CSMW Workshop Series
Resource Protection Guideline Development
Related to Coastal Regional Sediment Management

WORKSHOP #4
1 JULY 2010
10:00 AM – 3:00 PM
Monterey Bay Aquarium Research Institute (MBARI)
MOSS LANDING, CA

WORKSHOP OBJECTIVE

"Information exchange and transfer; identify sediment management issues of concern relative to Rocky Intertidal, Rocky Subtidal, Surfgrass, and Kelp Bed habitats; obtain input on resource protection guideline development considerations for these habitats. Review relevant sections of Section 6 of draft BIA Document pertaining to Rocky Intertidal, Rocky Subtidal, Surfgrass, and Kelp Bed habitats and resources."

Note: Agenda and PowerPoint presentation were posted to CSMWs web site (http://www.dbw.ca.gov/csmw/BIA_workshop.aspx).

AGENDA AND DISCUSSION

1. Introductions and Background – Clif Davenport and Karen Green

- Introductions of those in attendance and calling in/via webinar
- Review of workshop objectives and agenda

❖ **Background**

- Review of Agencies and Individuals Involved in Development of Resource Protection Guidelines
  - Sponsor Agencies
    - California Sediment Management Workgroup (CSMW)
      Co-Chairs: USACE and CA Natural Resources
    - 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

- CSMW Mission Statement and Goals

  - MISSION

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

  - GOALS

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

- Regional Sediment Management (RSM) in California (CA)

  - CA Coastline is divided into littoral cells.
  - Sand has historically been impounded by Dams.
  - Sediment bottom line: The natural sediment supply to the coast has been reduced due to sea cliff armoring (20%), dams and debris basins (Santa Maria River, 68%; Santa Ynez River, 51%; Ventura River, 53%; Santa Clara River, 27%)
  - The road to solutions: CSMW is working to identify sediment-related problems due to dams, debris basins, dredging, sand and gravel in-stream mining, coastal structures, lack of project coordination, and inconsistent policies, procedures, and regulations. All operations need an environmentally safe approach.

- BIA Study & Workshop History

  - CSMW held 8 public and 3 technical workshops in 2004 to gauge public's issues of concern related to biological resources in regional sediment management.
  - Based on response, CSMW commissioned Biological Impacts Analysis (BIA) study, which is titled "Review of Biological Impacts Associated with Sediment Management and Protection of California Biota."
  - The document was reviewed by agencies and scientists over a two-year period with overall favorable response.

- Comments included requests to provide additional guidance relative to protection of coastal resources, which was the impetus of the current effort and workshop series.
- Today's workshop is the 4th in a series of 7, which are listed below.

1. 2/18/10 Long Beach: Guideline Development and Agency Coordination.
2. 2/24/10 Sacramento: Water Quality, Water-Sediment Resource Protection in Watersheds, and Resource Protection in Managed Areas.
3. 6/16/10 Carlsbad: Habitats and resources associated with Sandy Beach, Dune/Strand, and Sandy Subtidal.
4. 7/1/10 Moss Landing: Habitats and resources associated with Rocky Intertidal, Rocky Subtidal, Surfgrass, and Kelp Beds.
5. 7/13/10 Oakland: Habitats and resources associated with Bays, Lagoons, and Eelgrass.
6. 7/14/10 Eureka: Habitats and resources associated with Bays/Wetlands and Commercial Fisheries.
7. 8/4/10 Orange County: Impact Assessment, Monitoring, and Database Tools.

❖ Work Products

- o BIA Study: draft report will be finalized early next year based on received review comments and input received during the workshop series.
- o Abbreviated User's Guide: will provide condensed version (key topics) and cross-references to BIA report and the developed Resource Protection Guidelines.
- o Work Plan: received recommendations or suggestions that would require additional or separate work efforts will be summarized in an action plan.

❖ User's Guide and Resource Protection Guideline Organization

- o Primary objective is to provide streamlined version of the BIA document that will be of practical use to variety of end users.
- o The document will include overview summaries of sediment management activities, project types, impact issues by project phase, monitoring, and performance evaluation.
- o The guide will be habitat-based and presented with a flow path approach (resources, impact issues, protective measures, monitoring considerations).

- Resource Protection Guidelines will include the following types of information: issue statement, guideline description, rationale, references (as applicable), and effectiveness considerations.
- Cross reference tables will be provided that organize guidelines by habitat, species group, impact type, project phase. In addition, a cross reference table will be provided to the BIA document for more detailed discussions of relevant topics.
  - Comments or Questions:
    a. Regarding involvement of environmental agencies in discussions of impacts from sediment transport, how involved are Federal Agencies? Specifically, is EPA involved? *Response:* Brian Ross and Alan Ota participated in the first workshop and Alan indicated he would try to participate in the fifth workshop, which will take place in Oakland.
    b. There also has been participation by NOAA and USFWS.
    c. We had one workshop dedicated to water quality issues with good outreach and participation with the State Water Resources Control Board and several Regional Water Quality Control Boards. Fish and Game has participated in most workshops.
    d. Sediment is Watershed TMDL concern – glad to hear about sand shed management – need federal entity – fine grained material also should be considered – nutrients to wetlands. Need to keep sediment management recognition of wide range of sediment grain sizes – relative to benefits. *Response:* Focus is sand, but also considering beneficial use with fine grained materials. Coordinating with EPA & regional sediment management, conducting Tijuana fate & transport study associated with placement of finer sediments cleaned from debris basins - EPA interested in potential considerations relative to 80/20 rule.

2. Rocky Intertidal and Surfgrass Habitats

- Topics
  - Habitat Functions and Species of Concern, BMP's/Mitigation Measures including Benefits and Impact Issues.
- Types of Activities
  - Beach Nourishment (sediment discharge site, conveyance of sand from source location – may need to consider nearby dredging).
  - Sand Maintenance (Relocate Sand – Backpass, Bypass).
  - Beach Grooming (not sediment management, but reviewers have requested this activity be considered where possible).

- Comments or Questions:
  a. Driftwood on beaches is important – core of dune system – help with dune stabilization – keep on beach rather than remove – ecological habitat.
  b. What about sediment retention devices, does report consider?

- Rocky Intertidal Habitats Functions and Resources
  - Primary habitat for invertebrates and vegetation – forage for fish and shorebirds, recycle nutrients.
  - Resources of concern: managed species such as abalone, lobster, monkeyface prickleback; foraging and resting habitat for birds, including roosting sites for brown pelican; marine mammals (may haul out); surfgrass.
  - Comments or Questions:
    a. How do we perform a value analysis of the ecological functions of habitats? *Response:* Consider the types of resources supported.

- Surfgrass Habitat Functions and Resources
  - Primary habitat for invertebrates and surfgrass – forage for fish and shorebirds, recycle nutrients.
  - Resources of concern: nursery habitat for lobster, surfgrass is habitat of particular concern (HAPC).

- Ecological values of vary among substrate type in rocky intertidal habitats
  - Resource development varies depending on physical characteristics of substrate, size of hard bottom area and rock relief and height.
  - Generally – greater the rock development – greater resource development.
  - Seasonal sand movement – important disturbance factor; sand inundation may bury reef, sand movement may scour and limit resource development.

- Comments or Questions:
  a. Jared (UCSB) – Conducting study looking at sand inundation differences in reef development – working with USGS.
  b. Need to consider intermediate disturbance theory – hard substrate diversity may be greater with intermediate disturbance. Need to consider intensity of scour. Based on the complexity of the reef resources, there can be a wide variation of biodiversity and environmental resources. This complexity and its variation would be good to include in the draft report and discuss at subsequent meetings.

- Sand Placement Impacts include direct effects of sand placement and operation of equipment (e.g., bury, crush, smother invertebrates); indirect effects such as disturbance, noise, turbidity, and sedimentation; and potential for accidental contaminant leaks and spills.

- Rocky Intertidal
  - Direct impacts from beach nourishment not expected with sediment management projects, which would unlikely be permitted in such areas. RGP 67 does not permit discharge of sand into ASBS without approval.
  - Concerns – related to conducting projects on adjacent beaches – if rocky habitat is nearby - potential for adverse impacts from turbidity & sedimentation.
  - If project involves pumping sand to beach – pipeline routes may be of concern if rocky habitats occur in nearshore or along beach where access is desired to reach sand placement site.
  - Generally, temporary impacts expected from turbidity – unless prolonged exposure results in reduction in marine vegetation. May be more of concern for rocky areas with diverse algae assemblage. Chronic turbidity results in reduced diversity and vegetation.
  - Potential effects from increased sedimentation likely depend on substrate characteristics (e.g., resources present, rock relief) and magnitude of influence (related to project size, proximity to reef, local environmental conditions that mobilize and move sand).

- Comments or Questions:
  a. Need monitoring to provide feedback loop to models – assumptions may not be realistic for California – models need improvement, particularly for local conditions.

b. LiDAR (Light Detection And Ranging) data a very useful tool – able to see sand movement – accretion & erosion - consulted LiDAR for recent opportunistic sand projects in Encinitas.
c. Learned at OPC meeting last week that NOAA to spend $2.75 M to complete LiDAR on CA coastline.
d. LiDAR is great tool for looking at volume changes on beach – however, it has limited application for subtidal reefs. *Response:* Use of blue-green wavelength laser has been successful in providing images of subtidal reefs off San Diego.
e. Ambag is flying LiDAR over most of Monterey County.

- Surfgrass
  - Surfgrass considered relatively tolerant of turbidity and sedimentation (store carbon reserves in rhizomes).
  - Surfgrass leaves range <1 to up to 3 ft in intertidal – sand trapping to depths of approx. 3 ft has been reported (Gibbs 2002). However, limited understanding of thresholds - amount of sand inundation surfgrass bed could withstand without adverse effect.
  - Surfgrass is sand tolerant, but sand coverage threshold for surfgrass is a complex issue. Previous guidelines that have been used include 2/3 burial or no more than 1 ft of burial. A key consideration is whether there is sufficient exposed leaf blades for photosynthesis.
  - Duration of impact also is important consideration.
  - Recovery of surfgrass after disturbance generally is slow (> 3 years) when the rhizome mat is removed – due to time required for vegetative re-growth.

  - Comments or Questions:

    a. Surfgrass burial – how much is too much relative to significant impact - 3/4 burial – is that too much? *Response by Loni (DFG):* No set guidance being used – suggest review of studies and propose guideline.
    b. Is surfgrass monitoring intended to be incorporated during or after a project? *Response:* It may be appropriate to consider during all project phases (before, during, after) depending on project needs or characteristics.
    c. Does data exist for monitoring projects? *Response:* Yes, for the most part they've been successful. Goleta project is an example where sand placement was about ½ mile from surfgrass beds. Distance buffers are sometimes used in the same manner as they are for noise and turbidity buffers.

d. How do we tackle guidelines for resources for which we don't have monitoring data sets that show threshold exceedance? *Response:* This will be a challenge. Response note: establish hypothesis based on best available scientific data, monitor, verify or adjust criteria.

- Tidepool Fish
  - Tidepool fish eat inverts & algae – fishes eaten by larger fishes when pools submerged – by birds when pools exposed.
  - Mobile – move among rockpools - but may move within limited home range.
  - Issues are impacts from reef sedimentation, turbidity, disturbance.
  - Impacts of concern - reduction in hard substrate where eggs laid, filling in or reduction in size of tidepools in which fish live. Tidepool fish often have high site fidelity; therefore, disturbance increases vulnerability to predation.
  - Want to minimize concentration and duration of turbidity, level of sedimentation, and avoid equipment on reefs

  - Comments or Questions:

    a. Jared – USGS multi-beam surveys – 3 years of sampling – looking at reefs – sand inundation – higher diversity on less sand influenced reefs.

    b. Impact/Guideline Considerations

       - Proximity to hard bottom; project schedule and duration of impact; wave energy of area.

- Least Terns
  - Breeding season April 1-September 15.
  - RGP 67 – no beach nourishment activities within 3,000 ft of nest sites during breeding season.
  - ESA informal consultation (to determine if formal consultation is necessary) if project within 1 mile of nesting sites.
  - Comments or Questions:

    a. DFG: need better understanding of turbidity effects on habitats and resources associated with these types of projects.

    b. 3,000' RGP 67 limitation based on other factors, not just turbidity.

- Brown Pelicans
  - Impact issues of concern are disturbance and turbidity.

- They habituate to certain noise levels, but may startle to sudden loud noises (e.g., engine strart up) or close approach.
- No dredging within 300 ft of large roosts allowed between July-Sept in SF Bay.
- Studies have shown that brown pelicans were not disturbed by heavy equip operation and rip-rap installation within 328 ft (100 m) of roost site (Jasques et al. 1996), pelicans were tolerant of dredging within 115 ft (35 m) but startled with engine start-up and close vessel approach (Varanus).

➢ Comments or Questions:

a. May wish to check with George Issac regarding pelican distance criteria.

- Shorebirds, Seabirds
  - Resource protection considerations: Minimize turbidity, avoid equipment on or near reefs, use buffer for noise <60 dB near sites, Avoid removal of beach wrack.
- Marine Mammals
  - Resource protection considerations: Minimize turbidity, avoid equipment on or near reefs, use buffer for noise <60 dB near sites, Avoid removal of beach wrack.
- Beach Wrack
  - Ecological benefits to invertebrate/forage habitats, shorebirds, gulls
  - Activities of concern include sand spreading and beach grooming, potential indirect impacts to snowy plovers.
  - provide ecological function and should not be completely removed from sand placement activities.
  - Resource protection consideration: Do not completely remove.

➢ Comments or Questions:

a. Loni (DFG): Minimize driving on beach wrack.

- Strand and Dune Vegetation
  - Provide dune stabilization and wildlife foraging environment
  - Species of concern include native vegetation and sensitive species (e.g., blue butterflies, globose dune beetles, snowy plover, least tern, rare plants).
  - Activities of concern are vehicles, pipelines, and trampling.

- Impacts may be minimized by establishing no work zones, 50-ft vehicle corridors, and raised supports for pipelines.

➢ Comments or Questions:

a. Will guidelines address avoiding introduction of invasive species (e.g., European beach grass, *Caulerpa*, *Undaria*)? *Response:* Yes, Caulerpa surveys part of permit process. Topic is addressed in document, but may need to be expanded.

b. Where does sand come from for beach nourishment? *Response:* Sand comes from offshore sources, lagoon habitats, etc. The concern is if you take sediment from a nearby source and it has invasive species there is potential to affect the receiver site.

c. Loni (DFG): Would like to see vehicle route plan included as measure to minimize impacts.

d. What are requirements for using resource protection guidelines? *Response*: They are guidelines, resource and regulatory agencies will review projects and determine appropriate permit conditions

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e. Will document explain impacts on adjacent areas of project implementation? *Response:* Yes, the document does take into account indirect impacts on adjacent sensitive resources. An example is downcoast turbidity impacts on least tern foraging.

3. Rocky Subtidal and Kelp Bed Habitats

o Topics

- Habitat Functions and Species of Concern, BMP's/Mitigation Measures including Benefits and Impact Issues

o Rocky Subtidal Habitats Functions and Resources

- Primary habitat for invertebrates and vegetation – forage for fish and marine mammals, recycle nutrients.
- Resources of concern: managed species such as abalone, lobster, sea urchins; marine mammals (forage); surfgrass, kelp beds.
- Guidelines are dealing with habitat in the nearshore. Not looking at deep offshore areas since they're not impacted by sediment management projects.

- Kelp Bed Habitat Functions and Resources
  - Primary habitat for invertebrates and algae – forage for fish and marine mammals, recycle nutrients.
  - Kelp beds are habitats of particular concern (HAPC).

- Potential for impacts from both sediment dredging and placement activities both at offshore borrow sites and discharge/receiver sites. Impacts include direct effects of sand placement or removal and operation of equipment (e.g., bury, crush, smother invertebrates); indirect effects such as disturbance, noise, turbidity, and sedimentation; and potential for accidental contaminant leaks and spills.

- Resource protection considerations when considering impacts of sedimentation and turbidity on rocky reef and kelp bed habitats include:
  - Proximity to reef;
  - Project implementation and environmental factors that may affect turbidity concentrations and duration;
  - Project volume, placement location, and environmental conditions relative to potential for sedimentation;
  - Vessel corridors to avoid kelp beds; and
  - Anchor and pipeline plans to avoid hard bottom areas.

➢ Comments or Questions:

a. USGS has been sampling reef areas for past 3 years to make comparisons of habitats on and near reefs. Only a couple or a few surveys are needed to see differences. Results are different for inundated vs. non-inundated reefs. Distance, current direction, water depth, reef height, and sedimentation level are all important considerations relative to potential for impacts on reef. Wave energy also may be important factor.

b. Analysis should take into account both reef height and complexity. Example is flat mud bay reefs that may not be buried if the reef height is higher than basal substrate. If it's a high complexity reef, you could have greater burial effects.

c. Do we see low relief, high complexity reefs? *Response:* Yes, you can see them in well developed subtidal reef.

d. Rigosity can be a good indicator of reef complexity vs. height. Also, it is important to know where sand channels end offshore. If it's close to closure depth, a lot of sediment can be lost offshore. At Torrey Pines, a lot of sand was lost offshore due to channel extending seaward.

e. Timing of placement vs. impact on species: report that looked at physical/ecological impacts and recovery of project at Goleta showed that there were much less impacts of placing the sand prior to habitat recolonization than waiting for it to develop, then placing.

f. Stockpiling of sediment can help provide planning advantages for placing sand during approved environmental windows (i.e., You don't have to wait around for a borrow source to become available or for coordination through RSM).

g. A tiering system may be good to assess habitat values.

h. Generally, low lying habitat has better chance of being covered and higher elevation areas are able to withstand more burial, thus garner less concern from resource agencies. *Additional Note:* implications of reef height vary with depth. For example, low lying reefs subject to scour in littoral zone where substantial sand movement occurs; however, low lying reefs may support kelp beds farther offshore where sand movement generally is less.

i. SAIC has used indicators to conduct rapid assessment of reef habitat quality.

j. USGS is doing rapid assessment to determine impacts to reefs from sedimentation.

k. There is a great deal of intertidal and subtidal testing currently being performed, with intertidal going up to Alaska and high resolution sampling of intertidal reefs being done. Monitoring programs will likely be reviewed at next meeting. *Additional Note:* Yes, these programs extremely important for providing long-term records of habitat quality, natural variability, and response to disturbance.

l. CSMW – resurrect GIS user's group – what type of data would be helpful.

m. Wave energy and currents important considerations in implementing projects and impacts.

   - Ocean beach – work offshore slack tides – otherwise currents too high.

   - High flow areas – distance of concern may be greater than in lower energetic area.

n. Potential sources of information or data to better understand sediment movement relative to currents potentially include: USGS – sediment transport – Dan Haines, Chris Zorlowsky, Patrick Barnard; Coastal Conservancy – COCMP – high frequency data – check with Julie Thomas – Heather Schlosser. Areas of high velocity and currents based on Buoy data and Ocean Observation System could be useful. Data will be obtained from USACE coastal engineering.

o. How do guidelines apply to artificial reefs? *Response:* Same considerations would apply as natural reefs if in vicinity of sediment management project. Created geotextile – removal considerations.

p. Nearshore placement - depth limited – vessel cannot get in close enough – limited to approx. 50 ft; east coast – smaller vessel can get closer. However, placement also may occur from hydraulically pumping.

4. Workshop Process & Products & Next Steps

- Next Steps
  - Summarize received Input.
  - Draft Resource Protection Guidelines will be reviewed and finalized based on received comments.
  - Guidelines will be incorporated into the Abbreviated User's Guide.
  - The draft BIA document will be finalized base on received comments.
  - A Work Plan will be prepared for recommended additional efforts.
- Next Workshop: July 13th @ SFEI Office in Oakland.

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WORKSHOP ATTENDEES

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