

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION

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TO: Commissioners and Alternates
FROM: Will Travis, Executive Director (415/352-3653 travis@bcdc.ca.gov)
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SUBJECT: **Staff Briefing on Aggregate Mining in San Francisco Bay**
(For Commission consideration on November 18, 2010)

Summary

San Francisco Bay subtidal habitats are comprised primarily of mud and sand, with a few rock outcroppings. The majority of the Bay bottom is mud; however, sandy sediments predominate in areas of high current. In South San Francisco Bay, there are rich deposits of oyster shell mixed with Bay mud. Sand and oyster shell are extracted for construction and nutritional supplements, respectively; 2.24 million cubic yards (cy) of sand and 80,000 cy of shell mining are authorized annually from San Francisco Bay. Recent research points to a decline in sand resources in the Central Bay and the outer coast. A recent draft Environmental Impact Report by the State Lands Commission provides insight into potential impacts of Bay mining activities. These mining permits are due for renewal by the Commission in 2011.

Staff Briefing

Background. San Francisco Bay subtidal habitat is comprised primarily of mud and sand, with a few rock outcroppings in the different embayments. The majority of the Bay bottom is mud, however in areas of high flow, tidal and current action, sandy sediments predominate. In South San Francisco Bay, there are rich deposits of oyster shell mixed with Bay mud. Both sand and oyster shell are mineral resources that are extracted by to the mining industry. Sand is used in construction for cement production and backfilling of trenches. It has been mined from the Bay since at least the 1930s. Oyster shell is comprised mainly of calcium and, until the 1960s, was used primarily in production of Portland cement. Today oyster shell is used by the poultry industry, in agriculture as a soil amendment and as nutritional supplements for people.

Three companies in the Bay Area mine sand from the Bay: Lehigh Hanson, Jerico Products Inc., and Suisun Associates (a joint venture between Lehigh Hanson and Jerico Products Inc.). The Commission has authorized mining of up to 2.24 million cubic yards (cy) of sand annually from five State Lands Commission lease areas and one privately owned lease area (Middle



Ground Shoal). Mining activity occurs in three areas: the Central Bay west of Angel Island, at Middle Ground Shoal just east of Port Chicago, and in the eastern portion of Suisun Channel (both in and outside of the Commission's jurisdiction). The total Central Bay lease area is approximately 2,750 acres, while the Suisun Bay and Channel lease areas together are approximately 1,305 acres. The majority of Bay sand mining takes place in the Central Bay west of Angel Island, and the remainder in Suisun Channel and Middle Ground Shoal. While mining is authorized over the entire lease area, the actual mining activity generally takes place in a somewhat smaller area due to the specific grade of sand sought by the industry, shallowness of some portions of the lease areas and regulatory constraints. The sand is hydraulically loaded into barges, where it is washed and the remaining fine sediment, larger rock and excess water are discharged back into the Bay.

Morris Tug and Barge is the only company that mines oyster shell in the Bay. The State Lands Commission lease area is generally located just north of the western side of the San Mateo Bridge and is approximately 1,560 acres. Morris Tug and Barge is authorized to mine up to 80,000 cy of shell annually. Similar to the sand mining activities, the oyster shell mining activity likely impacts a smaller portion of the lease area. In order to extract the shell from the mud-shell mix, the mix is pumped aboard the mining barge and washed. The mud and excess water are then discharged into the Bay over the mining site. It should be noted that oyster shell mining is from a historic shell deposit that does not support live oysters.

Subtidal areas serve as important aquatic habitat that support many fish and invertebrate species, including endangered and threatened fish species, such as Delta smelt, Chinook salmon, and steelhead, and many recreational and commercial species, like halibut, rockfish, lingcod, Dungeness crab, and sturgeon. Spawning, rearing, foraging, and migration of these and other species occur within the areas that are mined. Recent multibeam surveys have revealed large sand waves and underwater features both inside the Bay and outside of the Golden Gate. Because sand is deposited in fast moving river bottoms or deep basins, such as Suisun and Central Bay, nutrients and detritus are often in low supply, creating a sparser habitat with organisms specifically adapted to such systems, not unlike deserts, sand dunes and sandy beaches.

A comparison between a 1997 and 2008 multibeam survey has allowed researchers from the U.S. Geological Survey (USGS) to analyze changes in the Central Bay bedforms, transport and volumes. During the 11-year period between the surveys, 14.1 million cubic meters of sand and fine grain sediment were lost from the Central Bay. Of that volume, the non-lease areas lost 4.9 million cubic meters, and the lease areas lost 9.2 million cubic meters of sand and fine-grain sediment. Another report published by Patrick Barnard, USGS, and Rikk Kvitek, California State University, Monterey Bay, states that the Central Bay sand resources are connected to the outer coast littoral cell, and discusses potential impacts to Ocean Beach. Additional work is being completed by USGS to determine the source of the sand in San Francisco Bay.

In July of this year, the State Lands Commission completed a draft Environmental Impact Report (EIR) on the sand mining activities in Central San Francisco Bay and Suisun Bay. The draft EIR found several potential impacts from sand mining, including: increased turbidity, smothering or burial of benthic organisms, entrainment of benthic and pelagic native and listed species, loss of mineral resources, and the potential for release of hazardous substances (oil, gasoline, etc.), among others. Most of the impacts were determined not to be significant; a few of the impacts were significant, but could be reduced to non-significance with mitigation. One impact, entrainment of the State-listed, threatened longfin smelt, was considered a significant impact even after mitigation. The Commission staff provided comments, particularly in light of

the new information from the USGS regarding the loss of sediment supply to the Bay, the decrease in Bay bathymetry (Central Bay) due to mining activities, and the potential cumulative impacts to the outer coast. The final EIR should be issued in early 2011.

In 2011, Lehigh Hanson, Jerico Products, Inc., and Suisun Associates' will likely request renewal of their existing permits, and potentially an increase in mining volumes for the Central Bay and Suisun Channel lease area with a decrease in volume at the Middle Ground Shoals lease. At that time, the Commission should have before it a completed EIR and a complete application with additional information on continued mining activities in San Francisco Bay. The oyster shell mining permit will also require renewal in December of 2011; however, the level of mining is not anticipated to change.