

# SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION

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September 26, 2014

**TO:** All Commissioners and Alternates

**FROM:** Lawrence J. Goldzband, Executive Director (415/352-3653 lgoldzband@bcdc.ca.gov)  
Sharon Louie, Director, Administrative & Technology Services (415/352-3638 slouie@bcdc.ca.gov)

**SUBJECT: Draft Minutes of July 17, 2014 Commission Meeting**

1. **Call to Order.** The meeting was called to order by Chair Wasserman at the Ferry Building, Port of San Francisco Board Room, Second Floor, San Francisco, California at 1:06 p.m.

2. **Roll Call.** Present were: Chair Wasserman, Vice Chair Halsted, Commissioners Addiego, Bates (represented by Alternate Butt), Chan (represented by Alternate Gilmore), Chiu, Gibbs Gioia, Jordan Hallinan, Lucchesi (represented by Alternate Pemberton), McGrath, Nelson, Pine, Randolph, Sartipi (represented by Alternate McElhinney), Sears, Spering (represented by Alternate Vasquez), Techel, Wagenknecht, and Zwissler.

Chair Wasserman announced that a quorum was present.

Not present were: Association of Bay Area Governments (Apodaca), Santa Clara County (Cortese), Department of Finance (Finn), Sonoma County (Gorin), U.S. Army Corps. of Engineers (Hicks), Secretary for Resources (Vierra) 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. Comments would be restricted to three minutes per speaker.

Chair Wasserman recognized the one public speaker for this item.

Austin Perez of the Bay Planning Coalition addressed the Commission: I wanted to share an update on a couple of events that BPC is hosting here in the Bay Area. The first is we're hosting a welcome luncheon for the new Army Corps of Engineers District Commander for the San Francisco District, John Morrow. That will be on August 8th in San Francisco.

Secondly, we will be holding the Energy Water Nexus Summit 3 which will be an all-day event on September 5th in San Francisco at the PG&E Auditorium which will feature a lot of great speakers on energy and water issues here in California. We hope you can join us for these events. I have some flyers and more information with me if you'd like.

4. **Approval of Minutes of the June 5, 2014 Meeting.** Commissioner Sears moved, seconded by Commissioner Nelson, to approve the June 5, 2014 Minutes. The motion carried by voice vote with no opposition or abstentions.



*Making San Francisco Bay Better*

**BCDC MINUTES**  
**July 17, 2014**

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

a. **New Business.** Does anyone have any new business that anyone would like us to put on the agenda for a future meeting? The Chair received no comments on this item.

b. **San Mateo County Adaptation Conference.** Chair Wasserman continued: I would like Commissioner Pine to give a report on the San Mateo County Adaptation Conference that he helped to organize last month, on June 27th.

Commissioner Pine reported the following: On the 27th of June we held a conference on sea level rise in San Mateo County. We had an earlier conference in December, which was geared to a wide public audience. This conference was a little different because the invited guests were primarily people on the ground, local land-use planners from cities and special districts and local electeds.

We had about 100 people attend representing almost every city in the County. Zack Wasserman and some of the BCDC staff joined us as well.

We are pleased with what we accomplished at this conference. The goal was threefold. One of the goals was to try to engage local policy makers and educate them around sea level rise because while we're all so close to it, others are not. We wanted to introduce the concept of planning for three feet of sea level rise which is something that many of us have thought about but is a new concept for others.

The reaction on that was interesting. It didn't scare people away. Some commentators felt that we should actually plan for more than three feet of sea level rise.

There was also a lot of interest in looking for regional solutions. Fortunately BCDC is here to work on that.

The outcome of the meeting was to convene some working groups to work on a vulnerability assessment for the County and try to share those costs across the jurisdictions in our County and give some thought to what sort of local governance we need to put in place, particularly with respect to raising funds locally. We don't have any real meaningful flood control district of any kind or any way to raise money for flood control and sea level rise adaptation.

We're continuing to have a good dialogue about sea level rise in San Mateo County.

Chair Wasserman added: I was not able to stay for the very end of the conference but it was well attended and the subject matter was focused. One of the themes that came out there is that it is difficult in San Mateo County because there is not a flood control district but increasingly some of our efforts will be coordinated with the flood-control effort organizations throughout the Bay Area.

There has not yet been a level of coordination on thinking about it that there needs to be.

Commissioner Rising Sea Working Group. Earlier today our Commissioner working group on rising sea level met. We had a very good and vigorous discussion on what three feet of sea level rise really means and how should it be used. We're going to address that in more detail in the report that we hope to present to you in September. It will also address the concrete steps we think we need to take over the next 12 to 18 months in terms of developing the campaign to figure out how we are going to adapt to rising sea level.

c. **Next BCDC Meeting.** Our next meeting will not be on August 7th. We do expect to meet on August 21st although we are still evaluating this. If we do meet we may consider the following subjects:

(1) We may consider a consistency determination for a marsh enhancement project at Sonoma Creek, Sonoma County.

(2) We will consider a contract with the Port of San Francisco.

(3) We will have a briefing on the Middle Harbor Eelgrass Project at the Port of Oakland.

d. **Ex-Parte Communications.** That ends my report. This is the time to put any ex-parte communications you may have had on regulatory matters on the record. Chair Wasserman received no comments on this matter. He moved on to the Report of the Executive Director and recognized Executive Director Goldzband.

6. **Report of the Executive Director.** Executive Director Goldzband reported:

Welcome back. I hope that each of you enjoyed a happy and safe Independence Day and that you are looking forward to both a productive and relaxing rest of the summer. For many of us our families are visiting from out of town.

Since we last met, the Governor signed the Fiscal Year 2015 budget which ended well for BCDC. Both the legislative budget committees and the Administration's Department of Finance recognized that BCDC and our coastal management brethren have a great deal of need and acted in a very positive way. Ultimately, the Legislature created a new funding account for coastal resilience activities that has been funded through the Environmental License Plate Fund. BCDC has received a generous shot in the arm to continue our work on climate change adaptation and to make FY15 manageable. We shall not have to lay off any personnel due to budgetary reasons and we should be able to use a portion of the funds to expand our work on resiliency including our ART program and the Joint Policy Committee's Regional Shorelines Protection Initiative. However, we are using this funding as a bridge to a solid and long-lasting structural fix to our budget needs and we shall work with both the Administration and the Legislature to accomplish that goal. I want to publicly thank Chair Wasserman for his timely assistance in this matter.

We have continued our success in attracting highly-qualified interns. One is Tinya Huang, who earned a Master's degree in Environmental Science and Management from U.C Santa Barbara after she earned both her undergraduate and graduate degree in Biology from Stanford. She has worked at NOAA's Gulf of the Farallones National Marine Sanctuary, at the California Academy of Sciences and at Stanford's Hopkins Marine Station. Tinya will be helping the Regulatory Staff by researching biological issues related to proposed projects, evaluating restoration project monitoring reports and assisting in the review of permit applications. We are grateful to have her with us.

Also, Margaux Nguyen is joining the Planning Section as an intern where she will assist the Adapting to Rising Tides Program with work on the Housing and Community Resilience Project. Margaux has just completed her Master's in Public Administration in Environmental Science from Columbia. During graduate school she held an internship with the New York City Department of City Planning where she assisted in the environmental review and conducted analyses of zoning resolutions for Staten Island's three special purpose districts.

Also, Brian Liang has been working with us for several months in the Enforcement group and he soon will become a graduate student at UCLA. He has amended, updated, and otherwise worked wonders with our electronic permit compliance log and has discovered a rate far too high of non-compliance. Through the end of next month he will be contacting the non-compliant permittees to help them remove the banner of "scofflaw."

You will remember that I told you at the last meeting of the very positive review from Rick Welts of the Golden State Warriors about our staff. In that vein, I also want to let you know that Chair Wasserman and I sat down recently with senior representatives of the Port of San Francisco and SPUR to discuss how we can all work together to better plan a resilient San Francisco waterfront overall, including the area around Piers 30/32. There is more to come but it was a great and productive meeting.

I am very proud to announce that two of our outstanding staffers have been invited to make a very timely presentation at SPUR on shoreline resilience. Sarah Richmond, whom you will remember as our geologist in charge of the Corte Madera Baylands Study and Maggie Wenger, whom you will hear today describe the success of the Hayward Resilience Study, will present a joint report on those two projects, entertain questions and lead a discussion at SPUR headquarters in San Francisco during the lunch hour on July 30. Sarah and Maggie will describe how scientific research and collaborative adaptation planning are furthering our progress here at BCDC and throughout the Bay Area. I will send all of you a reminder of that meeting.

Now, I do need your attention on two specific issues. As I have stated previously, each Commissioner and Alternate is required to complete successfully the State's ethics training. Unfortunately, most of you have not done so. You all need to do that and we're going to get in trouble unless you do. Please remember that as local officials your local ethics training does not qualify you for an exemption for the state ethics training. Please check your mailbox for a letter that I sent to each of you last week who has not completed this requirement. Reggie Abad of our staff is keeping our tally. We shall publish a list of those Commissioners who have successfully completed this requirement and those that have not in October unless we hear from you in August and September.

Finally, one more announcement – and this is about your pocketbooks. The state government is implementing a brand new accounting system this month called, FISCAL. While many observers have placed seriously large side bets on its success or failure, either way we have to change the way that each of you receives your per diem. Therefore, Reggie Abad has provided to each of you here today a form that you need to complete called, the "Payee Data Record" for you to receive your per diem starting today. Each of you is the "Payee". Please complete the form and give it to Reggie today. For all other Commissioners and Alternates, we will email this form to them.

I am proud to report that "Bobby B. and the Shoreline Band," BCDC's Bocce team has continued its winning ways in the Spring League and is back on the court next Monday for the playoffs.

That completes my report Mr. Chairman and I am happy to answer any questions you all may have.

The ethics training is available online and we will make sure to get you and email specifically, Commissioner Gibbs, to point you in that direction.

Commissioner Gibbs added: Not just me, everybody.

Executive Director Goldzband replied: We will get it to everybody again.

BCDC has a very substantial partner in NOAA, the National Oceanographic and Atmospheric Administration which is a big partner on the ART Project. They have a quarterly magazine called, Coastal Services, which just came out. The cover of Coastal Services is all about ART, adaptation planning in the San Francisco Bay Area. We shall endeavor to get you a copy of it during the next mailing.

Chair Wasserman moved on to Item 7.

7. **Consideration of Administrative Matters.** There were no comments on this item. Chair Wasserman proceeded to Item 8.

**8. Public Hearing and Vote on an Application by OMP/I&G Creekside Investors LLC to Construct a Bridge Across a Total Channel at Fremont Boulevard in the City of Fremont, Alameda County; BCDC Permit Application No. 2013.008-00.** Chair Wasserman announced: This is a public hearing and possible vote on the Fremont Bridge in Alameda County. Erik Buehmann will make the staff presentation.

Mr. Buehmann presented the following: On July 3rd you were mailed a summary of an application to construct a Fremont Boulevard Bridge across Alameda County Flood Control District, Flood Channel B in the city of Fremont, Alameda County.

The proposed bridge would consist of an approximately 89 foot wide and 79.5 foot long span totaling approximately 4,906 square feet cantilevered over Flood Channel B. It will extend Fremont Boulevard across the flood channel to an undeveloped parcel to the south.

Flood Channel B is branch of Coyote Creek. The McAteer-Petris Act designates the branches of Coyote Creek as Commission's certain waterway jurisdiction. The Commission has no 100 foot shoreline band jurisdiction adjacent to certain waterways.

The bridge would allow Fremont Boulevard which currently terminates and Flood Channel B to continue south and create a link with Dixon Landing Road and would connect to a proposed approximately 487,000 square foot warehousing development planned for south Flood Channel B outside of the Commission's jurisdiction.

The project would result in 4,906 square feet of new cantilevered fill. The abutments for the bridge would be constructed upland of the inland edge of marsh vegetation in the channel outside of the Commission's jurisdiction.

Therefore, no pile driving or in-water work would be required to construct the bridge.

Public access for the project would include approximately five foot wide Class II bicycle lanes immediately adjacent to vehicle travel lanes; one approximately nine and a half foot wide sidewalk on the west side of the bridge, one approximately five and a half foot wide sidewalk on the east side and an approximately 43 inch high railing.

In addition to the public access associated with the bridge the applicant proposes to amend BCDC Permit No. 1981.007.03 which is a permit for an adjacent site as needed to provide new signage and landscaping at two existing public access areas north of the proposed bridge and to provide an approximately 1.7 mile Class II trail along Fremont Boulevard north of Flood Channel B.

Public access proposed for this project corresponds with access associated with similar projects, specifically a pending application to replace Bon Air Bridge over Corte Madera Creek, a certain waterway, proposes two seven foot wide Class II bicycle lanes and two ten foot wide sidewalks. You'll be seeing this application in the coming months.

In addition, the 27,588 square foot bridge over Lake Merritt Channel in the city of Oakland along the Embarcadero required two six foot wide bicycle lanes, a five foot bicycle lane on the north side of the bridge and a twelve foot wide Bay Trail segment along the south side of the bridge including two belvederes to serve as vista points. By comparison, the bridge proposed for this project is smaller both in area and in scale to these two larger bridges with less fill and fewer associated impacts to the Bay.

Mitigation for the fill associated with the bridge has already been completed. Applicants restored approximately 84 acres of wetland to the southwest of the project site. This restoration was authorized by a separate administrative permit by BCDC.

Seven acres of the restored wetland is a tidal marsh pond connected to Flood Channel B through a tidal gate. This portion of the wetland was intended as mitigation for the fill associated with the bridge.

The tidal marsh area was restored in 2002 and it was designed to meet specified performance standards by 2006. The site is now well vegetated with Pickle Weed and hydrophytes and provides valuable habitat for several animal species including Salt Marsh Harvest Mouse and is subject to a 50 year management plan.

The project applicant has provided sea level rise projections that show the impact over time to the public access features of the bridge which are shown in Exhibit E.

The bridge's elevation would assure that it would remain above rising sea levels at mid-century and end-of-century. The solid sidewall of the bridge railing may be threatened by storm surge and a hundred year flood event at the end of the century.

The applicant states that although flooding may occur in a hundred year flood event at the end of the century, it is likely the public sidewalk and bike lane would remain viable because wave forces on the bridge would be relatively weak and the bridge is designed for deck drainage.

In addition, the bridge is only designed for a 75 year life.

The staff summary lists the issues raised by the project, in particular; whether the proposed fill for the project is consistent with the McAteer-Petris Act and the Bay Plan policies on fill, including policies on safety of fills and sea level rise and whether the project provides maximum feasible public access consistent with the project.

Here to present the project is John Zentner, Project Consultant.

Mr. Zentner presented the following: I am a principal at Zentner and Zentner. We're the biological consultants on the Crossings Project.

The project goes back more than 20 years. The site is approximately 165 acres and was a former glider strip back in World War II. It was designated for a variety of industrial uses as part of the city of Fremont's general planning process.

The site was also a mix of uplands and wetlands, almost half and half. It also hosted the endangered Salt Marsh Harvest Mouse and because the site has subsided, simply opening the levees to tidal action in that area will result in extirpation of the mouse on the site.

What then followed was an approximately five year planning process. I would like to acknowledge the staff at the Tri-City Ecology Center for their help in allowing us to come to an agreement among the agency staffs and the landowner. We ended up with a program that allowed for the development of the site.

We took the wetlands that were scattered throughout the site and consolidate them in the lower two-thirds of the site and then fill the area adjacent to the freeway with the exception of Scott Creek.

The site was divided in about one-third and two-thirds being uplands and wetlands.

We restored the wetlands about 10 years ago; five years later the Corps of Engineers and the city sponsored a joint study to evaluate those. They were determined to be successful.

The project is primarily a warehouse-scale development with a significant amount of public access. These were public access agreements reached over several years of discussions of BCDC staff.

At the Crossings Project site we are proposing to put in Class II bike lanes all the way up Fremont Boulevard, refurbish the north park and the south park as well as Bay Trail and bike lanes along New Fremont Boulevard down through the project site.

This will extend the Bay Trail down to the southern edge of Fremont. I would also like to acknowledge the help of the city of Fremont staff.

Our end-of-century projections show that even if at the hundred-year storm level the access components of the bridge remain above that line. Given that the bridge has a projected 75 year lifespan, we should be fairly safe in terms of projecting access above the hundred year sea level rise projection.

I appreciate Erik and the rest of the BCDC staff help in bringing this to you today.

Chair Wasserman continued the meeting: Do we have any questions on this item? (He received no comments)

Do I have a motion to close the public hearing?

**MOTION:** Commissioner Vasquez moved closing the public hearing, seconded by Commissioner Sears. The public hearing was closed by a voice vote with no opposition or abstentions.

Mr. Buehmann read the staff recommendation into the record: The staff recommends that the Commission approve BCDC Permit No. 2013.008 to authorize the proposed project. The staff recommendation contains special conditions that require the permittee to take a variety of measures. These include, the permittee will provide the approximately 1,987 square feet of public access on the bridge consisting of a nine foot wide Bay Trail sidewalk on the west side of the bridge and a five foot wide sidewalk on the east side of the bridge and two bicycle lanes immediately adjacent to the vehicle travel lanes spanning the length of the bridge and seamlessly connecting to public access trails and paths on either side of the bridge north and south.

The permittee shall develop and submit a seismic instrumentation plan for review and final approval by the BCDC staff engineer.

The permittee shall manage and maintain in perpetuity a seven acre tidal marsh pond that was constructed in 2002 specifically to offset the impacts of the bridge.

As conditioned, the staff believes that the project is consistent with your law and Bay Plan policies regarding fill and public access.

I have a small correction to report at the request of the city of Fremont. On page 10 of the recommendation the findings state, that in the event the permittee transfers ownership of the mitigation property, the City would enter an agreement with the new owner to abide by the 50 year management plan for the site.

This is not quite accurate. Since the management plan is a requirement of the City's approval and runs with the land, a new agreement from the City is not necessary. The language will be changed and should read, in the event the permittee transfers ownership of the mitigation property to a private owner, the management plan will still apply.

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

Chair Wasserman queried: Has the applicant's representative reviewed the recommendations? The applicant's representatives informed Chair Wasserman that the recommendations were acceptable.

**MOTION:** Commissioner Vasquez moved approval of the staff recommendation, seconded by Vice Chair Halsted.

**VOTE:** The motion carried with a roll call vote of 20-0-0 with Commissioners Addiego, Butt, Gilmore, Chiu, Gibbs, Gioia, Jordan-Hallinan, Pemberton, McGrath, Nelson, Pine, Randolph, McElhinney, Sears, Vasquez, Techel, Wagenknecht, Zwissler, Vice Chair Halsted and Chair Wasserman voting, "YES", no "NO", votes and no abstentions.

Chair Wasserman proceeded to Item 9.

9. **Briefing on the Hayward Resilience Study.** Chair Wasserman explained: Item 9 is a staff briefing on the Hayward Resilience Study, a geographic-specific extension of the Adapting to Rising Tides Program. Maggie Wenger, our NOAA Coastal Fellow will make the presentation and our Executive Director has a comment.

Executive Director Goldzband commented: The reason that we want Maggie to do this is that about a month or two ago Commissioner Pine said, “so Larry, give me the upshot of what ART will actually accomplish.” We sort of talked through that. As you listen and talk with Maggie I want you to think about how Maggie’s presentation not only talks about Hayward but how you can think about it in your own communities. I think that she will answer Commissioner Pine’s question very well.

Ms. Maggie Wenger presented the following: We’re going to share preliminary findings and the process we used for the Hayward Resilience study which is an extension of the ART Program.

The original ART pilot project was for the shoreline of Alameda County from Emeryville to Union City and then resuming in Hayward and other ART program locations on a smaller geographic area for a few reasons.

One is that it lets you learn more about vulnerability at the very specific asset level.

The second is it lets you really think about what your adaptation responses could be and how they would fit onto the existing landscape, not just the natural areas but we don’t have an empty Bay shoreline. We have a Bay shoreline that’s serves purposes for recreation, for natural areas, for utilities, for private property; we need to work with what’s there.

We chose to work in Hayward because we had very strong ART pilot project partners there who were interested, who knew about the issue and had already done some of their own work to commission studies on sea level rise in the area.

But also for a very small area it’s just about two miles north/south and one mile east/west has very regionally significant assets. The most obvious to many of you would be the Hayward/San Mateo eastern approach, the highway leading to it.

The East Bay Dischargers Authority pipeline which carries wastewater for many communities in Alameda County, about two miles of Bay Trail, extensive natural areas owned by East Bay Regional Park District, Hayward Recreation and Park District and California Department of Fish and Wildlife as well as the Hayward Shoreline Interpretive Center.

It’s also a very low lying and exposed area. This area floods once a year now and it will soon happen most days. As you add more water you actually start seeing flooding in developed areas. This map is your three-foot map.

We walked through a version of the ART pilot process with city staff and many others in Hayward and we used a lot of information that came out of the ART pilot project but also the process itself.

So starting last summer we worked to scope and organize and find the right people, identify our project area and what assets we were going to look at and set resilience goals.

We spent the fall working on vulnerability and risk assessment at a more detailed level. And then all of this spring we focused on planning; what could you do here and how would you think about what is right for the shoreline and for this community.

We had wonderful partners including the city of Hayward, East Bay Regional Park District, Hayward Area Recreation and Park District, East Bay Dischargers Authority, the Union Sanitary District, the California Coastal Conservancy, Alameda County Flood Control Water Conservation District, Caltrans and Bay Trail.

At the very beginning of the process in October, the working group helped us draft Resilience Goals. This shaped all of the stages of the process because the reason that we brought a working group together was, we wanted to think about lots of sectors at once, lots of needs at once and so this is what we set out to do.

We set out to protect the health, safety and welfare of those who live work and recreate in the Hayward Shoreline area, prevent the destruction of key community services by protecting critical infrastructure, protect the environmental value of the Hayward Shoreline area by preserving habitat, water quality and endangered species and build organizational and community capacity so stakeholders can work collaboratively to address future conditions.

We spent the rest of the year figuring out how you would do that here, and if and where you have tradeoffs.

The vulnerability study was partially sort of desktop research for us. The great thing about working at this scale is that we got to go out and do field trips with individual asset managers and hear about how they work now, how they're doing maintenance, how they're doing capital improvements and we got to take the working group on a field trip in December.

They got to see each other's assets and hear from the asset managers, here's the trouble we've had, here's what we're thinking about doing because what that helps you see is how utilities and wildlife habitat and recreation all fit together very closely on the shoreline.

We had managers say, who work in Hayward every day, I've never seen this before. I never realized how close the flood control channel is to the water plant and to the power plant.

We learned five major things about this area. One, the shoreline protection is too low in this area. The shoreline protection here is not engineered levees. Its historic berms on the Bay side, a couple thousand feet of natural areas, ponds and marshes and then a flood control channel.

None of that is really designed to be coastal protection but it is serving as that right now.

The marshes are expected to downshift and eventually drown due to sea level rise because they don't have enough sediment to build up and they don't have space to move back. Marshes can't survive in that scenario and the structural shorelines that we have are all at a similar elevation and it's not high enough. In Hayward it's one big weak spot between 36 and 48 inches.

The second is that if you don't address these vulnerabilities in this small area you would have widespread consequences. The Hayward/San Mateo Bridge approach, if it's flooded, if it's damaged, that's an important regional transportation corridor; it would be felt throughout the region.

The East Bay Dischargers Authority pipeline carries wastewater for Union City, San Lorenzo, Hayward and other communities all the way out to Livermore. If that's out we have wastewater problems across a huge swath of Alameda County.

We have the Russell City Energy Center which is a CalPine plant that was just constructed that provides power for about 600,000 homes in the Bay Area.

So there are significant consequences even from impacts in this small area.

The third was, we found governance vulnerabilities that we all know about but we've got to learn more at this scale. One is that sea level rise adaptation planning isn't just hard because it crosses property lines. It also really asks managers to do things that are beyond the scope of their day-to-day job. The Park District does not want to be a shoreline protection agency but they are. And the wastewater treatment plant doesn't want to think about flooding but they have to. So we're asking people not just to work with their neighbors but to work on new issues.

There is limited financial support even for current maintenance and repairs in some sectors. So peoples' abilities to be proactive, to plan for improvements is pretty limited if you're just barely keeping up.

And third is that the current regulatory process for shorelines, for wildlife habitat, for fill in the Bay doesn't necessarily account for unavoidable changes. The shoreline is changing.

The Hayward area has unique recreation and education features. It has the Hayward Shoreline Interpretive Center, which is one of the few onsite shoreline environmental education facilities in the East Bay. It does programs for about 9,000 students a year.

There are 80,000 Bay Trail users a year in this area and it's all very vulnerable. The building itself will flood but more importantly, the trails and natural areas that they rely on for interpretation are very vulnerable.

And the last one is that there are many different property owners in this area. So when you start thinking about any kind of major solution here, it's clear that extensive coordination will be required.

We did identify short-term, mid-term actions that an individual or an individual agency could take up but when we get to that 36 or 48 inch water level you really need a coordinated multi-benefit approach.

We came up with four possible visions that attempt to meet that coordinated multi-benefit idea.

The first one is business as usual. Everyone does the best they can on the property they have with the resources that they can expect to have. What this gets you is not good. You do not have an integrated solution. You have flood damage both to the commercial/industrial areas, your utility infrastructure and the approach to Hayward/San Mateo Bridge. This would lead to lost economic activity and possibly increase flood insurance premiums. You would lose your tidal marshes, lose your Bay Trail, lose your interpretive center and you would still have a centralized wastewater system where you're sending lots of freshwater out to the Bay instead of using it.

The second is, if we built a traditional levee here, a 3 to 1 levee possibly along the west edge and a levee to protect Highway 92, what that gets you is you protect your utility infrastructure. You protect the footprint of the power plant, the footprint of the water treatment plant. You protect your industrial and commercial lands. You lose your tidal marshes. You lose your interpretive center. You could probably put the Bay Trail on top of this new levee but instead of being through marshes and beautiful it would be along the backside of the industrial park and you still have a centralized wastewater system.

The third was a horizontal levee and you may have heard this called a habitat levee, a ramp, different options. The idea is that instead of doing a 3 to 1 slope you're doing 30 to 1, or 100 to 1 so that you have a very gradual slope and you can have habitat on there as well as some wastewater discharge benefits.

This would still protect your utility infrastructure and your industrial and commercial areas because it is still a levee. You would have tidal marshes north of the bridge that will persist. They'll be new marshes because they will have been built but you will have marsh. We elevated the 92 approach to be a causeway so that you could connect that habitat with the South Bay Salt Ponds Project that is just south of the bridge.

You could have a relocated Bay Trail but it would still be next to habitat. You could have a relocated interpretive center that still has marshes and you'd be moving toward a decentralized wastewater system where we're using that freshwater to build up habitat and using the marshes to help treat and discharge that water.

The fourth action was room for the Bay. We can't figure it out for shoreline protection or we don't want to spend the money so we'll just get people out of the way.

You have to relocate your utility infrastructure and your industrial/commercial lands which leads to lost tax revenue for Hayward and lost economic activity. You may have new habitat or recreation opportunities in the vacated space.

You could maybe do some different kind of environmental education in this area because you might not have tidal marshes anymore.

You're going to be rebuilding your wastewater treatment plant. You could build it in a more decentralized way that could do more recycling or more reuse.

And the 92 approach would be protected but it would be protected as a peninsula, not integrated with the rest of the solution.

These are the four that we came up with that tried to come up with the outcome for each of the assets that we were concerned about. Then we thought, how do we evaluate these given the scale we're at?

And the first question was, how well do they achieve our resilience goals? Do they protect the environmental value? Do they protect health, safety and welfare? Do they protect critical infrastructure? Do they build capacity?

We had a conversation with the working group about this. We talked a lot about tradeoffs and if there are winners and losers and where there are, how do you choose?

One thing that we spent a lot of time on is, how do you even think about feasibility at this level because these are conceptual ideas. These are not plans.

One thing that it does help you do is, think about if we could build this, would we even want it? Is this what we want for our community? Do we want to choose an option that even if we build it right, we lose all our tidal marshes, we lose our recreation. Or do we want to focus on other options?

And what we're doing, we have the last working group meeting July 31st but then we're going to continue through the fall with further assessment to move us towards understanding feasibility. We will be working with the structural shoreline managers, the flood control district, the park districts to really think about engineering possibilities; working with Hayward Area Recreation and Park District and regional partners on thinking about the future of environmental education out here even if it can't be in the building we have.

That's how we see this transitioning into local action. The key outcomes for this focus area, this geographic-focused area, is that we knew this but adaptation planning involves working beyond existing inter-agency processes and across jurisdictional boundaries. ART staff, BCDC staff play this critical role because we can be conveners but we can also provide the structure for collaboration. We have wonderful working group partners, they're interested, they know their own assets very well; they do need outside staff help both for the information itself and for structures they can share with each other and think about joint solutions.

The second is, the current regulatory process for natural areas, shoreline improvements and water quality makes current maintenance and repairs difficult. Adapting to sea level rise impacts will require a more holistic approach to a short-term and long-term costs and benefits as well as multi-objective projects.

We have slowly been working with working group members who keep telling us, well I'd love to do this, you guys won't let us. Some of it is a lack of understanding about what we do and don't allow, what the Water Board does and doesn't allow but it is something that everyone is going to have to change the way they work a little bit. We're certainly part of that.

And the third is, Hayward has been a great example of ART planting seeds that grow on. Hayward incorporated sea level rise adaptation and resilience language in their general plan update this year. They dedicated staff time to adaptation efforts and made it a written priority for the city.

East Bay Dischargers Authority received a climate-ready grant from the Coastal Conservancy to look into the feasibility of the shoreline wastewater options because they will be investing in some kind of improvements to their system. They want to do those in a green way and in a resilient way. They're looking into that now.

And the Hayward Recreation and Park District has been taking sea level rise vulnerability and adaptation to the community through student programs, through summer camps and through public meetings called, Sharks in My Backyard.

It's been great to see working group members take what they're learning from us, learning with us and take that back to their home agency and to their communities. Thank you for your time.

Chair Wasserman recognized Commissioner Vasquez.

Commissioner Vasquez inquired: How many of those property owners were private?

Ms. Wenger answered: We looked at several private assets and we went to the chamber of commerce to present the study but they did not participate in the working group and neither did CalPine.

Commissioner Vasquez inquired further: And what was the reason for them not participating? It's interesting that you're talking about the economy and this impact whether it's privately held or publicly held; the vulnerability is there and to ignore it from the business side is a failing on their part. Since you invited them I would have thought engaged themselves to think about this.

Ms. Wenger replied: I would hope they are. Our hope was that the City was partially that voice because they are responsible for storm water services to that industrial park, utilities, emergency response, planning and we addressed some of those issues. We asked, how can the city help private landowners be more resilient because we didn't have that participation. It is a voluntary process.

Commissioner Vasquez pointed out: The fact that these entities were talking together about process and permitting and looking at a better way of doing it, you would hope that the private sector would be involved in that because that's often the concerns that is expressed to us as elected; you know, your process is too cumbersome, you don't talk to each other and here you had an opportunity to be in the room with all these folks that are beginning to talk to each other and say, how can we streamline this process, it's critical to all of us. This was a missed opportunity.

Ms. Lindy Lowe commented: I would like to respond from the ART Program. It has found the same issue in terms of engaging the business community. It's at varying scales depending on where you're working. What we've heard from many in the business community is they really do feel like this is the kind of thing that government should fix. That the City of Hayward and Alameda County Flood Control should ensure that their property is protected from floods. MTC and Caltrans should ensure that the infrastructure is protected from floods. In the way in which we engage with the private sector we need to be really creative in bringing them to the table, not just asking them to come to the table but making a more compelling case for getting them to the table.

Commissioner Gioia spoke: I think this is really good to see. This hands-on experience will help inform the larger process we're going through as we think about how to develop an adaptation plan to address sea level rise.

And coming out of the Bay Plan Amendment BCDC will be taking the lead on that with the other regional agencies. What comes out of this is that the existing regulatory infrastructure doesn't work for this. Everyone is trying to address this issue using the powers that they currently have and the regulatory or statutory process that currently exist doesn't work.

It's great to see that there can be results coming out of this cooperation. It also shows how intensive an effort it needs to be to bring everybody together. We can learn from this as this ties into the discussion of the sea level rise working group.

Commissioner Nelson asked: Did your scenario development process drill down deeply enough to think about alternatives for more aggressive sediment management and reusing dredged material more aggressively? How conceptual was it in terms of looking for opportunities to use resources in ways that might have flood management and environmental benefits?

Ms. Wenger responded: Sarah and I did some very-back-of-the-envelope calculations on how much dirt you would need for this horizontal levee because that was one of the first things people said when we brought it up. They asked, even if you could afford it, you can't get it.

To build a 100 to 1 slope which is very generous for how high we need it for end of century, you need about 750,000 cubic yards which is five Ferry Buildings of dirt.

That is often all the beneficial reuse for a year in the Bay. This sort of bounces around between half a million and a million cubic yards. That is a huge consideration. John Bourgeois from the Salt Bay Salt Ponds Project has spent years thinking about how you get enough sediment to do the restoration projects you want.

We heard, yes, that sediment exists in the Bay, how do you pay for it, how do you get it to Hayward at the right time is certainly a huge feasibility question mark about the horizontal levee.

Commissioner Zwissler made an observation: Your drawing appears to indicate that the levee is within the boundary of the existing shoreline. Is that what you mean to say?

Ms. Wenger replied: This is an odd piece of shoreline. When we did our calculations we assumed you would instead of filling in Cosgwell Marsh here which is healthy marsh, you would fill in these ponds shown here because it's not Bay, it's not habitat and you could let that healthy habitat creep upland.

Commissioner Zwissler continued: In this instance you could get a horizontal levee without encroaching further out into the Bay.

Ms. Wenger answered: In this segment, it gets a little fuzzier down here.

Commissioner Zwissler stated: I think this is one of those things like you said, it sounds so attractive. Let's just have more beautiful marshland. It's much more complicated than that. I want the public to understand that.

My second question is, when you do this do you also look at other consequences outside of the area? If you go to a hard levee system, great for this area, what about north and south?

Ms. Wenger responded: We did grab a sensible chunk geomorphologically. The area shown up here is a very high-capped landfill. It's 30 feet high. There is also a flood control channel here that is the boundary of that flood control zone. This is a basin which doesn't mean there wouldn't be any neighbor effects north or south but it is a sensible segment to think about.

Certainly we thought about, how does what you do north of the bridge and what you do for the bridge and what you do south of the bridge fit together or not fit together.

You wouldn't want to take with one hand and give with the other. That is a big piece.

Commissioner McGrath commented: I wanted to thank you for your presentation. It was very interesting and very well presented. I once had about 13 million cubic yards of sand and a suggestion from Phil Williams and Associates that it be used to construct a levee in front of the Hayward Marshes to protect them from erosion in the long-term and some agency didn't want me to do that and I can't remember which one it is.

We are changing. Sand doesn't come along all that easily or readily and it is much better.

It's probably not going to be all of one or all of the other. So when it moves to feasibility you've got the political challenge of creating collaborative networks by an organization that has historically looked at the world as a regulatory end point and it's not.

For this to work it's going to have to be collaborative and there's going to have to be different approaches to funding. It might be some from column A and some from column B as you approach feasibility. You want to make sure that the feasibility work that you do is enough iterative. And that is tough because it gets expensive.

Chair Wasserman commented: When and where are the, Sharks in My Backyard? Is it on Saturday?

Ms. Wenger replied: It will be at the Hayward Area Recreation and Park District Headquarter at 2:00 on Saturday. It's also an ART gallery opening for sea level rise adaptation art that was done by the community. It's at 1015 E Street in Hayward.

Chair Wasserman continued: I urge anyone who can to attend because the presentations emphasize very creative ways to get peoples' attention, to get people there to demonstrate the effects of sea level rise in a way that people can really grasp.

I think this a very good example of what we can do and what we need to focus on.

I have a couple of comments on Commissioner Vasquez's very legitimate concerns. It's going to be a very tough issue. Many of us in this room have been involved for many years in trying to get businesses involved in goods movement issues. This issue is one where they are much more immediately affected than these issues, still, very hard to get the attention and participation of business in the policy discussions. They tend to think, it's the business of government. It's not their business. As we deliver the report from the Rising Sea Level working group we're going to have to make that a piece of it. We're going to have to figure out some pilot projects where we can have a higher level of success of involving businesses and then utilize the lessons we learned from that in getting it out because as we know around this table, it's going to take a huge, broad cooperative effort to figure out how to adapt to what we know is going to happen.

Executive Director Goldzband added: One of the reasons that the private sector is reticent to get involved is because many times publicly-held companies and even privately-held companies are very concerned that if they become involved it automatically demonstrates a willingness to accept whatever the heck comes out of a process.

It concerns them to get involved with a process in which they do not know the end or the end game. There is a real high level of uncertainty and therefore a real high level of risk involved in getting involved in those discussions.

One of the things that we have to do as a regulatory and planning agency is somehow be able to talk with the private sector in a way that doesn't get them as concerned or at least mitigates some of those concerns. And that is hard to do.

Ms. Lowe commented: I would like to add that that concern was a concern for the local governments that we started working with several years ago when we first went into the Adapting to Rising Tides Project. They didn't want us identifying a list of vulnerabilities that then their community members would say, well City of Oakland, fix it.

I think that that is true in both cases. We have figured out a way to talk to the local governments and other agencies and jurisdictions. That is why we really need to be creative in our thinking about how to bring one of the important parts of governance to the table which is the private sector.

Commissioner Randolph added: I think there is also an issue for many of them about resources. A lot of businesses feel that they don't have the expertise or the resources to devote to hearings and this kind of process because it tends to be something where the advocates are active and they look to their associations to represent them. To get the individual enterprise to show up, they often feel resource constrained and constrained in terms of expertise.

Finding the right conversation that incentivizes comments is the big challenge.

Chair Wasserman announced: I think that concludes this presentation and there is no action required. Thank you very much for everything you've done.

Commissioner Gioia asked: Can we have this presentation posted on the web?

Executive Director Goldzband replied: It will be and it will also be presented tomorrow at the Joint Policy Committee.

Chair Wasserman stated: I'm going to turn the Chair over to Vice Chair Halsted for your next presentation. (Chair Wasserman left the meeting)

Vice Chair Halsted continued the meeting: Item 10 is a briefing on the sand mining background report.

**10. Briefing on Sand Mining Background Report.** Vice Chair Halsted informed the attendees of the following: Item 10 was a briefing on the San Francisco Bay sediment system, with a focus on sand transport dynamics and sand mining activities in preparation for upcoming proposed sand mining permit renewals. Rosa Schneider, BCDC's California Sea Grant Fellow will introduce the topic.

Ms. Schneider presented the following: Good afternoon Chair Wasserman and Commissioners. Today I will be presenting an overview of sediment transport and sand mining.

As advertised, analysis of sand mining proposals will be presented at a later time as part of staff summary and recommendations.

After giving some context for this briefing, I will introduce sand, what it is used for, where it comes from, how it moves and what lives in and around it.

I will then present how humans have altered the Bay's sediment system and explain where and how sand is mined.

Finally, I will list some Bay Plan policies that relate to sand mining.

Currently, three companies mine Bay sands for use in the construction industry and are seeking new 10 year permits to mine a total of 2 million 40,000 cubic yards annually from Central Bay and Suisun Bay.

For geographic context, these maps show current sand mining leases in Suisun Bay and Central Bay.

The applicants' current permits expired in 2008; sand mining has continued through annual time extensions on previously authorized volumes.

The maximum mined volume in any given year was 1.98 million cubic yards in 2000.

For reference, as we learned in the previous briefing, the Ferry Building volume is approximately 150,000 cubic yards.

The State Lands Commission certified an EIR for sand mining in 2012; since that time, the EIR has since been challenged, upheld, and is currently being appealed again

In 2012 the State Lands Commission issued sand mining leases. In 2013 new research on the Bay sediment system and sand transport were published in a special issue of Marine Geology.

Applications were submitted to BCDC in February 2013 and we anticipate bringing the proposed projects to you in fall of this year for a public hearing and vote.

This briefing is based on scientific research, applicant submittals, the EIR and other agency reports.

Sand is a natural substance, made of broken down rocks and minerals.

Sand is between 0.002 and 0.08 inches in diameter.

Sand is one type of sediment; other, smaller sediments are called silt and clay, or collectively, 'mud'.

Sediment is carried by water and wind.

Throughout this briefing, when I say 'sediment', I am referring to both sand and mud.

When I say 'sand', I am only referring to sand.

In the Bay, sand is found on the Bay floor and on beaches.

On this map of the Bay floor, sand is shown in yellow and in black and white stipple.

Sediment is important for its role as the substrate that creates and protects tidal marshes and beaches, as habitat for subtidal and inter-tidal plants and animals, in recreation on beaches and wildlife viewing, and as a commercial resource of mined sand.

Bay sand is used in cement concrete for buildings and paved surfaces, in asphalt, roadbase, and sub-base fill, and as general fill.

Sediment enters San Francisco Bay from two major sources: (1) the Sacramento and San Joaquin Rivers which drain the Sierra Nevada mountains and Central Valley; and (2) smaller Bay tributaries.

Other sediment sources include tidal marshes and wetlands, shoreline bluff and cliff erosion, coastal sources from outside the Golden Gate, and the Bay floor.

Sediment travels both in the water column as suspended load (mostly mud) or rolls, slides and bounces along the Bay floor as bedload (mostly sand).

Most sand in San Francisco Bay originates in the Sierra Nevada and is transported by the Sacramento River.

In the 1960s, sand discharge from the Sacramento River was estimated at 1.2 million cubic yards per year, which would be enough to fill eight Ferry Buildings.

Because sand is heavy, it usually moves as bedload, except during high flows, when it may comprise as much as 50% of the suspended load entering the Bay.

Currently, less sand enters the Bay than in the past, but the amount is unknown.

On average, it is estimated that bedload accounts for 10 percent of total sediment inflow.

Commissioner Gioia asked: Is there a reason why we don't know currently why it was measured in the 1960s and why it's not measured now?

Ms. Schneider replied: Agencies and SFEI routinely measure the suspended sediment coming into the Bay, but bedload is harder to measure. As far as I know a research agenda has not

been undertaken to measure bedload entering the Bay specifically.

Commissioner Gioia continued: So we don't know how many cubic yards of sand we get out of the Sacramento River now?

Ms. Schneider answered: No. And later on I will get to some ways that we estimate that.

This figure shows a model of sand pathways in the Bay system.

Along the dominant pathway, shown in bold, sand from the Sierras travels through Suisun Bay, San Pablo Bay and Central Bay. Some sand settles out on the Bay floor, some is delivered to beaches, and some continues out of the Golden Gate to the San Francisco Bar.

The San Francisco Bar is a 60 square mile underwater sand dune; sand is deposited here as water leaving the Golden Gate slows down.

From the San Francisco Bar, some sand moves along the shore to open coast beaches, including Baker Beach and Northern Ocean Beach.

A smaller amount of sand originates from local sources such as Bay watersheds, coastal bluffs and cliffs, and from the Pacific Ocean through the Golden Gate.

More sand exits from the Golden Gate than enters through it, but some sand moves north from Ocean Beach and through the Golden Gate.

By area, at least eight percent of the Bay floor is occupied by sandy habitat.

These are areas of deep water and along channel edges where high water velocities prevent lighter mud from settling. In Suisun Bay, sandy habitat is found in and along the edges of the main channel. In Central Bay, where water is deeper and currents are faster, sandy areas are found throughout the basin west of Angel Island.

Sand is also deposited on beaches, high-energy environments where smaller particles are re-suspended by waves, leaving only sand along the shoreline.

Compared to other habitats in the Bay, the ecology of sandy areas is under-studied.

It is known, however, that many organisms use them as habitat, living in, on, and above the sand in the water column.

In the Central Bay, which has a strong marine influence, a benthic (Bay bottom) survey conducted for the sand mining EIR mainly found nematodes, polychaetes (bristled worms), amphipods and clams living within the sand grains. Some organisms were found specifically in fine sand, medium sand or coarse sand.

In Suisun Bay, which has fresher water, the invertebrate community is less diverse as it is dominated by two species of invasive clams.

This benthic survey also addressed how these organisms respond to disturbance. Similar densities of organisms and numbers of species were found in areas that had been mined in the previous three years compared to areas that had not been mined or had possibly been mined during the previous 3 years.

The primary larger mobile invertebrates in Central and Suisun Bays include several species of shrimp, crabs, a nudibranch (or "sea slug") and an invasive snail.

Of these, the Dungeness crab is an important commercial fisheries species that spends key parts of its life cycle in San Pablo and Central Bay travelling along the Bay floor to reach the ocean each year.

Many fish species use deep and open-water habitats on and above sandy areas and feed on organisms that live in and on the sand.

Sediment dynamics in the Bay are complex and change over time. The Bay sediment system has been erosional in some periods, with more sediment leaving than entering, and accretional, with more sediment entering than leaving, in others.

In addition to this natural variability, humans have modified sediment dynamics.

This figure shows estimated sediment supply to the Bay over time. Time is on the x-axis; estimated annual sediment supply in millions of tons is on the y-axis

Horizontal bars show estimates for specific time periods.

Due to hydraulic mining during the Gold Rush, sediment to the Bay increased drastically.

The major influx of mining debris is estimated at more than 1 billion cubic yards.

Subsequently, large dams, reservoirs, flood control projects and other modifications to hydrology have reduced sediment inflows from the Bay and Delta tributaries

By 1999, the pulse of sediments from the Gold Rush had largely worked its way through the Bay system; suspended sediment flows in the Twenty-first Century are not expected to increase or return to previous levels.

Commissioner Gioia asked for clarification: So just to be clear, the current level of sediment flow is what you're showing in the lower right? (Ms. Schneider affirmed)

So did that drop of influx of gold mining mostly drop off after the hydraulic mining ended?

Ms. Schneider replied: The pulse continued until around 1920, and then it dropped off, and then there were more modifications upstream. As of 1999, people have done models and measurements and say that there is not anymore coming down from that mining activity.

As with overall sediment supply, sand supply to the Bay has decreased in recent years partly due to exhaustion of gold mining debris.

Because of its larger size, sand is more readily impounded behind dams, in reservoirs and in flood control channels.

Dams and other structures also diminish the peak flows required to move large amounts of sand.

In addition to affecting sediment input, humans also remove sediment from the system by navigational dredging and mining.

Over the past century, at least 262 million cubic yards of sediment has been removed from the Bay. Overall, humans remove more sediment from the Bay each year than enters it.

Currently, Central Bay, Suisun Bay and San Pablo Bay are erosional. Only the South Bay is building up sediment or accretional.

From 1949 to 1979 Central Bay lost 68 million cubic yards of sediment

From 1997 to 2008 it lost 18 million cubic yards

Because of decreased sediment supply, sea level rise, and large-scale tidal marsh restoration, keeping sediment in the system is increasingly viewed as a benefit.

Changes to the Bay system have impacted the coast.

In addition to losing elevation, the San Francisco Bar has become smaller and migrated towards the shoreline.

Erosion and contraction of the Bar has probably resulted from reduced tidal prism due to historic filling, diking and sedimentation of the Bay; and from decreased amounts of sediment

leaving the Bay as a result of upstream modifications, aggregate mining and dredging.

This has effectively resulted in more sand being delivered to northern Ocean Beach and less to southern Ocean Beach. Erosion and contraction of the Bar also likely affects wave energy reaching the shoreline, with northern Ocean Beach being protected and southern Ocean Beach being more exposed.

Sand mining occurs to fill discrete construction orders for specific volumes and grain sizes of sand. As mentioned earlier, sand is used in cement concrete, in asphalt, roadbase, sub-base fill and as general fill.

Due to equipment limitations and permitting requirements to protect shallow water habitats, mining takes place at minus 30 to 90 feet mean lower low water in Central Bay and minus 15 to 45 feet mean lower low water in Suisun Bay.

In Bay sand mining, a tugboat positions a barge over an area of desired sand.

Hanson's barge has a hydraulic suction dredge system. The drag arm is fitted with a drag head which is in turn covered with crossbars to screen out oversized material and a "fish screen" designed to reduce entrainment.

In both Central Bay and Suisun Bay Hanson uses the "moving potholing" method.

In this method the drag head is inserted six to eighteen inches below the surface and is pulled along the sandy bottom. Once the targeted sand size is found, a slurry of sand and water is pumped into the barge. As sand fills the barge, water is displaced by sand. The water is returned to the Bay along with suspended fine sediment, which makes up approximately 10% of the suctioned sediment.

While transiting between mining locations, adjacent sand slumps into the mining tracks and is also removed.

Lind Marine only operates in Suisun Bay and exclusively uses "stationary potholing". In this method, the barge is anchored in one location during the mining operation.

The suction pipe is not fitted with a drag head and is inserted directly into the substrate to a depth of 5-8 feet. The pipe is lowered as the pothole is deepened.

The suction pipe is also covered with crossbars and a "fish screen."

Within a lease, mining takes place where the desirable sand is located. This figure shows mining 'track lines' for the year 2005 at the Point Knox South Lease in Central Bay. Each color represents mining track lines from a different month.

Though sand mining has been ongoing since the 1930s, BCDC only has permits and records dating to 1974 for Suisun Bay and 1976 for Central Bay.

This figure shows the amount of sand mining in Suisun Bay that was authorized (in green) and mined (in orange) in each year. The blue bar is the amount of sand mining proposed for new permits in Suisun Bay. Similarly, this figure shows the amount of sand mining in Central Bay that was authorized (in green) and mined (in orange) in each year. The blue bar is the amount of sand mining proposed for new permits in Central Bay.

Sand removed from the Bay is not replenished at a constant rate, because the amount of sand entering the Bay changes each year.

Between 1997 and 2008, all of Central Bay lost more sand than it gained; 13.5 million cubic yards were mined and five percent of this naturally replenished within lease boundaries.

Non-lease areas also lost sand, but at a lower rate.

Between 2008 and 2014, all of Central Bay, on average, gained some sand, with greater gains outside of mining leases. During this time, 2,200,000 cubic yards were mined.

Over this longer timeframe (1997 to early 2014), which included the periods of varied mining activity as well as time periods of sand loss and sand gain in the region, large areas of net sand loss persisted in repeatedly mined area.

For Suisun Bay, less information is available, but in certain lease areas sand has been shown to replenish more quickly than in Central Bay.

Between 2004 and 2007, 1.2 million cubic yards were mined. Generally, there were no clear patterns of erosion or accretion.

Between 2008 and 2014, excluding the Middle Ground area, there was an overall signal of accretion, with similar depths of sediment building up in lease and non-lease areas.

During this time, period 130,000 cubic yards were mined.

Sand transport to beaches depends on many large and small scale factors.

Many of the mining leases intersect the dominant sand transport pathway where removing sand could decrease supply to the outer coast. The magnitude of this effect may be small. One model showed that the proposed mining in Central Bay would likely contribute less than three-tenths of a percent of the annual observed erosion of the San Francisco Bar.

East Bay sand comes from local cliffs and subtidal Bay sand, but detailed transport pathways are not known.

With sea level rise, beaches may require more sand to prevent erosion and landward migration, and the San Francisco Bar may require increased sand to maintain its volume and wave-sheltering benefits.

Natural aggregate materials include not only sand but also gravel and crushed stone.

Because they are heavy, aggregates are costly to transport long distances.

Demand for aggregate is expected to increase with population growth. Local aggregate reserves contain enough permitted resources to last through 2023 to 2032.

In addition to Bay sand and local land-based sand reserves, the Bay Area also purchases aggregate from Mexico and British Columbia.

The Bay Area imported 1.7 million tons of British Columbia sand in 2012 and is the largest market for British Columbia sand. This sand is preferred for major construction projects requiring high-strength concrete. British Columbia sand was used in the new Bay Bridge span, for part of Doyle Drive, and is being used for the new Trans-Bay Terminal.

British Columbia sand is not competitive with Bay sand or other locally-produced sand for other uses such as private housing and construction and neighborhood infrastructure projects, roadbase, sub-base fill, or for general fill purposes.

Before we close, we wanted to list some of the Bay Plan policies that staff will be using to determine the disposition of the applications.

In summary, this briefing has been given to provide background information on sand, the sediment system and sand mining in anticipation of upcoming proposed sand mining permits.

Staff is currently working closely with the applicants to resolve technical and policy issues and we anticipate bringing these projects to you in fall of this year.

Vice Chair Halsted continued the meeting: Thank you very much. That was complicated and interesting. We have a couple of people who would like to make some comments. To begin the comments we have John Briscoe, who represents the applicants. He will be giving responses to the presentation.

Mr. Briscoe commented: I represent Jerico and Lehigh Hanson the applicants for the permits that will be before you in a few months. We want to thank Rosa and Brenda for all their hard work on the application and in particular on this background report.

The background report tells you a little bit about the history of sand mining in the Bay. It began in the 1930s and has been a mainstay of the construction industry in San Francisco Bay for a long time.

Jerico is a family-owned business. It goes back more than 100 years. It began in the oyster shell mining business and in the 1930s and 1940s moved into sand mining.

Lehigh Hanson came in 1999 to the Bay Area and acquired the old Olin Jones and Tidewater and a couple of the smaller sand mining companies that had been here for many, many years.

They have been mining pursuant to leases from the State Lands Commission and permits from BCDC as well all of the other relevant agencies ever since.

The applications are not for new permits; they're for continuations for a 10-year continuation.

We're asking for 2.04 million cubic yards per year. That's less than the average annual consumption of late. Some people have forgotten about the Great Recession we had and it had a tremendous impact on construction.

There has been less harbor maintenance dredging because of the drought. Because we have less water coming down we have less sedimentation in the navigational channels and in our harbors.

I mention this because I think it's useful to compare harbor dredging, navigation dredging and sand mining in terms of volume to get a sense of scale.

Rosa mentioned that the harbor maintenance dredging is averaging between 1.5 to 2.0 million cubic yards per year. That's just in the last few years most of which have been drought years.

In normal years four or five million cubic yards per year are mined. It used to be about seven million per year when the Navy was here. We know that 1.5 to 2.0 million per year is a little bit on the low side.

Commissioner McGrath mentioned the Fifty Foot Project in Oakland and that was 13.5 million cubic yards. We have two big projects in Bay Area on the books, 10 million for Sacramento and 25 million for Stockton.

Our leases from the State Lands Commission are 2.04 million cubic yards and that is what we will be asking this Commission for when we are before you on our permit renewal applications.

Rosa mentioned a loss of 18 million cubic yards of sediment during the last 18 years. To put things in scale, there's been a net loss but there was a period of time when there was an enormous influx of sediment to the Bay. That was the hydraulic mining that took place beginning in the 1850s and lasting until it was ordered shut in 1884.

The study that is referred to is the Gilbert Study of the University of California and the U.S. Geological Survey and it was a monumental study. On page 43 he makes a phenomenal statement. During that period, hydraulic mining was washing down entire sides of mountains. A billion, one-hundred million cubic yards made it to the Bay.

The pulses from this have stopped being felt or being measurable by 1999. A total of 1.6 billion cubic yards were washed down. All the measurements were done by hand at the direction of Dr. Gilbert. He spent four years in the Sierra Nevada.

Dr. Gilbert writes in his report, "To most laymen and possibly to some engineers not concerned with great movements of earth, the term one million cubic yards conveys no definite meaning. It helps us to a conception of the actual magnitude of the hydraulic mining operations to know that the volume of earth moved was nearly eight times as great as the volume moved in building the Panama Canal."

Of that 1.6, 1.1 billion made it here, settled and began to move around. The pulse from that, the continued flow in 1917, and it kept coming down; however, the pulse from that has ceased but the effects are still here.

The 4,000 acres in back of Mare Island were added by hydraulic mining debris. Highway 37 was roughly the shoreline, all those marshes were the product of the hydraulic mining debris.

I would say that if we had been asked to give you a background report, it wouldn't have been that report that your staff presented here today. It wouldn't have been anything that we wrote. It would have been the executive summary and the findings that the State Lands Commission made in its Environmental Impact Report.

That was a six year process and Commissioner Pemberton brought a copy of that report with her. There are 37 pages of findings in this report.

The depth of analysis inherent in this report would cause us to refer it to this Commission. We ask that the six years of study that went into this report not be forgotten in this process and that it be given due respect and deference.

We were walled off from the process that the State Lands Commission went through to produce this report. There were very tight walls erected between the Lands Commission's staff and the consultants that the Commission engaged. This was a very independent process engaged in. They did a fabulous job on this report.

The report concluded that no significant impacts on sediment transport would be affected by the project we propose. No significant impacts on benthic habitat. I suggest that those are the two findings that are very, very important that you all take away from this.

Under CEQA, that's what the Environmental Impact Report concluded. You're a responsible agency and those are controlling. They are very well documented and we urge you to take a look at them.

We would mention the economic benefits of this since you are the Bay Conservation and Development Commission. Alternative sources would cost customers hundreds of millions of dollars more over ten years without sand mining.

Road repair costs would increase exponentially. The State with the project will receive millions of dollars in royalties per year that it wouldn't otherwise.

Public agencies, Caltrans in particular, would have to spend tens and maybe hundreds of millions of dollars to buy sand that's imported rather than the sand from this project.

The public works agencies of each of the nine Bay Area counties will find their costs of sand going through the roof if they have to use imported sand.

I would like to talk about environmental benefits of the project. As many as five million truck miles per year would be saved with this project over the costs of bringing in material by truck from land-based supplies.

Overall greenhouse gas emissions would be reduced. Approximately 100 metric tons of GHG emissions over ten years will be saved with this project. Without this project you're adding 100 million tons. This is in the EIR.

A separate study that we commissioned later puts that number at twice that, 180,000 metric tons.

I would refer to Item 9 and the construction that's going to be needed to be protecting us. You adopted the sub-tidal policies in 2002 and you immediately turned to sea level rise. You are going to need a lot of sand.

Vice Chair Halsted commented: We are being educated and I think some Commissioners have some questions and we have two members of the public that would like to say something.

Commissioner Gioia commented: I note the one thing that you didn't cover in the presentation of which I assume will be the subject later is, the policies that govern our decision, because I think you went over the history of sand mining but the policies that guide whether we issue permits and under what conditions we issue permits was not covered.

When will we be getting briefed on that and will it be in the context of each permit? I know that we have our own guidelines on this issue.

Ms. Schneider responded: Right now the applications aren't quite complete. We're waiting on a few more approvals from the resource agencies. After the applications are complete staff will analyze them and then we'll present that analysis to you in a public hearing, probably in early fall.

Commissioner Gioia stated: What would be useful would be a very brief overview of the types of policies and issues here that govern us out of the context of each individual permit.

I know that each of the applicants has a different history. We recently dealt with some fines for Hanson for violating permits. They were mining more than what was allowed under the permit.

Ms. Goeden clarified: The large case was with Hanson. The fine was about \$374,000.00 from BCDC. There were also previous enforcement cases against companies that no longer exist in sand mining.

Commissioner Gioia made a request: I would be interested in hearing some of the history of where the potential issues have come up on permit violations, so we're aware as we move forward in thinking about permits, because I know there has been a history of some permit violations.

The EIR that was referred to from State Lands; how does that relate to application of our policies?

Ms. Schneider replied: We're using the EIR because there's the benthic study in there and there's a sediment transport study. We're using it to apply our policies but we're also using other information.

Ms. Goeden commented: The EIR was based on all of the sand mining activities for Jerico, which is now called Lind, in Middle Ground, Suisun Associates which is in Suisun Bay and then Hanson which is mining in Suisun Bay, on Middle Ground, and also the whole Central Bay.

They did a programmatic EIR for all of the lease areas and they certified it. They acted with their certification to create the leases.

BCDC uses the CEQA document as the basis for CEQA findings for our project and a review under the California Environmental Quality Act. We use our independent authority under our policies to assess the project under our law and policy with the basis of the CEQA document.

There has also been a significant amount of scientific information that has been provided since the CEQA document was completed and we've been paying a good amount of attention to what the USGS and other researchers have provided since then.

The CEQA document was completed in October of 2012.

Commissioner Gioia continued: Which entities have permit authority over this?

Ms. Goeden replied: State Lands does leases. The Water Board does waste discharge requirements or water quality certifications. The Army Corps does a permit for harbors and rivers act. NOAA Fisheries looks at impacts to federally listed species and Essential Fish Habitat. U.S. Fish and Wildlife Service looks at Delta smelt specifically. And Cal Fish and Wildlife looks at both long fin and delta smelt.

Commissioner Gioia clarified: So State Lands has the authority to enter into the leases. But the criteria for them entering into leases is different than the policies that guide our permit authority.

So was the EIR that was done specifically for the leases?

Ms. Goeden answered: Yes.

Commissioner Gioia further clarified: So it doesn't necessarily address all the issues we would look at in terms of our policies.

Ms. Goeden replied: EIRs often do. In this case the CEQA document says something along the lines of, we've addressed these issues and BCDC will address additional issues per their law and policy.

Commissioner Butt commented: How do you get the salt out of the sand to make it suitable for construction?

Ms. Goeden replied: Once they bring it on land it's washed.

Commissioner Butt asked an additional question: Does it take a lot of water to wash the salt out of it?

Ms. Goeden responded: Not particularly according to the miners.

Commissioner Butt stated: So it's a one-shot-through wash and then the water ends up back in the Bay, right?

Ms. Goeden replied: Yes, you are correct.

Commissioner Butt had a further question: I was intrigued by the graphs that showed the relationship of the magnitude of the leases to the magnitude of the amount dredged. Mr. Briscoe addressed part of it when he talked about the fact that you don't use a lot of sand during a recession but this one goes way back.

What's the justification for having leases for huge quantities when it looks like the amount actually dredged in this case is like a third of the permit?

Ms. Goeden informed Commissioner Butt: That is an issue that we are working with the miners on. We've requested some information regarding the rationale for the requests.

Part of it is the period of time they're asking for the permit is 10 years. In that 10-year period they are trying to estimate the amount of business that they may have.

Part of the issue is sand that is purchased in the construction industry from Bay-mined sand is on a per order basis. It's not like they go and mine 200,000 and then say, we have 200,000 available, come buy it.

Part of the assumption is that business is going to pick up significantly. But again, that will need to come from the mining companies for the basis for the request.

Commissioner Pemberton added: I believe that the EIR was done for the comprehensive project for all of the permits not just for the State Lands Commission's consideration of the leases.

Commissioner Gioia commented: Later on will you be able to provide what the State Lands criteria for leases which is different than our responsibility here at BCDC?

Commissioner Pemberton responded: I can certainly follow up and provide that information.

Executive Director Goldzband added: And we'll also make sure to get a link out to all the Commissioners for the EIRs executive summaries.

Commissioner Zwissler had a dual-facetted question: Who is challenging the EIR, and on what basis?

Ms. Schneider replied: Baykeeper is challenging the EIR.

Ms. Goeden added: There were several bases and Baykeeper is here and perhaps they can answer that question.

Commissioner McGrath had a comment and a couple of questions: It was interesting that John pointed out the accreted marshes that are outboard of Highway 37. I believe there is something on the order of 200 million cubic yards of the billion that came down that is still resident in the Bay. It's held in place by the navigational jetty at the mouth of the Napa River.

So the material has accreted and in some of the modifications that we've made to the Bay, some of those accretions are relatively stable, although that one is not.

There is an important distinction between the impacts of the mining in the Suisun and the mining at the mouth of the Bay. Sand is transported from the Sierras down and out to the ocean. When it gets near the Gate it's exhausted many of its locations where it was having beneficial impacts.

One of the things that occurs along the path is that it does sustain some of the beaches that have been accreted in areas where we've modified the shoreline, and one of those is Albany Beach, adjacent to the landfill that sticks out.

One of the things that are important that should be teased out is the relative benefits that are paid along the way by the accretion of some of that material that appears to be coming from the Delta past the sand mining area and up to the beach.

My question is about EIRs and our jurisdiction and analysis. We don't want to require anybody to import sand with economic, environmental or greenhouse gas impacts that's not warranted with a clear nexus.

EIRs depend very heavily on what's in the baseline and what the significant thresholds are. I want to see some details about what significant thresholds were selected and how they relate particularly to the interest of our sister agency, the Coastal Commission.

There is a conclusion that the impacts to the shoreline in terms of erosion may be relatively small. I would be interested in the Coastal Commission's viewpoint on that since they're the coastal agency with jurisdiction over that.

I want their concerns on the record.

I also want to know what's in the baseline. If we are talking about a bedload that averages a certain amount and sand mining doesn't affect that, it's taken 10, 15 or 20 percent of the bedload for 30 years and that won't change; the question is whether or not that should be considered part of the baseline.

What I'm concerned about is that a baseline may be fine on something that is ongoing and fully entitled for all times and not subject to review. However, if there are changed circumstances such as rising sea level where the historic impacts begin to have more significance -- that's something I want to have teased out of this.

These have to do with how we look at the information that's in the EIR and whether or not it's sufficient to answer our questions and particularly whether it's sufficient to conclude whether or not it might have adverse impact on some of the Bay beaches and some of the coastal beaches.

Vice Chair Halsted continued: We should probably proceed to hear from the public with a few questions. Each one of the speakers will be limited to three minutes.

Mr. Orville Magoon addressed the Commission: I am a retired citizen living in San Francisco. I worked on coastal issues with the Army Corps of Engineers most of my life.

This is an interesting and complex issue. I commend you for taking this issue on because you'll find as many disagreements as agreements on this.

For a long time when they dredged the ocean bar off of San Francisco for navigation, the sand was dumped in deep water. There is a tremendous amount of sand that is not accounted for.

The ocean bar was dredged and various channels were dredged to the Golden Gate and then the sand was simply dumped into deep water. That sand was lost to the system.

The impact is both on the city of Pacifica and Ocean Beach. Someone in the state system is liable for the erosion of Pacifica. It is a very serious financial issue and you should look at this carefully to be sure that you are on safe footing.

Mr. Ian Wren from Baykeeper spoke: I am here to stress the critical need for BCDC to develop a science-based permit for sand mining in the Bay based largely on recent research, which has conclusively stated that sand mining in the Bay is resulting in massive erosion of the Bay floor and the highest rates of shoreline retreat along the outer coast, particularly at Ocean Beach, which is a public trust resource.

Baykeeper did bring an unsuccessful challenge to the State Lands Commission's EIR for this project which is now on appeal.

CEQA cases are not necessarily the most effective tool to bring about necessary change and improvement of natural resources.

That EIR did fail to adequately look at all the available science that has been produced. You do have the benefit of reviewing that science as well as the 20 odd papers that were produced last year.

John Briscoe read from a hundred year old paper; I am going to read from a nine month old paper here. This is the main conclusion from the provenance study that was published in this issue. The lead author was Patrick Barnard who has presented an award here recently.

Here it says, "The consensus results highlight the regional impact of a sharp reduction in the primary sediment source of the San Francisco Bay coastal system over the last century--in the Sierras--in driving massive erosion of the Bay floor ebb-tidal delta, and the highest regional retreat rates in California along the adjacent outer coast. In addition, this work highlights the need to more

efficiently manage existing in-Bay sediment resources, as active aggregate mining and dredging occurs along well defined sand transport pathways that carry sediment towards the outer coast beaches, at removal rates that exceed the present-day sediment supply rates from all of San Francisco Bay watersheds.”

What this boils down is that most sand along the outer coast near the Golden Gate travels through the Bay, and mining is occurring along the conveyor belt takes it there.

And the mining that does occur along these paths takes place at rates greater than the combined sand loads from all rivers, creeks and other sources entering the Bay.

Given that sediment loading to the Bay is decreasing and sea level rise is expected to increase, we should reconsider where and how much sand is being extracted from the Bay.

Mr. Bill Butler from Jerico Products/Lind Marine addressed the Commission: I am with Lind Marine/Jerico Products, one of the applicants. Of the 2.04 million cubic yards that have been requested, Jerico is 300,000 cubic yards of that annually and our operations are strictly in Suisun Bay.

This is the only source of aggregates for our business.

Commissioner Butt asked about how much water is used to rinse the salt out of the sand. Hanson uses some water in their processing to rinse the salt out, at Jerico we don't use any because it's a matter of letting the saltwater that's in the sand drain out.

When compared to the water that is required to process and make sand at a land-based operation, it doesn't even hold a candle to what that would require.

There is actually a correction taking place as far as volumes requested. Hanson has dropped the request for Suisun sand from 500,000 to 50,000 yards.

We've actually come close to 300,000 cubic yards of sand mined during 2004, 2005 and this is what we would be asking for going forward.

One of the reasons that the differences in volumes is so great is because we're talking about an annual permit limit. You need that flexibility when large projects come along and certainly sand will be mined as a result of demand.

The annual limits are the absolute worst case and we think that the environmental review has been analyzed for the absolute worst case.

Respectfully submitted,

LAWRENCE J. GOLDZBAND  
Executive Director

Approved, with no corrections/as corrected, at the  
San Francisco Bay Conservation and  
Development Commission Meeting  
of September 18, 2014.

R. ZACHARY WASSERMAN, Chair