

CSMW WORKSHOP SERIES



RESOURCE PROTECTION GUIDELINE DEVELOPMENT RELATED TO COASTAL REGIONAL SEDIMENT MANAGEMENT



CSMW Workshop 4

July 1, 2010



- **Introductions and Background**
- **Workshop Purpose and Objectives**
- **Resource Protection Guidelines and User's Guide Organization**
- **Rocky Intertidal and Rocky Subtidal Habitats**
- **Surfgrass and Kelp Bed Habitats**
- **Workshop Process and Products**
- **Next Steps**

Introductions



Sponsor Agencies

- California Sediment Management Workgroup (CSMW)
- Monterey Bay National Marine Sanctuary (NMS)

Contract Agencies

- Beach Erosion Authority for Clean Oceans and Nourishment (BEACON)
- USACE, Los Angeles District (Moffatt & Nichol contract)

Project Manager/Moderator

- Science Applications International Corporation

Introductions



CSMW Co-Chairs

USACE:

George Domurat

Heather Schlosser, Project Manager
and lead coastal planner, Los Angeles
District

CA Natural Resources Agency:

Brian Baird

Chris Potter – Staff liaison

CSMW Project Manager:

Clif Davenport

Monterey Bay NMS:

Brad Damitz

SAIC Project Manager:

Karen Green

Background



- Coastal Sediment Management Workgroup Efforts and Work Products
- Biological Impact Analysis (BIA) Document
- Workshops



Coastal Sediment Management Workgroup



Federal

USACE
SPL
SPN
USGS
NOAA
USEPA
MMS



State

Natural Resources Agency
Boating & Waterways
Coastal Commission
Parks & Recreation
Geological Survey
Fish & Game
Coastal Conservancy
SWRCB
Ocean Protection Council

Local

Cal Coast (local agencies)
Regional Entities

NGOs

CMANC (Ports & Harbors)

CSMW Mission and Goals



Mission

Conserve, restore, and protect California's coastal resources by developing and facilitating regional approaches to managing sediment imbalances.

Goals

- *To reduce shoreline erosion and coastal storm damages;*
- *restore and protect beaches and coastal habitat by restoring natural sediment supply from rivers, impoundments and other sources to the coast; and*
- *optimize the use of sediment from ports, harbors, and other opportunistic sources.*

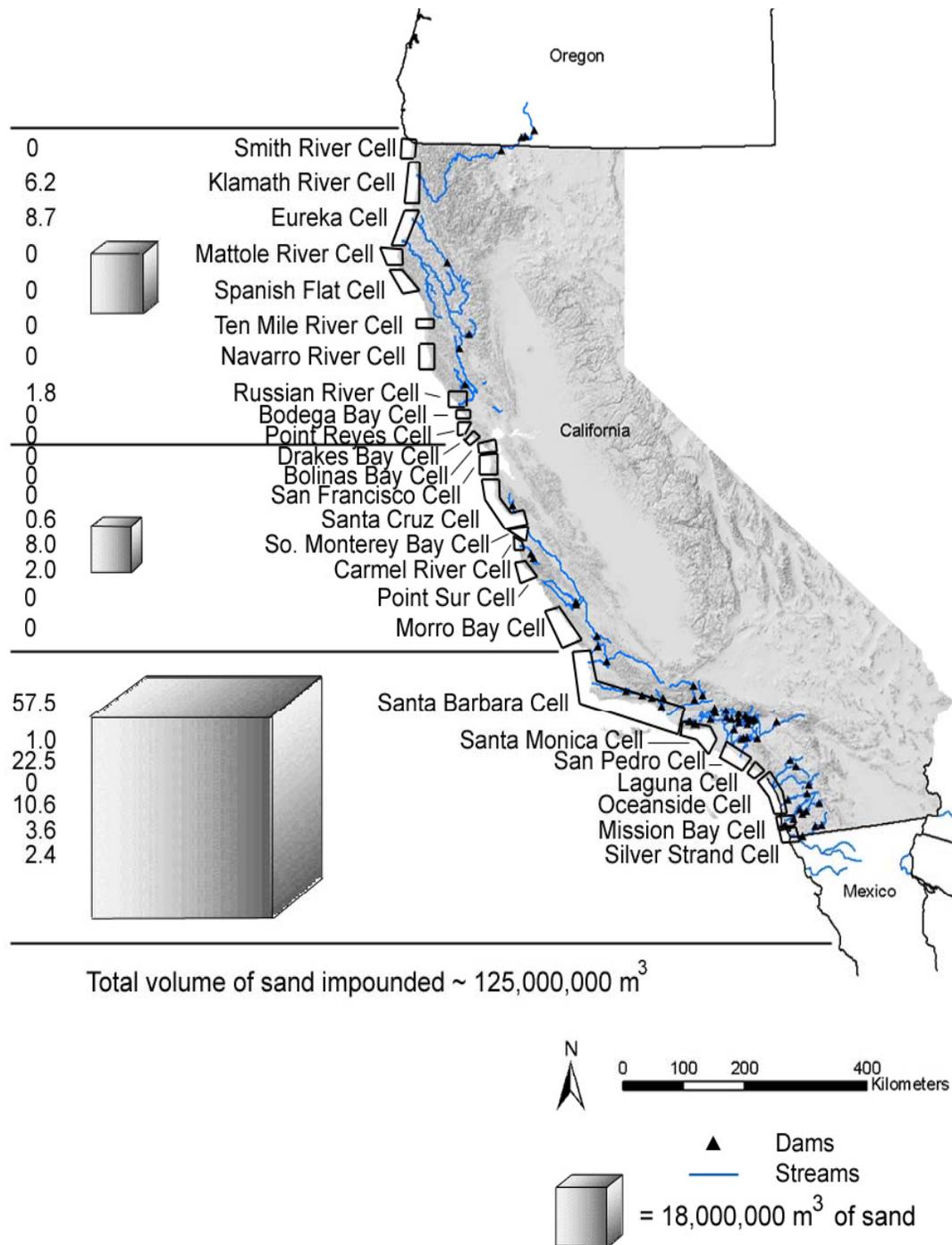
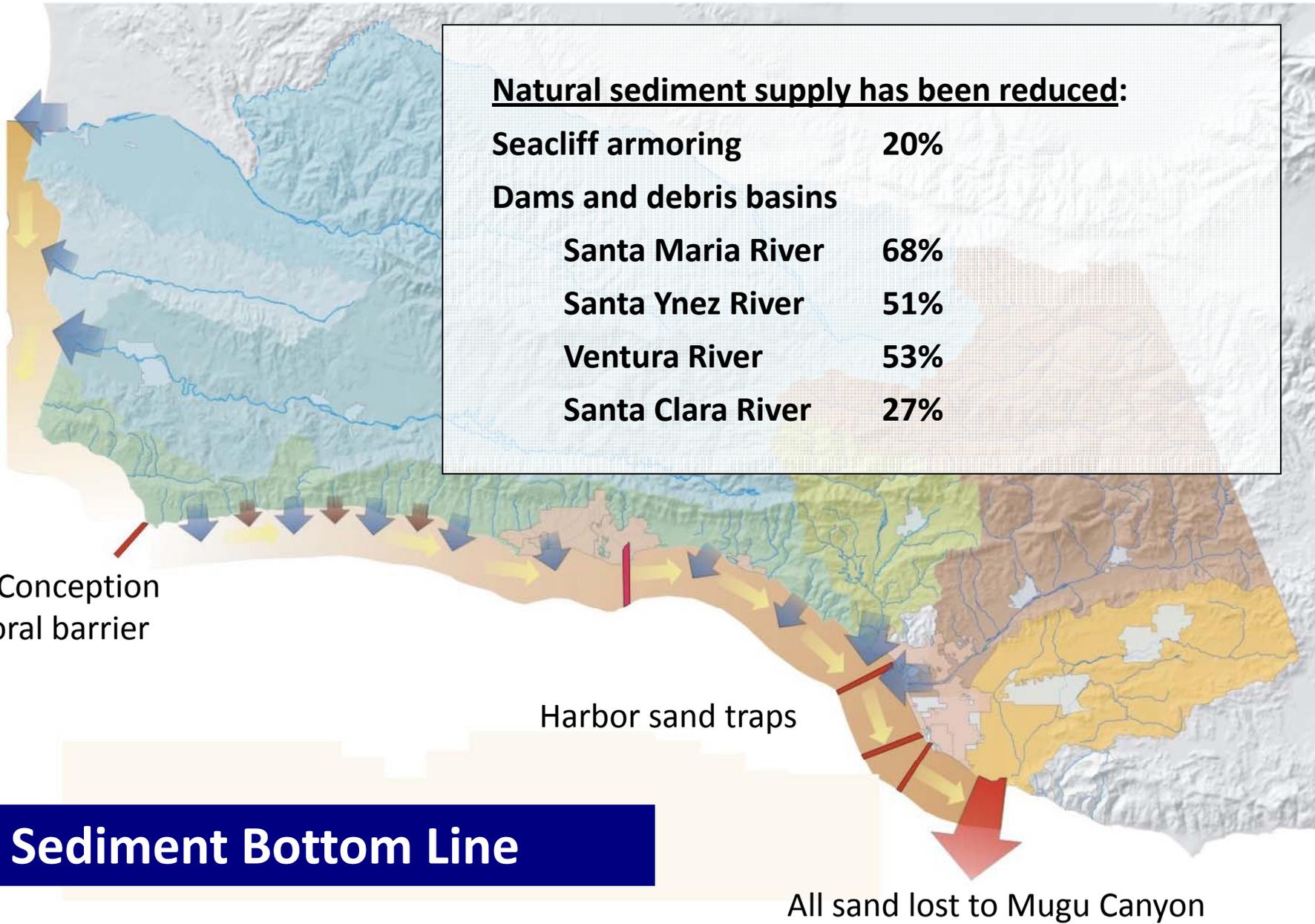
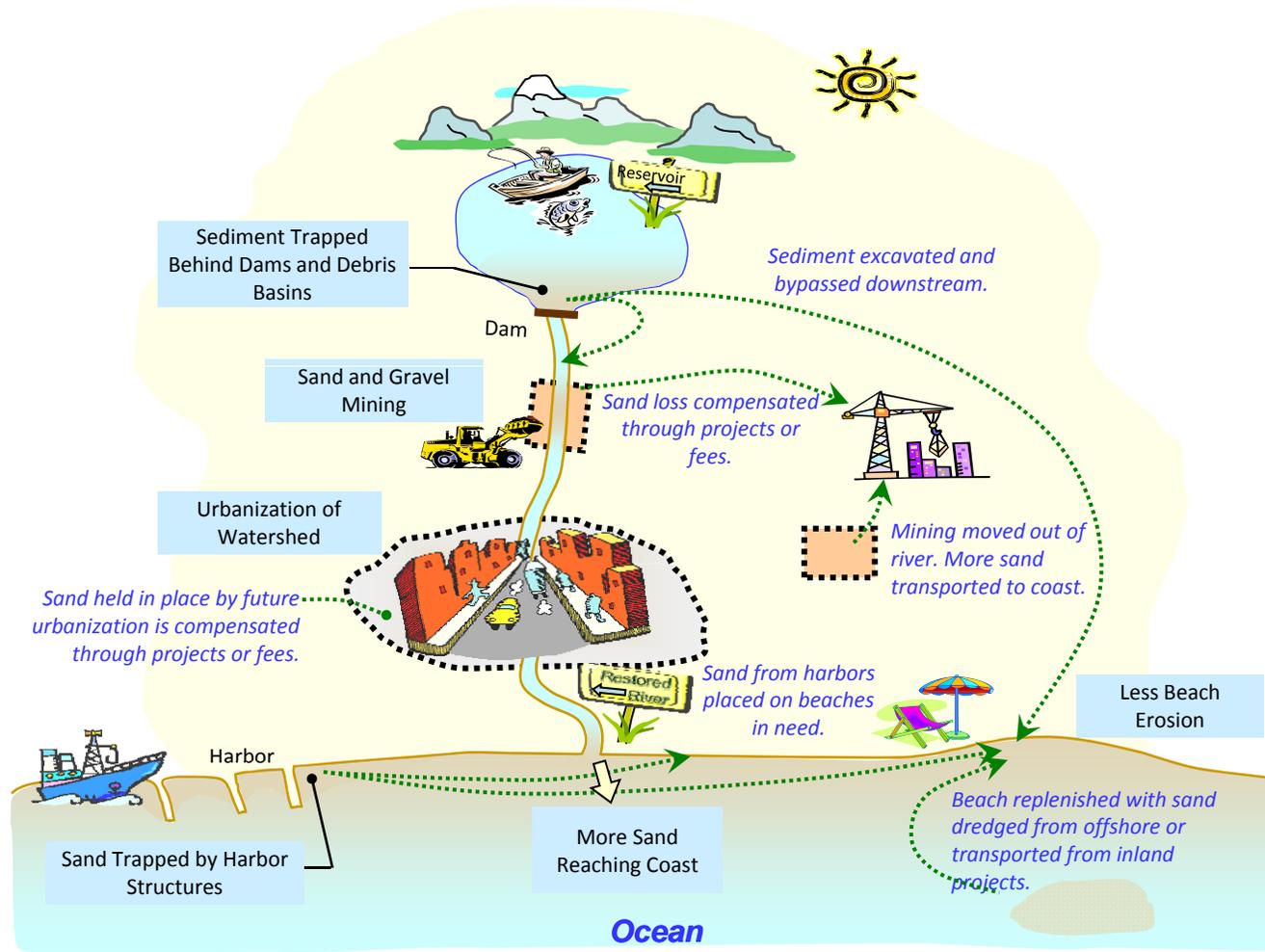


Figure 7. Cumulative sand impounded by dams in each of California's 25 major littoral cells. The numbers are millions of cubic meters of sand that have been trapped by dams in the watersheds draining into each littoral cell. The cubes are scaled in size relative to each other to depict impoundment in northern, central, and southern California. Littoral cell names and divisions are from Patsch and Griggs, 2005



Regional Sediment Management- Road to Solutions



Regional Sediment (Sand) Management

COASTAL SEDIMENT MASTER PLAN

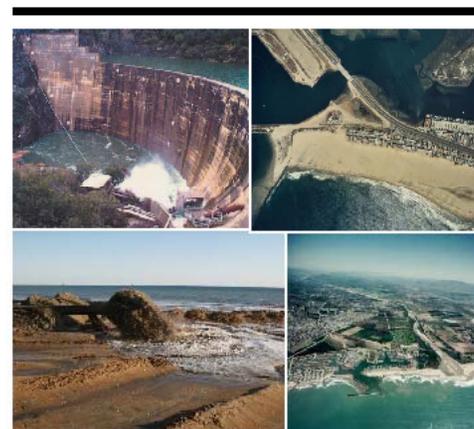


Deliverables:

- ✓ Educational materials, reports & data
- ✓ Computer-based decision support tools
- ✓ Regional-based Coastal RSM Plans.
- ✓ Agency outreach to incorporate RSM

THE CALIFORNIA COASTAL SEDIMENT MASTER PLAN

Status Report



PREPARED BY

California Coastal Sediment Management Workgroup

May 2009

<http://www.dbw.ca.gov/csmw/default.aspx>

Educational & Informational Reports and Data



- **Biological Impacts Analysis and Recommendations**
- **Cumulative Loss of Sediment Due to Dams**
- **The Economics of Regional Sediment Management in Ventura and Santa Barbara Counties**
- **Beaches, Littoral Drift and Littoral Cells -understanding California's Shoreline and Beach Nourishment**
- **Beach Restoration Regulatory Guide**
- **Sand Compatibility and Opportunistic Use Program (SCOUP)**
- **SMP Status Report and Brochure**
- **Development of Sand Budgets for California's Major Littoral Cells**
- **Tijuana Estuary Demonstration Program**
- **Sources, Dispersal & Fate of Fine Sediment Supplied to Coastal California**
- **Public Outreach & Workshops**
- **Conceptual Plan to Capture/Reuse Coastal Sediments Lost to Submarine Canyons**
- **California Beach Erosion Assessment Survey (CBEAS)**

Biological Information Analysis (BIA) Study



- ✓ Eight public and three technical workshops in 2004: Broad spectrum of attendees
- ✓ Participants asked to identify biological issues of concern (amongst other things)
- ✓ General consensus: better information needed to better determine whether and when sediment management activities could cause environmental problems
- ✓ CSMW commissioned a study to:
 - ✓ Assess what was known about critical biota and habitat,
 - ✓ compile adverse and beneficial impacts from sediment management activities
 - ✓ summarize important findings for educational perspectives, and
 - ✓ Provide mitigation guidance for consistent project methodologies to facilitate environmental assessments and permitting
- ✓ CSMW commissioned academic and obtained agency review:
 - ✓ Reviews all generally positive and supportive
 - ✓ Reviewers had recommendations for improvements or requested additional information.

Academic and Agency Review

Peer Review commissioned for academic balance:

- Dr. Steven Schroeter – UCSB and CCC-SAP
- overall positive commendations and support.

CSMW's cochair requested additional review:

- Resource & Regulatory Agencies
CDFG, NMFS, USACE Regulatory
- Coastal Managers of Sanctuaries and Protected Areas
ONMS-WRCO, MBNMS
- Coastal Wetlands Biologist
SCCWRP

Reviews were all generally positive and supportive on what and how we were trying to accomplish. Several reviewers had recommendations for improvements or requested additional information above and beyond that contained within the report.

Biological Impact Analysis (BIA) Report



Comprehensive Summary Document

REVIEW OF BIOLOGICAL IMPACTS
ASSOCIATED WITH
SEDIMENT MANAGEMENT
AND
PROTECTION OF CALIFORNIA COASTAL BIOTA

In Support of the
CALIFORNIA SEDIMENT MANAGEMENT MASTER PLAN



Prepared for:
California Coastal Sediment Management Workgroup
Under Contract with: BEACON



- 10 Chapters
- 4 Appendices
- Technical Summaries - California coastal habitats and biological resources - increase understanding of how sediment management may affect them.
- Balanced summaries of types of impacts and issues of concern.
- Review of mitigation measures, monitoring, and effectiveness considerations.
- Science-based recommendations to protect coastal biota during sediment management activities.

Standardized Ecological and Response Information

- Regulatory Status
- Distribution
- Functions & Species Supported
- Life History Facts
- Resilience
- Reported Responses
- Case Studies

Habitat and/or Species:

Habitat	
Species Common Name	
Species Scientific Name	



Regulatory Status:

Endangered	
Threatened	
CDFG Managed	
Essential Fish Habitat	
Other	
None	

Distribution:

Life Stage or Function	California			On Land	Inter-tidal	Near-shore < 30 ft	Off-shore > 30 ft	Exposed and/or Protected Coast
	South	Central	North					
Primary Habitat								
Foraging Habitat								
Nesting/Spawning Habitat								
Resting/Roosting Habitat								

Functions:

Associated Species	Primary Habitat	Forage Habitat	Spawning Nesting Habitat	Resting Habitat	Fisheries Habitat		Forage Prey
					Commercial	Sport	
Invertebrates							
Reptiles							
Birds							
Vegetation							
Mammals							
T&E Species							

Life History Facts:

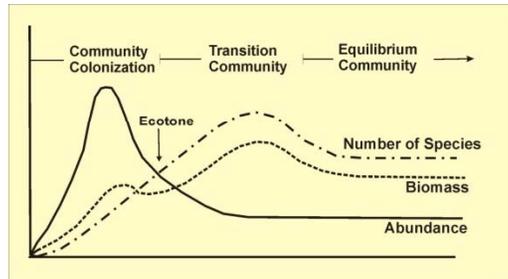
Reproduction		Growth Season	Dormancy Season	Migrator y Season	Longevity Life Span	Motility
Method	Season					
Egg/Nest Egg/Spawn Flower/Seed Planktonic Spores Vegetative	Months	Months	Months	Months	Annual 1-3 Years > 3 Years	Sedentary

Summaries – Understanding the Impact



Technical Data by Issue Area

- Equipment
- Burial, Sedimentation
- Water Quality



Distance or Time from Disturbance



Unconfined hydraulic discharge



Hydraulic discharge behind dike

Photos from SANDAG

Table 5.3-1. Noise levels associated with operation of different types of construction and marine equipment.

Dredges and Construction Equipment	Airborne Noise dBA at 50 ft (15 m)	Dredges and Other Marine Equipment	Underwater Noise dB (re 1 µPa)
Clamshell dredge ²	76	Large clamshell bucket dredge (sands) ^{3a}	99 to 124 (RMS) at 500 ft (150 m)
Bucket dredge	75-88	Small clamshell bucket dredge (soft sediments) ^{3a}	107 (RMS) distance not reported
Hopper dredge, dredging ¹	82	Bucket dredge ^{3b}	150 to 162 distance not reported
Hopper dredge, discharging ¹	79	Barge loading ^{3a}	108.6 (RMS) at 500 ft (150 m)
Backhoe (average)*	72-90	Barge discharge ^{3a}	96 to 108.7 (RMS) at 1,035 ft (316 m)
Backhoe**	84-93	Trailing suction hopper dredge ⁴	183 to 195 normalized at 3 ft (1 m)
Bulldozer **	85 -103	Trailing suction hopper dredge ⁴	162 to 175 normalized at 33 ft (10 m)
Compressor (average)*	73-88	Trailing suction hopper dredge ⁴	142 to 155 normalized at 328 ft (100 m)
Crane (average)*	74-89	Other Marine Equipment	
Crane **	90 - 102	Vessel Traffic (ambient)*	130 (peak)
Excavator (average)*	81-97	Ferry Terminal*	131-136 (peak)
Front loader (average)*	72-90	Cable laying ⁵	160 at 800 ft (244 m)
Front-end loader**	86-94	Sonar devices*	150 to 215 distance not reported
Generator (average)*	71-82	Pile driving ⁶	177 to 220 (peak) at 33 ft (10 m)
Grader (average)*	79-93		
Heavy trucks (average)*	82-96		
Pile driver (peak)*	81-115		
Pumps (average)*	68-80		
Roller (average)*	72-75		

Sources:

Construction equipment: WSDOT 2006*, <http://www.cdc.gov/elcosh/docs/d0500/d000573/d000573.html>**

Dredges (dBA) = Chambers Group 1992¹, Helix cited in Chambers Group 2000², Boeing 2005⁷

Dredges and other marine equipment (dB re 1 µPa) = Dickerson et al. 2001^{3a}, Miles et al. 1986 and 1987 cited in

Dickerson et al. 2001^{3b}, Bassett Acoustics 2005⁴, City of Pittsburg 2005⁵, Hastings and Popper 2005⁶

Note: Underwater noise values may be referenced as peak, RMS, or either of these reference levels may not be reported.

Summaries – Monitoring Requirements



Table . Representative water quality monitoring requirements associated with beach nourishment and/or sand placement projects in California.

Example Projects	Permit and/or Document	Monitoring Observations	Dredge and/or Nearshore Disposal Receiving Water Monitoring	Beach Monitoring
San Diego Beach Sand Project 2001	RWQCB 401 Certification File No. 00C-063 (Project implemented per described in application, including monitoring water column). USACE 1999-15076-RLK, USFWS Biological Opinion FWS Log. No. 1-6-01-F-1046.	Visual observations during water quality monitoring: 1. current speed/direction 2. tidal stage, 3. trash, debris, 4. odors	1. Daily Water Quality for first week, followed by weekly. Sampling Locations: A. 250 ft (75 m) downdrift, B. 500 ft (150 m) downdrift, C. 250 ft (75 m) updrift, D. 500 ft (150 m) updrift, E. Control 1000-1500 ft (300-450 m) from dredge, F. 1000-1500 ft (300-450 m) from dredge and at least 500 ft (150 m) from first control. Analyzed for dissolved oxygen, turbidity (NTU and Secchi disk), temperature, conductivity, pH. <i>Monitoring Plan Criteria:</i> turbidity not to exceed ambient by more than 20%. 2. Water clarity within top 3 ft of water column < 3ft with Secchi disk. <i>USFWS/USACE Criteria:</i> reduction in water clarity no more than 2.47 acres (1 hectare).	1. Daily nearshore water clarity within top 3 ft of water column < 3ft with Secchi disk immediately west of active wave break on beach. <i>USFWS/USACE Criteria:</i> reduction in water clarity no more than 2.47 acres (1 hectare). 2. Weekly Bacteria. Three replicate samples collected offshore discharge point. Analyzed for total and fecal coliform. <i>Monitoring Plan Criteria:</i> If any sample exceeds 200/100 ml, notify and additional sampling until standards met for 3 consecutive days.
Oceanside Harbor Dredging 1998	RWQCB Waste Discharge Requirements W98B0016 (Jan 1998 Modification)	Daily visual observations for: 1. current speed/direction 2. tidal stage, 3. trash, debris, 4. oil/petroleum materials, 5. discoloration/ extent of visible turbidity plume, 6. odors	1. Daily Turbidity - Secchi disk or turbidity meter. Sampling locations at dredge and nearshore disposal site: a. 30 m (100 ft) downdrift, b. 75 m (250 ft) downdrift, c. 150 m (500 ft) updrift, d. control 300-450 m (1000-1500 ft) updrift, e. control 300-450 m (1000-1500 ft) updrift and at least 150 m (500 ft) from first control. <i>Criteria: none specified.</i> 2. Water Samples each dredge cycle. Sampling locations a-c, f-h. Analyzed for TSS, hydrogen sulfide, polar & non polar oil & grease. <i>Criteria: none specified.</i>	1. Daily Turbidity - Secchi disk or turbidity meter. Sampling locations: k. 900 m (3000 ft) updrift and 150 m (500 ft) offshore, l. 450 m (1500 ft) downdrift and 150 m (500 ft), m. directly offshore in plume. <i>Criteria: none specified.</i> 2. Bacteria weekly. Three replicate samples. Sampling location: 30 m (100 ft) downdrift. Analyzed for total and fecal coliform. <i>Criteria:</i> If any sample exceeds water contact standards, notify and additional daily sampling at 30, 60, 150, 300 m (100, 200, 500, 1000 ft) downdrift daily until no exceedance for 3 consecutive days.

Significance Criteria – *What Has Been Used*



Table D.1. Significance criteria that have been used for evaluating potential impacts to biological resources associated with representative California sediment management projects.

Type of Criteria					
Federal and/or State Listed Sensitive Species	Essential Fish Habitat	Native Species and/or Other Sensitive Resources	Wildlife Movement	Commercial Fishing	Environmental Policies
Northern California					
<i>USACE 1998c, Crescent City Harbor O&M Dredging, Del Norte County California, EA and FONSI</i>					
Forceful effect causing change in existing conditions.		Forceful effect causing change in existing conditions.	Forceful effect causing change in existing conditions.		
<i>USACE 2002c, Operations & Maintenance Dredging of the Moss Landing Harbor Federal Channels, Monterey County, California, EA and FONSI</i>					
If it is expected to affect the population status of a State or Federally listed, proposed, or candidate species or is expected to affect the breeding or foraging habitat of such a species so as to result in increased mortality or reduced reproductive success.		Causes the loss or long-term degradation of any environmentally sensitive habitat. Causes a measurable change in species composition or abundance of a sensitive community or causes a substantial change to marine habitat within the harbor or bay for a period of five years or longer. An impact is a forceful effect causing a change in conditions.	Interferes substantially with the movement of any resident or migratory fish or wildlife species.		
Central California					
<i>USACE 2001, Morro Bay Harbor Six-Year Maintenance Dredging Program, Final EA</i>					
Not specified, but potential to impact threatened and endangered species assessed.	Not specified, but potential impacts to grunion and essential fish habitat assessed.	Not specified, but potential impacts to plankton, invertebrates assessed		Not specified, but potential for impacts to commercial oyster bed assessed.	

Mitigation Summaries – *What Has Been Implemented*



Table . Schedule and prohibition zones used in association with beach nourishment and/or replenishment projects to protect sensitive fish species.

Document	SAND Volume (cy)	% Fines	Species	Schedule	Prohibition Zone	Other Measures
USACE 1998 Crescent City EA	65,000	sandy	Rockfish	late Aug-Sep		To avoid spawning
Chambers 2002. Biological Analysis (Goleta Beach Winter Dike)	4,000 to 8,000	NA	Grunion	Fall/winter		Coordinate berm removal prior to Memorial Day weekend outside predicted grunion run, grunion monitoring conducted, and removal operations limited to areas with no grunion or will cease until no grunion present.
Chambers 2001, Mitigated Negative Declaration (BEACON South Central Coast)	100,000	Up to 25	Grunion Steelhead	Schedule between Sept 15 and Mar 15 avoids spawning season at most sites.		(1) Monitor grunion if project conducted during spawning season with curtailment of construction and/or construction of protective berms as necessary to protect and allow eggs to hatch. (2) Monitor inlets of Goleta Slough, Carpinteria Creek and Ventura River, if sedimentation closes inlets, will be opened with bulldozers.
SANDAG and U.S. Navy 2000, EIR/EA, San Diego Regional Beach Sand Project)	2,000,000	1-51, mainly <10	Grunion	Pre-construction surveys to determine habitat suitability, monitoring during construction, buffer or move operations		

Response to Comments and Completion of Biological Impact Analysis (BIA) Document



- Conduct Workshops
- Develop Resource Protection Guidelines
- Finalize BIA Document
- Prepare Abbreviated User's Guide
- Develop Work Plan

Workshop Series



Date (2010)	Location	Key Topics
February 18	Long Beach NOAA	General Approach to Guideline Development, Resource Agency Coordination
February 24	Sacramento EPA	Water Quality, Water-Sediment Resource Protection in Watersheds, Resource Protection Managed Areas
June 16	Carlsbad USFWS	Habitats: Sandy Beach, Dune/Strand, Sandy Subtidal
July 1	Monterey MBARI	Habitats: Rocky Intertidal, Rocky Subtidal, Surfgrass, Kelp Beds
July 13	Oakland SEI	Habitats: Bays, Lagoons, Eelgrass
July 14	Eureka Humboldt BRCD	Habitats: Bays/Wetlands and Commercial Fisheries
August 4	San Diego SCCWRP	Impact Assessment, Monitoring, Database Tools

Workshop Purpose and Objectives



***Workshop Purpose:
Assist Development of Resource Protection Guidelines***



Objectives:

Identify Opportunities to Refine Existing Guidelines, Improve Coordination with Other Relevant Programs, and Identify Guideline Considerations to Improve Resource Protection During Sediment Management Projects Relative to:

- ✓ **Rocky Intertidal Habitat and Resources**
- ✓ **Rocky Subtidal Habitat and Resources**
- ✓ **Surfgrass Habitat and Resources**
- ✓ **Kelp bed Habitat and Resources**

Guideline Format and User's Guide Organization



User's Guide Organization



Objective: Streamline Document to Facilitate Practical Use to Agencies, Planners, Scientists

- Condensed Version BIA Document
- Overview Summaries
 - Key Elements (Sediment Management Activities, Project Types, Impact Issues By Project Phase, Monitoring, Performance Evaluation)
- Resource Protection Guidelines
 - Habitat-Based
 - Flow Path Approach (Resources, Impact Issues, Protective Measures, Monitoring Considerations)
 - Cross-Reference Tables (e.g., Habitat, Species, Impact Type, Project Phase)

Resource Protection Guideline Format



Habitat Based

Guideline Descriptions

- Issue Statement
- Guideline Description
- Rationale
- References (As Applicable)
- Effectiveness Considerations

Habitat Example

Habitat = Rocky Intertidal						
Project Type	Sand Placement					
Resource Categories	Invertebrates	Fish	Birds	Marine Mammals	Vegetation	Other
Resource Type	Rocky Intertidal Invertebrates	Nearshore Water Column, Tidepool Fish	Seabirds, Shorebirds	Pinnipeds	Algae, Seagrasses	
Species of Concern - If Present	Abalone		Brown Pelican	Pinnipeds	Surfgrass	
Critical Habitat - If Present						
Sensitive Habitat			Major Roosting Sites	Rookeries		ASBS, MLPA, Reserve, Sanctuary, State Park
Adjacent Habitats of Particular Concern (HAPC) - If Present	Reef, Surfgrass	Reef, Surfgrass	Reef, Surfgrass		Reef, Surfgrass	
Other Adjacent Sensitive Habitats - If Present	Dunes		Nesting Sites, major roosting sites, critical habitat	Haul out, Rookeries		Bay, Estuary
Adjacent Species of Concern - If Present			Least Tern, snowy plover, Brown Pelican			

Habitat = Rocky Intertidal

Special Jurisdiction Coordination Considerations							
Area of Special Biological Significance							
Marine Life Protected Area, Reserve, Sanctuary							
State Park							
Special Resource Protection Considerations							
	Critical Habitat	Nursery or Spawning Area	Nearby Nest Sites	Foraging Area	Wintering Area	Resting Area	Nearby Sensitive Area or Habitat
Endangered or Threatened Species							
California brown pelican						Potential	
California least tern			Potential				Nesting
Western Snowy Plover			Potential	Potential			Nesting
Other Species or Habitats of Concern							
Abalone		Potential		Potential			Potential
Ca Spiny Lobster		Potential		Potential			Potential
Sea Urchins		Potential		Potential			Potential
Pinnipeds						Potential	
Rocky Subtidal							Potential
Surfgrass		Potential		Potential			Potential
Dunes/Strand							Potential
Wetland							Potential

Habitat = Rocky Intertidal						
Project Type	Sand Placement at Nearby Beach					
Resource Categories	Invertebrates	Fish	Birds	Marine Mammals	Vegetation	Other
Impact Considerations						
• Equipment (e.g., pipelines)	Damage	Disturbance	Disturbance	Disturbance	Damage	
Contaminant Spill	Contaminate	Contaminate Prey	Contaminate Prey, Oiling	Harm		Habitat Degradation
Entrainment						
Lighting			Predator Attraction			
Noise			Disturbance	Disturbance		
Vehicles (Damage)						
• Sediment burial/removal						
• Sedimentation	Habitat Degradation, Loss	Habitat Degradation, Loss	Habitat Degradation, Loss		Habitat Degradation, Loss	Inlet Closure, Degrade Habitat
• Turbidity	Feeding, Recruitment	Disturbance	Foraging		Habitat Degradation	

Habitat = Rocky Intertidal						
Project Type	Sand Placement Nearby					
Resource Categories	Invertebrates	Fish	Birds	Marine Mammals	Vegetation	Other
Monitoring Considerations						
Pre-project Assessment	Habitat Quality	Habitat Quality	Proximity to Major Roosting Sites	Proximity to Major Haul Outs or Rookeries	Surfgrass, if applicable	Sediment Quality
Construction (as appropriate)	Turbidity, Sedimentation	Turbidity, Sedimentation	Noise, Light, turbidity	Noise	Turbidity, Sedimentation	Water Quality, Sedimentation
Post-Construction	Habitat Quality	Habitat Quality			Surfgrass, if applicable	Sediment Quality
Other Construction Monitoring Considerations						

ROCKY INTERTIDAL AND SURFGRASS HABITATS



Round-Table Discussion Guideline Development Considerations



- Issues of Concern
- BMPs, Mitigation Measures
- Identify guideline topics of particular interest
- Discuss guideline considerations to improve resource protection of beneficial uses
- Identify critical data gaps

Sediment Management Activities



Beach Nourishment

- ❖ Discharge – Receiving Site

Sand Maintenance

- ❖ Relocate Sand – Backpass, Bypass

Other Activities - Beach Grooming

- ❖ Rework Sand - Remove Debris



ROCKY INTERTIDAL HABITAT

Habitat Functions

Invertebrates

Primary habitat – prey of fish and shorebirds, recycle nutrients

Fish

Foraging and spawning (tidepool) habitat

Birds

Foraging, resting

Other Wildlife

Resting

Vegetation

Species of Concern

Abalone

Spiny lobster

Monkeyface prickleback

Brown Pelican

Pinnipeds

Surfgrass



Habitat Functions

Invertebrates

Primary habitat – prey of fish and shorebirds, recycle nutrients

Fish

Foraging and spawning (tidepool) habitat

Birds

Foraging

Other Wildlife

Vegetation

Primary Habitat

Species of Concern

Spiny lobster

Surfgrass

Ecological Values Vary



Habitat = Rocky Intertidal				
Substrate Type	High or Mixed Relief - Surfgrass	Low Relief, Substantial Area	Low Relief, Localized Patch Reefs	Boulder, Cobble
Winter	Persistent	More exposed	Exposed	Exposed
Summer	Persistent	Less exposed, persistent	Sand inundated	Sand inundation variable*
Resources Supported	High	Variable*	Low	Variable*

Potential Sand Placement Impacts

Equipment

- Damage (Anchors, Chains, Pipelines, Propellers)
- Noise Disturbance of Sensitive Species
- Accidental Spills

Turbidity

- Reduce Vegetative Growth
- Interfere with Seabird Foraging
- Interfere Fish Foraging/Respiration

Indirect Sedimentation

- Habitat Loss
- Degrade Habitat Function
- Reduce Vegetative Recruitment
- Impact Spawning Grounds
- Inlet Shoaling, Closure



Rocky Intertidal/Surfgrass

Issue of Concern

Sedimentation, Turbidity, Damage

Resource Protection Considerations

- Proximity to reef
- Project size and duration
- Measures to minimize sedimentation
- Avoid habitat degradation or loss
- Anchor and pipelines plans to avoid hard bottom areas



Abalone, Lobster

Issue of Concern

Reef sedimentation, turbidity, damage

Protection Considerations

- Minimize turbidity
- Avoid habitat degradation or loss
- Avoid equipment on or near reefs

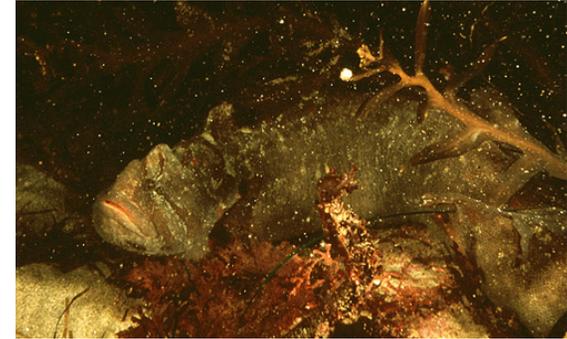


Black abalone

Photo credit: <http://www.marine.gov>



Tidepool Fish



Monkeyface prickleback

Photo credit: Daniel Gotshall

Issue of Concern

Reef sedimentation, turbidity, disturbance

Protection Considerations

- **Minimize turbidity**
- **Avoid habitat degradation or loss**
- **Avoid equipment on or near reefs**

Least Tern

Breeding Season
April 1-September 15

Issue of Concern

Disturbance, Turbidity

- ESA consultation if project within 1 mile (1.6 km) of nesting sites
- RGP 67 - no beach nourishment activities within 3,000 ft (914 m) of nest sites during the breeding season.
- MMRP – Turbidity compliance monitoring
- Buffer distance to attenuate noise < 60 dB at nest sites



Brown Pelican

Issue of Concern

Disturbance, Turbidity

- Buffer distance to attenuate noise < 60 dB at major roost sites
- MMRP – Turbidity compliance monitoring



Shorebirds, Seabirds

- Minimize turbidity
- Avoid equipment on or near reefs.
- Use buffer to attenuate noise to ≤ 60 dB near nesting sites
- Avoid removal of all beach wrack



Marine Mammals



Issue of Concern

Haul Outs, Rookeries

Resource Protection Considerations

- Minimize turbidity and sedimentation.
- Avoid equipment on or near reefs.
- Buffer distance to attenuate noise < 60 dB near areas of concentration.

Beach Wrack

Ecological Function

Invertebrate habitat/forage
Shorebird, Gulls Forage

Species of Concern

Snowy Plover

Activities of Concern

Sand spreading
Beach grooming



Impact Minimization

- Do not completely remove wrack



Strand and Dune Vegetation



Functions

Dune stabilization

Wildlife habitat/forage

Species of Concern

Native vegetation

Blue butterflies

Globose dune beetle

Activities of Concern

Vehicles, Pipelines

Trampling

Impact Minimization

- **No work zones**
- **50-ft vehicle corridors**
- **Supports for pipelines**

Turbidity



- ❑ Naturally occurs in areas of rip currents, during storms.
- ❑ Beach nourishment monitoring
 - Turbidity mainly confined within the surf zone unless carried offshore by rip currents.
 - Under rip current conditions, turbidity plumes may be visible downcurrent for > 2 mi (3.2 km) and extend outside the breaker zone (MEC 1997, Sherman et al. 1998, AMEC 2002).
 - Under non-rip conditions, plumes may be < 1,000 ft (305 m) long and within the surf zone (MEC 1997, AMEC 2002, Moffatt & Nichol 2003, other data files reviewed in Section 5.5.3.5).



Turbidity

- **RGP 67**
 - 80% sand, < 10% difference from receiving beach
- **Use dikes or swales to slow rate of release of fines**
 - Generally limits turbidity to the surf zone, except in areas of rip currents (MEC 1997, AMEC 2002, Moffatt & Nichol 2004).



Proximity to Inlet

Issue of Concern

Inlet Closure

Sedimentation – increased maintenance

Protection Considerations

- Monitor to determine if inlet closure occurs due to sedimentation. If closure is observed, then remove material as necessary until the inlet area has stabilized (BEACON Demonstration project measure).
- Contribute funds to inlet maintenance program (SANDAG RBSP I measure).

ROCKY SUBTIDAL and KELP HABITATS





Rocky Subtidal HABITAT

Habitat Functions

Species of Concern

Invertebrates

Primary habitat – prey of fish and marine mammals, recycle nutrients

Abalone
Sea Urchins
Spiny Lobster

Fish

Primary habitat – prey of marine mammals

Other Wildlife

Foraging

Sea Otter

Vegetation

Primary habitat – forage and shelter for wildlife

Kelp Beds,
Surfgrass

KELP BED HABITAT



Habitat Functions

Invertebrates

Primary habitat – prey of fish and marine mammals, recycle nutrients

Fish

Primary habitat – prey of marine mammals

Other Wildlife

Foraging

Vegetation

Primary habitat – forage and shelter for wildlife

Species of Concern

Abalone

Sea Urchins

Spiny Lobster

Sea Otter

Kelp Beds,
Surfgrass

Ecological Values Vary



Photo credit: San Diego Nearshore Program
<http://nearshore.ucsd.edu/>

Habitat = Rocky Subtidal				
Substrate Type	High or Mixed Relief	Low Relief, Substantial Area	Low Relief, Localized Patch Reefs	Boulder, Cobble
Winter	Persistent	Sand influence variable*	Sand scour	Sand scour
Summer	Persistent	More exposed	More exposed	More exposed
Resources Supported	High	Variable*	Low	Low

Round-Table Discussion Guideline Development Considerations



- Issues of Concern
- BMPs, Mitigation Measures
- Identify guideline topics of particular interest
- Discuss guideline considerations to improve resource protection of beneficial uses
- Identify critical data gaps

Sediment Management Activities



Borrow Site

- ❖ Dredging - Sand Source Dredging

Nearshore Placement

- ❖ Discharge - Receiving Site

Potential Dredging Impacts

- **Habitat Removal**
- **Dredge Damage (Anchors, Chains, Propeller Damage)**
- **Entrainment**
- **Noise, Lights**
- **Turbidity**
- **Sedimentation**
- **Accidental spills**



Potential Nearshore Placement Impacts

- **Habitat Burial**
- **Damage (Anchors, Chains, Propellers)**
- **Noise, Lights**
- **Turbidity**
- **Sedimentation**
- **Accidental spills**



Rocky Reef/Kelp Beds

Issue of Concern

Sedimentation, Turbidity, Damage



Photo credit: San Diego Nearshore Program
<http://nearshore.ucsd.edu/>

Resource Protection Considerations

- Proximity to reef - Project Size, Duration, Sediment Characteristics
- Turbidity light level thresholds
- Measures to minimize sedimentation
- Vessel corridors to avoid kelp beds
- Anchor and pipelines plans to avoid hard bottom areas

Invertebrates



Issue of Concern

Live Bottom Fisheries (Abalone, Lobster, Sea Urchins)

Resource Protection Considerations

- Minimize turbidity and sedimentation
- Avoid equipment on or near reefs

Reef Fish

Issue of Concern

Reef fish fidelity to hard bottom areas

Resource Protection Considerations

- Minimize turbidity and sedimentation
- Avoid equipment on or near reefs



Least Tern



- ❑ ESA consultation if project within 1 mile (1.6 km) of nesting sites
- ❑ Avoid water clarity reductions of < 3 ft (1 m) offshore nest sites during the breeding season.
- ❑ Turbidity plumes during dredging may range up to 2,297 ft (700 m), but a generalized worst-case plume is considered ≤ 500 mg/L at distances $\leq 1,640$ ft (≤ 500 m) (LaSalle et al. 1991).
- ❑ Turbidity generally dissipates to near background levels within approximately 1,000 ft (300 m) of hydraulic dredges during offshore dredging.

Marine Mammals

Issue of Concern

Forage in hard bottom and Kelp Bed areas

Resource Protection Considerations

- Minimize turbidity and sedimentation
- Avoid equipment on or near reefs
- Buffer distance to attenuate noise < 60 dB near areas of concentration



Types of BMPs and Effectiveness Considerations



- **Operational Controls**
 - Cycle Time
 - Bucket Dredges
 - Eliminate multiple bites, bottom stockpiling
 - Waterline pause to drain excess water
 - Cutterhead Dredge
 - Reduce rotation and swing speeds, bank undercutting
 - Increase pump rates
 - Operate below sediment surface
 - Hopper Dredge
 - Reduce Overflow, fill level
 - Use morninglory spillway - conveys overflow subtidally
 - Halt and Adjust

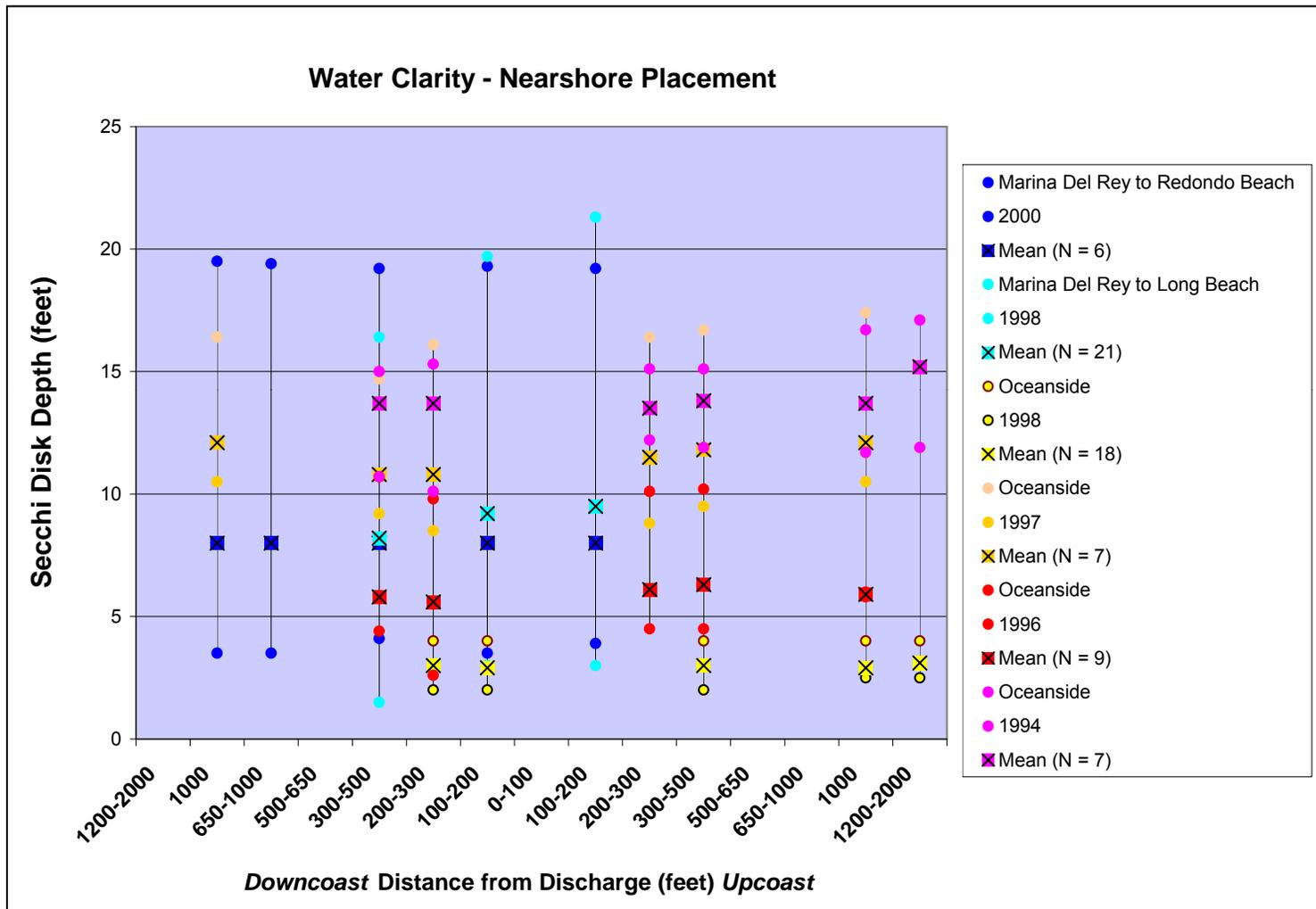
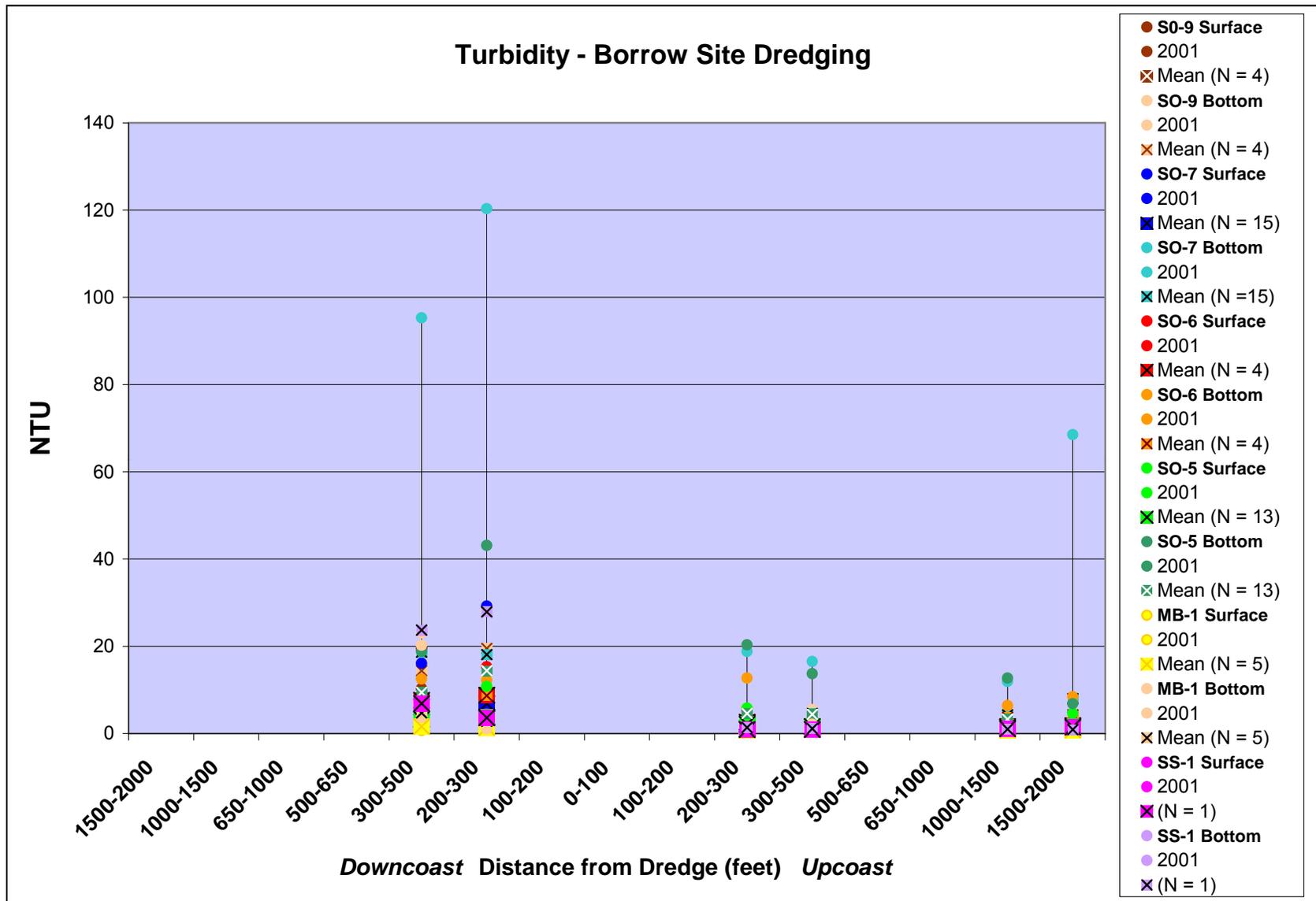


Figure 5.5-10 . Representative light transmittance measurements during sediment management activities in California.



Note: Circles depict range, square box with centered "x" depict mean value.

Figure 5.5-6. Representative turbidity measurements during sediment dredging activities in California.

Final Remarks



Workshop Process and Products



- ✓ Workshops
- ✓ Summarize Received Input
- ✓ Develop Draft Guidelines
- ✓ Guideline Review
- ✓ Incorporate Guidelines into Documents
 - BIA Document
 - User's Guide

Next Steps



- Workshops - Feb-August 2010
- Draft Guidelines - Oct 2010
- Guideline Review - Oct-Nov 2010
- Finalize BIA Document - Dec-Jan 2010
- User's Guide - Dec 2010 - Jan 2011
- Work Plan - Dec 2010 – Jan 2011

Workshop Series



Date (2010)	Location	Key Topics
February 18	Long Beach NOAA	General Approach to Guideline Development, Resource Agency Coordination
February 24	Sacramento EPA	Water Quality, Water-Sediment Resource Protection in Watersheds, Resource Protection Managed Areas
June 16	Carlsbad USFWS	Habitats: Sandy Beach, Dune/Strand, Sandy Subtidal
July 1	Monterey MBARI	Habitats: Rocky Intertidal, Rocky Subtidal, Surfgrass, Kelp Beds
July 13	Oakland SEI	Habitats: Bays, Lagoons, Eelgrass
July 14	Eureka Humboldt BRCD	Habitats: Bays/Wetlands and Commercial Fisheries
August 4	San Diego SCCWRP	Impact Assessment, Monitoring, Database Tools

Next Steps



Workshop Participation

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Document Links

- <http://www.dbw.ca.gov/CSMW/default.aspx>