CSMW WORKSHOP SERIES

Coastal Sediment Management Workgroup

RESOURCE PROTECTION GUIDELINE DEVELOPMENT RELATED TO COASTAL REGIONAL SEDIMENT MANAGEMENT

CSMW Workshop 5
July 13, 2010

Coastal Sediment Management Workgroup

- Introductions and Background
- Workshop Purpose and Objectives
- Resource Protection Guidelines and User's Guide Organization
- Bay and Lagoon Habitats and Resources
- Eelgrass Habitat and Resources
- Workshop Process and Products
- Next Steps

SAIC From Science to Solutions

Introductions

Coastal Sediment Management Workgroup

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

SAIC From Science to Solutions

Introductions

Coastal Sediment Management Workgroup

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

SAIC From Science to Solutions

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

Coastal Sediment Management Workgroup

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.***

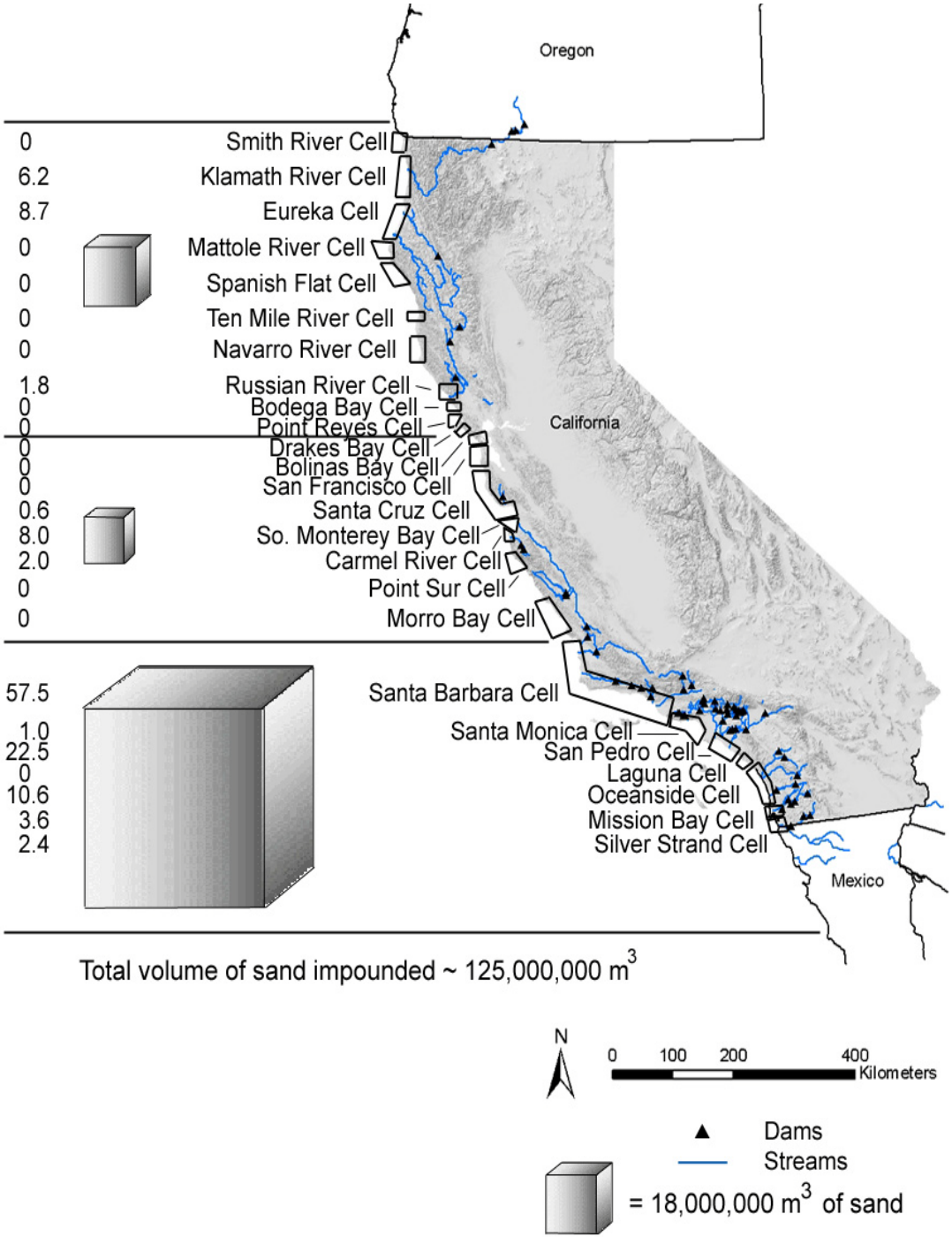
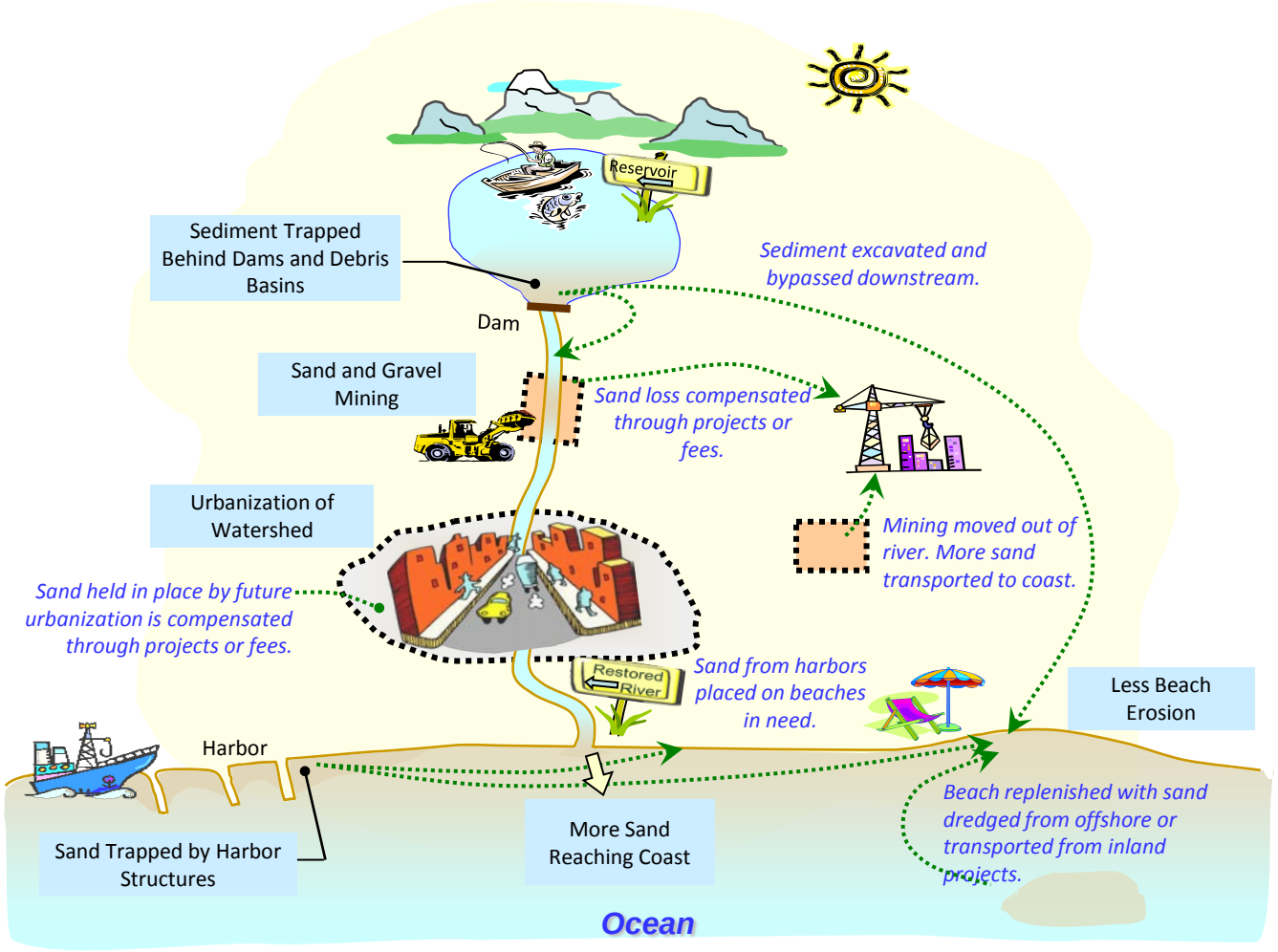


Figure 7. Cumulative sand impounded by dams in each of California's 25 major littoral cells. The numbers are millions of cubic meters of sand that have been trapped by dams in the watersheds draining into each littoral cell. The cubes are scaled in size relative to each other to depict impoundment in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

Regional Sediment Management- Road to Solutions

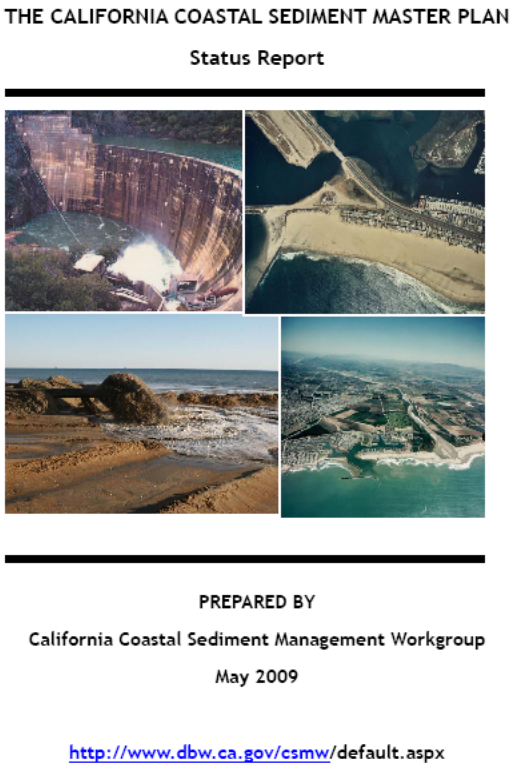


Regional Sediment (Sand) Management

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

Coastal Sediment Management Workgroup

- 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

Coastal Sediment Management Workgroup

✓ 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:

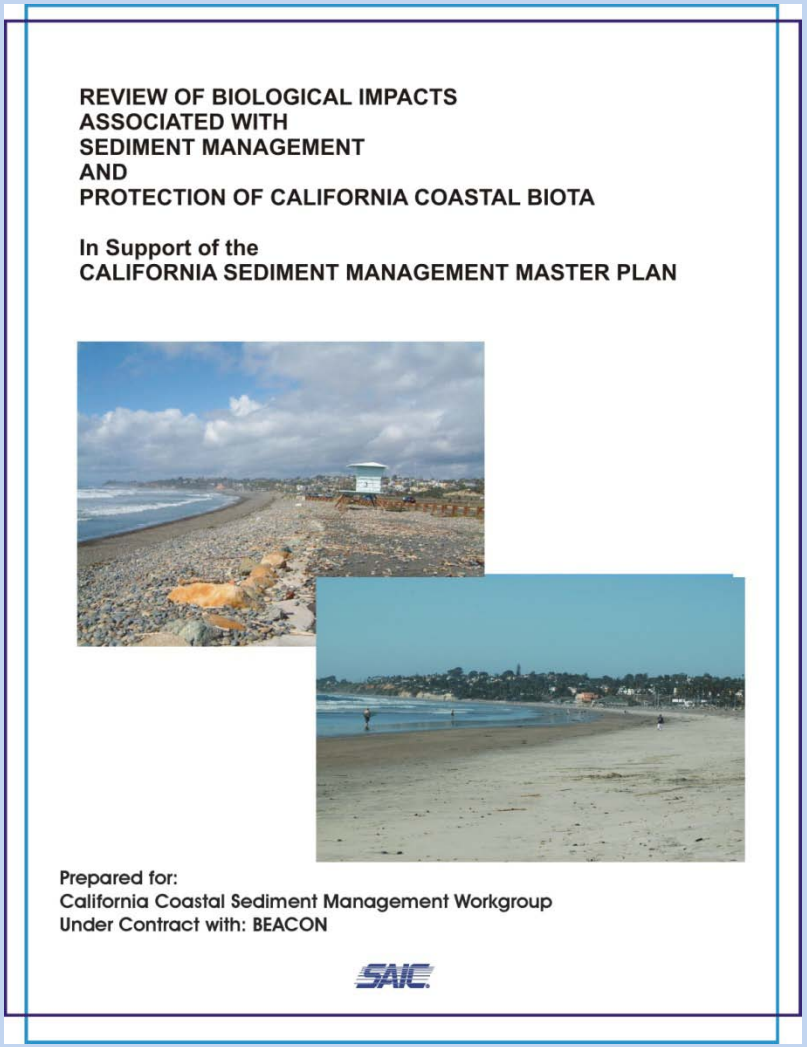
- Dr. Steven Schroeter – UCSB and CCC-SAP
- overall positive commendations and support.

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



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

SAIC

Comprehensive Summary Document

- 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	Migratory 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

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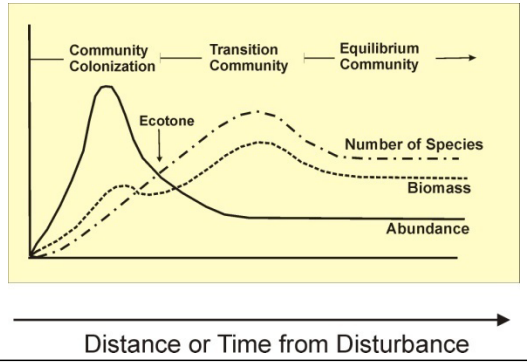
Summaries – *Understanding the Impact*

Coastal Sediment Management Workgroup

- **Technical Data by Issue Area**
  - Equipment
  - Burial, Sedimentation
  - Water Quality



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 1992[1], Helix cited in Chambers Group 2000[2], Boeing 2005[7]
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 2005[4], City of Pittsburg 2005[5], Hastings and Popper 2005[6]
Note: Underwater noise values may be referenced as peak, RMS, or either of these reference levels may not be reported.

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Summaries – *Monitoring Requirements*

Coastal Sediment Management Workgroup

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. *Monitoring Plan Criteria:* turbidity not to exceed ambient by more than 20%. 2. Water clarity within top 3 ft of water column < 3ft with Secchi disk. *USFWS/USACE Criteria:* 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. *USFWS/USACE Criteria:* 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. *Monitoring Plan Criteria:* 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. *Criteria: none specified.* 2. Water Samples each dredge cycle. Sampling locations a-c, f-h. Analyzed for TSS, hydrogen sulfide, polar & non polar oil & grease. *Criteria: none specified.*	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. *Criteria: none specified.* 2. Bacteria weekly. Three replicate samples. Sampling location: 30 m (100 ft) downdrift. Analyzed for total and fecal coliform. *Criteria*: 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.

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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					
USACE 1998c, Crescent City Harbor O&M Dredging, Del Norte County California, EA and FONSI					
Forceful effect causing change in existing conditions.		Forceful effect causing change in existing conditions.	Forceful effect causing change in existing conditions.		
USACE 2002c, Operations & Maintenance Dredging of the Moss Landing Harbor Federal Channels, Monterey County, California, EA and FONSI					
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					
USACE 2001, Morro Bay Harbor Six-Year Maintenance Dredging Program, Final EA					
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*

Coastal Sediment Management Workgroup

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		

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

Coastal Sediment Management Workgroup

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

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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

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Workshop Purpose:
Assist Development of Resource Protection Guidelines

Coastal Sediment Management Workgroup

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:

- ✓ **Bay and Lagoon Habitats and Resources**
- ✓ **Eelgrass Habitat and Resources**

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Guideline Format and User's Guide Organization

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User's Guide Organization

Coastal Sediment Management Workgroup

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)

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Resource Protection Guideline Format

Coastal Sediment Management Workgroup

Habitat Based

Guidleline Descriptions

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

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Habitat Example

Habitat = Bay						
Project Type	**Maintenance Dredging**					
Resource Categories	**Invertebrates**	**Fish**	**Birds**	**Marine Mammals**	**Vegetation**	**Other**
Resource Type	Soft-bottom Invertebrates	Water Column, Demersal Fish	Seabirds	Pinnipeds, Sea Otters		
Species of Concern - If Present	Dungeness Crab	Green Sturgeon, Pacific Herring, Salmonids		Pinnipeds, Sea Otters	Eelgrass	
Critical Habitat - If Present		Green Sturgeon				
Sensitive Habitat	Nursery areas	Nursery areas				ASBS, ER. NWR, Sanctuary, State Park
Adjacent Habitats of Particular Concern (HAPC) - If Present	Eelgrass, Kelp Beds	Eelgrass, Kelp Beds	Eelgrass	Eelgrass, Kelp Beds	Eelgrass, Kelp Beds	
Other Adjacent Sensitve Habitats - If Present	Marsh, Wetland	Tributary Creeks	Nesting Sites, Major Roosting Sites	Haul Outs		
Adjacent Species of Concern - If Present			Brown Pelican, Clapper Rail, Least Tern, Snowy Plover			

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Habitat = Sandy Subtidal

Special Jurisdiction Coordination Considerations							
Area of Special Biological Significance							
Ecological Reserve, Sanctuary , State Park, Wetland							
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 Least Tern			Potential	Potential			Nesting
Light-footed Clapper Rail			Potential				Nesting
Western Snowy Plover			Potential				Nesting
Other Species or Habitats of Concern							
Dungeness Crab		Potential					
Green Sturgeon		Potential		Potential			
Pacific Herring		Potential		Potential			
Salmonids		Potential		Potential			
Pinnipeds				Potential		Potential	
Eelgrass		Potential		Potential			Potential
Wetland		Potential	Potential	Potential	Potential		Potential

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Habitat = Sandy Subtidal						
Project Type	**Dredging**					
Resource Categories	**Invertebrates**	**Fish**	**Birds**	**Marine Mammals**	**Vegetation**	**Other**
Impact Considerations						
● Equipment (e.g., dredges, pipelines)	Damage	Disturbance	Disturbance	Disturbance		
Contaminant Spill	Contaminate	Contaminate Prey	Contaminate Prey, Oiling	Harm		Habitat Degradation
Entrainment	Potential	Potential				
Lighting		Predator Attraction	Predator Attraction			
Noise		Disturbance	Disturbance	Disturbance		
Vehicles (Damage)						
● Sediment burial/removal	Recovery of Forage Base	Recovery of Forage Base				
● Sedimentation	Degrade Habitat	Reduce Forage Base, Smother Demersal Eggs				
● Turbidity	Foraging, Recruitment	Disturbance, Foraging	Foraging			

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Habitat = Sandy Subtidal						
Project Type	**Dredging**					
Resource Categories	**Invertebrates**	**Fish**	**Birds**	**Marine Mammals**	**Vegetation**	**Other**
Monitoring Considerations						
Pre-project Assessment			Proximity to Nesting Sites, Major Roosting Sites	Proximity to Major Haul Outs	Eelgrass, if applicable	Sediment Quality
Construction (as appropriate)	Turbidity	Turbidity	Noise, Light, turbidity	Noise	Turbidity, Sedimentation, if applicable	As built dredge depths and footprint
Post-Construction					Eelgrass, if applicable	Eelgrass, if applicable
Other Construction Monitoring Considerations						

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BAY AND LAGOON HABITATS

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Round-Table Discussion
Guideline Development Considerations

Coastal Sediment Management Workgroup

- 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

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Sediment Management Activities

- **Maintenance Dredging or Excavation**
  - Dredge Site
  - Discharge Site
- **Beneficial Reuse**
  - Beach Nourishment
  - Shoreline Protection
- **Coordination**
  - SF BCDC
  - USACE, EPA
  - Resource Agencies
  - State Lands, CCC

State or Federally Listed Species and Species of Special Concern Consulting Agencies

Common Name	Consulting Agency
Black, White Abalone	NMFS, DFG
California Clapper Rail	FWS
Least Tern , Western Snowy Plover	FWS, DFG
Marbled Murrelet, Xantus's Murrelet	
Belding's Savannah Sparrow	DFG
Coho Salmon, Chinook Salmon (listed runs)	NMFS, DFG
Steelhead Trout , Tidewater Goby	NMFS
Green Sturgeon – Southern DPS	

Bay or Lagoon Habitats

Soft-Bottom Subtidal

Sandy Beach

Tidal Flat

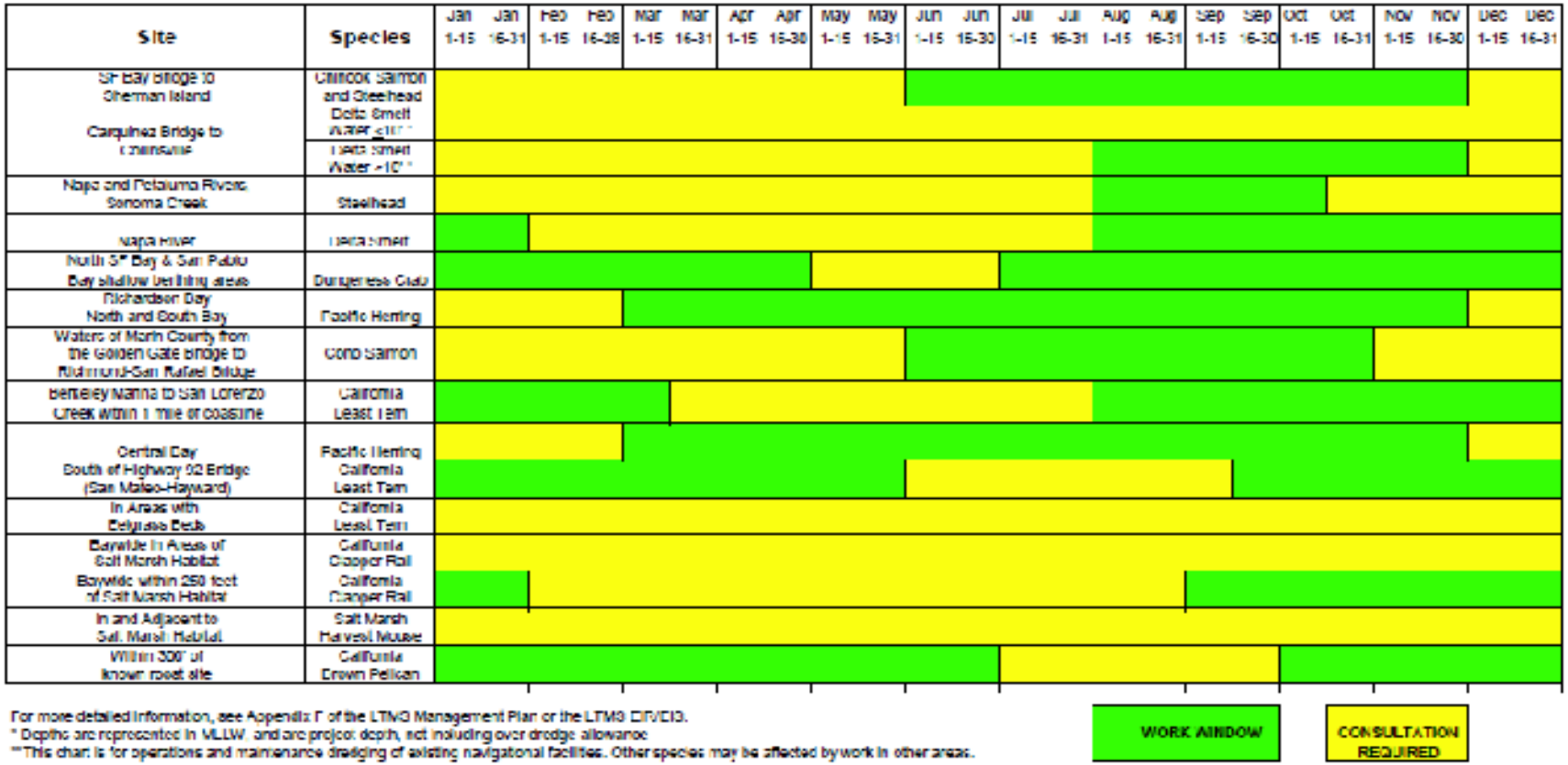
Eelgrass Meadow

Kelp Bed

Rocky Rip-Rap

Marsh, Wetland

Maintenance Dredging Work Windows by Area and Species



For more detailed information, see Appendix F of the LTMS Management Plan or the LTMS DIR/EIS.
* Depths are represented in MLLW, and are project depth, not including over dredge allowance
** This chart is for operations and maintenance dredging of existing navigational facilities. Other species may be affected by work in other areas.

LONG TERM MANAGEMENT STRATEGY

April 2010 Presentation
Mark D'Avignon, USACE

Summary of Disposal Work Windows

Location & Designation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bar Channel (SF-8)												
Carquinez (SF-9)												
San Pablo (SF 10)												
Alcatraz (SF-11)												
Suisun (SF-16)												
Beneficial Reuse Sites												

Disposal Work Windows

Species	Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Chinook Salmon	SF-9 & SF-10												
Steelhead Trout	SF 9, SF 10 & SF 11												
Recreational Marine Fishes	SF-10 & SF-11												
California Brown Pelican	Within 300' of known roost site												
California Clapper Rail	Beneficial Reuse Site												
Snowy Plover,													
Salt Marsh Harvest Mouse,													
Delta Smelt													
Delta Smelt	Suisun Bay & marshes (not SF-16)												
Least Tern	All eelgrass beds, or within 3 miles of nesting area at Alameda Naval Air Station												

(For more information, see Appendix F of the LTMS FIS/FIR)

WORK WINDOW | MINIMIZED DISPOSAL | CONSULTATION REQUIRED

April 2010 Presentation
Mark D'Avignon, USACE

Potential Dredging Impacts

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

Potential Sand Placement Impacts

- **Burial, Crush, Smother**
- **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

Potential Nearshore Placement Impacts

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

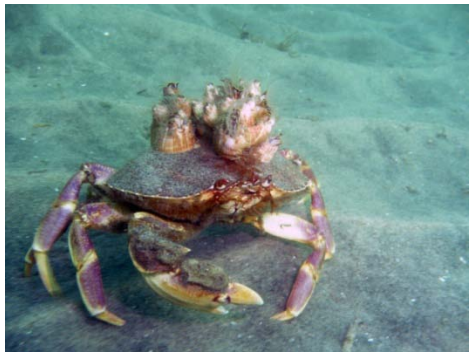
Invertebrate Recovery

Rate associated with frequency of disturbance

Rapid - navigation channel (e.g., 1-6 months)

Slower - areas infrequently disturbed

- **Avoid stockpiling of dredged material below the ordinary high water line.**
- **Minimize change to substrate characteristics of dredge and discharge areas.**
- **Minimize change to bathymetry and hydrodynamics.**



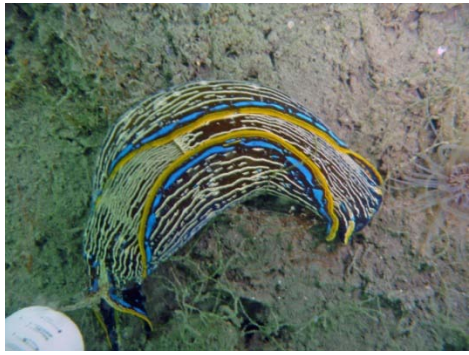


Photo credit: Danny Heilprin, SAIC

Dungeness Crab

Photo credit: http://www.noaa.gov

Issues of Concern

Damage, Entrainment, Sedimentation

Protection Considerations

- Limit construction to environmental work windows in areas where there is breeding or recruitment concentration.
- Use measures to reduce turbidity and sedimentation near nursery areas (e.g., silt curtains, operation controls, as appropriate).

Lobster

Issues of Concern

Damage, sedimentation, turbidity

Protection Considerations

- Avoid degradation or loss of rocky and surfgrass habitats from sedimentation.
- Avoid night-time dredging near breakwaters or riprap during the closed fishing season (first Thursday after March 15 to Friday preceding first Wednesday in October), if lobster are present.

Tidewater Goby

Issues of Concern

Unnatural breaching of lagoon inlets, increased tidal mixing, sedimentation

Photo credit: Greg Goldsmith, USFWS

Protection Considerations

- Conduct pre-construction survey to determine presence/absence if within area of historical occurrence.
- Relocate prior to construction consistent with resource agency approved plan.
- Use source control measures to minimize sedimentation of habitat.

Green Sturgeon

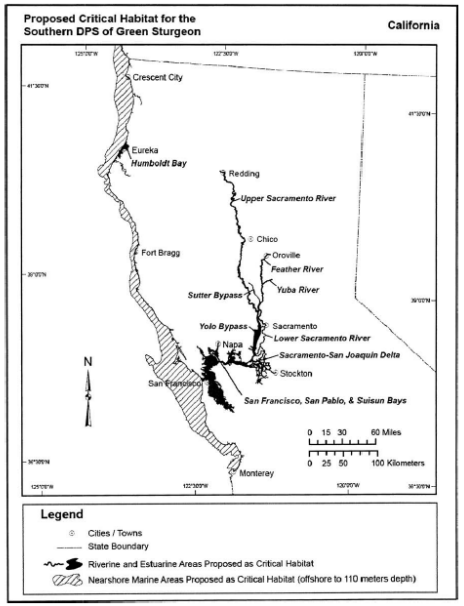
Photo credit: USFWS

Issues of Concern

Disturbance, Forage Reduction

Protection Considerations

- Coordinate with NMFS if within critical habitat.
- Minimize changes to hydrodynamics and substrate associated with dredging to promote benthic recovery.
- Avoid dredging near inlets of freshwater tributaries during migration to spawning grounds (February-July), if present.



Smelts

Issues of Concern

Disturbance, Forage Reduction

Protection Considerations

- **Delta Smelt –** Consult with FWS, DFG to identify appropriate protective measures.
- **Longfin Smelt**
  - Schedule within environmental work window approved for area.

Salmonids

Chinook Salmon, Coho Salmon, Steelhead

Photo credit: Danny Heilprin, SAIC

Issues of Concern

Entrainment, Sedimentation, Turbidity, Noise, Lights

Protection Considerations

- Schedule within approved environmental work windows.
- Avoid hydraulic pumping operations if the cutterhead or dragarm is within 3 ft of the bottom.
- Avoid night-time dredging in areas of salmonid outmigration.
- Shield lights in areas of salmon migration.
- Minimize sedimentation and turbidity of eelgrass meadows used as nursery habitat by salmonids.
- Maintain open inlets to tributaries used by salmonids.

Pacific Herring

Photo credit: Warren E. Savary and Luis A. Solorzano, californiabiota.com

Issues of Concern

Damage, Sedimentation, Turbidity

Protection Considerations

- Schedule within approved environmental work windows:
  - November 1 – March 1 North Coast
  - December 1 – February 28 San Francisco Bay
- Minimize sedimentation and turbidity of eelgrass meadows and other spawning sites.

Least Tern

Breeding Season
April 1-September 15

Issues of Concern

Disturbance, Turbidity

Protection Considerations

- Schedule outside breeding season if within 3,000 ft (914 m) of nest sites during the breeding season (RGP 67).
- Consult with USFWS if project is within 1 mile (1.6 km) of a nesting colony during the breeding season (informal consultation first to determine if formal consultation will be necessary).
- If permitted, use measures to reduce turbidity (e.g., silt curtains, operation controls, as appropriate).
- Maintain near surface water clarity in the project area (e.g., Secchi depth $\geq$ 3 ft or the same as ambient).
- Maintain noise at ambient levels or < 60 dB at nest sites.
- Direct or shield lights away from nest sites.

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Snowy Plover

Breeding Season
March 1-September 15

Issues of Concern

Disturbance, Turbidity

Protection Considerations

- Schedule outside breeding season if within 1,500 ft (457 m) of nest sites during the breeding season (RGP 67).
- Consult with USFWS if project area is within critical habitat, supports nesting, or overwintering.
- If permitted, use measures to minimize invertebrate recovery.
- Maintain noise at ambient levels or < 60 dB at nest sites.
- Direct or shield lights away from nest sites.

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Clapper Rail

Breeding Season
March 1- August 15

Photo credit:

Issues of Concern

Disturbance, Sedimentation

Protection Considerations

- Consult with FWS if species has potential to occur.
- Buffer distance to attenuate noise < 60 dB or ambient at nest sites during the breeding season.
- Minimize access routes in marsh areas according to a pre-approved vehicle route plan.
- Avoid removal of cordgrass.
- Any removal of cordgrass will be according to a pre-approved plan and will be conducted during lower tidal stages to maximally expose the plant base.

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Marine Mammals

Issues of Concern

Disturbance, Turbidity

Protection Considerations

- Use measures to reduce turbidity (e.g., silt curtains, operation controls, as appropriate).
- Minimize use of construction equipment within 1,000 feet of seal haul-outs or within 2,000 feet if pups are present.
- Buffer distance to attenuate noise < 60 dB or ambient near areas of concentration.

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Eelgrass

Photo credit: Annie Eicher
*www.dfg.ca.gov/marine/abmp/**eelgrass**.asp*

Issue of Concern

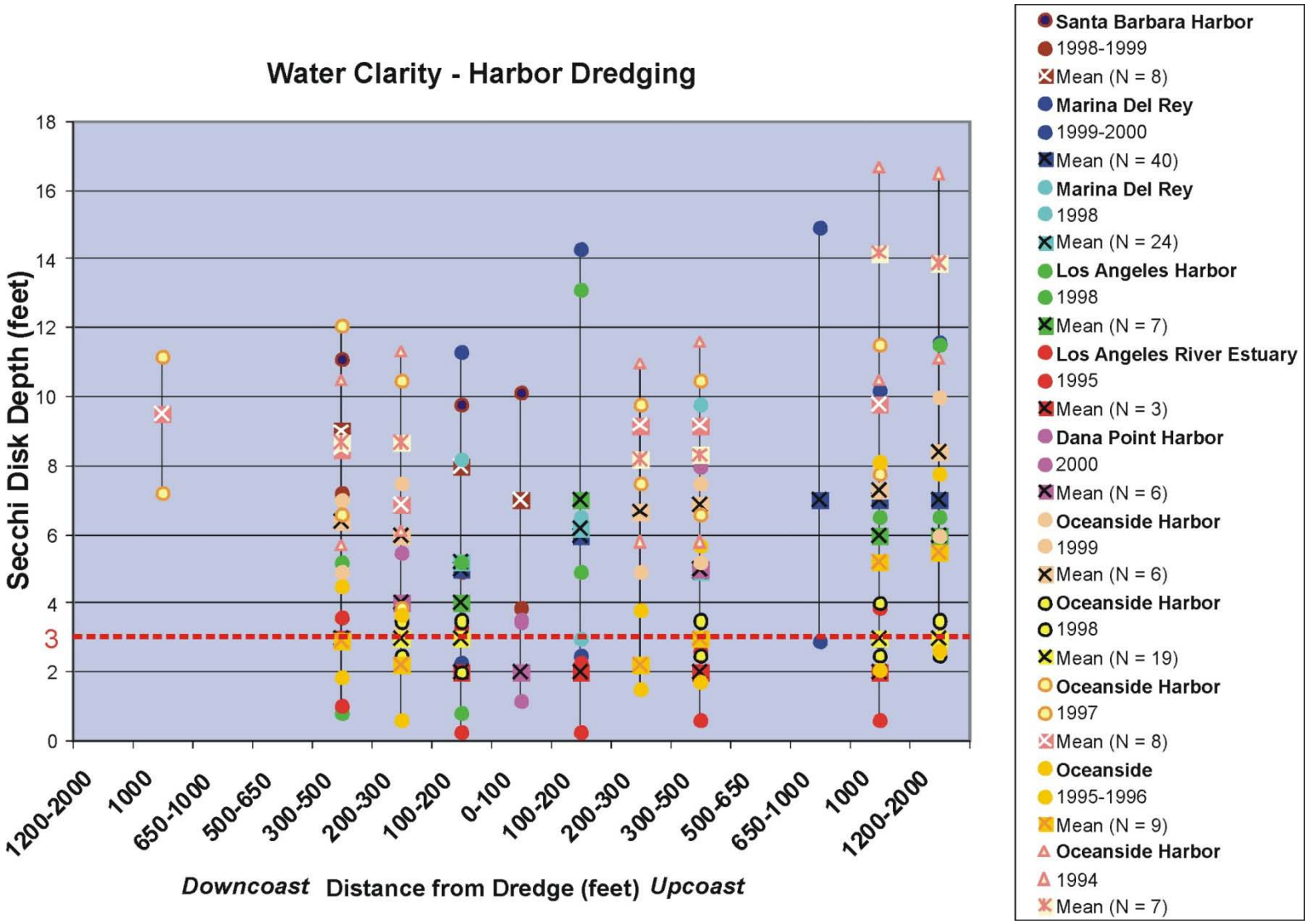
Sedimentation, Turbidity, Damage

Resource Protection Considerations

- Avoid construction in eelgrass meadows.
- Prepare anchor, dredge, and pipelines plans to avoid or minimize potential disturbance near eelgrass areas.
- Minimize reduction of near bottom light levels to <20% of surface irradiance. Avoid <20% of surface irradiance for period greater than 2 weeks.

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


Water Clarity - Harbor Dredging
Secchi Disk Depth (feet)
18
16
14
12
10
8
6
4
3
2
0
1200-2000
1000
650-1000
500-650
300-500
200-300
100-200
0-100
100-200
200-300
300-500
500-650
650-1000
1000
1200-2000
Downcoast Distance from Dredge (feet) Upcoast
Santa Barbara Harbor
1998-1999
Mean (N = 8)
Marina Del Rey
1999-2000
Mean (N = 40)
Marina Del Rey
1998
Mean (N = 24)
Los Angeles Harbor
1998
Mean (N = 7)
Los Angeles River Estuary
1995
Mean (N = 3)
Dana Point Harbor
2000
Mean (N = 6)
Oceanside Harbor
1999
Mean (N = 6)
Oceanside Harbor
1998
Mean (N = 19)
Oceanside Harbor
1997
Mean (N = 8)
Oceanside
1995-1996
Mean (N = 9)
Oceanside Harbor
1994
Mean (N = 7)

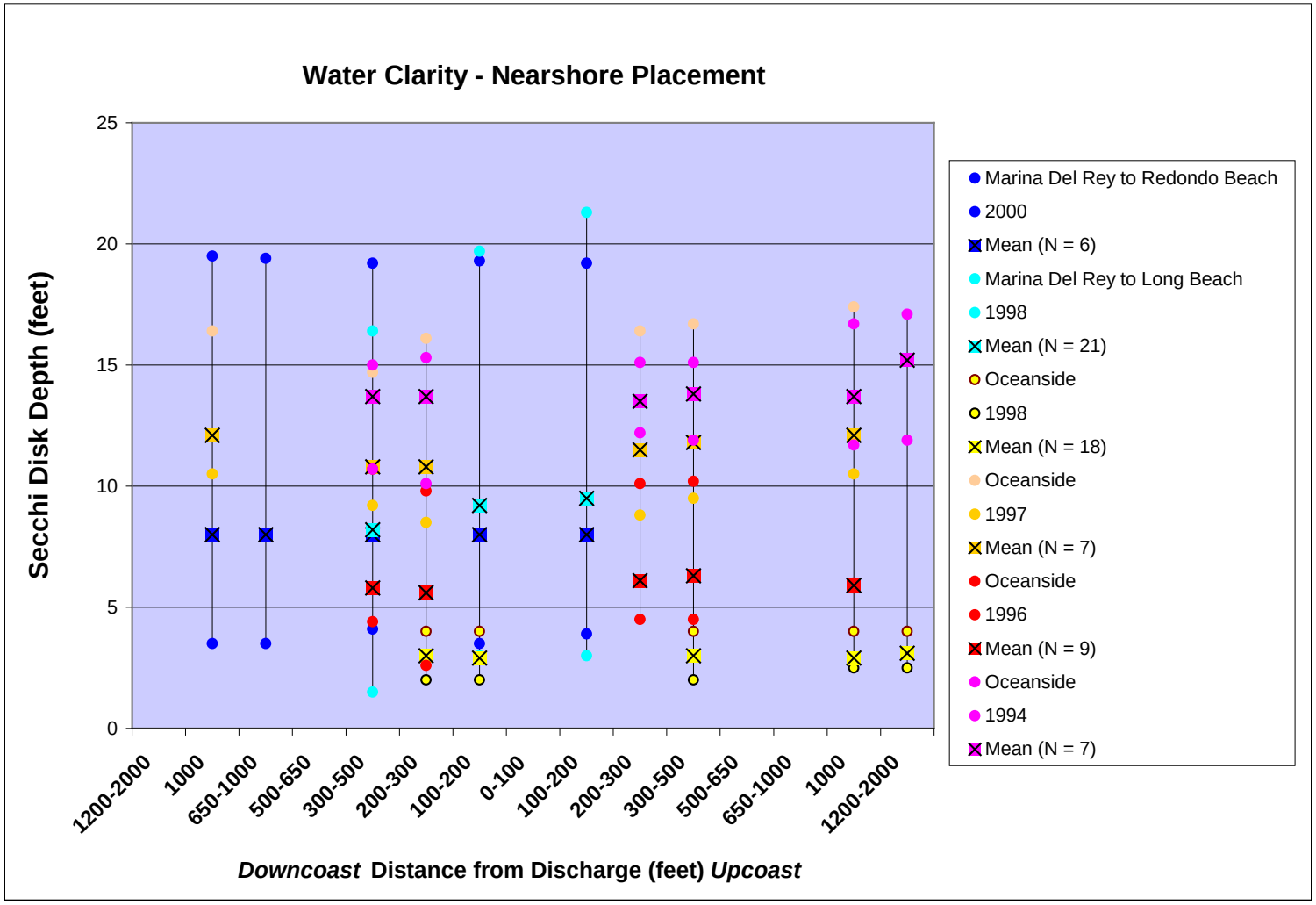


Figure 5.5-10 . Representative light transmittance measurements during sediment management activities in California.

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

Coastal Sediment Management Workgroup

- 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

SAIC From Science to Solutions

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