

San Francisco Bay Conservation and Development Commission

455 Golden Gate Avenue, Suite 10600, San Francisco, California 94102 tel 415 352 3600 fax 415 352 3606

February 12, 2016

TO: All Commissioners and Alternates

FROM: Lawrence J. Goldzband, Executive Director (415/352-3653; larry.goldzband@bcdc.ca.gov)
Sharon Louie, Director, Administrative & Technology Services (415/352-3638; sharon.louie@bcdc.ca.gov)

SUBJECT: Draft Minutes of February 4, 2016 Commission Meeting

1. **Call to Order.** The meeting was called to order by Acting Chair Halsted, at the MetroCenter Auditorium, 101 Eighth Street, Oakland, California at 1:09 p.m.

2. **Roll Call.** Present were: Acting Chair Halsted and Commissioners Addiego, Bates, Chan (represented by Alternate Gilmore), Cortese (represented by Alternate Scharff), DeLaRosa (represented by Alternate Jahns), Gioia, Gorin, Lucchesi (represented by Alternate Pemberton), McGrath, Nelson, Pine, Randolph, Sartipi, Sears, Spering (represented by Alternate Vasquez), Techel, Wagenknecht and Ziegler.

Acting Chair Halsted announced that a quorum was present. She also stated that Item 12 would be heard before Item 11 on the agenda.

Not present were Commissioners: Department of Finance (Finn), Speaker of the Assembly (Gibbs), Governor (Wasserman, Zwissler), U.S. Army Corps of Engineers (Hicks), City and County of San Francisco (Kim).

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

There were no public speakers present to comment.

Acting Chair Halsted moved to Approval of the Minutes.

4. **Approval of Minutes of the January 21, 2016 Meeting.** Acting Chair Halsted asked for a motion and a second to adopt the minutes of January 21, 2016.

MOTION: Commissioner Vasquez moved approval of the Minutes, seconded by Commissioner Gilmore.

info@bcdc.ca.gov | www.bcdc.ca.gov
State of California | Edmund G. Brown, Jr. — Governor



BCDC MINUTES
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VOTE: The motion carried with a vote of 19-0-0 with Commissioners Addiego, Bates, Gilmore, Scharff, Jahns, Gioia, Gorin, Pemberton, McGrath, Nelson, Pine, Randolph, Sartipi, Sears, Vasquez, Techel, Wagenknecht, Ziegler and Acting Chair Halsted voting, "YES", no "NO", votes and no abstentions.

5. Report of the Chair. Acting Chair Halsted reported on the following:

a. New Business. Does anyone have any new business to propose?

(1) San Francisco Alternate: As a proud San Franciscan, I am pleased to let you know that Commissioner Jane Kim who is supposed to be here with us today, has appointed new Supervisor Aaron Peskin as her alternate, so we shall have the opportunity to welcome Supervisor Peskin back to the Commission.

b. Next BCDC Meeting. At our February 18th meeting, at the Ferry Building in San Francisco, we will take up the following matters:

(1) We will consider a permit application for flood control on San Francisquito Creek, along the Cities of Palo Alto and East Palo Alto.

(2) We will have a briefing by Sam Schuchat of the Coastal Conservancy on the San Francisco Bay Regional Authority and the upcoming parcel tax measure that will appear on the June ballot

(3) We will have a briefing by Professor Mark Stacey of Cal on his National Science Foundation project that examines the potential impacts of Bay shoreline armoring and analyzes the physical networks that surround the Bay.

c. Ex-Parte Communications. That completes my report. In case you have inadvertently forgotten to provide our staff with a report on any written or oral ex-parte communications, I invite Commissioners who have engaged in any such communications to report on them at this point.

Commissioner Gioia inquired: Just a question. Since we are getting a briefing on the Restoration Authority measure, is it possible for BCDC to take a position on that measure? If the answer is yes, I was going to ask that we have a resolution in the event we wanted to take a position.

Chris Tiedemann replied: That question was presented to me earlier this week and I have not had the time to look into it. I have had enough time to tell you that I have not found anything that prohibits it but I have not found anything that authorizes it. I will provide an opinion next week.

Commissioner Gioia continued: In the event we can take a position we can at least have it noticed and have a resolution ready so if we choose to, we can decide to take a position.

Executive Director Goldzband commented: Let me ask if it would be okay with Supervisor Gioia and Vice Chair Halsted if we take that at this point under advisement given that the Chair is travelling.

Commissioner Gioia answered: Yes.

Executive Director Goldzband continued: If it is discovered by the Attorney General's office that BCDC has the authority to take a position let us go with that information to Chair Wasserman and have him start the discussions with regard to the agenda. That would be okay?

Commissioner Gioia answered: Yes.

6. Report of the Executive Director. Executive Director Goldzband began his report by thanking Vice Chair Halsted.

Woody Allen once said that you can't make it through a week without a major rationalization. As a corollary to that, I've decided that you can't make it through a week without a major tradeoff. For example, what's four months of constant Presidential primaries on Tuesday nights compared to watching six seasons of "Game of Thrones?" At BCDC we're used to trade-offs – we have that "and" in our name, and all of you who participated in the workshop two weeks ago were reminded of how difficult choices and trade-offs can be. And if anybody in California is peeved because we have had more rain in this past January than in the previous four or five Januarys put together, I would remind them of what that noted philosopher Dolly Parton always says: "If you want to see a rainbow, you have to put up with the rain."

For the first time in months we haven't hired anybody since we last met. However, I do want you to know that Governor Brown has appointed Deborah Halberstadt Deputy Secretary for ocean and coastal matters at the California Natural Resources Agency – the person with whom we and the Coastal Commission and the Coastal Conservancy work very closely. Ms. Halberstadt has served as a deputy attorney general for a decade and is Secretary of the State Bar of California's Environmental Law Executive Committee. I am assuming that Chris Tiedemann knows her well.

Ms. Tiedemann commented: She worked in our Oakland office and you will be very pleased to work with her.

Executive Director Goldzband continued: I want to tell you this because BCDC and the State Bar, in April, will co-host a workshop entitled, "Legal Implications of Rising Sea Level," and Deborah has been working with us on the agenda. We shall be sure to send each of you an announcement of the workshop, which will satisfy continuing legal education requirements and be very interesting.

Speaking of continuing education, we want to let you know of a couple events in Marin County that are worth attending. Next Tuesday night in San Rafael, anthropologist Dr. Susan A. Crate will present and discuss her documentary (screened at the recent Paris Climate Summit) that follows her and her teenage daughter Katie as they travel the globe to explore effects of climate change on centuries-old indigenous communities. Lindy Lowe is participating in a panel discussion afterward and will concentrate on BCDC's ART Program.

Three nights later, students of the Marin School of Environmental Leadership and Marin Academy will show their creative presentations on climate change at ArtWorks downtown.

I want to close with two things. The first is an annual announcement. In my hand is a copy of a memo from Chief Counsel Marc Zeppetello and the State's FPPC Form 700. Please complete this form and make sure that Reggie receives it no later than April 1st. Reggie is a very tough taskmaster and has no hesitation calling you, harassing you and visiting you in an effort to ensure that BCDC can boast of 100% compliance. As that other noted philosopher, Geena Davis, said in the great remake of "The Fly": "be afraid... be very afraid." (Laughter)

The second announcement, In front of you is a body of articles on Sylvia McLaughlin. I thought you would enjoy reading them and we appreciated Barry and Jim with their kind thoughts two weeks ago. In front of you is a copy of the Order of Service of the memorial service for Sylvia that happened earlier this week. That completes my report, Madame Chair, and I am happy to answer any questions.

Acting Chair Halsted asked: Are there any questions?

Commissioner Pine commented: I wanted to announce another event, which sounds very fascinating. On February 19th at the Chabot Space and Science Center there is going to be a climate music project concert. This is described as a science and arts collaborative that uses music to teach people about climate change. The collaborative is made up of leading climate scientists who pull from terra-bites of climate data and the most advanced climate models to create music that reflects the story of our climate. That is kind of an interesting twist on the issue we think so much about. It is at 8:00 on the 19th, Friday night. Maybe they could come and perform for BCDC.

Acting Chair Halsted added: All of these sound like really fascinating ways of getting people engaged in the subject matter which we are grappling with.

7. Consideration of Administrative Matters. We are now on to Administrative Matters. Brad McCrea will answer any questions you might have on this matter. There were no questions pertaining to this item.

8. Commission Consideration of an Amendment to the ABAG Contract to Compensate BCDC for Staff Services Acting Chair Halsted announced: Item 8 is a Commission consideration of an amendment to our contract to provide staff services to ABAG to address additional proposed work. Lindy Lowe will make the staff presentation.

Acting Chief Planner Lindy Lowe presented the following: Item 8 is an amendment to a contract that I brought to the Commission last fall. That contract was between BCDC and ABAG, the Association of Bay Area Governments. ABAG was going to be providing BCDC staff with approximately \$15,000.00 to work on combining hazard mitigation planning and climate adaptation planning and to plan a workshop for the American Planning Association. We already did that work.

In the process of doing that work our partners at FEMA and the EPA said, “wow, that really went well.” They wanted to give us more money in order to put together a guidebook and a framework so that we could pass this information along to other regions in California and also outside of California.

This contract is an amendment that would increase the amount of money BCDC was going to be getting to no more than \$49,500.00. It will result in that guidebook and that process. I am available for questions.

Acting Chair Halsted commented: Sounds like a wise idea.

Commissioner Nelson commented: This is the sort of collaboration between agencies that is absolutely essential to the adaptation work we need to do and I will move the staff recommendation.

MOTION: Commissioner Nelson moved approval of the staff recommendation, seconded by Commissioner Wagenknecht.

VOTE: The motion carried with a roll call vote of 19-0-0 with Commissioners Addiego, Bates, Gilmore, Scharff, Jahns, Gioia, Gorin, Pemberton, McGrath, Nelson, Pine, Randolph, Sartipi, Sears, Vasquez, Techel, Wagenknecht, Ziegler and Acting Chair Halsted voting, “YES”, no “NO”, votes and no abstentions.

9. Commission Consideration of Support Letter for the Exploratorium’s Grant Proposal to NOAA Acting Chair Halsted announced: Item 9 is Commission consideration of a position of support on a grant proposal to NOAA by the Exploratorium. Executive Director Goldzband will make the presentation.

Executive Director Goldzband addressed the Commission: During the past few months BCDC has increased its partnership and collaboration with the Exploratorium. In September our 50th Anniversary Summit was held there. In December we held a major meeting at the Exploratorium led by BCDC with a number of staff and organizations who are involved in adaptation in order to do three things.

Number one, we would try to figure out if we can actually create a process map which will enable all of you and the public to better understand how the various projects and programs are inter-connected and help lead to an actual solution.

Second, we worked very diligently and are working very diligently to create a series of talking points about adaptation that we can all use so that as we speak with public officials and the public we are using the same words and in the same way, so we can ensure that they understand what it is that each of us is trying to say.

And then finally, we are working with the Exploratorium to do some basic marketing. They are actually looking to try to figure out how to segment, target and position the public so that we can better understand how to talk with the public.

One of the ways that they are doing that is applying for a NOAA grant. NOAA has a large pool of funds for environmental literacy grants. The Exploratorium is applying for a \$500,000.00 environmental literacy grant. The Exploratorium asked BCDC if it would be willing to endorse its grant proposal.

After doing a little bit of legwork and research we decided that it would be a good thing for the Commissioners to take a look at. Therefore, we drafted a letter that is in front of you right now, which expresses support for project resilience.

The resilience project is a way to connect science, resilience and sustainability education, not only with practitioners which is what the whole purpose of our meeting in December was, but also understand how to communicate information about climate change, rising sea level resilience in extreme weather to diverse communities.

We and the Working Group members are working on those issues.

The Exploratorium is a perfect venue for such discussions and for that kind of teaching. It is going to be a novel approach because we will be convening with the Exploratorium and our partners a very wide cross-section of science, policy, professionals and community members which we are already doing through the ART program. We will be working with them and our partners to co-develop programs and materials.

It is a great opportunity for BCDC to help the Exploratorium and to allow them to continue to help BCDC. With that background I am happy to take any questions you might have.

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

VOTE: The motion carried with a roll call vote of 19-0-0 with Commissioners Addiego, Bates, Gilmore, Scharff, Jahns, Gioia, Gorin, Pemberton, McGrath, Nelson, Pine, Randolph, Sartipi, Sears, Vasquez, Techel, Wagenknecht, Ziegler and Acting Chair Halsted voting, "YES", no "NO", votes and no abstentions.

10. Sediment Science Workshop Briefing. Acting Chair Halsted announced: Item 10 is a briefing on the Sediment Science Workshop that staff held last year. Sea Grant Fellow Heather Perry will provide the briefing.

Sea Grant Fellow Heather Perry presented the following: I have been working with BCDC for the past year and I will present a briefing on the Science of Sediment Workshop we held in October, with the goal of identifying regional sediment science priorities for the Bay Region.

I will first present why we had this workshop and why it is so critical right now. I will go over some background and goals of the workshop and the preparation leading up to the workshop. I will then discuss the workshop itself and the structure of it. We will then talk about the initial outcomes we have identified and then some recommended next steps.

Why should we as a Commission care about sediment and why are we doing this work now? We need to know how much sediment there is, where it is and how it moves and how it should continue to be used. In the next five years we will be dealing with issues concerning beneficial reuse of dredged sediment, marsh restoration, climate change and sea level rise. Ultimately we are trying to get you more and better information about sediment and sediment transport than we have had before.

We should recall the challenges faced during the sand mining permitting votes last spring. We are facing a fairly serious sediment supply decline in the Bay as voiced by Commissioner McGrath. Sediment is needed to deal with sea level rise, sustaining wetlands and, more recently, the importance of mineral deposits, that is, the coarser sediment as a base for those systems. Ultimately, we have a limited amount of sediment that is needed for multiple uses. Therefore, we need to figure out how to optimize the smart use of this limited resource. In order to guide us in doing this we need a regional sediment strategy based on priority sediment needs for the Bay.

In the recent past, staff has brought to the Commission for approval several Army Corps dredging projects and sand mining permits. Commissioners voiced concerns that there are conflicts among different needs and users of sediment. As Commissioner Zwissler stated, "how are we going to go about reconciling the inherent conflicts within our various policies; don't dredge, get sand and restore beaches." Commissioner Pine also voiced, "I think this is going to be one of the more difficult decisions for the Commission to assess particularly given how much science and technical expertise is involved. It is very hard for me to know how to look at this given the complexities."

As voiced in all of these sentiments, we need to make sure that over the next decade we address the questions I mentioned before, that is; how much sediment do we have, where it is, how it moves, and how it should be used. In order for us to understand the impacts of sand mining and other activities on our coastal resources we must continue researching these matters.

We want to have the science to inform our decision making so that during the next round the decision-making is not so challenging. The Sediment Workshop began to address many of these concerns. Furthermore, our Bay Plan policies direct us to continue working with sediment in several different ways. Our Bay Plan policies on Tidal Marsh and Tidal Flats explicitly direct the Commission to support research and monitoring to understand sediment processes necessary to sustain and restore wetlands. Our Bay Plan policies on Subtidal Areas direct the Commission to support and encourage the expansion of scientific information on the Bay subtidal areas including sediment dynamics, sand transport and wind and wave effects on sediment movement.

And finally, the Bay Plan policies on Dredging direct the Commission to continue to participate in initiatives conducting research on Bay sediment movement and alternatives to Bay aquatic disposal.

I will now go over the background and goals for the workshop. We started in 2010 identifying data gaps with the USGS during its sediment science workshop that BCDC co-hosted. We began work on the Coastal Impact Assistance Grant Plan the following year with a completion of a literature review as a component of a regional sediment management plan. In 2013 there was a review of the first twelve years of the LTMS program. There were difficult decisions to make on the sand mining permits. Now there will be more difficult decisions to come regarding dredging and how to move dredged material to beneficial reuse sites for wetland restoration and resilience. As part of the sand mining permitting we hosted the Sand Mining Science Panel in 2014. This past year we held our overall sediment strategy workshop.

We had three primary goals for the workshop. Ultimately we want consensus between scientists, academics and practitioners of sediment about what information is needed and how we should make decisions. We want to identify priority sediment issues by geographic area and user group or activity of sediment in the Bay and we need to develop a research strategy.

In March of last year we reached out to a core group of scientists that we wanted to participate in the workshop to gauge their interests and availability. After receiving positive feedback we began working with the San Francisco Sentinel Site Cooperative as well as SFEI and USGS to begin scoping and structuring the workshop. We also started engaging with sediment practitioners early last summer to gather and vet some initial management questions. We met with members from flood control agencies, the DMMO, LTMS Managers Committee and other shoreline managers to have them review and rate a list of internally developed sediment management questions.

The questions were sent around to different participants grouped by category and we asked people to review and add any additional questions that they saw were missing. We asked agencies to rate the questions with a one, two or three to show their level of importance or relevancy. The main feedback we received from these questionnaires was that the majority

of these questions were relatively important to these agencies and organizations. From the dredging community we received responses from 13 organizations. For the first question, will placing dredged material in the Bay work to augment marshes or mudflats? Ten people responded saying this question was highly relevant to them.

We incorporated the information gleaned from these questionnaires in generating the basic questions for the prioritization portion of our workshop. We covered a breadth of different types of shoreline, flood protection and dredging managers in addition to regulators and sediment scientists and consultants of various types. We invited as broad of a representation from the sediment community or those who work with sediment on a daily basis as possible. However, we unfortunately did not receive as much participation from the private sector as we had hoped. The expertise was varied and extensive just as the extent of sediment impacts are broad and influence a huge range of users across geographic areas and activities.

It was challenging to figure out how to best organize this extensive list of management questions for an effective conversation during the workshop but in the end decided to divide the discussion into four geographic areas, to be more reflective of sediment users and activities. We had four general groupings: (1) watersheds, tributaries and flood control channels that drain into the Bay; (2) surrounding marshes and mudflats; (3) beaches and non-wetlands shorelines around the Bay and (4) open-water and subtidal areas of the Bay including dredging and sand mining topics. Permeating through all the discussions we discussed monitoring.

The first day of the workshop we generated a list of the most important sediment questions that ultimately need to be answered and then we prioritized them. We accomplished through presentations, brainstorming rotations and voting.

For the watersheds, tributaries and flood control channels category the top rated question was, how can we design channels to help convey sediment to marshes and baylands rather than into the Bay? For the marshes and mudflats category the top question was, how can we verify or test the modeling results of in-Bay placement naturally distributing to marsh plain leading to more efficient beneficial reuse?

For the beaches and non-wetlands shoreline category the top question was, are particular shoreline areas most at risk from erosion and sea level rise? And finally, for the open-Bay and subtidal areas category the top question was, does placement of dredged sediment and in-Bay disposal sites benefit shores and wetlands?

The second day of the workshop had three main objectives. The first objective was to reorganize those priority management questions into more scientific research groups. The new groupings decided on were, sediment feed and transport, budget and supply and status risk and resilience. The next objective was to develop a research strategy for each of the new groups and finally to identify overlaps and gaps among the different groups such as regional monitoring and data needs.

Some of the initial outcomes identified during the workshop included, an extensive list of prioritized sediment management questions, a draft summary report of the workshop and the discussions that took place and the beginning pieces of a research strategy including the identification of overlapping monitoring and data needs, outlines for each of the research strategy groups and a list of participants who voiced interest in continuing to work on the development of the research strategy.

Ultimately, the research proposed from this workshop would allow us to understand exactly how much of what type of sediment we have, increase fluvial and tidal connections to improve sediment conveyance, increase the beneficial reuse of sediment in the context of a limited incoming supply in order to maintain wetlands and identify shorelines at risk from sea level rise and ways to reinforce them through sustainable means. These were the main takeaways from this workshop, which will be addressed with the continuation of this work.

After the workshop people gave us great feedback. They were excited and seemed motivated to continue working towards the goal of developing a regional research strategy. We were able to identify many important components of the research strategy from each group. We proposed developing three working groups to finish building out the research strategy from the workshop outcomes. We suggest holding a series of meetings from now through May with a draft strategy completed by June and then the staff would report back to the Commission in June or July.

In summary, we have a sediment supply decline in the Bay. We need to use what we have wisely and in a way that benefits the entire region. This workshop was successful in identifying top priority management and research questions about sediment. However, the research strategy will require follow-up work from participants and staff. There are funding opportunities available for studies related to this type of work and a research strategy will assist in securing such funds. This work should be continued. It is incredibly important for the Bay and can lead to answers to some of our most critical issues.

I am happy to take any questions that you have. Thank you.

Acting Chair Halsted mentioned: We did not schedule a public hearing on this matter but if anybody wants to comment on it they should come forward now. Seeing none, I would entertain any questions we have from the Commission.

Commissioner Nelson spoke: Great list of questions. Could you talk a little bit about funding? You said that funding opportunities exist. What is the likelihood that the research partners here will be able to secure adequate funding to make a good run at answering those important questions? Ms. Perry replied: We identified a couple of grants including an annual NOAA grant for ecological effects of sea level rise program. I think that having a more developed research strategy will help target different grants to secure funding for that. I think SFEI is interested in perhaps carrying forward some of this work. Sediment Program Manager Brenda Goeden added: We had a pretty good representation from USGS. The connection with

USGS and their funding for the different sediment work they do in the Bay would potentially lead to them focusing their work a little more. We had asked them what kind of research would help us with these questions and they came back, you really need to help us define the questions more. This was a step towards answering their questions focusing in to where they might also garner funding. We are also hoping to get funding that will help identify additional studies that will help the dredging community and other flood-protection areas through the Regional Monitoring Program. They have expressed some interest in leveraging funds as well.

Commissioner Nelson had a follow-up question: Could you let us know, how long will it take for that research strategy to come together? Ms. Goeden replied: One of the unfortunate things is that Heather is now done with her fellowship. Our next phase is reaching out to the work groups. We are hoping that in the next six months we can put together the actual strategy, the pieces that are needed and then come back to you with that. We can then use the next phase to look for funding to assist in the work. The research itself will take several years depending on which pieces get picked up.

Commissioner McGrath commented: I did attend this workshop and I think the staff has done an excellent job. One of the tough issues in getting to any successful policy change is our federal partners who have a charge to take care of endangered species. The Fish and Wildlife Service has plenty of skin in the game because they have endangered species in the marshes and the drowning of those marshes could threaten the Ridgeway Rail and the Salt Marsh Harvest Mouse. It is a little bit more difficult in the fisheries area because turbidity, which would be likely to increase from any direct discharge, is a problem in terms of some of the species. My continued comment is, as you go forward with researching the questions it is very important that you make sure that these agencies, who have real responsibilities and to where uncertainty is a significant problem, are comfortable with the methodologies of looking at these questions as being credible to bear answers. I would be remiss if I did not say how good of work the staff has been doing on this.

Commissioner Ziegler commented: This is great work. It is really great putting together a research strategy and who you are pulling together. From EPA we touch on a lot of parts of this issue from controlling sediment in the Napa River and moving sediment and recognizing that the reason that sediment is trying to be limited is because it is impacting fish habitat. It is not making its way through and that is connected with reduced flows. We are managing very complex processes. We deal with dredge disposal, reuse, wetlands restoration but what I wanted to touch on was the thought that the problem statement could be thought of as you started with and you ended with; we have a serious sediment deficit. That is something that you might think of redefining that as a problem statement.

One of the things that has struck me in our evolution of managing these issues over time is that we are starting to think more about not the specific pollutant or component but more in terms of processes. These are complex processes. This is all great and it strikes me as excellent work. As we redefine it in terms of the questions you identified which are super; I think all of those questions relate more to processes. As we refine this strategy you may think about, is

there a refinement to the problem statement. Another part of this is that as we have less sediment we are seeing the emergence of potential nutrient issues, which are not really a problem here because they are constrained by sunlight. So you need to be thinking about that feedback to the problem statement as we evolve this. This is excellent work, thank you.

Acting Chair Halsted added: I would like to note that Ms. Perry has now completed her Fellowship and we thank her for all the work that she has done for BCDC and the Bay and we wish her well on her further endeavors. Ms. Perry replied: It has been a pleasure working with the Commissioners and the staff. Thank you very much.

11. Commission Briefing on Caltrans' Controlled Implosion of Pier E3. Acting Chair Halsted announced: Item 11 is a briefing by Caltrans on the results of the controlled implosion of Pier E3, which was part of the old East Span of the Bay Bridge. Tinya Hoang of our staff will introduce the topic.

Permit Analyst Tinya Hoang presented the following: As you recall, last September you approved a permit amendment authorizing the Pier E3 Implosion Demonstration project as part of the demolition of the original East Span of the Bay Bridge. You included permit conditions, which required certain timing of the implosion. You also required marine mammal, fish and bird observations prior to the implosion as well as monitoring after the implosion including biological, hydro-acoustic and water-quality monitoring. The conditions also require that Caltrans provide a monitoring report and brief the Commission on the report's findings, results and recommendations.

If the project is considered a success it is expected that Caltrans will request additional authorization for additional pier implosions.

Next, Caltrans will give their presentation. I am available to take questions if you have any, otherwise I will turn it over Stefan Galvez of Caltrans.

Mr. Stefan Galvez, Environmental Manager for the San Francisco/Oakland Bay Bridge Project with Caltrans addressed the Commission: We gave you a briefing back in April of 2015. We are pleased to see the approval of our demonstration project via the amendment to our permit for the Bay Bridge.

We will be reporting on the great success of the implosion of Pier E3. I would like to express our appreciation to the Commission and the Commission staff.

I would also like to extend a special thanks to our partners the federal and state agencies including the Army Corps of Engineers, the Water Board, Fish and Wildlife Services, U.S. Fish and Wildlife Service, NOAA and the Coast Guard as well as the stakeholders from the community that helped us devise a strategy to minimize and avoid impacts to species.

Pier E3 is the largest pier supporting the old East Span. We will be going through some of the conditions for this demonstration.

We are going to concentrate on the results instead of the previous analysis that we did. We will answer your questions as they come along.

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I am going to pass it along to Dr. Brian Maroney who will walk you through the first part of the presentation.

Dr. Brian Maroney, Senior Engineer for Caltrans presented the following: Usually I fix things as a bridge engineer for Caltrans. Today I get to tell you about, “we did it! It worked!” It actually went better than what we thought. I am trying to remember the last time I got to do that.

I want to emphasize, “we” because it was not just Stefan. It was not just Brian. It was a team. It was your staff who was behind us from the instant we brought up this idea. The people and the specialists that were brought in were handpicked and that is really important.

At Caltrans I usually have to deal with low bid contractors (laughter) and that means you have to be on your toes. You have to look a little harder. And that means you are also going to have to deal with a few misses.

Part of the success of this was the people. This is not a low-bid piece of work. We went out and interviewed the contractors that have a history of respecting our environment right here in San Francisco Bay. They have experience using implosion as a technique on buildings. A lot of the heroes here are the men and women that were handpicked to be part of this and the advice that we got from your staff.

We are talking about thousands of pounds of dynamite for this demonstration. At no one instant in time did more than a 35 pound charge go off. This was done smartly. We used the least amount. We set off the smallest amount at any one time. That means the energy release was not so big. That was really, really important.

As Mr. Galvez said, as we go east the piers just get smaller and smaller. This was going to be the largest release of energy that we are going to have as we go east.

With respect to water quality, with respect to the shock wave – the sound pressure wave, the over pressure, the same things happen with the release of energy from an explosive.

The blast attenuation system was also a hero in this demonstration. We created and designed and the contractor built it per our specs, we observed it and made sure it was deployed properly. We made sure it was operating properly. It knocked down that energy about 80 percent.

That is very, very impressive. Not only do we have data acquisition systems that actually give us numbers that show those results, we also put fish out in a cage. Mr. Galvez will show you a chart. We put about 40 juvenile Chinook salmon about 150 feet away from the blast and not one of them died. Inside the blast attenuation system the full energy was received and the mussels and the fish that were inside that area did not make it.

Our calculations of the energy released were based on the expertise that we have and the surveying we completed before and after the blast. The impacts and the loss were less than what we were predicting. This is really good news. If I were to build coffer dams out in the Bay to take two structures down the impacts would be much worse; and this is coming from 30 years of experience doing bridge work.

The slides I will share with you now will take you through the actual demonstration implosion. Pier E3 is the very largest foundation in the entire bridge.

The structure is about as tall as a five-story building, about 50 feet. We deposited the material that it was made out of below the mudline. This material literally fell in on itself. The top part that sticks up above the water was mechanically removed and placed down below the mudline. We eliminated the impacts of removing it and taking it to another location.

This slide shows you what the blast attenuation system looks like. The ring you see around the pier is the actual blast attenuation system. We used a battery of 16 air compressors, each one the size of a truck, pumping a tremendous amount of air down into the pipes on the system and this created a curtain of bubbles around the pier.

If you release a blast through water the shockwave goes very, very effectively through that water. However, if you mix it up with air then all of a sudden it is not water anymore. It is water and air. And air is compressible. What we did with this blast attenuation system is we used physics to reduce the impacts of the implosion and the concomitant shockwaves. (Dr. Maroney showed a 30-second video showing the actual implosion in real time)

What you see floating in the water immediately after the implosion are the 12x12 timbers on the structure and they had to be cleaned up. Kewitt/Manson had them cleaned up within a few hours.

We used sonar to make sure that the fill left behind was below the mudline. Around any pier in any water the flow of the water stops and cannot flow through the pier. The water has to accelerate and go very fast around the pier. When this happens the water can carry a heavier piece of sand or clay away and this scours out a hole around the bottom of the pier. The depth of this hole is around 50 feet from the surface of the water or approximately 10 feet below the natural mudline. Now that the pier is gone the water does not have to go so fast around it. The silt will fill in the area in and around where the pier was. We are basically returning this part of the Bay to its original condition.

We actually needed to measure that the pressure was knocked down. We used a modern, electro-mechanical ear to do this. We put several of these into the water and measured the pressure wave inside and outside the blast attenuation system and further out. We collected hard data. This advanced the state of the science, practice and art because nobody has seen anything like this before. This is a new tool in BCDC's box and you can decide when and how to use it.

We used pile-driving guidelines for threshold levels on aquatic life. Pile drivers are made of steel and this is the worst as far as creating shockwaves in the water.

There is a draft report out on our results and we believe we will finalize it in less than a month. Because of the success of this demonstration I have asked Mr. Galvez to prepare submittals to all the agencies involved asking for permission to use this technique for the removal of all the other piers left to remove.

If we do everything right we will be able to sign a contract with Kewitt/Manson in April to go forward in removing the next set of piers, Piers 4 through 18. We understand that there is a lot of discussion going on and even though this was very successful there will be a set of rules and guidelines in every single resource agency. And we will follow those rules.

We did it. We did it the way you told us to do it as well as every other resource agency. And everything I see looks better and you helped us restore. Right now my assignment is to remove these piers from the Bay and do it responsibly.

Mr. Galvez addressed the Commission: I will go through the results themselves. We will talk about the modeled numbers versus the actual measured results.

We had four species of marine mammals that could be potentially affected. We had a number of exclusion zones for the different species that might be present during the implosion.

We are working with the different agencies to interpret the data we collected regarding the different species in the delineated exclusion zones. We are working on what is going to be viable and of use in future projects.

What we modeled and what we measured in actual results was a tremendous decrease from the modeled estimates. The risk inherent in the next group of piers to be removed will be much more manageable than Pier E3. We have gone from theory to actual, in-field observations.

We had similar results with fish species. The cumulative results were much smaller than modeled.

For bird monitoring we established a 500-foot radius. We were concerned about diving birds such as the Brown Pelican and the Least Tern. We did not want to see any of these species diving at the moment of the implosion. We did not observe any of them utilizing a multitude of monitors in a number of locations.

Our concern with fisheries was with the listed species. We acknowledged that inside the bubble curtain there would be a fish take. We worked with CDFW and NOAA to come up with methodologies to measure this. CDFW recommended conducting trawling to ascertain takes. We were able to recruit the Moss Landing Marine Lab and they brought out three boats and they conducted trawling right after the implosion. They conducted 14 trawls and 94 percent of the fish were returned to the water alive. About six percent of the fish were dead.

We conducted necropsies to see if there was a nexus to the implosion. We found that there was none or a very slight change in a few number of species. We had a minimal impact that took place.

The main reason CDFW wanted us to do the trawling was to determine if there was any death to the Longfin Smelt. There were no Longfin Smelt or salmonids or any other listed species that were produced as a result of the trawling.

We had observers watching the bird activity right after the implosion and there were a lot of birds present in the area. We could not establish one strike by a bird to one fish because there was a lot of organic matter in the water right after the implosion. The birds were just trying to get a free lunch out of us.

We did necropsies on four fish. Two of the rockfish exhibited evidence of effects of the implosion.

We deployed 491 fish in 12 cages at regular intervals. They were mostly unaffected. There were five dead fish out of 491. We found no strong correlation with trauma from the implosion.

The Department committed to purchasing four acres of mitigation credit relating to the Longfin Smelt as one of the conditions required by BCDC. This was done at Wildlands Inc., Liberty Island Conservation Bank. We do have a letter showing our funding for this and your staff has a copy of it. We have that money allocated ready to go through the contractual process. This conservation bank involves about 186 acres of different habitat for Delta Smelt and Longfin Smelt. It is a fully functional mitigation bank approved by CDFW and approved by the remaining agencies. Wildlands Inc. will be doing all the monitoring and reporting for this banking agreement.

We had a number of devices to track the turbidity of the water and the pH of the water. There was a plume created as a result of the implosion. We expected a much larger plume than what was actually created. We reached our water quality objectives within one hour of the implosion and returned to background conditions within four hours. This exceeded our expectations. Our modeling showed much longer time periods involved.

The additional monitoring required by conditions of our permit was completed and we completely succeeded.

In conclusion, we were able to restore this portion of the Bay back to its original condition. You now have 17,000 cubic yards of open Bay that has been returned. We had lower take of fish than expected and no take of listed species, no bird or marine mammal takes as well.

We learned that we would like to have a more cohesive effort in terms of our hydro-acoustic analysis, having more redundancy with our instrumentation and improve our bird predation effort.

Our team is here to answer any questions that you might have.

**BCDC MINUTES
February 4, 2016**

Commissioner Gilmore inquired: My recollection is that this was the largest pier. I assume that the amount of blast material that you would need is less for the next set of piers. Is that correct?

Dr. Maroney replied: Yes. The water gets shallower as you move east. From Pier 6 on we are going to have to remove material with a clam and dispose of it.

Commissioner Ziegler had a similar question: How many piers are there remaining to be removed and does it include E2 which is to the west?

Dr. Maroney answered: Right now the Toll Bridge Program Oversight Committee made up of three directors; the director of the California Department of Transportation, the director of California Transportation Commission and the director of the Bay Area Toll Authority have challenged us to explore opportunities in leaving Piers E2 as public access and an observation platform and whether it is a good idea to leave Piers 19, 20, 21 and 22 so that two of them would be for public access and be associated with the new Gateway Park and then the outer two being a bird habitat protected from predation. This is for specialists in these areas to consider.

As soon as we get through this, one of Mr. Galvez's challenges is to talk with all the resource agencies and evaluate this. If they decide that they want to do this then we will have to do whatever the community decides to do.

Right now I am being told; get Pier E4 through 18 out. That is 15 and this is the next contract we are shooting for.

Regulatory Director Brad McCrea commented: Currently your permit for this project requires that the entire in-water bridge be removed. And that was mitigation for the fill that was needed to build the new bridge. The requirement is that all things come out of the water. A proposal to keep part of the piers or bridge foundations for either public access or bird roosting etcetera would need an amendment to the permit and would definitely come back before you and there would be a tradeoff there.

There would be some fill that would remain in the Bay and yet that fill would be for the purpose of public access and bird roosting if approved.

This is one of the things that the staff will be working through and analyzing that proposed tradeoff.

Commissioner McGrath commented: I had the good fortune to watch the implosion from a boat. The whole team involved in this has to be recognized and praised for developing the necessary research to figure out what the impacts are and whether or not it makes sense to do it again.

I am not convinced that there weren't more birds killed. There were a lot of fish there. There is the necessary expertise brought to bear by the wildlife agencies. I am interested in seeing their comments on how to do it.

It is impressive how well it did reduce the blast. I have confidence that there are the necessary people to make sure that they understand it. We should not jump to any conclusions until we see their recommendations. I am sure that they will have the information they need to render it.

Acting Chair Halsted had a question: I have a question regarding the nature of the rubble and what its fate is. Where does this go and how does it mix with the mud? Can you describe that at all?

Dr. Maroney replied: Almost all of the rubble went right down into the existing pier. Very tiny particles of debris can be carried by the energy created during the implosion. We followed this plume and it was much less than expected. We did the implosion during slack tide and the current was approximately zero. We did not want the very tiny pieces to be carried very far.

Acting Chair Halsted continued: Who tracks what remains of the part that is distributed?

Dr. Maroney replied: The requirement of the U.S. Coast Guard has been met in this regard. It is not a threat to any marine navigation at all. You could use ground-penetrating sonar to see exactly where this smaller material might be. The Coast Guard has made it clear to me that nothing is sticking up.

Commissioner Jahns commented: Can you talk a little bit about how you approach permitting with the state and federal resource agencies and how the results of all this monitoring can be fed into future work?

Mr. Galvez replied: We have existing permits for the Bay Bridge. Based on the discussions we had with the agencies it was agreed that we just needed amendments to all the permits. The environmental document did address the potential of placing some of the material inside the caissons but it did not go into details.

With some of the agencies we had the possibility of placing some of the material in the caissons. With BCDC we wanted to clarify the methodology and the same thing with the other agencies.

We have a specific methodology that will include the controlled blast techniques. We found that there was a significant variation from what was included in the environmental document on the permits and that there was no specific analysis done before in terms of the particular impact on the resources.

We also agreed that we would do E3 as a demonstration project since this had never been done before. We wanted to see if our analysis was correct, that this implosion actually helped. What we are seeing here is that it did.

Going forward we want to go through another amendment process. For agencies such as the Water Board we are not doing any amendment we are just doing an update. All agencies are slightly different.

We are all working together to make sure that we share the same information and everybody is on the same page. This is very significant for the region.

Mr. McCrea added: I think this has been a successful process for Caltrans in pulling all of the regulatory agencies staff into the room at the same time. They started doing that years ago when they first explored this idea of imploding the pier. Some agency staff are more comfortable in speaking out and going on the record early.

Acting Chair Halsted moved on to Item 12.

12. Commission Briefing on the ART Program. Acting Chair Halsted announced: Item 12 is a series of three staff briefings regarding the Commission's Adapting to Rising Tides program. Lindy Lowe, our Acting Chief Planner, will start us off.

Acting Chief Planner Lowe presented the following: I am going to frame a series of briefings on the ART program that you are going to hear about today. My portion will be the ART program objectives approach to projects. We will then hear from Sara Polgar who will take you through the ART portfolio on a website tour. Wendy Goodfriend will talk about the ART Tidal Creeks and Flood Control Channels project that we just completed. Then Maggie Wenger will talk about ART parks and recreation.

The Commission is probably familiar with the Alameda County ART program. It was the first multi-jurisdiction, multi-sector adaptation planning process in the region. Some of the things that we did were somewhat innovative and groundbreaking.

The work that we did with our Working Group helping them and having them help us come to not just the findings but also developing the process was an example and was a very successful approach.

The other thing that we did was that for every single step of the process we incorporated what we defined as the four frames of sustainability - society and equity, governance is the one that we added because it really matters who is at the table, economy and environment.

We shifted from the ART pilot program in Alameda County to an ART program because we found in Alameda County not only could the process we developed with our Working Group be translated to other jurisdictions, but also the findings were also very relatable to other jurisdictions. We wanted to be able to provide those findings and that process to others who would want to do this work.

We also realized that we are a small team and we cannot be everywhere and so how can we help the region most? And that was to translate our findings and our process to as many folks as possible.

We developed ART program objectives that were different than those objectives that we had for the ART pilot project. The ART program objectives are: provide guidance and support for adaptation at all scales, develop, leverage and identify the best available data information and research, build ongoing partnerships with agencies and organizations, identify challenging issues or regional priorities that need further assessment and information and continue to develop and refine approaches and identify regional issues and priorities that lead to action. But, the overarching goal for the program is to share what we learn as we learn it and make it easier for everyone else.

One of the tenants of the ART approach is the idea of sustainable from start to finish. You do not wait until the end of the process to evaluate whether or not you are on track with respect to society and equity or the environment. At every step of the process from scope and organize to developing your adaptation actions we build the four sustainable frames in.

Collaborative by design, it is really important to do this work with the Working Group members who will be affected by it.

And then a transparent process, that every step along the way you are identifying how you are making your decisions so that folks who could not be at the table or come to the process later really understand why you came to the decisions that you came to and you prioritized what you decided to prioritize.

Today you will hear about the portfolio website, tidal creeks and channels and parks and recreation.

Planner Sara Polgar presented the following: The ART portfolio is BCDC's platform for sharing what we have learned through past and present ART program work. It is one way that we connect with others doing resiliency planning in the Bay Area and provide them with support and guidance.

This slide shows you the home page. This is Adapting to Rising Tides.org. I will give you a tour of the four main parts of the ART portfolio; that is, the findings, the projects, How To and the help desk.

This will give you a sense of how this can be a great resource for you and the communities and the agencies and organizations that you represent.

This slide shows the findings, which is what we have learned from the ART program projects. We have packaged them into two ways to make it easy for you to find the information you are looking for.

One of the sections is the findings sorted by sector. We get a lot of requests about what we have learned pertaining to different sectors, their assets and key findings.

On all of the pages we have links at the bottom that go into detail on the data and the reports that we use. All of the pages also have somebody that you can contact at the ART team for more information.

We also have findings by issue. In the ART program there have been certain topics or themes that have bubbled up that really needed more specific work.

We will now look at the project section. These are a great way to learn about where we are working and what we are doing with different partners. We have organized these by regional, local scale and sector specific.

We will next look at the how to section. This section has three parts, the ART approach, the designer project and ART supplies. These have the guidance and tools, all the supporting information that can help someone better navigate a planning project that addresses climate impacts and other, adaptation and hazard mitigation planning work that the ART program has been doing throughout the region.

We will go from here to design your project section. The design your project portion is where you get into the nitty-gritty of how to do a project following the ART approach. It has numerous, detailed and specific tools and resources and they are woven into a broader guidance for each of these eight planning steps that you see. There are a lot tools but they are short and they are specific to particular milestones in a planning process.

One of the key things about the Art portfolio is while it has all this great information and great resources they just cannot substitute for actually talking to a person who has the right experience, the knowhow to help you with your questions or working with your stakeholders. We want to make sure that we provided that kind of support and that what this help desk is all about.

Every page has a help desk button. If you have a question that you are not sure how to handle we are always encouraging you to contact us.

The most important part of the help desk is the bios that describe our team members' experience and areas of expertise and we are helping folks throughout the Bay.

I want to conclude by pointing out that it is our aim to provide adaptation and hazards mitigation support to the region. Our staff is very careful not to overstep this role. We want to work where we are asked and we are asked a lot. We want to make sure that you know that we are available and want to provide support for your constituents, communities and agencies.

Planner Wendy Goodfriend presented the following: I want to talk about a project that we have worked on at the agency looking at tidal creeks and flood control channels.

One of the reasons that we are interested in the issue of tidal creeks and channels, which exist around the entire region, is that as water in the Bay rises we know that the influence of the tides is going to start migrating upstream.

The area where we have tidal influence is called the Head of Tide. It is a region and is not a simple spot in a creek channel. It is where salinity changes and where you have transitions in habitat. It is also where we might start to see the first impacts of flooding as sea levels rise.

During storm events, as the elevation of the Bay rises those tidal creeks and channels that discharge water from our watershed that comes down during a rainfall event will hit that higher Bay water level. Even today some have a very hard time getting the water out. Water flows overbank and it comes up through the storm drains that are connected to the tidal creeks and channels and it causes flooding.

This is what happened in downtown Martinez in 1997. Since that time there has been a widening of Alhambra Creek down at the mouth but not at the upstream portion. When they had another storm event during the New Year of 2005/2006 they still had overbank flooding upstream and they could have overbank flooding in Alhambra Creek in Martinez now.

We are going to start to see this kind of flooding more as the Bay rises and it might be surprising in some locations where the creeks and channels are functioning adequately but they need that relief to get out to the Bay to carry that water away.

Since 2010 we have been talking about, "how are we going to understand the impact of rising tides on these necessary, natural and built flood management features?" We know that there are going to be impacts and we want to understand what actions we need to take to protect the roads and railroads that cross over the creeks and channels, the folks that live next to the creeks and channels and then the habitat and the creatures that rely on these creek mouths that feed out into marsh habitat and mudflat habitat so that we can come up with some holistic solutions.

The goal of this project was to develop guidance so that we could have community and land use planners and flood managers working together to understand the vulnerabilities of these tidal creeks and channels.

We wanted to develop the guidance and then test it and refine it. In the ART projects we often like to develop something, test it, retest it, have our Working Group members help us understand if it is useful and action-oriented enough for them and then finalize and disseminate all the information that we have.

We developed some guidance and Sara named it, "Up a Creek." It is a step-by-step guide to assessing the vulnerability of tidal creeks and channels using the ART approach.

The benefit of it is that it can get us past engineering or restoration based only projects to broaden it to a larger conversation that needs to happen around land use plans and policies for adapting to climate change along these creeks and channels.

Part of what is included in the guidance is a science-based protocol for identifying the current Head of Tide and for understanding where Head of Tide is migrating to; a sort of predetermination of where you need to start focusing some of your attention to where we might start to see tidal influence.

There is a desktop mapping and a field component that was conducted by the San Francisco Estuary Institute. We also have in there information about how to identify current Head of Tide based on vegetation, sediment and channel bank characteristics. It is a very rich, detailed guidebook.

Part of what is summarized in all of this material is how to improve that coordination between flood managers and habitat managers and community planners so that we can get to those solutions that we are going to need to look for as sea level rises.

We had many partners as we did not do this project in isolation. We had creek-specific working groups. There were six creeks that we piloted that SFEI looked at in mapping and in field investigation. We worked with members who had an interest or knowledge about those creeks, the flood control districts, city staff and East Bay Parks.

SFEI had a technical advisory committee mostly of local experts on creeks and channels but then also Ray Torres from University of South Carolina who is a Head-of-Tide expert who is doing a lot of research in Head of Tide on the East Coast.

We tested the guidance in our Contra Costa ART project with the Flood Control District who is an excellent partner and is really interested in helping us understand how to look at joint Bay-River flooding.

We had seven creeks and channels and we have used mapping, best professional judgment and where we have modeling information on the systems we are using that to help test our guidance.

For example, Rodeo Creek runs through the middle of Rodeo, which is an unincorporated area in Contra Costa. It sits between Hercules and Crockett just west of the I-80 Bridge.

Rodeo is a sort of a poster child for what is happening with our tidal creeks and channels around the region. It does not carry a very big storm. A 15 to 20 year rainfall event really is all it can carry right now.

The County does not have adequate funding for ongoing maintenance or for improvements. This is fairly typical for Contra Costa County and for the region. We hear from all the flood control managers that they have very limited funds and no way to access additional funding.

They have not removed sediment from Rodeo Creek since the early '90s because it is expensive and it is difficult to permit and also because it is a losing battle to continue to desilt these channels. We need to come up with different solutions.

For Rodeo Creek and a lot of the creeks and channels around the region what we are recommending and what is actually needed are watershed-specific hydraulic models.

We need to understand creek-by-creek, channel-by-channel, watershed-by-watershed what the impacts of sea level rise will be; how much water can the systems carry, what are going to be the impacts within the existing flood plain and how will that flooding extend beyond those areas where some people know that they are in a flood zone.

The next steps for us, is to continue working with regional partners and local stakeholders. We need to help support the work that needs to be done to assess these creeks and channels. We need to help develop with the appropriate disciplines the research and development for how to adequately conduct these joint, Bay, river watershed modeling efforts; how to communicate that, how to translate and communicate that into action.

We are going to continue to provide ART help desk support to those in the region that are looking at this critical issue and help them use our guidance and also help them find other resources that they may need.

We also want to make sure that when we are assessing tidal creeks and channels that it is robust and transparent and collaborative. This is a key underpinning of the ART approach.

We want to make sure that we are working beyond our typical silos and that we are not just looking at these as systems that we need to have natural or build physical solutions for. We need land-use policy and planning solutions. The physical interventions can only go so far.

Finally, I think there are many regional actions that have been woven through this talk that we need to take. There needs to be an investigation about the funding for flood control channels and flood management. We need to think about those governance challenges. We need to continue doing this so that we can come up with a more holistic flood management approach that will help us be more resilient to rising sea level.

Planner Maggie Wenger presented the following: I am going to talk about our shoreline parks assessment and shoreline access and recreation are a big priority for BCDC. Living by the Bay is a privilege and we all get to enjoy access and connection to the Bay. It is a quality of life issue.

The parks are a lot of our shoreline. If we can make our parks resilient we actually can solve a significant fraction of our shoreline adaptation.

Because BCDC has done such a good job of providing shoreline recreation a lot of the parks are right at the shoreline. They are the line between the Bay and development.

They will be the first to experience sea level rise impacts. They will experience the most severe sea level rise impacts. And they are a location where we can test out adaptation.

They are also a place where we implement adaptation and people can go see it. Parks are public. People love their parks. You can show what green infrastructure looks like. You can show what mixed green and gray infrastructure looks like and people can experience it.

So that is why we picked regional parks. We worked with East Bay Regional Park District (EBRPD), which covers Contra Costa and Alameda County. We worked in 10 regional parks all the way from Martinez down to the Hayward regional shoreline.

We had an ongoing relationship with East Bay Regional Park District from the ART pilot project. They manage an enormous amount of land and they manage really different parks.

In these 10 parks you have everything from very, very natural areas to really pretty urban environments. There is a huge range of natural and physical environments and users for the parks. This was our big test case for the region.

We wanted to work with park managers to understand what sea level rise vulnerability and risks looks like across their properties. We wanted to develop adaptation strategies that made sense for them as land managers, land owners.

We wanted to evaluate those adaptation strategies so that they would think about not just what was possible but what would really support environmental resilience, social and equity goals and feasibility.

We also wanted to develop resources that communicate what we found because we want to use parks to communicate with members of the public. Millions of people visit these shoreline parks every year. That is a chance to carry this forward.

We did a vulnerability assessment. We did a park-by-park assessment as well as the regional assessment. We did mapping and field visits to park managers.

I worked on the assessments and we used ART tools to do the assessments and then we got to ground truth it with park managers.

East Bay Regional Park District holds on to their staff. We have multiple park managers who had been there 25 or 30 years, at the same park. When you talk about, what flooding have you seen in a 10 or 25 year event; they have seen it because they have been there. They were out there on New Year's Eve in 2005 trying to make sure the storm drain in the parking lot was working or fixing a levee that was eroding.

They are incredible information banks about what happens on our shoreline.

We did exposure mapping. We used the NOAA Sea Level Rise Viewer for inundation mapping.

We also used Point Blue, who were formerly PRBO. They have a future marshes tool to think about what would happen in all these natural areas. EBRPD manages a lot of natural areas. They own a lot of marshes.

We wanted to think about, what can we expect for marshes in these areas, where can we expect marshes to persist and where are they going to need some help?

We found that parks are often owned and managed by separate agencies or they have neighbors that make it really complicated to do what they might want to do. For example, working with the railroad can be difficult for them.

The Bay Trail is vulnerable because of its shoreline location and because it only works if you can actually go on a pretty good segment of it. A two hundred yard section of Bay Trail that does not connect to anything, doesn't really work for its intended recreation purpose.

There is also marsh habitat that is at risk of downshifting and disappearing. There are structural shorelines that are eroding and difficult to permit and repair and expensive.

EBRPD owns a lot of our structural shoreline. It is not the flood control district or the city; it is levees that EBRPD holds the deeds on that are protecting our communities. Those are major concerns for EBRPD and the region as a whole.

We came up with proposed adaptation actions. The first one is governance. Your land managers, your recreation managers need to pull sea level rise and flooding impacts into the management plans and partnership agreements.

This is an especially big deal where EBRPD manages other peoples' properties because they have very strict management agreements about what they have to pay for and what the owner has to pay for and what money can be spent on. Making sure that current and future flooding is a part of that is going to be a huge piece of actually implementing adaptation.

EBRPD buys land for recreation and habitat. Where it is possible, we want them to acquire land that might help marshes migrate landward or might give us a place to reroute recreation. They have actually done this in Hayward on a very small parcel.

We want them to use resilient materials for structures and trails. We need to create high-tide refugia and transition space for shoreline habitat. There are things we can do to help our natural areas.

The good news is, EBRPD is a phenomenal partner. They are leading the way on this in many ways. Climate adaptation is a priority in their Master Plan they adopted in 2013.

They have a newly hired climate coordinator and they have been updating the Hayward Area Joint Powers Authority (HASPA). They are now explicitly addressing sea level rise adaptation. They have completed some very important flood protection and adaptation management projects.

We continue to work with EBRPD in Contra Costa. They are still a partner on our Oakland/Alameda Shoreline Resilience Study. We are going to continue doing some of the sector-specific work around the region where there is really interesting problems to dig into. We need to think about, what would adaptation look like for this sector in particular?

BCDC and the ART program are in a very strong position to integrate public access, shoreline public access and recreation into all of our regional adaptation planning as part of "sustainability from start to finish." Public access can get short shrift if we do not think about it the whole time. You do not want to do a regional transportation plan and not think about bike and pedestrian access. We need to say, "we need to protect our shorelines and the communities behind them in a way that preserves shoreline public access and shoreline parks."

Ms. Lowe then fielded questions: Hopefully this gave the Commission an update and overview of what we have been doing in the ART program and how it all fits together and meets our objectives. I would like to open it up for questions.

Commissioner Gorin commented: Great presentation and you are working on some interesting things. There are areas around the Bay that clearly are missing and we are doing a lot of interesting things in Sonoma and Solano County. Should we provide contact people to you so that you can include those kinds of adaptation strategies in the overall website?

Ms. Lowe replied: Absolutely. One of the things that we are hoping to do with our 309 Proposal for NOAA in the next year is to write it to update the website to pull in more regional information and provide more information in that way. We have been talking to folks in Sonoma County and you have been on some of those email chains. We have been talking about having a workshop and sharing what we have been doing and hearing. Sonoma County has a great governance structure and we would love to have a case study of it on the ART website as well as us providing some information to Sonoma County about some of the things we have been finding specific to sea level rise vulnerabilities and adaptation.

Commissioner Gioia commented: Thanks for this really thorough presentation. The process in Contra Costa County is ongoing and your efforts involve a lot of work. We are doing this from the ground up. We are planning best practices and how do we address the complicated shoreline issues dealing with sea level rise?

For me it is, how are we going to eventually translate this good work and recommendations and policy suggestions into the governance structure that will carry this out?

We are brought together through our planning role, not our regulatory role, all these different agencies; public agencies, special public districts, city/county governments, businesses and it is how we then come up with a series of recommendations, whether it is to the Legislature as to how to formalize the governance that will be needed to carry this out. It is not going to happen voluntarily. Some are going to want to do it and some are not going to want to do it. Figuring out how to make this stuff happen is the challenge that we all will have. The more good work that you do the easier it will be for us to try to convince others that something needs to change in governance to make this all happen.

Ms. Lowe commented: I do think that some of the projects that we have presented today demonstrate that in some cases it will happen voluntarily where money and resources are available. In addition to the fact that as you know and you identified, it is a lot of work and hard work. That makes the case making that needs to happen as well as the trust building that needs to happen. Where we have worked both have happened. Folks trust that there really is a problem where we have identified it and that we have really done the hard work to identify what that problem is. And now we are focusing in on those priorities to develop action.

Commissioner Gioia added: And the other gap is resources and funding to make this stuff happen.

Commissioner Nelson had questions: Three questions. The first one picks up on Commissioner Gioia's question. And that is about implementation. When you look at the ART project design implementation is that last step; given the presentation today, most of that focus is on planning. I wonder as we get deeper into the implementation process how is the ART project going to evolve and how is the website going to evolve? Instead of people looking at this as a way to start planning for adaptation we get more robust tools to think about implementation.

Ms. Lowe replied: So we have been working on tools for implementation, including an evaluation criteria process and how you develop evaluation criteria while you are at the stage where you are choosing options so that the folks that have gone with you throughout the entire process understand why you are choosing the option you are choosing and that you don't lose the trust that you have built by selecting an option that doesn't really flow from the process that you have developed.

I do think we have seen, for the amount of planning that we have been doing over the last three to five years, we have been unleashing implementation in different ways. In some ways it is kind of boring because it is getting it into the capital improvement plans and getting it into the planning documents. But that is what has to happen before actual projects get into the ground.

Commissioner Nelson continued: The second question. There is obviously a lot of great information on the website. Can you give us a sense of what the usage of the site is? Is there any way for you to track what sort of projects the site itself is serving as a catalyst and is extending your reach beyond what you were doing with the partnerships prior to this?

Ms. Polgar answered: We do track what the usage is of the website. We do not get really high traffic but we have about 2,300 users and about a third of them are return users which is a very good sign because we are trying to get people to come back and really delve into the information.

I will say that the favorite sites within the portfolio are the findings by sector. That is something that we got a lot of requests for prior to developing the portfolio.

The next most popular part of the website is the ART How To section. People are going there looking for resources or something. People are definitely looking at the tools that we are providing.

The vast majority of people visiting are from the U.S. I can tell you that within the last month I fielded a call from Sustainable New Jersey and helped them develop their issue statements for their planning processes that they are trying to start along the New Jersey shore.

We are definitely getting attention and I am going to speak to the NOAA folks about this resource.

Commissioner Nelson had a third question: The third question is, have you been learning from other regions what other regions have tools that are as well developed as this to help regional adaptation efforts?

Ms. Polgar replied: I think there is a lot of great guidance out there on adaptation planning and resiliency planning and hazards mitigation. It definitely is higher level than where you can go with the portfolio. You can stay high level at the portfolio but you really can dive into the details. We have found that you need to sweat the details and if you have to figure those out by trial and error that is extremely time consuming. That is a major purpose of the portfolio is to make that easier for others so that they are benefitting from our tears and all that sweat.

I am pretty confident that this is kind of a unique resource.

Ms. Lowe added: I think that in addition to us responding to that question, it is better to hear from our NOAA partners. They have a federal scan on this. They have said that the ART portfolio is the most comprehensive, user-friendly tool they have seen in the nation. They want to get it onto Digital Coast so that it can be a resource to everybody in the nation.

Commissioner McGrath commented on governance: I wanted to follow up on Commissioner Gioia's comment on governance because certainly there are governance issues in approaching the shoreline and approaching creeks and what is happening with flood control. It is interesting what is happening collaboratively. We have grants from EPA that is looking at some of these facilities in some detail. We have another effort in CHARGE. I just found out this week about, Resilience by Design, which is a competitive effort of 10 shorelines around the Bay that is going to kick off in September.

There at least four that I know of, collaborative efforts that are being done voluntarily that are taking ideas and developing them to a stage where at some point we are going to face implementation issues whether they are funding or governance.

It is kind of intriguing talking to Will and Joe about regional government. That tends to raise lots of flags at least at this stage whereas trying to figure out good partnerships does not raise the same kinds of issues. We are going to be facing really significant economic challenges when we take conceptual designs and try to make them into hydraulic designs and when we take those hydraulic designs and try to make them into funding programs.

I feel very cautious about pushing governance modification buttons at this time. There are about 30 or 40 really interesting pilot projects. That is not going to cover the 150 or so creeks and streams that come into the Bay. At some point the scaling up is going to be very difficult but what is happening collaboratively now is very encouraging.

ART is one of the leaders in that but it is not the only thing out there.

Ms. Lowe commented: Just to respond to the CHARGE and the Resilience by Design efforts, we sit on the Managing Partners of Resilience by Design and we are a steering committee member of CHARGE. We are very well integrated. CHARGE is somewhat of an offspring of the ART program in Alameda County; and the idea that we actually need to address this at a subregional or regional scale.

It is a slow game. It is a long game but we are starting to turn the dials in the right direction.

Acting Chair Halsted commented: The whole regional government question is a big one. I think that we are proceeding in the right direction. I am wondering if we have done a presentation to the Council of Governments at ABAG so as many regional representatives are aware of these tools as possible.

Commissioner Gioia added: Or even at BARC rather than just at ABAG. Do it at the old JPC with all the agencies.

Ms. Lowe responded: We have presented different aspects of the program to the Bay Area Regional Collaborative and we are in conversations with Allison Brooks the Executive Director to present a version of this to them. We have made different kinds of presentations in front of the Association of Bay Area Governments as well as the Metropolitan Transportation Commission who are both very strong partners with us.

Commissioner Ziegler had a question: I am wondering what thoughts you might have about incorporating BEHGU? I am wondering if you thought about how that incorporates in or if you would.

Ms. Lowe replied: The Coastal Conservancy is a really strong partner with us. Maggie and I just went and met with some of the staff over at the Coastal Conservancy to talk specifically about some of our trickier locations because there are some areas where BEHGU does a super job of identifying our opportunities in the region for natural area preservation and enhancement. And then there are other areas where we really need to know what makes sense.

We had a really great conversation with them about the kinds of interventions that can happen in some of our fringing marshes and how to move BEHGU from where it is at right now to using it in our ART program processes and projects and other similar efforts.

Absolutely, BEHGU is going to be a super resource for us. It would have been great to have it in Alameda County when we did that work. Now that we've got it we are definitely going to use it.

Commissioner Pemberton had a question: I have a question on the ART website. I was wondering if staff designed it or if it was designed by a contractor?

Ms. Lowe replied: We did have consultant help. I think that we went into the process of designing and developing a website a little bit naively. In the end I think staff did a lot of the design of the website and we did get some super design help from our sub-consultant but it wound up being a lot more heavy lifting and Sara did a lot of that work. Thank you Sara for that.

Executive Director Goldzband commented: First of all it is always a good idea to go into a website being a little naïve. I want to respond to Commissioner Gioia's remark about implementation. If Chair Wasserman were here what he would say is, you are right, this will take probably some different ways of doing business maybe and that's why we are having the workshop on March 3rd and that's why we are having the workshop in the first week of April and that's why we are having the workshop in the first week of May.

And we want all of you here to be there because on March 3rd the topic of discussion is regional governance, how we can start figuring this out. We learned a lot and you will get a synthesis and synopsis that tells you what happened and the questions that were raised and so on at the first workshop that will help you think about the next workshop and the same will happen in April.

We encourage all of you to make sure that they are on your calendar and that you come because those are the kinds of questions that need to be asked and answered. Thank you.

13. Adjournment. Upon motion by Commissioner Vasquez, seconded by Commissioner Nelson, the Commission meeting was adjourned at 3:44 p.m.