Appendix I

COMMENTS ON THE JULY 2010 DRAFT EIR

THIS PAGE INTENTIONALLY LEFT BLANK

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH, STATE CLEARINGHOUSE

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold Schwarzenegger
Governor

Cathleen Cox
Acting Director

September 28, 2010

Christopher Huitt
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825

Subject: San Francisco Bay and Delta San Mining
SCH#: 2007072036

Dear Christopher Huitt:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. The review period closed on September 27, 2010, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan
Director, State Clearinghouse

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH, STATE CLEARINGHOUSE

Document Details Report
State Clearinghouse Data Base

SCH#	2007072036
Project Title	San Francisco Bay and Delta San Mining
Lead Agency	California State Lands Commission

Type	EIR Draft EIR
Description	NOTE: Extended Review Per Lead to end on September 27, 2010. Hanson Marine Operations and Suisun Associates have applied for renewed leases and related permits that would allow them to continue mining sand for 10 years following the end of the regular 10-year term that ends in June, 2008. Mining occurs in Central San Francisco Bay, Middle Ground Shoal and within the navigation channels of Suisun Bay. The purpose of this sand mining is to obtain marine aggregate, which is primarily used for construction purposes within the greater San Francisco Bay Area.

Lead Agency Contact

Name	Christopher Huitt		
Agency	California State Lands Commission		
Phone	(916) 574-1938	*Fax*	
email			
Address	100 Howe Avenue, Suite 100-South		
City	Sacramento	*State* CA	*Zip* 95825

Project Location

County	San Francisco, Marin, Contra Costa, Solano			
City	San Francisco, Pittsburg, Oakland			
Region				
Lat / Long				
Cross Streets				
Parcel No.				
Township	*Range*	*Section*	*Base*	

Proximity to:

Highways	
Airports	
Railways	
Waterways	Central San Francisco Bay, Suisun Bay, and the Middle Ground Shoals
Schools	
Land Use	Sand Mining

Project Issues	Air Quality; Archaeologic-Historic; Biological Resources; Economics/Jobs; Geologic/Seismic; Minerals; Noise; Public Services; Population/Housing Balance; Recreation/Parks; Toxic/Hazardous; Traffic/Circulation; Water Quality; Wildlife; Growth Inducing; Landuse; Cumulative Effects; Other Issues
Reviewing Agencies	Resources Agency; California Coastal Commission; Department of Conservation; Department of Fish and Game, Region 3; Office of Historic Preservation; Department of Parks and Recreation; San Francisco Bay Conservation and Development Commission; Department of Water Resources; Resources, Recycling and Recovery; California Highway Patrol; Caltrans, District 4; Air Resources Board, Major Industrial Projects; Regional Water Quality Control Board, Region 2; Department of Toxic Substances Control; Native American Heritage Commission

Date Received 07/28/2010 *Start of Review* 07/28/2010 *End of Review* 09/27/2010

Note: Blanks in data fields result from insufficient information provided by lead agency.

COMMENT SET 1: REGIONAL WATER QUALITY CONTROL BOARD, CENTRAL VALLEY REGION

California Regional Water Quality Control Board
Central Valley Region
Katherine Hart, Chair

Linda S. Adams
Secretary for Environmental Protection

11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • FAX (916) 464-4645
http://www.waterboards.ca.gov/centralvalley

Arnold Schwarzenegger
Governor

18 August 2010

Christopher Huitt
Project Manager
California State Lands Commission
100 Howe Avenue, Suite 100 South
SACRAMENTO, CA
95825

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD COMMENTS ON THE SAN FRANCISCO BAY AND DELTA SAND MINING ENVIRONMENTAL IMPACT REPORT.

Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff has reviewed the San Francisco Bay and Delta Environmental Impact Report (EIR), and offer the following comments:

The EIR is for a continuation of a land lease from the California State Land Commission. All areas of the lease are outside of the Central Valley Water Board jurisdiction, except for *perhaps* a small easternmost section of Parcel PRC 7881 (East). A section of this parcel is located near the boundary line of the Central Valley Region running between Winter Island and Sherman Island. It is not possible to determine the exact coordinates of this parcel from the information provided. However, data provided in the EIR indicate that this section of the Parcel has no record of sand mining by the project proponents. 1-1

The Central Valley Water Board requests clarification of exact boundaries of parcel PRC7881 (East). If a section of the parcel is located in the Central Valley Water Board jurisdiction, and if sand mining occurs within that section, a dredging waste discharge permit, or waiver thereof, will be required from this Board.

VICTOR J IZZO
Senior Engineering Geologist
Title 27 and Mining Unit

From: orville magoon [omagoon@sbcglobal.net]
Sent: Sunday, September 12, 2010 4:46 PM
To: Christopher Huitt
Cc: Christopher Huitt; brendag@bcdc.ca.gov
Subject: San francisco Bay Sand Mining

Categories: Sand Mining

Christopher Huitt, Project Manager
California State Lands Commission
huittc@slc.ca.gov

Dear Mr. Huitt:

Comments on SCH No. 2007072036, CSLC EIR No. 742 are:

1. Proposed sand mining from Central San Francisco Bay Lease Areas could have a major impact on:
A. Coastal processes and sediment supply to the San Francisco Ocean Bar area, B. Accelerating the current erosion of the City of San Francisco Ocean Beach area, and
C. Beach areas of the City of Pacifica. 2-1

2. In order to quantify the potential impacts described in item 1. above, the model limits (i.e.. see figures Appendix 4-25 to 4-29) should be extended to include the entire San Francisco Bar area, the San Francisco Ocean Beach area, and the City of Pacifica beaches. 2-2

3. A table should be generated showing the annual quantities of sand mined
from the Central San Francisco Bay Area from approximately 1915 to date, and the total quantity of sand mined from the Central San Francisco Bay Area. 2-3

3. Comments on this document should be obtained from the California Coastal Commission, and also the City of San Francisco, if those entities have not already commented on this document. 2-4

Sincerely,

Orville T. Magoon
600 Chestnut Street, Unit 410
San Francisco, California 94133-3279
415-931-1842
omagoon@sbcglobal.net

ANTHROPOGENIC REDUCTION OF THE NATURAL SUPPLY OF SEDIMENTS TO THE COASTS OF WASHINGTON, OREGON, AND CALIFORNIA

Orville T. Magoon[1] and Donald D. Treadwell[2]

Abstract

The general increase of human activities, including the exploitation of the hydraulic and sediment resources of rivers, has caused extensive coastal erosion throughout the world, especially during the last 150 years or so. The true costs and impacts of this erosion have not been reflected in the price of providing commodities such as sand and gravel. These impacts and their estimated costs are presented using information from the states of Washington, Oregon, and California on the Pacific Coast of the United States of America.

Key words: coastal erosion, sediment transport, sand and gravel mining, dredging, unpriced externalities

Introduction

In addition to the ongoing natural attack on coastlines by waves and currents, anthropogenic activities have produced serious impacts on coasts, resulting in both short-term and long-term erosion. This is almost invariably caused by the reduction of sediment supplies to coastlines (Douglass, Bobe, and Chen, 2003).

2-5 cont.

In early published literature, Gilbert (1917) reported on the deleterious effects of hydraulic gold mining on the supply of sediment to San Francisco Bay and the nearby beaches. In discussing sediment supply to California beaches, O'Brien (1936) stated, "Instead of being static, a beach is merely part of a stream of material in process of being transported from the land surfaces to the ocean depths. Measures which interfere with this movement are almost certain to upset the equilibrium and the only question is how serious the damage will be".

The problems associated with interfering with the natural supply of sediments to the coast are clearly evidenced worldwide. For example, in discussing the causes, effects, and solutions associated with coastal erosion near the mouth of the Tenryu River on the coast of Japan, Uda (2007) stated, "New measures, based on comprehensive sediment management, must be taken instead of local optimization using hard structures at a site".

Rivers and streams are the main sources of sediment for the beaches of the Pacific Coast. Along the northern portion of the coast, in Washington, Oregon and northern California, the rivers and streams tend to be large watershed systems, such as the Columbia, the Klamath, the Eel, the Sacramento, and the San Joaquin. These systems provide many millions of cubic meters of sediments to the coast. In Southern California, the watersheds are smaller in area but are still the key contributors of new beach material.

The long-term sustainability of Pacific Coast beaches depends on continuing deliveries of sand and gravel from coastal rivers and streams. The anthropogenic activities that have altered fluvial sediment regimes and contributed to erosion of the coasts of Washington, Oregon, and California include:

- sand and gravel mining operations that remove sediments,
- dams that intercept and store sediments,
- dredging operations that remove sediments, and
- debris basins that intercept and store sediments.

[1]Consulting Engineer, San Francisco, California, USA; omagoon@sbcglobal.net
[2]Consulting Engineer, Sausalito, California, USA; ddtreadwell@comcast.net

Sand and Gravel Mining

Many beaches are impacted by reduction of sediment delivery to the coastal zone caused by sand and gravel mining within coastal watersheds. Streams and rivers are the transportation systems that deliver sediments to the coast. The streams and rivers move sediment from areas of weathering and erosion in the headwaters regions through middle reaches where little erosion or deposition occurs to regions of deposition in the lower reaches of rivers and then ultimately to coastal sites.

The time scale of sediment movement down these river systems is measured in terms of decades to centuries (Kondolf, Smeltzer, and Kimball, 2001). Movement of sediments is not constant, but rather is controlled by episodic peak flows during extreme rainfall events that often trigger floods. The reduction of peak flows by dams further reduces the ability of the river systems to move sediment.

The concept of "safe yield" of aggregate mining locations encompasses the argument that as long as the volume of sand and gravel that is mined annually from river channels is less than the annual replenishment of sediment from natural erosion then the effect on river channels is negligible. This argument may or may not hold true for local reaches of rivers close to the extraction sites. However, the volume of sediment in the fluvial system is reduced and thus less volume is ultimately delivered to the coast.

Based on available local information, sand and gravel mining in northern California from the Russian River to the Oregon border is approximately 6.1 million cubic meters per year. It has been reported that sand and gravel mining in southern California (Figure 1) produces an annual average 30.6 million cubic meters of material.

2-5 cont.

It is estimated that 50 percent of this material may be from or associated with coastal watercourses in the first flood plain. Thus, the annual sand and gravel extraction in coastal watersheds in southern California is perhaps about 15.3 million cubic meters and in northern California is perhaps about 3.1 million cubic meters.

Although coastal sand mining was occurring along the coasts of California and Oregon as early as the late 1800s, coastal sand mining along the Pacific Coast reportedly ended by 1991. However, some questionable coastal sand mining operations are still active on the shore of Monterey Bay (Figure 2).

Komar (1998) reports that some 84,100 cubic meters of sand were removed from the beach near the mouth of the Siletz River in Oregon between 1965 and 1971. Hotten (1988) reports that between 7,700 and 11,500 cubic meters of sand were removed from the Mission Bay littoral (near San Diego) in conjunction with removal of kelp from beaches.

The major northern California coastal sand mining operations have been along the shore of Monterey Bay and on the floor of San Francisco Bay near the Golden Gate. Based on the estimates of Magoon, Hagen, and Sloan (1972) and Kendall, Vick, and Forsman (1991), about 6.3 million cubic meters of coastal sand had been mined in the vicinity of Monterey Bay before coastal sand mining seaward of the shore was reportedly terminated in 1991.

Recent multi-beam survey work by the United States Geological Survey (Barnard, 2005) outside the entrance to San Francisco Bay shows that more than 90 million cubic meters of sediment has been lost from the mouth of the bay since the 1950s, about the same amount that has been removed by sand mining within the bay during the same period. Their sand wave maps show a clear net seaward transport of sediment through the Golden Gate.

For the present, the total sediment loss to the coastlines attributable to sand and gravel mining in California, Oregon, and Washington is estimated to be about 1.3 billion cubic meters since 1950.

Figure 1. Coastal Watershed Sand and Gravel Mining at Irwindale, California, USA

Figure 2. Mining Sand from the Shore of Monterey Bay, California, USA.

2-5 cont.

Dams

A substantial reduction of the supply of sediments to the California coast is due to the construction and operation of dams. Willis and Griggs (2003) have noted that "The long-term sustainability of California's beaches depends on periodic deliveries of sand and gravel from coastal rivers and streams. To assess the long-term health of California's beaches, this study characterized the current state of fluvial sediments delivery and quantified on a littoral cell basis, the cumulative impacts of dams on decreasing annual discharge. Presently, more than 500 dams impound more than 42,000 square kilometers or 38 percent of California's coastal watershed area. Flow modeling suggests that by diminishing flood hydrographs, these dams have reduced the average annual sand and gravel flux to 20 major littoral cells by 2.8 million cubic meters per year or 25 percent." An estimated cumulative loss in California since 1963 of 120 million cubic meters has been used herein.

The Columbia River is the dominant watershed for the coastlines of Washington and Oregon. Research estimates suggest a range of 1.4 to 4.4 million cubic meters of sediment transport per year. Kaminsky (2004) reports that "Flow regulation has been estimated to reduce the sand carrying capacity of the river by two-thirds, and the present estimated rate of supply of sand from the lower river to the estuary is 1.4 million cubic meters per year (or less as estimated by the Corps of Engineers). Komar (2004) notes that "other than the effects of the dams on the Columbia River, this is not a particular issue on the coasts of Oregon and Washington."

There are more than 219 dams in the Columbia River watershed, including the Grand Coulee (Figure 3). The Washington Department of Ecology (2005) estimates that "Dams on the Columbia River have reduced the sand supply to coastal beaches by two thirds". As a conservative estimate, this study assumes that the reduction has been about 2 million cubic meters annually, due to dams and regulated dredging for navigation. The total sediment loss to the coastlines attributable to dams in the coastal watersheds of California, Oregon, and Washington is estimated at about 210 million cubic meters since 1950.

Figure 3. Grand Coulee Dam on the Columbia River, USA.

2-5 cont.

Dredging

The modern practices of navigation channel maintenance (see Figures 4 and 5) generally include the placement of suitable beach material on the nearby shores or in sufficiently shallow water that keeps the dredged material in the littoral system. The two major exceptions to this practice are the navigation channels at the entrances of Humboldt Bay and the Columbia River (the latter was considered earlier herein). The fairly recent placements of sediments dredged from San Francisco Bay on the bar offshore the Golden Gate have not yet been fully evaluated as to whether such placements have had a beneficial impact on Ocean Beach.

Since 1990, material removed from the entrance and navigation channel of Humboldt Bay in northern California has been deposited in deep water, thereby removing the material from the littoral system. By 1998, approximately 10.7 million cubic meters of material had been deposited in water depths of 49 to 55 meters and lost to the coastal system (Nicholls et al, 1998). The cumulative loss through 2006 is an estimated 20.8 million cubic meters, while the ongoing annual rate of loss is 1.3 million cubic meters. The total sediment loss attributable to dredging is estimated at about 110 million cubic meters since 1950.

Figure 4. Maintenance Dredging in San Francisco Bay, California, USA.

2-5
cont.

Figure 5. Corps of Engineers Hopper Dredge ESSAYONS on the Columbia River, USA.

Debris Basins

Debris basins (Figure 5) are typically used in southern California to protect urban development from the damaging effects of periodic intense rainfall. As stated in Ellis et al (2001), "Debris basins are designed to trap sediments being transported by debris flows…. As of 2000, 162 debris basins trapped a total of more than 13,761,900 cubic meters of debris… Assuming a 50 percent sand content for these deposits, the basins have trapped about 6,881,000 cubic meters of sand. It is assumed that little of this sand is returned to the drainage system, and therefore this impoundment represents a loss of sand from the coastal budget." The sediment loss (adjusted to 2009) attributable to debris basins is estimated to be 8 million cubic meters.

Figure 5. Debris Basin in Riverside, California, USA.

2-5 cont.

Seawalls and Revetments

Although the loss of sediments to the coast due to construction of seawalls, revetments, or other coastal armoring (Figures 6 and 7) is locally important (Komar, 2004; Hampton and Griggs, 2004), it has a relatively minor impact on the Pacific Coast of the coterminous United States. The California Department of Boating and Waterways (2002) estimated that for the Santa Barbara and Oceanside littoral cells in Southern California, coastal armoring reduced the supply of sediments by 2,000 cubic meters and 9,500 cubic meters per year, respectively, resulting from 68.6 kilometers of armoring.

Averaging and projecting the sediment reduction from these reaches of coast to the entire state in order to estimate the effect of armoring on approximately 260 kilometers of armoring in California (seawalls and breakwaters) would result in about 53,000 cubic meters per year lost due to armoring. For the present purposes, coastal sediment loss due to armoring in California is estimated to be 38,230 cubic meters per year; for Oregon, the estimate is 2,290 cubic meters per year (Komar 2004). The total sediment loss to the coastlines attributable to sea walls and revetments in California, Oregon, and Washington is thus estimated at about 1.5 million cubic meters since 1950.

Figure 6. O'Shaughnessy Seawall at the Great Highway, San Francisco, California, USA.

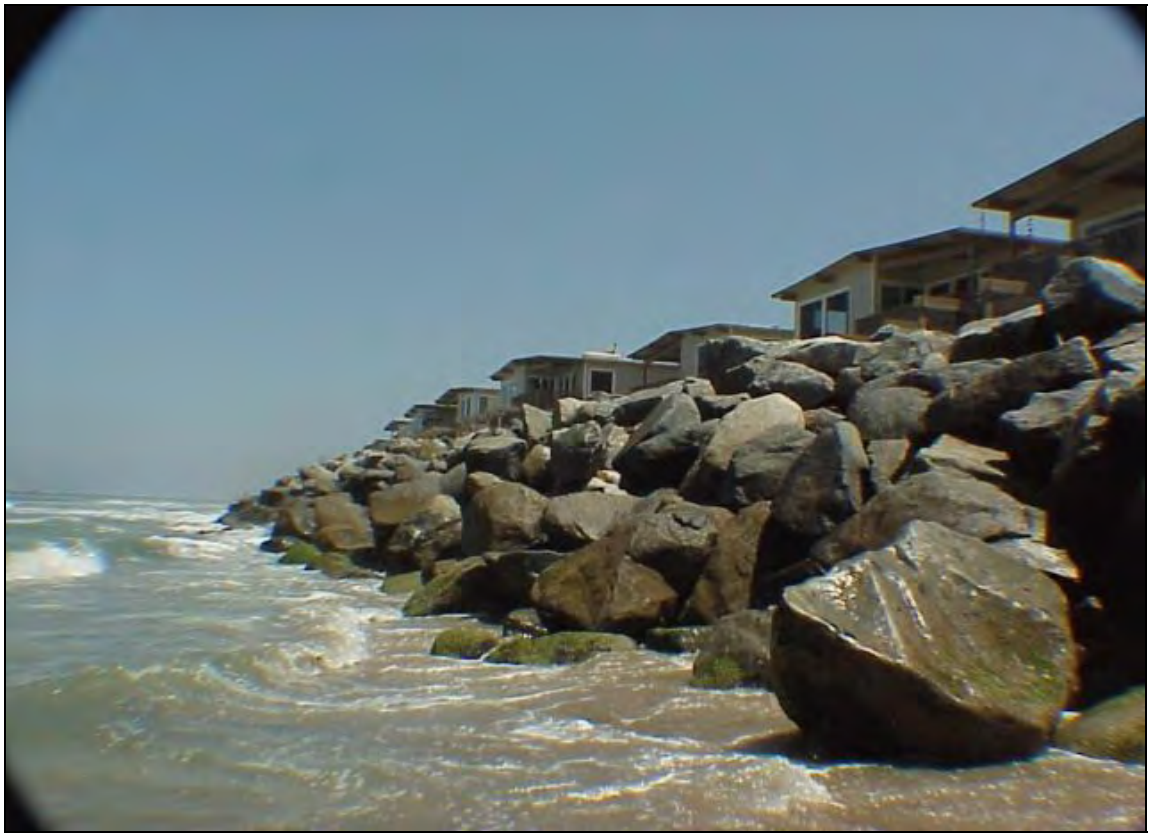

Figure 7. Armor Stone Revetment at San Clemente, California, USA.

2-5
cont.

Unintended Consequences and Unpriced Externalities

To reiterate, O'Brien (1936) stated that, "Instead of being static, a beach is merely part of a stream of material in process of being transported from the land surfaces to the ocean depths. Measures which interfere with this movement are almost certain to upset the equilibrium and the only question is how serious the damage will be."

Sediment continues to be removed to clear channels for commercial shipping, sediment continues to be contained behind dams that provide water and power and flood control, and sediment continues to be mined as input to construction and to various manufactured materials. While each of these activities was and is undertaken at some expense, the cost of the activity traditionally does not include the cost to the coastline due to removal of the sediment.

The controlling concept in understanding the economics of these activities focuses on unpriced externalities (Lent, Magoon, and Richmond, 2005). The failure of the market to include the cost of interference in the natural supply of sediment to the shoreline effectively results in a subsidy to the action, as the activity is being undertaken at less than the real cost. The cost is external to the decision to undertake the activity, resulting in the potential over-consumption of sediment, thus further compounding the problem.

A simple approach (Magoon et al, 2004) may be used to estimate the replacement value of the lost sediment. In Table 1, the loss of sediment from debris basins, dams and flow regulation, sand and gravel mining, seawalls and other armoring, and harbor dredging are valued based on a present (and inexact) estimate of US $20 per cubic meter. 2-5 cont.

Table 1. Estimated replacement cost of sediments lost to the coastlines of California, Oregon, and Washington since 1950.

FACTOR	Estimated Loss (cu m)	Estimated Cost (US$)	Percent
Sand and Gravel Mining	1,300,000,000	$ 26,000,000,000	79.7%
Dams	210,000,000	$ 4,200,000,000	12.9%
Dredging	110,000,000	$ 2,200,000,000	6.8%
Debris Basins	8,000,000	$ 160,000,000	0.5%
Sea Walls and Revetments	1,500,000	$ 30,000,000	0.1%
TOTALS	**1,629,500,000**	**$ 32,590,000,000**	**100.0%**

As shown in Table 1, the estimated total sediment loss to the coast in these five categories since 1950 is more than 1.6 billion cubic meters. Sand and gravel mining is the largest factor by far, accounting for nearly 80 percent of the estimated loss.

The estimated replacement value of this sediment using estimated current (2009) prices is almost US $32.6 billion. The ongoing annual loss of sediment is estimated to be about 30 million cubic meters, presently valued at about US $600 million.

In reality, if there were to be sizeable efforts initiated to mitigate the cumulative or annual sediment losses, the actual cost per cubic meter would be much higher as the tremendous demand for sediment would drive up the cost significantly. Two other factors relevant to economic considerations are the repair and replacement costs for structures damaged and benefits lost and the value of what minor beach nourishment has taken place.

Very little information is available for repair costs, as only a very limited portion of the shoreline has actually undergone repair. Separate reports (e.g., Heinz Center, 2000) estimate as much as US $3.1 billion in lost structures, damaged infrastructure, and lost recreation benefits in the study region.

In addition, very little work has been done to replenish the sediments lost to the coastlines. The U.S. Army Corps of Engineers has undertaken five nourishment projects beginning in 1959 'putting back' about 56 million cubic yards along the California coast. Note that most of the sand that was 'put back' utilized near shore dredged material which was simply replacing what would otherwise have been counted as a loss to the system. The reported costs for these nourishment projects have totaled US $258 million (U. S. Army Corps of Engineers, 2003), a small fraction of the estimated damages.

Conclusions

The information presented herein indicates that 1.6 billion cubic meters or more of sediment has been lost to the coastlines of Washington, Oregon, and California since 1950. The replacement value of these lost sediments is conservatively estimated to be at least US $32.6 billion. About 80 percent of the loss is attributable to sand and gravel mining in coastal watersheds and from the beaches.

Further, it is believed that most of these losses continue unabated, at a rate of about 30 million cubic meters per year. The annual replacement value of these sediments is thus believed to be at least US $600 million.

These estimates, even with limitations, provide a useful understanding of the economic effects of sediment loss along the coastlines. Although the focus of this work was on a specific region of the United States, the anthropogenic factors discussed herein are most surely among those impacting coastlines around the world. 2-5 cont.

Acknowledgements

The authors acknowledge the assistance and support of many colleagues in this effort, including Linda Lent, Jeff Williams, Jim Richmond, Lesley Ewing, Tony Pratt, Scott Douglass, Billy Edge, Katherine Stone, Ron Noble, Patrick Barnard, Gary Griggs, Tom Kendall, Cope Willis, Paul Komar, Monte Hampton, and Bob Wiegel. The support and enthusiasm of friends and family is also very much appreciated.

References

Barnard, P. (2005), Modern Processes at the Mouth of San Francisco Bay, United States Geological Survey draft notes prepared for field trip sponsored by the California Shore and Beach Association, 9 October 2005, 22 pages.

California Department of Boating and Waterways and State Coastal Conservancy (2002), *California Beach Restoration Study*, Sacramento, California.

Douglass, S.L., Bobe, A., and Chen, Q.J., (2003), The Amount of Sand Removed from America's Beaches by Engineering Works, *Proceedings, International Conference on Coastal Sediments 2003*, ASCE, Clearwater Beach, Florida.

Ellis, J.T., Baas, A.C.W, Barron, K.M., Hansen, D.J., and Sherman, D.J. (2001), Sediment Impoundment by Coastal Debris Basins in California, *Proceedings, 2001 Annual Conference*, California Shore and Beach Preservation Association, Monterey, California.

Gilbert, G. K. (1917), Hydraulic Mining Debris in the Sierra Nevada, *Professional Paper 105*, United States Geological Survey, Washington, D.C.

Hampton, M. A. and Griggs, G. B. (2004), Formation, Evolution, and Stability of Coastal Cliffs --- Status and Trends, *Professional Paper 1693*, United States Geological Survey, Washington, D. C., 123 pages.

Heinz Center (2000), *The Hidden Costs of Coastal Hazards: Implications for Risk Assessment and Mitigation*, Island Press, Covelo, California.

Hotten, R.D. (1988), Sand Mining on Mission Beach, San Diego, California, *Shore and Beach, Journal of the American Shore and Beach Preservation Association*, Volume 56, Number 2, April 1988, pages 18-21.

Kaminsky, G. M. (2004), Personal communication to Orville Magoon.

Kendall, T.R., Vick, J.C., and Forsman, L.M. (1991), Sand as a Resource: Managing and Mining the Northern California Coast, *in* Domurat, G.W., and Wakeman, T.H., eds., *The California Coastal Zone Experience*, ASCE, New York, New York, pages 278-297.

Komar, P.D. (1998), *The Pacific Northwest Coast: Living with the Shores of Oregon and Washington*, Duke University Press, Durham, North Carolina, 196 pages.

Komar, P.D. (2004), Personal communication to Orville Magoon.

Kondolf, G.M., Smeltzer, M., and Kimball, L. (2001), *Fresh Water Gravel Mining and Dredging Issues*, prepared by the Center for Environmental Design Research, University of California, Berkeley, prepared for Washington Department of Fish and Wildlife, Washington Department of Ecology, and Washington Department of Transportation, 122 pages.

Lent, L. K., Magoon, O. T., and Richmond, J. A. (2005), Market Incentives that Starve Our Beaches: Gainers and Losers, *Proceedings, Solutions to Coastal Disasters 2005*, Charleston, South Carolina, pages 801-809.

Magoon, O. T., Haugen, J. C., and Sloan, R. L. (1972), Coastal Sand Mining in Northern California, USA, *Proceedings, 13th International Conference on Coastal Engineering*, ASCE, Vancouver, Canada, pages 1571-1597.

Magoon, O. T., Williams, S. J., Lent, L. K., Richmond, J. A., Treadwell, D. D., Douglass, S. L., Edge, B. L., Ewing, L. C., and Pratt, A. P. (2004), Economic Impacts of Anthropogenic Activities on Coastlines of the United States, *Proceedings, ICCE 2004, 29th International Conference on Coastal Engineering*, ASCE, Lisbon, Portugal, pages 3022-3035.

Nicholls, R., Larson, M., Capobianco, M., and Birkemeier, W. A. (1998), Depth of Closure: Improving Understanding and Prediction, *Proceedings, 26th International Conference on Coastal Engineering*, ASCE, Copenhagen, Denmark, pages 2888-2901.

O'Brien, M. P. (1936), The Coast of California as a Beach Erosion Laboratory, *Shore and Beach, Journal of the American Shore and Beach Preservation Association*, Volume IV, Number 3, July 1936, pages 74-79.

Uda, T. (2007), Beach Erosion and Dune Deformation Triggered by Dam Construction and Riverbed Mining, *Proceedings of Coastal Zone 2007*, Portland. Oregon.

U.S. Army Corps of Engineers (2003), The Corps of Engineers and Shore Protection: History, Projects, Costs, *Report 03-NSMS-1*, Institute for Water Resources, Alexandria, Virginia, page 66.

Washington Department of Ecology (2005), *Southwest Washington Coastal Erosion Study*, performed in cooperation with the United States Geological Survey, *http://www.ecy.wa.gov/programs/sea/coast/erosion/study.html*

Willis, C. M. and Griggs, G. B. (2003), Reductions in Fluvial Sediment Discharge by Coastal Dams in California and Implications for Beach Sustainability, *Journal of Geology*, Volume 111, pages 167-182.

2-5 cont.

COMMENT SET 3: STATE MINING AND GEOLOGY BOARD DEPARTMENT OF CONSERVATION

STATE OF CALIFORNIA, NATURAL RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, GOVERNOR

STATE MINING AND GEOLOGY BOARD

DEPARTMENT OF CONSERVATION

801 K Street • Suite 2015 • Sacramento, California 95814

PHONE: 916 / 322-1082 • FAX: 916 / 445-0738 • TDD: 916 / 324-2555 • INTERNET: conservation.ca.gov/smgb

ERIN D. GARNER, CHAIR
CHARLIE WYATT, VICE CHAIR

BRIAN BACA
JOHN LANE
BENJAMIN LICARI

KATHY LUND
BARBARA LUNDBURG
ROBERT TEPEL

September 13, 2010

Christopher Huitt, Project Manager
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, California 95825

Re: San Francisco Bay and Delta Sand Mining Draft Environmental Impact Report, SCH No. 2007072036; CSLC EIR No. 742

Dear Mr. Huitt:

Staff of the State Mining and Geology Board (SMGB) has completed review of the Draft Environmental Impact Report (DEIR) for the above referenced project. It is our understanding that the California State Lands Commission (CSLC) is considering granting of new leases for ongoing marine sand mining operations for an additional 10-year period. We appreciate the opportunity to comment on the subject DEIR, as the SMGB will rely on the final EIR in order to approve amended reclamation plans for the affected marine sand mining operations per the requirements of the Surface Mining and Reclamation Act of 1975 (SMARA, Public Resources Code (PRC) Section 2710 et seq.).

At this time the SMGB has no specific comments regarding the DEIRs analysis of environmental impacts and mitigations. However, we offer the following comments for your consideration in preparing the final EIR;

- Discussion under the final bullet on Page 1-15 should be revised to clarify that the SMGB, which is a part of the Department of Conservation (DOC), is a responsible agency for the project. The DOC's Office of Mine Reclamation (OMR) is also responsible for reviewing the reclamation plans for the subject sand mining sites, but it is the SMGB that grants approval for each of these reclamation plans. 3-1

- Discussion of the makeup of the DOC beginning on Page 4.2-5 should be revised to more accurately reflect the current program divisions. Note that the Division of Mines and Geology has been renamed to the California Geological Survey (CGS), and that the Division of Recycling is no longer part of the DOC. 3-2

- The sentence on lines 12 to 14 on Page 4.2-6 is erroneous and should be revised to state the following: "*The lead agency under SMARA is the jurisdiction which has the principal responsibility for approving a reclamation plan applicable to the surface mining operation – in this case the SMGB.*" In addition, the final sentence of this paragraph (on lines 16 through 19) may be deleted, as the SMGB is not required to adopt a surface mining ordinance in this case. 3-3

- The paragraph on lines 9 through 12 on Page 4.2-7 should be corrected so that the second sentence becomes the heading for the following paragraph. 3-4

-o0o-

Thank you for the opportunity to comment on the DEIR for the San Francisco Bay and Delta Sand Mining project. We look forward to receiving the final EIR. If you have questions regarding the above comments or the SMGBs role in this matter, please do not hesitate to contact Will Arcand or myself at the SMGB office.

Sincerely,

Stephen M. Testa.
Executive Officer

cc: Dennis O'Bryant, Assistant Director, Office of Mine Reclamation

SAN FRANCISCO BAYKEEPER

Christopher Huitt, Project Manager
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825
sent via electronic mail: huittc@slc.ca.gov

August 13, 2010

Re: San Francisco Bay and Delta Sand Mining DEIR, SCH # 2007072036

Dear Mr. Huitt:

Please accept these comments, submitted on behalf of San Francisco Baykeeper, in opposition to the proposed San Francisco Bay and Delta Sand Mining ("Project") Draft Environmental Impact Report ("DEIR"). Baykeeper is particularly concerned that significant adverse impacts to biological resources, water quality and mineral resources, which have been assessed in a manner inconsistent with significance criteria stated within the Project DEIR. It is our sincere hope that the State Lands Commission and all other responsible agencies seize this environmental review process as an opportunity to ensure the best possible protections of public waters and wildlife resources during the ten year duration of this proposed Project. We look forward to your further review and analysis based on these comments. 4-1

I. The assessment of impacts to biological resources is inconsistent with stated significance criteria.

Conclusions contained in §4.1.4 of the DEIR fail to adhere to stated thresholds of significance, which claim that a biological resource impact is considered significant if (4.1-40):

- There is a potential for any part of the population of a special status species (such as State or federally endangered species) to be directly affected or indirectly harmed through the disturbance or loss of its habitat;
- A net loss occurs in the functional habitat value of a sensitive biological habitat, or any area of special biological significance;
- There is a potential for the movement or migration of fish to be impeded; or,
- A substantial loss occurs in the population or habitat of any native fish or vegetation or in there is an overall loss of biological diversity, with substantial defined as any change that could be detected over natural variability.

4-2

The DEIR states that "noise levels generated by sand mining at the location of the hydraulic dredge are within the sound range that can result in the behavioral responses by fish and marine

CALIFORNIA COASTKEEPER ALLIANCE
WATERKEEPER ALLIANCE FOUNDING MEMBER
Pollution hotline: 1 800 KEEP BAY
www.baykeeper.org
785 Market Street, Suite 850
San Francisco, CA 94103
Tel (415) 856-0444
Fax (415) 856-0443

mammals," and that "[b]ehavioral responses can include avoidance behavior, such as change in swimming direction and speed" (4.1-44), and "altered foraging" (4.1-43). The DEIR concludes that these impacts are less than significant, but fails to explain how noise impacts that change the behavior of fish and swimming patterns could not (1) directly affect or indirectly disturb the fish habitat, (2) reduce the value of the habitat by resulting in avoidance, or (3) change the movement or migration of sensitive fish species. In addition, the DEIR fails to consider how *increasing* noise through increased sand extraction could exacerbate these effects. The DEIR offers no mitigation measures for this impact, which therefore must be considered to be significant and unmitigated.

Similarly, the DEIR describes in detail numerous impacts to foraging habitat that will likely occur as a result of sand mining but, inexplicably, the DEIR concludes that this impact will be less than significant because "these changes do not appear to last more than a few years." (4.1-46.) However, nothing in the significance criteria suggests that an impact may be less than significant if it lasts "only" a few years. This conclusion is at odds with the significant threats faced by endangered, threatened, and sensitive species whose populations could pass a tipping point over the course of a few years, nor does this evaluation account for the increased production proposed by the project that would increase the scope and duration of this multi-year impact above baseline levels. The DEIR offers no mitigation measures for this impact, which therefore must be considered to be significant and unmitigated.

4-2 cont.

II. The Project's impacts to delta smelt and other special status fish should be considered significant and unavoidable.

Based on entrainment estimates the DEIR admits the Project would result in direct take of at least nine individual delta smelt per year (4.1-52), which clearly qualifies as a significant impact pursuant to the DEIR's stated thresholds significance. However, the DEIR concludes this impact will be less than significant, despite the absence of mitigation measures intended to avoid direct take of listed species. Mitigation of this impact is deferred by delaying consultation with California Department of Fish and Game ("CDFG") to determine whether an Incidental Take Permit ("ITP") under Section 2081 of CDFG code is required. (4.1-53.) Nothing in the DEIR's evaluation shows that this impact will be less than any of the significance criteria provided by the DEIR.

4-3

Similarly, the DEIR admits the project will cause mortality to other special status fish and implements mitigation measures to reduce the impact, yet fails to provide any comparison of the reduced impacts to the DEIR's standards of significance. Merely implementing some mitigation measures does not necessarily reduce an impact to a less than significant level. Awaiting further review and advice from state and federal wildlife agencies impermissibly defers the evaluation and mitigation of these impacts that must occur in the DEIR.

4-4

III. Impacts to longfin smelt are inadequately assessed and formulation of mitigation measures are illegally deferred.

Based on projected impacts to longfin smelt and other special status species, CSLC should deny the project and suspend any ongoing activities that cannot be mitigated to less-than-significant levels. The DEIR notes that formal CDFG consultation has not been initiated over likely take of longfin smelt during project operations and that formulation of mitigation measures is deferred pending further unknown recommendations from CDFG after closure of the public review and comment period on the EIR. Because these mitigation measures are wholly uncertain and would not take effect for a year or more after the project begins, the project should be denied and not permitted to operate in any way that would result in illegal take of longfin smelt.

Informal consultation with CDFG regarding longfin smelt appears to have been initiated, resulting in the inclusion of MM BIO-9d. However, this mitigation measure fails to meet minimum standards for environmental review. In *Gentry v. City of Murrieta*, the Court of Appeal stated that mitigation measures may be formalized after project approval *only if*, the lead agency has circulated an environmental review document that (1) identifies and discloses with particularity the project's potentially significant impacts, (2) establishes measurable performance standards that will clearly reduce all of the identified impacts to less-than-significant levels, and (3) describes a range of particularized mitigation measures that, when taken in combination, are able to meet the specified performance standards. (*Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1394-1395; see also CEQA Guidelines § 15126.4.) However, the DEIR simply recommends that Applicants consult with CDFG to determine whether an ITP is required after the CEQA review process is over and public review and comment period closed. (4.1-55.) 4-5

Mitigation measures for impact BIO-9 fail to meet the standards established by *Gentry* for deferral of mitigation measures for several reasons. First, the mitigation measure fails to include any "measurable performance standards"; second, the DEIR fails to describe any "particularized mitigation measures"; and third, the DEIR offers no evidence to support its conclusion that MM BIO-9d would serve to reduce impacts to longfin smelt to less-than-significant levels.

IV. Significance criteria are inappropriately applied with regards to impacts to mineral resources.

As stated in § 4.2.3, adverse impacts on mineral resources are considered significant under the following conditions: 4-6

- The loss of availability of a known mineral resource that would be of value to the region and the residents of the State; or
- The loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other use plan.

The DEIR interprets these criteria to "mean that depletion of the resource through mining does not constitute a significant impact; an impact could only occur where a project prevented or inhibited access to a known mineral resource" (4.2-8). Under this interpretation, no mining operation could ever pose a significant impact to mineral resources unless operations prevented future access to other mineral resources. Under this flawed interpretation sand mining should be allowed to occur at an unrestricted rate since access to other valuable mineral resources would presumably not be restricted as a result of sand extraction in the San Francisco Estuary. Since sand mining can and should be conducted in a sustainable manner the DEIR should more appropriately assess whether the project has the potential for resource depletion, thereby threatening the availability of a resource of value to the region and the residents of the State. 4-6 cont.

V. The proposed extraction rate is unsustainable, resulting in foreseeable significant impacts.

Through assessment of Impact MIN-3: Depletion of the sand resource, the DEIR suggests that Central Bay lease areas could suffer from resource depletion since deposition of new sand resources have not been observed over the last ten years. (4.2-9) This is consistent with a 2004 USGS report which concludes that "the total volume of sand in the west-central bay shoals that are in active sand mining leases is unknown… The volume of commercially extractable sand and gravel in these shoals needs to be known to prevent resource depletion. Additionally, it is not known whether the sand shoals in west-central bay are being naturally replenished, are in equilibrium, or are eroding".[1] In the absence of appropriate evidence, further study should be conducted to determine the appropriate level and locations of sand extraction. Alternatively, extraction volumes should be reduced significantly to permit monitoring and adaptive management over the ten year lease cycle. 4-7

As cited from Porterfield (1980), the DEIR states that estimates of sand loads from the Delta to the Bay range from 1.7 to 3.3 million cubic yards.[2] Under the proposed Project, leaseholders would be permitted to extract up to 2,040,000 cubic yards of sand per year, which exceeds the lower bound estimate of total sand loads and is a majority of the upper bound estimate. In reality, proposed extraction levels likely approximate the total annual sand load to San Francisco Estuary.

The likely fact that extraction rates approximate total sand inputs from the Delta is consistent with comments to the Notice of Preparation ("NOP") for this Project received from Patrick Bernard of the USGS. Dr. Bernard pointed out that over 100 million cubic yards of sediment has been lost from the Mouth of San Francisco Bay in the last 50 years, a time period broadly coincident with major sand mining activities in Central San Francisco Bay. This is also

[1] Chin, J.L., F.L. Wong and P.R. Charlton. 2004. *Shifting Shoals and Shattered Rocks – How Man Has Transformed the Floor of West-Central San Francisco Bay*. Circular 1259, U.S. Geological Survey, Menlo Park, CA.
[2] Porterfield, G. 1980. *Sediment Transport of Streams Tributary to San Francisco, San Pablo and Suisun Bays, California, 1909-66*. U.S. Geological Survey, Water Resource Investigations 80-64, 92 p.

consistent with the CHE report prepared in support of this Project, which found that the volume of material mined from 1997 to 2008 is nearly equivalent to the measured erosion inside and surrounding the lease areas. Authors of the CHE report indicated that only approximately 5 percent of the mined sands are replaced under natural processes, suggesting an entirely unsustainable practice that could result in significant erosion and other geomorphological impacts to areas within and outside San Francisco Bay.[3] Accordingly, the DEIR should develop a project alternative that satisfies the project objectives through sustainable practices. 4-7 cont.

VI. Inadequate assessment of potential geomophological impacts indicates an under-representation of impacts to hydrology or water quality.

Among other criteria, a hydrology- or water quality-related impact is considered significant if the Project "…altered the topography in a manner that would result in substantial erosion or sedimentation" (4.3-24). The fact that the DEIR states that depletion of sand resources "is not considered a significant impact of the Project" (4.2-11) suggests a lack of understanding regarding sediment dynamics and potential impacts to coastal geomorphology in the region. Numerical modeling conducted in support of this project did not adequately assess potential geomorphology impacts to beaches and coastlines north and south of the Golden Gate and concerns still exist over whether on-going sand mining operations are exacerbating known erosion issues. 4-8

Continuation of sand mining operations at unsustainable extraction rates could result in significant erosion of beaches and bluffs located north and south of the Golden Gate. Unsustainable sand mining operations have occurred in other areas of California, such as Monterey Bay, where accelerated erosion of beaches and bluffs resulted in the termination of sand mining in the area during the 1980s.[4] Baykeeper shares the concerns of USGS that without a reliable supply of course sediment from the Delta to the mouth of San Francisco Bay coastal geomorphology in the region. As a result, permanent alterations to beaches and coastlines may occur, requiring public investment in coastal revetment and restoration. In addition, reliable sediment loads from the San Francisco Estuary are required in efforts to mitigate the effects of sea level rise over the next century. 4-9

VII. Evidence is not provided to support assertions regarding the No Project alternative.

Under the no project alternative, or the reduced project alternative, the DEIR asserts that air quality impacts would increase because demand would be met by transporting materials acquired in more distant locations (p. ES-5). However, the DEIR fails to provide any evidence to support this assertion, including no information to indicate that the local demand for sand is fixed, and no 4-10

[3] Coast and Harbor Engineering (CHE). 2009. *Sand Mining Resource Evaluation and Impact Analysis*. Included in the DEIR as appendix G.
[4] Griggs, G., K. Patsch and L. Savoy. 2005. *Living with the Changing California Coast*. University of California Press, Berkeley.

information regarding the current distribution and demand for sand beyond San Francisco Bay sufficient to understand how a decrease in sand production from the Bay could or would affect supply and transportation, either beneficially or adversely. 4-10 cont.

VIII. The DEIR inaccurately forecasts future sand demand.

Mineral demand forecasts appear to be based on data from a report published in 2006 at the onset of the current housing crisis.[5] (4.2-3) Recent housing data indicates that demand for construction services and material is down significantly; housing starts in September 2010 are down 70% compared with 2006 data from the same month.[6] Since economic forecasts over the 10-year lease period indicate prolonged strain on the construction sector it would appear that forecasts for sand over a similar period may be overestimated. Accordingly, assessment of potential impacts to air quality and mineral resources appears to be based on outdated information. 4-11

IX. The DEIR should evaluate project alternatives that demonstrate minimum extraction rates to achieve economic viability

Project Applicants have identified the objective for the San Francisco Bay and Delta Sand Mining Project to "…continue sand mining at an economically viable level in San Francisco Bay for the next 10 years". (ES-2) However, the DEIR fails to provide any evidence to determine economic viability or unacceptability. While the DEIR evaluates an alternative to cut production by half, this alternative could be seen as too drastic a reduction to be viable, although the DEIR provides no information with which to assess whether this or other project alternatives could meet the only stated project objective. If the 50% reduction alternative is deemed not viable, a different reduced project alternative should be considered, as it would significantly lessen the project's adverse impacts (by, for example, 25% for a 3/4 production alternative) while achieving the project objectives. 4-12

X. Foreseeable impacts arising from inevitable sand mining operations beyond the 10-year lease term should be evaluated.

More information should be provided in the DEIR the Applicant's potential option to extend the proposed project for an additional 10 years beyond the proposed 10 year lease period. (2-1) The DEIR states that further CEQA review will be required at that time, yet further CEQA review will only occur in the event the option to extend the lease is discretionary, which is not stated in the DEIR. Furthermore, by the very terms of the project proposal, the project intends to continue for another 20 years. Therefore, the DEIR must evaluate the impacts of this project term. 4-13

[5] Kohler, S. 2006. *Aggregate Availability in California*. Department of Conservation, California Geological Survey.
[6] Housing start data available through the California Building Industry Association at www.cbia.org

XI. Foreseeable impacts from ancillary sand and gravel facilities must be considered in the DEIR.

The DEIR inconsistently describes on-shore sand and gravel facilities as part of the Project, and not part of the Project. (2-18.) The DEIR admits that activities at sand and gravel facilities occur as a totally foreseeable indirect result of the Project mining. However, the DEIR chooses to omit evaluation of impacts from on-shore facilities, noting that those facilities are required to obtain separate approvals. This approach contradicts CEQA's well established principle that a project is the whole of an action that has a potential to result in a direct or reasonably foreseeable indirect physical impact; a project is not each separate governmental approval required for each foreseeable impact.

To effort to help protect water quality in the Bay, San Francisco Baykeeper has resorted to litigation against permit holders in violation of storm water permits, including sand and gravel storage facilities. Such suits have highlighted the reasonably foreseeable indirect physical impacts associated with sand mining in San Francisco Bay and Delta, despite the fact that such facilities have obtained the required Clean Water Act permits. Baykeeper has brought several lawsuits against on-shore facilities that store sand, including the Tidewater Sand & Gravel Co. (now Hanson Oakland Marine), the Granite Rock Company, and Cemex, Inc.

4-14

At the time of Baykeeper's suit against Tidewater Company, sand and gravel stored at facilities immediately adjacent to the Bay was acting as a source of storm water pollution. Permit violations for high suspended sediment concentrations were a direct result of sediment from the sand piles directly contaminating storm water flowing from the facility. Similarly, Baykeeper filed suit against the Granite Rock Company due to storm water violations associated with on-shore storage of sand and other construction materials. Granite Rock operates several concrete and asphalt facilities and maintains large piles of crushed concrete, sand, and rubble at its facilities. In addition to being a source of wind-borne dust, these uncovered piles were also causing storm water pollution. Granite Rock's own storm water sampling results reported exceedances of EPA Benchmarks for total suspended solids, pH, and iron. Prior to Baykeeper's lawsuit, every storm water sample collected at the site exceeded the benchmark for total suspended solids.

Baykeeper brought a third similar storm water pollution-related lawsuit against Cemex, a corporation specializing in concrete and building supplies. Cemex owns and operates nine concrete ready mix supply facilities in the Bay Area. Raw materials, including sand used in the manufacturing of various ready mix products, are stored and transported at the facilities. Baykeeper's site investigation revealed extensive tracking of dust, sediment, and debris from Cemex's facilities. In addition to air-borne contamination, Cemex's storm water was found to be in violation of EPA Benchmarks for total suspended solids, pH, and iron.