emissions scenario.

To address the future flood risk, the applicants have proposed measures that would be implemented as part of the initial project construction and which could facilitate future adaptation actions, which they will further describe to you.

In brief, the measures would facilitate future installation of a wall at the location shown in black.

The vulnerable areas of the Waterfront Park inland of the wall, shown here in orange, would be protected against flooding from sea level rise during a 100-year storm event at the end of the century.

The area shown in blue could be impacted during flood events but would be accessible during other times. In other words, if adapted as suggested by the applicants, a narrow but continuous east-to-west, public-access area would be available even during an extreme flood event at the end of the century. However, a majority of the public-access area provided on the wharf deck would experience occasional flooding and would be periodically closed and unavailable to the public.

The applicants and staff have also discussed if a more Bayward alignment of the protective devices that could be implemented such that more of the Waterfront Park could be protected from future flooding.

The applicants indicate that there is more uncertainty about the cost and logistics in implementing an adaptation measure that would protect a larger portion of the Park from flooding.

In summary, and as outlined in the application summary, the Commission should consider the project's consistency with the Commission's law and policies on Bay fill and those that relate to the public access proposed-which include Bay Plan policies on public access, recreation and appearance, design and scenic views.

As discussed here among the key public-access issues are the phasing of the public-access improvements proposed for the project, and how the public-access areas will be impacted over time considering potential sea level rise and adaptation responses proposed.

I will now turn this over to Sean Whiskeman with Catellus to present the proposed project in more detail.

Mr. Whiskeman addressed the Commission: My name is Sean Whiskeman and I am the Senior Vice President of Development for Catellus. I am also joined here by members of my Catellus team as well as Andrew Thomas, Planning Director of the city of Alameda and Amy Wooldridge, Park and Recreation Director from the city of Alameda.

We are co-applicants here and excited to be here. This has been a portfolio project for Catellus and a project that we are very proud of and one that I know the City is as well. It has been a long time coming and we are excited to be here talking about the last phase which is our waterfront phase.

We've been working on this particular project for about 18 years. We got involved in early 2001 and so far what we have been able to accomplish in strong partnership with the city of Alameda is the construction of about 873 residences including 197 affordable units.

We have facilitated the construction of the Ruby Bridges Elementary School and associated park, over 300,000 square feet of retail which was designed to address the City's retail sales leakage that was occurring every year, over 364,000 square feet of maritime-commercial which I will talk a little bit more about in a second.

We've got another 300 to 400 residential units for the waterfront. We've spent to date over about 200 million dollars of infrastructure improving old or non-existent infrastructure as part of the Navy's former, military base.

We have another 50 million or so to go out on the waterfront. But also there are some other highlights we wanted to bring up too.

Alameda Landing and the neighboring Bay Port Project is the first fiscally-neutral project within the City of Alameda, which means that we are essentially – our residents and owners of Alameda Landing are having a small, tax assessment that helps go to pay for public and infrastructure improvements and maintenance. It is not providing any financial burden on the City to maintain the public infrastructure that we've installed here.

We've implemented the first transportation-demand management program in Alameda. And part of that service is a Bart shuttle that is meant to reduce single-vehicle occupancy trips through the tube. And we've been averaging over 5,000 boardings a month which has been a successful, transportation alternative for our residents and other citizens within the City.

And we are also working on real cross-estuary transportation solutions in form of our water shuttle proposed within the waterfront project and also working to help facilitate a location of a future, bike and pedestrian bridge with the city of Alameda.

So what we have here is shifting to the waterfront. The waterfront project is our last phase. It is finally ready to be put into production. We've been working very closely with the city of Alameda to come up with the right, secret sauce to meet their needs and also create a financially-viable project.

And the first phase of that was going through a process with the City Council in summer of 2017 to create a land-use plan that would allow about half of this waterfront site to be parceled off and sold to a neighboring, commercial business called Bay Ship and Yacht.

Bay Ship and Yacht was critical to meeting city needs of expanding and retaining maritime businesses within the city of Alameda. Two buildings are being renovated now out on this waterfront deck and soon will be occupied by Bay Ship and Yacht and other maritime businesses which we are all very excited about.

So that left our remainder parcel. It is about 22.8 or almost 23 acres which is the project we are going to be talking about today and also point to primarily the residential and the Waterfront Park.

But before we set out we wanted to point out a few things that we had to contend with. We certainly had the land-use requirements that were imposed on the project by the City Council. That was a collaborative effort that we worked on with them. And that includes the 4.5 acre Waterfront Park and waterfront dock.

We have view corridors which we will talk about here more in a second.

There is a mix of housing units including affordable, affordable-by-design units, universally designed units and also a cap on single-family homes.

It includes about 5,000 square feet of commercial. We are also working closely with the City to create a land-use spot for a future bicycle and pedestrian bridge.

We are working very closely with the City Planning and Parks and Rec Departments to implement their objectives.

We had to contend with some existing utilities, which the image on the right side of this slide on the screen is meant to show. You will see the view corridors.

A large, red easement on the right side is an existing AMP easement, a sub-station. There are a variety of other sewer easements and other utility easements within the project that we had to contend with.

We certainly had to take into consideration all of the regulatory requirements from BCDC, the Bay Trail, the Army Corps and the Water Board.

We had structural constraints with the wharf deck; the least of which was maintaining a 35-pounds-per-square-foot, maximum load on the existing wharf deck.

We had geotechnical constraints with stabilizing the shoreline and the building paths to create a suitable project to construct.

And all of this Catellus is paying for. And the result of it is a fairly limited amount of saleable residential land.

We took all of that into consideration. We worked closely with the City and its Planning Board and we've come up with a variety of design principles. And we found a home builder to help implement all of these constraints into a feasible project and that is why we are here before you today.

It has taken a while to navigate all of these into a project that we can construct but we are happy to be here and have a chance to talk to you about these.

The key design principles that we were able to implement here, the view corridors and many of which Rebecca has already covered so I will talk briefly. Certainly the view corridors to the waterfront, there's four of them – originally there were two. We've added two more to help encourage views and access to the Waterfront Park.

The east-west one which cuts through the project and aligns beautifully down in between the two, existing Bay Ship and Yacht buildings with views to the City and into the Bay.

There are very strong pedestrian and bicycle connections throughout the project. And all the residential homes that are out on the waterfront edge will face the waterfront as well as the western greenway on the western edge of the project.

So with all of the constraints that I indicated before this is an active plan. It may not be the actual, final plan that gets approved by the city of Alameda's Planning Board but it is a good representative of all of the constraints that I tried to outline earlier on how a residential plan can be implemented and interface into the Waterfront Park and promenade that we are talking about here today.

So as you will see along the water line we designed the Park and it is important to note that nearby there is a city public park called Estuary Park which has many ball fields and traditional play structures and it is a wonderful park that is evolving and is nearby.

And it was an interest of ours and most importantly an interest of the City to create a public park that really created a platform to experience the water, to experience the interesting views across the water, connections to Broadway and Jack London Square and not to overdo it; to create an urban environment that has a little bit of grit to it – just really to create a place for people to come and experience the water.

That was a goal of the design of this park and we are happy that it was a collaborative effort with the City. So what we really focused our attention on and the right side of the project the circular areas is our plaza. That is where will be more programs. There are more activities there. There are play structures which will be a little bit more organic and urban versus some of the typical play structures you might see. There is also going to be barbecues and fish-cleaning stations and our kayak launch, our kayak storage and stand-up paddle-board storage. And a variety of those activities will be much more programmable and that is part of the Park on the right side of the plan you are viewing will be much more active.

And as we move west down the Estuary the balance of the promenade will be much more passive and quiet and calm. And we feel that is appropriate as does the City. But throughout this promenade and plaza you are going to see a variety of different types of seating and lighting and things to experience. So we have a public art component to this as well that will follow. This will create places for people to come out and enjoy.

The connection to Jack London Square is a very powerful one and one that we really hope will help activate the waterfront dock that we will be adding as part of this project getting people not only to the water but onto the water is a goal of ours and certainly we understand a goal of BCDC.

I will give you a little bit of context on some of the structural and geotechnical and design impacts that we have had to contend with. This cross section is meant to show you how things are going out there. You see the old, Navy wharf deck that had a life onto itself. It is unbelievably engineered from a structural perspective. This deck used to house trains. And it used to take on heavy equipment and materials and supplies.

We simply are going to use that deck as our viewing platform and also for our Waterfront Park. The first 90 feet will be waterfront deck and will be a wharf deck. And then after 90 feet in it will be on terra firma and that is better for construction.

BCDC's jurisdiction starts mean high water and comes in about 100 feet. So your jurisdiction actually starts a good 80 feet or so in from the edge of the wharf deck which is important to note.

This slide is meant to show the Waterfront Park improvements on top of the deck over water. And then as you get to the edge where we have a nice, 10-foot buffer between the building face of any residential and the end of the Waterfront Park.

Our Master Plan approved by the city of Alameda requires that no building be closer to 100 feet from the edge of the wharf and so this plan meets that requirement.

On the western edge of the property we have wharf decks to contend with as we turn the corner between our project and the Bay Ship and Yacht Project.

The 5th Street section is going to be very important in bringing people visually but physically through our existing, Alameda Landing Project to the waterfront in cars and bikes and on foot. And this will be the main sense of arrival as you approach the project.

There is a variety of different types of materials and elements many of which are City of Alameda Rec and Park specified and some that are not, some that will be elements that we will be able to re-use from the existing buildings, even from the wharf deck itself. We are excited about that, including some of the mooring cleats that are out there along the edge now. All of these as much as we can will find their way back into the Park to help create a unique and a little bit more urban and gritty experience.

There is a very strong lighting program here to create the right type of ambience. We worked closely with the City and the Planning Board to enhance the lighting program.

We've got Bellingham Marine, which many folks know, onboard that designed the waterfront dock. This waterfront dock is going to be the access onto the water. It is going to be built using a sea flex system which essentially requires no piles to secure this dock in the water.

The Bay Trail, obviously all of their requirements have been implemented into this plan, strong connectivity with the existing Bay Trail and we will be returning it back towards Estuary Park as it continues out to Alameda Point.

We are available to answer any questions you might have on the phasing of this project. I will say that the spirit behind the phasing was to deliver the public improvements when the people were there and not to get out in front of that too much with a lot of construction activity happening behind it. We wanted to tie the public improvements with the private improvements to make sure that they were coming online in a relatively close proximity to each other.

We have every intention of delivering, starting the Park on one end and continuing it to the other in a continuous fashion. That makes the most sense from a construction ability. We have reserved the right with the City of Alameda to build the Park in phases.

I'm going to turn this over now to our resident sea level rise expert; Bill Kennedy is going to talk a little bit about sea level rise and we are all here available for questions and I appreciate your time.

Mr. Bill Kennedy presented the following: My name is Bill Kennedy. I do want to correct Sean on one thing. I am the Vice President of Construction for Catellus. I am not the sea level rise expert. I don't know if anyone in this room could put their hand up and claim that yet. I can say that I have tried to stay in lock step with this Commission and with BCDC staff in trying to parse the information and understand the rules and the evolution and anticipation of coming rules about how to deal with and understand sea level rise and how it impacts the Bay, the Estuary and how developers like ourselves can implement resilient shorelines while following these rules and still get our projects completed in a reasonable fashion.

I understand that there is a lot of discussions still on how to – but before we talk about the adaptive measures that one might put in place for a project, I think we need to back up a little bit and understand or at least get on the same page about what we think our understanding is about what is sea level rise. How are we forecasting it – mid-century, end-of-century and make sure there are some very, very good tools out there.

I commend the staff and the Bay Flood Explorer work and the all the spreadsheets and the cross sections that Rebecca put up a little while ago. I think they are incredibly good tools. But I just want to caution all of us that the tools are only as good as the inputs that we put into them. There are a lot of questions and assumptions that need to be asked and answered and those become the input values of the tools.

I was hoping to give a quick summary of what we have been able to do with this project over the last 18 months and then try to get a list of a little bit of feedback and questions and comments to make sure that as we go off and finalize our final conditions and get our final recommendation put together that we've really addressed those things so that when we come back we've really addressed the heart of the matter on dealing with sea level rise.

In trying to follow the policy guidelines as near as we can tell it involves sitting down with staff and going through a discussion, meeting with the ECRB, meeting with the DRB, preparing an engineer's assessment based on the best available science and come up with our best recommendations based on those things.

We've been to the DRB twice and gave them some supplemental information in between. This slide shows the results of meetings we had with the ECRB and then rolled into the DRB where we recognize that with the deck being at elevation 13 there may be some periods at end of century where we could potentially have periods of wetness or inundation on the deck.

So what we did initially was we raised the back walkway to one foot which is what you are seeing on here. We said we could implement a program for end of century with signage for periodic flooding or periods of high tide where we might get wet areas and even installing some vents in the deck to allow pressure release.

Sitting down with staff we came away with a few more ideas that got included into the program which is a seat wall along the north edge of the walkway just in front of the residences.

This green line here represents a seat wall that we've added since we came away from the DRB which would essentially put in about 80 percent of a protective, secondary protection with the red zones being left open for the initial 60, 65 years; whatever that might be to allow easy access to and from the Waterfront Park and the promenade and the shoreline in that period of time.

The yellow area represents a point where if sea level rise got to the levels that you saw on some earlier slides there is a potential that you could have flooding in that zone not only from the water side but also from 5th Street.

So there is a purple dotted line here which shows another thing that we've brought into the plan which is a kind of below-grade footing that would allow you to extend that green wall on top of that footing at such time as it might be needed.

The challenge we ran into was we are trying to deal with the best available science at the time and we all know that by 2050 it's pretty well agreed that we are going to see somewhere of sea level rise between 1.1 and 1.9 feet. And that puts us at about 2.5 to 3.0 feet below the elevation of the deck.

After that the curves – you might recall when I was here in November we had a very similar discussion. After that the curves vary wildly. And that's when you have to start going back and looking at the input values into the model.

But assuming we get to this 5.7 feet of sea level rise at the end of the century these adaptive measures that we are agreeing to put in on day one would allow maximum feasible public access at that time to still go east and west along the promenade and be able to avoid periods where you might have water intermittently splashing up onto the deck and then running off after a King Tide and a potential 100-year storm event.

We followed the current policy and guidelines. We provided an engineer's risk assessment and sea level flood risk evaluation. In our assessment we believe that the water will never get to the wharf deck. However, what I've just shown you and through our discussion with staff and through the DRB and the ECRB we are prepared to put 80 percent of adaptive measures in place today that would mitigate for a 5.7 foot sea level rise scenario at the end of the century. Notwithstanding a little bit of in-fill in those gaps that the red lines I showed you on the earlier slide.

We've applied the best available science based on the most probable sea level rise assessments. The best available science does not mean in our view the most conservative, restrictive, highest-possible scenario we could come up with which as I've said before this Commission before has a 0.5 percent probability of occurring.

We are basing our assumptions on the 66 percent probability which is called, "the likely scenario" and we are taking the very high end of that. If we do that we will always remain one foot below the surface of the deck.

However, as I said before; we are prepared and willing and have designed into the project future, adaptive measures that would meet this 5.7 foot sea level rise level.

The engineer's assessment shows there is no over-topping in 66 percent scenario. It does show that there are 33 tide instances. That is not 33 days. That is 33 tides assuming about three hours per tide and maybe a half of those or a third of those happen at night and that is in the last decade of the century.

And again, I've explained that we have put into place adaptive measures for the 0.5 percent probabilistic sea level rise.

With that I don't want to use any more time going through all the other information I brought. But what I would like to do if we can hear what we maybe haven't addressed yet or maybe if you could help us by giving staff some information to make sure that they collect what you want to hear next time we come back so that we really have hit this issue and responded in a way that satisfies the Commission.

And the very last point I wanted to make about that was if you have a park next door to us, a shoreline park – and as Rebecca showed on the slide; it is fairly adaptable and it's not in a critical zone, it is something that BCDC isn't that concerned about when and if sea level rise happens – you assign a likely probability, a low-risk, aversion scenario, 66 percent chance. If next door to that you have a high-value facility you assign this 0.5 percent probability – the water doesn't know that when it got to the property line it automatically is more important and now it has to jump 3.3 feet higher. But when I talk about the input to the model that is exactly what we are doing. We are saying, everything that goes into this model has to be represented 3.3 feet higher because we made an early decision about how important or how adaptable that project was.

I just want to remind you when you look at these cross sections they are based on the output of a model which is based on assumptions like this that when you put those assumptions in early on.

This is the engineer's risk assessment and you can see in the top bar chart at 2100 using what I consider the appropriate and what our engineer's assessment considers the appropriate risk assessment which is a low-aversion to risk which is a 66 percent probability using the high end of that range; in the year 2100 we have no over-topping at low emissions and no over-topping at high emissions. In fact, nothing happens until 2140.

If you use 0.5 percent probability which is what we are talking about in this room today, at 2100 those are the 33 tides you see in the bar chart that may occur in the last decade of the year. And we believe that the mitigation, adaptive measures we are putting in place would certainly be reasonable in that event to be able to allow the water to come up, splash around, run off and allow the public to go back out on the wharf.

You need development projects like this to protect the shoreline. We think we are bringing one that does the absolute, maximum protection to provide the maximum feasible public access consistent with the project.

And just lastly, if you were to apply that scenario we usually look at much worse scenarios than this and much better scenarios than this; this is the Bay Flood Explorer with 36 inches of sea level rise – you can't put in a 100-year storm event on 42 inches so I have used 36. But this is interesting. The edge we are talking about is currently the most protected edge along the southern part of the Estuary and it is existing.

With that I will leave it to questions.

Chair Wasserman asked: Questions?

Commissioner McGrath commented: I am fairly confident that there is a plan for 2100. But I am also concerned that beyond that there is going to be acceleration of sea level rise and there is not going to be a lot of room to work with.

I do have a question for Mr. Kennedy having to do with the idea of a seat wall. I understand and it's pretty clear from the presentation and the staff report that this wharf won't take an earthen fill to get it above long-term either directly or in adaptation without a huge investment in it; but the idea of a short, seat wall along the edge of the wharf that would provide an additional two to three feet of freeboard that would give you, who knows, 10 to 40 years of more time before the public access way floods – can you give me some idea of what the structural and economic barriers to that are?

And I'm not talking about it being constructed at this time. I'm talking about an adaptation process – the staff has indicated you have a funding mechanism that at such time it is possible or likely that periodic flooding would affect the public access area; could at that time it be constructed and what are the load-bearing constraints, and the fiscal constraints about such an option?

Mr. Kennedy responded: The load-bearing constraints are 35 pounds per square foot. The financial mechanism is what we can do today to ensure 2100 is viable. However, it is not very practical in our review and we've actually gone through and designed this. You could put a small curb wall on the front, raise the railing, we talked about 18 inches but what we discovered is there are expansion joints throughout the wharf. The water would still come back and go up and through those expansion joints. If we put water stops in those today they would be turning to dust and deteriorating in 65 years.

We felt that the best available science says, we are not going to know what is really going to happen until 2030 or 2040 and at that point in time we come up with the most reasonable assumption or design using the current materials at that time.

Commissioner McGrath continued: I understand that. I'm not asking for that. It is feasible in terms of the loading on the wharf to put in an 18 inch curb wall. But making it waterproof enough to keep the area dry during higher tides is going to require ongoing maintenance. It is going to require joint material and maintenance of the joint material.

Mr. Kennedy replied: Maybe I wasn't really clear. The wharf is actually made up of three wharves. And the expansion joints go north to south. So there is a gap and there is a metal plate there. If water were to come and splash up under the wharf it would just come through that joint and land on it.

What I was saying is that they – you could come up with some mechanism to seal that like a water stop system but it should be put in at the first sign of a problem which in our view is well down the road. In some views it could be 75 years from now.

Commissioner Scharff had concerns: I had some concerns about the phasing. I didn't feel that comfortable with the notion that the Park wouldn't be completed before you had occupancy permits for the houses. I also had some concerns with the last 20 percent.

You know we may go into recession. You may never build the last 20 percent. Or you may wait five or seven years to build it. I personally don't see any reason why we shouldn't require, but I wanted you to ask that question – why we shouldn't require you to finish the plaza area before you get occupancy permits for the first phase? And on the second phase why you shouldn't basically have to finish that before you get occupancy permits for the second phase?

I would also ask to some extent why you shouldn't do the whole thing before you complete the first phase before you get the final occupancy permit. I wanted you to address those two scenarios.

Mr. Whiskeman replied: We certainly appreciate the question and concern. It is something that we've talked quite a bit with staff and Andrew might want to come up here and address this as well. It is twofold. First of all this project is from a feasibility perspective is critical that we manage the cash and the cash outlay through it. That is a sources and uses issue for us as we go through with these major projects.

We are tying the first phase to the start of the second phase which is critically important to the home builder to the completion of the first phase of the Park. We thought that was a heavy hammer that exists for the City but also to get the public improvements completed.

I should mention too that, or remind the Commission that, the home building will be done by another party. That we will be constructing the Waterfront Park improvements and ultimately we will dedicate this all to the City upon completion. So those are the various players that are at work here.

It was important for us to maintain some flexibility in the phasing to make sure that we are not getting too far out over our skis. From a cash perspective it is very important that we manage this project in a fiscally-responsible way. That is why we reserved those rights with the City. The City was able to get comfortable with our phasing.

We certainly understand why folks would want all of the Park to be constructed but also I should remind folks too that there is going to be a tremendous amount of construction activities happening out here. And so part of it is creating a safe place for access for the public. A lot of this has to do with the prudent management of cash.

Commissioner Scharff continued: I understand the fiscal argument. I don't understand the construction argument. It seems to me that you are better off building the whole Park or we are better off with you building the whole Park. The residents are better off that the Park is constructed before people move in because then you don't have the construction noise and all of that while they are living there.

I mean I understand the fiscal argument but I guess I understand no other arguments besides the fiscal argument of why you shouldn't build the whole thing and have it done at the completion of the first phase. I see no reason to build it before but why shouldn't you – putting aside the fiscal argument for a second, I don't understand the rest of the argument.

Mr. Kennedy explained: From a construction standpoint I think you are right on the money here. The majority of the cost is in the geotechnical improvement that starts from – well we are actually starting over right about here and we have to do deep-soil mixing all the way to the east. And that is such an expensive mobilization and construction effort we will immediately come back to the same place and go all the way to the west.

All of the remediation of which we are recently discovering there isn't going to be a lot – all of the soils removal, replacement, deep-soil mixing, rapid-impact compaction, surcharging, wicking and fill and light-weight fill is all going to occur simultaneously; in a non-stop fashion from the east to the west generally.

Also we intend on building the sidewalk portion to allow access to the home builder to complete his homes so that they have their front doors are going to come out onto the north side. So they will need to have that first walkway completed.

So what is left, so the investment is already being made up front and continually. We don't intend on stopping that. It is the service improvements that we want to keep consistent with the rest of the residential development so we don't destroy what we have built and so we don't get too far out in front of ourselves and put too much work out in front of – I mean that's the financial, the fiscal argument. It is just kind of the surface improvements.

Commissioner Scharff asked: What percentage of the costs are the surface improvements? I mean we are just talking about the surface improvements on the second phase I assume, right? Because you are pretty much going to complete the first phase.

Mr. Kennedy responded: It is probably about half to two-thirds of the cost is in the work below grade getting back to the surface.

Commissioner Scharff continued: That was very helpful. But one other question on this thing; what you have asked for is on the first phase to not have to complete that if I understood it correctly until the second phase starts. Was that correct or did I misunderstand that?

Mr. Thomas responded: Hello, I am Andrew Thomas from the city of Alameda. We talked through this a lot with our – obviously the Park part has already been approved by our Planning Board. We have basically, when I heard you speak, we are on the exact same page. This Park is going to be done when this project is done. It is going to be built simultaneously.

I was just asking Sean – my recollection of our phasing requirements are actually more strict than what was just shown to you a few slides ago.

I think we should – what I think we need to do-city staff, BCDC staff, applicants-is come up with a tighter, phasing schedule that makes everybody more comfortable. But even I wasn't quite sure that this was accurately reflecting our phasing schedule.

At the end of the day our goal is we are going to phase building permits so that we are sure, the City, that we are going to get a full Park at the end of the project. And Sean's point is a good one. What that is, it is going to be our limitations not on them to go faster but our limitations on the home building so that we are going to be stopping building permits because we are going to say, hey – not enough of the Park is built which is then going to put an obligation on them to speed up.

And we haven't approved the housing yet. I think we can come up with a good phasing schedule to ensure that it all gets done simultaneously. And the way it is going to be enforced is with the City's limitation or your conditions on the issuance of building permits.

Commissioner Scharff stated: That's great. So our charge is public access. So when this comes back I would love to see the actual phasing and how that is going to work.

Commissioner Techel commented: This reminds me a bit of the flood project in Napa. And we got the promenade built and then we built the development behind it and we had to close the public promenade while the rest of that was being built. There is something to consider the public access of that promenade when there is other construction being done.

Chair Wasserman asked: How tall is that green-line, sea wall? There is a wall proposed and how tall is that going to be?

Mr. Whiskeman answered: The sidewalk at that location is at 14 feet. So one our adaptive measures now is to just we are going ahead and build that sidewalk a foot up from the elevation of the wharf deck which is 13. So we are going to build that sidewalk at 14. The seat wall would start from there and rise up about 18 inches to 15.5 feet.

Chair Wasserman asked: From the sea level?

Mr. Whiskeman replied: Yes. It would be a foot and a half or 18 inches.

Mr. Kennedy added: That is 15 and a half which is also the elevation of the finished floors of the homes. So we are at structural, slab elevation by providing that approximately 18 inch high additional seat wall next to the sidewalk.

Chair Wasserman continued: So I appreciate that Catellus is not the home builder. And I appreciate that the homes are going to be built outside of BCDC's jurisdiction. So I'm just asking the questions. If the sea level, total water level now with sea level rise, King Tide, high tide, storm tide goes over that 15.8 it's at the level of the homes, so it is coming into the homes.

Mr. Whiskeman answered: That is correct.

Mr. McCrea chimed in: The homes along the green line are in BCDC's shoreline band jurisdiction.

Chair Wasserman stated: Beyond the purpose of our jurisdiction in that.

Mr. Kennedy interjected: Just to put it into context and Mr. Thomas is going to get up here and probably say a couple of words about it. Relative to what? Mitchell will be flooded. The storm drains will be flooded. Alameda will be - the water will be coming from the other end of the island but that edge will still be above water.

Chair Wasserman acknowledged: I understand your projections and I understand there may be a difference of opinion there and I understand that the scientific predictions are not at a level of certainty that any of us would like. And your point that at that point in time we've got water coming out of everywhere is an important point to be made.

I very much appreciate this presentation. And from my perspective you have the benefit and burden that you are really one of the very first projects to propose this kind of construction within our jurisdiction that allows us to start to have a better understanding of what may really happen.

And I appreciate that there are differences of opinion on what may happen.

Mr. Thomas commented: Just from the City's perspective; so we are talking about, 90 percent of what we are talking about is a city park that is within your jurisdiction. And Brad is right. There are going to be the private homes on the back side.

From just the City's perspective and I am definitely not going to challenge any of these numbers – we are very concerned in Alameda about sea level rise. We are working very hard on this issue citywide. That last slide that Bill showed with the flooding around this – I mean, those pictures are scary when you look at Alameda in 100 years or with any of these projections.

So what we were looking at is how do we design this park that these guys are going to build for us? We actually own this park already. This was given to us by the Navy for better or for worse (Laughter) We are the proud owners of it. Our goal at the City was; we've got these guys on the hook to build this park for us. How do we design it? And they will be gone in 100 years. The City will still be here and hopefully BCDC is still here.

So our mindset was, design this park so that we can adapt it in the future. And our game plan from day one has been we've got this big, huge piece of concrete; let's keep it simple, let's keep it gritty, let's keep it interesting and you know what, in 25 or 30 years we might start seeing some water coming over the top and that is going to be an issue.

So then we have this back band where we've raised up. We've got the wharf comes back and there is all those weight limits but on the back half of the park up against the houses, now we are moving onto dirt. So we raised that up a few feet. And then the houses are raised another half foot behind us.

And our mindset here is, okay that back 15 or 20 feet where we have a continuous path and it's elevated off the wharf – we don't know what we're going to do in 25 or 30 years but we know we are going to have to do something. It may be some sort of barrier up front. It may be something at the front. Maybe that last 20 feet has to be raised. And when we're dealing with that we're protecting the public. We're going to be protecting the public access along the back end so that even in that high tide event there will still be ability. But we are also protecting those houses. And it is going to be protecting that whole project.

Chair Wasserman stated: So I think the points you just made are a very important piece. And I actually as a going-forward suggestion to think about – that possibility and that thinking is a very important part of the adaptability of this that I would have thought logically would have come earlier in the discussion.

And noting taking that example if, and that's a problem I don't think anybody up here is likely to be around to be dealing with, we may be observing it but I – probably not on this dais. (Laughter) But the other part of that adaptability is if you are putting some form of barrier there to hold a higher level of water back we've got view issues that will be argued vociferously about at that time – but you could put public access on top of that.

I mean there are many other projects that we deal with where the adaptation to rising sea level may well eliminate public access; this is not one of them. So from my perspective that is an important piece to keep in mind.

The other piece is, just from a personal point of view I am not speaking for the Commission – we haven't taken this up; if I accept what has been presented I'm a little less concerned, I think the plans that you have presented are important, we're not deciding on them today, they are important and I don't want to see any retreat from them – but having said that, I'm not so concerned about preserving access 99 hours a year. I am very concerned that there isn't damage that occurs that can't in a reasonable way be contained and quickly responded to so that we have access.

And I think we just need as we are playing through that at least need to keep those elements in mind as well. This is public access for as much time as is feasible, as much time as is possible. I don't want to be responsible for somebody being out on that wharf when there is a total water level of nine or twelve feet frankly regardless of whether it hits the surface.

Any other comments?

Commissioner Gilmore was recognized: We as a Commission have discussed in our various workshops and it comes back to this tension between what do you require of a particular project versus its neighbor who isn't protected. And I think one of the scenarios we used was the Oakland Airport. The Airport is clearly an asset that everybody in the region wants to maintain. San Francisco Airport has the same problem. You solidify or you use barriers or whatever to protect the airport but the water simply goes around it.

It is sort of the same thing being on an island. We can get these newer projects that are coming online in Alameda to do the best that they can with the technology and the science that we have to protect against sea level rise but the reality is the water is going to come in on the other side of the island. It is going to come through the storm drains and we may very well do a very good job of protecting the front of this project only to have the water sneak in the back way or sideways or something else.

And I think it is something that we have discussed about all of our approaches to sea level rise. We also brought up the whole context of, well you know, do we retreat? It is a much longer discussion. And I just want to caution us not to impose unrealistic expectations of a project simply because they have the misfortune or lucky happenstance to be coming before us when we are in the process of tightening up our requirements.

Chair Wasserman reiterated: It's always a balancing act.

Commissioner McGrath voiced a concern: I do have a planning concern. This is certainly for the next 40 to 50 years a generous, public-access, way area in part because the military left us with a pretty strong pier.

My concern here and I want it addressed in the staff report is whether – at some point we are going to face more than six feet of sea level rise; it is very unlikely that it will be before 2100. But somewhere around 2140 we may see it. So the question then becomes, with all projects, do we walk away or do we adapt?

So when you bring it down to this project the question is, if we can't adapt on the wharf and we have to adapt on the land – will there still be enough area to do it so we have a meaningful, public-access area? Or is that public-access area going to be under the awnings of the buildings?

And to me with the only basis that we have to deny a project that it doesn't provide maximum feasible access; the question that I have is, okay, in the more extreme scenarios which I will acknowledge are beyond 2100, do we still have enough room to adapt? And do we have an institutional arrangement? And if we do, I'm fine with that. And if we don't, the development is very close to the wharf – is there enough room? And if there is enough room but it is not very utilitarian then maybe what we need to do is make sure that there are some efforts to keep the plaza dry as long as we can, the wharf dry as long as we can.

But I'm also very mindful of what Catellus has said; this is a lot better than a lot of places. We are going to see a lot worse problems and we shouldn't punish them unduly.

Chair Wasserman stated: I think that is a good point to stop. We expect that this is coming back to us at our next meeting.

Is there a motion to close the public hearing? (Off mic)

MOTION: Commissioner Scharff moved to close the public hearing, seconded by Commissioner Gilmore. The motion carried by a voice vote with no abstentions or objections.

9. Public Hearing and Possible Vote on PG&E's Potrero Power Plant Remediation Project in the City and County of San Francisco; Material Amendment No. Three to BCDC Permit No. M2017.005.00. Chair Wasserman announced: Item 9 is a public hearing and vote on the remediation of PG&E's closed Potrero Power Plant on San Francisco's southern waterfront. Pascale Soumoy will introduce this item.

Sediment Program Analyst Soumoy addressed the Commission: My name is Pascale Soumoy and I am here to introduce the Potrero Power Plant and Pier 70 Offshore Sediment Remediation Project and its proponents Pacific Gas & Electric Company, the Port of San Francisco and the California Barrel Company.

On February 8th you were mailed a summary of an application to remediate portions of the former PG&E Potrero Power Plant and the adjacent Port of San Francisco's Pier 70 located at 1201 Illinois Street between 20th and 23rd Streets. The remediation would remove contaminated sediments from the property shorelines and offshore intertidal and subtidal areas and would impact approximately 3.3 acres.

The project's main goal is to mitigate the potential exposure of fish and other aquatic species to polycyclic, aromatic hydrocarbons, also known as PAHs, as well as to minimize their harmful exposure to people wading in the waters offshore of the properties should they choose to do so.

The remediation would be conducted by dredging and excavation of contaminated sediments near the shoreline and placing remediation materials such as activated carbon, sand and aggregate to treat and isolate the newly exposed surfaces and protect them from erosion.

Two subtidal areas would also be remediated without dredging, one being treated by direct application of activated carbon and the other allowed to accrete with local sediments naturally.

The riprap removed over the course of the project would be replaced along the shoreline and the existing revetment replaced to protect a section of exposed shoreline.

The project came forward as a request for final authorization and it resulted in an application for a material amendment to an administrative permit which is why you will find that the recommendations have new language underlined and deleted text struck through. Please also find in your packet an errata sheet for corrections in the staff recommendations.

This project raised the following primary issues: whether the project was consistent with the McAteer-Petris Act and the Bay Plan policies on fill in the Bay, dredging and water quality policies, tidal flats and subtidal area policies as well as those regarding fish and wildlife and the climate change policies.

Staff believes that the project is consistent with the Commission laws and policies and included conditions to further support this such as:

That sediment be removed in the most environmentally sound manner through the use of appropriate equipment and methods and that the sediment be processed and disposed upland outside of Commission jurisdiction.

That fill be minimized by removing the temporary structures upon project completion.

That water quality and health of intertidal and subtidal areas continue to be improved by the monitoring and adaptive management post-construction.

Here to present additional details of the project is Mr. Robert Saur, Senior Remediation Project Manager for PG&E.

Mr. Saur addressed the Commission: My name is Rob Sauer and I'm with Pacific Gas & Electric Company. I'm with the Environmental Remediation Department and I am the project manager for the remediation that we are performing at the former Potrero Power Plant. I am here with Lois Autie who is the design engineer with Haley & Aldrich and also co-applicants are Charlie Thornton with the California Barrel Company, Ming Yeung with the Port of San Francisco and Carol Bach with the Port of San Francisco.

This remediation project is for the offsite area of the sediments, offsite from the Potrero Power Plant and the Pier 70. The former Potrero Power Plant is located in southeast San Francisco. PG&E has been performing environmental remediation under the oversight of the California Regional Water Quality Control Board. It is divided up into seven different areas

of concern. Six of those areas are in the upland areas. The offshore sediment area is out in the water. The upland areas have mostly been remediated and the remediation is complete and this is one of the later phases of remediation to address the impacts that are associated with PG&E's former operations.

So the sediment area was first and remedial investigations were performed and environmental impacts were discovered in that area in 2009. Then after that we have gone through a number of different phases of investigation and developing a remedial action plan. That remedial action plan was prepared and submitted to the Water Board in 2017 and approved by the Water Board in 2018.

We have been working through an inter-agency group that is listed on the right hand side since 2009. That was put together by the Water Board which is the lead agency. They were involved in collaborating and being involved in the remedial investigations and the remedial design process.

Now that the Water Board has approved the remedial action plan we've been going through the permitting process to implement the remediation. That work has been underway. We currently have a water-quality certification from the Water Board coverage under the NPD-38 for the dredged material by the Army Corps of Engineers. We've also consulted with the California Fish and Wildlife and we have a license agreement with the Port of San Francisco.

This phase is to obtain authorization from BCDC for the project.

This area is in an industrial area that has been industrialized since the 1870s. Like many areas close to the Bay the area was filled, portions of which we are working on. PG&E operated a manufactured gas plant from 1906 to 1930, and those impacts from this plant are what we are addressing through this remediation. There was also a power plant there that was operated by PG&E from the 1960s. And PG&E is currently not the property owner. We sold the property in 1999. And there were other industrial activities that were associated in and around this property.

Our remedial action plan that was developed has the remedial action objectives that Pascale went over. It is to mitigate the potential for exposure of fish to the PAHs that may bioaccumulate in the sediment organisms and also to mitigate the potential for future exposure to humans to impacted sediments from wading in the accessible areas.

Our remedial action plan is essentially a dredge-and-cap program. We will be dredging areas. The picture on the left hand side shows the areas that will be dredged.

Segment 2 is the middle section and that is where the highest impacts or concentrations are. The areas shown in blue will be dredged and capped. The areas in blue hatching will receive in-situ treatment where there will be a placement of activated carbon to address the PAHs.

We are planning to start this work and implement the construction in 2019 starting on June 1st. We are limited by a work-in-water window that starts on June 1st. While we are doing that there will be resource monitoring so we'll be performing turbidity controls and water-quality monitoring as well as biological monitoring.

After the completion of the remediation activities we'll be implementing a long-term, monitoring program that will be assessing the cap stability and erosion and also monitoring the monitored, natural, attenuation progress.

This is an environmental remediation project so the goal is to address human health and the environment. The project has been designed in a way that we can perform this remediation with no net fill where we minimize the disturbance of the healthy benthic communities. This cap design also promotes natural deposition processes where the natural sediments can be deposited over the cap material.

So that was all I have and I wanted to thank you and open it up for questions.

Commissioner Peskin was recognized: So it sounds like the bankruptcy is not going to hinder the implementation of this remediation?

Mr. Sauer replied: No, we don't expect it. We are fully expecting to be able to perform the remediation this year. And we don't think that will impact the project.

Commissioner McGrath commented: I was taken out to this site by Paul Nixon who is one of the people that started the Water Trail back before I was a BCDC Commissioner. And Paul and the Port have worked for many years on opening up this area of the waterfront to public access which hasn't been there. It is an important thing to do to clean it up. I just want to salute the people here from the Port of San Francisco that have helped with that effort. It is important to have the water clean enough to go in. The kayakers have been looking forward to this for about a dozen years.

Chair Wasserman requested: A motion to close the public hearing please.

MOTION: Commissioner Peskin moved to close the public hearing, seconded by Vice Chair Halsted. The motion carried by a voice vote with no abstentions or objections.

Chair Wasserman continued: Pascale will you please present the staff recommendation.

Ms. Soumoy presented the staff recommendation: The staff recommends that the Commission approve Material Amendment No. Three to BCDC Permit M2017.005.00, as conditioned, to authorize PG&E, the Port of San Francisco, and California Barrel Company, LLC, to conduct the remedial activities of the Potrero Power Plant and Pier 70 Sediment Remediation Project.

Staff also requests that the Commission allow staff to make minor typographical, grammatical or non-substantive corrections to the permit.

And with that, we recommend that you adopt the recommendation.

MOTION: Commissioner Peskin moved approval of the staff recommendation, seconded by Commissioner McGrath.

Chair Wasserman asked: Does the applicants' representatives accept the recommendations?

Mr. Robert Sauer with PG&E replied: Yes we do.

Ms. Carol Bach with the Port of San Francisco stated: The Port of San Francisco also accepts the recommendations.

Mr. Charles Thornton with the California Barrel Company responded: I am Charlie Thornton with the California Barrel Company and we very much support this effort.

VOTE: The motion carried with a roll call vote of 18-0-0 with Commissioners Addiego, Ahn, Butt, Gilmore, Scharff, Gorin, Pemberton, McGrath, Peskin, Pine, Sears, Vasquez, Nguyen, Techel, Wagenknecht, Holzman, Vice Chair Halsted and Chair Wasserman voting, "YES", no "NO", votes and no abstentions.

10. Briefing on the Port of San Francisco Seawall Program. Chair Wasserman announced: Item 10 is a briefing by the Port of San Francisco on the Seawall program. Shannon Fiala will introduce the briefing.

Planning Manager Fiala presented the following: It is my pleasure to introduce Elaine Forbes, Executive Director of the Port of San Francisco who is here to give you an update on the Port's Seawall Program.

But first I just want to remind you that the updates to the Port's Waterfront Land Use Plan and BCDC San Francisco Waterfront Special Area Plan are ongoing and are likely to include new resilience policies.

We expect to recommend that you initiate the Special Area Plan Amendment this spring or summer followed by a yearlong CEQA review process with a public hearing and vote in 2020.

As you will hear from Elaine, the Seawall Program process is on a different timeline from these policy updates.

Please also keep in mind that while the first phase of the Seawall Program will focus on addressing the seismic risks as you will hear from Elaine, any construction to address the seismic risks would need to be consistent with the Bay Plan Climate Change policies. Even if the seismic risks could be addressed by construction in the shoreline band from the top of the seawall, the project would need to provide maximum, feasible, public access that is viable to sea level rise, i.e., resilient to 2050 and adaptable to the end of the century as we recently discussed with the Alameda Landing Project.

With that I will turn it over to Elaine.

Executive Director of the Port of San Francisco Elaine Forbes addressed the Commission: It is an honor to be here today. I am also here with my staff that manages waterfront development, directs planning and environment and directs the Seawall Program.

We are very happy to share with you the Embarcadero Seawall Program and Port Resilience Project. And we are requesting BCDC engagement as your staff has indicated.

I'd like to bring you back to 1850 in San Francisco. The bottom right picture shows the waterfront pre-seawall. The waterfront was a very quiet place with tidal mud flats. And the seawall was built between 1878 and 1915. And in building of the seawall, the project reclaimed 500 acres of land that was previously Bay. The seawall is 30 feet tall and up to 100 feet wide. The building of the seawall was a major, public-works accomplishment at the time thanks to our state Harbor Commission. Though it was a remarkable feat the engineers at the time didn't understand seismic stability the way we do today. The wall was built on top of weak mud.

The seawall really supports our vibrant waterfront. It supports \$100 billion in economic activity annually. It supports our regional, transportation network which carries 500,000 people to and from the City every day. It supports San Francisco's emergency response network. In fact the City estimates that we will need to move 250,000 people post-disaster earthquake by water from the waterfront. The seawall also supports major, utility infrastructure – wastewater, sewer and power.

We all know it's a matter of "when" not "if". We are prone to earthquakes in San Francisco and the Bay Area. Science predicts that a large earthquake will take place sometime before 2044.

The Port completed a vulnerability assessment to find out how the seawall will perform in this major quake. We learned that we are very, very highly susceptible to liquefaction because the fill in young, Bay mud liquefies in a major earthquake and with nothing to hold this massive, rock dike in place it pushes Bayward up to three to five feet. This lateral spreading would fracture piles which would cause buildings to collapse, bulkheads and wharfs to fail and utilities to rupture.

Earthquakes are not the only risk to the San Francisco Waterfront. We experience intermittent flooding today from King Tide events and storms. Muni and BART are susceptible to flood risks today. And sea level rise is expected to add three feet by 2050 and six to ten feet by 2100. When I started talking about this program, my projections for sea level rise were half of what I am saying today. It was not ten feet by 2100. So the projections are on the rise especially for end-of-century.

To address both earthquake and flood risks and sea level rise the Port and the city of San Francisco are leading the Embarcadero Seawall Program. I would like to give a shout out to Commissioner Peskin. He was instrumental in placing a question on the November ballot for the San Francisco voters to consider the Seawall Program and has been a major champion in finding a way to improve our shoreline.

We had a pretty productive year in 2018. We needed to introduce San Francisco to this unseen infrastructure. So we engaged the public in many, many ways. When we started gathering information about San Francisco residents we learned that very few even knew there was a seawall. In fact, in 2017 only nine percent of San Francisco voters said they knew there was a seawall. And the person conducting the analysis said that was probably an overstatement because people hate to admit that they don't know anything. But November of 2018 82 percent of San Franciscans voted in favor of a ballot measure to strengthen the Embarcadero Seawall.

The engagement efforts were very important to us and we utilized lots of different ways to reach the public from traditional ways to social media to fun engagements with local businesses. And we feel very positive about the exchange we had with our residents.

We've also been very, very deep in data collection so we understand how to make the seawall safe in the most efficient and effective manner possible. We've been collecting information about those utilities, urban and cultural assets, homes, businesses, attractions, historic buildings, parks and ecosystems, habitat, the Embarcadero Promenade and maritime resources especially those around disaster response.

There are quite a bit of resources in the inundation zone and in the area that the seawall provides flood protection for.

We've been on the ground quite a bit too. We've been doing bathymetric and laser surveys to measure the water depth and understand the sizing of the seawall and how deep it is to real bedrock. These results will inform and move us from a high-level screening to understanding very detailed information about the seismic vulnerability in the entire stretch of the three miles.

What is under the ground matters incredibly much in this project and we've actually done over 100 exploratory borings to help us understand the effects of earthquakes to our waterfront.

We are conducting a multi-hazard, risk assessment. This will help us understand where to spend money first and to understand our hazards. We will have the results of this assessment in the fall.

Lindy Lowe and Diane Oshima created a Port resiliency, planning framework to address hazards over time, minimize disruption and make smart decisions that can adapt over time. We think it will cost up to five billion dollars to repair the whole seawall for the seismic risks plus flooding and we have about a 10 percent down-payment at this point.

So it is very important for us to target our spending in the way that minimizes safety risks in the most effective way possible now as we plan for future investments.

This framework allows for us to adapt and strengthen now. I call this concept aggressive incrementalism where we make small, effective changes and to enjoy what we have and to provide to the public enjoyment of what we have; our beautiful waterfront that is connected to the Bay for the longest time possible while not losing sight that we have to plan for and engage the public in envisioning a future that has big changes to the urban form in 2100 and beyond. And this framework allows us to do those things concurrently.

We also are engaged with the Army Corps of Engineers on a flood study. We were lucky enough to get a “new start.” We were one of six provided nationwide last year and one of only two provided for flood risks. This kicked off a three to four year. Flood study with the Army Corps to understand our flood risks across the entire waterfront. The study has big potential for federal investment if the Army Corps of Engineers finds federal interest in our waterfront and potentially quite a bit of resources for the Seawall Program.

We have career professionals from the Army Corps some of which worked on Katrina, some of whom worked on Hurricane Sandy who are helping us look at the tool kit of flood mitigation measures and efforts that can help the San Francisco Waterfront. And it is a really excellent learning opportunity for my team and the whole City staff to see that tool kit from the federal perspective.

We have an extremely aggressive schedule to get improvements in the ground because our goal is to protect life safety in our first phase. Right now we are in the planning phase. The flood study is happening concurrently.

We will be in program design and construction in the middle of 2100, flood study design and construction at the end of 2022 with a desire to complete phase one, life safety improvements by the end of 2026.

My team routinely tells me this is very, very aggressive but we are still marching to this deadline because we understand this is a life safety problem.

I would call this pie chart aspirational. This is how we would like to fund our whole five billion dollars of investment just to rebuild our seawall. We have locally-secured sources totaling 440 million dollars, 225 which came from the San Francisco voters. We are now looking to secure federal funding. And I discussed the Army Corps of Engineers flood study which is an excellent opportunity for that.

We are looking at state resources, cap and trade or some share of tax increments. And we are also thinking private development should pay a major share in the investment of the seawall.

Our development projects have a flood tax, a special tax that we already will earn. And we are looking at other ways to make development part of the solution and to take the burden off of the City Geo-Bond Program for phases of the program.

I'm talking today about our Embarcadero Seawall Program and our Army Corps Flood Study. We also have other resiliency efforts that are going on at the Port of San Francisco that we are working on the City with. That includes working on the southern waterfront, Islais Creek Flood Study and the Southern Waterfront Assessment. We are working very carefully with the Planning Department and the Office of Resiliency and the Department of the Environment on a citywide strategy.

Much of the strategy is deployed on our property. So we are very happy to be at the table with our City partners.

In terms of improvements that are coming to the waterfront we are, per your direction, requiring our development partners to adapt to rising sea tides. This is an example of one such project. It is a public project, the WETA Ferry Terminals. If they are built three feet higher than the prior terminals due to sea level rise and there is a huge mass of steel piles that can withstand up to six feet of lateral spreading in this facility. So these ferries and this terminal will be ready after a major earthquake to transport people in and out of the City.

We're adding a Mission Bay Ferry Landing. This is one of the fastest growing neighborhoods in San Francisco. And we need to plan for current demand on the ferry system and future growth. This project will accommodate sea level rise to 2070 and have the capacity to adapt beyond.

We have major development projects with new neighborhoods coming in at Pier 70 and Mission Rock. Here we are delivering many housing units including 30 and 40 percent affordable. These projects have very strong sea level rise adaptation.

Pier 70 six feet of sea level rise adaptation and 88 million dollars for the Port to spend elsewhere for flood protection. Mission Rock has six feet and also has an excellent shoreline tax that we can utilize for other parts of the waterfront.

I would like to give you a small preview into what you will be hearing in much more detail in March from Rebecca Benassini about the Embarcadero Historic District. I couldn't talk about the Seawall Program without recognizing that our Embarcadero Historic District isn't exactly the same geography as our seawall.

The District is an integral part of San Francisco's Waterfront. In 2000 BCDC approved an SAP amendment that included requirements for the Port to create the Embarcadero Historic District. And as stewards of the District the Port is the key agency responsible to advance solutions to restore these historic piers.

The District is in quite a bit of risk from flood, earthquake and from lack of investment in the facilities. Of the historic facilities listed on the Historic District six have undergone significant rehabilitation, two have been demolished and 16 need significant repair. Sadly the Port has not had the financial wherewithal to take care of these facilities in the way we would have liked.

We have however had very successful, public/private partnerships in bringing on the Ferry Building, Pier 1 Headquarters, Piers 1 through 5 and the Exploratorium really have demonstrated how successful rehabilitation of our historic resources bring a lot of vitality and enjoyment to our waterfront while celebrating our maritime heritage.

The Waterfront Plan that staff has just gone through with the public produced tailored, public-trust objectives for historic restoration to promote pier rehabilitation, public-trust benefits and financial feasibility.

Strengthening the seawall really does provide us an unprecedented opportunity to also restore some of the finger piers. So I am extremely excited by this opportunity and though sea level rise is coming we have many decades ahead and we don't think it is a good idea to let these historic resources go dark if we have the opportunity to restore them. And we look forward to collaborating and developing a shared, BCDC, State Lands and Port strategy on our historic piers.

San Francisco now has the resources to plan and implement a program to respond to seismic and flood risks along the most urban and developed stretch of the San Francisco Bay. And we hope that with your advice and guidance we can together model for other communities along the San Francisco Bay how to fund and implement a climate change program with very, very robust public participation.

I thank you very much for your time and attention today and we are here to answer any questions.

Chair Wasserman asked: Questions or comments from the Commission?

Commissioner Vasquez commented: Finally a wall we can all agree on at the same price tag. (Laughter)

Chair Wasserman noted: I am going to save the questions that I have for the next more-detailed presentation because we do need to dig a little bit more into the phasing and the balancing between costs and rising sea level protections. I think that's probably more appropriate at the next more-detailed presentation. Thank you very much for the presentation.

Commissioner McGrath gave kudos: I am just going to give you a shout out for your staff. I've had lots of interaction with your staff. As somebody that has worked on public access for decades your staff has done great work on it and you are to be commended for their work.

Chair Wasserman stated: And I echo that as in particular the outreach effort that you described and that you did. And we are going to have more conversations about that. Thank you very much.

11. Briefing in Support of Bay Plan Amendment 1-17 for Bay Fill for Habitat. Chair Wasserman announced: Item 11 is a briefing in support of additional information on the technical background for the Fill for Habitat Bay Plan Amendment. Megan Hall will introduce the item.

Planner Hall presented the following: Today's presentation is the second in our series of science briefings on the Fill for Habitat Amendment. As a reminder last time you learned about many of the different types and purposes of fill that we may begin to see on a larger scale and to a greater extent in the Bay in the coming years.

In today's briefing we'll take a step back and learn a bit more about the history of restoration in the Bay and how our thinking on restoration projects has evolved through time. We'll also see a few more examples of how the lessons learned from history can be applied as we move forward.

Today's speaker Michelle Orr is a water resources engineer who leads Environmental Science Associates' Wetlands and Estuary team. Michelle has more than 20 years of experience in wetland restoration, planning and design.

Her work has contributed directly to the restoration of tens of thousands of acres in the San Francisco Estuary. Michelle is recognized for leading projects that integrate flood management and restorations, links physical and biological processes and creates climate-resilient landscapes. Michelle is currently assisting clients with a range of living shoreline treatments and estuarine habitats from oysters and Eelgrass to tidal wetlands, seasonal wetlands and adjacent habitats.

So with that I will turn it over to Michelle and we really look forward to hearing her talk today.

Ms. Michelle Orr addressed the Commission: Thank you for inviting me to speak today. I am glad to be able to provide input to your policy considerations for Bay fill for wetland restoration. I've been asked to talk about the history of wetland restoration in San Francisco Bay. I have been doing it for 20 years so I will be pulling in project examples that I have worked on and that others have worked on.

I'd like to acknowledge the people listed here who are my former colleagues who were true pioneers in wetland restoration in San Francisco Bay and there are many others.

I'll start my story with three women who will be familiar to all of you. They saw the Bay being filled unchecked and that we were losing a precious resource. As a result of their efforts and the efforts of others BCDC was founded in 1969. What followed then were a number of additional environmental protection laws, both state and federal. All of this set the stage for the first restorations.

I'll talk here about three generations of wetland restoration. In the beginning it began early to mid-1970s, and the first generation continued into the 1980s. Then the second generation learned from that first generation for the next two decades. And then the current generation that we are in began around 2010.

The first generation of restoration really looked at your natural-reference marshes as a template for what should be restored. This is a reference site, China Camp up in the North Bay that is often used as a natural reference site. You can see it is flat. The marsh plain is about mean high or high water relative to the tides. It has an extensive channel system.

And so the first generation really tried to go about replicating some of what they thought were the key features of these reference marshes. And I will use Muzzi Marsh as an example. This is in Corte Madera. It is a mitigation site for a shopping center. It used dredged material from the nearby ferry terminal channel. It was filled up to a natural marsh plain elevation and then it was breached in 1976. It was successful in creating vegetated marsh. As you might be able to tell from this picture it had very limited diversity and particularly at the beginning it was a mono-culture of one type of marsh plant. It had very little channel formation. The few channels you can see in the site today, they actually went back and excavated a number of those after the fact and improved drainage. And channels are important for delivering water in and out of the site, connecting the marshes with the Bay; they bring in sediments, seeds, biota and some of our endangered species like the Ridgeway's Rail will forage directly in these tidal channels.

So this brings us to the second generation. In this generation the practitioners looked around at other sites to see what they could be doing better.

Some of the sites they were learning from were actually accidental restorations. They weren't planned at all. This brings us back to Muzzi Marsh. And now I will talk about Outer Muzzi that is outlined in yellow. This was a happy accident. When Inner Muzzi was filled some the dredged material over-topped the berm that was between these two sites. And some of the dredged material went into Outer Muzzi so there wasn't as much of it. And then when both of them were opened to the tides in 1976 Outer Muzzi actually showed more ecological and physical diversity. Basically by filling not all the way up to the tide level you didn't completely obliterate the channels that may have been there to begin with and then you allowed more tide waters on top that could carve out the channels.

Sonoma Baylands was the first second-generation site to take this approach purposely. This is the site up near the mouth of the Petaluma River. These 300 acres were restored in 1996 and it used dredged material from the Port of Oakland to fill below the marsh plain elevation by about one to two feet. It relied on sedimentation to raise the mud flat up the rest of the way. In 1996 it was predominantly just mud flats. On the right hand side you see a more recent photograph where you see vegetated marsh, extensive channel formation, and from the monitoring that my firm has done here we've confirmed that the length of channels present at the site are comparable to what you would see in a natural marsh. This site was

created to enhance habitat for native and special-status species. You see a Ridgway's Rail there on the bank and a river otter in the foreground. This was taken in 2005. Ridgway's Rails were observed on the site in 2004, about eight years after the site was breached.

U.S. Fish and Wildlife Service went out there to do additional rail surveys more recently and were surprised to find in one evening 20 rails using the marsh and they are estimating about 23 rails at the marsh during that period.

Another advance of the second generation is practitioners, managers and scientists start to come together as an estuary to take a regional approach. It was a shift from an individual project-by-project planning to a regional planning. San Francisco Bay managed to destroy 80 percent of our wetlands as you know in the late 1990s. Resource managers, scientists, practitioners came together and they set ambitious but hopefully achievable goals for species recovery and overall ecological health. And they set a target at 100,000 acres of tidal wetlands. And that was documented in the Habitat Goals Report of 1999.

So what this means is a lot of the potentially, restorable areas are subsided. They are low in the inter-tidal zone. That means that we need sediment to bring them back up to even mud flat elevations or marsh elevations. That can be done by bringing in dredged material like the examples I've been giving or also just through natural depositions of sediment. But either way it is going to take a lot of sediment.

And this brings us to the third generation; the update to the Baylands Goals Report. Roger Leventhal from Marin County came and spoke to you two weeks ago and he talked about this complete shoreline concept. It is something very important that is guiding restoration today—thinking about how the sub-tidal areas connect up all the way through the upland areas and that involves habitats like Eelgrass beds, oyster reef restoration, mud flats, beaches, marshes and then connecting to upland transition areas.

For a third generation project I'll talk about the Lower Walnut Creek Project. This is along the lower four miles of the Creek where it enters Suisun Bay. It is a tidal section of the Creek. Like many creeks around the Bay it was straightened and dredged in the 1960s. This Creek was dredged again in the 70s and that dredged material was placed about where you see this red dot here. It was piled high up to about 12 feet higher than the adjacent marsh. I like this example because the northern part of the site has been designed twice. Once in the early 2000s as a second generation project and then more recently.

I can talk about how the thinking has changed and the design change. So the initial design called for grading down as much of this fill pile as was feasible to create tidal marsh. There were some upland transition areas but not too much. And then this is what the design looks like today. There are still tidal wetlands that are part of that grading down of the big fill pile. A lot of that fill was left in place because it provides the benefit to the ecosystems that are being created today and also into the future. With sea level rise it provides a place for the marsh to move and flow and be sustainable.

There are a number of plants and animals that use that ecotone between the marsh and the higher areas. They can use the different areas during their lifecycle or during the course of the day or during the course of a tide. How they connect is important. You see bird nesting in these higher areas and during high water which we can expect more of. This provides some high and dry refuge for them. Importantly the opportunities for restoring this type of habitat around the Bay are pretty rare.

This is some work by the U.S. Geological Survey looking at the amount of sediment that is in the water column and documenting a downward step change around 1998. The earlier high levels are thought to be due to the high levels of sediment that got washed down after the Gold Rush. There is a big pulse of sediments that came into the Bay and it has presumably now left the system so we can be looking at a little bit less sediment going forward.

And last, there is comprehensive research being conducted by SFEI and others into watershed sources of sediment that sustain our Bay. And this information is being used to answer questions such as the ones here; how much sediment do we have collectively, how much mud flat and tidal marsh can that create and that can be sustainable and where are the most sustainable areas?

These are my conclusions:

In the beginning the first restorations represented a really large step forward but there was an overly simplistic approach to what was being created, and the expectations for being able to create instant marsh were not met.

In the second generation there was a recognition of the importance of tide evolution and time for creating values and the importance of restoring sustainable, natural processes and setting regional goals.

The current focus is on creating resilient landscapes and climate resilience. All the new types of restoration approaches that Roger told you about – these are likely to require more fill, different types of fill; for instance, oyster reefs rather than just Bay mud and fill in new locations like filling the mud flats and fill for creating upland transitions.

And if I can leave you with just one message it would be this; that sediment has shifted from something that is to be disposed of to a valuable resource for our environment that is in increasingly short supply especially with sea level rise. I'll take questions.

Commissioner Wagenknecht commented: This is an interesting progression that you've shown from step one, two, three and it is almost like there is an invisible hand of God that has worked with this over time. What is the hand of God that has worked on this and has made it progress from what we learned and able to add to that each time?

Ms. Orr replied: You have a very interested group of restoration community here in San Francisco Bay who wants each project to do better than the last one. And some of my colleagues who I was acknowledging at the beginning actually put their own time and money behind monitoring some of those first sites so that they could learn from them and looking at them over time and integrating those lessons. And then when the Baylands Goal Project that regional approach came together people really started sharing a lot of information and that continues to be the case today.

Commissioner Wagenknecht added: It is really fascinating to watch how that has progressed. We've seen it in Napa. We've seen some of the people that you mentioned were involved in some of our river restoration. Thank you.

Executive Director Goldzband asked a series of questions: One of the things that our Chair has said many, many times if you take a look at your third bullet where it talks about requiring more fill and different types of fill and that is the pivot for BCDC, which is one of the reasons why we are doing a Bay Fill Amendment. Where does uncertainty land in all of this? One of the things that we have to think about as a regulatory agency as staff is looking at permitting new fill and being able to let the Commission know – well, is it going to work? If it works when is it going to happen? What happens if it doesn't work? What happens if it doesn't work the way people think it should work? How do we as staff think about that? And how do we communicate that with decision makers such as Commissioners? How is that for a real hard question?

Ms. Orr answered: It is a great question and a hard one to answer. I know Roger talked about the importance of testing these approaches at the pilot scale. So that is the phase that a lot of these approaches are in right now. Do something small like the Living Shorelines Project in San Rafael, monitor it and look at the results you are getting before you roll it out at a larger scale. There is a lot of interest in doing that not just from the regulatory community but from the resource manager and practitioner's community, because someone has to pay for this and you want to have a project that you are reasonably sure is going to work well.

Monitoring is important so you can see what the results are. I worked on the South Bay Salt Ponds Restoration for many years during the early planning. And, in fact, uncertainty almost threatened to bring that project to a halt. There was a difference of agreement over what types of habitat and mixed-habitat should be created. In the end it was agreed to move forward with the first steps that everyone could agree with and then monitor them and then revisit your decisions and create a learning curve there. And they have created one of the best adaptive management programs in the country. They have done a really nice job with that.

For the most part it can be hard to go back and change a project once you put it in the ground-you can do a lot of damage by trying to undo that. But you can learn for the next one.

Commissioner Pine was recognized: I had a question on your slide about the sediment shortage. It is really striking to see how there is kind of a stair-step function of the sediment declining after 1998 which is surprising that it would change so rapidly. I don't know if you have any perspective on that. This only goes up to 2006. How does the data look for the subsequent 12 years?

Ms. Orr explained: You have caught me in an over-generalization here. There is continuing research on this topic. And the USGS and others are continuing to look at these trends and get a better understanding of the nuances and the inter-annual variations that give big pulses of sediment when you've got Bay flood events, big rain years like 1997.

We could potentially see a lot more of those with climate change and more extreme runoff. We could also see longer periods of drought. And so they are trying to balance what that might mean net for whether overall sediment supply goes up or down.

But the thing is you throw in sea level rise there and that just creates so much more of this space that you need to fill with sediment and that is a much more important factor here.

Commissioner Pine continued: I mean we need the sediment to establish the restoration and then for the marsh land to continue to keep pace with sea level. So that is a particular concern with this apparent drop-off of sediment. How will they continue to keep pace?

Commissioner McGrath weighed in on the issue: One of Dave's colleagues has taken very careful bathymetric surveys of the Bay over a period of years and prepared volumetric calculations. It is pretty well documented that there was a huge pulse of material, two billion cubic meters, it is an astonishingly large number that came out of the hydraulic mining and deposited in San Pablo and Suisun Bay and has gradually moved downstream. Some of it has been trapped by structures like the jetty at the mouth of the Napa River and other changes. But the system is generally believed to have been in disequilibrium while that was going on. So the Bay just kept working at that material until it was back close to what its historic equilibrium was. And there is documentation of the overall reduction, the huge amount that was in and the overall reduction. So there is a whole bunch of more research that is being done.

Commissioner Scharff asked: Does this look like the historic equilibrium where we are now? With the much lower level do we think it will go further down? Do we know historically what it was before mining?

Ms. Orr answered: It is hypothesized to be approximately what might have been more typical before the Gold Rush. They weren't taking these kinds of measurements then so it's a little hard to say.

Commissioner Scharff continued: So if it wasn't for sea level rise we wouldn't have a concern about where the sedimentation level is, right?

Ms. Orr replied: Your natural marsh might be up here relative to the tides and when we've diked and drained these sites they go lower and they can subside by two to ten feet. So that creates a big gap that you have to make up for with restoration. So we have that large piece of it as well.

Commissioner McGrath added: We also have a huge number of dams and reservoirs that have been put into place; 1,500 I think. And those don't so much trap sediment behind them as they interfere with the transport of sediment down to the Bay. So I don't expect that this sediment level is what was natural but we'll never know. But we know that a lot less sediment is being transported to the Bay from the Sierras than used to be.

Commissioner Gorin commented: Thank you so much. This is a really important conversation. And looking at your maps it is really clear that the more natural areas around the Bay for this kind of adaptation is the flatter part of the bathtub which is the north part of the Bay and the south part of the Bay.

The Sonoma Land Trust was very successful in transporting or at least moving around some of the sediment to create the wetlands and breaching the levees. And they continue to work on plans moving forward and talking to some of the property owners that recognize with the Bay level rise their time is rather limited on continuing to grow and cultivate hay in some of the lowlands. So they are forming those relationships. And some of the long-time property owners are in conversations so we may see an additional future there. But also the Bay Restoration Authority funded the Land Trust and a number of the groups to look at some of the flooding issues that Sonoma Valley and certainly the adaptations for that is creating more wetlands, more giant sponges to soak up that both coming down stream carrying that sediment as well as the Bay level rise. So it is important that we continue to think about that and thus the conversation with our Army Corps of Engineers; where are we going to get the sediment to re-create some of the wetlands that were lost over the century or so?

Ms. Orr replied: I appreciate that comment and that is an important study that you've referred to that is in progress. I'm working on that study with the Land Trust and SFEI and others.

Sonoma Creek has the advantage of having the highest sediment load of all the creeks that flow into the Bay. So it is a good place to do restoration.

Commissioner Gorin added: And that may be good or may not be good. (Laughter) The Sonoma Ecology Center and others are really working hard on partnerships along Sonoma Creek to figure out how to slow its spread and sink it which is a good way to minimize or at least lower some of the sediment flow.

So we are moving forward on that but we recognize that some of the sediment flow; our Chair didn't really talk about the impact of last week's floods because we notice that Highway 37 was closed again for about a week. That is a really important recognition of the sediment flow coming down either through Marin County or Sonoma County and elsewhere.

Chair Wasserman commented: This is more an observation than a question but I certainly welcome any response. And it may be directed to our Bay Fill Working Committee as much as anything else. One of the things that we need to do and do it consciously recognizing it is not easy is increase the number of experimental approaches to the problems you have described and the challenges as well as to accelerate our monitoring of them.

At one level what I am talking about is impossible. We need a time machine here. But on the other to recognize that although evaluation of, is this really going to work, what is really going to happen, what are the unforeseen consequences – takes a very significant amount of time. Nonetheless if we generally accelerate the look at that and the sharing of that; that's going to be very important in helping us to make decisions of where we can best deploy our too-limited-resources in addressing the sediment issue as well as a wide array of adaptations.

Commissioner McGrath chimed in: It is interesting because we talked about exactly that this morning in the Bay Fill Group. And Michelle's discussion about our efforts to improve the abilities is an important thing. We have to recognize that we are humans and we are not God and we are not going to be able to create wetlands out of whole cloth and we have to be able to accept that things are never going to be perfect. So we have to be able to accept and celebrate substantial improvement rather than perfection. But having talked to Michelle over many years and read the reports on Sonoma Baylands and having some handle on it to go out there and see Ridgway Rails in a kayak after 20 years – it doesn't have to be perfect to be pretty damn cool. (Laughter)

12. Adjournment. Upon motion by Commissioner Peskin, seconded by Vice Chair Halsted, the Commission meeting was adjourned at 3:49 p.m.