

Hanson Marine Operations / Jerico Products, Inc.

Sand Mining in Central San Francisco and Suisun Bays

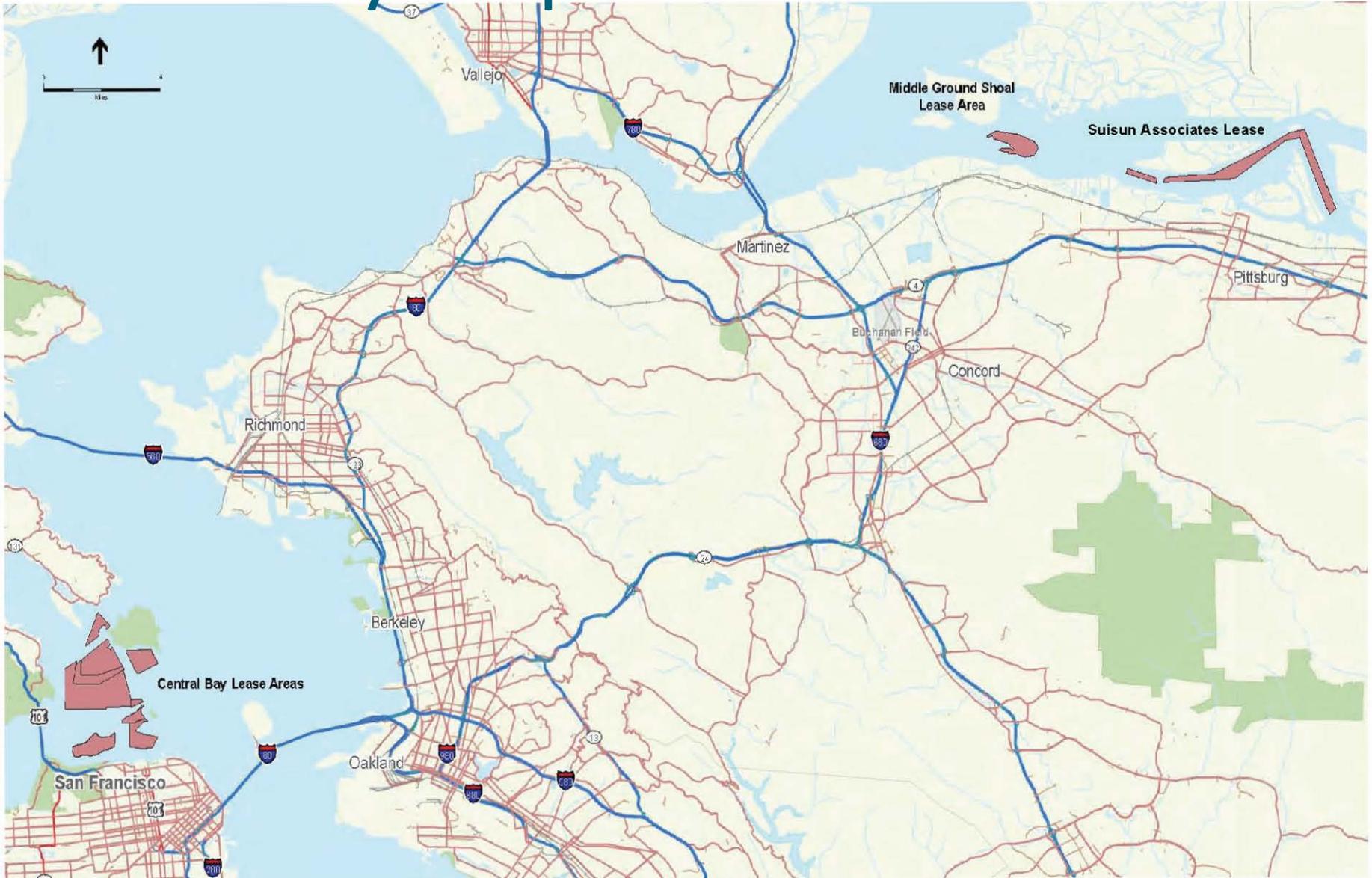
Project Description and Overview

January 23, 2014

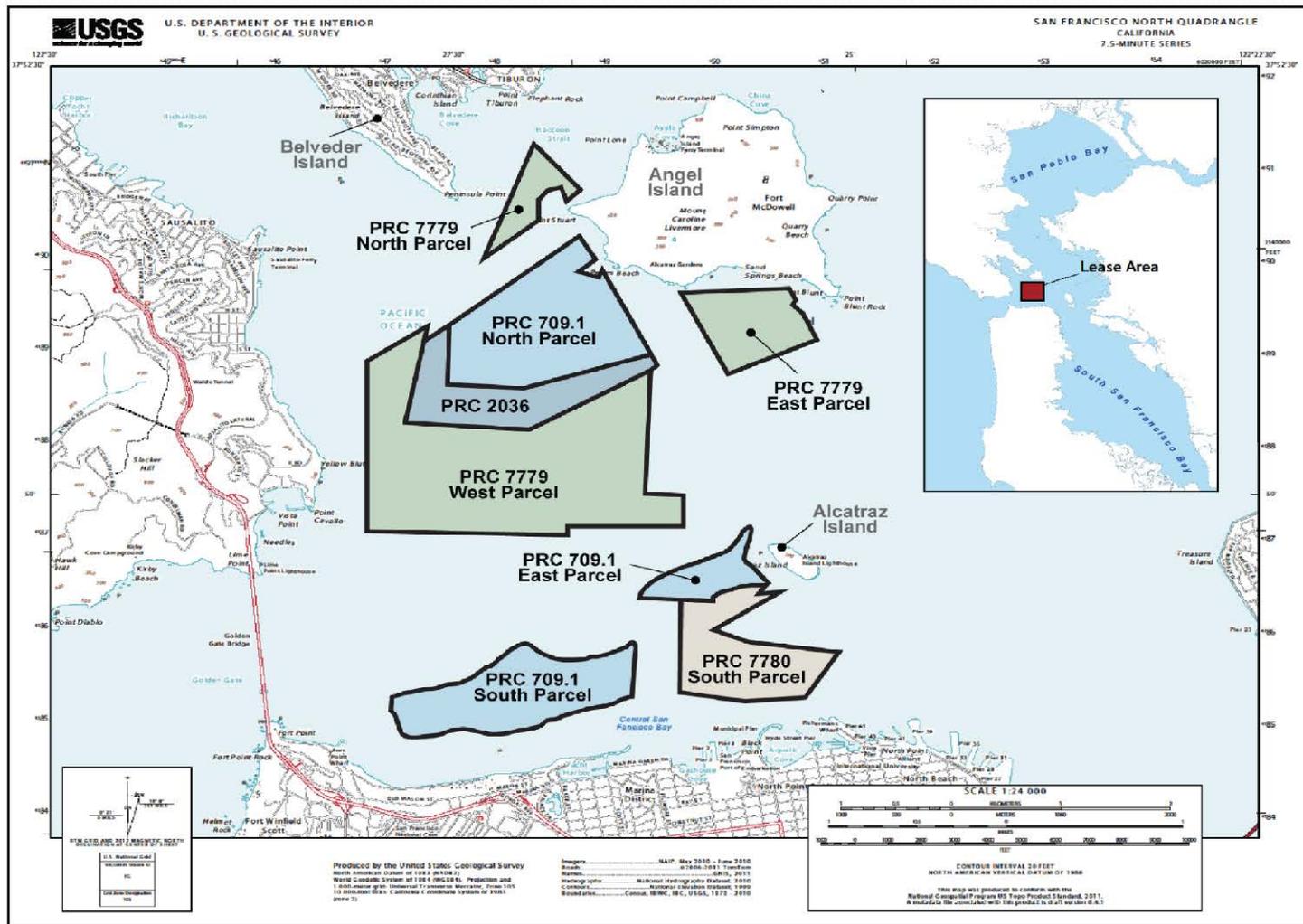
Proposed Project

- Mine up to 1.54 million cubic yards of sand from Central San Francisco Bay annually for 10 years.
- Mine up to 300,000 cubic yards of sand from Suisun Channel annually for 10 years.
- Mine up to 200,000 cubic yards of sand from Middle Ground Shoal annually for 10 years.

Vicinity Map of Lease locations

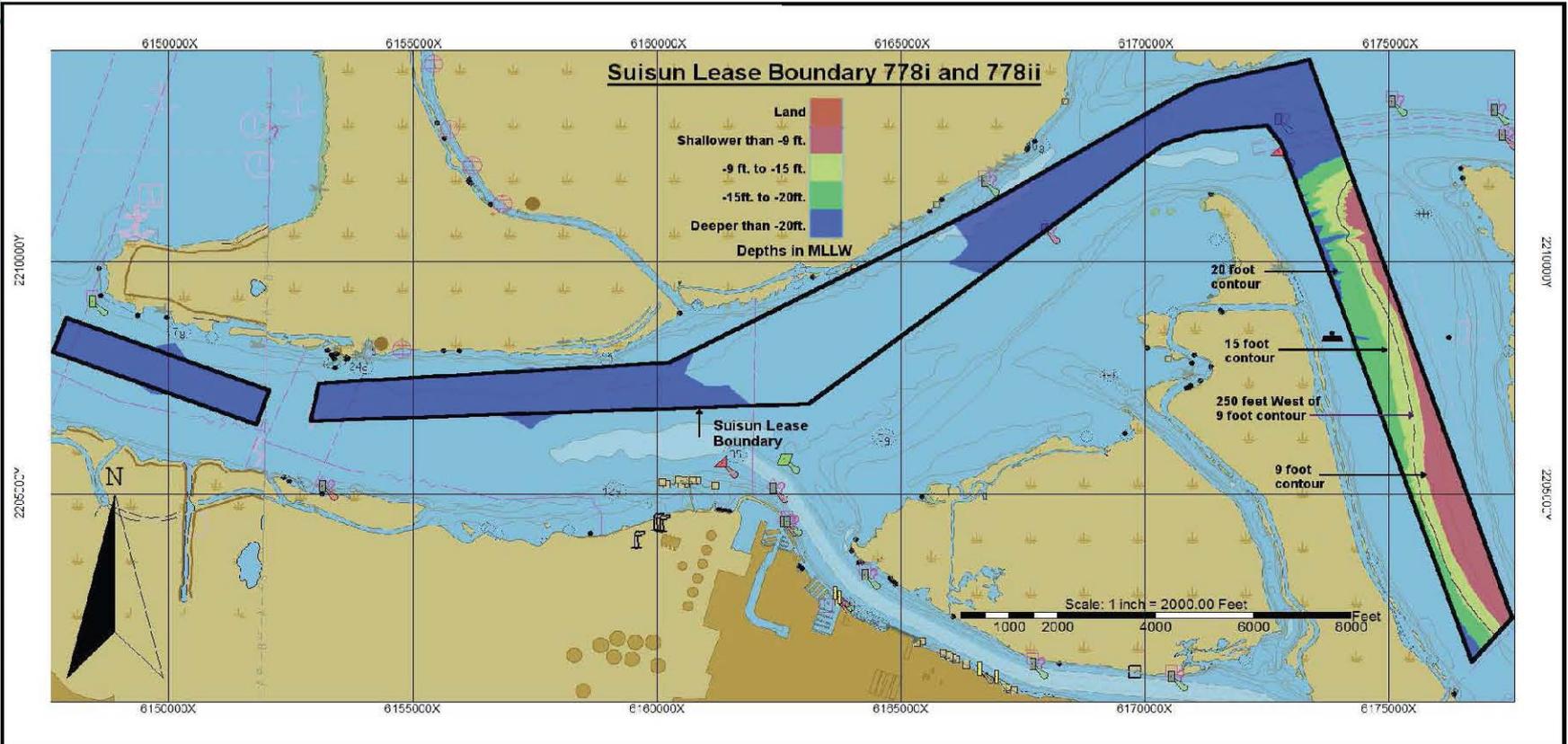


Central Bay Lease Locations



Central Bay - 2,601-acre area: 9 parcels of submerged lands that comprise 4 leases from the California State Lands Commission (SLC) – *Hanson only*

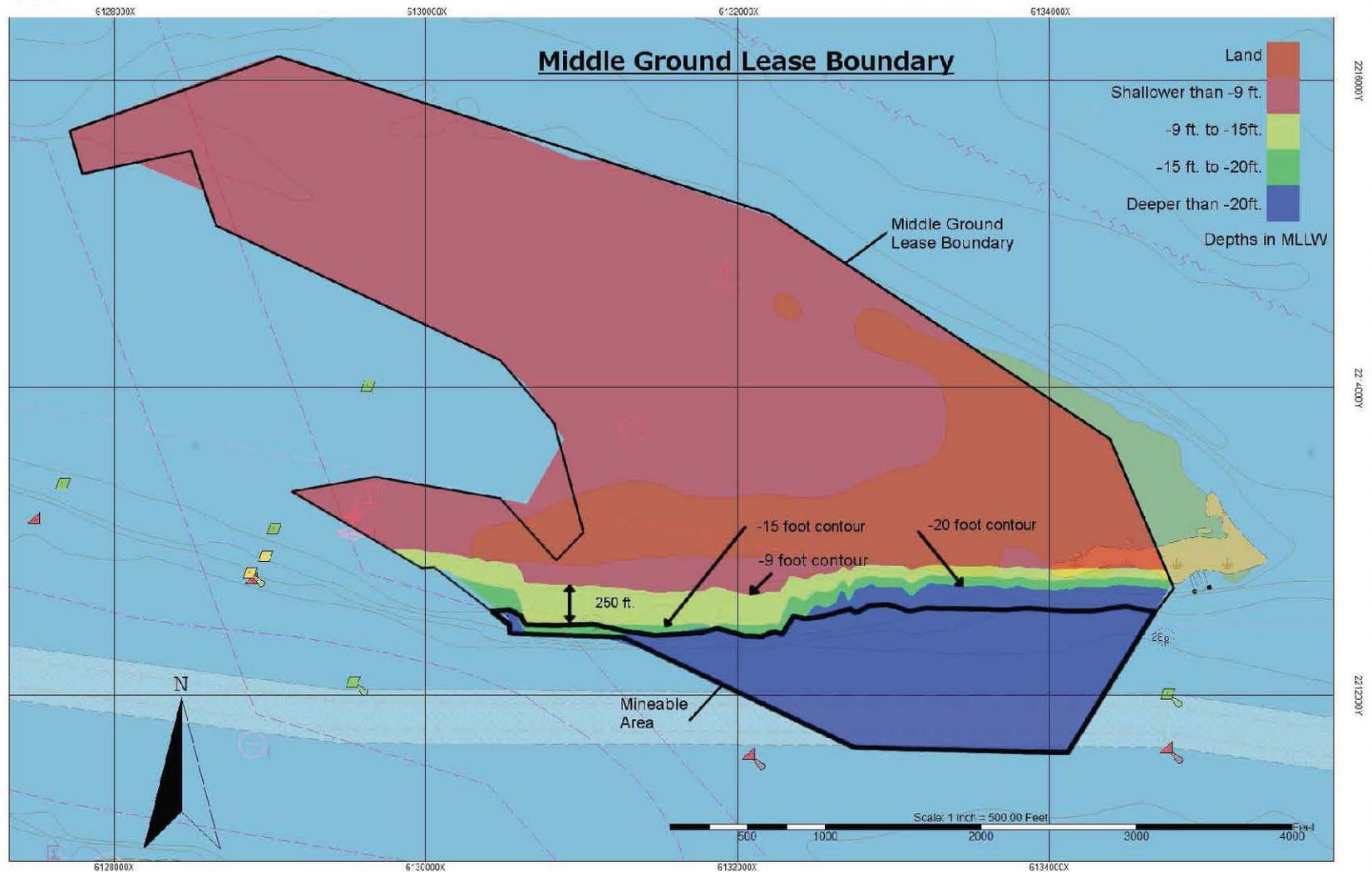
Suisun Assoc. Lease Locations



<p>Boundary: 7781i and 7781ii</p>	<p>Marine Sand Mining Lease 2013</p>	<p>Date of Survey: 13/12/07 Contract No: Soundings in Feet Conditional Survey</p>	<p>Notes: Surveyed by eTrac Inc. Lambert conformal conic projection from WGS-84 to NAD 1983 State Plane California Zone III coordinate system. Vertical control was derived from one of the following based on its proximity to the survey site. Within the delta: NOAA-provided information from Port Chicago and Mare Island tide gauges. Within the bay: NOAA-provided information from the Presidio tide gauge. This bathymetric information is only valid for the time which the survey was conducted. Horizontal positioning was acquired through an Applanix POSMV 320 version 4 using coast guard DGPS corrections.</p>
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Suisun Associates - - 938-acre area of submerged lands within the Suisun Channel in Suisun Bay – leased by Suisun Associates, a joint venture between Hanson and Jerico Products.

Middle Ground Lease Location



Middle Ground-367-acre area of submerged lands leased from Grossi Family (same area leased by Hanson and Jerico separately)

Sand Mining History

- Channel and harbor dredging to remove sand and other sediment deposits from the Bay began in the 1800s, and construction sand mining within the Bay-Delta estuary began in the 1930s.
- Sand Mining within the Central Bay and Suisun Bay has occurred for over 70 years.

Sand Mining History

- After acquiring two Bay area sand mining companies, Hanson entered sand mining business in 1999.
- Jerico began sand mining in 1970's; Middle Ground shoal, Suisun Channel, Chipps Island, and New York Slough in the Delta.
- Suisun Associates is a joint venture between Hanson and Jerico after they both acquired companies of the original joint venture.

Need for Bay Sands

- Key component of building materials including fill and road materials, concrete and hot mix asphalt used in a variety of construction projects.
- *Local Resource* that is efficiently harvested and transported to Bay Area consumers.
- Reduces nearly 5,000,000 truck miles annually compared to other sources – which would generate up to 45 times more GHG and CAP emissions. (*Source: Environ Air Quality Study, 2013*)

Annual Sand Mining Volumes (cy)

Historic Permitted vs Proposed

Leases	Current Permitted Volumes ¹	Proposed Project Annual Volumes
PRC 709: Presidio Shoals (Hanson)	540,000	340,000
PRC 2036: Point Knox South (Hanson)	300,000	450,000
PRC 7779: Point Knox Shoal (Hanson)	400,000	550,000
PRC 7780: Alcatraz South Shoal (Hanson)	150,000	200,000
PRC 7781: (Suisun Associates – a joint venture between Hanson and Jerico)	100,000	300,000
PRC 5871	NA	N/A
<i>State Lands Lease Totals: Central Bay & Suisun Bay</i>	1,490,000	1,840,000
Hanson -Grossi Middle Ground	500,000	50,000
Jerico – Grossi Middle Ground	250,000	150,000
<i>Middle Ground Private Leases Total</i>	750,000	200,000
TOTAL ALL LEASES	2,240,000	2,040,000

Note: 1 These volumes are the original permitted volumes; recent permit extensions have lower annual volume limits that were agreed to as part of the temporary extension process.

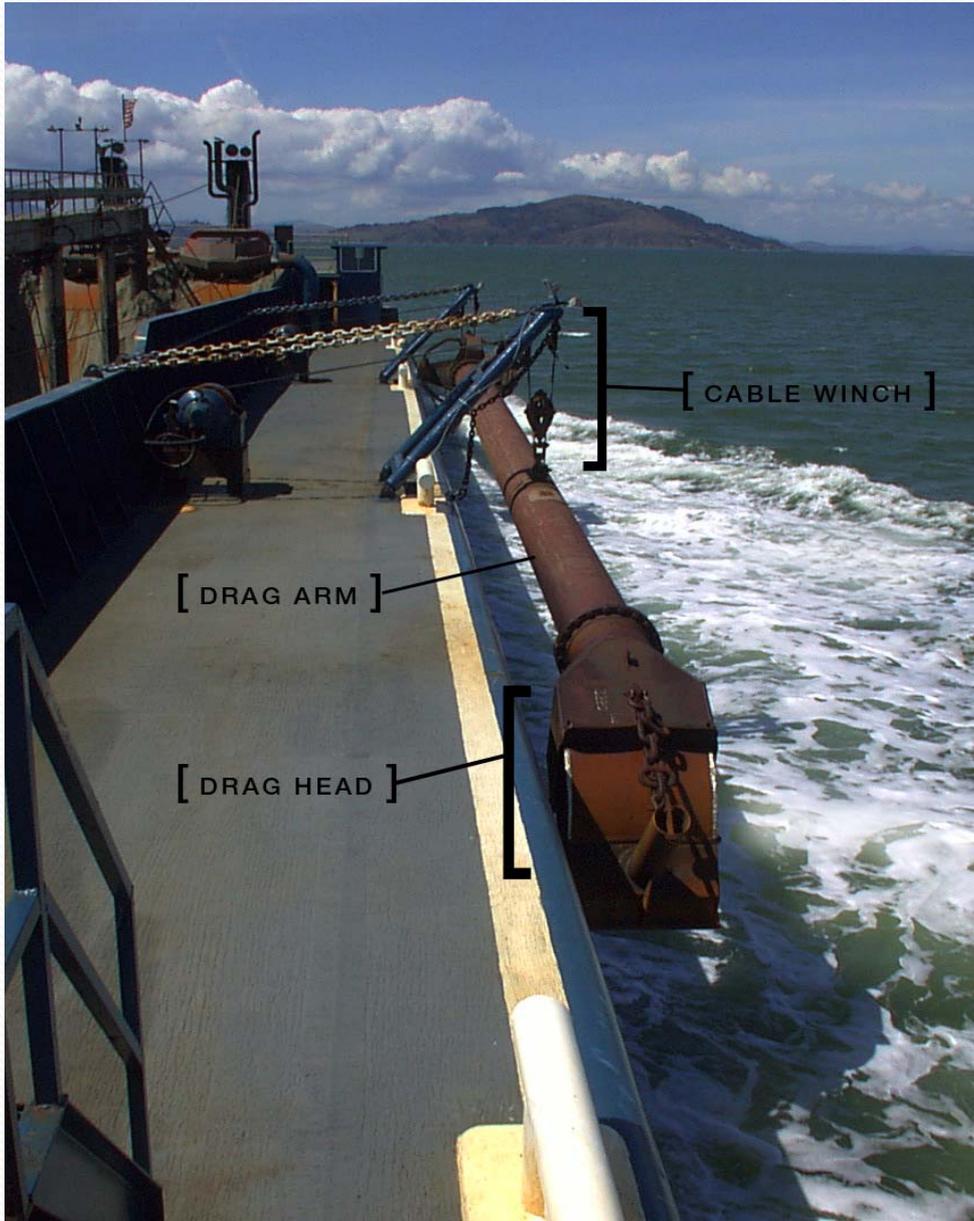
Sand Harvest Equipment



TRAILING DRAG ARM AND HEAD



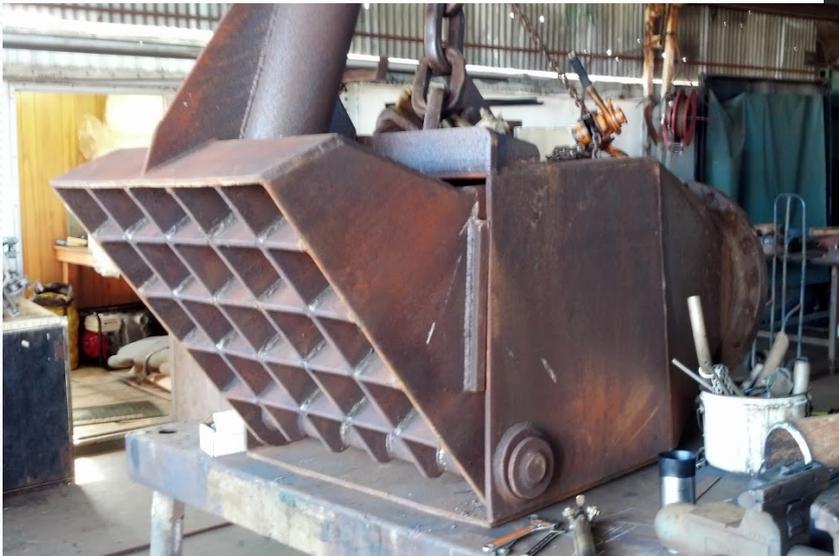
Sand Harvest Equipment



Hanson hydraulic suction drag arm & drag head assembly (retracted position)

Sand Harvest Equipment

Hanson's hydraulic suction draghead showing articulating "visor" and "grizzly" to exclude $>6''$ material during sand mining



Sand Harvest Equipment

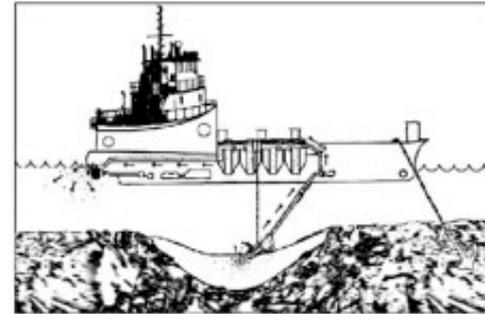
Jerico's hydraulic suction pipe assembly



Sand Harvest Methods

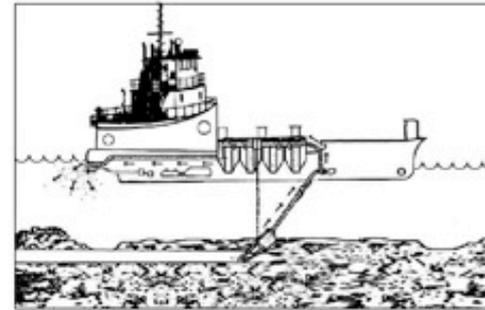
A - Stationary potholing

currently used by Jerico



A

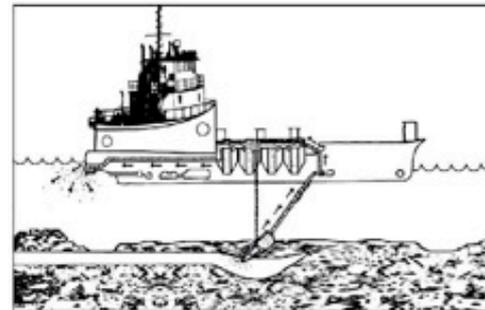
B - Trolling (no longer used)



B

C - Moving Potholing

currently used by Hanson



C

Sand Harvest Equipment

Loading- barge loading chute and gate

close up of loading gate



Sand Offloading Locations



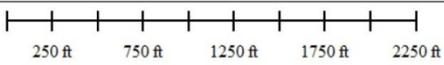
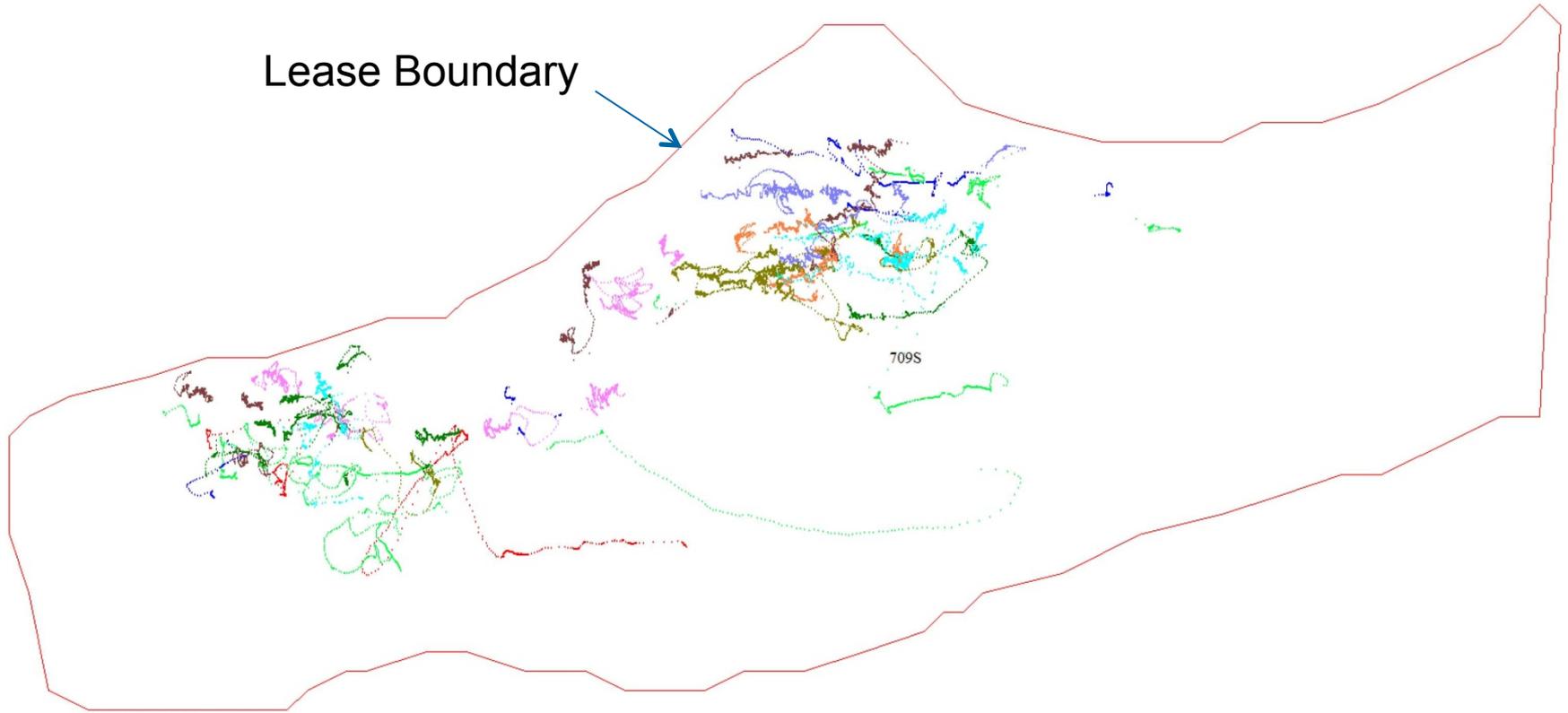
Event Frequency & Durations

Year	Hanson # of Events	Jerico # of Events
2005	514	187
2011	133	68
2012	108	52
2013	152	62

- Average Duration ranges between 3 to 6 hours
- At least one complete tidal cycle before barge returns to site

Event Tracking

Lease Boundary



Year – 2011

Site : 709S

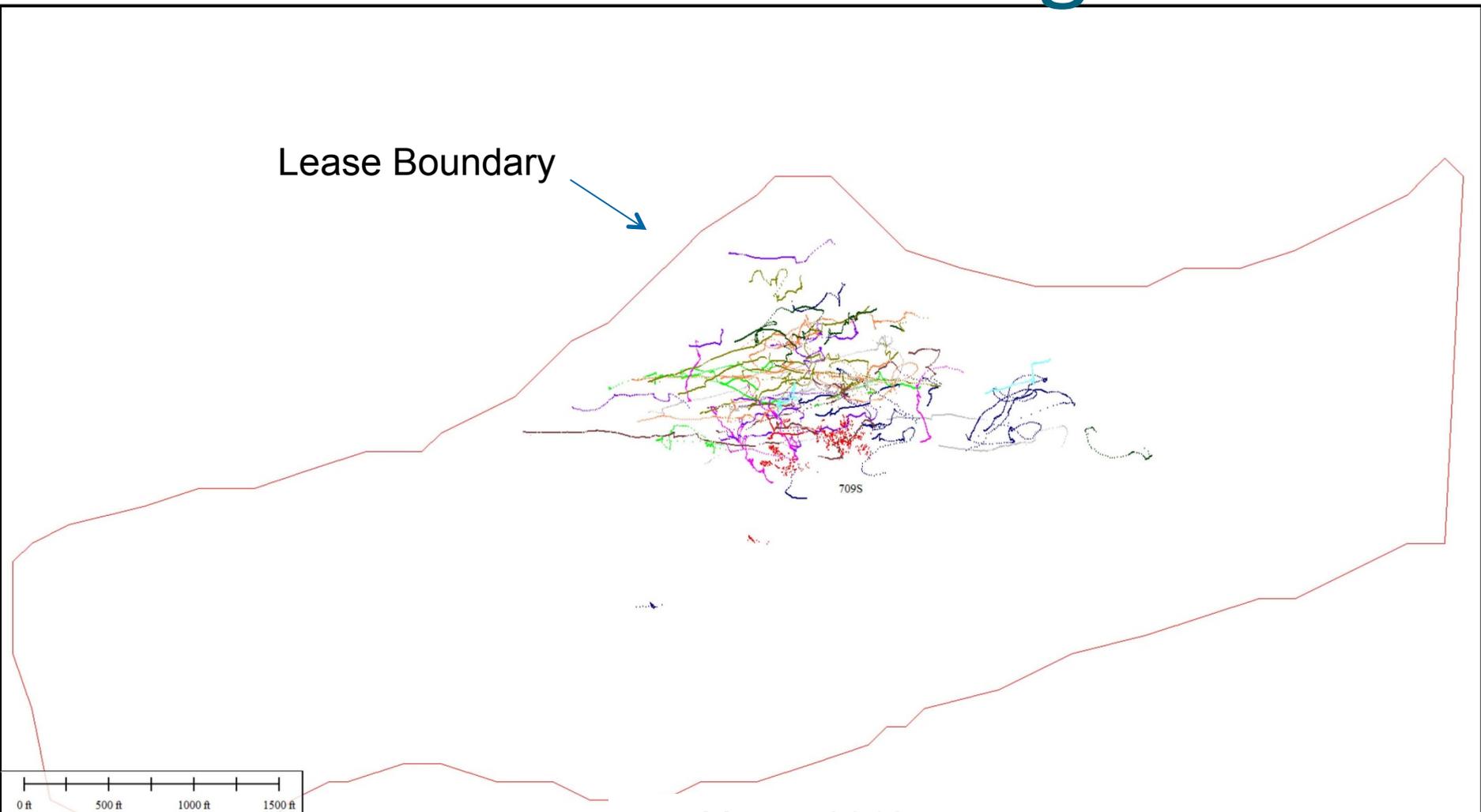
Year 2011
Full Site

Legend

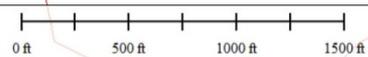
January	May	September
February	June	October
March	July	November
April	August	December

Event Tracking

Lease Boundary



709S



Year – 2012

Site : 709S

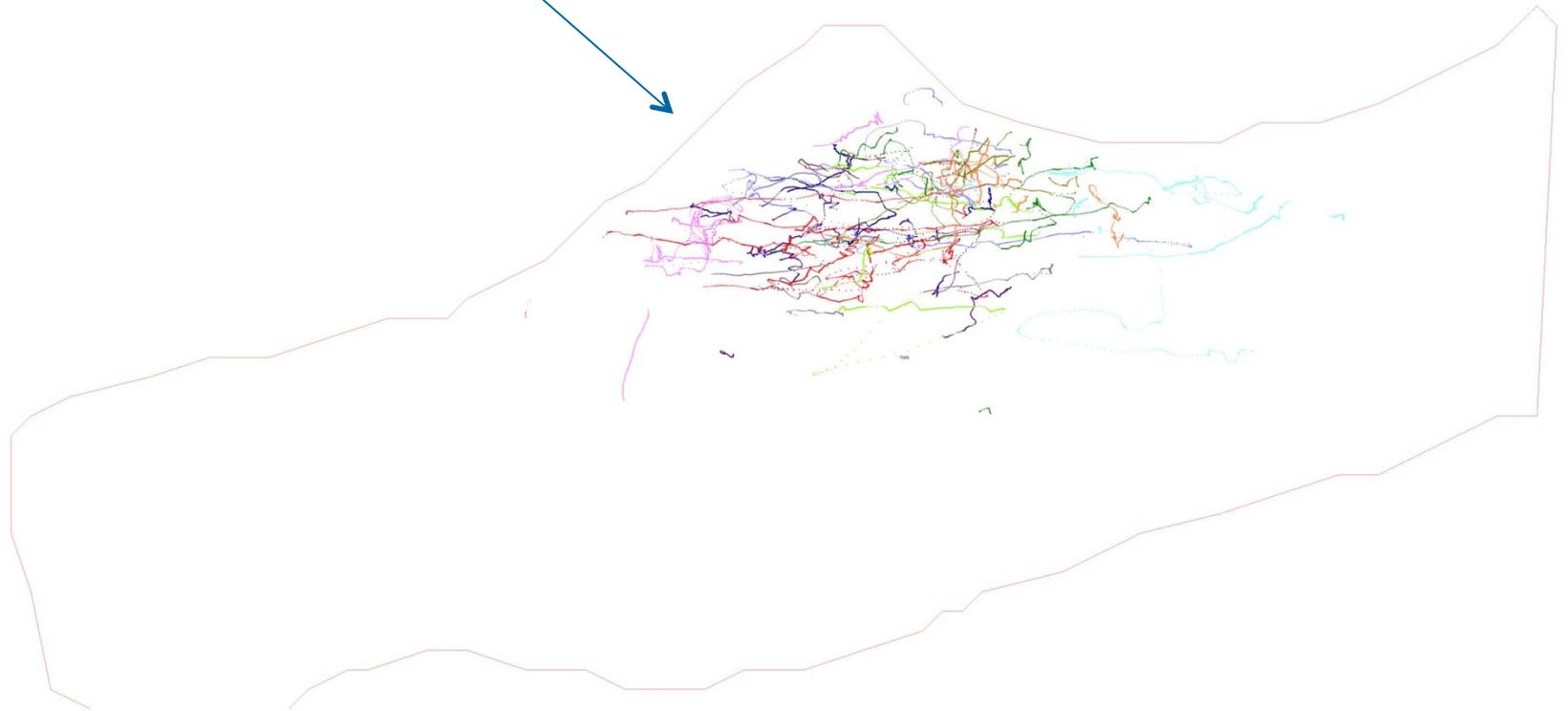
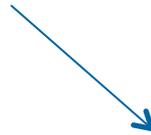
Year 2012
Full Site

Legend

January	May	September
February	June	October
March	July	November
April	August	December

Event Tracking

Lease Boundary



Year - 2013

Site : 709S

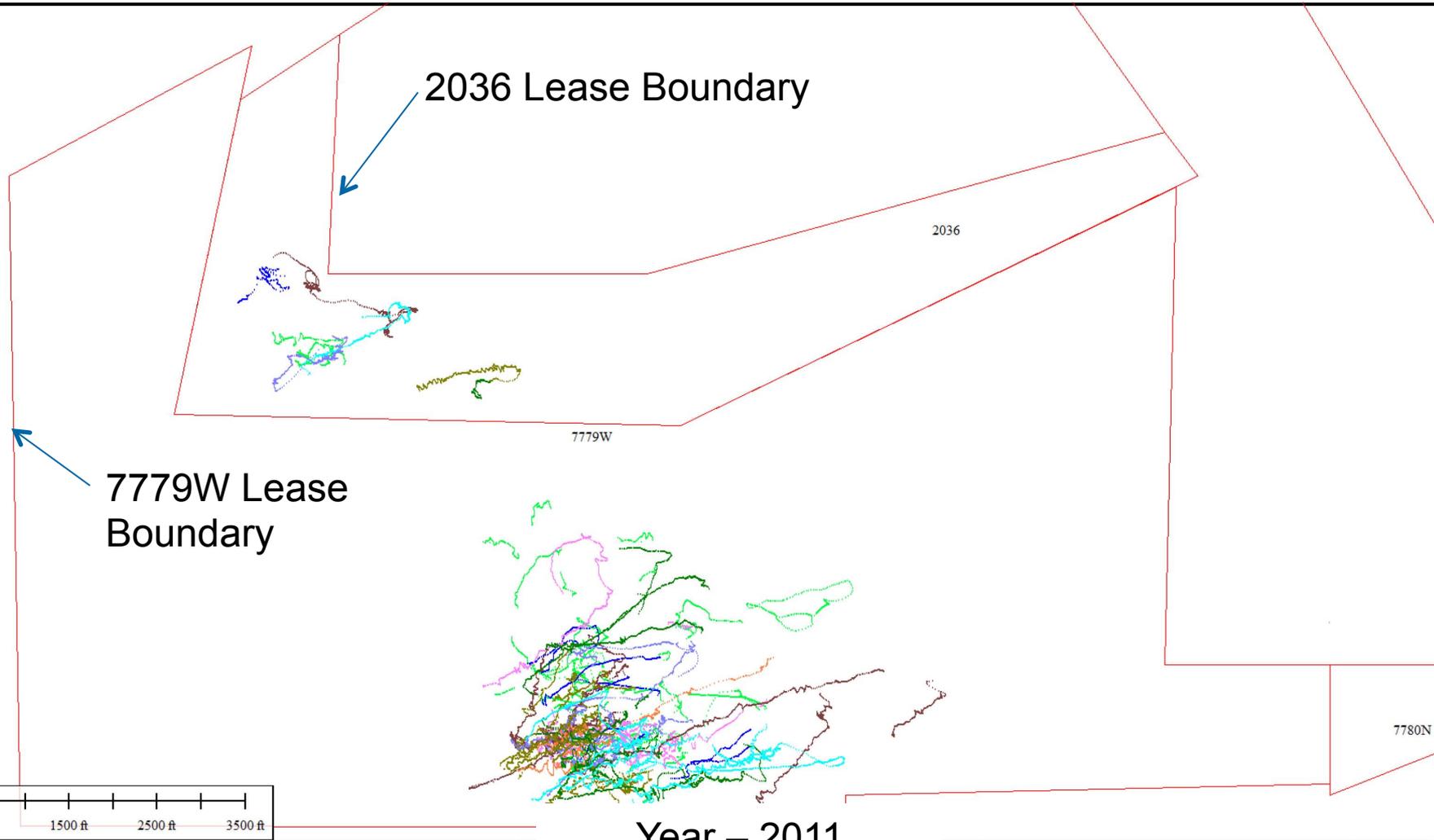
Year 2013
Full Site

Legend

January	May	September
February	June	October
March	July	November
April	August	December

20

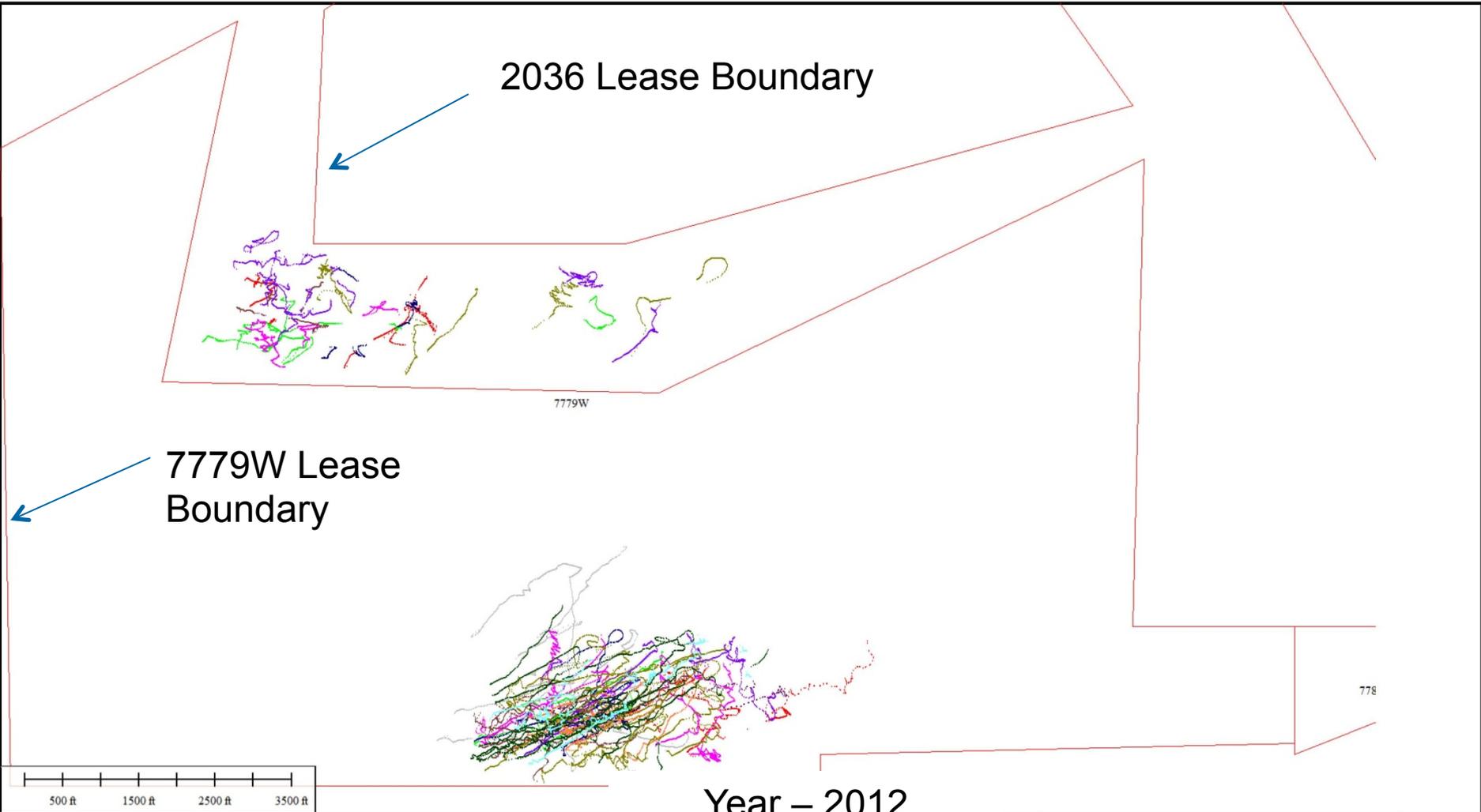
Event Tracking



Site : 7779W and 2036

Year 2011
Full Sites

Event Tracking

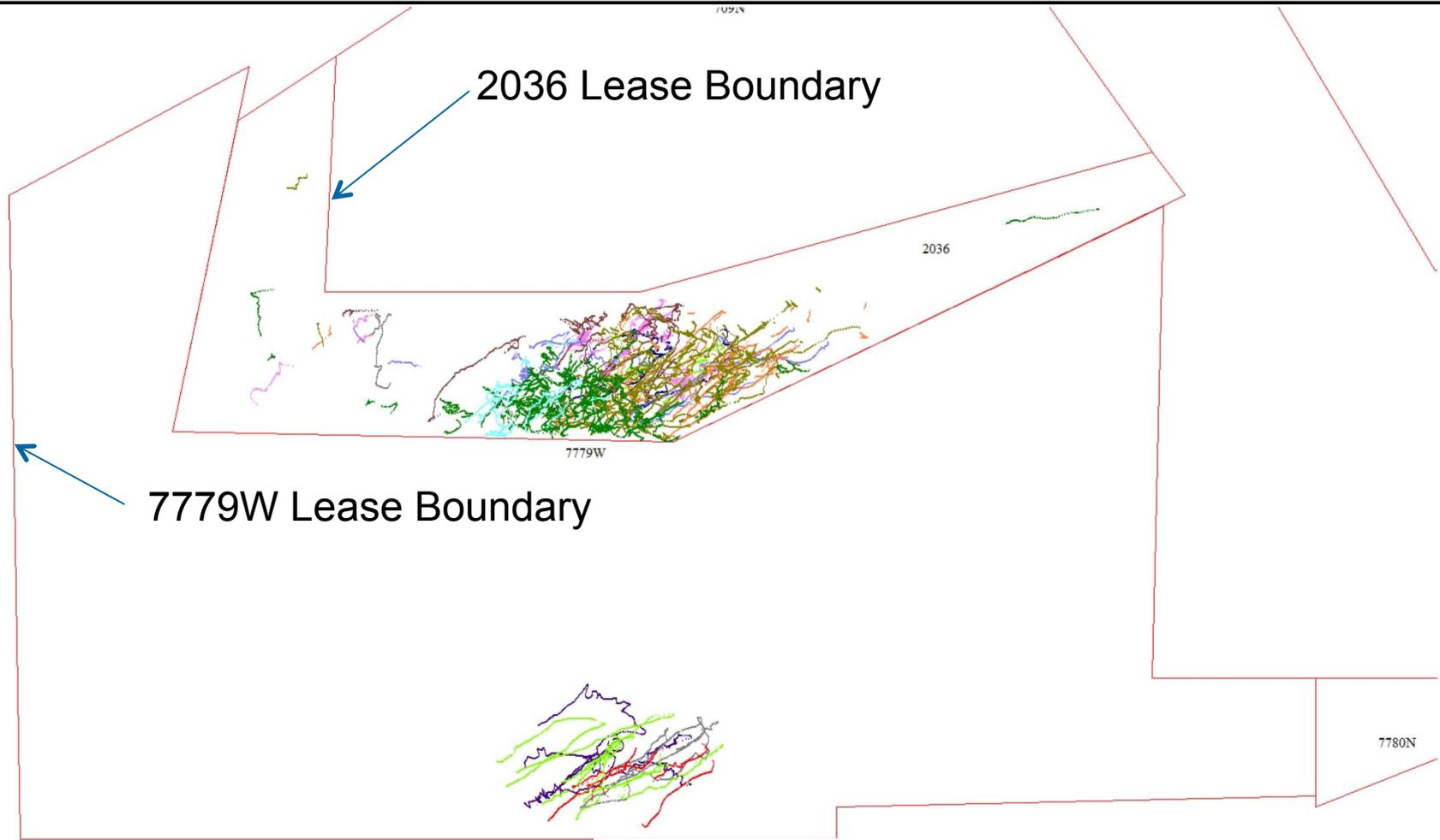


Site : 7779W and 2036

Year 2012
Full Sites

Legend		
January	May	September
February	June	October
March	July	November
April	August	December

Event Tracking



Year – 2013

Site : 7779W and 2036

Year 2013
Full Sites

Legend

January	May	September
February	June	October
March	July	November
April	August	December

Central Bay Benthic Disturbance

- Less than 7% of the area over each year has been disturbed from mining activities; monthly average is significantly less.
- % disturbed from mining events ranged over the past three years between 0% and 30.8% within an individual lease area.
- Annual percentages of disturbance ranged between 5.6% and 6.6%. This is a very conservative estimate as it assesses a general area of potential monthly disturbances over the year.

Source: Hanson/Jerico Response to NMFS Questions Regarding Benthic Disturbance and Fishery Habitat

Suisun Channel Benthic Disturbance

- Only 50.4 acres of the 367-acre Middle Ground lease is feasible to mine due to depth restrictions – about 14%.
- Jerico on average disturbs only 0 – 3.4% of the smaller area monthly. Only 18-20% of the small channel area was disturbed on an annual basis – with only 2.6-2.8% of the total lease area disturbed.
- Suisun Associates lease disturbance significantly less - between 0 - 0.08%.

Source: Hanson/Jerico Response to NMFS Questions Regarding Benthic Disturbance and Fishery Habitat

History - Environmental Analysis

- **2001 -2002 Work Group Mtgs** with State and federal regulatory and resource agency staff developed Study Plan to assess potential impacts from Sand Mining
- **2004 Report** Assessment & Evaluation Of The Effects Of Sand Mining On Aquatic Habitat And Fishery Populations Of Central San Francisco Bay And The Sacramento–San Joaquin Estuary
 - **Independent panel of scientific peer reviewers**
- **Additional Studies after 2004 Report**
 - Entrainment Study
- **EIR development**
 - Entrainment Study (AMS 2009)
 - Benthic Study (AMS 2009)
 - Bathymetric and Hydrodynamic Study (CHE 2009)
- **EIR certified 2012 by California State Lands Commission**

Avoidance & Minimization Measures: an Evolving Process

- 100 ft buffer around hard bottom areas within and adjacent to Central Bay lease areas
- Monitoring mining events/locations
- Water depth limitations to avoid sensitive habitat
- End of pipe shall be held at a height in the water column no greater than 3ft off the bottom when priming the pump or clearing the pipe
- Fish Screens (installed in Fall 2013)

Avoidance/Minimization Measures – Fish Screens





Thank You!

Questions Prior to the
Panel Discussion?