

SAND STUDIES INDEPENDENT SCIENCE PANEL FINDINGS REPORT

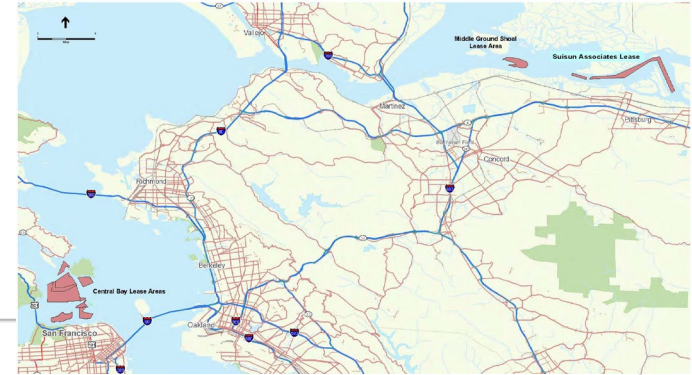
BRENDA GOEDEN
SEDIMENT PROGRAM MANAGER
SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
JULY 12, 2024



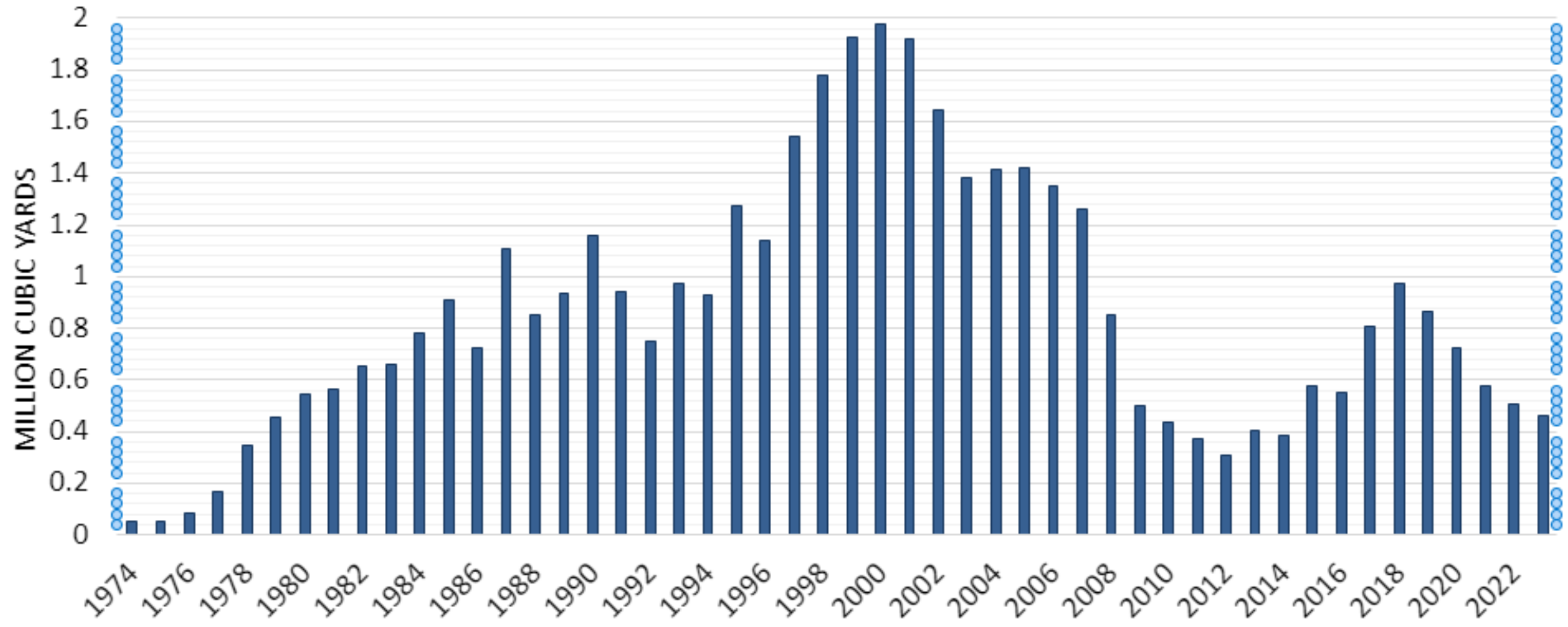
PROJECT HISTORY

- Mining since 1930's
- Commission records from 1970's
- Multiple small mining companies
- 1990's mining leases consolidated:
 - Lind Marine
 - Martin Marietta
 - Suisun Associates





Annual Volumes of Sand Mined in San Francisco Bay



COMMISSION PERMITTING REQUEST 2013



- 2.2 Million cy total annually
- Four applications:
 - Central Bay – Martin Marietta
 - Suisun Bay – Suisun Associates
 - Middle Ground Shoal – Lind Marine
 - Middle Ground Shoal – Martin Marietta
- Ten-year mining period

COMMISSION PERMITS - 2015

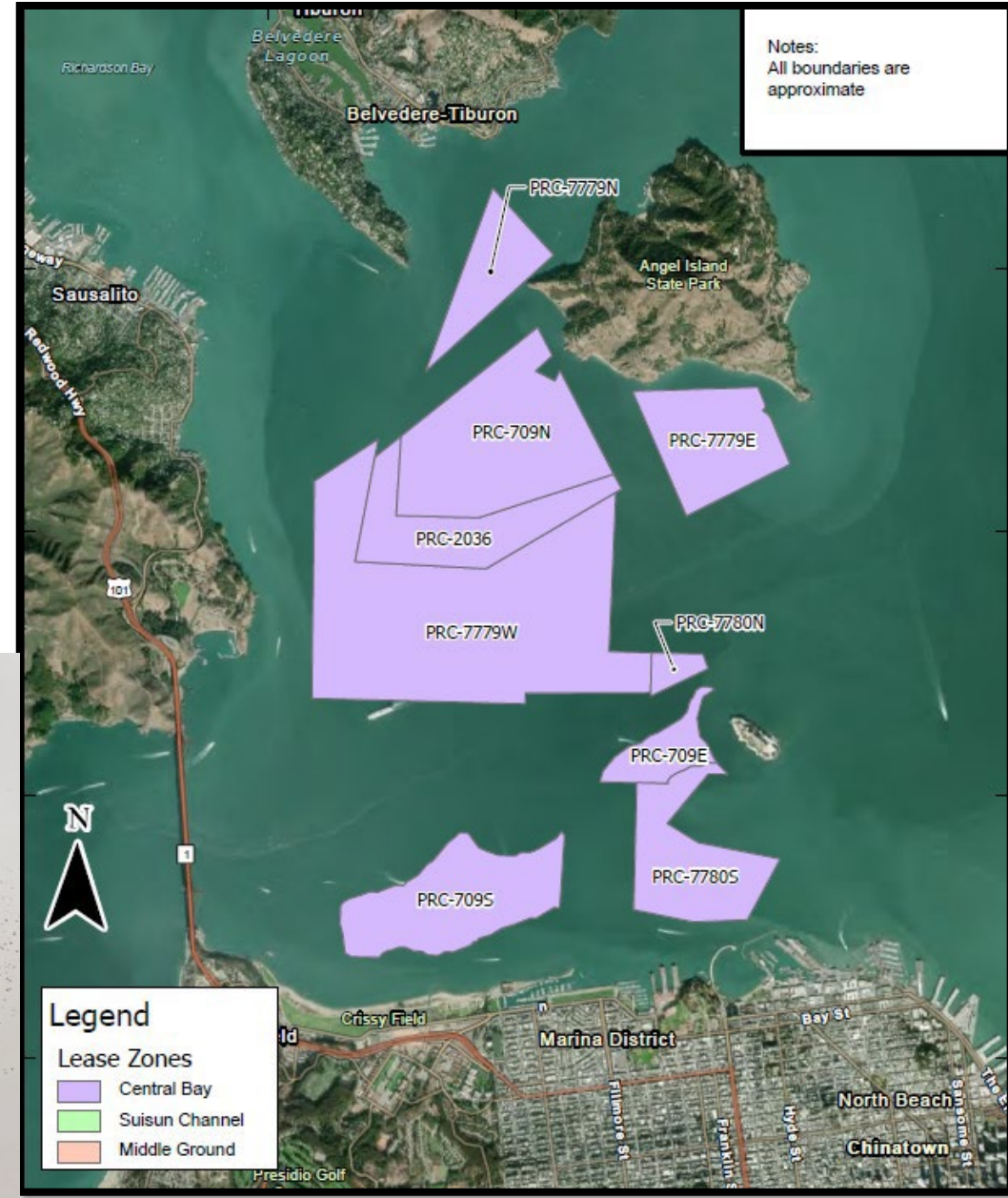


- Negotiated reduction in volume
 - Allowance for addition mining annually
- Three permits issued:
 - Central Bay – Martin Marietta – 1.14 M cy
 - Suisun Bay – Suisun Associates – 185,000 cy
 - Middle Ground Shoal – Lind Marine – 100,000 cy
- Ten-year mining period
- Studies required:
 - Water Quality Monitoring Study
 - Benthic Habitat Study
 - Sand Transport, Budget, and potential impacts
 - \$1.2 million
- Mitigation required:
 - Removal of Bay fill
 - Installation and use of fish screens
 - Reduction in volume at 2 lease sites

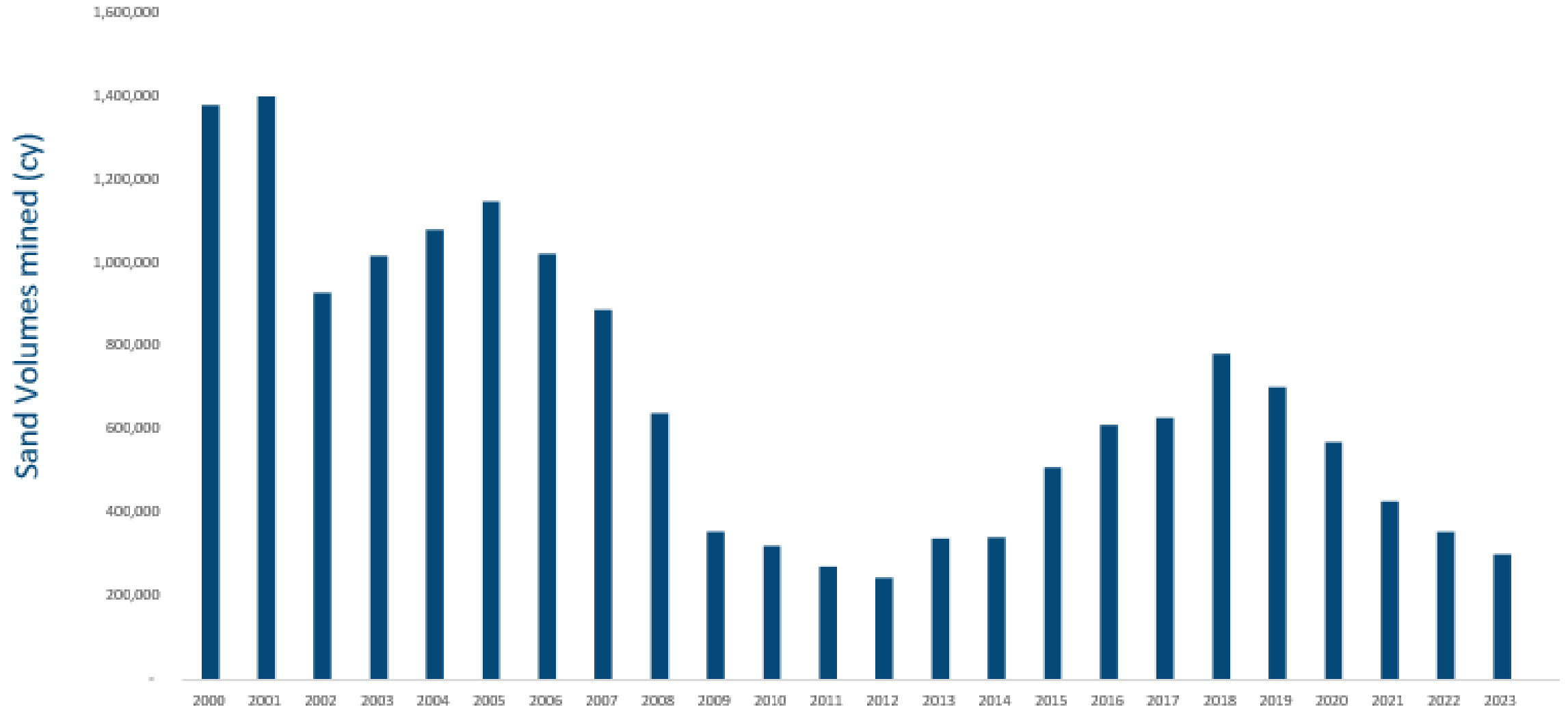
CENTRAL BAY LEASE AREAS

Company: Martin Marietta

- Mined in areas up to 90 feet deep
 - No mining within Racoon Strait
- Leased from Ca State Lands Commission
- Primarily coarse grain sand
- Finer grain sand at Presidio Shoal



MINING ACTIVITIES – CENTRAL BAY – 1.14 MCY MAX



SUISUN CHANNEL LEASE AREA

Company: Suisun Associates

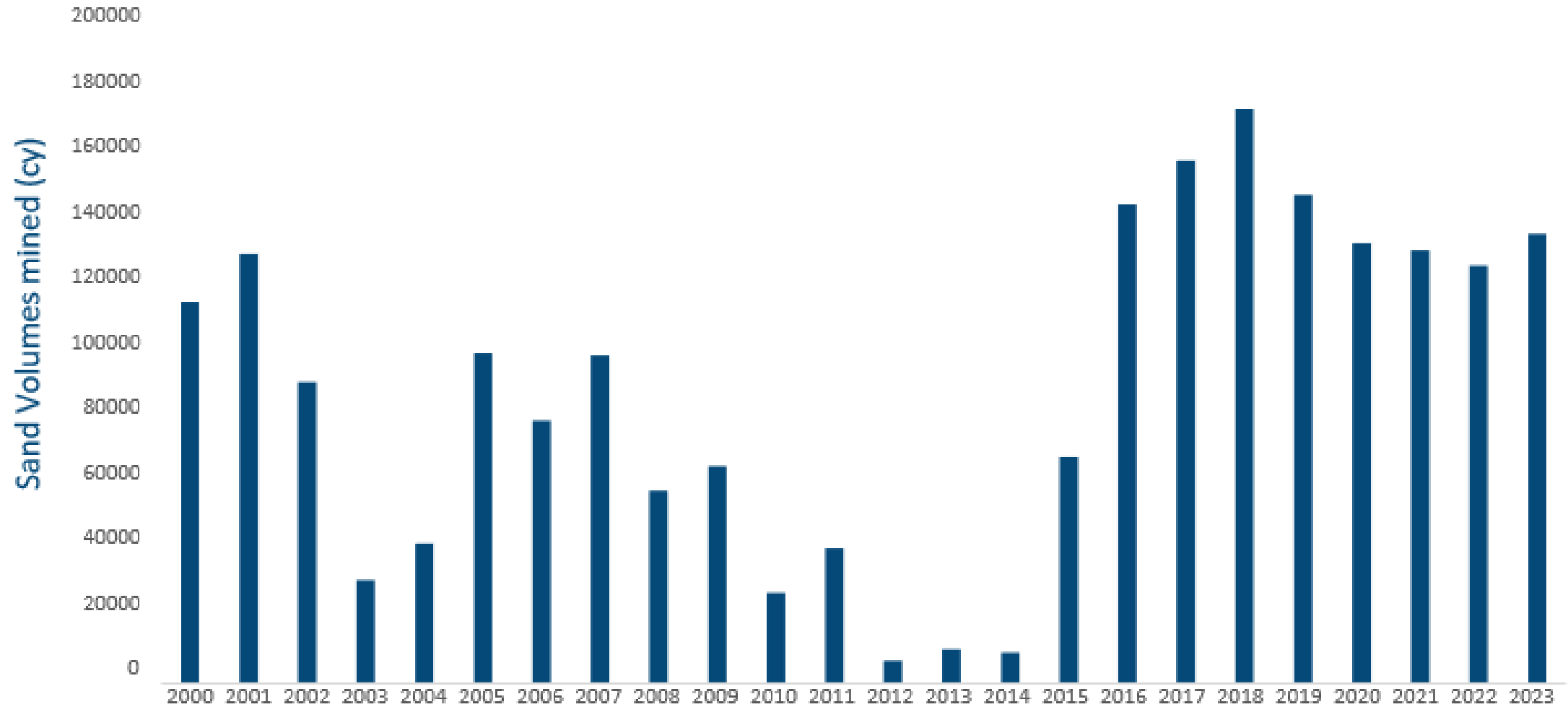
- Mined in areas up to 45 feet deep
- Leased from Ca State Lands Commission
- Fine grain sand



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MINING ACTIVITIES – SUISUN CHANNEL – 185,000 CY MAX



MIDDLE GROUND SHOAL LEASE AREA

Company: Lind Marine

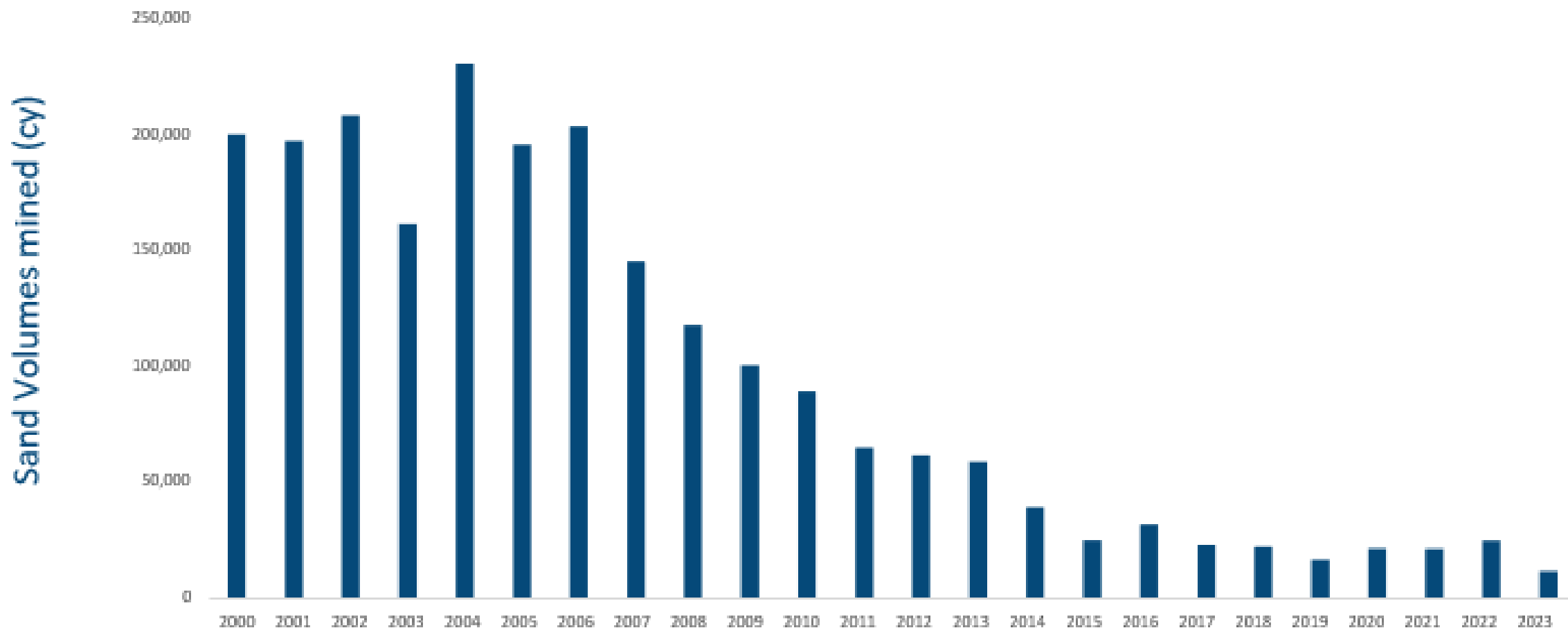
- Mined in areas up to 30 feet deep
- Adjacent to an island
- Private lease
- Fine grain sand



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MINING ACTIVITIES – MIDDLEGROUND – 100,000 CY MAX



MINING EQUIPMENT



SAND MINING EQUIPMENT

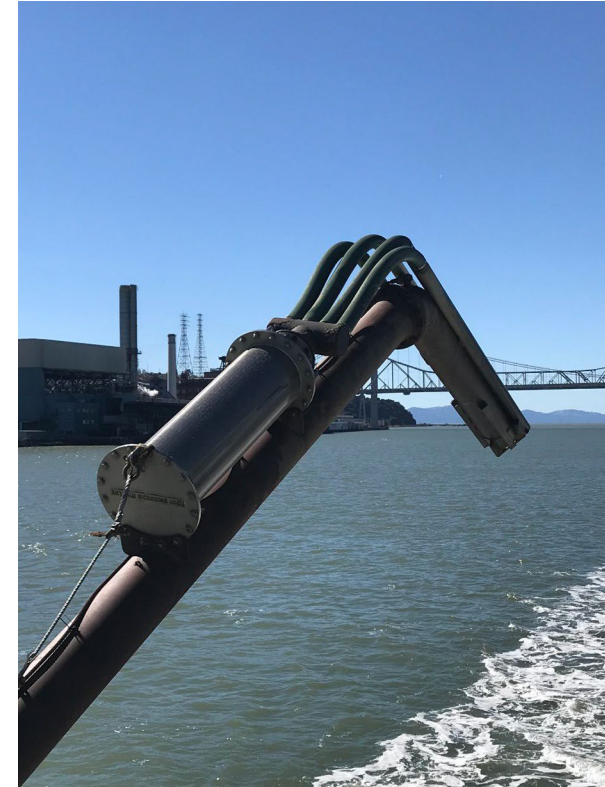


SAND MINING EQUIPMENT (CONT.)

Martin Marietta - Suction Drag Head



Lind - Suction Pipe



MINING ACTIVITIES

Mining is for construction aggregate, not navigation

- Not generally considered beneficial reuse as is not a waste product being reused

Mining occurs year round

- No work windows, but fish screens are on intake pumps

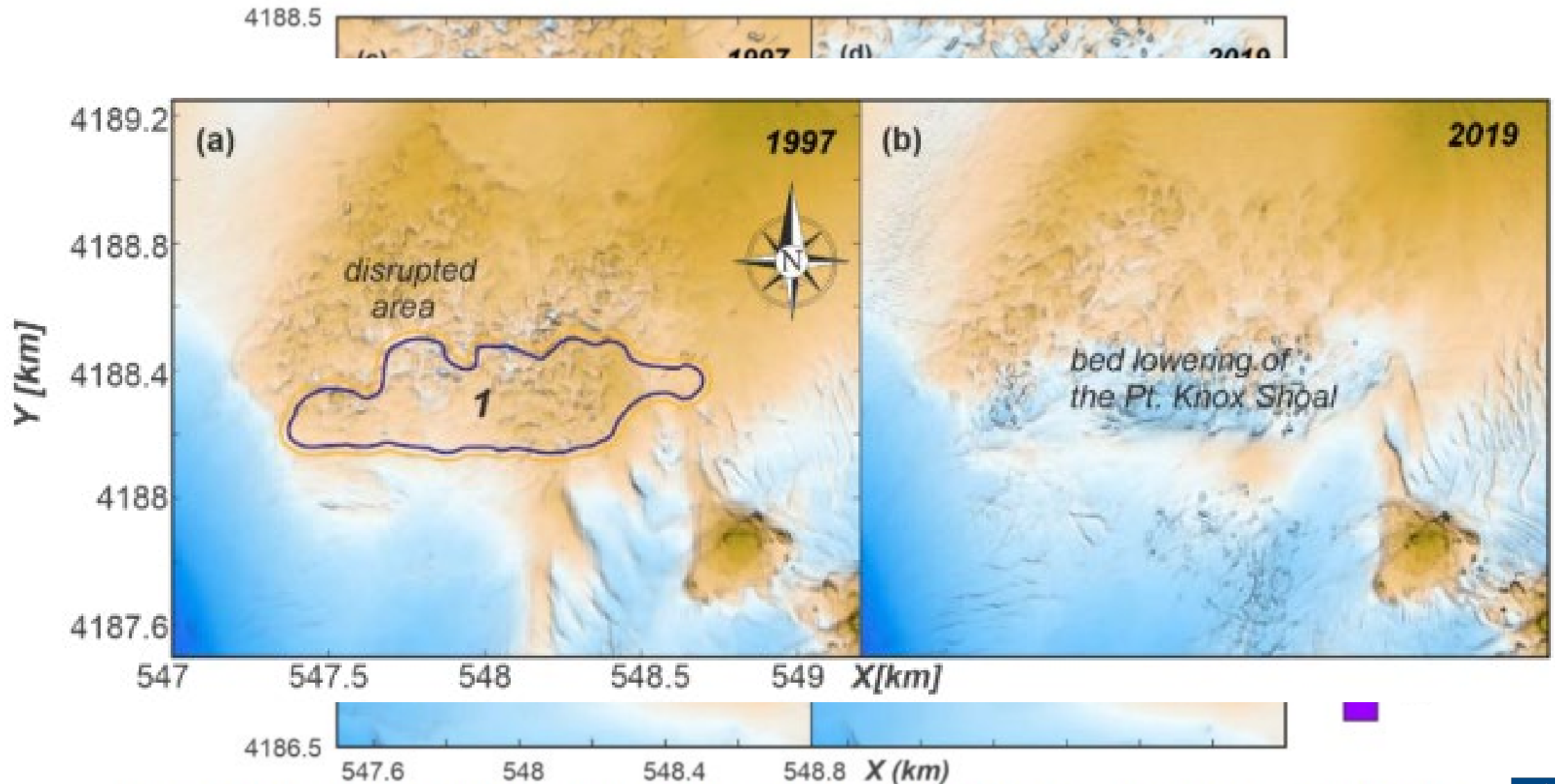
Mining location is based on leases and grain size of sand desired

- Central Bay – mainly coarse grain, appropriate for concrete, asphalt
- Suisun and Middle Ground – fine grain, appropriate for trench filling, other uses

Mining repeated in same area

- Need for specific grain size

Local Effects of Mining Example



STUDY PROCESS

Funds Provided

Lind & Martin Marietta
\$1.2 Million

Sand Technical Advisory Committee

Management Questions
Formed
Study Scopes Developed
RFQ Posted
Proposals Reviewed

Independent Science Panel

Proposals Reviewed
Scope Revised
Science Teams Identified
Studies Completed
Findings Report Developed

SAND STUDIES QUESTIONS

Is sand mining at existing lease areas, at permitted levels, having a measurable or demonstrable impact on sediment transport and supply within San Francisco Bay?

- What is a sustainable number? What is “substantial depletion”?

What are the anticipated physical effects of sand mining at permitted levels on sand transport and supply within San Francisco Bay and the outer coast?

- What is the impact to active sands and the consequences to the beaches and tides that it feeds?
- What’s the impact to relic sands? How much is the volume and where is it?

Are there other feasible sand mining approaches to consider in San Francisco Bay?

- Should there be a modification of volume and site and conditions?

SAND STUDIES TECHNICAL ADVISORY COMMITTEE

- State Coastal Conservancy
- San Francisco Bay Conservation and Development Commission
- California Coastal Commission
- State Lands Commission
- US Army Corps of Engineers
- San Francisco Bay Regional Water Quality Control Board
- National Marine Fisheries Service
- California Department of Fish and Wildlife
- San Francisco Bay Keeper
- Martin Marietta
- Lind Marine

INDEPENDENT SCIENCE PANEL

- Bob Battalio, PE, Environmental Science Associates
- Dr. Craig Jones, Integral Consulting
- Dr. John Largier, UC Davis at Bodega Marine Laboratory
- Dr. David Schoellhamer, US Geological Survey, Emeritus
- Dr. Paul Work, PE, US Geological Survey, Emeritus

RESEARCH TEAMS

Sand Budget, Supply, Morphological Change and Transport Analysis

San Francisco Estuary Institute

- Lester McKee, Tan Zi, Sarah Pearce, Cristina Grosso, Adam Wong, Michael Weaver, Scott Dusterhoff, Jeremy Lowe, Jen Hunt

Deltares, Netherlands

- Edwin Elias, Floortje Roelvink

US Geological Survey

- Bruce Jaffee, Theresa Fregoso, Mathieu Marineau, Christopher Ely, David Hart

Sand Transport Modeling

Anchor QEA

- Michael MacWilliams, Aaron Bever

Sand Provenance

University of Texas at Austin

- Matthew Malkowski, Zachery Sickmann

US Geological Survey

- Bruce Jaffee, Theresa Fregoso

**INDEPENDENT SCIENCE PANEL KEY FINDINGS
PRESENTED TODAY BY MEMBERS OF THE
INDEPENDENT SCIENCE PANEL**