Encinitas-Solana Beach Coastal Storm Damage Reduction Project

San Diego County, California

Volume V (Appendices K through N)

Appendix K	**Distribution List**
Appendix L	**Response to Comments**
Appendix M	**Mitigation Strategy**
Appendix N	**Consistency Determination**

U.S. Army Corps of Engineers
Los Angeles District

April 2015

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Encinitas-Solana Beach Coastal Storm Damage Reduction Project

San Diego County, California

Appendix K

Distribution List

U.S. Army Corps of Engineers
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Freitas	Gina		4972 Mt. Frissell Drive	San Diego	CA	92117	gf.ginabobina@gmail.com
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APPENDIX K - DISTRIBUTION LIST

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Hamlin	Jack		3114 Homer St	San Diego	CA	92106	jbhamlinesq@sbcglobal.net
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APPENDIX K - DISTRIBUTION LIST

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APPENDIX K - DISTRIBUTION LIST

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Tyler	Judy		227 Calle Marina	San Clemente	CA	92674	
Upp	Dr. Rexford		341 Pacific Avenue	Solana Beach	CA	92075	dirtrx82@gmail.com
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Wagner	Christine		141 La Mesa Avenue	Encinitas	CA	92024	
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Ward	Jeremy		147 S Granados Ave	Solana Beach	CA	92075	jeremy.martin.ward@gmail.com
Warner	Will		828 Hernandez st.	Solana Beach	CA	92075	Warnerw@comcast.net
Wartell	Julie		1076 Opal St., #3	San Diego	CA	92109	julie@pubquest.com
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APPENDIX K - DISTRIBUTION LIST

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West	Angela		6314 Lake Badin Ave.	San Diego	CA	92119	angelamoon@msn.com
West	Mark		321 Daisy Ave.	Imperial Beach	CA	91932	mark_west@mac.com
Westbrook	Donna		806 Oakbranch Drive	Enicinitas	CA	92024	twicesites@yahoo.com
White	Tyler		3380 Apache Ave.	San Diego	CA	92117	Tylerhwhite@gmail.com
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Encinitas-Solana Beach Coastal Storm Damage Reduction Project

San Diego County, California

Appendix L

Response to Public Comments

U.S. Army Corps of Engineers
Los Angeles District

April 2015

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Comments were received from Federal, State, and local agencies, non-profit organizations, and the public. In addition, USACE and the Cities held two public hearings at which oral comments were provided. The table that follows identifies each comment and provides a response.

Planning Division
U.S. Army Corps of Engineers, Los Angeles District
ATTN: Mr. Larry Smith (CESPL-PD-RN)
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Los Angeles, California 90017
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Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
1	U.S. Environmental Protection Agency (USEPA)	EPA recommends that the FEIS give greater consideration to the project's potential impacts and mitigation needs under high sea level scenarios and that further consideration be given to the need for monitoring and mitigation plans to address environmental impacts from the proposed fill activities, such as loss of surf grass, loss of hard bottom habitat, and water quality. We also encourage the U.S. Army Corps of Engineers to include, in the Final Environmental Impact Statement (FEIS), the results of a comprehensive biological survey of the Encinitas-Solana Beach shoreline. Without such a survey, it is difficult to accurately evaluate the potential environmental impacts of the various alternatives described in the proposed action.	The USACE and the Cities are now recommending a smaller volume project known as Alternative EN-1B and SB-1B instead of the higher volume Alternatives EN -1A and SB -1A which were originally the Proposed Project (Tentatively Recommended Plan) identified in the Draft Integrated Report. The reduced volume alternative for Encinitas (Alternative EN-1B) is 340,000 cubic yards for the initial fill which represents a 50% reduction in volume from the original project fill volume of 680,000 cubic yards. Renourishments would involve 220,000 cubic yards which is another 20% reduction in total volume from 280,000 previously proposed for renourishments. The reduced volume alternative for Solana Beach (Alternative SB-1B) is 700,000 cubic yards for the initial fill which represents a 30% reduction in volume from the original project fill volume of 960,000 cubic yards. Renourishments would involve 290,000 cubic yards which is another 30% reduction in total volume from 420,000 previously proposed. This reduced volume alternative would have a correspondingly reduced potential to affect offshore natural and recreational resources. Under this reduced volume alternative, mitigation for biological resources would be required consistent with the mitigation obligations for the original project within Solana Beach. High sea level rise scenarios are expected to apply to future renourishment events only and not to the initial beach fill proposed in the near term. Potential impacts would occur primarily during the initial fill because it is the largest relative to subsequent fills and as such it is the basis for identifiying potential impacts and mitigation requirements. High sea level rise renourishment events are much smaller in volume then the initial beach fill and are not expected to result in any new environmental impacts, which is essentially the same as for the low sea level rise scenario. Mitigation and monitoring plans are discussed in Appendix H.	Appendix H

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
			Habitat monitoring proposed to determine long-term impacts for purposes of mitigation, include a pre-project phase starting one year prior to construction, spring and fall, that will provide the information requested. Descriptions of the nearshore environment are based on the best available spatial data and includes the 2004 light detection and ranging imagery (LiDAR) data to provide bathymetric information for portions of the study area. The 2002 California State Conservancy and SANDAG San Diego Nearshore Program GIS layers of bathymetry, hard substrate, and aquatic vegetation mapping served as the basis for reef and sensitive resource acreage calculations. In addition, these data were ground-truthed to support other projects such as the Regional Beach Sand Project and Regional Sediment Management Plan. For example, in 2006, 2009, and 2010 reef dives and intertidal surfgrass mapping was conducted within the study area to provide representative information on reef heights and habitat quality indicators. The survey data used in this evaluation is sufficient for the impacts analysis.	
2	USEPA	<u>Alternatives Analysis/Climate Change</u>: *Recommendation #1:* The FEIS should include a full detailed description of the tentatively recommended plan; including high sea level scenarios, using up-to-date data, and looking forward through at least the life of the project.	Please also refer to Response 1 above. The Integrated Report contains a full detailed description of the final array of alternatives, including the recommended plan. Project assumes that construction occurs only during low sea level conditions. If the higher SLR rates occur, then the project allows the plan to adjust through Adaptive Management, as described in Section 3.2.4. Adaptive Management would be addressed through Preconstruction Engineering and Design (PED) which occurs prior to each renourishment event. Construction contingency factors allow for a potential larger project to address SLR rates.	Section 3.2.4

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
3	USEPA	Alternatives Analysis/Climate Change: *Recommendation #2:* The FEIS should include a description of how each alternative would meet the needs of the project while reducing adverse impacts to species of concern, coral reefs, and surf grass.	The USACE is now recommending a smaller volume project known as Alternative EN-IB and SB-1B instead of the higher volume Alternatives EN -1A and SB -1A which were identified in the Draft Integrated Report as the tentatively recommended plan. The Final Integrated Report contains a full detailed description of each alternative addresses the project needs and objectives and evaluates the environmnetal impacts of each alternative. Should unavoidable impacts occur with the alternatives, mitigation is proposed and monitoring would be conducted to minimize future impacts through adaptive management. Details of the proposed mitigation and monitoring can be found in Appendix H. Tables 6.2-1 thru 6.2-4 show the mitigation estimates for each of the alternatives under both low and high sea level rise scenarios.	Appendix H
4	USEPA	Alternatives Analysis/Climate Change: *Recommendation #3:* The FEIS alternatives analysis should include a reasonable range of practicable alternatives that meet the project purpose and demonstrate the project's consistency with the CWA Section 404(b)(1) Guidelines and selection of the LEDPA.	Alternatives considered include a reasonable range of practicable alternatives as discussed in chapter 3. The 404(b)(1) analysis is included in Appendix D. The USACE is now recommending a smaller volume project as a Locally Preferred Plan (Alternative EN-IB and SB-1B) instead of the higher volume NED Plans, Alternatives EN -1A and SB -1A, which comprised the Tentatively Recommended Plan identified in the Draft Integrated Report. The Recommended Plan has less construction impact to the aquatic ecosystem but greater overall environmental impact than the NED Plans, which were identified as the LEDPA for each segment. Therefore, the Recommended Plan is not the LEDPA and the report includes the requirements for 404(r).	Chapter 3 Appendix D
5	USEPA	Water Quality: *Recommendation #1:* The FEIS should include the results of a comprehensive biological survey of the Encinitas-Solana Beach shoreline.	See response to Comment #1. The Final Integrated Report contains the results of biological surveys sufficient to disclose and evaluate impacts. Please see section 4.5.1. Pre-construction surveys will be conducted and monitoring during and after construction are also proposed to ensure any potential adverse effects are avoided or minimized.	Section 4.5.1

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
6	USEPA	Water Quality: *Recommendation #2:* The FEIS should address the potential of the project to contribute to elevated turbidity levels. The Corps should consider marine design modifications regarding factors such as location and size to minimize these environmental impacts.	The Final Integrated Report addresses turbidity in Section 5.3. The impact is expected to be minimal due to the construction techniques which utilize a shore-parallel berm which is created to allow sediments to settle out before reaching the nearshore and the material being placed is high-qualtiy coarse grained sand that creates little added turbidity. Alternatives are considered in section Chapter 3.	Section 5.3
7	USEPA	Water Quality: *Recommendation #3:* Additional minimization measures for impacts to the aquatic environment should be discussed in the FEIS, such as measures related to timing and rate of fill placement.	Project design minimizes water quality impacts by working to complete construction as quickly as possible and by channeling runoff to allow for maximum sand retention on the beach and lower turbidity levels in runoff waters. Please also see the response to Comment 6 above.	
8	USEPA	Water Quality: *Recommendation #4:* The FEIS should commit to: 1) placement in fall or winter to better mimic natural shoreline turbidity processes and reduce impacts during high recreational use times, and 2) development of debris management plans to ensure that the borrow site materials do not deposit trash or other debris that may be harmful to the ocean environment.	1): Due to the length of time that the recommended plan's initial construction dredging will require, it is not feasible for a long-term project to work only in the seasons recommended; 2) Borrow sites are open ocean sites where trash or debris is not expected. RBSP I and II used the same borrow sites with no reports of trash or debris in the sands.	
9	USEPA	Source & Quality of Beach Nourishment Materials: *Recommendation #1:* The Corps should evaluate and discuss, in the FEIS, any opportunities to further minimize impacts to the aquatic environment by coordinating with other Corps permitted dredging projects that may produce suitable material for beach nourishment purposes, or using sources from which the dredging might provide enhancement of environmental, navigational, or recreational conditions. The ROD should include a commitment to consideration of opportunistic sources of beach nourishment material prior to each nourishment cycle.	The Final Integrated Report discusses the use of dredged sands from restoration of San Elijo Lagoon, if the schedule permits, for this reason. The USACE and the Cities are committed to considering using any other opportunistic sources of beach sand depending on availability, compatibility, and schedule requirements and continue to coordinate with the project proponents and CEQA and NEPA lead agencies to pursue the use of dredged beach quality sediments from the San Elijo Lagoon Restoration Project if and when they become available.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
10	USEPA	Source & Quality of Beach Nourishment Materials *Recommendation #2:* The discussion of the chemical testing of the proposed Oceanside borrow site should be expanded in the FEIS to describe what was done in greater detail, including why further up-to-date testing is not needed down to the anticipated dredging depth.	This information is included in the geotechnical appendix (Appendix C).	Appendix C, section 4.3.1.5.
11	USEPA	Biological Quality Surveys and Monitoring: *Recommendation:* The FEIS should include a clear detailed description of a survey and monitoring program for the biological impacts of the preferred alternative, and commit to its incorporation as a required project element. This information should be included for both nearshore and borrow areas in order to evaluate the effectiveness of the proposed action in protecting biological diversity and quality. The monitoring plan should include pre- and post-project dive surveys and benthic community sampling of the borrow site and the receiver site to ensure that each benthic community returns to its pre-project density and structure. We recommend that the monitoring program have a clear adaptive management strategy to ensure that the aquatic environment is protected.	See Appendix H - Section 6 for the mitigation and monitoring framework. It is anticipated that a final detailed mitigation and monitoring plan would be developed in consultation with the relevant regulatory agencies. The proposed monitoring framework includes pre- and post-construction monitoring of the benthic community using primarily remote sensing equipment verified by either divers or underwater video. The Final Integrated Report includes an adaptive management strategy – see Section 5.5. Please also see Response to Comment #34	Appendix H
12	USEPA	Endangered Species: *Recommendation:* The FEIS should include the results of a comprehensive biological survey of the entire project area as well as the borrow site, including a complete review of species outside the immediate project area that may be affected by the project. The results of consultation with the United States Fish and Wildlife Service and National Oceanic and Atmospheric Administration,	See response to Comment #1. In addition to the surveys noted in Comment #1, surveys at the borrow sites were conducted in 2010 for the SANDAG Regional Beach Sand Project (RBSP) and included otter trawl, sediment sampling, and biological transects. There are only two listed species potentially in the project area. The first is the western snowy plover. Critical habitat for the western snowy plover was designated in 2012; no areas of designated critical habitat occur within the direct activity footprint area of the proposed	5.5.3

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
		if appropriate, regarding threatened or endangered species or critical habitat should be included in the FEIS. The FEIS should commit to having beach nourishment activities avoid the nesting seasons for listed species, such as the least tern and snowy plover.	Project. Some areas of critical habitat are within 2 miles of the proposed Project footprint: snowy plover critical habitat Subunit 52A, located within San Dieguito Lagoon, is about 1 mi southeast of the proposed Project activity footprint area in Solana Beach; snowy plover critical habitat Subunits 51A and 51B are within San Elijo Lagoon and east of Coast Highway 101. The closest area of designated critical habitat to the proposed Project footprint is snowy plover crtical habitat Subunit 51A, which is about 800 feet (ft) north of the potential Project staging area within the Cardiff Seaside parking lot. It should be noted that proposed snowy plover critical habitat subunits within Batiquitos Lagoon (subunits 50A–C; to the north of the proposed Project footprint) were excluded in final designation, thus no designated critical habitat for snowy plovers occurs in Batiquitos Lagoon. The western snowy plover nests at Batiquitos Lagoon, and consistently utilizes South Carlsbad Beach south of the Batiquitos Lagoon mouth for wintering and foraging; this area is north of the Encinitas receiver site activity area. Wintering snowy plovers have consistently used Cardiff State Beach south of San Elijo Lagoon. This snowy plover use area is adjacent to the Seaside Parking Lot that may be used as a project staging area. If this lot is used as a staging area, construction activities including utilization of the associated proposed beach access route between the staging area and the Solana Beach receiver site, have the potential to affect this species. Monitoring would be conducted prior to mobilization to the site and specific avoidance measures proposed based on the exact location of the snowy plovers and the actual construction activities planned for the area. This applies to the initial fill and subsequent renourishment events. The Corps will coordinate with the Service on specific avoidance measures and will share information (including relevant reports generated) during contract performance, as described below. Avoidance and minimization measures consist of the following: • The Project impact limits, including the access route and paved staging area, would be temporarily marked with flagging or orange	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
			fencing. The final construction plans, including photographs of the marked project impact limits, would be provided to the Service prior to mobilization for their review. Temporary markers would be removed upon Project completion. • A Project biologist that is appropriately qualified to monitor snowy plovers would be responsible for overseeing compliance with protective measures for the plover. The Project biologist's name, address, telephone number, and work schedule on the Project would be submitted to the Service prior to initiating Project impacts. The Project biologist would perform the following duties: o Monitor compliance with all avoidance and minimization measures. o Oversee installation of the temporary marking of Project limits. o Train all contractors and construction personnel on the biological resources associated with the Project. At a minimum, training would include: - the purpose for resource protection; - a description of the snowy plover and their habitat; - measures that would be implemented during Project construction to avoid impacts to the snowy plovers, including strictly limiting activities, vehicles, equipment, and construction materials to the marked Project footprint; - the protocol to resolve conflicts that may arise; and - the general provisions of the Endangered Species Act, the need to adhere to the provisions of the Act, and the penalties associated with violating the Act. o Halt work, if necessary, for any Project activities not in compliance with avoidance and minimization measures. The Project biologist would report any non-compliance issues to the Corps within 24 hours of its occurrence. The Corps would confer with the Service to ensure the proper implementation of species and habitat protection measures. o Submit a report to the Corps within 48 hours if an impact	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
			occurs outside of the approved Project limits. Copies would be forwarded to the Service as soon as possible. o Submit weekly compliance reports, with photographs of impact areas, to the Corps to document whether the authorized impacts were exceeded and compliance with all avoidance and minimization measures was maintained. Copies of the compliance reports would be forwarded to the Service. o Submit a biological monitoring report to the Corps after Project completion that includes: as-built construction drawings with an overlay of areas that were affected and other relevant information documenting whether impacts exceeded authorized limits and general compliance with the avoidance and minimization measures was achieved. Seaside Parking Lot: • If the Seaside Parking Lot is used as a staging area, the Project biologist will survey all beach portions of the Project footprint adjacent to the Seaside Parking Lot extending south to Ocean Street for snowy plovers within 72 hours prior to the initiation of project activities. If snowy plovers are not present, no further measures are required for 72 hours following completion of any survey. During construction activities, surveys will be conducted every 72 hours. If construction activities in and adjacent to the Seaside Parking Lot temporarily halt, then surveys will not be conducted until immediately prior to construction activities resuming, at which time a survey would be conducted in and adjacent to the Seaside Parking Lot extending south to Ocean Street. Should timely beach surveys prove to be impractical for emergency or operational reasons, or should surveys show a presence of snowy plover, a qualified snowy plover monitor would walk ahead of the vehicle(s) and equipment to assure that all snowy plovers are out of harm's way before the vehicle(s) or equipment can proceed within and adjacent to the Seaside Parking Lot on Cardiff State Beach and on beach areas within 700 ft south of the Seaside parking lot (e.g., the proposed access route from the Seaside Parking lot staging area south to approximately Ocean Street).	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
			• The number of vehicle trips on Cardiff State Beach and areas within 700 ft of the Seaside parking lot would be minimized to the extent practicable during equipment and dredge pipeline mobilization, inspection and maintenance, and demobilization. • Vehicle use on approved beach areas would be authorized only for activities associated with the various discharge operations. Receiver Sites during renourishment events: Project beach receiver sites are currently very narrow and subject to substantial recreation activities; these beach areas do not currently support habitat suitable for snowy plovers, or the habitat is poor, either for wintering or nesting. While these areas have not been comprehensively surveyed, recent snowy plover positive occupation records for these areas are unknown. Therefore, beach fill activities at Project receiver sites during the initial fill are not expected to affect this species. Beach fill will likely create conditions on the receiver beaches suitable for wintering snowy plovers. This is considered to be a benefit of the project to the species. Future conditions prior to Project renourishment events are expected to revert to a condition that is unsuitable for snowy plovers as a result of continued beach erosion. To ensure that beach fill activities do not affect this species, surveys of the beach receiver sites will be conducted prior to each renourishment event by a qualified biologist within one week of initiation of Project activities. If snowy plovers are not present, then no further measures would be taken. If snowy plovers are present, the same avoidance and minimization measures described above for the Seaside Parking Lot staging area would be applied to those beach segments with snowy plovers. The general measures discussed below and included in Section 5.5.3 are added to the Project to reduce other potential biological impacts, but would also aid in avoiding impacts to snowy plovers as well. The project therefore, may affect, but is not likely to adversely affect	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
			the snowy plover with the monitoring and avoidance measures outlined herein. General Measures These measures would be implemented independent of possible effects to snowy plovers; i.e., they would be implemented even if the Project does not utilize the Seaside staging area, and/or if no snowy plovers occur on the sand fill/nourishment Segments during any of the nourishment events: • If night work is necessary, night lighting would only be used in the surf fence construction/ maintenance zone and would be of the lowest illumination necessary for human safety, selectively placed, shielded, and directed away from natural habitats. • Employees would strictly limit their activities, vehicles, equipment, and construction materials to the marked impact limits. • The Project site would be kept as clean of debris as possible. All food-related trash items would be enclosed in sealed containers and regularly removed from the site. • Pets of project personnel would not be allowed on the Project site. • All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities would occur only in designated areas outside of waters of the U.S. within the fenced project impact limits. These designated areas, which would be shown on construction plans, would be located in paved staging areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the U.S. Contractor equipment would be checked for leaks prior to operation and repaired as necessary to avoid leaks on the Project site. Creation of habitat suitable for western snowy plover is considered to be a beneficial effect of the project on the species. USACE has consulted with the USFWS under Section 7 of the ESA, and USFWS concurred with the “may affect” determination with the inclusion of	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
			the identified monitoring and avoidance measures on January 6, 2015. Avoidance of the nesting season is not necessary. The second listed species is the California least tern and a no effect determination has been made, as discussed in the Final Integrated Report. This species is only present during part of the year and beach nourishment activites will not affect least terns. The nearest nesting colony is in Batiquitos Lagoon. Foraging terns from this site forage within Batiquitos Lagoon and in adjacent nearshore areas. This does not include the beach fill areas. USACE has determined that the project would not affect this species. Avoidance measures are not needed.	
13	USEPA	<u>Executive Order 11988: Floodplain Management</u>: *Recommendation:* The FEIS should discuss any impacts that the Proposed Project may have on the potential for flooding.	High velocity impacts including direct structural damages and flooding were quantitatively addressed within the risk and uncertainty model utilized by the USACE. The damage categories are fully described in the Coastal Engineering Appendix to the Final Integrated Report (Appendix B) and the economic summary is fully described in the Economics Appendix (Appendix E). The recommended plan (EN-1B and SB -1B) is designed to alleviate high velocity damages and will not induce additional flood damages. The recommended plan is not expected to encourage additional occupancy and/or development within the project footprint.	Appendix B and Appendix E
14	USEPA	<u>Cumulative Impacts</u>: *Recommendation:* Given that the Project will take place over the next 50 years, the FEIS should include a comprehensive discussion of reasonably foreseeable projects that may take place in the area during the construction period, such as the San Elijo Lagoon Restoration project, San Clemente Shoreline Feasibility Study and others, and analyze the potential cumulative impacts on affected resources.	The discussion of potential cumulative effects is included in Chapter 6 of the Draft and Final Integrated Report. The Project proposed in San Clemente is within the same 55-mile long Oceanside littoral cell, but not within the more applicable Encinitas-Leucadia sub-cell. The San Clemente project and this project are separated by barriers to littoral transport such as the Oceanside Harbor and are therefore not included in the analysis of potential cumulative effects.	Chapter 6

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
15	USEPA	<u>Air Quality: *Construction Mitigation Measures:*</u> *Recommendations:* We recommend that all applicable requirements under the South Coast Air Quality Management District (SCAQMD) Rules and the following additional measures be incorporated into the Construction Emissions Mitigation Plan. (see letter for detail)	The air quality analysis included in the Final Integrated Report concluded that the project would not result in a potentially significant impact. However, the project does include design features to reduce potential air quality impacts, as indicated in Table 10.2-1. Table 10.2-1 in the Final Integrated Report is modified to incorporate the following measures, as recommended by EPA: • Use of BMPs to reduce air quality impacts such as the use of BACT and/or BART for the dredge. • Construction equipment will be properly maintained and tuned. • Reduce us, trips, and unnecessary idling from heavy equipment. • Meet CARB diesel fuel requirement for off-road and on-highway (i.e., 15 ppm), and where appropriate use alternative fuels such as natural gas and electric.	Table 10.2-1
16	USEPA	<u>*Air Quality Impacts Associated with Transporting Fill Material*</u>: *Recommendations:* The FEIS should include a revised air quality analysis and updated emissions comparison to SCAQMD significance thresholds to account for the emissions from the equipment required to transport fill. The FEIS should also commit to additional minimization measures for emissions from barges, tugboats, dredge equipment and equipment used to place the sand on the beach.	The air quality analysis includes emissions associated with tug/barge operations and transport (e.g., pumps) of material to the beach. The analysis also includes emissions associated with off-road equipment (e.g., dozers) operating to place sand on the beach. It appears that the detailed emission calculations were inadvertently omitted from Appendix I, Air Quality Analysis, of the Draft Integrated Report. The revised Appendix I includes attachments that show the detailed emission calculations. However, the overall emission estimates are presented in Section 5.6, Air Quality. The section has been updated for clarity. Table 10.2-1 currently includes a measure to incorporate the use of BMPs to reduce air quality impacts such as the use of BACT and/or BART for the dredge. No additional measures are determined to be necessary at this time.	Table 10.2-1

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
17	National Oceanic and Atmospheric Administration :National Marine Fisheries Service (NOAA/NMFS)	*Magnuson-Stevens Fishery Conservation and Management Comments*The spatial and temporal scale and the associated environmental effects of this Project may have substantial adverse impacts to environmental fish habitat (EFH). Given the potential for substantial adverse impacts to EFH, the Integrated Report should contain more detail regarding the effects of the action, alternatives analysis, and recommended mitigation measures. NMFS believes the Integrated Report provides insufficient information to fully inform an analysis of the adverse effects on EFH.	The EFH evaluation in the document is in Section 5.5 and was prepared in accordance with federal regulations (50 C.F.R. 600.810(a)). The level of detail is commensurate with other EFH analyses and NEPA documents prepared by the Los Angeles District. The last paragraph in Section 5.5.3 states "Less than substantial impacts to water column EFH and benthic habitat at the borrow sites are anticipated and would constitute temporary adverse impacts (e.g., temporary turbidity plume due to dredging or loss of prey items at borrow or receiver sites due to dredging or nourishment). Similarly, temporary adverse impacts to life stages of managed species are expected to occur as a result of the project. Protective measures have been implemented to avoid and/or minimize these impacts. However, based on the analysis in the preceding sections, substantial adverse effects to quality or quantity of benthic habitat EFH and HAPCs (e.g., rocky reefs) are suggested by modeling predictions of sand level changes at year 2 following project implementation for Solana Beach only."	Section 5.5

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
18	NOAA/NMFS	*Level of detail in EFH analysis:* It does not provide a list of managed species by life stage that may be affected by the Project. In addition, it does not include EFH for the Highly Migratory Species FMP. Lastly, it does not provide a detailed analysis of the effects commensurate with the scope of the Project. Given the significant cost of the Project and the potential for substantial adverse impacts to EFH, NMFS believes that the views of recognized experts should be presented in the analysis. Experts could include university, agency, or private industry personnel with extensive knowledge about the habitat, managed species, or types of effects relevant to the proposed action. In addition, biostatistical expertise may assist understanding of the confidence and risks associated with previous monitoring and the modeling assumptions used in the analysis. NMFS is aware that the Corps is conducting an Independent External Peer Review of the Project. Inclusion of the results from this review may benefit the EFH analysis.	The Integrated Report discusses various habitats that occur offshore of the project area (e.g., kelp forests, surfgrass, sandy subtidal), and fish species commonly found within those habitats, some of which are managed species. The report includes detailed analysis of effects. While not noted if species are managed, tables of representative species are provided in Tables 4.5.1 and 4.5.4. The EFH analysis does not specifically address managed species by life stage as the analysis focuses on habitat impacts (e.g., water column, benthic) as opposed to species-level impacts. The assumption is that if designated habitat for the managed species were affected, then there is a possibility that any managed species could be affected if present. The EFH analysis does not specifically address managed species by life stage as the analysis focuses on habitat impacts (e.g., water column, benthic) as opposed to species-level impacts. The assumption is that if designated habitat for the managed species were affected, then there is a possibility that any managed species could be affected if present, whether the species is managed under the Pacific Groundfish, Coastal Pelagic, or Highly Migratory Species FMPs. An Independent External Peer Review of the project was conducted and results from the review will be provided to NMFS. This includes outside technical experts included in the recommendation.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
19	NOAA/NMFS	**Effects of dredging:** The adverse effects of dredging on EFH may include: 1) direct removal/burial of organisms; 2) turbidity/siltation effects, including light attenuation from turbidity; 3) contaminant release and uptake, including nutrients, metals and organics; 4) release of oxygen consuming substances; 5) entrainment; 6) noise disturbances; and 7) alteration to hydrodynamic regimes and physical habitat. The dredging impacts of most concern to NMFS are impacts to the benthic invertebrate community and the permanent alteration to the topography of the seafloor at the borrow sites. (see letter for more detail)	The borrow sites are located within a water depth that would be considered the inner mainland shelf by the Regional Surveys (5 to 30 m), and have been studied for several decades. Additional borrow site monitoring has been incorporated into the proposed project as noted in the updated Mitigation and Monitoring Plan contained in the Final Integrated Report. Results from Regional Surveys indicate that the mainland shelf has diverse, abundant, evenly distributed, and undominated communities, and that the same taxa have dominated the mainland shelf over at least the last five decades. Therefore, there is no indication that the inner mainland shelf areas of the proposed borrow sites would not contain or support a similar community as those Bight-wide. In addition, any change in topography from the proposed project (e.g., up to 20 ft if dredged to full design) would still fall within the depth category of the inner shelf and could therefore support a similar community as the existing condition, further supported by findings from surveys conducted at historic borrow sites for RBSP II. It should also be noted that while a proposed borrow site footprint is depicted (based on distribution of optimal sediment characteristics and volume), during construction it is not anticipated that the entire footprint would be dredged, but that smaller areas within the footprint would be dredged to meet the needs of the project at that time.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
20	NOAA/NMFS	**Effects of dredging:** The Corps should further analyze the effects of a reduced foraging base and the implications of precluding the development of a benthic invertebrate climax community.	While the Final Integrated Report acknowledges the unavoidable direct loss of epifauna and infauna in the dredge footprint, the Final Integrated Report also acknowledges that over the life of the project, and assuming varied replenishment cycles, the borrow site footprint would be in various states of recovery. The Final Integrated Report also notes that the forage base would begin to establish almost immediately after cessation of dredging by migration of invertebrates from unaffected surrounding areas as well as settlement from the plankton. Dredging is a temporary impact. Nothing in the project would preclude the development of a climax community at the dredge site. Future renourishment events would dredge in new sections of the borrow sites and would not interrupt the development of a climax benthic community at the previous dredge locations.	

Comment Letters and Emails – Public Agencies				
No.	**Commenter**	**Comment**	**Response**	**Location in Final Report**
21	NOAA/NMFS	**Effects of dredging:** The Integrated Report indicates that benthic recovery would be expected to be similar to Regional Beach Sand Project I and concludes that the impact would be less than significant on a regional level. It is anticipated that the impact would also be less than significant on a local level given that no long-term alteration of the benthic community was found 9 years after implementation of RBSP I. However, NMFS notes that the benthic community impact analysis conducted for the borrow sites at RBSP I was not comprehensive and may not adequately assess environmental impacts associated with dredging at the borrow sites. According to SANDAG (2011), the sampling effort associated with the borrow sites was limited given the reconnaissance level of the survey. NMFS believes additional analysis is warranted given the spatial (combined area of borrow sites are 275 acres) and temporal scale (50 year project with repeated dredging) of the Project.	The inner mainland shelf is estimated to constitute approximately 1,171 km2 (299,360 acres) of the Bight, and the maximum proposed borrow site area is approximately 275 acres or 0.09% of the available habitat in the Bight. Given the characteristics of the community present in this area, and the relatively small area affected, it was determined that any impact would not be considered significant. Future renourishment events would dredge in new sections of the borrow sites and would not interrupt the development of a climax benthic community at the previous dredge locations over the 50-year life of the project. Data provided by the RBSP I monitoring was used as part of the analysis as it provided detailed data in the study area as a result of a beach nourishment project. Although it is smaller in volume, it represented the most recent data of dredging of the borrow sites.	
22	NOAA/NMFS	**Effects of sand placement:** The disposal of dredged material on the beach may adversely affect EFH by 1) impacting or destroying benthic communities; 2) impacting adjacent sensitive habitats; 3) creating turbidity plumes and introducing contaminants and/or nutrients. Of primary concern to NMFS are the potential impacts associated with the sediment disposal to sensitive nearshore resources (e.g. seagrass and reef habitat) and beach habitat.	Impacts to beach communities are considered to be short-term and adverse and are discussed in the Final Integrated Report in Section 5.5. The Corps agrees that potential indirect impacts to near shore resources are of more concern and has proposed mitigation to offset those impacts. See response to Comment #25.	Section 5.5

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
23	NOAA/NMFS	**Reef habitat:** The Integrated Report indicates that reef features are naturally exposed to periodic burial, so that short-term burial resulting from the project is not a loss. However, short term burial at depths of 0.8 feet exhibited a statistically significant decline in surfgrass shoot count within a laboratory setting (Craig *et al*. 2008). Surfgrasses exhibit late successional traits, recover very slowly from disturbance, require facilitation from algae before settling, and are strong competitors (Turner 1985). Additive impacts and repeated beach nourishment efforts likely will increase this rate of disturbance to these systems. Slow recovery times suggest that disturbances to these communities may be ecologically significant. Given that algal turf community facilitates surfgrass settlement, consideration should also be given to reefs containing turf algae. They do not appear to be accounted for in the nearshore impact analysis.	If by turf algae you are referring to annual red (e.g., Acrosorium, Plocamium, Mazzaella) and brown (e.g., Dictytales) algae, these are ephemeral species that may be present on nearshore rocky substrate but are not persistent year round due to annual erosion and accretion. The presence of turf algae does not imply that the habitat is suitable for surfgrass as there are many locations where surfgrass is present and no turf algae is present and vice versa. It appears that the distribution of surfgrass in the nearshore areas of north San Diego County is dictated by the presence of suitable habitat (i.e., high relief substrate or moderately sand influenced low-relief substrate) on the nearshore upper limit, and potential biological (competitive) interactions in slightly deeper waters (e.g., understory kelp such as Egregia and Eisenia are common at the lower limit of surfgrass). The study area is a diverse, stressful habitat for which surf grass is ideally adapted. Surf grass can survive repeated, short-term burial that may be encountered as a result of the project. No long-term impacts to surf grass are expected.	
24	NOAA/NMFS	**Reef habitat:** Removal of surfgrass from a rocky reef community has profound impacts to community structure (Turner 1985). Galst and Anderson (2008) have suggested that surfgrass is important for nearshore fish communities and reductions in surfgrass could negatively affect recruitment patterns. Specifically, experimental reductions in coverage of seagrass (ranging from 7 to 180 square meters) resulted in significant decreases in the density of newly recruited fish species. Similarly, NMFS expects reductions in coverage and/or density may reduce other ecological services provided by surfgrass, such as shelter, foraging, primary productivity, substrate for epibiota, and wave energy dissipation.	The analysis used existing data for surfgrass and other understory algal coverage since the presence of these perennial species suggests persistent habitat which generally consists of either high-relief reefs or low-relief reefs that are not influenced by sediment movement. The analysis uses a model that has gone through ATR and IEPR and is an accepted, conservative model for estimating these impacts. Mitigation actions will be based on monitoring results rather than the model used for planning purposes.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
25	NOAA/NMFS	**Beach Habitat:** Under the tentatively recommended alternative, a maximum of 93 acres of beach habitat would be disturbed by construction at Encinitas and 63 acres at Solana Beach. The Integrated Report concludes that recovery of the invertebrate prey base would be complete in less than 1 year. Due to the relatively small area affected, and the widespread occurrence and relatively rapid recovery rates of sandy beach invertebrates, the Integrated Report concludes that direct impacts to marine invertebrates within the receiver site footprints are expected to be less than significant. However, the Integrated Report provides little scientific rationale for this conclusion.	A study conducted by the City of Encinitas indicated recovery at not only the receiver sites, but also adjacent areas following the RBSP I and can be provided to NMFS (SAIC, 2006. Coastal Habitat Study, 2003-2005. Influence of Beach Nourishment on Biological Resources in the City of Encinitas, California). Also note that the receiver sites are historically known to suffer from erosion and therefore, without renourishing, no beach habitat exists. For example, prior to RBSP I, the Cardiff receiver site was 100% cobble, and the Solana Beach receiver site consisted of a very small beach backed by coastal bluffs. Recovery at receiver site footprints is a well-documented process based on prior beach nourishment projects. As noted above, USACE is recommending a smaller beach nourishment project in both Encinitas and Solana Beach than the project tentatively recommended in the draft report.	
26	NOAA/NMFS	**Beach Habitat:** Beach maintenance activities such as nourishment and bulldozing cause high rates of mortality in benthic macroinvertebrates (Speybroeck *et al*. 2006). (see letter for more detail)	These impacts are recognized and discussed within the Final Integrated Report as is the high rate of recovery seen at these and other beaches. Note also that these beaches are historically known to suffer from erosion and therefore, without renourishing, no beach habitat would exist.	
27	NOAA/NMFS	**Adequacy of Nearshore impact analysis:** The Integrated Report indicates this methodology was developed in coordination with CDFG, NMFS, and USFWS. However, NMFS staff expressed concerns with the approach at an October 2011 interagency meeting and requested that various assumptions be more fully described and justified. (see letter for more detail)	See Response to Comment #36 below.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
28	NOAA/NMFS	**Lagoon impacts and mitigation measures:** San Elijo Lagoon and San Dieguito Lagoons occur in close proximity to the nourishment sites. San Elijo Lagoon lies between the two nourishment sites and may have the greatest potential for adverse impacts associated with increased lagoon sedimentation. San Dieguito Lagoon lies to the south of the Solana Beach nourishment site. (see letter for more detail)	An analysis was performed to estimate the likely increase in dredge volume that could be realized at the lagoon entrances at Batiquitos, San Elijo and San Dieguito. As with littoral drift sands that periodically block the entrance, sand from the project would not extend into the lagoons themselves. This is presented in Section 10 of Appendix B. An allowance for increased maintenance cost for the lagoon entrances is also included. In addition, lagoon entrance monitoring would also occur at Los Penasquitos Lagoon as part of the project implementation. The USACE Project contains monitoring and maintenance commitments for any of the lagoons that experience increase sedimentation as a result of this USACE project would be provided with the additional funds required to remove the project-related sediment. This is the standard mitigation that has been employed in the past in the region for both the RBSP 1 and the RBSP 2 project. The sand is removed from the lagoon during maintenance dredging events and placed on the beaches either upcoast or downcoast of the lagoon entrance and tidal flows to the lagoons are restored.	
29	NOAA/NMFS	***Analysis of previous monitoring:*** If previous monitoring results in Southern California are to be used as support for conclusions that impacts to biological resources are minor and/or insignificant, NMFS believes a more rigorous examination of their sampling design, statistical analyses, and conclusions are necessary. (see letter for more detail)	Noted; however, there also needs to be a distinction between statistical significance and biological significance, as well as meaningful, measurable metrics that can be compared as sampling in the marine environment is highly variable. While reviewing other studies may provide insightful information, to implement a statistically robust sampling design in this highly variable environment would be very labor intensive, therefore, to minimize the challenges associated with a highly variable habitat, this project is proposing to use a similar approach as that used for evaluating impacts to eelgrass (SCEMP). Previous monitoring results were used to supply existing conditions, which were then subject to model results to assess impacts. Monitoring conducted as part of the RBSP I & II projects received extensive agency review and is thus considered to be an accurate representation of conditions. The remaining studies were conducted by the Corps to further evaluate conditions and were also reviewed by resource agencies and are also considered to be accurate.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
30	NOAA/NMFS	***Erosion sources and effect on alternative analysis:*** Although the Corps' authority may focus on bluff toe protection, the analysis should still address other sources of erosion. At a 2011 interagency meeting, NMFS and FWS staff requested that the analysis account for other sources of bluff erosion. Since erosive forces other than just wave energy may occur at the bluff top and on the bluff face, they need to be more clearly accounted for in the alternative formulation and analysis. Groundwater and rainfall may require armoring and/or retreat to reduce risks to public safety and economic damages.	Concur that management practices to divert surface runoff from the bluff and minimize ground water should be implemented to mitigate landslides and slope failure in the upper bluff, and that even with such measures, upper bluff stabilization measures may be required in certain areas. However, all of these measures are dependent on stabilizing or protecting bluff toe from wave undercutting and block failures. These measures also apply predominantly to private property where the Corps has no jurisdiction in this regard and such efforts would be beyond the scope of the project. The local Cities have taken steps to reduce irrigation on the bluffs. As one example, the City of Solana Beach Local Coastal Program Land Use Plan contains the following: *Policy 4.26: With respect to bluff properties only, the City will require the removal or capping of any permanent irrigation system within 100 feet of the bluff edge in connection with issuance of discretionary permits for new development, redevelopment, or shoreline protection, or bluff erosion, unless the bluff property owner demonstrates to the satisfaction of the Public Works Director, or the CCC if the project is appealed, that such irrigation has no material impact on bluff erosion (e.g., watering hanging plants over hardscape which drains to the street*).	
31	NOAA/NMFS	***Economic analysis:*** A similar level of risk factor should account for the environmental risks. Environmental costs should be fully considered in the economic evaluation of the project. The Corps has acknowledged the potential need to mitigate 8.4 acres of rocky reef impact, but NMFS has concerns that this may be an underestimate. Furthermore, there is uncertainty whether the proposed mitigation would offset impacts to rocky reef habitat. Lastly, the environmental costs associated with repeated disturbance to soft bottom communities are not incorporated into the analysis. (see letter for more detail)	For this project, the cost per mitigation acre includes a substantial contingency to account for the Corps' assessment of the uncertainty in estimating potential project impacts. Mitigation costs are the expected costs plus a contingency to address uncertainty in expected performance and cost. Expected costs with the contingency are adequate to address the uncertainty. The Corps affirms that expected mitigation costs plus this substantial contingency substantively address the "upside" uncertainty in overall mitigation needed to address impacts. Impact estimates are based on a conservative methodology that, the Corps believes, overestimates the potential impacted area.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
32	NOAA/NMFS	***Managed retreat alternative analysis:*** The Integrated Report indicates there are no quantitative economic benefits that would enable a managed retreat alternative to qualify for a Federal interest since the benefit to cost ratio would be less than one and the Cities of Encinitas and Solana Beach do not support a Managed Retreat Alternative. However, the analysis of this alternative within the Integrated Report is based upon a very limited cost-benefit analysis and does not consider alternatives evaluated in detail elsewhere in the State (e.g., ESA PWA (2012*)).* (see letter for more detail)	Managed Retreat requires significant, disruptive, and costly measures to execute. These include potential relocation of several hundred families, land loss, demolition of several hundred public and private structures, loss of public access points to the shoreline, protective measures for water, sewer, power lines, and public roads, and increased life-safety risks from collapsing bluffs in a heavily visited shoreline. Further, representatives from both Cities have stated that eventually, once the bluff-top parcels have eroded to the back of the properties, seawalls would be constructed to protect roads, utilities and other critical infrastructure. Hence, a managed retreat option would likely delay the eventual construction of seawalls rather than eliminating the need for them. Note that the impacts of a retreat scenario were evaluated in the economic appendix. Total damages and economic losses associated with this scenario were estimated at over $7.1 million ($9.5 million under high sea-level rise conditions) on an average annual basis. While managed retreat is economically costly and difficult to justify from that perspective, it also does not adequately address life-safety risks, an important project objective, or provide a supportable alternative given the negative impacts to the community from relocating and condemning residences and the strain to local finances from relocating or protecting extensive infrastructure. Reference to ESA PWA document is noted and was reviewed in addition to other reports.	Appendix E

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
33	NOAA/NMFS	NMFS indicated it would provide final recommendations upon receipt of revised EFH analysis as requested in earlier in their comment letter. (see comment 18) **Recommendation #1:** According to Table 3.1-2 which summaries the preliminary screening of alternatives, all of the beach nourishment alternatives with various beach width increments would meet the fundamental objectives of the Project. The primary difference amongst these alternatives is the extent to which the economic analysis justifies a Federal interest in the Project. If the basic objectives of the Project may be met via a reduced beach nourishment volume, NMFS recommends the alternative(s) with the minimum beach width to avoid and/or minimize impacts to EFH.	USACE carefully reviewed each NMFS recommendation and determined that further revision to the EFH analysis is not indicated. The reasons for this are explained in detail below. As discussed between USACE and NMFS during coordination in 2013, USACE is treating the preliminary recommendations included in the comment letter as NMFS' final conservation recommendations. A formal response to each is provided below. The tentatively recommended plan identified in the Draft Integrated Report was the National Economic Development (NED) Plan and it maximized benefits while minimizing environmental impacts. Narrower beaches would reduce benefits, leaving a high residual risk of continued bluff attack and failure despite the project. Larger beaches would increase benefits; however they would also increase potential environmental impacts and mitigation requirements to unacceptable levels. The Recommended Plan has been revised in the Final Integrated Report and is now the Locally Preferred Plan (LPP). The LPP includes alternatives EN-1B and SB-1B and are narrower beaches than the NED Plan. The LPP is projected to have less construction impacts to the aquatic ecosystem. Please also see the response to comment 1 above.	
34	NOAA/NMFS	**Recommendation #2:** A scientifically defensible monitoring plan should be developed prior to a record of decision on the proposed project.(see letter for more detail)	The draft monitoring plan included in the Draft Integrated Report was independently reviewed by ATR and IEPR reviewers working independently of the USACE. These include reviewers outside of the District and outside of the Corps. Additionally, the Corps has committed to further review by resource agencies when a fully detailed monitoring plan is prepared during preconstruction, engineering and design in preparation for construction. We note the comment, while disagreeing with it. See response to comment #29.	

Comment Letters and Emails – Public Agencies				
No.	**Commenter**	**Comment**	**Response**	**Location in Final Report**
35	NOAA/NMFS	**Recommendation #3:** According to Appendix B Coastal Engineering Appendix, the Project will result in increased sedimentation to nearby coastal lagoons. Maintenance of lagoon mouths is necessary to ensure adequate tidal circulation to support the ecological functions provided by these sensitive lagoon habitats. The Corps should provide funding to the appropriate entities responsible for lagoon mouth maintenance to offset any increases in lagoon sedimentation at lagoon systems adversely affected by the Project.	Maintenance Costs for lagoon mouth dredging efforts are included in the total project cost as mitigation for the project. See Appendix F - Cost Engineering for more detail. The Corps would address lagoon mouth dredging through a contract.	Appendix F
36	NOAA/NMFS	**Recommendation #4:** As described in the Integrated Report and expressed in our comments above, there is great uncertainty regarding the extent of impacts to nearshore reef habitat. NMFS questions some of the assumptions used in the nearshore habitat impact analysis (see letter for more detail). The Corps should explicitly address each of the identified concerns, provide detailed justification for the assumptions, and provide a range of potential mitigation alternatives that may be necessary to offset the adverse impacts to nearshore reefs and EFH.	1) As stated in the Integrated Report, to estimate sedimentation and impacts to resources based on "Natural Variation," a sand layer was created from empirical data provided from the 1996 to 2008 coastal 38 profile dataset (Figure 4.4-8). Due to the high degree of variation of the coastal profile data (most likely a sampling artifact), the standard deviation of the sand layer depth was used instead of the maximum values. This sand layer was overlaid onto the baseline layer similar to the modeled sedimentation results, and the same ≥ 12 in criteria was applied, and area impacted calculated. While NMFS notes that profile data may provide some indication of changes in sand depth, it is not reflective of variation in biological resources associated with reef habitat because of natural sand movements in the study area. However, these changes in sand depth were incorporated into the model to predict effects to habitat in a similar manner that model-predicted sedimentation results were used to predict effects. They were run independently (i.e., coastal profile results to determine Natural Variation, and model-predicted sedimentation to determine project-related effects). The general approach is similar to analyses conducted for RBSP I and II; however, was incorporated into a GIS-based model for efficiency.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
			Also NMFS notes other statements from previous reports that "To document reef area and seasonal changes in reef area, remote sensing surveys, similar to what was conducted for SANDAG's Nearshore Inventory Program would need to be conducted." This statement still applies to this study and remote sensing surveys are proposed for monitoring; however, the only remote sensing data currently available were those that were used for this study as remote sensing to provide pre-project conditions would occur in Preconstruction, Engineering and Design (PED) phase. To address another comment regarding why the standard deviation of the coastal profile data were used, as noted in the Integrated Report, there was a great deal of variability associated with the coastal profile data. During the initial model runs, the mean values (from spring and fall from 1996 to 2008) were used; however, the results indicated potentially large impact areas (higher than what was modeled from project-related effects). Therefore, since it was determined that some element of natural variation needed to be accounted for, it was determined that a smaller value (i.e., the standard deviation of the mean) would be used to estimate the potential effects from natural variation. The use of this value could be considered as a conservative assumption to model predicted effects. 2) For this project, model-predicted sedimentation was estimated for spring and fall seasons for five years. Per coordination with NMFS and USFWS, it was agreed that , for mitigation purposes, the most probable impact would be determined at Year 2 post construction. Therefore, there was a spring value and a fall value for Year 2, and the most probable value was calculated as the average between the Year 2 Spring and Year 2 Fall values. By contrast, RBSP I and II assessed impacts over the five years to distinguish between short-term and long-term impacts.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
			3) Maximum and minimum impacts were not calculated because, in coordination with Resource Agencies, the most probable impact at Year 2 was determined to be used for impacts analysis.	
37	NOAA/NMFS	Endangered Species Act Comments: As a Federal agency and pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 et. seq.), the Corps shall, in consultation with and with the assistance of NMFS, insure that any action it authorizes, funds, or carries out, does not jeopardize the continued existence of any species listed as threatened or endangered, or result in the destruction or adverse modification of designated critical habitat designated. (see letter for more detail)	There are no listed species in the project area under the jurisdiction of the NMFS. The comment does not propose any. Therefore, consultation is not required. NMFS has mentioned, in outside communications, the possibility of the presence of a single listed abalone in the nearshore reef area. The Corps is not aware of any reports of listed abalone in these reefs. However, we will include in the pre-construction surveys, measures to detect abalone, if present. If detected, consultation will be initiated with NMFS.	
38	NOAA/NMFS	Marine Mammal Protection Act Comments: Marine mammals are protected under the Marine Mammal Protection Act (MMPA) (16 U.S.C. §1361 et. seq.). Under the MMPA, it is generally illegal to "take" a marine mammal without prior authorization from NMFS. "Take" is defined as harassing, hunting, capturing, or killing, or attempting to harass, hunt, capture, or kill any marine mammal. NMFS recommends that the Corps assess the potential for harassment or injury to marine mammals as a result of the Project, and implement any measures that may be necessary prevent the take of any marine mammals, as defined under the MMPA. (See letter for more detail). NMFS recommends that the Corps assess the potential for harassment or injury to marine mammals as a result of the Project, and implement any measures that may be necessary prevent the take of any marine mammals, as defined under the	The Final Integrated Report concludes that the project would not affect marine mammals. The project would not result in the take of any marine mammals primarily because there is no use of the receiver sites by marine mammals. NMFS comments did not identify any potential take of marine mammals as a result of the proposed project, but simply offered assistance.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
		MMP A. If the incidental take of marine mammals is expected to occur as a result of the Project, the Corps should apply for an Incidental Harassment Authorization (IHA) or Letter of Authorization (LOA) from NMFS well in advance of the Project. NMFS staff is available to assist with this assessment and compliance with the MMPA, including any IHA or LOA applications, upon request from the Corps. If it becomes apparent that impacts to marine mammals in the form of "take" may be occurring as a result of the Project that has not been authorized, the Corps should cease operations and contact NMFS immediately to discuss appropriate steps going forward.		
39	U.S. Fish and Wildlife Service (USFWS)	The FWCA states that" ... wildlife conservation shall receive equal consideration and be coordinated with other features of water-resource development programs through the effectual and harmonious planning, development, maintenance, and coordination of wildlife conservation ... "	Comment is noted. A Final Coordination Act Report, dated February 2014, was prepared by the USFWS incorporating public and agency comments on the Draft EIS/EIR A summary of the concerns and a list of all Final CAR recommendations as well as the USACE response to the recommendations can be found in Section 10.1.1 of the Final Integrated Report.	10.1.1
40	USFWS	Considering the RBSP pre-project modeling, the subsequent reduction in sand replenishment quantities of the RBSP based on this modeling, and post-project monitoring that determined no significant long-term impacts to biological occurred, the Corps should use the same (or smaller) sand replenishment quantities as those used in the RBSP. If the Corps decides to proceed with larger sand replenishment quantities than the RBSP, the Corps should use the GENESIS model and/or a similar equivalent model to predict sand movement over the life of the Project. (see letter for more detail)	See Section 5.5.3 of the Integrated Report regarding analysis to predict potential sedimentation impacts to biological resources. Volumes similar to the RBSP projects do not provide shoreline protection and were intended for recreation only. While the SANDAG RBSP project has contributed to shoreline protection, the protection is localized and was predicted to last from one to five years based on natural processes of coastal erosion and littoral transport. Much of the sand from RBSPII in 2012 has already eroded; The volumes were too small to provide long-term protection. USACE used the GENESIS model to analyze along shore transport of sediment as part of our plan formulation to determine the optimal volumes to provide long term shoreline protection on the beaches in the project area.	Section 5.5.3

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
41	USFWS	If the Corps decides to proceed with larger sand replenishment quantities than the RBSP, the Corps should implement the monitoring protocol used for the RBSP (Engle 2005), and/or a similar equivalent protocol, to determine if the Project causes any significant long-term impacts to biological resources and/or lagoons. Implementation of a monitoring program should be overseen by the above-noted biological working group. (see letter for more detail)	See Appendix H - Section 6 regarding general mitigation and monitoring framework. The mitigation and monitoring plans will be refined during the pre-construction engineering design (PED) phase of the project in consultation with knowledgeable, experienced, and qualified marine ecologists. The monitoring plan will build upon the RBSP II monitoring and will include more monitoring for rocky reef and surf grass habitats. Appendix H (section 6) has been updated since the Draft Integrated Report based in part on additional commitments made during the CCC coordination efforts associated with the Federal Coastal Consistency Determination which was made in November 2013.	Appendix H
42	USFWS	Our one additional comment is that we disagree with the Corps' determination that the proposed action would have "no effect" on the California least tern or snowy plover. Pursuant to the Endangered Species Act we suggest that consultation on snowy plover and California least tern is appropriate and warranted for the proposed action. (see letter for more detail)	Comment noted. See response to Comment 12. The USACE has revised its effect determination for snowy plover and consulted with the USFWS on its may affect, not likely to adversely affect determination for the snowy plover. USACE has included avoidance and monitoring measures agreed upon between our agencies. USFWS concurred with the determination on January 6, 2015. Thank you for your coordination under the Endangered Species Act.	Section 5.5
43	USFWS	The Corps should perform surveys for least terns, snowy plovers, and grunion in the Study Area during the environmental review process and before each replenishment event, to determine current nearshore use for foraging by breeding least terns, and beach use by grunion and wintering or breeding snowy plovers. If Project activities must occur during the breeding seasons of these species (or wintering season for snowy plovers) and they are present in the Project area, measures developed by the biological working group should be implemented to avoid, minimize, and offset potential impacts. (see letter for more detail)	For discussion of the avoidance and monitoring measures included for snowy plovers, please see response to Comment 12. For discussion of least tern, please see response to Comment 12. USACE has included monitoring plans for grunion in the proposed project. See Appendix H.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
44	USFWS	As was done for the RBSP, the Corps should place funds in an interest bearing account of sufficient quantity to guarantee a means to mitigate any significant long-term adverse impacts documented by the monitoring program. Such mitigation could include creation of artificial reefs and the clearing of lagoon inlets, as determined to be appropriate by the biological working group.	The Corps is unable to fund an interest-bearing endowment as recommended by USFWS. Such an action would violate the prohibition against "advance payments" as set forth in 31 U.S. Code Section 3324. Generally, a competitively procured FAR contract is the only vehicle under which the Corps can obtain mitigation services to be in compliance with all applicable laws and regulations.	
45	USFWS	The Corps should monitor the extent of turbidity plumes at the dredge and beach replenishment sites throughout the duration of dredging and sand placement activities. Each turbidity plume should not exceed 2.5 ac (1.0 ha) at any given time. If a plume is documented to be greater 2.5 ac (1.0 ha), Project operations should cease until the plume has receded to less than 2.5 ac (1.0 ha). Surface turbidity plumes should be avoided during the most sensitive periods for California least terns, from early May to late July.	Monitoring for RBSP I was conducted to determine potential foraging effects on sight dependent seabirds and indicated construction had no effect. Water quality monitoring was also conducted and indicated that turbidity plumes did not exceed the levels identified by the USFWS. The only restriction to construction for RBSP I and II was at the Batiquitos Receiver Site, as it was allowed only after September 15 (or August 1 with verification of cessation of least tern and snowy plover nesting at the W-2 nest site). The Corps will conduct standard monitoring for turbidity that will not include mapping of turbidity plumes. Dredging and beach nourishment projects have been monitored extensively for earlier projects. Such efforts would not be necessary for this project where standard monitoring will provide a sufficient level of protection.	
46	USFWS	If a hopper dredge is used, a morning glory spillway or similar type spillway that conveys overflow water below the bottom of the hull for discharge should be used.	Minimization measures for water quality impacts from dredges are appropriate as long as they do not specifically require the use of one particular type of dredge equipment and exclude all other equipment. The contract will require implementation of BMPs and other specifications, including specific performance requirements to minimize turbidity. Overflow restrictions can be included where appropriate.	
47	USFWS	If a cutterhead dredge is used, it should back flush a minimum of 16 ft (5 m) below the surface and not at the surface. Turbidity monitoring would not be necessary if this method and back flush technique are implemented.	See response to comment no. 46.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
48	USFWS	Sand placed in the nearshore with the intent to replenish beaches should be placed directly within the littoral zone, in depths as shallow as practicable, to reduce in-water impacts and provide the most nourishment to beaches. Any Project replenishment sand not deposited onshore should be deposited directly into the littoral zone, at depths of-19 ft (-6 m) MLL W or less, wherever practicable (SANDAG and CSMG 2006). No sand intended for beach replenishment should be deposited at depths greater than-30ft (-9 m) MLLW (SANDAG and CSMG 2006, EPA 2012).	The project is not proposing nearshore placement but placement directly on the beach. Comment noted for consideration in design phase (PED).	
49	USFWS	To help avoid and/or minimize potential impacts due to operation of equipment offshore of the beach replenishment sites, the Corps should develop a plan based on diver surveys that includes details of the proposed locations of all pipelines, cables, anchors, and any other equipment to be used. If submerged pump lines are used to place dredged material onto the beach, they should be outfitted with tractor tires or equivalent bumpers to minimize abrasion of the ocean floor or reefs. Construction monitoring should include monitoring of equipment and activities offshore of the beach replenishment sites. Pumpout of fluids from offshore equipment (such as holds or ballast tanks) should be avoided. If problems are detected, operations should cease until the any problems observed during monitoring are remedied. Pre- and post-construction surveys should be performed to document any adverse biological impacts. Any impacts should be mitigated as directed by the biological working group.	Surveys have been conducted to locate areas for pipeline and anchoring locations that avoids sensitive aquatic habitat. Pre-project monitoring to establish baseline conditions for impact assessment to rocky reef and surf grass habitats will be used to locate pipeline and anchoring locations to avoid sensitive aquatic habitat. Pre- and post-construction surveys are included in the proposed monitoring program included in Appendix H and have been updated since the Draft Integrated Report was issued in late 2012 to include some additional monitoring efforts and agreements that USACE will implement as part of the proposed project. Mitigation would be coordinated with the resource agencies that formed the biological working group which included the USFWS, EPA, CDFW, NOAA, CCC and the RWQCB.	Appendix H

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
50	USFWS	The Corps should maintain and operate all Project-related equipment in such a manner as to prevent contaminants (e.g., fuel, oil, grease, coolant, hydraulic fluid, hold and tank pump-outs, etc.) from entering the ocean, local streams/storm drains, or beach areas directly or indirectly).	A spill control plan and hazardous waste management plan is a standard requirement for Corps' construction projects, including dredging and beach nourishment projects like this one. Please refer to Appendices H and M.	
51	USFWS	The Corps and Cities should work with the California Department of Transportation, Caltrans, San Diego Association of Governments, North County Transit District, the 22nd District Agricultural Association, the cities of Oceanside, Carlsbad, and Del Mar, resource agencies, and others, to develop and implement hydrological/fluvial solutions to the sediment capturing effects of the artificial fill (e.g., road and railroad berms) and bridge-related structures associated with the freeway, railroad, and road crossing of the lagoons and stream/rivers in north San Diego County. (see letter for more detail)	• The natural supply of sediment to the beaches in the project areas has been significantly reduced due to development and construction of dams and debris basins in the watershed and by the construction of roads and the railroad which reduce fluvial sediment flushing from the lagoons to the beaches . These larger issues and how to address them are complex and beyond the scope of this study. • The San Diego Association of Governments (SANDAG) has a Shoreline Preservation Working Group that is looking at a long-term strategy of managing and maintaining the coastal resources, from a larger watershed perspective, along San Diego County. Additionally a Regional Sediment Management Plan (RSMP) has been developed for San Diego County through a cost-shared feasibility study (California Coastal Sediment Master Plan) between the Corps and the California State Parks, Division of Boating and Waterways. If a more natural sediment regime was established and sediment was more regularly supplied to the project area that could potentially benefit the project in terms of increasing the time between beach nourishment events. • The Cities are actively working locally, regionally and at the State level to improve sediment management practices in San Diego County and implement sand retention projects as part of a comprehensive and long-term shoreline management program. • The Cities are two of four cities in San Diego County that have approved Sand Compatibility and Opportunistic Use Program (SCOUP) for beach nourishment. SCOUP was developed in consultation with State and federal resource agencies and provides protocols and templates for a regional opportunistic sand program intended to streamline regulatory approval of small (less than 150,000 cubic yards) beach nourishment projects.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
52	California Department of Fish and Wildlife (CDFW)	**Impacts to Marine Fish and Wildlife**: The draft EIS/EIR indicates that Project activities may directly impact and permanently bury or scour existing intertidal reefs with surf-grass and algae, as well as abalone and other invertebrates. Other sensitive habitats observed by Department staff within or adjacent to the two project segments include: large intertidal boulders, tide-pools, and sub-tidal reef pedestals. The draft EIR/EIS has not adequately identified these resources and potential impacts to these habitats from Project activities, or provided adequate avoidance, minimization and mitigation measures. Many species rely on these habitats for attachment, shelter, roosting, foraging and reproduction. The Department also has concerns regarding the potential for direct loss and degradation to marine plants and animals from Project activities. Both of the Project segments are located in high energy wave areas. Once algae or surf-grass mats are removed, it is difficult for them to re-establish on reefs naturally or by transplantation, due to harsh wave conditions. Additionally, indirect adverse impacts including scour and/or burial may occur due to storms and cross-shore or long-shore sediment transport. The draft EIR/EIS should adequately identify these potential impacts from Project activities, and provide adequate avoidance, minimization and mitigation measures. Impacts from Project activities may permanently change the community structure of existing sandy beach habitats within or adjacent to the Project segments. These habitats are critical to the	The Integrated Report includes a detailed discussion of biological resources in Section 4.5 and a detailed analysis of potential direct and indirect impacts to biological resources in Section 5.5. The Integrated Report indicates the initial receiver site footprints were designed to avoid direct impacts to sensitive nearshore resources in the area (e.g. rocky reef and surfgrass beds) so no direct burial of existing reefs would occur. While indirect impacts to nearshore rocky reef are projected to occur in the Solana Beach segment, no direct or indirect impact to surfgrass is projected in either segment. In addition, the Integrated Report states that no impacts to abalone are anticipated because suitable habitat for abalone is not present (see section 4.5.4). Under the recommended plan, sand will be placed along the shorelines of Encinitas and Solana Beach. For Encinitas, modeling indicated no project-related impact to sensitive nearshore resources for all alternatives in the final array considered. Any impacts to nearshore reefs would be due to indirect burial as a result of the sand naturally moving along the beach as well as in the nearshore. Potential indirect impacts are predicted for nearshore reefs adjacent to the Solana Beach receiver site, but no indirect impacts are predicted for surfgrass (see Sections 5.5.4 and 5.5.5 and Table 5.5-1.). Your comment regarding the challenges of reestablishing surfgrass is noted and has previously been discussed among our agencies. Section 4.5.1 discusses the marine shoreline and offshore habitats. Specifically, Table 4.5-2 lists the estimated acreage of bedrock, cobble, surfgrass, understory kelp, and kelp within the vicinity of the study area. Large intertidal boulders, tidepools, and sub-tidal reef pedestals do not exist within the project site, but may exist adjacent to the project site. See response to Comments #19 to 24 for further discussion of biological resource impacts in the borrow sites and receiver sites (#19-21 regarding effects of dredging on borrow sites, including benthic invertebrates; #22 for effect on beach	Section 5.5

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
		preservation and maintenance of the vast array of fish and wildlife resources that utilize these areas. The draft EIS/EIR does not adequately discuss the impacts to sandy beach and coastal strand species and habitats, nor how it should be conserved during initial and subsequent beach construction.	communities and nearshore resources from sand placement;and #23-24 regarding algae and surfgrass). The current impacts analysis adequately addresses potential indirect impacts including scour or burial due to sediment transport (both in the cross-shore and longshore directions). Section 4.1 in Appendix M discusses the sediment transport modeling done as part of the impacts analysis, which was GIS-based and described in section 4.2 of that same appendix. The monitoring plan for pre- and post-construction has been designed to identify direct or indirect impacts due to project implementation. USACE does not agree that impacts of sand placement may permanently change community structure. As identified in Section 5.5.3, "Sand Placement" subsection, there will be temporary impacts to the sandy beach habitat, but these impacts will not have a permanent change to the community structure because the affected areas are small and recovery begins quickly. Due to the relatively small area affected, and the widespread occurrence and relatively rapid recovery rates of sandy beach invertebrates, direct impacts to other marine invertebrates within the receiver site footprints are expected to be less than significant as discussed in 5.5.3 (see response to Comment #25-26 for additional discussion). While there would be a temporary reduction in forage base for fish and shorebirds that feed upon invertebrates under appropriate tidal conditions, colonization of the sands would begin almost immediately and the development of the invertebrate prey base would be complete in less than 1 year (e.g., weeks to months). As discussed in that section, this project has the potential to enhance or increase persistence of sandy beach habitat at erosive beaches.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
53	CDFW	**Impacts to Marine Protected Areas:** Three of these MPAs are located near the Project area, and one, Swami's SMCA, is located within the Project footprint. The removal, destruction, or degradation of any habitats within an MPA is likely to jeopardize the effectiveness of the MPA network as a whole. Due to the regulations outlined in the MLPA, the MMAIA, and CCR Title 14, significant impacts to habitats within MPAs shall be avoided and loss of habitat in an MPA cannot be mitigated outside the MPA.	The only MPA located within the study area is the Swamis SMCA. This conservation area is conditioned to allow beach nourishment such as is proposed for this project. As codified in California State law, both beach nourishment and sand extraction activities are allowed in the Swami's SMCA. We have included the specific provisions of the MLPA language below for your reference and have shown in bold/italics that this project type is specifically allowed within the SWAMI's SMCA. Title 14, CCR, Section 632 (b) (138) Swami's State Marine Conservation Area. (A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted: 33° 02.900′ N. lat. 117° 17.927′ W. long.; 33° 02.900′ N. lat. 117° 21.743′ W. long.; thence southward along the three nautical mile offshore boundary to 33° 00.000′ N. lat. 117° 20.398′ W. long.; and 33° 00.000′ N. lat. 117° 16.698′ W. long.; thence northward along the mean high tide line onshore boundary to 33° 00.962′ N. lat. 117° 16.850′ W. long.; and 33° 00.980′ N. lat. 117°16.857′ W. long. (B) Take of all living marine resources is prohibited except: 1. Recreational take by hook and line from shore is allowed. 2. The recreational take of pelagic finfish [subsection 632(a)(3)], including Pacific bonito, and white seabass by spearfishing [Section 1.76] is allowed. 3. Take pursuant to activities authorized under subsection 632(b)(138)(C) is allowed. (C) Beach nourishment and other sediment management activities and operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department. The Integrated Report did not identify any potentially significant impacts in any MPAs as a result of project implementation.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
54	CDFW	**Reef Mitigation Strategy:** The draft EIS/EIR describes the main impacts being the burial and/or scouring of reefs with indicator species located immediately offshore of segment 2 in the City of Solana Beach. In order to determine appropriate mitigation for these impacts, the USACE convened a panel to assist in the development of an acceptable mitigation plan. The panel consisted of staff from the National Marine Fisheries Service (NMFS), United States Fish and Wildlife Service, California Coastal Commission, USACE, the Department and Keith Merkel with Merkel and Associates. During a conference call on March 1, 2012, the panel agreed to use the NMFS Wetland Mitigation Ratio Calculator to determine acceptable mitigation ratios for reef impacts. (Appendix M of the draft EIS/EIR entitled “Mitigation Strategy” describes the process that was used to calculate mitigation ratios). The ratio calculator includes seven parameters. The panel agreed on the appropriate values for the parameters that includes a range of low, average and high values. The panel recommended ratios for shallow, mid-water, and deep water reefs as follows; 1.35:1 for the low values, 2.18:1 for the average values and 5.58:1 for the high values. The USACE did not use these recommendations. They instead used 2.5:1 for shallow water reefs, 2.0:1 for mid-depth reefs and 1.5:1 for deep water reefs. The ratios proposed are not sufficient to adequately mitigate for reef impacts and the USACE proposed ratios should be revised using the panel recommendations.	In determining adequate mitigation for the project, the Corps utilized the expert panel's application of the wetland mitigation calculator but also made modifications to the wetland mitigation calculator variables and conducted a qualitative evaluation of factors described below. Panel concerns about the adequacy of mitigation funding to address size of mitigation required and uncertainties in design were addressed through inclusion of a mitigation contingency. Corps guidance for establishing mitigation requirements in the Civil Works Program is provided in ER 1105-2-100. “Mitigation planning objectives are clearly written statements that prescribe specific actions to be taken to avoid and minimize adverse impacts, and identifies specific amounts (units of measurement, e.g., habitat units) of compensation required to replace or substitute for remaining, significant unavoidable losses” [ER 1105-2-100, App C, Paragraph C-3.b (13) 22 April 2000] and “habitat-based evaluation methodologies…shall be used to describe and evaluate ecological resources and impacts” [ER 1105-2-100, App C, Paragraph C-3.d (5)] This guidance requires that the Corps not use standardized ratios, but instead use a scientific-based approach through the use of habitat evaluation through a functional assessment (FA). Following consultation with resource agencies in March 2012 as well as the Planning Centers of Expertise for Coastal Storm Damage Reduction and Ecosystem Restoration, the Corps decided to proceed with a process based, in part, on the National Oceanic and Atmospheric Administration (NOAA) mitigation calculator. The Corps assembled an expert panel to assist in populating the mitigation calculator. This mitigation ratio calculator represents a systematic, peer-reviewed approach to the calculation of a mitigation ratio for wetlands. The calculator is heavily dependent on best professional judgment, but it is tailored to the specific study area and project. The panel addressed mid-water reef mitigation in detail. The values for deep water reefs were discussed in lesser detail as that scenario was seen as less likely. Values for this scenario were developed by the Corps, keeping the discussion with the panel in mind when assigning values. The values for the shallow water (surf grass) reef were determined in a similar fashion. As described in section 5.1 of Appendix M, the mitigation calculator uses 8 factors to determine a mitigation ratio. For the mid-water	Appendix M

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
55	CDFW	**Impacts to California Least Tern and other Seabirds:** Impacts to offshore areas of the Encinitas and the Solana Beach segments will increase ocean turbidity and may prevent sight dependent seabirds such as the California least tern (*Sterna antillarum browni*), a State fully protected and endangered species, from seeing and obtaining its prey during the breeding season. Nesting activity disturbances during construction may also occur in the lagoon nesting sites nearby.	Monitoring for RBSP I was conducted to determine potential foraging effects on sight dependent seabirds and indicated construction had no effect. Water quality monitoring was also conducted and indicated that turbidity plumes did not exceed the criteria established by the USFWS. The only restriction to construction for RBSP I and II was at the Batiquitos Receiver Site, as it was allowed only after September 15 (or August 1 with verification of cessation of least tern and snowy plover nesting at the W-2 nest site). The California least tern nests within Batiquitos Lagoon. The San Elijo site has not had a nest since 2005, but may support nesting within the lifetime of the project. Nest sites were recorded for San Dieguito Lagoon for the first time in 2013 and nesting is expected to continue. Offshore dredging and beach fill to the south are too far away to impact nesting least terns. These terns forage primarily within the lagoon or in immediate nearshore areas. Beach fill will not affect foraging activities of these least terns.	
56	CDFW	**Recommendation #1:** A longer sand replacement cycle may be needed (based on the impact monitoring results) to further avoid or minimize impacts to marine resources. The USACE should consult with the resources agencies prior to subsequent sand replacement projects.	Please also refer to the response to comment 1 above. The sand renourishment cycle for each segment was based on erosion characteristics of the beach areas. The renourishment cycle was optimized along project objectives. A longer cycle also leads to cost savings to the project.	
57	CDFW	**Recommendation #2:** The final EIS/EIR should include specific language in the summary section as well as Appendix M that clearly identifies that the USACE will utilize the ratio calculation process recommended by the panel. Also, actual impacts determined through the implementation of a comprehensive monitoring plan developed in consultation with the resource agencies should also be included.	Monitoring and Mitigation are discussed in Section 6 of Appendix H. We concur that the Corps should utilize the ratio calculation process recommended by the panel and this was spelled out in the mitigation portion of the impacts section for biological resources (Section 5.4.7) and in Appendix M.	Section 5.5.7

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
58	CDFW	**Recommendation #3:** In order to protect marine resources within Swami's SMCA, and to comply with the specific laws and regulations pertinent to Swami's SMCA, the preferred projects chosen should identify strategies to avoid permanent and minimize temporary loss or degradation of reefs and other habitats.	See Appendix H - Section 6 regarding general mitigation and monitoring framework. The mitigation and monitoring plans will be refined during the pre-construction engineering design (PED) phase of the project in consultation with knowledgeable, experienced, and qualified marine ecologists. Beach fill is an allowed impact to the Swamis SMCA. Additional measures are not needed nor required. Please also see the response to comment 53 above.	Appendix H – Section 6
59	CDFW	**Recommendation #4:** A sandy beach and coastal strand habitat avoidance and minimization plan should be developed in consultation with the Department.	See response to Comment #25. As noted, the receiver sites are historically known to suffer from erosion and therefore, without renourishing, no beach or strand habitat would exist. For example, prior to RBSP I, the Cardiff receiver site was 100% cobble, and the Solana Beach receiver site consisted of a very small beach backed by coastal bluffs. Receiver beaches are non-existent at high tides and do not possess habitat that requires protection from such a plan.	
60	CDFW	**Recommendation #5:** The bird breeding season between May 1st and August 31st should be avoided for the Western snowy plover and California least tern.	See response to Comment #42. Monitoring for RBSP I was conducted to determine potential foraging effects on sight dependent seabirds and indicated construction had no effect. Water quality monitoring was also conducted and indicated that turbidity plumes did not exceed the criteria established by the USFWS. The only restriction to construction for RBSP I and II was at the Batiquitos Receiver Site, as it was allowed only after September 15 (or August 1 with verification of cessation of least tern and snowy plover nesting at the W-2 nest site). The Corps has determined that the project would not affect the California least tern and may affect, but is not likely to adversely affect the western snowy plover with avoidance and monitoring measures. See Response 12 for a list of avoidance and monitoring measures. Recommended timing would only delay the project without providing any protection to either listed species. Beach fill may create a temporary habitat suitable for wintering western snowy plovers, however this is expected to be unsuitable again once conditions warrant future renourishment. See Response 12 for measures if plovers are identified as present prior to renourishment events.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
61	CDFW	**Recommendation #6:** If surveys indicated that Western Snowy plover, California least tern, California grunion and abalone protection plans are necessary, they should be developed in consultation with the resource agencies.	The Corps has determined that the project would not affect California least tern; additionally the project area is not suitable habitat for any protected species of abalone. Species specific surveys are not necessary, however, measures to detect abalone will be included in the preconstruction habitat survey (as noted in response to Comment 37). USACE has included monitoring plans for grunion in the proposed project. See Appendix H. USACE has determined that the proposed project may affect, but is not likely to adversely affect, the snowy plover through use of the Seaside Parking Lot as a staging area and during renourishment events at receiver beaches. Avoidance and monitoring measures are described in Response 12 above.	
62	CDFW	**Recommendation #7:** A comprehensive mitigation and monitoring plan is required to address all adverse impacts (including unexpected impacts) to marine resources. After impact monitoring is completed, mitigation and monitoring plans should be developed in consultation with the Department and the other resources agencies.	See Appendix H - Section 6 regarding general mitigation and monitoring framework. It is anticipated that a final detailed mitigation and monitoring plan would be developed in coordination with the agencies.	Appendix H – Section 6

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
63	Department of Parks and Recreation: San Diego Coast	In general, we support the goal of this project, to protect public access and recreational opportunities, without extensive hardening of the coastline. Our department is also concerned about the project's compliance with the American's with Disabilities Act (ADA). Given the extensive use of this area, please make certain that all aspects of the project comply with ADA. State parks remains concerned about several aspects of the project and requires further clarification and assurances that the project will not result in significant impacts to cultural and environmental resources on State Public Trust Lands. The first question is about archaeological findings at moonlight state beach, and the second is the necessity of staging at Cardiff state beach.	Both the City of Solana Beach and the City of Encinitas have provided ADA compliant facilities and access points to beaches within the project study area. Implementation of the proposed project would improve recreational opportunities for members of the public. Impacts to biological and cultural resources are discussed in the document in Chapter 5 - Section 5.5 and 5.8. Mitigation measures are included to ensure that any potential effects on resources are avoided or minimized. Due to limited space and physical access constraints at Fletcher Cove, temporary construction staging at Cardiff may be necessary. Beach staging allows access along the shoreline thereby avoiding access over high vertical bluffs. See comment no. 64 for archaeological resources at Moonlight State Beach.	Sections 5.5 and 5.8

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
64	Department of Parks and Recreation: San Diego Coast	**Impacts to Archeological site at Moonlight State Beach** Within the last six months, federally listed archaeological site CA-SDI-17402 (also listed as P37026505/SDM-S-83) has been located on the beach itself…. Advanced testing of the western edge is essential in designing the berm construction and sand placement strategy. This is not just a monitoring situation at the time of construction, but something that could conceivably change the sand replacement strategy. *(See letter for full comment)*	In the USACE September 2013 Consistency Determination (CD) concurred with by the Coastal Commission (CCC) on November 14, 2013, the USACE indicated that it would conduct a cultural resources survey of Moonlight State Beach to determine the western extent of a possible buried cultural resource identified adjacent to the project area. This commitment was included, in part, to address concerns of California State Parks. Subsequent to the CD, USACE coordination with both the SHPO and California State Parks has concluded that further cultural resource survey, in the form of trenching, could damage the resource if it is present, and such survey results are unnecessary to evaluate effects to historic properties due to the scope of the undertaking in the subject area. The proposed undertaking would have no effect on the resource regardless of its western extent. No further investigation of cultural resources, or mitigation for adverse effect to historic properties (if any), at Moonlight State Beach is thus necessary. The undertaking, without modification, would place sand from the borrow areas on the area identified and would not excavate at the site; sand has been placed at this location by others previous to the proposed undertaking. The sand placement will, incidental to the undertaking, preserve the potential resource. USACE has reached informal agreement with both SHPO and California State Parks and is consulting with the SHPO under Section 106.	Section 10.1.1
65	Department of Parks and Recreation: San Diego Coast	**Impacts to Cardiff State Beach from staging and Transportation to receptor sites:** State parks would prefer that staging and access to Segment 2 occur at Fletcher Cove; if this is not feasible, then project staging and access must be designed to avoid impacts to State Park operations, public access, and the rocky substrate that supports archaeological and paleontological resources… (*See letter for full comment)*	See response to comment no. 62. Staging will be conducted in such a manner as to avoid impacts to State Park operations at Cardiff.	Appendix G

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
66	Department of Parks and Recreation: San Diego Coast	**Impacts to rocky intertidal reef at Cardiff State Beach (Seaside Reef)** Although the project seeks to avoid placing sand on rocky intertidal habitat, State Parks is concerned that changes in sand drift patterns may negatively affect the habitat. The Rocky intertidal habitat in the vicinity of Seaside Reef is the best and most accessible in the Encinitas/Solana Beach Are. It is critical that this location remains healthy and intact. The EIS/EIR proposes post-project monitoring to assess potential impacts in the event that they may occur. With a mitigation strategy that is as vague as the one proposed State Parks shall require that all efforts are made to avoid impacts to rocky intertidal habitat as Seaside… *(See letter for full comment)*	The Corps has committed to fully monitor and to mitigate for impacts to rocky reef habitat. The monitoring plan and mitigation plans will be fully detailed and prepared in consultation with state and federal resource agencies. It is not possible at this stage of the project to prepare detailed plans. The northern terminus of the Solana Beach beach fill was already modified to move it away from Table Tops reef. Impacts will be further removed by tapering the beach fill and terminating it just south of the public access stairways at Tide Park Beachin an effort to avoid direct impacts to intertidal rocky reef just south of Cardiff State Beach.	
67	Department of Parks and Recreation: San Diego Coast	State Parks requests that project proponent meet with staff when 50% plans are available for review. State Parks will initiate internal project review; and negotiate terms and conditions of Right of Entry Permit for access to State Parks Lands. To initiate this process please contact our CEQA coordinator Cindy Krimmel (Cindy.Krimmel@parks.ca.gov, 619-278-3771).	The USACE asset management team will work with the Cities which have responsibility to negotiate and obtain all real estate rights required for the project. This step will occur after execution of the Project Partnership Agreement (PPA) and final approval of the real estate plan.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
68	California State Lands Commission (CSLC)	Based on CSLC staff review of in-house records and maps, as well as information provided in the DEIS/DEIR, the two segments identified as the Project may involve ungranted sovereign lands under the jurisdiction of the CSLC. Prior to any beach nourishment and/or placement of structures on sovereign land, CSLC staff would require a MHTL survey and possibly a lease. The CSLC has issued multiple leases for shore protection within both segments. The Cities should contact the Public Land Manager listed at the end of this letter as soon as is convenient for further information on determining the extent of the CSLC's jurisdiction and obtaining a lease, if necessary, for the Project.	The project is waiting on final approval of the planning documents to begin this action. USACE Asset Management Division has already been in contact with CSLC regarding the steps and process needed to start this project. The Cities will coordinate with the CSLC, survey the MHTL, and acquire required leases as part of project implementation.	
69	CSLC	Agency Coordination: As stated in our previous comment letter, some of the proposed activities appear to be located on sovereign land under the CSLC's jurisdiction and as such, implementation of the Project may require a lease from the CSLC. Although the DEIS/DEIR acknowledges coordination with the CSLC in Section 12.1.7 (Page 518), this section should also include a discussion of the Project proponent's intent in regards to CSLC's leasing requirements and responsibilities under the Public Trust Doctrine, which are mentioned in Section 10, Pages 507-508.	The Cities will be the lead for obtaining any required permits and surveys. The Corps will assist the Cities in the coordination of all involved agencies and stakeholders.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
70	CSLC	A thorough and complete Project Description· should be included in the DEIS/DEIR in order to facilitate meaningful environmental review of potential impacts, mitigation measures, and alternatives. CSLC staff believes that more detail should be incorporated into the description of construction activities (e.g., project equipment, construction access arid staging areas, and impacts to access) to facilitate a better understanding of Project impacts, make for a more robust analysis of the work that may be performed, and minimize the potential for subsequent environmental analysis to be required.	The project description is adequately detailed and includes description of potential staging areas, the equipment that potentially would be used, locatations of the borrow sites and receiver beach sites. It is anticipated that the Cities and the USACE will initiate additional coordination with the CSLC and other agencies during the Pre-construction, Engineering and Design (PED) which would commence following conclusion of the NEPA and CEQA review processes sometime in 2015.	
71	CSLC	**Project Equipment:** To assist the reader's understanding of the possible impacts from Project-related activities, CSLC staff recommends that the approximate placement of temporary pipelines, anchoring, and installation of mono buoys that may have the potential to impact sensitive resources within the Project area be included in the Project Description.	In general, the Cities and the USACE would commence the project in a manner similar to the RBSP I (2001) and RBSP II (2012) projects since the borrow sites and receiver sites are being utilized by the project. Contractors will be required to place pipelines and equipment to avoid impacts to high value nearshore habitats. Construction operation standards will be the responsibility of the Contractor and managed by USACE. Additional engineering and design details will be developed during the Pre-construction, Engineering and Design (PED) which would commence following conclusion of the NEPA and CEQA review processes sometime in 2015.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
72	CSLC	**Project Equipment:** Section 3.3.3 "Types of Dredge Equipment," (Page 121) of the DEIS/DEIR states that equipment for dredging and placement of dredged material for the proposed Project would be selected from two types of dredges (hopper dredge or cutterhead dredge). Per Section 5.3.2 (Page 333), the cutterhead dredge would create a continuous plume during dredge operation, while the hopper dredge would only create intermittent plumes during the dredging and disposal cycles.· Due to the differences in turbidity produced by both types of dredge equipment, CSLC staff suggests that Section 3.3.4 "General Description of Construction Activities" indicate under what circumstances each type of dredge would be used and for what approximate percentage of the Project, to assist in the analysis of impacts involving this equipment.	The USACE disagrees with the assessment that the two types of dredges would have differences in turbidity. Both use hydraulic cutterheads that limit turbidity to the sea floor. The only differences would be that hopper dredges could result in some surface turbidity when overflowing and hopper dredges are intermittent while hydraulic dredge is continuous. See response to comments no. 45 and 46. In addition, like the RBSP I and II projects construction methods will utilize the creation of a berm that enables sediments to be retainied on the beach while seawater drains away in an effort to reduce turbidity. Lastly, due to the nature of the high quality and large grain size of the borrow site material, turbidity is not anticipated to be a major issue for this project. Please also see Appendix H which has been updated since the Draft Integrated Report was released in December 2012 to incorporate additional monitoring and mitigation measures. Minimization measures for water quality impacts from dredges are appropriate as long as they do not specifically require the use of one particular type of dredge equipment and exclude all other equipment. The contract will require implementation of BMPs and other specifications, including specific performance requirements to minimize turbidity. Overflow restrictions can be included where appropriate.	
73	CSLC	**Project Equipment:** Section 3.3.4 states that existing sand at each receiver site would be used to build a small, "L"-shaped berm to anchor the sand placement operations; however, details regarding how the berms would be constructed is lacking. CSLC staff recommends that additional clarification of the equipment and techniques used to build the berms be included in the Project Description to facilitate a more thorough analysis of this Project component.	Please also see the response to comment 72 above. Additional engineering and design details will be provided during engineering design during preconstruction engineering and design (PED) phase.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
74	CSLC	**Construction Access and Staging Areas:** The DEIS/DEIR states that public parking areas are available for use by the construction crew, for staging purposes; occasional equipment storage, and fueling or maintenance activities. Please clarify if areas within the public parking areas would be reserved for these purposes to avoid access and traffic issues with the general public and whether local permits would be required.	The Cities' use of any the parking areas for staging of equipment, will be segregated from the public for safety and security. A temporary fence will be put up, and when not needed will be taken down to allow the public to park. As this is sponsor owned land, a permit will not be required in Encinitas. If the Seaside Parking lot is used, any required permits would be secured prior to the commencement of construction staging.	
75	CSLC	**Public Access:** Approximately 200 feet of beach (the point of discharge) and an additional 200 feet on either side of the point of discharge would be inaccessible to the public at each placement site throughout the Project. As heavy equipment would be maneuvered within these areas, public safety is of concern. Table ES-3 and Table 10.2-1 state that the USACE would generate a safety plan to restrict public access at receiver and notch fill sites and Section 5.13 provides some discussion of the plan; however, requirements of the plan are not specified. As impacts to public safety would likely be significant without the proposed plan, CSLC staff suggests the measure be identified in Section 5.13, and that it specify the plan requirements. (see letter for more detail)	A detailed public safety plan will be developed during the pre-construction, engineering, design phase and is not necessary to complete the NEPA/CEQA review process. This is a standard condition for beach nourishment projects and is a straightforward exercise once placement sites and construction dates have been identified. The safety plan is developed by the successful construction contractor at the time of construction. A typical scope of that plan, would include identification of the safety team, accident prevention plan, activity hazards analysis, emergency and notification procedures, and other detailed requirements. This plan is fully developed when the contractor develops his methods and schedules. For public safety, there would be public access and traffic control around critical construction zones. We also generally require the following fencing and traffic control: PUBLIC SAFETY: The Contractor shall provide temporary fencing, barricades, and/or guards, as required, to provide protection in the interest of public safety. Whenever the Contractor's operations create a condition hazardous to the public, he shall furnish at his own expense and without cost to the Government, such flagmen and guards as are necessary to give adequate warning to the public of any dangerous conditions to be encountered and he shall furnish, erect, or maintain such fences, barricades, lights, signs and other devices as are necessary to prevent accidents and avoid damage or	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
			injury to the public. Flagmen and guards, while on duty and assigned to give warning and safety devices shall conform to applicable city, county, and state requirements. Should the Contractor appear to be neglectful or negligent in furnishing adequate warning and protection measures, the Contracting Officer may direct attention to the existence of a hazard and the necessary warning and protective measures shall be furnished and installed by the Contractor without additional cost to the Government. Should the Contracting Officer point out the inadequacy of warning and protective measures, such action of the Contracting Officer shall not relieve the Contractor from any responsibility for public safety or abrogate his obligation to furnish and pay for those devices. The installation of any general illumination shall not relieve the Contractor of his responsibility for furnishing and maintaining any protective facility. The Contractor shall furnish flagmen, watchmen, or other security personnel to control traffic and protect pedestrians in the vicinity of the discharge pipe at all times while discharging material in the placement area.	
76	CSLC	Water Quality: Although the DEIS/DEIR states that sands contained in all three borrow sites are comprised of medium to coarse-grained materials with no silt overburden, Section 5.3.2 (Page 333) asserts that "the primary potential for degradation of water quality from the proposed beach nourishment is through the generation of turbidity during dredging and sediment discharge to the beach." The DEIS/DEIR states that dredging and disposal operations would be monitored for effects on water quality and Best Management Practice (BMPs) would be implemented if turbidity exceeds water quality criteria; however, it is not clear what these BMPs would entail.	Dredging BMPs would include modifications to dredging operations, including limited or no overflow for hopper dredges, operating the cutterhead only when on or near the bottom (and not in mid-water). Beach fill BMPs include diked, single point discharges. Exact BMPs will depend on the type of dredge used and will be detailed in the water quality monitoring plan prepared prior to the start of construction. See response to comments no. 45 and 46.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
77	CSLC	Water Quality: In addition, as noted in Comment #2, the DEIS/DEIR does not clearly define what dredging equipment would be employed, even though the amount of turbidity could vary widely based on which dredge is used. To facilitate a clearer understanding of the potential adverse effects associated with the proposed dredging activities, please identify the equipment usage assumed for the impact analysis. If different dredges are to be used during Project construction, the effects of both should be included in the analysis. In addition, if conclusions are based on comparisons to previous projects, please provide justification for how the impacts are comparable (for example, the RBSP I project, to which the proposed Project is compared in Section 5.3.2 [lines 34-37]).	See response to comment no. 45. No final determination has been made yet as to which type of dredge will be used. Both dredge types use hydraulic cutterheads that limit turbidity to the sea floor. The only differences would be that hopper dredges could result in some surface turbidity when overflowing and hopper dredges are intermittent while hydraulic dredge is continuous. The contract will require implementation of BMPs and other specifications, including specific performance requirements to minimize turbidity. Overflow restrictions can be included where appropriate. The proposed project is similar to the RBSP 1 and RBSP 2 projects in that the borrow sites are the same and the receiver beaches are similar. The volumes are larger for this project than the RBSP projects and the length of beach that will receive sand is larger. This will translate into a project with a longer construction duration than the RBSP in Solana Beach. The longer duration is the primary project component that would be different; however; daily operations would be almost the same which is why we utilized information on impacts from the RBSP 1 and 2 project EIR's. Both this project and the RBSP projects involve dredging sand from the offshore and placement of sand on the local beaches. Construction methods are similar and lessons learned in the RBSP projects will be employed in this project The bidding process for this project is expected to result in bids from the same bidders as the RBSP 1 and 2 projects because there are very few companies capable of building this type of project.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
78	CSLC	Biological Resources: The DEIS/DEIR determined that the Project would not affect two federally listed species found in the area (California least tern and western snowy plover) and that "effects on other wildlife species are expected to be short term and insignificant." However, there is little discussion and no proposed mitigation (other than to monitor turbidity levels) in regards to potential effects to offshore marine animals during borrow site dredging, even though Section 4.5.1, Page 220, states that several marine mammal species are known to occur within the Project area.	Marine mammals in the area would avoid dredging operations. There are no marine mammals on receiver beaches. Proposed operations are in the open ocean with lots of areas for these animals to move into with no effect, as described in the Draft Integrated Report. The Corps has determined that the project would not affect California least tern; additionally the project area is not suitable habitat for any protected species of abalone. For western snowy plover discussion, please see response to Comment 12.	
79	CSLC	Biological Resources: CSLC staff believes marine impacts resulting from dredging activities may potentially impact marine resources and, therefore, recommends the development and implementation of a Marine Mammal and Turtle Contingency Plan to minimize impacts from construction equipment during dredging activities to marine resources. In addition, CSLC staff recommends that the Cities and USACE perform a more stringent analysis of potential impacts to marine animals in consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service, and provide mitigation measures for any potentially significant impacts identified.	The Corps does not agree with CSLC staff because marine mammals that may occur in any of the borrow areas will relocate during dredging activities. Marine mammals are not found in beach any of the beach fill areas. Sea turtles are not found either in the dredge or beach fill areas.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
80	CSLC	Cultural Resources: Mitigation Measure CR-1 would be implemented to avoid potentially significant impacts, which includes a monitoring program designed to identify. Cultural resources encountered during dredging operations. Monitoring procedures would be specified in a monitoring plan that is approved before dredging is initiated. CSLC staff requests that language be included in Mitigation Measure CR-1 related to the following statement: Title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the CSLC. (see letter for more detail)	Concur. Language was added to Section 5.8.	
81	CSLC	To fully comply with CEQA, the DEIS/DEIR should include a summary statement of how and why the Environmentally Superior Plans noted above were determined to be infeasible.	Discussion can be found in Section 9.2 of the Final Integrated Report.	Section 9.2
82	CSLC	Mitigation Measures: The correlation among Section 5 "Environmental Consequences," Table ES-3 "Summary of Design Features/Monitoring Commitments and Mitigation Measures (if necessary)," and Table 10.2-1 "Summary of Design Features/Monitoring Commitments" is unclear. The summary measures noted in Table ES-3 'and Table 10.2-1 are not numbered and, therefore, it is difficult to decipher which are identified in Section 5, or conversely, which measures identified in Section 5 are noted in Tables ES-3 and 10.2-1. CSLC staffs suggest that the measures indicated in Table ES-3, Table 10.2-1, and Section 5 be consistent with each other, and the Mitigation and Monitoring Plan, to improve clarity. (see letter for more detail)	ES-3 is a summary table and includes the same information found in Table 10.2-2. The tables have been revised.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
83	Native American Heritage Commission	Native American cultural resources were not identified in the location you specified. Culturally affiliated tribes are to be consulted to determine possible project impacts pursuant to the National Historic Preservation Act, as amended. See attached list. Contact the person listed and seek to establish a "trust" relationship with them; they may refer you to other tribes near the affected project area (see letter for more detail)	Concur. Comment noted. All local Native American Tribal representatives have been previously notified and USACE will continue coordination throughtout the CEQA and NEPA processses.	
84	Department of Toxic Substances Control (DTSC)	DTSC provided comments on the project Notice of Preparation (NOP) on May17, 2012; some of those comments have been addressed in the submitted Draft EIS/EIR. Please ensure that all those comments will be addressed in the Final EIS/EIR for the Project	DTSC comments on the NOP were received and were considered during preparation of the Draft Integrated Report. Potential hazards are discussed in the Integrated Report in Section 4.4. Given the nature and location of the proposed project, impacts related to and from hazards and hazardous materials would not be significant and no mitigation is required.	
85	Department of Toxic Substances Control	If it is determined that hazardous wastes are; or will be, generated by the proposed operations, the wastes must be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code, Division 20, Chapter 6.5) and the Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5). If it is determined that hazardous wastes will be generated, the facility should also obtain a United States Environmental Protection Agency Identification Number by contacting (800) 618-6942. Certain hazardous waste treatment processes or hazardous materials, handling, storage or uses may require authorization from the local Certified Unified Program Agency (CUPA). Information about the requirement for authorization can be obtained by contacting your local CUPA.	See response to comment 84. Wastes generated by dredging and beach placement operations will be monitored and controlled by the construction contractor in accordance with state and federal laws.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
86	City of Del Mar	IMPACT ON DEL MAR'S SAND LEVELS DUE TO DREDGING OF SAND FROM BORROW SITE SO-5: The DEIR/EIS indicates that cumulatively, up 7.8 million cubic yards of sand is available at SO-5 and could be dredged from this borrow site in five events over the 50-year life of the project. The same borrow site was used for RBSP I and II. The City has questions and is concerned about whether dredging at SO-5 will have an affect on sand levels on the Del Mar beach. The City is concerned that sand removed from SO-5 will be filled in with sand migrating in the nearshore, resulting in loss of sand from beach areas. The City is concerned that SO-5 is 1,800 feet (horizontally) away from the depth of closure. There is concern that this could cause changes that could include: 1) higher waves at certain locations, and 2) changes in wave breaking angles. This could lead to changes in the longshore sediment transport, divergence of drift, and a change in the shoreline configuration. Based on these factors, the City believes that the Final EIR/EIS needs to include more information on the issue of potential impacts of dredging at Borrow Site SO-5 on Del Mar's beach sand levels. The City also requests that the DEIR/EIS include information on how the project will be monitored and managed to ensure that all dredging operations are confined to the limits that may ultimately be approved for Borrow Site SO-5. *(See letter for more detail)*	Use of the SO-5 borrow site is not expected to impact the beach morphology at Del Mar. The depth of closure in the Del Mar area has shown to be approximately -30 ft MLLW. The depth of closure generally refers to an offshore depth beyond which no sediment is exchanged in either cross shore direction. The landward edge of the SO-5 borrow site is at -35 ft MLLW approximately 2,000 ft from shore. The Los Angeles District has extensive experience with this phenomenon. At Surfside-Sunset in Orange County, sediment borrow sites beyond the depth of closure have caused no impacts to the immediate landward beach over the last 50 years. There is no indication that the wave regime has changed including higher/smaller wave heights, changes in wave breaking angles, changes in longshore sediment transport direction and/or magnitude, and shoreline configuration. Additionally, repetitive hydrographic surveys over several decades have indicated that little (if any) in-filling of the borrow pits has occurred. This indicates the borrow pits are not causing beach sediments to migrate offshore thereby negatively impacting the beach. Based on this experience, the District believes there will similarly be no impacts to the beach morphology at Del Mar. As part of the post-construction monitoring program, beach profile monitoring will be extended south into Del Mar and near the Los Penasquitos Lagoon, as well as hydrographic monitoring of the borrow site(s), as outlined in Section 6.2 of Appendix H. Future detailed designs could entail further borrow site field investigations and possible adaptive management if impacts are found to differ from what has already been analyzed and disclosed in this Integrated Report.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
87	City of Del Mar	**RELIANCE BORROW SITE SO-5 FOR NUMEROUS RECEIVER SITES ALTERNATIVES AND MITIGATION MEASURES.** The City believes that the DEIR/EIS should include alternatives for a broader range of sand borrow sites, both to minimize the potential impacts of multiple dredging operations involving such a large amount of material from Borrow Site SO-5. The City also believes that if Borrow Site S0-5 continues to be identified as the source for the majority of dredged sand, the DEIR/EIS should include a program for monitoring sand levels along the Del Mar beach and in the borrow site itself so as to gauge impacts on sand levels in the near shore area and also to track the rate of back fill of sand in the borrow site. The City further believes that if Borrow Site S0-5 continues to be identified as the source for multiple sand dredging operations, the DEIR/EIS should include a mitigation program to off-set any loss of sand at Del Mar beaches that may occur as a result of the project following any of the future sand dredging operations. As with any mitigation measure, it would be important not only to identify the appropriate mitigation measures but also to identify their source(s) for funding. This is especially true for a project that includes multiple dredging events over the course of a half century.	Three nearshore borrow sites (SO-5, SO-6 and MB-1) between Mission Beach to Oceanside, proposed for use by this project, are determined to contain approximately 15,515,000 cubic yards of sand. Of this amount, SO-5 contains approximately 7,810,000 cubic yards. The life cycle requirement for the project is approximately 5,050,000 cubic yards. Therefore, the project would use only 65% of the available sand even if the SO-5 borrow site was used exclusively. As part of the post-construction monitoring program, beach profile monitoring will be conducted in Del Mar as well as hydrographic monitoring of the borrow site(s), as outlined in Section 6.2 of Appendix H. The intent of the post-construction monitoring is to determine what (if any) impacts the project is having on the adjacent environment. Future adaptive management measures may be developed to mitigate these impacts.	Section 3.1.4 and Appendix C, Section 8.1.2

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
88	City of Del Mar	**IMPACT OF USE OF BORROW SITE SO-5 ON DEL MAR'S ABILITY TO PURSUE BEACH REPLENISHMENT PROJECTS.** Like Encinitas and Solana Beach, Del Mar's beachfront is subject to wave impacts, especially during winter storms. The City also faces the potential impacts of sea level rise. These factors increase the likelihood that Del Mar may pursue a replenishment project for its own beaches. The extensive use of Borrow Site SO-5 raises the concern that this area, which has been identified as being a desirable source of sand for beach replenishment projects, would be depleted when the City of Del Mar pursues a future sand replenishment project. The City requests that a mitigation measure be included in the DEIR/EIS requiring that the other borrow sites identified are used to the full extent identified for each in the DEIR/EIS before reliance on dredging from Borrow Site S0-5. The City further requests that the DEIR/EIS include a mitigation measure specifying that any dredging from S0-5 for this project be restricted so that operations start at those portions of the borrow site farther from the Del Mar shoreline, thereby leaving the sand in the areas closer to shore available for future sand replenishment projects pursued by the City.	Borrow sites SO-5 and SO-6 are identified as the primary sites. Material from borrow site SO-5 would be used for Segment 2 (Solana Beach) and material from borrow site SO-6 would be used for Segment 1 (Encinitas) until exhausted, at which time SO-5 and MB-1 would provide material for both Encinitas and Solana Beach receiver sites. SO-5 has been used by other projects in the past, without having impacts on the Del Mar shoreline. The SO-5 borrow site contains approximately 7,810,000 cubic yards. The life cycle requirement for this project (50 years), using three borrow sites, is approximately 5,050,000 cubic yards. Therefore, use of SO-5 by others, including for future City projects, should not be precluded by this project. For additional details, see response to Comment 87. A physical monitoring plan has been added to Appendix H, Section 6.2.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
89	City of Del Mar	**IMPACTS TO TIDAL FLOWS OF THE SAN DIEGUITO LAGOON AND RIVER CORRIDORS HAVE NOT BEEN ADEQUATELY ADDRESSED:** How will the quantity of sand extracted from Borrow Site SO-5 affect the tidal flows of the San Dieguito Lagoon project? The DEIR/EIS contains virtually no analysis of these potential impacts. The concern here is that a depletion of beach sand in the area of the Lagoon's mouth could skew the tidal flows and post-project beach profiles identified in the Lagoon Restoration Project. Such skewed results would have a detrimental effect on the long-term success of the Lagoon Restoration project.	Use of the SO-5 borrow site is expected to have no impact on tidal flows to San Dieguito Lagoon. The landward edge of the SO-5 borrow site is at -35 ft MLLW approximately 2,000 ft from the lagoon mouth. This extensive distance between the SO-5 borrow site and the lagoon mouth is expected to result in no impacts to the lagoon mouth. The depth of closure generally refers to an offshore depth beyond which no sediment is exchanged in either cross shore direction. Thus, there is expected to be no exchange of sediment between the lagoon mouth and the borrow site. Furthermore, the SO-5 borrow site is sufficiently deep and offshore that there is no expectation that the wave regime will change including higher/smaller wave heights, changes in wave breaking angles, changes in longshore sediment transport direction and/or magnitude, and shoreline configuration. Therefore, the District believes there will similarly be no tidal flow impacts to San Dieguito Lagoon. As part of the post-construction monitoring program, shoreline changes at all the lagoons will be evaluated in order to determine if there are sedimentation impacts to any of the lagoons. Mitigation measures for lagoon sedimentation, if it occurs, are included as a part of the project and described in Section 3.1.4 and 3.6.	

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
90	City of Del Mar	**CONSTRUCTION PHASE IMPACTS.** The City is concerned about the construction-phase impacts of dredging at borrow site S0-5, specifically the duration of future dredging operations and the potential noise impacts of the dredging. With reliance on a major portion of sand using Borrow Site SO-5, the extent of such impacts would be concentrated in one location rather than being distributed to a number of dredging sites. *(See letter for full comment)*	The SO-5 borrow site is located approximately 2,500 feet offshore from the beachfront residences in Del Mar, as noted in revised Section 5.2.8. As noted in Section 5.2.8 of the Final Integrated Report, beachfront residences that line the shore could be exposed to potential noise from dredge activities at the sites. However, noise due to dredge activities at the borrow site would diminish at these distances due to spreading of energy and atmospheric effects. Further, as shown in Table 5.8-1 of the Final Integrated Report, the noise level would be less than 50 dBA at the nearest location on the shoreline (i.e., Del Mar for SO-5), which would be much less than the normal ambient noise level from wave activity on the beach (63 to 71 dBa). Noise from the dredge at the borrow site would not be expected to be audible to shoreline residents. In addition, Del Mar beaches would not have pipeline hook-ups or equipment onshore because no sand is being placed there by the project. In addition, Section 5.2.8 of the Final Integrated Report also discusses noise levels associated with the use of both cutterhead dredge and hopper dredge operations. As described, the cutterhead dredge would not result in greater noise levels than the hopper dredge. If a cutterhead dredge is used for the project, the cutterhead would operate beneath the surface of the water, which would attenuate the noise at a much greater rate than air thus making it inaudible at the surface. Additionally, sand would be transported to a mono buoy located offshore. Therefore, no booster pumps would be required and no equipment would be required onshore within the City of Del Mar. The Corps has added borrow site monitoring to the project that will include pre- and post-construction monitoring of bathymetry and benthic organisms.	Section 5.2.8

Comment Letters and Emails – Public Agencies

No.	Commenter	Comment	Response	Location in Final Report
91	City of Del Mar	The DEIR/EIS predicts that there will not be an impact on the sand levels and/or wave action along Del Mar's beaches. However, in the City's view, the document is not adequate in providing information and analyses to support that conclusion. Nor does the document contain appropriate alternatives to address the very real potential of such impacts or mitigation measures and funding for such to address those impacts were they to occur. (see letter for more detail)	See response to comment 86.	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
92	Surfrider Foundation San Diego County Chapter	IMPACTS TO SURFING NOT CONSIDERED IN ALTERNATIVES: Impacts to surfing that are identified in Section 5.12.2 need to be considered in project alternatives. (See letter for more detail)	The surfing analysis done for this feasibility study demonstrates a change in surfing quality along five key measures but does not conclude the overall impact is beneficial or detrimental because that is highly subjective to each individual surfer depending on skill set and other preferences. A set of analyses were performed to ascertain the likely changes to surfing resulting from the project. Specifically, the analyses address, backwash changes, breaking intensity for beach breaks, sedimentation changes to reef breaks, currents at surf sites, and changes to surf break location and surfing frequency. This is detailed in Appendix B – Coastal Engineering, Section 11. Changes to surfing are not necessarily considered a negative impact, just a potential change in current surf conditions. As noted above, smaller volume alternative are being recommended for both segments. Reduced sand volumes would result in a reduced potential effect on surfing. In addition, at the request of Surfrider, the northern terminus of the Solana Beach beach fill has been modified to move it further away from Table Tops reef by tapering the beach fill and terminating it just south of the public access stairways at Tide Park Beachin an effort to avoid direct impacts to intertidal rocky reef just south of Cardiff State Beach and reduce potential effects on surfing. According to the Integrated Report, no significant adverse impacts to surfing would occur with project implementation. The wave/surfing modeling in the Integrated Report concluded that the potential exists for noticeable temporary change at 4 of 21 surf breaks studied after Year 2 following project implementation. Sand moves continuously and it not assumed that any changes to surf breaks would be permanent. With the permission of the Cities, Surfrider was allowed to install monitoring cameras at our beaches before the last SANDAG RBSP 2 project to get a look at surfing conditions before and after implementation. Both Cities have agreed to allow these cameras to remain in place and to continue the surfing monitoring program. Further, the project includes provisions for adaptive management that would enable the project to be revised (in renourishment volume, timing or footprint) to avoid future impacts.	Appendix B, Section 11.

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
93	Surfrider Foundation San Diego County Chapter	UNCERTAINTY WITH MEDIAN GRAIN SIZE OF FILL MATERIAL We request clarification regarding the grain size of the fill material. Please provide the median grain size to be used in the beach fill. (See letter for more detail)	The intent is to borrow medium grain size sand with a D_{50} greater than 0.3mm. The most recent geotechnical investigation for borrow sites SO-5 and SO-6 showed average median grain size of 0.51mm and 0.35mm, respectively. The final volume weighted composite grain size distribution will not be established until further detailed design and geotechnical investigations are conducted during Plans and Specifications development, but the gradation is still expected to be a medium grain size. Given that a medium grain size will be used, the variation in beach fill behavior due the range of grain sizes under consideration is secondary compared to the variation in wave conditions and longshore transport regimes.	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
94	Surfrider Foundation San Diego County Chapter	SURF SPOT/SURFABILITY MONITORING NEEDS TO BE A COMPONENT OF PROJECT MONITORING: Include mitigation for loss of surfing resources, which should allow adaptation of the fill amounts and frequency. Surfrider monitoring program will end before this project starts, but Surfability monitoring should be implemented at least one year before first beach fill. (See letter for more detail)	The document has been revised to include a Surfing Monitoring Plan similar to the one developed for the San Clemente shoreline project and coordinated with the California Coastal Commission. The Surfing Monitoring Plan will include the following features: (a) adequate baseline data collection, including, if feasible, a full year of pre-construction monitoring to determine the baseline condition (conditions at the project area and, as appropriate, at control sites). (b) identification of locations to be monitored, the length of the pre-project monitoring, and interest groups to be involved in establishing the monitoring effort to identify surfing or surf quality changes that might be attributable to the nourishment project, including identifying criteria for a determination of what constitutes a significant alteration or impact. Another location within the region might also be chosen to act as a control site to help determine if there are changes within the region to surfing conditions that could be attributable to other factors other than project implementation. (c) supplementing the "wave observation" component of the surf monitoring with observations about the surfing activities, including a usage scale of surfers in the water, both morning and mid-day, and describing the average and maximum ride lengths. (d) if observer counts are too difficult for one observer, video may be used to augment observer counts. (e) when collecting user data, the analysis should be disaggregated into weekday and weekend data. (f) for mid-day observations on days when surfers are kept out of the water by lifeguards, these should be recorded as restricted use days (not zero use days). (g) establishing mechanisms for forming the local community about the project, and encouraging public comments on surfing quality (or other recreational concerns), including but not limited to: (i) a web site, (ii) pre-construction notifications to the public; and (iii) signs.	Appendix H

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
95	Surfrider Foundation San Diego County Chapter	FILL AMOUNTS ARE TOO LARGE: Section 3.2 - Final Array of Alternatives. Decrease the beach width and fill amounts for all alternatives. Proposed beach fill volumes exceed traditional/historical beach widths for the region. There is very little understanding how this extreme amount of sediment will behave in project area. (See letter for more detail)	The main purpose of this project is to reduce coastal storm damages along the study area. A range of alternatives was considered to address this purpose and beach nourishment was the alternative that met the project objectives and maximizes the Federal investment. A range of beach widths was analyzed, with the smallest width being 50-feet. Our analysis shows that the amount of residual risk with smaller plans is very high and the larger plans are shown to bring down the level of risk dramatically. Nonetheless, the Corps has decided to recommend a Locally Preferred Plan (LPP) in lieu of the NED Plan. The LPP includes EN-1B and SB-1B. Both are narrower beaches selected to reduce initial environmental impacts and construction costs.	
96	Surfrider Foundation San Diego County Chapter	SEDIMENT MONITORING NEEDS TO TAKE PLACE MORE THAN TWICE A YEAR: Provide a sediment monitoring program that utilizes state of the art science and high frequency profiling similar to that which has been implemented by local scientists from Scripps Institution of Oceanography. (See letter for more detail)	The report has been revised to provide more detail on the beach profile monitoring plans that will be similar to the beach and lagoon monitoring program that has been implemented by SANDAG since the 1990s twice a year (Spring and Fall) for the SANDAG Regional Beach Sand Project II project Table 3.1. The beach monitoring plan will include semi-annual beach profile surveys along 22 shore perpendicular transects and oblique photos at each of the receiver sites. The beach profile data will be obtained in the Spring and Fall, corresponding to the transitions between the winter and summer wave seasons, commencing prior to construction and continuing until two years post construction. Semi-annual profiling at the summer/winter seasonal transitions has shown to sufficiently capture the bulk sediment transport changes to the project shoreline. High frequency shoreline change measurements, such as daily-weekly measurements employed by research scientists, are inherently complex and typically seek to understand micro-behavior sediment transport characteristics in lieu of long-term seasonal changes. The oblique aerial photos will be obtained semi-annually in the Spring and Fall during the first two years post construction. The transect locations will begin at SD-710 in the north and end near the Los Penasquitos Lagoon at the southern end. Lagoon entrance monitoring will focus on the condition of lagoon	Appendix H

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
			entrances in the Oceanside Littoral Cell: Batiquitos, San Elijo, San Dieguito and Los Penasquitos. Monitoring will consist of oblique aerial photography, monthly inspections, and an assessment of lagoon closure and maintenance records.	
97	Surfrider Foundation San Diego County Chapter	ECONOMIC ANALYSIS DOES NOT INCLUDE SURFING: Section 3.5.2 needs to include recreational benefits and losses due to surfing quality. (See letter for more detail)	The surfing analysis done for this feasibility study demonstrates a change in surfing quality along five key measures but does not conclude the overall impact is beneficial or detrimental because personal preferences and varying skill sets make this too subjective to be meaningful. Given that this detailed analysis of surfing does not indicate an overall direction from surfing impacts (positive or negative) and given that surfing visits presently make up a relatively small share of total beach visitations to the study area estimated at less than 10% of total visits to the study area shoreline, the overall impact to recreation values from surfing would not affect plan selection if quantified. Further, surfing visits are not expected to increase as much as other recreation visits in the future due to the significant beach-based recreation that would be supported by the project. Consequently surfing impacts have not been quantified to establish recreation benefits but have been analyzed to develop a qualitative understanding of how surfing could potentially be impacted to aid stakeholders.	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
98	Surfrider Foundation San Diego County Chapter	SURF SPOT AND BEACH DEGRADATION ECONOMIC ANALYSIS UNDER THE ALTERNATIVES ARE AN OMISSION AND ERROR IN THE STUDY (See letter for more detail)	Backwash effects could cause increasing negative impacts to surfing under the no action plan but there are at least four additional surf characteristics that need to be analyzed in tandem with backwash effects including wave-breaking intensity, sedimentation, nearshore currents, and location and frequency of breaking waves to determine the overall impact of the no action plan on surfing. This makes the direction and magnitude of surfing impacts less certain for the no action plan and proposed alternatives. In addition, the primary focus of the economic analysis is to assess the change in values that may be realized as a result of a proposed project. Hence, any change in value under the No Action Plan (Without Project Condition) is only relevant to the economic analysis to the extent that it is a basis for comparison when looking at conditions with the proposed alternatives in place. Significant impacts to recreation from degradation and loss of recreation area under the no action plan have already been captured in the economic analysis and compared to conditions that would exist with project alternatives in place. This is because presently over 90% of beach visits involve beach-based activities (sunbathing, walking, light swimming, etc.) that have already been analyzed. Therefore, the negative impacts to recreation under the no action plan have been substantively quantified in the feasibility report and the impacts to surfing from increased backwash and other important drivers of surfing experience are not expected to materially alter the analysis and recommendations in this feasibility report. As a result surfing impacts have not been quantified to establish overall recreation benefits but have been analyzed to develop a qualitative understanding of how surfing could potentially be impacted.	
99	Surfrider Foundation San Diego County Chapter	MANAGED RETREAT PROPOSED DOES NOT MEET GUIDELINES OF A PROPER ALTERNATIVE: Section 3.1.4 needs to properly propose a Managed Retreat Alternative. (See letter for more detail)	Managed retreat was seriously considered as an alternative and a detailed analysis performed as discussed in the draft report. The variation suggested in your comment letter has also been considered. The *Retreat Scenario* analyzed in the draft report and detailed in Appendix C, considered the most likely retreat scenario and assumes the property owners are unable to construct seawalls	3.1.4

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
			in time and the first row of structures collapse given enough bluff erosion over the 50 year life of the project. With Project Benefits are determined by the reduction in without project damages. The *Retreat Scenario* is not a "true" managed retreat scenario because officials at both cities (Solana Beach & Encinitas) would likely seek to protect public infrastructure, utility lines and roads immediately interior to the bluff top parcels with publically-financed seawalls obtained under emergency permits from the CCC. Therefore *Retreat Scenario* damages are limited to structure loss, land loss, and seawall construction affecting the row of bluff top parcels only. This also means the timing of major damages categories structure loss and seawall construction are pushed out further in to the future than the major damage occurring under the armoring scenario, which is seawall construction before the bluff top structure is undermined. The retreat scenario weighting and analysis are detailed in Appendix E, Section 8.3. Managed Retreat requires significant, disruptive, and costly measures to execute and can result in greater environmental impacts when compared to the proposed project which involves sand placement. Environmental impacts of managed retreat include relocation of several hundred families (in a built out City such as Solana Beach building new replacement housing would not even be feasible), land loss, demolition of several hundred public and private structures, loss of public access points to the shoreline, protective measures for water, sewer, power lines, and public roads, and increased life-safety risks from collapsing bluffs in a heavily visited shoreline. Further, representatives from both Cities have stated that eventually, if bluff-top parcels eroded to the back of the properties, seawalls would be constructed to protect roads, utilities and other critical infrastructure and preserving accesss to the second row of homes. Hence, a managed retreat option would likely delay the eventual construction of seawalls rather than eliminating the need for them. While managed retreat is economically costly and difficult to justify from a fiscally-responsible perspective, it also does not	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
			adequately address life-safety risks, an important project objective, or provide a supportable alternative given the negative impacts to the community from relocating and condemning residences and the strain to local finances from relocating or protecting extensive infrastructure. With respect to inclusion of costs for private staircase replacement, these costs were included but are not significant in affecting the cost or economic analysis and would not change the conclusions of the analysis. The analysis presented in the Draft Integrated Report takes into account that approximately 1/3 of the 291 parcels that have structures are already armored with seawalls. The erosion rate of the bluff along those parcels has been adjusted and the model shows that no damages can occur. With respect to your comments on land lease fees versus deposit amounts, we have revised the language in the Final Integrated Report to reflect the current status. Since 2007, Solana Beach has been imposing and collecting mitigation fees and deposits for seawalls. Per the certified Local Coastal Program (LCP) Land Use Plan (LUP), Solana Beach is collecting a beach sand mitigation fee per the Coastal Commission's approved methodology which is contained in LUP Appendix A. In addition to collecting the mitigation fee, Solana Beach also collects a $1,000 per linear foot deposit for impacts to public recreation and use of public land. Solana Beach is currently updating a 2010 fee study to establish a public recreation and land lease fee. The July 2010 draft fee study recommended a public recreation impact mitigation fee in the amount of $3,100 per linear foot. Encinitas also collects the $1,000 per linear foot deposit for impacts to public recreation and use of public land. However, the difference in potential fees identified would not substantially change the viability of the managed retreat alternative, as costs would remain excessive and far exceeding fees collected. The Federal	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
			interest determination (affecting USACE participation) would not be affected by the amount of fees collected, as the costs would continue to far exceed the benefits. The variation to the managed retreat alternative suggested in Surfrider's comment letter on the draft report has been more directly addressed in the final report. Like the scenario analyzed in the draft report, the variation is not carried forward because it has extremely high costs, would not meet criteria for federal participation as it would not be economically justified, does not address the life-safety project objective, would likely have significant environmental impacts to the community, and is not supported by the Cities for implementation, with or without Federal participation. A similar "proactive" managed retreat scenario to that suggested was previously subject to detailed evaluation by the City of Solana Beach as discussed below. The City of Solana Beach studied a planned coastal retreat strategy detailed in the report entitled "Funding Solana Beach Shoreline and Coastal Bluff Management Strategies" prepared by Economics Research Associations dated May 1, 2002. The report can be viewed at: http://www.ci.solana-beach.ca.us/vertical/sites/%7B840804C2-F869-4904-9AE3-720581350CE7%7D/uploads/SB_Appendices_that_accompany_the_Final_EIR.pdf In that study, it compared the sand replenishment strategy and the planned coastal retreat policy alternatives. Under the planned coastal retreat policy, the seacliffs would be allowed to naturally erode, allowing the landward boundary of the beach to occur naturally. To protect property and personal safety, two setback lines would be established to limit new development beyond the point of estimated bluff retreat. Under this strategy, the City would be obliged to acquire properties west of the planned retreat lines	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
			through purchase or eminent domain. The coastal retreat policy alternative involves the following: 1) Purchasing homes within the 50- and 100- year retreat zones, 2) relocating residents, and 3) relocating existing utilities. It is assumed that the City would have to acquire 50 single family homes and 69 condominium units that may be affected by natural erosion. Detailed in that report, the estimated total cost is approximately $142.5 million without appreciation, and $363.8 million with real appreciation, (in year 2002 dollars). This alternative costs significantly more that the sand replenishment strategy due to the acquisition of valuable private coastal property.	
100	Surfrider Foundation San Diego County Chapter	THE ENGINEERING ANALYSIS FAILS TO PROPERLY CHARACTERIZE THE IMPACTS OF SEA LEVEL RISE ON EROSION PROCESSES (See letter for more detail)	Recent analysis of LiDAR and aerial mapping has shown bluff retreat rates of 0.2 to 0.4 feet/year on a time and alongshore average. But bluff retreat does not occur at a constant gradual rate but as a result of discrete bluff failures and is highly site specific The engineering analysis modeled these failures based on the available data on failure sizes and relationships of wave energy impact at the bluff toes. This model also accounts for difference in future sea level rise.	
101	John Steel	Thank you and your ACOE team for the time and money invested to craft a viable plan to protect our ocean front property from further erosion. Regarding costs; The Surfsong HOA Board of Directors is strongly supportive of the Army Corps of Engineers Plan for Encinitas and Solana Beach. Future Sea walls and high spending can be diminished with the success of this plan. See email for further comments.	Comment noted.	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
102	Kelly Tucker	We were very impressed by the intelligence, professionalism, and comments made by Col. Mark Toy, David Van Dorpe, and Susan Ming. Meeting was not publicized in Solana Beach, No one knew it was scheduled, Only Surf Riders knew. Thank You very much for making this a possibility! Surfriders do not represent most beach goers and environmentalists. We hope you do not do the same as the Surfriders have done. See email for further comments.	Comment noted. Notice of the public meetings was provided in the Federal Register, public distribution mailing of the draft report and e-blasts done by both cities.	
103	Steven Aceti, California Coastal Coalition (CalCoast)	The Feasibility adequately describes the bluff and shoreline challenges facing the cities of Encinitas and Solana Beach (Cities) and proposes alternatives that ensure these challenges would be addressed over a 50-year term. Improved shoreline and bluff stabilization, increased public safety, better recreation opportunities and environmental restoration of important habitat can best be achieved by a plan for periodic beach nourishment in the Cities. CalCoast supports the NED Plan for Segment 1 (EN-1A) and the NED Plan for Segment 2 (SB-1A)(see letter for more detail)	Comment noted.	
104	Dennis Lees	The alternatives that have been proposed are not going to fix anything permanently. The decisions on the beaches and the nearshore areas, nearshore biota, are based on “weeds” rather than the trees and the ecosystem. There is a total lack of consideration in Chapter C of the appendix on the biological impacts of the dredging program on the borrow sites. It's totally omitted. The only mention in the document is that there will be culture resource surveys to borrow	Alternatives are proposed for the 50-Year project period of analysis to address the project objects defined as: • Reduce coastal storm damages to property and infrastructure along the study area shoreline and the bluff top, prior to the need for emergency action, throughout the period of analysis. • Improve public safety in the study area by reducing the threat of life-threatening bluff failures caused by wave action against the bluff base, throughout the period of analysis. • Reduce coastal erosion and shoreline narrowing to improve recreational opportunities for beach users within the study area	Section 5.4

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
		sites. (see transcript for more detail)	throughout the period of analysis. See response to Surfrider letter. See Section 5.4 of the Integrated Report regarding biological impacts and Appendix H for an analysis on nearshore resources, monitoring, and mitigation. Surveys were conducted at all of the receiver and borrow sites for RBSP II and used to provide existing conditions information. The intent of the surveys was to document the species present and general information, including recovery at some of the borrow sites which were used for RBSP I. This information was used and assessed with regulatory-based significance criteria to meet NEPA/CEQA requirements. While short-term, localized impacts are anticipated at the receiver and borrow sites as noted in Section 5.4, your statement noting that impacts are insignificant on a regional basis supports our conclusions. A study examined the effects of a clamshell dredge project in San Diego Bay on demersal fish, epibenthic invertebrates, and benthic infaunal invertebrates entitled "Demersal Fisheries Response to the 2004 Channel Deepening Project in San Diego Bay" dated 29 January 2010, looked at the recovery of soft bottom habitats following dredging. Results indicated that demersal fish took between 14 and 22 months to recover. Benthic infauna recovered within 5 months relative to density and biomass but examination of community indices indicated that full recovery may have taken 17 to 24 months. Epibenthic invertebrates recovered within 29 to 35 months in terms of density and biomass. However, the epibenthic invertebrate community composition was still changing or had achieved an alternate stable state near the end of the study. While the species may differ at the borrow site, the ecological principles would be similar. The Corps has added borrow site monitoring to the project that will include pre- and post-construction monitoring of bathymetry and benthic organisms.	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
105	Ron Lucker	I strongly support the Army Corps Shoreline Protection Project Alternative SB-IA. Sand is long overdue for the Solana Beach shoreline. December 14, 2012 a 6.3 magnitude earthquake occurred off the California coast. (See letter for more detail)	Comment noted.	
106	Jack & Marjorie Mariani	We strongly recommend support of the sand replenishment program for many reasons, but first and foremost, public safety. There have already been too many fatalities because of lack of seawalls and the need for proper sand replenishment.	Comment noted.	
107	Lynn & Russell Marr	Please accept the following as public comment re the sand replenishment program that is being reviewed for Encinitas and Solana Beach. We feel that excessive sand is destroying valuable flora and fauna. There are signs warning us not to pick up sand dollars, etc., at D Street beach access and the Cardiff Tidepools. Yet the recent dredging project first smothered the flora and fauna, destroying the environment. Then winter storms washed all the sand away. We feel the only viable option is "Managed Retreat." I have used Denis Lee's post on Encinitas You Need Us on February 3, 2012, http://encinitasyouneedus.blogspot.com/ to compile the following remarks. (see letter for more detail)	Impacts to beach communities are considered to be short-term and adverse and are discussed in the Integrated Report. Beach communities are expected to recover quickly, based on past experience as discussed in Section 5.4. See response to Comment No. 104.	Section 5.4
108	Garth Murphy	I. CITY OF ENCINITAS BEACHES -INTEGRATED SAND REPLENISHMENT GOALS (see letter for detail.) II. EFFECTIVE SAND REPLENISHMENT: GENERAL ISSUES (see letter for detail.) III. HOW USACE PLAN EN1A FAILS TO ACHIEVE	Comment noted. See the response to comment 124. The study area for the City of Encinitas extends from approximately	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
		ENCINITAS CITY INTEGRATED BEACH REPLENISHMENT AND EROSION ABATEMENT GOALS	7,800 ft from the 700 block of Neptune Avenue south to West H Street. To better analyze the coastal bluff and shoreline morphology as well as oceanographic conditions, the entire study area was divided into nine geographical areas called reaches. The distinction between reaches is based on differences in seacliff geology, topography, coastal development and beach conditions. Reaches 1 through 7 are in the City of Encinitas and were analyzed possibly alternatives related to the purpose and needs of the project. Only Reaches 3 through 5, warranted further consideration for alternatives analysis. Please see the response to comment 124.	
		* At the meeting on Feb 6th, the USACE officially decoupled their beach replenishment Plan from the San Elijo estuary dredging and restoration project of ten years union, which potentially would have contributed a large amount of sand to the adjacent sand bar strip and increased natural sand flow both at the existing north outlet and a new second one at the south. No reason for this decoupling was given except expediency.	The decoupling of the shoreline and the San Elijo Lagoon elements was initially requested by the cities since the lagoon portion was going slower than the shoreline study, however, the main reason was that the lagoon project is being developed as part of mitigation by Caltrans for the I-5 widening. The storm damage reduction project acknowledges and considers that proposed work at the lagoon and the possible sediment source. The San Elijo Lagoon is the subject of an Integrated Report that is currently being evaluated by USACE Regulatory Division (NEPA Lead Agency) and SANDAG (CEQA Lead Agency).	
		* Changes to the management of California coastal subtidal ecosystems, mandated by the Marine Life Protection Act, and in particular the Swamis MPA that went into effect in January of 2012, were ignored.	Please see the response to comment 124.	
		* Underwater parks and leases in State Waters, formerly belonging to State Parks, at San Elijo to D Street, and the City of San Diego in La Jolla/Del Mar, were cited in the Plan as reasons for actions/inactions. All former state and city marine protected areas, leases or underwater parks were formally canceled or	Pleae see the response to comment 124.	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
		adopted into the new network of California MPAs. Very important to note this change in offshore MPAs.		
		* There was little evidence of any USACE cooperation with SANDAG engineers and their history of research and monitoring of sand placement and episodic or continual erosion patterns or effects in their Encinitas projects	The project team worked with the cities and many of the same consultants that worked on SANDAG also contributed to the formulation of these alternatives and analyses.	
		* PLAN IMPLEMENTATION AND RECOMMENDATIONS OF R. Mark Toy, Colonel, USACE, (pages 500 and 520) contain disturbing cost revelations, with inequitable contract terms, potentially detrimental to City of Encinitas residents and US taxpayers:	Comment noted. All cost estimates have been estimated using risk analysis and all inconsistencies were revised in the main report.	
		IV. WHAT DOES THE USACE PLAN OFFER THAT COULD HELP ADVANCE CITY BEACH ECOSYSTEM GOALS * Because no significant negative marine ecosystem impacts were detected as a result of the plan, because the plan's defects were in illogical replenishment solution specifics and study omissions, not the merits of well designed replenishment, the plan could be altered and augmented to allow it to comply with the finding of no significant negative impacts, while at the same time enhancing integrated beach ecosystem stability goals of the City of Encinitas. (see letter for more detail)	Comment noted. The tentatively recommended plan for the City of Encinitas does not estimate any impact to nearshore resources that is significant. Alternatives were analyzed that did have impacts, but were not considered if they didn't meet the projects needs and objectives.	
		V. SUGGESTED ALTERATIONS AND ADDITIONS TO THE USACE PLAN TO		

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
		COMPLEMENT CITY OF ENCINITAS INTEGRATED BEACH ECOSYSTEM MANAGEMENT GOALS.		
		* Abandon the current USACE plan with its errors and crippling development costs and start anew, taking its good sections into a new short, sweet plan.	Comment noted.	
		* Use SANDAG's last sand replenishment plan and experience as a base. It was excellent in most aspects; we can expand and improve on it.	Comment noted. The RSBP 2 project was not designed for coastal storm damage reduction but rather for recreational purposes primarily therefore; the formulated project volumes are different because the goals of the projects are different.	
		* Establish adaptive management goals, hierarchy, procedures and strategies as the controlling system for the 50 year replenishment plan duration.	Comment noted. Adaptive Management will be detailed in Preconstruction, Engineering and Design (PED).	
		* Spread most of an initial deposit of 600,000 cu. yd. over the entire bluff beach of Encinitas from Batiquitos lagoon to H street, about 3 miles total. (Like EN1B with 50 ft of new beach but at twice the length)	Comment noted. Please see the response to comment 124.	
		* Reserve some of the initial sand allotment for deposit at San Elijo Estuary sandbar beach, if needed by 2015, the target start year.	Comment noted. Sediment from lagoon is a potential source. Please also see the response to comment 9 above.	
		* Examine borrow sites outside of Swamis MPA, at Batiquitos etc., to locate the best sand with the least biological values. Cardiff sandy habitat and its intact suite of species is needed for interactions with reef habitat species to the north and south and the critical conjunction with San Elijo Lagoon for breeding and juvenile	Comment noted. Please see the response to comment 124. Borrow source investigation would be conducted in PED.	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
		rearing, in order to a complete food web life cycles for maximum sustainable MPA biomass. There are alternate sand dredge sites outside of Swamis MPA, which already must contend with dredging at the San Elijo estuary mouth and a high volume sewer outlet.		
		* Explore the option of permanently widening the beach and parking from Cardiff Chart House Restaurant to Seaside Beach, eventually raising the road grade and putting a causeway bridge over a section of the south end to allow another natural San Elijo lagoon opening. This is an area of beach opportunity without negative impacts.	Comment noted. Alternatives for the San Elijo Lagoon are not part of this shoreline project and can be analyzed in the San Elijo Lagoon/Caltrans project if deemed feasible.	
		* Carefully monitor all points along the beach, before and after sand placements, noting the first dates and points where waves reach the cliffs at high tide, any anomalies in sand transport, formation of offshore banks, reef coverage and seasonal variations. The lifeguards should be the vanguard in this effort. Find, analyze and map weak points to determine best places for future augmentation.	Comment noted. Beach monitoring is part of the monitoring plan.	
		* Devise a way to collect and pump the ground water in downtown Encinitas to water local parks, especially the Hall property which will require a lot of water which will seep down to the water table and return to the beach.	Comment noted. Groundwater infiltration is not authorized under the projects authority and is being addressed by the individual cities.	
		* Fund and post bilingual signs explaining bluff failure dangers in the 8 feet of beach closest to the bluff, along all bluffs. Post signs on every existing block fall as examples to beware.	Comment noted. Signs are posted and the lifeguards contact beachgoers and warn them over the bluff failure damages.	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
		* Adjust existing rip rap stones for stability and wedge shape, with high side to the bluff. (Loose rip rap needs help immediately, at D Street and south Beacon.)	Comment noted. City will determine shore protection changes as needed in these areas.	
		* Plan and post signs extolling the Swamis MPA and explaining its role, rules and rationale. This MPA should be considered a potential tourist magnet, once it matures, if marketed properly.	Comment noted. City has been coordinating with the State on the MPA development and implementation program.	
		Beach sand replenishment is not rocket science. It is a logical, observable physical construct that requires intelligent adaptive management based on timely observation and experience. (See letter for more details)	Comment noted.	
109	Eric Ziegast	Thank you for making the document available online for public review. I have read the plan provided online and it seems to me to have an Environmental Impact Review board as its primary audience. The plan is wanting for details that are important to Encinitas residents. Are there any other documents made available? How much is each option expected to cost? What are the benefits of each option? What are the physical, environmental and economic impacts of the “No Action” plan? How do artificial reefs work? See email for further comments and questions.	The Final Integrated Report with the supporting technical appendices are available on the webpage (Volumes I through V). The Integrated Report is a scientific, technical and legal document used to inform the public and decision makers on the purpose and environmental impacts of a proposed project and reasonable alternatives. The Feasibility study portion of the document analyzes the costs and benefits associated with the various alternatives. Information on the alternatives and impacts are detailed in these documents. http://www.spl.usace.army.mil/Missions/CivilWorks/ProjectsStudies/SolanaEncinitasShorelineStudy.aspx	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
110	Jon Corn (Plus other similar comment letters)	We write to provide comments on the Draft EIR and EIS for the Coastal Storm Damage Reduction Project ("Project"). These comments are submitted on behalf of the Beach & Bluff Conservancy, the Condominium Owners of South Sierra Avenue, and the HOAs for the most of the oceanfront condominium projects in Solana Beach, numerous individuals, and the undersigned. Together, these organizations and my firm represent more than 1,400 coastal property owners in Solana Beach, Encinitas, and Carlsbad, California. We strongly support the Project. This project will save lives, save money, preserve property and property values, improve surf break quality, improve our local economy and ecology, and make our communities more desirable places to live and visit. (see letter for more details)	Comment noted.	
111	Surfrider Member Letter (328 identical comment letters/emails)	• We have seen significant and unexpected impacts in Imperial Beach following RBSP II, and would advise against such large volumes of sand. This project needs to examine the affects of the "as-built" beach profile and equilibrium, and not rely on a "bigger is better" approach. Beachfront property owners in Imperial Beach are dealing with continual flooding after the RBSP II beach fill project, which is less than half the size of this proposed project. • I also have grave concerns regarding the impacts to surfing resources from this project. The variety of surf spots and beaches are part of what makes life in San Diego enjoyable and unique. Any negative impacts should be taken very seriously!	• Development on top of the bluffs fronting the beach fill is very different from the shoreline profile at Imperial Beach. No garages or buildings will be subject to flooding due to wave overtopping of the new beach fill. Ponding between the base of the bluff and the winter storm berm can occur on a wider sandy beach as a result of coincident spring tides and large wave events. This kind of ponding is temporary and its undesirable effects lessened through beach grooming. A wider beach than what was created in the Encinitas and Solana Beach area during SANDAG II is needed to provide winter storm wave and tide protection at the bluff toe. • Surf breaks are expected to change in character in those areas where shallow reefs are covered in sand, but the number of surfing opportunities is not expected to change. Deeper breaks of the larger wave events are expected less, if any, change in conditions. Please see the response to comment 98.	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
		The EIR/EIS states that reef breaks in Solana Beach and Encinitas will likely be converted to beach breaks, yet this is not deemed a significant impact! Changing a surf spot from reef break to beach break is not acceptable, and must be avoided!		
		• The economics section does not include anything about surfing! The EIR shows that the cost of this project is too expensive for the US Govt. to fund if only the protection of private property is considered, but passes when recreational benefits are included. The study relies on a simple correlation of “towel space” to quantify a recreational benefit. This is short sighted, and does not consider the quality of surf breaks as a recreation resource. Your economic analysis does not account for surfers who may not go to a beach where surf has been impacted by this project. It also excludes the family and friends that travel with a surfer to another break.	• Please see the response to comment 34.	
		• Furthermore, the short analysis of the Managed Retreat alternative in the EIR/EIS is setup to be "impractical and infeasible [sik]". Managed retreat does not happen overnight and requires leadership and planning. Just discounting the policy because the cities cannot afford to buy all the property is unfair to the local cities and completely misses the point. This is a costly Federal project, and more than a	• Please see theresponse to comment 99.	

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
		cursory hand waving should be used to evaluate Managed Retreat. Project proponents should take a close look at the aftermath of hurricane Sandy for lessons learned and how those cities are now turning to managed retreat.		
112	Public Support Letter (44 identical letters/emails)	I strongly support the Army Corps of Engineers proposed Storm Damage Reduction (beach sand nourishment) Plan for Encinitas and Solana Beach. This project is a win-win for our community, property owners and our environment. Managed retreat is a ruse, and has been so revealed by numerous studies including your own. Thank you for providing a through analysis of this straw man alternative.	Comment noted.	
113	Bill Elliott	Thought you might be interested in another approach to shoreline management: manufactured pocket beaches, using rip rap, are a relatively permanent way to keep the expensive dredged sand in place.	This alternative was evaluated and found to not meet project objectives.	3.1.5
114	Chris Novak	Turning reef breaks into beach breaks is a terrible choice in an area known for great surfing. Beaches are for the enjoyment of everyone, not just for the 1% of citizens that live on bluffs. Surfing should be considered a significant part of this area's beauty and culture.	Surfing is recognized as an important recreational activity for beaches in the study area. A set of analyses was performed to ascertain the likely changes to surfing. For the surf sites within the study area, each of the following topics were addressed: reflection (backwash), breaking intensity, sedimentation, nearshore currents, and breaking location and frequency. The results of this analysis indicate that some impacts to surfing may occur, however, these impacts are minor and are expected to occur immediately after construction completion and diminish over time as the sand fill adjusts to the natural shoreline bathymetry. The USACE has committed to a monitoring program where the surfability (surf quality) will be measured both before construction and after construction. The monitoring program includes detailed observations of many aspects of surfability with the intent to quantitatively define any impacts from the project. The monitoring program will also aid in identifying any potential changes that could be incorporated into future beach fill episodes to help reduce potential impacts to surfing.	5.13.2

Comment Letters and Emails – Public

No.	Commenter	Comment	Response	Location in Final Report
115	James Hammonds	I applaud your thorough analysis and rejection of so-called "managed retreat" as a project alternative. Managed retreat is not realistic and will cost the federal, state and local governments many times more dollars than the project that you have proposed. It will cause tremendous property damage, infrastructure problems, lawsuits, urban blight, more fatalities, and general misery for beach communities, their residents and visitors. Additionally, managed retreat will directly lead to more beach loss, unsafe beaches, and more hard bluff retention devices. Our communities, residents, and visitors will be far better off with the wide sandy beach that your project envisions.	Comment noted.	
116	Renita Greenberg	I live ...., Solana Beach and am grateful for the san replenishment project. There is already a significant and visible benefit to our beach from the sand which was put back during the last year.	Comment noted.	
117	Rex Upp	This project will save lives, save money, preserve property and property values, improve surf break quality, and improve the general environment for our communities. I applaud your thorough analysis and rejection of so-called “managed retreat” as a project alternative.	Comment noted.	

Verbal and written comments received during public hearings

No.	Commenter	Comment	Response	Location in Final Report
118	Dennis Lees	The alternatives that have been proposed are not going to fix anything permanently. The decisions on the beaches and the nearshore areas, nearshore biota, are based on "weeds" rather than the trees and the ecosystem. There is a total lack of consideration in Chapter C of the appendix on the biological impacts of the dredging program on the borrow sites. It's totally omitted. The only mention in the document is that there will be culture resource surveys to borrow sites. (see transcript for more detail)	Please see response to Comment 104.	Section 5.4
119	Charles Marvin, Leucadia resident	My name is Charlie Marvin. I live at 200 Neptune in Leucadia. I support alternative EN-1A. (see transcript for more detail	Comment noted.	
120	Julia Chun-Heer (Ms Chun-Heer's comments were made over two days at separate public meetings)	Surfrider would like to fully participate to the process allowed under CEQA; requesting a 30 day extension for EIR/EIS to provide comments. We believe the twenty days between public hearings on this project and the deadline for comments is not sufficient. We believe our comments are crucial in strengthening the EIR/EIS	Surfrider comments were accepted and considered after the official public comment period on the Draft Integrated Report was closed.	

Verbal and written comments received during public hearings

No.	Commenter	Comment	Response	Location in Final Report
121	Chunn-Heer, Julia, Campaign Coordinator for Surfrider San Diego	Requested a 30-day extension to the review period in order to provide meaningful comment. Due to the extensive size and complexity of the document we feel that a more than 60-day comment period is necessary for proper review. Believe the 20 days between these hearings and the deadline for comment is not sufficient. Managed Retreat was deemed impractical and infeasible. But that takes leadership and oversight. And this is a costly federal project. The alternative deserved more than just a cursory hand wave. It should be more substantially evaluated. (see transcript for more detail)	Surfrider was allowed to provide late comments for inclusion. See response to Surfrider Letter and the response to comment 120 above. Please also see the response to comment 99 above. Managed Retreat requires significant, disruptive, and costly measures to execute. These include potential relocation of several hundred families, land loss, demolition of several hundred public and private structures, loss of public access points to the shoreline, protective measures for water, sewer, power lines, and public roads, and increased life-safety risks from collapsing bluffs in a heavily visited shoreline. Further, representatives from both Cities have stated that eventually, once the bluff-top parcels have eroded to the back of the properties, seawalls would be constructed to protect roads, utilities and other critical infrastructure. Hence, a managed retreat option would likely delay the eventual construction of seawalls rather than eliminating the need for them. While managed retreat is economically costly and difficult to justify from that perspective, it also does not adequately address life-safety risks, an important project objective, or provide a supportable alternative given the negative impacts to the community from relocating and condemning residences and the strain to local finances from relocating or protecting extensive infrastructure.	
122	Julia Chunn-Heer, Surf Rider San Diego	So I do have a copy of a letter that we submitted earlier this week requesting a 30-day extension on the comment period since the document is very long, complex and released over the holidays. Due to the timing of that structure we were able to get initiated just right off the bat so under CEQA we're requesting a 30-day extension. (see transcript for more detail)	Surfrider was allowed to provide late comments for inclusion. See response to Surfrider Letter.	

Verbal and written comments received during public hearings

No.	Commenter	Comment	Response	Location in Final Report
123	Frank Birkner, Leucadia resident	Good evening, my name is Franz Birkner, and I'm a lucky man. I'm a lucky man because I have lived, for the last 31 years, on Neptune Avenue on the ocean bluff in Leucadia, and that's been wonderful. And in the course of 31 years, I am an engineer, electrical engineer, not a biologist, but speaking as an engineer I think we've reached a point where we know some things that work with respect to how to protect our beaches. And what works is what you're recommending, sand replenishment. There is no question about that at this point. The sand replenishment project in 2001 was hugely successful. (see transcript for more detail)	Comment noted.	
124	Garth Murphy	One of my questions is why -- why you're not doing the same area SANDAG did? I just I had not seen that slide to analyze it. I worked for two years on the Marine Life Protection Act Initiative and hope you're all aware there is a marine protected area in Encinitas between Moonlight Beach and Seaside, and that I helped negotiate the borrow and placement sites in that. I would like to know if you have examined any of the borrow sites to see how quickly they refill. I think that's important. I would encourage putting adaptive management into the whole plan. You need 50 years, but you might need that replenished every year for three years and then you might integrate a light break. There's an easy way to tell how much sand you	The SANDAG beach fill did not provide sufficient coastal storm damage risk reduction to developed properties to economically justify or optimize its cost and eligibility as a federal project because it was intended to provide primarily recreation benefits. The Swamis State Marine Conservation Area (SMCA) is known to the Corps as well as limitations. Beach nourishment is allowed under provisions establishing the Swami's SMCA. Please also refer to the response to comment above. Regarding borrow sites, please see Response to Comments 3 (adaptive management) and 34 (monitoring). The Corps has added borrow site monitoring to the project that will include pre- and post-construction monitoring of bathymetry and benthic organisms. Adaptive management is part of the project and replenishment intervals are part of the optimization planning process for total project authorization, however, replenishment will occur when the need is determined by monitoring. The analysis performed in the Coastal Engineering Appendix evaluates the amount of sand needed to reduce the time of exposure	

Verbal and written comments received during public hearings

No.	Commenter	Comment	Response	Location in Final Report
		should put in each time. You're talking 680,000 cubic meters. I think personally that's too much. We just had 278,000 and when I walk the beach I see that that's just about enough.	and intensity of wave impacts at the bluff base. This combined with an economic evaluation is used to find the optimal beach fill volume along with its average replenishment cycle. This is based on modeling, some of it empirical, that will be subject to adjustment as a result of monitoring	
		So you got the surf grass, which is super important. It's right along the shore. If you put 100 feet of sand you're going to heavily affect the surf grass if you walk on it now. If you put 50 feet you will be all right. The surf grass is a true grass. It flowers, it's got a root, it's not like kelp. It grows in the shallow water. It needs a lot of sun.	We agree that surfgrass is very important habitat type, which is why we are monitoring it. Our evaluation is that the project will not adversely impact existing surf grass habitat. However, we will monitor in case there is some unexpected impacts in which case we will mitigate appropriately.	
		The other thing is you have three objectives and you don't know have an objective to rebuild the beaches, which to me, that's the most important thing for people here is we want the beaches. Maybe Washington doesn't like that. And you also have bluff protection, which is a completely separate issue.	Public concerns were used to develop problem statements and study goals and objectives. These were established as objectives for the proposed action. The first bullet addresses the shore and the bluff. • Reduce coastal storm damages to property and infrastructure along the study area shoreline and the bluff top, prior to the need for emergency action, throughout the period of analysis. • Improve public safety in the study area by reducing the threat of life-threatening bluff failures caused by wave action against the bluff base, throughout the period of analysis. • Reduce coastal erosion and shoreline narrowing to improve recreational opportunities for beach users within the study area throughout the period of analysis.	
		One final thing, groins are not appropriate in the bluffs, but I think they're appropriate from the last restaurant going toward -- toward Seaside. Short groins that would make the beach, after the last restaurant, which is the Chart House, as wide as that same beach is. And that would just increase	Groins were considered as an alternative, but because of the potential adverse effects on downdrift beaches, groins and similar structures should be used only after careful consideration of the factors involved and should always incorporate a pre-fill component whereby the amount of sand that could be trapped by the structure is placed concurrent with structure construction thereby avoiding	

Verbal and written comments received during public hearings				
No.	**Commenter**	**Comment**	**Response**	**Location in Final Report**
		public access, keep the sand there and require less sand. (see transcript for more detail)	downdrift impacts.	
125	Tom Cook, Surfrider Foundation, San Diego	I'm from San Diego, California, talking to you tonight as part of the Surfrider Foundation. Most of my comments are regarding impacts to surfing resources, but I would also like to, you know, echo the sentiment that others have mentioned, that the managed retreat section is lacking. When you're putting out volumes of 600, 800, 900,000 cubic yards, the impact to the beach system is going to be great. And everyone up here is very happy with the SANDAG project that just completed this year. You go down to IB, Imperial Beach, where they've placed about 400 or 400,000 cubic yards of sand and people are not that happy. Homeowners are having issues with flooding as well as surfing is pretty much knocked out for 90 percent of the Imperial beach. So the surfing analysis, while we're very thankful that you did such a dedicated large part of the EIR to surfing analysis their -- their findings is that surfing will be impacted at many of the reef breaks south of here in Solana Beach. We don't think that is acceptable in any regard. We do understand that there are short-term impacts in that surfing, especially at beach breaks, will adapt over time. However places like Tabletops and Pillbox, which are reef and hybrid reef breaks, need to continue to break in a traditional manner. (see transcript for more detail)	Development on top of the bluffs fronting the beach fill is very different from the shoreline profile at Imperial Beach. No garages or buildings will be subject to flooding due to wave overtopping of the new beach fill. Regarding surfing analysis, please see response to comment 92.	

Verbal and written comments received during public hearings

No.	Commenter	Comment	Response	Location in Final Report
126	Craig Bruce, Leucadia Resident	I live in Leucadia. My point is, I'm the president of Sea Coast, which is the largest coastal property group in all of California; the oldest and the largest. So on that point, obviously sand is a yes. That's a big one. But, you know, listening to some of the comments, I want to throw something out there about the sand, about the homes, and, essentially, to the homeowners, to all of us beach property owners up and down the California coast. You know, we don't like seawalls at all. You know, I'm in so many meetings and so many hearings and so many arguments and so many lawsuits about the seawalls, but it's a really good point to tell everybody that we're totally against them. Absolutely 100 percent against them. It's not our fault that we have to put seawalls in. And a project like this just not knocks it all. It's an absolutely fantastic project. The opportunity here is huge. So, anyway, we're actually for it. Personally, I'm a surfer. I have been surfing my whole life. I know every break around. I know every break in Encinitas, to Solana Beach, all the way down to Mexico, and I can tell you that a good surfer -- the breaks change every day. There are no two waves alike anywhere. So when you change the sand, when you change -- when a storm comes in or a storm goes out, the breaks change. The current changes. Everything changes. So surfers adapt. Otherwise we're absolutely for the project. A five-year renewal is much better than a 10-year renewal because we can obviously see weather plays a huge role in the movement of our sand so the more often it can be replaced, the better. (see transcript for more detail)	Comment noted.	

Verbal and written comments received during public hearings				
No.	**Commenter**	**Comment**	**Response**	**Location in Final Report**
127	David S. Oakley	"COE" recommendations are great. Sand replenishment is essential! Planned retreat not acceptable. P.S- Seawalls don't hurt; They stop sea caves when no sand. I support (EN-1A)	Comment noted.	
128	Mark Wisniewski, Leucadia resident	My concerns are whether a couple of items were addressed in your report. I haven't had a chance to review it. Between a 10-year period, approximately from 1880 to early 1890, there was 600 feet of bluff retreat centered at Moonlight Beach. 600 feet. It's documented in a publication by Gerald Coon, who was a co-author that studied the entire geology of San Diego County from Orange County to Mexico, including erosion. Also, was sea level rise that's going to be influenced by climate change considered a near approach? I would also like to state, as one other speaker did, a concern of groundwater exiting out the base of the cliff, primarily from the street down towards Swami's. It also contributes to bluff failures. Has that contribution been weighed, analyzed and studied and given its -- its due. Along with groundwater other causes of bluff failure and erosion in that area are exotic plants including Mexican Fan Palms, Myoporum, Arundo, Pampas Grass, Tree Tobacco. Expanding roots cause bluff failure. (see transcript for more detail)	Recent analysis of LiDAR and aerial mapping has shown bluff retreat rates of 0.2 to 0.4 feet/year on average. A thorough review of bluff retreat rates are included in Sections 7.2 and 7.3 of the Geotechnical Appendix. Scenarios of sea level rise due to climate change are analyzed in the report with respect to its affect on bluff retreat and how much more additional sand borrow volumes would be required to maintain the shoreline in a same relative position to the toe of the bluffs. Ground water and surface water erosion are mitigated through Best Management Practices that both the City of Encinitas and the City of Solana Beach have for diverting runoff and controlling ground water.	

Verbal and written comments received during public hearings

No.	Commenter	Comment	Response	Location in Final Report
129	Bob Eubank, Leucadia resident	I have lived near the Grand View steps since 1976. We have a win, win solution here with the sand on the beach. People don't have to watch their houses fall on the bluff. We don't have to argue over planned retreat. And as far as planned retreat, how would you like to be having your house be condemned as part of the planned retreat, you know. I just can't even believe that people would not even be allowed to protect their own houses. But I have surfed there. I have seen, this last winter, after the sand went up, I have never seen so many wonderful, wonderful sandbars going out within a few hundred yards of Grand View. There is surf -- there's breaks every 100 yards going off right now that never were going off before. It's happening. I have been there every single day since 1976. I know what I'm talking about. And I like to surf there. I like to run there. You know, my family goes down there. We picnic down there. This is our life and it's the life of our community and it's the lifeblood of our community. We need to decide if it's going to go the possible way of losing a few sea worms or our life-style. (see transcript for more detail)	Comment noted.	

Verbal and written comments received during public hearings

No.	Commenter	Comment	Response	Location in Final Report
130	Dolores Welty, Leucadia resident	At the same time I fought the dredging of Batiquitos and I fought it very hard and I did not succeed except partially. And when -- when they were decide to go dredge Batiquitos they were -- they kept telling me that there's no life in the soil in – under the water. There's no life in that biota, but there was plenty of biota in the water column. Batiquitos was dead in the soil because it would be -- it would transfer between freshwater and saltwater depending upon whether it was open to the ocean or whether the ocean had closed it up. So from 1986 until the present Batiquitos has had to be dredged, but nobody ever goes back to see if there's life in the soil in the biota. I'm not using that word correctly. If there's biota in the soil under the water is what I'm talking about. Nobody ever checks on that. And so we don't know. Fish and wildlife come out and net the fish, count those up and throw them back, but nobody ever looks at what grows or what is there for them to eat. So I would be very interested in what Mr. Lees said and the -- the hesitation or the concern he has about plant life and crustaceans, et cetera, that the trees and the weeds that live offshore. Who's going to look at it? (see transcript for more detail)	Prior to its restoration Batiquitos Lagoon experienced wide swings in terms of water salinity. Periodic closure followed by drying lead to hypersaline regimes. Rain events lead to a reversal. Very few species can survive in such an environment, including benthic organisms. Monitoring performed by the POLA has shown that benthic organisms have recovered and that Batiquitos Lagoon is a healthy ecosystem. The Final Integrated Report includes detailed impact assessment for marine habitats, including a monitoring and mitigation program.	

Verbal and written comments received during public hearings

No.	Commenter	Comment	Response	Location in Final Report
131	Jim Jaffe	Impacts determined from the project were that the reef breaks in Solana Beach were likely to be impacted, and there's a possibility they could be converted to beach breaks. Don't know if that's deemed a significant impact. The analysis identifies Table Tops as a right surf break, but in the summertime, and sometimes in the winter, it predominantly breaks left. Need clarity on what is being proposed. What does the 100-foot beach width mean? Is that initial placement or the equilibrated width? Surfing monitoring doesn't appear on the list of monitoring. Surfrider has instituted a monitoring program for the SANDAG project but it's not funded next year. (see transcript for more detail)	The characterization of the surf break at Table Tops will be corrected to have both left and right breaks. The 100-foot increased in mean sea level (msl) width is the expected shift in the msl position after the beach fill has been re-worked by tides and waves and is in a quasi-equilibrium shape. Please note that the Project now includes reduced volume alternatives for both Encinitas (EN-1B) and Solana Beach (SB-1B) that are 50 foot and 150 foot wide beach fills (equilibrium), respectively. Monitoring of recreational surfing will be included. Please also see the response to comment 94 above. Recreation figures were used from the Solana Beach study which collected a year's worth of beach attendance data from 2008-2009.	Appendix B
132	Charlotte Zettel, Leucadia resident	I'm a resident here in Leucadia. Not a long-time resident, but a person who has enjoyed our beaches here in San Diego County for the better part of 40 years. First of all, I want to thank you for being here and thank your team for all the work. And I testify in support of your recommendation EN1-A. First of all, I think the important thing that you're addressing is public safety. Second of all, our beaches are an important resource for our community. Not only for the -- for the beach residents but for our neighbors that come from inland to come to visit our beautiful beaches and tourists from countries all over the world. This has a great economic benefit for the City of Encinitas. Businesses thrive, restaurants thrive, and jobs are created. (see transcript for more detail)	Comment noted.	

Verbal and written comments received during public hearings

No.	Commenter	Comment	Response	Location in Final Report
133	Adam Birnbaum, Planning Manager, City of Del Mar	The City of Del Mar is supportive of the restoration efforts. Want to be sure that the work at the borrow sites (SO-5 and SO-6) is carried out beyond the depth of closure so there wouldn't be any impact on Del Mar's beach profile. They hope that the analysis includes some consideration and potentially mitigation included to address if there are, in fact, impacts of the result of borrowing a large amount of sand off the Del Mar beach front. (see transcript for more detail)	See responses to City of Del Mar letter which are contained in Comments 86 through 91 above.	
134	Jim Jaffe, San Diego Chapter of the Surf Rider Foundation advisory board, resident of Solana Beach	I just want to address a couple of key things here. What we're really talking about with these types of projects, it already is -- if we fix the shoreline, which is what this project proposes to do, we're effectively doing planned retreat, we're retreating from the ocean in a sense, because what happens when we fix the shoreline in a place that under natural conditions would normally erode -- the gentleman alluded to, I don't believe the rate is as high as 600 feet, but it's clearly been eroding for centuries. And we discussed this during our meetings. And I'm not sure it was adequately communicated to the public that this shoreline retreats even if you put the sand in to the extent that nature would have put it there. This is an eroding shoreline. Now if we increase the sea level the rate of shoreline erosion increases from the natural state. So the question is, if you fix it, sea level rises, you will bury essentially all of your surfing reefs under higher elevations of the water and you no longer break. So the solution we're proposing is you dump sand on top of it. When you dump sand on top of these reefs the no longer act as surfing reefs any longer. The natural process is that when cliffs have erodes as they	In recent times, this stretch of shoreline has had narrow beaches and retreating bluffs. Anecdotal evidence suggests that this condition was exacerbated by the cluster storms of the 1980's El Ninos. The Corps of Engineers planning horizon for civil works projects is 50 years, or for this study to 2065. During this time period, sea level rise is expected to be range between 0.5 and 2.5 feet. Existing improvements on the bluffs are expected to be protected, preventing the shore platform from migrating landward, so in the out years without the introduction of more sand, the deeper depths will result surf breaks closer to shore with a greater chance of wave reflection and backwash from a hardened bluff face. For surfing analysis discussion, please see response to comment 92.	

Verbal and written comments received during public hearings

No.	Commenter	Comment	Response	Location in Final Report
		have done for, I believe, 18,000 years, you get emergent reefs depending on the geology of the remnant bluff. So we will no longer have those emergent reefs. And as was pointed out by Tom, and as identified in the EIR, it's not something we made up, there's a likely impact with this sand replenishment that we're proposing that we're going to bury the reefs in Solana Beach. It was clearly identified but it was not listed as a significant impact. I don't know what the threshold was for a significant impact on the surfing break. (see transcript for more detail)		
135	Bonnie Kempner	As a resident of Solana Beach since 1954, as a child and adult, I have witnessed the bluff failures for years. I have seen the sand come and go. It always will and the ocean is a force a man can’t control. REF: The east coast disaster this year, Japans Tsunami, etc.	Comment noted.	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

February 26, 2013

Josephine R. Axt, Ph.D.
Chief, Planning Division
U.S. Army Corps of Engineers
Los Angeles District
P.O. Box 532711
ATTN: Mr. Larry Smith (CESPL-PD-RN)
Los Angeles, California 90053-2325

Subject: Draft Environmental Impact Statement for the Encinitas-Solana Beach Coastal Storm Damage Reduction Project, San Diego County, CA (CEQ# 20120400).

Dear Ms. Axt:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for Encinitas-Solana Beach Coastal Storm Damage Reduction Project (Project), San Diego County, California. Our review is provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR 1500-1508), and Section 309 of the Clean Air Act. Our comments were also prepared in accordance with the provisions of the Federal Guidelines promulgated at 40 CFR 230 under Section 404(b)(1) of the Clean Water Act (CWA).

EPA recognizes the need to minimize threats to public safety from collapsed bluffs, and we support this goal. Based on our review of all of the project action alternative scenarios, we have rated the DEIS as *Environmental Concerns – Insufficient Information* (EC-2) (see enclosed "*Summary of Rating Definitions*"), due to our concerns regarding climate change and sea level rise, and impacts to water quality. We also have concerns regarding the source and quality of beach nourishment materials; biological quality surveys and monitoring; endangered species; floodplain management; cumulative impacts and air quality.

EPA recommends that the FEIS give greater consideration to the project's potential impacts and mitigation needs under high sea level scenarios and that further consideration be given to the need for monitoring and mitigation plans to address environmental impacts from the proposed fill activities, such as loss of surf grass, loss of hard bottom habitat, and water quality. We also encourage the U.S. Army Corps of Engineers to include, in the Final Environmental Impact Statement (FEIS), the results of a comprehensive biological survey of the Encinitas-Solana Beach shoreline. Without such a survey, it is difficult to accurately evaluate the potential environmental impacts of the various alternatives described in the proposed action.

EPA appreciates the communication between our offices and the opportunity to review this DEIS. When the FEIS is released, please send one hard copy and three CD's to the address above (mail code: CED-2). If you have any questions, please contact me at (415) 972-3521, or have your staff contact James Munson, the lead reviewer for this project. James can be reached at (415) 972-3852 or munson.james@epa.gov.

Please note that, as of October 1, 2012, EPA Headquarters no longer accepts paper copies or CDs of EISs for official filing purposes. Submissions must be made through the EPA's new electronic EIS submittal tool: e-NEPA. To begin using e-NEPA, you must first register with the EPA's electronic reporting site - https://cdx.epa.gov/epa_home.asp. Electronic submission does not change requirements for distribution of EISs for public review and comment, and lead agencies should still provide one hard copy and three CD's of each Draft and Final EIS released for public circulation to the EPA Region 9 office in San Francisco (Mail Code: CED-2).

Sincerely,

Kathleen Martyn Goforth

Kathleen Martyn Goforth, Manager
Environmental Review Office
Communities and Ecosystems Division

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

EPA'S DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE ENCINITAS-SOLANA BEACH COASTAL STORM DAMAGE REDUCTION PROJECT, SAN DIEGO COUNTY, CA, (CEQ# 20120400)

Alternatives Analysis/Climate Change

The DEIS includes no-action alternatives and multiple action alternatives for each beach, and each alternative has a high sea level rise scenario and a low sea level rise scenario. The document identifies a tentatively recommended plan with two alternatives that call for beach nourishment on two project areas but with different beach widths, (EN-1A Encinitas Beach 100 feet and SB-1A Solana Beach 200 feet). The tentatively recommended plan assumes a low sea level rise scenario, but does not provide a sufficient rationale for why this was chosen. Page 115 of the DEIS states, "Should high sea level rise scenario predictions become evident during the course of the project, adaption of the design to the high sea level rise scenario would be implemented. To achieve that adaption the higher re-nourishment volumes would be implemented." EPA is concerned that the impacts analysis and mitigation is primarily calibrated using the low sea level rise scenario; hence, there is insufficient data to fully analyze the impacts and mitigation needs should the high sea level rise scenario become the federal action.

Page 47 of the DEIS states: "The low sea level rise is represented by a trendline analysis of yearly MSL data recorded at La Jolla in San Diego County from 1924 to 2006. This indicates an upward trend of approximately 0.0068 ft per year, as described in the Coastal Engineering Appendix." Page 46 indicates that this number is formulated using a "Curve I from the National Research Council (1987)." Using a low sea level rise from a curve created in 1987 that reflects data calculating changes from 1924 to 2006 may not fully capture probable sea level rise levels over the next 50 years. At 0.0068 feet per year, this amounts to an increase of 0.34 feet over the 50 year life of the project; however, Table 1.8-4 on page 48 of the DEIS shows conflicting data from the "'Projections from year 2000 baseline' Source: California Ocean Protection Council, 2011." Those data project an average rise of approximately 1.17 feet or "14 inches" by 2050, which is less than $^4/_5$ of the project's 50 year action period -- a difference of approximately 0.84 feet over the life of the project.

As written, the DEIS' alternatives and economic sections are insufficient to demonstrate why the Corps chose the "tentative recommended plan" or why this plan was chosen over the "Environmentally Superior Plans (EN-1B & SB-1C)". We also note that the artificial reef alternative was dismissed, but the "tentative recommended plan" includes 16 acres of artificial reef; detailed description of the artificial reef alternative that was discarded is not available for comparison. Furthermore, although a CWA Section 404 permit is not needed for the proposed action, this Civil Works project should meet the intent of the CWA Section 404(b)(1) Guidelines. The DEIS alternatives analysis does not demonstrate the project's consistency with the nature of the Clean Water Act Section 404(b)(1) Guidelines and selection of the Least Environmentally Damaging Practicable Alternative (LEDPA).

Recommendations:

The FEIS should include a full detailed description of the tentatively recommended plan, including high sea level scenarios, using up-to-date data, and looking forward through at least the life of the project.

The FEIS should include a description of how each alternative would meet the needs of the project while reducing adverse impacts to species of concern, coral reefs, and surf grass.

The FEIS alternatives analysis should include a reasonable range of practicable alternatives that meet the project purpose and demonstrate the project's consistency with the CWA Section 404(b)(1) Guidelines and selection of the LEDPA.

<u>Water Quality</u>

While the project will have impacts to high value marine habitats, including special aquatic sites (defined at 40 CFR 230.3(q-1)), the Section 404(b)(1) Analysis (Appendix D) concludes that all impacts are localized and temporary and, therefore, insignificant. There is little discussion of the basis for this conclusion.

As a result of the large volumes of sand being placed on receiver beaches, (1.64 million cy), the Tentatively Recommended Plan described on page 501 could lead to significant and unavoidable adverse impacts on surface water quality, benthic habitat, and fisheries from increased turbidity and fill in special aquatic sites. Page 333 of the DEIS states that, "turbidity is limited to the bottom and is rarely visible at the surface"; however, little information is provided in the document to support this statement. Other short and long term threats to water quality include construction-related contaminants such as oil and hydraulic fluid and increased turbidity that would occur during future maintenance activities for the proposed project.

Recommendations:

The FEIS should include the results of a comprehensive biological survey of the Encinitas-Solana Beach shoreline.

The FEIS should address the potential of the project to contribute to elevated turbidity levels. The Corps should consider marine design modifications regarding factors such as location and size to minimize these environmental impacts.

Additional minimization measures for impacts to the aquatic environment should be discussed in the FEIS, such as measures related to timing and rate of fill placement.

The FEIS should commit to: 1) placement in fall or winter to better mimic natural shoreline turbidity processes and reduce impacts during high recreational use times, and 2) development of debris management plans to ensure that the borrow site materials do not deposit trash or other debris that may be harmful to the ocean environment.

Source & Quality of Beach Nourishment Materials

The DEIS briefly considers sources of sand such as onshore and offshore borrow sites (DEIS p. 100); however, in regards to possible onshore borrow, the document states, "Some potential for beach replenishment material exists within the quarry and the surrounding area, although the cost would be much higher than offshore sources due to the costs associated with transport."

Recommendation:

The Corps should evaluate and discuss, in the FEIS, any opportunities to further minimize impacts to the aquatic environment by coordinating with other Corps permitted dredging projects that may produce suitable material for beach nourishment purposes, or using sources from which the dredging might provide enhancement of environmental, navigational, or recreational conditions. The ROD should include a commitment to consideration of opportunistic sources of beach nourishment material prior to each nourishment cycle.

We note that the chemical testing of the sediments in the proposed Oceanside borrow pit occurred several years ago. Due to this lapse of time, additional testing may be necessary. Page 203 of DEIS describes an initial general sampling scheme, with an unspecified number of cores taken at depths of 2 feet and approximately 20 feet; however, it is unclear how many of those cores were taken from borrow sites planned for the Tentative Recommended Plan. EPA is also concerned that the document fails to include plans to take core testing down to the anticipated dredging depth.

Recommendation:

The discussion of the chemical testing of the proposed Oceanside borrow site should be expanded in the FEIS to describe what was done in greater detail, including why further up-to-date testing is not needed down to the anticipated dredging depth.

Biological Quality Surveys and Monitoring

As discussed in the DEIS, surveys and monitoring have typically been incorporated into beach nourishment projects. We acknowledge the Corps' commitment to a 50 year monitoring period (over the life of the project); however, the document does not sufficiently discuss a biological monitoring plan.

Recommendation:

The FEIS should include a clear detailed description of a survey and monitoring program for the biological impacts of the preferred alternative, and commit to its incorporation as a required project element. This information should be included for both nearshore and borrow areas in order to evaluate the effectiveness of the proposed action in protecting biological diversity and quality. The monitoring plan should include pre- and post-project dive surveys and benthic community sampling of the borrow site and the receiver site to ensure that each benthic community returns to its pre-project density and structure. We recommend that the monitoring program have a clear adaptive management strategy to ensure that the aquatic environment is protected.

Endangered Species

The DEIS insufficiently evaluates the potential impacts to on shore species of concern such as snowy plover, least tern and their habitat. The document states that the species are found in the area, but does not sufficiently disclose the results of site specific surveys.

Recommendation:

The FEIS should include the results of a comprehensive biological survey of the entire project area as well as the borrow site, including a complete review of species outside the immediate project area that may be affected by the project.

The results of consultation with the United States Fish and Wildlife Service and National Oceanic and Atmospheric Administration, if appropriate, regarding threatened or endangered species or critical habitat should be included in the FEIS.

The FEIS should commit to having beach nourishment activities avoid the nesting seasons for listed species, such as the least tern and snowy plover.

Executive Order 11988: Floodplain Management

Per Flood Insurance Rate Maps (FIRM), portions of the project footprint are in a Zone VE Coastal Flood Zone with velocity hazard and established base flood elevation (BFE). See FIRM#: 06073C1045G San Diego Co Unincorporated & Incorporated Areas 05/16/2012. Executive Order 11988 Floodplain Management requires federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains.

Recommendation:

The FEIS should discuss any impacts that the Proposed Project may have on the potential for flooding.

Cumulative Impacts

The DEIS does not include a sufficient description of other projects in the area that are under construction or planned within the 50 year time frame and could have cumulative impacts , such as adjacent beach re-nourishment projects and or the ecosystem restoration at the San Elijo Lagoon, which is located between the Encinitas Beach and Solana Beach.

Recommendation:

Given that the Project will take place over the next 50 years, the FEIS should include a comprehensive discussion of reasonably foreseeable projects that may take place in the area during the construction period, such as the San Elijo Lagoon Restoration project, San Clemente Shoreline Feasibility Study and others, and analyze the potential cumulative impacts on affected resources.

<u>Air Quality</u>

Construction Mitigation Measures

EPA recognizes the incorporation of mitigation best management strategies for the project on page S-10 to reduce or minimize air pollutant emissions. More stringent emission controls are available that could further reduce emissions.

Recommendations:
We recommend that all applicable requirements under the South Coast Air Quality Management District (SCAQMD) Rules and the following additional measures be incorporated into the Construction Emissions Mitigation Plan.

Fugitive Dust Source Controls:

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
- Install wind fencing, and phase grading operations, where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.
- When hauling material and operating non-earthmoving equipment, prevent spillage, and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

Mobile and Stationary Source Controls:

- Reduce use, trips, and unnecessary idling from heavy equipment.
- Maintain and tune engines per manufacturer's specifications to perform at California Air Resources Board (CARB) and/or EPA certification, where applicable, levels and to perform at verified standards applicable to retrofit technologies. Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications. CARB has a number of mobile source anti-idling requirements. See their website at: http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm
- Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations

- If practicable, lease new, clean equipment meeting the most stringent of applicable Federal or State Standards. In general, only Tier 2 or newer engines should be employed in the construction phase.
- Utilize EPA-registered particulate traps and other appropriate controls where suitable, to reduce emissions of diesel particulate matter and other pollutants at the construction site.

Administrative controls:

- Identify all commitments to reduce construction emissions and incorporate these reductions into the air quality analysis to reflect additional air quality improvements that would result from adopting specific air quality measures.
- Identify where implementation of mitigation measures is rejected based on economic infeasibility.
- Prepare an inventory of all equipment prior to construction, and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking. (Suitability of control devices is based on: whether there is reduced normal availability of the construction equipment due to increased downtime and/or power output, whether there may be significant damage caused to the construction equipment engine, or whether there may be a significant risk to nearby workers or the public.) Meet CARB diesel fuel requirement for off-road and on-highway (i.e., 15 ppm), and where appropriate use alternative fuels such as natural gas and electric.
- Develop construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow.
- Identify sensitive receptors in the project area, such as children, elderly, and infirm, and specify the means by which you will minimize impacts to these populations. For example, locate construction equipment and staging zones away from sensitive receptors and fresh air intakes to buildings and air conditioners.

Air Quality Impacts Associated with Transporting Fill Material

EPA is concerned that the air quality analysis in the DEIS does not adequately address mitigation of emissions associated with the multiple collection barge trips needed to remove and transport fill from the Project site, nor does the DEIS appear to include estimates of the number of necessary collection barge trips, distance traveled, and corresponding air emissions.

Recommendations:

The FEIS should include a revised air quality analysis and updated emissions comparison to SCAQMD significance thresholds to account for the emissions from the equipment required to transport fill. The FEIS should also commit to additional minimization measures for emissions from barges, tugboats, dredge equipment and equipment used to place the sand on the beach.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

February 26, 2013

Josephine R. Axt, Ph.D.
Chief, Planning Division
U.S. Army Corps of Engineers
Los Angeles District
P.O. Box 532711
ATTN: Mr. Larry Smith (CESPL-PD-RN)
Los Angeles, California 90053-2325

Dear Dr. Axt:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the U.S. Army Corps of Engineers (Corps) integrated feasibility report and Environmental Impact Statement/Environmental Impact Report (Integrated Report) for the Encinitas-Solana Beach Coastal Storm Damage Reduction Project (Project). The purpose of the Project is to effectively reduce risks to public safety and economic damages associated with bluff erosion and to restore beaches along the shorelines of the cities of Encinitas and Solana Beach in San Diego County, California. NMFS has some concerns regarding the proposed project and the Integrated Report. The Encinitas-Solana Beach Project sets a precedent for how Corps may plan and implement large shoreline protection and beach nourishment projects for which sensitive nearshore habitats may be impacted. NMFS offers the following comments pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA), Endangered Species Act (ESA), and the Marine Mammal Protection Act (MMPA).

Proposed Action

The tentatively recommended plan is comprised of beach nourishment of a 100 foot (ft) wide beach for the City of Encinitas with re-nourishment cycles every 5 years and a 200 ft wide beach for the City of Solana Beach with re-nourishment cycles every 13 years. The Corps proposes an initial placement volume of 680,000 cubic yards (cy) at the Encinitas site and a total placement volume between 3,200,000 and 4,030,000 cy over 50 years. At Solana Beach, 960,000 cy is proposed for initial placement with a total placement volume between 2,210,000 and 4,040,000 cy of sediment.

The study area extends from the southern limits of the City of Solana Beach to the northern limits of the City of Encinitas. Two segments within this study area were identified for protection from bluff erosion. Segment 1 is a portion of the beach within Encinitas that extends approximately 7,800 ft from the 700 block of Neptune Ave south to West H Street. Segment 2 is approximately 7,200 ft long extending from the southern city limits of Solana Beach north to Tide Park, close to the northern city limits of Solana Beach.

Sand would be dredged from offshore using borrow sites designated as MB-1, SO-5, and SO-6. Table 3.3-1 summarizes the three offshore borrow sites considered for the project. Borrow sites SO-5 and SO-6 are identified as the primary sites. Material from borrow site SO-5 would be used for Segment 2 (Solana Beach). Material from borrow site SO-6 would be used for Segment 1 (Encinitas) until exhausted; at which time SO-5 would provide material for both Encinitas and Solana Beach alternatives. Borrow site MB-1 would be used as a supplemental source to contribute to required sand volumes under a high sea level rise scenario.

	MB-1	SO-5	SO-6
Volume Available (approximate)	5,800,000 cy	7,800,000 cy	1,300,000 cy
Surface Area	107 acres	124 acres	44 acres
Depth of the Dredge Cut (ft)	20	20	20
Depth of Borrow Site (MLLW)	-60 to -74 ft	-34 to -95 ft	-42 to -56 ft

The total cost of the tentatively recommended plan is $177,121,000.

<u>Magnuson-Stevens Fishery Conservation and Management Comments</u>

NMFS and the Corps established a finding, or agreement, that specified essential fish habitat (EFH) consultation procedures. Based upon this finding, National Environmental Policy Act documents prepared by the Corps should contain sufficient information to satisfy the requirements in Section 600.920(g) for EFH Assessments. As set forth in the regulations, EFH Assessments must include (1) a description of the proposed action; (2) an analysis of the effects, including cumulative effects, of the action on EFH, the managed species, and associated species by life history stage; (3) the federal agency's views regarding the effects of the action on EFH; and (4) proposed mitigation, if applicable. If appropriate, the assessment should also include: the results of an on-site inspection; the views of recognized experts on the habitat or species affects; a literature review; an analysis of alternatives to the proposed action; and any other relevant information. The information must be easily found, and should include both an identification of affected EFH and an assessment of impacts. The level of detail in an EFH Assessment should be commensurate with the complexity and magnitude of the potential adverse effects of the action, 50 CFR 600.920 (e)(2).

The spatial and temporal scale and the associated environmental effects of this Project may have substantial adverse impacts to EFH. Dredging would affect 275 acres of subtidal habitat on the inner shelf. Disposal will directly impact 156 acres of beach habitat and indirectly affect a significant area of shallow subtidal habitat containing a number of sensitive resources and Habitat Areas of Particular Concern (HAPC). The exact acreage of affected HAPCs is difficult to quantify and is based upon a modeling effort described in the Integrated Report. Assuming all modeling assumptions are fully justified, the Integrated Report indicates 8.4 acres of rocky reef habitat would be impacted. Considering the potential additive impacts of increased sand in association with natural variation, the Project may impact 21 acres of rocky reef habitat. Given the potential for substantial adverse impacts to EFH, the Integrated Report should contain more detail regarding the effects of the action, alternatives analysis, and recommended mitigation measures. NMFS believes the Integrated Report provides insufficient information to fully inform an analysis of the adverse effects on EFH. Below are specific points the Corps should address for analyzing effects of the action on EFH. Upon receipt of a revised analysis, NMFS will review and submit appropriate EFH Conservation Recommendations consistent with our finding.

Level of detail in EFH analysis

Although the EFH section within the Integrated Report indicates that EFH for species within the Pacific Groundfish and Coastal Pelagic Species Fishery Management Plans would be adversely impacted, it does not provide a list of managed species by life stage that may be affected by the Project. In addition, it does not include EFH for the Highly Migratory Species FMP. Lastly, it does not provide a detailed analysis of the effects commensurate with the scope of the Project.

Given the significant cost of the Project and the potential for substantial adverse impacts to EFH, NMFS believes that the views of recognized experts should be presented in the analysis. Experts could include university, agency, or private industry personnel with extensive knowledge about the habitat, managed species, or types of effects relevant to the proposed action. In addition, biostastical expertise may assist understanding of the confidence and risks associated with previous monitoring and the modeling assumptions used in the analysis. NMFS is aware that the Corps is conducting an Independent External Peer Review of the Project. Inclusion of the results from this review may benefit the EFH analysis.

NMFS encourages further review of the literature to ensure the conclusions made are adequately justified by the best scientific information available. Specific information regarding federally managed species may be found on our website:
http://swr.nmfs.noaa.gov/hcd/HCD_webContent/EFH/index_EFH.htm.
Additional references are cited in this comment letter. Below are some additional points that the Corps should consider for analyzing effects of the action on EFH.

Effects of dredging

The adverse effects of dredging on EFH may include: 1) direct removal/burial of organisms; 2) turbidity/siltation effects, including light attenuation from turbidity; 3) contaminant release and uptake, including nutrients, metals and organics; 4) release of oxygen consuming substances; 5) entrainment; 6) noise disturbances; and 7) alteration to hydrodynamic regimes and physical habitat. The dredging impacts of most concern to NMFS are impacts to the benthic invertebrate community and the permanent alteration to the topography of the seafloor at the borrow sites.

Many fishery species forage on infaunal and bottom-dwelling organisms, such as polychaete worms, crustacean, and other prey types. Dredging may adversely affect these prey species at the site by directly removing or burying these organisms. Recolonization studies suggest that recovery (generally meaning the later phase of benthic community development after disturbance when species that inhabited the area prior to disturbance begin to re-establish) may not be straightforward, and can be regulated by physical factors including particle size distribution, currents, and compaction/stabilization processes following disturbance. Rates of recovery listed in the literature range from several months to several years for estuarine muds to up to 2 to 3 years for sands and gravels. Recolonization can also take up to 1 to 3 years in areas of strong current but up to 5 to 10 years in areas of low current.

Boyd *et al.* (2005) examined the benthic community at an aggregrate dredge site that experienced extraction of >100,000 tons of substrate/year for 21 years. They concluded that the alteration in sediment characteristics from persistent dredging prevented the climax community from returning. Newell *et al.* (2004) found a decrease in species richness, population density, and biomass at an aggregrate dredging site compared to control areas. Early successional, opportunistic species comprise benthic communities at long-term dredge sites (Robinson *et al*. 2005). Thus, forage resources for fish that feed on the benthos may be substantially reduced until recovery is achieved. The Corps should further analyze the effects of a reduced foraging base and the implications of precluding the development of a benthic invertebrate climax community.

The Integrated Report indicates that benthic recovery would be expected to be similar to Regional Beach Sand Project I and concludes that the impact would be less than significant on a regional level. It is anticipated that the impact would also be less than significant on a local level given that no long-term alteration of the benthic community was found 9 years after implementation of RBSP I. However, NMFS notes that the benthic community impact analysis conducted for the borrow sites at RBSP I was not comprehensive and may not adequately assess environmental impacts associated with dredging at the borrow sites. According to SANDAG (2011), the sampling effort associated with the borrow sites was limited given the reconnaissance level of the survey. NMFS believes additional analysis is warranted given the spatial (combined area of borrow sites are 275 acres) and temporal scale (50 year project with repeated dredging) of the Project.

Effects of sand placement

The disposal of dredged material on the beach may adversely affect EFH by 1) impacting or destroying benthic communities; 2) impacting adjacent sensitive habitats; 3) creating turbidity plumes and introducing contaminants and/or nutrients. Of primary concern to NMFS are the potential impacts associated with the sediment disposal to sensitive nearshore resources (e.g. seagrass and reef habitat) and beach habitat.

Reef habitat

The Integrated Report indicates that reef features are naturally exposed to periodic burial, so that short-term burial resulting from the project is not a loss. However, short term burial at depths of 0.8 feet exhibited a statistically significant decline in surfgrass shoot count within a laboratory setting (Craig *et al*. 2008). Thus, surfgrass habitat is likely to be impacted by beach nourishment and shoreline protection projects that place sand either directly or indirectly onto surfgrass beds (Craig *et al.* 2008). Surfgrasses exhibit late successional traits, recover very slowly from disturbance, require facilitation from algae before settling, and are strong competitors (Turner 1985). Additive impacts and repeated beach nourishment efforts likely will increase this rate of disturbance to these systems. Slow recovery times suggest that disturbances to these communities may be ecologically significant. Given that algal turf community facilitates surfgrass settlement, consideration should also be given to reefs containing turf algae. They do not appear to be accounted for in the nearshore impact analysis.

Removal of surfgrass from a rocky reef community has profound impacts to community structure (Turner 1985). Galst and Anderson (2008) have suggested that surfgrass is important for nearshore fish communities and reductions in surfgrass could negatively affect recruitment patterns. Specifically, experimental reductions in coverage of seagrass (ranging from 7 to 180 square meters) resulted in significant decreases in the density of newly recruited fish species. Similarly, NMFS expects reductions in coverage and/or density may reduce other ecological services provided by surfgrass, such as shelter, foraging, primary productivity, substrate for epibiota, and wave energy dissipation.

Beach habitat

Under the tentatively recommended alternative, a maximum of 93 acres of beach habitat would be disturbed by construction at Encinitas and 63 acres at Solana Beach. The Integrated Report concludes that recovery of the invertebrate prey base would be complete in less than 1 year. Due to the relatively small area affected, and the widespread occurrence and relatively rapid recovery rates of sandy beach invertebrates, the Integrated Report concludes that direct impacts to marine invertebrates within the receiver site footprints are expected to be less than significant. However, the Integrated Report provides little scientific rationale for this conclusion.

Although beach nourishment has the potential to restore ecosystem functions of sandy beach communities, persistent disturbances may preclude natural recovery Revell *et al.* (2011). Following a major El-Nino on nearby beaches, recovery of wrack abundance and shorebirds to pre-El Nino levels took 3 years. Reductions in biomass and mean size of invertebrates were still detected 2 years after the event. The loss of larger and older cohorts of intertidal invertebrates (e.g., sand crabs, E. analoga, and pismo clams, T. stultorum) may take 1 to 10 years for recovery.

The benefit of sandy beach habitat to fishery resources is often overlooked because of frequent disturbance, low primary productivity and minimal habitat heterogeneity (Dexter 1992). Energy input is primarily from allocthonous organic material (e.g. macrophytes, phytoplankton) and plankton that supports high densities of filter-feeding, benthic macroinvertebrates (Polis and Hurd 1996, Dugan *et al*. 2003, Crawley *et al*. 2006). These invertebrates are a valuable link to upper level predators such as fishes and shorebirds (Leber 1982).

Beach maintenance activities such as nourishment and bulldozing cause high rates of mortality in benthic macroinvertebrates (Speybroeck *et al*. 2006). For example, the impact to sand crabs (*Emerita* spp.) and clams from beach maintenance activities has been well documented (Peterson *et al*. 2000, Peterson *et al*. 2006). Recovery of these macroinvertebrates can take up to two years if no additional disturbances occur (Dolan and Stewart 2006). For some species, such as Pismo clams, recovery may take even longer (Revell *et al*. 2011).

Losses of benthic invertebrates cascade through the food web by decreasing the abundance of prey items available to recreationally and commercially important fishes. Recreationally important species such as barred surfperch and California corbina (Efford 1965, Barry *et al*.

1996) consume these macroinvertebrates, as well as many other fishes trophically linked to recreationally and commercially important fishes. Other recreational fishes include barred surfperch, white seabass, queenfish, spotfin croaker, California halibut, jacksmelt and California grunion utilize this habitat for foraging (Allen and Pondella 2006). In addition, leopard shark (*Triakus semifasicata)*, managed under the Pacific Groundfish FMP, utilize shallow coastal waters as pupping and feeding/rearing grounds. Neonate pups occur in and just beyond the surf zone in areas of southern California. Therefore, repeated disturbances are likely to have cumulative impacts to prey availability. Changes in the availability of prey resources reduce the quality of habitat and may adversely affect the overall fitness of fishery species in the area.

Adequacy of nearshore impact analysis

Sediment transport modeling was used to predict the influence of the project on sand elevations in the vicinity of the receiver sites. A 2004 LiDAR dataset was used as base bathymetry to examine changes in sand thickness. Substrate and vegetation data from 2002 was added as a layer to indicate areal coverage of the resources. Modeled sedimentation results were then overlaid on these data sets. In addition, a sand layer was created from empirical data provided from the 1996 to 2008 coastal profile dataset and was used to estimate sedimentation and potential impacts to resources based on natural variation. The potential project-related impact was determined by subtracting the most probable impact from natural variation. Encinitas modeling indicates no project-related impact to nearshore resources. Solana Beach modeling estimates indicate a permanent impact to approximately 8.4 acres of rocky reef. However, no impacts to reefs supporting surfgrass were predicted.

The Integrated Report indicates this methodology was developed in coordination with CDFG, NMFS, and USFWS. However, NMFS staff expressed concerns with the approach at an October 2011 interagency meeting and requested that various assumptions be more fully described and justified. Examples of issues suggested to be more clearly explained were 1) how natural variation was defined and incorporated into the modeling and analysis, 2) a rationale for assuming the average condition as the most probable impact, and 3) a description of how maximum and minimum impacts were described. However, the methodology provided in the Integrated Report is not substantively different than that provided by the Corps in 2011. NMFS maintains staff's previous recommendation that the methodology provide additional justification for the assumptions used in the analysis. Below is some additional discussion regarding the three points mentioned above.

Based upon the methodology description, the Integrated Report calculates natural variation by using coastal beach profile datasets. Profile data may provide some indication of changes in sand depth, but are not reflective of variation in biological resources associated with reef habitat. There are limitations to this approach that have previously been described. NMFS notes the following conclusions in the RBSP Year 4 Post-Construction Monitoring Report:

> *Beach profile data are primarily bathymetric (i.e., water depth) data along a narrow corridor, and differences can be perceived as changes in sand cover. However, transect data cannot provide sand cover over a large area, but only along the transect line. Beach profile data are very good for observing general patterns; however, the primary*

> *limitation, especially in areas where there are reefs, is the inability to address changes in reef area. To document reef area and seasonal changes in reef area, remote sensing surveys, similar to what was conducted for SANDAG's Nearshore Inventory Program would need to be conducted.*

Moreover, simple subtraction of the natural variation in sand depth from the predicted sand burial depth expected from the project does not seem to be a justified approach for evaluation of reef impacts. This approach does not seem consistent with the impact evaluation procedure for RBSP I and II. The estimated project-related impacts were calculated by subtracting the standard deviation of empirical coastal profile data from the most probable impact of beach nourishment (Table 5.2-4). However, subtracting one standard deviation from the mean only represents 34.1% of possible impact values. Typically, confidence intervals encompassing 90% to 95% of possible values are reported (Douglass *et al*. 1999; Stockdon *et al*. 2002). In addition, solely subtracting the standard deviation assumes sedimentation will only decrease as a result of natural variation. It is inherent in the definition of 'natural variation' that values may increase or decrease. If the analysis subtracted the standard deviation only to show natural variation was greater than the probable project impact, the analysis then ignored the potential synergistic effects of project impacts and natural variation. Therefore, NMFS believes this method may be statistically inadequate to model potential project impacts. The additive effects of sand placement may exceed the ability of biological indicator species to withstand naturally occurring sand movements. The most probable impact, as presented in Appendix H, may provide a better indication of the potential for additive impacts associated with sand placement. Under the tentatively recommended plan scenario, 1.8 acres of reef with surfgrass and 6.7 acres of reef with other biological indicators may be impacted at Encinitas and 0.4 acre impact to intertidal reef platform and 12.1 acres of reef with other biological indicators may be impacted at Solana Beach.

The theoretical sand surfaces appear to be based upon average values of sand movement. Denny and Gaines (1990) demonstrated the inadequacy of means and variances as sole descriptors for considering the impact of wave forces on the population dynamics and evolution of marine species. Gaines and Denny (1993) suggest that many other ecological and evolutionary problems are also better expressed in terms of extreme values than in terms of means and variances. They suggested that physical stresses that kill or physiologically impair are clear examples where maxima or minima are often more critical than means for predicting community structure. Given that sediment burial and scour are significant physical stressors in the affected area, NMFS would expect that the maximum values of sand movement may be more appropriate for determining potential impacts to reef habitat. The Corps should further justify the application of average values for their impact determination and present the range of impacts that may occur using the minimum and maximum values associated with sand movement.

NMFS further questions the conclusions that no surfgrass impacts will occur based upon results from RBSP I. NMFS notes the following from the RBSP Year 4 Post-Construction Monitoring Report:

> *Sand cover at SB SS-2* [a transect at the Solana Beach site] *increased to levels beyond what was observed prior to the RBSP and remained at those levels. At SB-SS-2, the only*

> *apparent source of sediment was the RBSP suggesting that the RBSP may have potential impacts on this nearshore reef. The increased sedimentation did not appear to affect surfgrass cover; however, shoot density declined as a possible response to the increased sedimentation. If sedimentation persists it is likely that declines in indicator species would occur.*

and

> *Based on the volume of material that was placed at the receiver sites for the RBSP, no environmental impacts were observed; however, the placement of large quantities (exceeding that of the RBSP) in close proximity to nearshore sensitive resources may result in significant impacts to these resources.*

Based upon figures provided by the Corps during an October 2011 interagency meeting, the two receiver sites overlap previous beach nourishment sites from RBSP I. Specifically, 146,000 cy were placed at Solana Beach and 105,000 cy were placed at Encinitas. Initial placement volumes for the Project are more than six times that placed at RBSP I. Thus, in light of the conclusions from RBSP I above, significant impacts to nearshore sensitive resources at both project sites may occur.

Lagoon impacts and mitigation measures

San Elijo Lagoon and San Dieguito Lagoons occur in close proximity to the nourishment sites. San Elijo Lagoon lies between the two nourishment sites and may have the greatest potential for adverse impacts associated with increased lagoon sedimentation. San Dieguito Lagoon lies to the south of the Solana Beach nourishment site. According to Appendix B-2, as gross transport increases with increasing beach nourishment, lagoon sedimentation is expected to increase. An increase in lagoon sedimentation is a negative project impact, and the estimated costs of removing the sedimentation by dredging provide a valuation of this impact. However, this impact is not described in Section 5.4 Biological Resources nor are mitigation measures identified to address the increased sedimentation. In addition, no environmental commitments are identified in Section 10.2. This impact may also warrant discussion in Section 5.1 Geology and Topography and/or Section 5.2 Oceanographic and Coastal Processes.

Analysis of previous monitoring

During the environmental review of a similar, but smaller project (San Clemente Beach Nourishment project), NMFS conveyed concerns regarding the adequacy of analysis and conclusions drawn from previous studies. Peterson and Bishop (2005) reviewed 46 beach monitoring studies and showed that: 1) only 11 percent of the studies controlled for both natural spatial and temporal variation in their analyses; 2) 56 percent reached conclusions that were not adequately supported; and 3) 49 percent failed to meet publication standards for citation and synthesis of related work. They opined that regulatory and resource agency practices are in urgent need of reform as the risk of cumulative impacts grows in the face of sea level rise, climate change, and increased coastal development. NMFS notes that, with the exception of one project from the 1970s, all the studies that were reviewed were on the Atlantic or Gulf coastlines.

Thus, their results may not be directly applicable to projects implemented in Southern California. However, NMFS shares the concerns expressed by the authors that the presumption that nourishment projects are ecologically benign may be based upon an incomplete and flawed body of science. If previous monitoring results in Southern California are to be used as support for conclusions that impacts to biological resources are minor and/or insignificant, NMFS believes a more rigorous examination of their sampling design, statistical analyses, and conclusions are necessary.

Erosion sources and effect on alternative analysis

The Integrated Report is supposed to describe existing and future without-project conditions of the study area and identify problems and opportunities to reduce storm damages, improve public safety, increase recreation opportunities, and protect the environment. The Monte Carlo Simulation used to model bluff failure appears to focus on bluff toe erosion from waves. Bluff erosion also occurs from groundwater, rainfall, and failures at the bluff top. According to Young *et al.* (2009), nine seacliff sections in southern California showed maximum seacliff erosion in the the most rainy time period when wave energies were not particularly elevated. Although the Corps' authority may focus on bluff toe protection, the analysis should still address other other sources of erosion. At a 2011 interagency meeting, NMFS and FWS staff requested that the analysis account for other sources of bluff erosion. Since erosive forces other than just wave energy may occur at the bluff top and on the bluff face, they need to be more clearly accounted for in the alternative formulation and analysis. Groundwater and rainfall may require armoring and/or retreat to reduce risks to public safety and economic damages.

Economic analysis

Significant expenditure of public dollars requires thorough analysis of the alternatives. NMFS recognizes the importance of infrastructure protection, recreation benefits, and public safety that may be derived from the beach nourishment approach proposed in the Integrated Report. Project alternatives were formulated to exclusively reduce erosion to the base/toe of the bluff. The Integrated Report compares the bluff erosion damages that are prevented by the Project to the damages associated with residual sloughing at the bluff top edge that would not be prevented by a Federal-interest project. This comparison provides an indication of the level of economic risk expressed as a percentage of the residual damages as a share of the preventable damages. The "Level of Risk" for the tentatively recommended plan is 32% at Encinitas and 45% at Solana Beach.

A similar level of risk factor should account for the environmental risks. Environmental costs should be fully considered in the economic evaluation of the project. The proposed Project involves six times the amount of material used during previous beach nourishment projects and may have significant environmental impacts. The Corps has acknowledged the potential need to mitigate 8.4 acres of rocky reef impact, but NMFS has concerns that this may be an underestimate. Furthermore, there is uncertainty whether the proposed mitigation would offset impacts to rocky reef habitat. Lastly, the environmental costs associated with repeated disturbance to soft bottom communities are not incorporated into the analysis. The Corps maintains that there are adequate contingency measures in place to account for uncertainty regarding environmental impacts. NMFS has previously questioned the Corps reliance on their contingency measures during the project planning phases and expressed concerns about the modeling assumptions. An informed decision as to whether the project achieves a positive benefit cost ratio (BCR) is compromised if accurate costs are not provided for monitoring and mitigation. The Corps should provide a more explicit accounting for the range of potential impacts to marine resources and provide a justified worse-case scenario in the economics analysis.

Managed retreat alternative analysis

The Integrated Report indicates there are no quantitative economic benefits that would enable a managed retreat alternative to qualify for a Federal interest since the benefit to cost ratio would be less than one and the Cities of Encinitas and Solana Beach do not support a Managed Retreat Alternative. However, the analysis of this alternative within the Integrated Report is based upon a very limited cost-benefit analysis and does not consider alternatives evaluated in detail elsewhere in the State (e.g., ESA PWA (2012)). Given the cost of the proposed Project ($177 million), the economic “Level of Risk”, the uncertainty of environmental impacts, and the likely need to continue similar actions after the life of the Project, managed retreat warrants additional analysis.

Conclusion and Preliminary Recommendations

NMFS believes the Integrated Report provides insufficient information to fully inform an analysis of the adverse effects on EFH. We have identified specific issues above that would improve the overall analysis. Upon receipt of a revised analysis, NMFS will review and submit appropriate EFH Conservation Recommendations consistent with our finding. In the interim, NMFS offers the following recommendations to consider in your decision-making process.

1. According to Table 3.1-2 which summaries the preliminary screening of alternatives, all of the beach nourishment alternatives with various beach width increments would meet the fundamental objectives of the Project. The primary difference amongst these alternatives is the extent to which the economic analysis justifies a Federal interest in the Project. If the basic objectives of the Project may be met via a reduced beach nourishment volume, NMFS recommends the alternative(s) with the minimum beach width to avoid and/or minimize impacts to EFH.

2. A scientifically defensible monitoring plan should be developed prior to a record of decision on the proposed project. The purpose of the monitoring plan is to detect environmental impacts associated with the proposed project and serve as the basis for determining whether compensatory mitigation is appropriate. Results from the monitoring plan will inform the development of a final mitigation plan, which will be based upon the approach described in the contingency mitigation plan. The monitoring plan should be described in greater detail than the program currently described in Section 6.1 of Appendix H. The sampling design and statistical analyses should be clearly described and should be based upon fundamental principles of statistical inference. This monitoring plan should be reviewed and approved by the Corps, NMFS, and other interested resource agencies prior to a record of decision. In addition, to

ensure adequate scientific rigor, consideration should be given to involving an independent review by recognized, biostatistical experts.

3. According to Appendix B Coastal Engineering Appendix, the Project will result in increased sedimentation to nearby coastal lagoons. Maintenance of lagoon mouths is necessary to ensure adequate tidal circulation to support the ecological functions provided by these sensitive lagoon habitats. The Corps should provide funding to the appropriate entities responsible for lagoon mouth maintenance to offset any increases in lagoon sedimentation at lagoon systems adversely affected by the Project.

4. As described in the Integrated Report and expressed in our comments above, there is great uncertainty regarding the extent of impacts to nearshore reef habitat. NMFS questions some of the assumptions used in the nearshore habitat impact analysis. The Corps should explicitly address each of the identified concerns, provide detailed justification for the assumptions, and provide a range of potential mitigation alternatives that may be necessary to offset the adverse impacts to nearshore reefs and EFH.

Endangered Species Act Comments

As a Federal agency and pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 et. seq.), the Corps shall, in consultation with and with the assistance of NMFS, insure that any action it authorizes, funds, or carries out, does not jeopardize the continued existence of any species listed as threatened or endangered, or result in the destruction or adverse modification of designated critical habitat designated. In order to comply with the ESA, the Corps should determine whether any ESA-listed species or designated critical habitat may be adversely affected by the Project. NMFS recommends that the Corps engage in consultation with the NMFS Protected Resources Division in Long Beach, California, for assistance with ESA compliance. Upon request, NMFS staff may be able to help in determination of which ESA-listed species or designated critical habitat, if any, may be present in the Project area and how these ESA-listed species or designated critical habitats may be directly or indirectly affected by the Project. NMFS staff may also be able to assist in development of protective measures that can help minimize the potential for adverse effects to ESA-listed species or designated critical habitat.

Marine Mammal Protection Act Comments

Marine mammals are protected under the Marine Mammal Protection Act (MMPA) (16 U.S.C. § 1361 et. seq.). Under the MMPA, it is generally illegal to "take" a marine mammal without prior authorization from NMFS. "Take" is defined as harassing, hunting, capturing, or killing, or attempting to harass, hunt, capture, or kill any marine mammal. Except with respect to military readiness activities and certain scientific research conducted by, or on behalf of, the Federal Government, "harassment" is defined as any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

NMFS recommends that the Corps assess the potential for harassment or injury to marine mammals as a result of the Project, and implement any measures that may be necessary prevent the take of any marine mammals, as defined under the MMPA. If the incidental take of marine mammals is expected to occur as a result of the Project, the Corps should apply for an Incidental Harassment Authorization (IHA) or Letter of Authorization (LOA) from NMFS well in advance of the Project. NMFS staff is available to assist with this assessment and compliance with the MMPA, including any IHA or LOA applications, upon request from the Corps. If it becomes apparent that impacts to marine mammals in the form of "take" may be occurring as a result of the Project that has not been authorized, the Corps should cease operations and contact NMFS immediately to discuss appropriate steps going forward.

Thank you for considering our comments. Please contact Mr. Bryant Chesney at (562)980-4037, or via email at Bryant.Chesney@noaa.gov if you have any questions concerning our EFH comments or require additional information. If you have any questions pursuant to ESA or MMPA issues, please contact Dan Lawson at (562) 980-3209 or Dan.Lawson@noaa.gov, or Monica DeAngelis at (562) 980-3232 or Monica.DeAngelis@noaa.gov, respectively.

Sincerely,

FOR Rodney R. McInnis
Regional Administrator

cc: Administrative File: 150316SWR2005HC_N183

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From: Avery, Jon
To: Smith, Lawrence J SPL
Cc: Carol Roberts; David Zoutendyk (David_Zoutendyk@fws.gov); Munson.james@Epa.gov; Clifford, Jodi L SPL; Ming, Susan M SPL; Ota.Allan@epamail.epa.gov
Subject: Encinitas and Solana Beach Storm Damage Reduction Draft Environmental Impact Statement/Environmental Impact Report/Feasibility Study
Date: Tuesday, March 05, 2013 12:54:19 PM

Larry,

Thanks for your note below. Please note that I remain the USFWS main point of contact on the proposed project. Please send related correspondence, such as your email below, to me.

Per your email below, we have limited further comments and recommendations on the subject draft EIS/EIR beyond those stated in our draft Coordination Act Report that we sent you on 9 November 2012. The general recommendations from our draft CAR are repeated below.

Our one additional comment is that we disagree with the Corps' determination that the proposed action would have "no effect" on the California least tern or snowy plover. Pursuant to the Endangered Species Act we suggest that consultation on snowy plover and California least tern is appropriate and warranted for the proposed action.

Thanks,

Jon

From:
USFWS Draft Coordination Act Report, November 2012
Encinitas and Solana Beach Shoreline Protection Project

RECOMMENDATIONS
The FWCA states that" ... wildlife conservation shall receive equal consideration and be coordinated with other features of water-resource development programs through the effectual and harmonious planning, development, maintenance, and coordination of wildlife conservation ... " In accordance with the FWCA, we make the following recommendations to avoid and minimize
negative effects to fish and wildlife resources.

1. Considering the RBSP pre-project modeling, the subsequent reduction in sand replenishment quantities of the RBSP based on this modeling, and post-project monitoring that determined no significant long-term impacts to biological occurred, the Corps should use the same (or smaller) sand replenishment quantities as those used in the RBSP. If the Corps decides to proceed with larger sand replenishment quantities than the RBSP, the Corps should use the GENESIS model and/or a similar equivalent model to predict sand movement over the life of the Project. This model should take into account (as model baselines for initial and recurrent proposed replenishment volumes) the recent and likely future sand replenishment efforts by others in the Study Area over the life of the Project (e.g., 2012 RSBP) and predict what: a) biological resources may be affected (e.g., reefs, surfgrass beds, or kelp beds buried) by Project-associated sand movement in the littoral system; and b) effects may occur to the coastal lagoons in the area (i.e., Batiquitos, San Elijo, and San Dieguito). The Corps should identify the spatial and temporal extent of Project-related sand that would likely bury sensitive resources. The Corps should also predict the magnitude of sand predicted to enter the lagoons or reduce the present fluvial exchange regimes oflagoon mouths, and the associated removal costs of any additional sand. The proposed Project beach replenishment quantities, footprints, and or timing should then be modified to avoid any significant long-term impacts to biological resources or from sand migration into the lagoons. Any predicted remaining biological impacts from replenishment sand should be mitigated as directed by a

biological working group consisting of representatives from the California Department of Fish and Game, Corps, National Marine Fisheries Service, and the Service.

2. If the Corps decides to proceed with larger sand replenishment quantities than the RBSP, the Corps should implement the monitoring protocol used for the RBSP (Engle 2005), and/or a similar equivalent protocol, to determine if the Project causes any significant long-term impacts to biological resources and/or lagoons.
Implementation of a monitoring program should be overseen by the above-noted biological working group. The biological working group would also review monitoring reports and make recommendations for the future replenishment activities during the 50-year life of the proposed Project.

3. The Corps should perform surveys for least terns, snowy plovers, and grunion in the Study Area during the environmental review process and before each replenishment event, to determine current nearshore use for foraging by breeding least terns, and beach use by grunion and wintering or breeding snowy plovers. If Project activities must occur during the breeding seasons of these species (or wintering season for snowy plovers) and they are present in the Project area, measures developed by the biological working group should be implemented to avoid, minimize, and offset potential impacts.

4. As was done for the RBSP, the Corps should place funds in an interest bearing account of sufficient quantity to guarantee a means to mitigate any significant long-term adverse impacts documented by the monitoring program. Such mitigation could include creation of artificial reefs and the clearing of lagoon inlets, as determined to be appropriate by the biological working group.

5. The Corps should monitor the extent of turbidity plumes at the dredge and beach replenishment sites throughout the duration of dredging and sand placement activities. Each turbidity plume should not exceed 2.5 ac (1.0 ha) at any given time. If a plume is documented to be greater 2.5 ac (1.0 ha), Project operations should cease until the plume has receded to less than 2.5 ac (1.0 ha). Surface turbidity plumes should be avoided during the most sensitive periods for California least terns, from early May to late July. For the purpose of monitoring, surface turbidity is defined as a change in ambient conditions in the water column visible to the naked eye and where a secchi disc reading is less than 3.3 ft (1 m). Turbidity plumes with a secchi disc reading greater than 3.3 ft (1 m) would not require monitoring per these recommendations.

6. If a hopper dredge is used, a morning glory spillway or similar type spillway that conveys overflow water below the bottom of the hull for discharge should be used.

7. If a cutterhead dredge is used, it should back flush a minimum of 16 ft (5 m) below the surface and not at the surface. Turbidity monitoring would not be necessary if this method and back flush technique are implemented.

8. Sand placed in the nearshore with the intent to replenish beaches should be placed directly within the littoral zone, in depths as shallow as practicable, to reduce in-water impacts and provide the most nourishment to beaches. Any Project replenishment sand not deposited onshore should be deposited directly into the littoral zone, at depths of-19 ft (-6 m) MLL W or less, wherever practicable (SANDAG and CSMG 2006). No sand intended for beach replenishment should be deposited at depths greater than-30ft (-9 m) MLLW (SANDAG and CSMG 2006, EPA 2012).

9. To help avoid and/or minimize potential impacts due to operation of equipment offshore of the beach replenishment sites, the Corps should develop a plan based on diver surveys that includes details of the proposed locations of all pipelines, cables, anchors, and any other equipment to be used. If submerged pump lines are used to place dredged material onto the beach, they should be outfitted with tractor tires or equivalent bumpers to minimize abrasion of the ocean floor or reefs. Construction monitoring should include monitoring of equipment and activities offshore of the beach replenishment sites. Pumpout of fluids from offshore equipment (such as holds or ballast tanks) should be avoided. If problems are detected, operations should cease until the any problems observed during monitoring are remedied. Pre- and post-construction surveys should be performed to document any adverse biological impacts. Any impacts should be mitigated as directed by the biological working group.

10. The Corps should maintain and operate all Project-related equipment in such a manner as to prevent contaminants (e.g., fuel, oil, grease, coolant, hydraulic fluid, hold and tank pump-outs, etc.) from entering the ocean, local streams/storm drains, or beach areas directly or indirectly).

11. The Corps and Cities should work with the California Department of Transportation, Caltrans, San Diego Association of Governments, North County Transit District, the 22nd District Agricultural Association, the cities of Oceanside, Carlsbad, and Del Mar, resource agencies, and others, to develop and implement hydrological/fluvial solutions to the sediment capturing effects of the artificial fill (e.g., road and railroad berms) and bridge-related structures associated with the freeway, railroad, and road crossing of the lagoons and stream/rivers in north San Diego County. For example, the Corps and Cities should investigate the benefits and costs of partially restoring storm flow sediment delivery capacity of Escondido Creek/San Elijo Lagoon to the ocean, through substantially expanding the water-flow openings of the road and railroad crossings (two bridges and a trestle) over the lagoon. The potential benefits of this would be to: a) restore more natural levels of sediment delivery to the ocean and beaches; b) reduce the anthropocentric trapping of sediments in, and concomitant degradation of, local lagoons; and c) increase the effective longevity, and reduce the needs, costs, and impacts of, beach replenishment and lagoon restoration efforts in north San Diego County.

---------- Forwarded message ----------
From: Smith, Lawrence J SPL <Lawrence.J.Smith@usace.army.mil>

Date: Thu, Feb 28, 2013 at 4:42 PM
Subject: RE: Notice of Availability Encinitas/Solana Beach (UNCLASSIFIED)
To: "David Zoutendyk (David_Zoutendyk@fws.gov)" <David_Zoutendyk@fws.gov>, "Munson.james@Epa.gov" <Munson.james@epa.gov>
Cc: "Clifford, Jodi L SPL" <Jodi.L.Clifford@usace.army.mil>, "Ming, Susan M SPL" <susan.m.ming@usace.army.mil>, "Ota.Allan@epamail.epa.gov" <Ota.Allan@epamail.epa.gov>

Classification: UNCLASSIFIED
Caveats: NONE

Gentlemen,

We have not received comments from either the USFWS nor the USEPA. The comment period for the project has closed, as of February 26, 2013. Please let us know as soon as possible if you plan to submit comments and when we can expect to receive them. We will accept late comments, provided they are submitted within a week from today. We are on a tight schedule and cannot delay any further than that. If we do not hear from you, we will have to assume that your agency does not choose to comment on the proposed project. If you mailed comments, please scan the comment letter and email to me, in case your letter got lost in the mail.

Larry Smith
(213) 452-3846
<https://mail.google.com/mail/u/0/images/cleardot.gif>

State of California – Natural Resources Agency EDMUND G. BROWN, Jr., Governor
DEPARTMENT OF FISH AND WILDLIFE CHARLTON H. BONHAM, Director
www.dfg.ca.gov
Marine Region
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February 27, 2013

Ms. Josephine R. Axt, Ph.D
US Army Corp of Engineers
P.O. Box 532711
Los Angeles District
ATTN: Mr. Larry Smith (CESPL-PD-RN)
Los Angeles, California 90053-2325

Subject: Encinitas and Solana Beach Storm Damage Reduction Draft Environmental Impact Statement/Environmental Impact Report/Feasibility Study (SCH # 2012041051)

Dear Ms. Axt:

The Department of Fish and Wildlife (Department) has reviewed the Encinitas and Solana Beach Storm Damage Reduction Draft Environmental Impact Statement/Environmental Impact Report (draft EIS/EIR) and Feasibility Study. This report was prepared by the US Army Corp of Engineers (USACE). The proposed Project is described as follows:

- Segment 1: The City of Encinitas will have a portion of their beach area replenished with sand extending laterally 7,800 feet from the 700 block of Neptune Ave. and Daphne south to West H St. The southern portion of this segment is located in the northern most portion of Swami's State Marine Conservation Area (SMCA). The beach sand replacement alternatives include pumping between 340,000 and 800,000 cubic yards of sand onto the beach from an offshore borrow site. Each alternative includes a bluff notch fill in order to repair the undercut bluff areas. This alternative includes 5 or 10 year sand replenishment cycles.

- Segment 2: The City of Solana Beach portion of the Project will encompass the city limits and extend laterally 7,200 feet from approximately Tide Park south to the southern city limit. The beach sand replacement alternatives include pumping from 440,000 to 1.62 million cubic yards of sand onto the beach from an offshore borrow site. Each alternative includes a bluff notch fill in order to repair the undercut bluff areas. This alternative includes 10 or 13 year sand replenishment cycle.

- Both segments propose replacing sand on extensively eroded beach areas for public safety, recreation, infrastructure and private property protection. The project alternatives in the draft EIS/EIR include: no project, replacement of beach sand, and bluff notch filling for the two non-contiguous segments of beach.

As a trustee for the State fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants and habitat necessary for biologically sustainable populations (California Fish and Game Code §1802). In this capacity, the Department administers the Marine Life Protection Act (MLPA) and other provisions of the California Fish and Game Code and California Code of Regulations (CCR), Title 14 that afford protection to the fish and wildlife of the State. The Department is a Trustee Agency for purposes of CEQA [CCR, Title 14, §15386(a)]. Under the MLPA, the Department is responsible for marine biodiversity protection in coastal marine waters of California. Pursuant to our statutory authority, the Department submits the following concerns, comments, and recommendations regarding the Project.

Impacts to Marine Fish and Wildlife
The draft EIS/EIR indicates that Project activities may directly impact and permanently bury or scour existing intertidal reefs with surf-grass and algae, as well as abalone and other invertebrates. Other sensitive habitats observed by Department staff within or adjacent to the two project segments include: large intertidal boulders, tide-pools, and sub-tidal reef pedestals. The draft EIR/EIS has not adequately identified these resources and potential impacts to these habitats from Project activities, or provided adequate avoidance, minimization and mitigation measures. Many species rely on these habitats for attachment, shelter, roosting, foraging and reproduction.

The Department also has concerns regarding the potential for direct loss and degradation to marine plants and animals from Project activities. Both of the Project segments are located in high energy wave areas. Once algae or surf-grass mats are removed, it is difficult for them to re-establish on reefs naturally or by transplantation, due to harsh wave conditions. Additionally, indirect adverse impacts including scour and/or burial may occur due to storms and cross-shore or long-shore sediment transport. The draft EIR/EIS should adequately identify these potential impacts from Project activities, and provide adequate avoidance, minimization and mitigation measures.

Impacts from Project activities may permanently change the community structure of existing sandy beach habitats within or adjacent to the Project segments. These habitats are critical to the preservation and maintenance of the vast array of fish and wildlife resources that utilize these areas. For example, the intertidal sandy beach is important foraging and spawning habitat for the California species of special concern and federally threatened Western snowy plover (*Charadrius alexandrinus nivosus*) and the California grunion (*Leuresthes tenuis*). Coastal strand habitat is an important and diminishing California natural resource and supports a unique ecological community (Dugan and Hubbard 2009). The draft EIS/EIR does not adequately discuss the impacts to sandy beach and coastal strand species and habitats, nor how it should be conserved during initial and subsequent beach construction.

Impacts to Marine Protected Areas

Marine Protected Areas (MPAs) in southern California went into effect in January 2012. Three of these MPAs are located near the Project area, and one, Swami's SMCA, is located within the Project footprint. According to the Marine Managed Areas Improvement Act, in an SMCA it is unlawful to "injure, damage, take, or possess any living, geological, or cultural marine resource for commercial or recreational purposes, or a combination of commercial and recreational purposes, that the designating entity or managing agency determines would compromise protection of the species of interest, natural community, habitat, or geological features" (Public Resources Code §36710(c)). Swami's SMCA includes offshore reef habitat and nearshore bedrock benches. These areas are important nearshore areas that include a wide range of species including surf-grass, algae, abalone and lobster. While Swami's SMCA does allow the take of living marine resources pursuant to sediment management activities, it does not allow the conversion (e.g. changing nearshore rocky areas from hard to soft substrates via burial), degradation, or destruction of habitats within the MPA.

In addition to Swami's SMCA, there are three additional MPAs near the Project area. These include: Batiquitos Lagoon SMCA, San Elijo Lagoon SMCA and San Dieguito Lagoon SMCA. It is likely that Project activities will also impact these MPAs due to the movement of sediment. As required in the Marine Life Protection Act (MLPA), MPAs were carefully sited in order to capture specific habitats and to meet size and spacing requirements in order to create a network effect along the California coastline. The removal, destruction, or degradation of any habitats within an MPA is likely to jeopardize the effectiveness of the MPA network as a whole. Due to the regulations outlined in the MLPA, the MMAIA, and CCR Title 14, significant impacts to habitats within MPAs shall be avoided and loss of habitat in an MPA cannot be mitigated outside the MPA.

Reef Mitigation Strategy

The draft EIS/EIR describes the main impacts being the burial and/or scouring of reefs with indicator species located immediately offshore of segment 2 in the City of Solana Beach. These impacts were described as adverse and unavoidable, and that mitigation will be required. Table ES-2 (page S-9) of the draft EIS/EIR predicts a total area of natural reef loss between a minimum of 1.6 acres under the Alternatives 1C and 2B and a maximum of 8.4 acres under Alternative 1A. Compensation for these losses will be provided by constructing shallow, mid and deep water artificial reefs.

Federal regulations require a functional assessment be conducted whenever mitigation for a federal project is deemed necessary. In order to determine appropriate mitigation for these impacts, the USACE convened a panel to assist in the development of an acceptable mitigation plan. The panel consisted of staff from the National Marine Fisheries Service (NMFS), United States Fish and Wildlife Service, California Coastal

Commission, USACE, the Department and Keith Merkel with Merkel and Associates. During a conference call on March 1, 2012, the panel agreed to use the NMFS Wetland Mitigation Ratio Calculator to determine acceptable mitigation ratios for reef impacts. (Appendix M of the draft EIS/EIR entitled "Mitigation Strategy" describes the process that was used to calculate mitigation ratios). The ratio calculator includes seven parameters. The panel agreed on the appropriate values for the parameters that includes a range of low, average and high values. The panel recommended ratios for shallow, mid-water, and deep water reefs as follows; 1.35:1 for the low values, 2.18:1 for the average values and 5.58:1 for the high values. The USACE did not use these recommendations. They instead used 2.5:1 for shallow water reefs, 2.0:1 for mid-depth reefs and 1.5:1 for deep water reefs. The ratios proposed are not sufficient to adequately mitigate for reef impacts and the USACE proposed ratios should be revised using the panel recommendations.

Impacts to California Least Tern and other Seabirds
Impacts to offshore areas of the Encinitas and the Solana Beach segments will increase ocean turbidity and may prevent sight dependent seabirds such as the California least tern (*Sterna antillarum browni*), a State fully protected and endangered species, from seeing and obtaining its prey during the breeding season. Nesting activity disturbances during construction may also occur in the lagoon nesting sites nearby.

Recommendations
The following items should be fully addressed in the final EIS/EIR:

1. The Department supports Project alternatives having a beach width and volume of sand that reduces the risk such that the initial or subsequent adverse impacts to biological resources are avoided. In addition, it is recommended the beach sand have a replacement cycle that is adaptive in nature rather than static cycles of 5 to 13 years. A longer sand replacement cycle may be needed (based on the impact monitoring results) to further avoid or minimize impacts to marine resources. The USACE should consult with the resources agencies prior to subsequent sand replacement projects.

2. The Department recommends the final EIS/EIR include specific language in the summary section as well as Appendix M that clearly identifies that the USACE will utilize the ratio calculation process recommended by the panel. Also, actual impacts determined through the implementation of a comprehensive monitoring plan developed in consultation with the resource agencies should also be included. This monitoring plan should include a pre-construction survey for marine resources and rocky reef habitats, a component for adaptive management monitoring during construction, and a complete post construction survey.

3. In order to protect marine resources within Swami's SMCA, and to comply with the specific laws and regulations pertinent to Swami's SMCA, the preferred projects chosen should identify strategies to avoid permanent and minimize temporary loss or degradation of reefs and other habitats. A Swami's SMCA biological impacts monitoring, avoidance and minimization plan should be developed in consultation with the Department to sufficiently protect fish, wildlife and habitats of this area. These plans should be included in the final EIS/EIR.

4. Baseline biological surveys should be conducted for Swami's SMCA as well as reference sites, borrow sites and along the pipeline route. Quantitative surveys should include, but are not limited to: fish, all reefs, boulders, marine plants, all abalone species, locally unique habitats and vulnerable species (e.g. California grunion), sandy beach habitat, benthic and epi-benthic invertebrates, listed or fully protected species, seabirds and shorebirds. Draft baseline survey plans should be reviewed and approved by the Department.

5. The MLPA laws and regulations do not include provisions for the construction of artificial reefs as mitigation for impacts to habitats located within an MPA [California Fish and Game Code §2857(c)]. The Department recommends that the draft EIR/EIS be amended to reflect that adverse impacts to reefs and the construction of an artificial reef for mitigation will not be allowed in the Swami's SMCA.

6. Monitoring during construction for direct impacts to shallow reef and surf-grass may assist with adaptive management as well as to facilitate research and development for new impact reducing strategies.

7. Impacts to the San Dieguito Lagoon SMCA, San Elijo Lagoon SMCA, and Batiquitos Lagoon SMCA should be assessed. Mitigation and monitoring plans to minimize and avoid impacts should be developed in consultation with the Department and included in the final EIS/EIR.

8. A sandy beach and coastal strand habitat avoidance and minimization plan should be developed in consultation with the Department. For example, the beaches should be built such that the resulting beach has the same or similar sand type and slope as the existing beach. Additionally, areas of the built beach should leave gaps at intervals in order for the invertebrates to easily re-colonize the built beach on each side facilitating faster sandy beach invertebrate recovery times.

9. The bird breeding season between May 1st and August 31st should be avoided for the Western snowy plover and California least tern. If avoiding the bird breeding season is not feasible, then appropriate surveys and impact assessments should be conducted. Protection plans should be developed to

avoid foraging and nesting impacts if necessary. Surveys and impact assessments of over-wintering Western snowy plovers is also recommended. All reports should be reviewed and approved by the Department and other agencies.

10. If surveys indicate that Western snowy plover, California least tern, California grunion and abalone protection plans are necessary, they should be developed in consultation with the resources agencies.

11. Finally, a comprehensive mitigation and monitoring plan is required to address all adverse impacts (including unexpected impacts) to marine resources. After impact monitoring is completed, mitigation and monitoring plans should be developed in consultation with the Department and the other resources agencies.

Thank you for the opportunity to review and comment on the draft EIS/EIR. As always, Department personnel are available to discuss our concerns, comments, and recommendations. Please contact Ms. Loni Adams, Environmental Scientist, at (858) 627-3985 or ladams@dfg.ca.gov if you have any questions.

Sincerely,

Paul Hamdorf

Paul Hamdorf
Acting Regional Manager
Marine Region

cc: Department of Fish and Wildlife
Becky Ota- Belmont Office
Vicki Frey- Eureka Office
Loni Adams- San Diego Office

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CITATIONS

Dugan, J. E. and D. M. Hubbard. 2010. Loss of Coastal Strand Habitat in Southern California: The Role of Beach Grooming. Estuaries and Coasts. 33:1-11.

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*

DEPARTMENT OF PARKS AND RECREATION
Major General Anthony L. Jackson, USMC (Ret), *Director*
San Diego Coast District
4477 Pacific Highway
San Diego, CA 92110

February 26, 2013

US Army Corps of Engineers, Los Angeles District
Planning Division
Lawrence Smith, CESPL-PD
915 Wilshire Blvd.
Los Angeles, CA 90017

RE: **Encinitas-Solana Beach Coastal Storm Damage Reduction Project Integrated Feasibility Study and EIS/EIR**

Dear Mr. Smith,

Thank you for the opportunity to comment on the *Encinitas-Solana Beach Coastal Storm Damage Reduction Project Integrated Feasibility Study and EIS/EIR, San Diego County, California,* USACE, Dec. 2012. The California Department of Parks and Recreation (State Parks) is a Trustee Agency and is mandated by law to protect the natural, cultural and recreational resources found within the State Park system. Therefore, we submit the following comments to assist you in developing a project design that avoids or minimizes impacts to lands held in public trust. In general we support the goal of this project, to protect public access and recreational opportunities, without extensive hardening of the coastline. Our department is also concerned about the project's compliance with the American's with Disabilities Act (ADA). Given the extensive public use of this area, please make certain that all aspects (both during construction and upon completion) of the project comply with ADA.

State Parks remains concerned about several aspects of the project and requires further clarification and assurances that the project will not result in significant impacts to cultural and environmental resources on State Public Trust Lands. The first question is about archaeological findings at Moonlight State Beach, and the second is the necessity of staging at Cardiff State Beach.

1) Impacts to archaeological site at Moonlight State Beach
Within the last six months, federally-listed archaeological site CA-SDI-17402 (also listed as P37026506/SDM-S-83) has been located on the beach itself. Recorded prior to WWII by Malcolm Rogers of the San Diego Museum of Man, it should have shown up in your South Coastal Information Center search. The City of Encinitas has contracted with Dr. Mark Becker, ASM Affiliates, Inc. of Carlsbad, who is doing the site assessment at this time (mbecker@asmaffiliates.com, 760-804-5757), and would be able to consult with you. Section 4.8.3 statement (p. 264, line 20) that no onshore cultural materials were located needs to be changed. It is the shallow nature and unknown western boundary of this site (C14 dated so far from 3800 bp to 1800 bp) that would be affected by the use of existing sand to create an "L"-shaped berm to anchor sand placement (Section 3.3.4, p. 122, lines 37-40). Advanced testing of this western edge is essential in designing the berm construction and sand placement strategy. This is not just a monitoring situation at the time of construction, but something that could conceivably change the sand replacement strategy. Please consult with District Archaeologist Therese Muranaka (Therese.Muranaka@parks.ca.gov, 619-778-2553).

2A) Impacts to Cardiff State Beach from staging and transportation to receptor sites
State Parks would prefer that staging and access to Segment 2 (Solana Beach) occur at Fletcher Cove; if this is not feasible, then project staging and access must be designed to avoid impacts to State Park operations, public access, and the rocky substrate that supports archaeological and paleontological resources. Federally-registered archaeological site CA-SDI-13754 (San Diego Museum of Man site SDM-W-312), a well-known Archaic stone bowl site, rests just underwater at low tide in the shell formation. Staging (p. 123, lines 28-38), even only at beginning and ending phases of the project, or for fueling and maintenance purposes, poses a problem for these cultural resources. Underwater survey prior to site selection would be required. Paleontological comment regarding Cardiff 'reef' should be gathered from Dr. Tom Demere of the San Diego Natural History Museum (tdemere@sdnhm.org, 619-255-0232) as to the stability of the shell formation, which in turn supports the archaeological site. It is of note that Fig. 8.3-2 does not match Fig. 1.8-2 and Fig. 3.1-2, as it shows a more northern reach for sand replenishment, impacting the Cardiff 'reef' for more than just staging. Furthermore, to avoid impacts to park operations and public access, work schedules and staging locations would have to be agreed upon by the North Sector Superintendent Robin Greene (Robin.Greene@parks.ca.gov) and formalized with a Right of Entry (ROE) agreement.

2B) Impacts to rocky intertidal reef at Cardiff State Beach (Seaside Reef)
Although the project seeks to avoid placing sand on rocky intertidal habitat, State Parks is concerned that changes in sand drift patterns may negatively affect the habitat. The rocky intertidal habitat in the vicinity of Seaside Reef is the best and most accessible in the Encinitas/Solana Beach Area. It is critical that this location remains healthy and intact. The EIS/EIR proposes post-project monitoring to assess potential impacts and then prescribes a vague mitigation strategy for impacts in the event that they may occur. With a mitigation strategy that is as vague as the one proposed State Parks shall require that all efforts are made to avoid impacts to the rocky intertidal habitat at Seaside. A site-specific monitoring plan must be implemented to measure the effects of sand replenishment on the habitat quality of the nearby rocky intertidal habitat. This plan should be designed to be complementary with ongoing monitoring conducted by the Multi-Agency Rocky Intertidal Network (MARINe).

State Parks requests that project proponent meet with staff when 50% plans are available for review. State Parks will initiate internal project review; and negotiate terms and conditions of Right of Entry Permit for access to State Park Lands. To initiate this process please contact our CEQA coordinator Cindy Krimmel (Cindy.Krimmel@parks.ca.gov, 619-278-3771).

Sincerely,

Clayton A. Phillips, San Diego Coast District Superintendent

Cc Darren Smith, Acting District Services Manager
Robin Greene, North Sector Superintendent
Therese Muranaka, Archaeologist
Reading File

CALIFORNIA STATE LANDS COMMISSION
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February 26, 2012

File Ref: SCH # 2012041051

Mr. Larry Smith (CESPL-PD-RN)
U.S. Army Corps of Engineers
Los Angeles District
P.O. Box 532711
Los Angeles, CA 90053-2325

Subject: Draft Integrated Feasibility Study & Environmental Impact Statement/ Environmental Impact Report (DEIS/DEIR) for the City of Encinitas and City of Solana Beach Coastal Storm Damage Reduction Project, San Diego County.

Dear Mr. Smith:

The California State Lands Commission (CSLC) staff has reviewed the subject DEIS/DEIR for the Coastal Storm Damage Reduction Project (Project), which is being prepared jointly by the City of Encinitas and City of Solana Beach (Cities) and United States Army Corps of Engineers (USACE), which are lead agencies under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.) and National Environmental Policy Act (NEPA) (42 U.S.C. 4321 as amended). The CSLC is a trustee agency under CEQA because of its trust responsibility for projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters. Additionally, because the Project involves work within sovereign lands, the CSLC will act as a responsible agency.

<u>CSLC Jurisdiction and Public Trust Lands</u>

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The CSLC also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line (MHTL), except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. On navigable non-tidal waterways, including lakes, the State holds fee ownership of the bed of the waterway landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high water mark, except where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

Based on CSLC staff review of in-house records and maps, as well as information provided in the DEIS/DEIR, the two segments identified as the Project may involve ungranted sovereign lands under the jurisdiction of the CSLC. Prior to any beach nourishment and/or placement of structures on sovereign land, CSLC staff would require a MHTL survey and possibly a lease. The CSLC has issued multiple leases for shore protection within both segments. The Cities should contact the Public Land Manager listed at the end of this letter as soon as is convenient for further information on determining the extent of the CSLC's jurisdiction and obtaining a lease, if necessary, for the Project.

Project Description

The proposed Project is located along the Pacific Ocean in Encinitas and Solana Beach, San Diego County. Encinitas is approximately 10 miles south of Oceanside Harbor, and 17 miles north of La Jolla. In the last several decades, the shorelines of both cities have experienced accelerated erosion of the beaches and coastal bluffs.

The proposed Project area is divided into two segments. Segment 1 is located within Encinitas and extends from the 700 Block of Neptune Avenue to Swami's Reef and is approximately 2 miles long. Segment 2 encompasses the entirety of Solana Beach and stretches from Table Tops Reefs in Encinitas to the southern limit of Solana Beach and is approximately 1.7 miles long. The proposed Project would include the use of offshore sand deposits (borrow sites) for placement on the beach in Encinitas (Segment 1) and Solana Beach (Segment 2). The beach-fill design parameters have been determined by considering various combinations of beach-fill widths, beach nourishment locations and fill footprints, and different replenishment cycles. Initial placement volumes currently being considered range from 600,000 cubic yards (cy) to 800,000 cy for Encinitas and 700,000 cy to 1,700,000 cy for Solana Beach. The life of the proposed Project would be 50 years during which time periodic re-nourishment with lower incremental volumes of material would occur to maintain protection of the shoreline.

Environmental Review

The CSLC previously submitted comments on the Notice of Preparation for the DEIS/DEIR on May 18, 2012. In addition, the CSLC staff requests the Cities and the

USACE consider the following comments and suggestions when preparing the final EIS/EIR.

General Comment

1. Agency Coordination: As stated in our previous comment letter, some of the proposed activities appear to be located on sovereign land under the CSLC's jurisdiction and as such, implementation of the Project may require a lease from the CSLC. Although the DEIS/DEIR acknowledges coordination with the CSLC in Section 12.1.7 (Page 518), this section should also include a discussion of the Project proponent's intent in regards to CSLC's leasing requirements and responsibilities under the Public Trust Doctrine, which are mentioned in Section 10, Pages 507-508.

Project Description

2. A thorough and complete Project Description should be included in the DEIS/DEIR in order to facilitate meaningful environmental review of potential impacts, mitigation measures, and alternatives. CSLC staff believes that more detail should be incorporated into the description of construction activities (e.g., project equipment, construction access and staging areas, and impacts to access) to facilitate a better understanding of Project impacts, make for a more robust analysis of the work that may be performed, and minimize the potential for subsequent environmental analysis to be required.

   - **Project Equipment**: To assist the reader's understanding of the possible impacts from Project-related activities, CSLC staff recommends that the approximate placement of temporary pipelines, anchoring, and installation of mono buoys that may have the potential to impact sensitive resources within the Project area be included in the Project Description.

     Section 3.3.3 "Types of Dredge Equipment," (Page 121) of the DEIS/DEIR states that equipment for dredging and placement of dredged material for the proposed Project would be selected from two types of dredges (hopper dredge or cutterhead dredge). Per Section 5.3.2 (Page 333), the cutterhead dredge would create a continuous plume during dredge operation, while the hopper dredge would only create intermittent plumes during the dredging and disposal cycles. Due to the differences in turbidity produced by both types of dredge equipment, CSLC staff suggests that Section 3.3.4 "General Description of Construction Activities" indicate under what circumstances each type of dredge would be used and for what approximate percentage of the Project, to assist in the analysis of impacts involving this equipment.

     Section 3.3.4 states that existing sand at each receiver site would be used to build a small, "L"-shaped berm to anchor the sand placement operations; however, details regarding how the berms would be constructed is lacking. CSLC staff recommends that additional clarification of the equipment and techniques used to build the berms be included in the Project Description to facilitate a more thorough analysis of this Project component.

- **Construction Access and Staging Areas:** The DEIS/DEIR states that public parking areas are available for use by the construction crew, for staging purposes, occasional equipment storage, and fueling or maintenance activities. Please clarify if areas within the public parking areas would be reserved for these purposes to avoid access and traffic issues with the general public and whether local permits would be required.

- **Public Access:** Approximately 200 feet of beach (the point of discharge) and an additional 200 feet on either side of the point of discharge would be inaccessible to the public at each placement site throughout the Project. As heavy equipment would be maneuvered within these areas, public safety is of concern. Table ES-3 and Table 10.2-1 state that the USACE would generate a safety plan to restrict public access at receiver and notch fill sites and Section 5.13 provides some discussion of the plan; however, requirements of the plan are not specified. As impacts to public safety would likely be significant without the proposed plan, CSLC staff suggests the measure be identified in Section 5.13, and that it specify the plan requirements. For instance: preparation and approval of the plan two (2) weeks prior to construction and maps showing fencing and signage locations within the construction areas.

<u>Water Quality</u>

3. Although the DEIS/DEIR states that sands contained in all three borrow sites are comprised of medium to coarse-grained materials with no silt overburden, Section 5.3.2 (Page 333) asserts that "the primary potential for degradation of water quality from the proposed beach nourishment is through the generation of turbidity during dredging and sediment discharge to the beach." The DEIS/DEIR states that dredging and disposal operations would be monitored for effects on water quality and Best Management Practice (BMPs) would be implemented if turbidity exceeds water quality criteria; however, it is not clear what these BMPs would entail.

   In addition, as noted in Comment #2, the DEIS/DEIR does not clearly define what dredging equipment would be employed, even though the amount of turbidity could vary widely based on which dredge is used. To facilitate a clearer understanding of the potential adverse effects associated with the proposed dredging activities, please identify the equipment usage assumed for the impact analysis. If different dredges are to be used during Project construction, the effects of both should be included in the analysis. In addition, if conclusions are based on comparisons to previous projects, please provide justification for how the impacts are comparable (for example, the RBSP I project, to which the proposed Project is compared in Section 5.3.2 [lines 34-37]).

Biological Resources

4. The DEIS/DEIR determined that the Project would not affect two federally listed species found in the area (California least tern and western snowy plover) and that "effects on other wildlife species are expected to be short term and insignificant." However, there is little discussion and no proposed mitigation (other than to monitor turbidity levels) in regards to potential effects to offshore marine animals during borrow site dredging, even though Section 4.5.1, Page 220, states that several marine mammal species are known to occur within the Project area.

   CSLC staff believes marine impacts resulting from dredging activities may potentially impact marine resources and, therefore, recommends the development and implementation of a Marine Mammal and Turtle Contingency Plan to minimize impacts from construction equipment during dredging activities to marine resources. In addition, CSLC staff recommends that the Cities and USACE perform a more stringent analysis of potential impacts to marine animals in consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service, and provide mitigation measures for any potentially significant impacts identified.

Cultural Resources

5. Submerged Resources and Title to Resources: The DEIS/DEIR included the assessment of archival data including the California Shipwreck Database maintained by the CSLC, and determined that there is the potential for discovery of significant cultural resources during dredging activities (Impact CR-1). Mitigation Measure CR-1 would be implemented to avoid potentially significant impacts, which includes a monitoring program designed to identify cultural resources encountered during dredging operations. Monitoring procedures would be specified in a monitoring plan that is approved before dredging is initiated.

   CSLC staff requests that language be included in Mitigation Measure CR-1 related to the following statement: Title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the CSLC. Therefore, if any cultural resources are discovered on State lands during construction or operations, the Cities and/or USACE should consult with Senior Staff Counsel Pam Griggs at the contact information noted at the end of this letter.

Alternatives

6. Section 9.1 "Environmentally Superior Plan (CEQA)," states that Alternatives EN-1B and SB-1C are considered the Environmentally Superior Plans. However,

the tentatively recommended plan is composed of alternatives that have been identified as the National Economic Development (NED) plans for Segment 1 (Encinitas - EN-1A) and for Segment 2 (Solana Beach - SB-1A).

NEPA allows the elimination of alternatives that are not reasonable or feasible (reasonable means those alternatives which may be feasibly carried out based on technical, economic, environmental, and other factors). However, Section 21002 of CEQA states, in part, that: "... it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects...." In addition Section 21002 states that "...in the event specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects thereof."

To fully comply with CEQA, the DEIS/DEIR should include a summary statement of how and why the Environmentally Superior Plans noted above were determined to be infeasible.

Mitigation Measures

7. The correlation among Section 5 "Environmental Consequences," Table ES-3 "Summary of Design Features/Monitoring Commitments and Mitigation Measures (if necessary)," and Table 10.2-1 "Summary of Design Features/Monitoring Commitments" is unclear. The summary measures noted in Table ES-3 and Table 10.2-1 are not numbered and, therefore, it is difficult to decipher which are identified in Section 5, or conversely, which measures identified in Section 5 are noted in Tables ES-3 and 10.2-1. CSLC staffs suggest that the measures indicated in the Table ES-3, Table 10.2-1, and Section 5 be consistent with each other, and the Mitigation and Monitoring Plan, to improve clarity.

   In addition, several measures noted in Tables ES-3 and 10.2-1 would benefit from revised timing references. As an example, under "Water and Sediment Quality," a measure states "Generate plan for hazardous spill prevention and containment." The timing for generating this plan is "During operation of equipment on the beach or in the water." Generation of the plan should occur at a specified time prior to Project operations (e.g., 2 weeks), and be reviewed by an appropriate responsible agency or agencies.

   Other measures would benefit from more detail. For example, one measure states "Use proper Best Management Practice (BMPs) during vehicle fueling." In this case, the actual BMPs should be defined within the measure itself so that it contains specific, feasible, enforceable obligations, or a formula containing "performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way" (State CEQA Guidelines §15126.4, subd. (b)).

Thank you for the opportunity to comment on the subject DEIS/DEIR. As a responsible agency, the CSLC will need to rely on the Final EIS/EIR for the issuance of any new lease as specified above and, therefore, we request that you consider our comments prior to certification of the EIR.

Please send additional information on the Project as plans become finalized, as well as copies of future Project-related documents—including an electronic copy of the Final EIS/EIR, Mitigation Monitoring and Reporting Program (MMRP), Notice of Determination (NOD), CEQA Findings and, if applicable, Statement of Overriding Considerations—when they become available, and refer questions concerning environmental review to Cynthia Herzog, Staff Environmental Scientist, at (916) 574-1310 or via e-mail at Cynthia.Herzog@slc.ca.gov. For questions concerning archaeological or historic resources under CSLC jurisdiction, please contact Senior Staff Counsel Pam Griggs at (916) 574-1854 or via email at Pamela.Griggs@slc.ca.gov. For questions concerning CSLC leasing jurisdiction, please contact Grace Kato, Public Land Manager, at (916) 574-1227, or via email at Grace.Kato@slc.ca.gov.

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
Grace Kato, LMD, CSLC
Cynthia Herzog, DEPM, CSLC
Kathryn Colson, Legal, CSLC

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
e-mail: ds_nahc@pacbell.net

December 28, 2012

RECEIVED
JAN 02 2013
Planning-Comm Dev Dept
City of Solana Beach

Ms. Wende Protzman
United States Army Corps of Engineers – Los Angeles District CO-Lead with the Cities of Encinitas and Solana Beach
635 South Highway 101
Solana Beach, CA 92075

Re: Joint Document: NEPA and CEQA; draft Environmental Impact Statement and Environmental Impact Report (EIS/EIR) for the **"Encinitas-Solana Beach Coastal Storm Damage Reduction Project Integrated Feasibility Study Project ;"** located in the North Coastal Area north of Downtown San Diego; San Diego County, California

Dear Ms Protzman:

The Native American Heritage Commission (NAHC) is the California State 'Trustee Agency' pursuant to Public Resources Code §21070 for the protection of California's Native American Cultural Resources. The NAHC is also a 'reviewing agency' for environmental documents prepared under the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq*), 36 CFR Part 800.3, .5 and are subject to the Tribal and interested Native American consultation as required by the National Historic Preservation Act, as amended (Section 106) (16 U.S.C. 470; Section 106, [4f], 110 [f] [k], 304). The provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. 3001-3013) and its implementation (43 CFR Part 10.2), and California Government Code §27491 may apply to this project if Native American human remains are inadvertently discovered. Since a General Plan Amendment may be required this project then would be subject to California Government Code Section 65352.3 *et seq.*

The NAHC is of the opinion that the federal standards, pursuant to the above-referenced Acts and the Council on Environmental Quality (CSQ; 42 U.S.C. 4371 *et seq*) are similar to and in many cases more stringent with regard to the 'significance' of historic, including Native American items, and archaeological, including Native American items at least equal to the California Environmental Quality Act (CEQA.). In most cases, federal environmental policy require that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Statement (EIS).

The NAHC did conduct a Sacred Lands File (SLF) search of its Inventory and Native American cultural resources **were not identified** in the location you specified. However, there are Native American cultural resources in close proximity to the Area of Potential Effect or APE. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American traditional cultural places or cultural landscapes in any APE. While in this case, a search of the NAHC *Sacred Lands File* did not indicate the presence of any sites within the APE you provided, a Native American tribe or individual may be the only source for the presence of traditional cultural places. For that reason, enclosed is a list of Native American individuals/organizations who may have knowledge of traditional cultural places in your project area. This list should provide a starting place in locating any areas of potential adverse impact

The NAHC Sacred Lands File Inventory of the Native American Heritage Commission is established by the California Legislature pursuant to California Public Resources Code §§5097.94(a) and 5097.96. The NAHC Sacred Lands Inventory is populated by submission to the data by Native American tribes and Native American elders. In this way it differs from the California and National Register of Historic Places under the jurisdiction of the U.S. Secretary of the Interior.

The NAHC, pursuant to Appendix B of the Guidelines to the California Environmental Quality Act (CEQA) is designated as the agency with expertise in the areas of issues of cultural significance to California Native American communities. Also, in the 1985 California Appellate Court decision (170 Cal App 3rd 604), the court held that the NAHC has jurisdiction and special expertise, as a state agency, over affected Native American resources, impacted by proposed projects including archaeological, places of religious significance to Native Americans and burial sites.

Culturally affiliated tribes are to be consulted to determine possible project impacts pursuant to the National Historic Preservation Act, as amended. Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. The NAHC recommends as part of 'due diligence', that you also contact the nearest Information Center of the California Historical Resources Information System (CHRIS) of the State Historic Preservation Office (SHPO) for other possible recorded sites in or near the APE (contact the Office of Historic Preservation at 916-445-7000).

Attached is a list of Native American contacts is attached to assist you pursuant to Section 800.2(c)(1)(i) and Section 800.2(c)(2); they may have knowledge of cultural resources in the project area. It is advisable to contact the persons listed and seek to establish a 'trust' relationship with them; if they cannot supply you with specific information about the impact on cultural resources, they may be able to refer you to another tribe or person knowledgeable of the cultural resources in or near the affected project area.

Lead agencies should consider avoidance, in the case of cultural resources that are discovered. A tribe or Native American individual may be the only source of information about a cultural resource; this is consistent with the NHPA (16 U.S.C. 470 *et seq* Sections. 106, 110, and 304) Section 106 Guidelines amended in 2009. Also, recommended for serious consideration are the federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) NAGPRA (25 U.S.C. 3001-3013) as appropriate. In addition, consider the 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes and are supportive guides for Section 106 consultation. The aforementioned Secretary of the Interior's *Standards* include recommendations for all 'lead agencies' to consider the historic context of proposed projects and to "research" the cultural landscape that might include the 'area of potential effect.'

NEPA regulations provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Even though a discovery may be in federal property, California Government Code §27460 should be followed in the event of an accidental discovery of human remains during any groundbreaking activity; in such cases California Government Code §27491 and California Health & Safety Code §7050.5 will apply and construction cease in the affected area.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton
Program Analyst

State Clearinghouse

Attachment: Native American Contacts list

Kumeyaay Diegueno Land Conservancy
Mr. Kim Bactad, Executive Director
2 Kwaaypaay Court Diegueno/Kumeyaay
El Cajon , CA 91919
guassacl@onebox.com
(619) 445-0238 - FAX
(619) 659-1008 - Office
kimbactad@gmail.com

Inter-Tribal Cultural Resource Protection Council
Frank Brown, Coordinator
240 Brown Road Diegueno/Kumeyaay
Alpine , CA 91901
frankbrown6928@gmail.com
(619) 884-6437

Kumeyaay Cultural Repatriation Committee
Bernice Paipa, Vice Spokesperson
1095 Barona Road Diegueno/Kumeyaay
Lakeside , CA 92040
(619) 478-2113
(KCRC is a Colation of 12
Kumeyaay Governments

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2012041051; Joint NEPA/CEQA Document; Draft Environmental Impact Statement and Draft Environmental Impact Report (DEIS/DEIR) for the Encinitas-Solana Beach Damage REduction Project Integrated Feasibility Study; located in the north Coastal Area about 15 miles n north of Downtown San Diego; San Diego County, California

Department of Toxic Substances Control

Matthew Rodriquez
Secretary for
Environmental Protection

Deborah O. Raphael, Director
5796 Corporate Avenue
Cypress, California 90630

Edmund G. Brown Jr.
Governor

February 22, 2013

Ms. Josephine R. Axt, Ph. D.
Chief, Planning Division
U.S. Army Corps of Engineers
ATTN: Mr. Larry Smith (CESPL-PD-RN)
Los Angeles Disrict
P.O. Box 532711
Los Angeles, California 90053-2325

NOTICE OF AVAILABILITY OF A DRAFT INTEGRATED FEASIBILITY STUDY & ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL IMPACT REPORT FOR THE ENCINITAS-SOLANA BEACH COASTAL STORM DAMGE REDUCTION PROJECT (SCH#2012041051), SAN DIEGO COUNTY, CALIFORNIA

Dear Ms. Axt:

The Department of Toxic Substances Control (DTSC) has received your submitted Draft Integrated Feasibility Study & Environmental Impact Statement / Environmental Impact Report (EIS/EIR) for the above-mentioned project. The following project description is stated in your document:

"The proposed project is a beach fill only design with periodic re-nourishment on separate reaches in the Cities of Encinitas (Segment 1) and Solana Beach (Segment 2). Material will be dredged and transported via a either a hopper dredge with pump-out capability or a hydraulic pipeline dredge. For both the hopper and hydraulic pipeline dredging methods, sand would be combined with seawater as part of the dredging process to produce a slurry It would then be conveyed to the beach either via pipeline oer a combination of hopper dredge and pipeline. Existing sand at each receiver site would be used to build a small, "L"-shaped berm to anchor the sand placement operations. The slurry would be pumped onto the beach. Encinitas and Solana Beach shoreline study area is located along Pacific Ocean in the Cities of Encinitas and Solana Beach, in San Diego County, California."

Based on the review of the submitted document DTSC has the following comments:

1) DTSC provided comments on the project Notice of Preparation (NOP) on May17, 2012; some of those comments have been addressed in the submitted Draft EIS/EIR. Please ensure that all those comments will be addressed in the Final EIS/EIR for the Project.

2) If it is determined that hazardous wastes are, or will be, generated by the proposed operations, the wastes must be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code, Division 20, Chapter 6.5) and the Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5). If it is determined that hazardous wastes will be generated, the facility should also obtain a United States Environmental Protection Agency Identification Number by contacting (800) 618-6942. Certain hazardous waste treatment processes or hazardous materials, handling, storage or uses may require authorization from the local Certified Unified Program Agency (CUPA). Information about the requirement for authorization can be obtained by contacting your local CUPA.

If you have any questions regarding this letter, please contact Rafiq Ahmed, Project Manager, by e-mail at rahmed@dtsc.ca.gov, or by phone at (714) 484-5491.

Sincerely,

Rafiq Ahmed
Project Manager
Brownfields and Environmental Restoration Program

cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044
state.clearinghouse@opr.ca.gov.

CEQA Tracking Center
Department of Toxic Substances Control
Office of Environmental Planning and Analysis
P.O. Box 806
Sacramento, California 95812
Attn: Nancy Ritter
nritter@dtsc.ca.gov

CEQA # 3713

City of Del Mar

February 25, 2013

Ms. Wendé Protzman, Community Development Director
City of Solana Beach
635 South Highway 101
Solana Beach, CA 92075

Re: Comments on the City of Encinitas & City of Solana Beach Coastal Storm Damage Reduction Project Draft Environmental Impact Report (DEIR) and Environmental Impact Assessment (DEIS)

Dear Ms. Protzman,

This letter contains comments from the City of Del Mar ("the City") on the environmental documents noted above and referenced herein as the DEIR/EIS.

In preparing this comment letter, City staff reviewed the DEIR/EIS and attended a public meeting conducted on February 7, 2013 at the Solana Beach City Hall. Staff also relied on input from representatives of Del Mar's City's Community Services Department who oversee daily operations of the City's lifeguard services and, thereby, have intimate and historical knowledge of Del Mar's shoreline.

1. OVERVIEW OF CITY'S COMMENTS.

The City appreciates the opportunity to respond to the DEIR/EIS documents. The overall comments from the City of Del Mar are that:

A) The City is generally supportive of efforts to replenish sand along areas of Encinitas and Solana Beach, for the various reasons cited for the project in the EIR/EIS.

B) Despite this general support, the City has concerns that the DEIR/EIS calls for a large portion of the replenishment sand at beaches in Encinitas and Solana Beach to be dredged from a sand borrow site located immediately offshore of the Del Mar beachfront (Sand Borrow Site SO-5).

C) The relatively shallow depth of Sand Borrow Site SO-5 and its proximity to the Del Mar shoreline raises concerns about long-term and construction-phase impacts of multiple future dredging operations. The most notable of the potential long-term impacts include: the loss of sand from Del Mar beaches, alteration of wave action, and changes to the bathymetry at the mouth of the San Dieguito Lagoon where a major wetland restoration project was completed in 2012.

D) The project holds the potential for construction-phase noise impacts, especially if the sand dredging were to be carried out using cutter-head dredge, rather than hopper-type dredge equipment.

The following segments of this letter contain more specific comments and questions about the issues noted above. The City requests that the Army Corps of Engineers (ACOE) and the other parties responsible for the document respond to all comments and questions contained in this letter, in a manner consistent with the requirements of the National Environmental Protection Act (NEPA).

2. IMPACT ON DEL MAR'S SAND LEVELS DUE TO DREDGING OF SAND FROM BORROW SITE SO-5.

The DEIR/EIS for the project identifies the inclusion of a sand borrow site offshore of the north end of the Del Mar beach, designated as Borrow Site SO-5. Borrow Site SO-5 is approximately 279 acres in size and, as described in the DEIR/EIS is located, at its closest point, approximately 1,800 feet offshore from Del Mar's beach shoreline at the northern end of the City. The DEIR/EIS indicates that cumulatively, up 7.8 million cubic yards of sand is available at SO-5 and could be dredged from this borrow site in five events over the 50-year life of the project. The DEIR/EIS anticipates that the dredged sand would be transported, mostly by barge, to beaches in Encinitas and Solana Beach. The DEIR/EIS indicates that the top sand elevation in the borrow site ranges in elevation from minus 34 feet to minus 62 feet Mean Lower Low Water (MLLW). The borrow site off Del Mar (SO-5) is the largest of the three borrow sites identified for the sand replenishment project.

The borrow site now proposed is in the same location as the sand borrow sites used in two other beach sand projects, SANDAG's 2001 and 2012 Regional Beach Sand Replenishment Projects (RBSP I and II). As was the case when the City commented on the environmental document for SANDAG's RSBP II, the City has questions and concerns about whether dredging at Borrow Site SO-5 will affect sand levels on the Del Mar beach. The specific concern is whether the volume of sand to be removed from Borrow Site SO-5 would, over time, be replenished (filled in) by virtue of near-shore sand migrating to the dredged borrow site area with a resulting loss of sand from near-shore beach areas. This potential would increase if this sand borrow site is repeatedly used for sand replenishment projects over a 50-year period.

The DEIR/EIS indicates that the dredging of sand from Borrow Site SO-5 will not have an adverse impact on the levels of sand in the littoral cell in this area. The justification for this conclusion is that the depth of closure, the seasonal movement of sand along the beach, both on-shore and off-shore, extends only to a depth of minus 30 feet mean lower low water (-30 MLLW). However, the DEIR/EIS also indicates that the sand elevation level in Borrow Site SO-5, at its closest point to the shoreline, is at an elevation of minus 35 feet mean lower low water (-35 MLLW). That elevation leaves only a four-foot vertical elevation differential between these two critical contour elevations. This is a very narrow margin when considering that the borrow site, at its closest point to the area of the depth of closure, is only 1,800 feet away (horizontally). As a result, there is the potential that the extent of dredging at Borrow Site SO-5 could cause changes in the near-shore wave regime and consequently on the shoreline. These changes could include: 1) higher waves at certain locations, and 2) changes in wave breaking angles. This would, in turn, lead to a change in the longshore sediment transport, divergence of drift, and a change in the shoreline configuration. Some of the beach areas in the vicinity of the borrow site could accrete, and others could erode. Their significance to Del Mar's beach should be addressed. Again, while the City is supportive of beach sand replenishment in its neighboring communities for the reasons cited in the DEIR/EIS, the improvement to conditions at those beaches should not come at the expense of a loss of the asset that beach sand represents to Del Mar.

Little numerical modeling is provided in the DEIR/EIS to address the impact of Borrow Site SO-5 on City of Del Mar beaches. No information is provided in the DEIR/EIS about whether Borrow Site SO-5 will likely be "filled in" in the future and returned, more or less, to its original configuration. If so, how long would this process take? Also, if the borrow site does fill up with sand, where will this sand come from? These questions must be answered in order to accurately determine if the proposed dredging at Borrow Site SO-5 will have any significant impacts on City of Del Mar beaches. Equally important the DEIR/EIS includes no mitigations to address this potentially significant impact.

It appears that a great deal of the information in the DEIR/EIS is similar to that gathered for the referenced SANDAG RBSP II project's environmental documents. However, that previous environmental document did not address the question of whether there was any back-fill that occurred in the borrow area between the time of completion of the 2001 SANDAG RSBP and planning for RSBP II. Likewise the subject DEIR/EIS does not address the issue of backfilling of the previously used borrow site (SO-5). This is of special concern in that the borrow site off Del Mar's beach used for RBSP II (SO-5) was larger and closer to shore than was the case for the borrow site used in RBSP I.

Based on these factors, the City believes that the Final EIR/EIS needs to include more information on the issue of potential impacts of dredging at Borrow Site SO-5 on Del Mar's beach sand levels.

The City also requests that the DEIR/EIS include information on how the project will be monitored and managed to ensure that all dredging operations are confined to the limits that may ultimately be approved for Borrow Site SO-5.

3. RELIANCE ON BORROW SITE SO-5 FOR NUMEROUS RECEIVER SITES - ALTERNATIVES AND MITIGATION MEASURES.

The City believes that the DEIR/EIS should include alternatives for a broader range of sand borrow sites, both to minimize the potential impacts of multiple dredging operations involving such a large amount of material from Borrow Site SO-5.

The City also believes that if Borrow Site SO-5 continues to be identified as the source for the majority of dredged sand, the DEIR/EIS should include a program for monitoring sand levels along the Del Mar beach and in the borrow site itself so as to gauge impacts on sand levels in the near shore area and also to track the rate of back fill of sand in the borrow site. The City further believes that if Borrow Site SO-5 continues to be identified as the source for multiple sand dredging operations, the DEIR/EIS should include a mitigation program to off-set any loss of sand at Del Mar beaches that may occur as a result of the project following any of the future sand dredging operations. As with any mitigation measure, it would be important not only to identify the appropriate mitigation measures but also to identify their source(s) for funding. This is especially true for a project that includes multiple dredging events over the course of a half century.

4. IMPACT OF USE OF BORROW SITE SO-5 ON DEL MAR'S ABILITY TO PURSUE BEACH REPLENISHMENT PROJECTS.

Like Encinitas and Solana Beach, Del Mar's beachfront is subject to wave impacts, especially during winter storms. The City also faces the potential impacts of sea level rise. These factors increase the likelihood that Del Mar may pursue a replenishment project for its own beaches. The extensive use of Borrow Site SO-5 raises the concern that this area, which has been identified as being a desirable source of sand for beach replenishment projects, would be depleted when the City of Del Mar pursues a future sand replenishment project. The existence of a sand-borrow site immediately offshore from which sand could be pumped directly to affected beach areas would dramatically reduce the costs of such a project. Even if the sand available in SO-5 were not fully depleted by the project analyzed in the DEIR/EIS, the extensive near-shore dredging proposed would result in result a more difficult and expensive future dredging project for Del Mar.

For these reasons, the City requests that a mitigation measure be included in the DEIR/EIS requiring that the other borrow sites identified are used to the full extent identified for each in the DEIR/EIS before reliance on dredging from Borrow Site SO-5. The City further requests that the DEIR/EIS include a mitigation measure specifying that any dredging from SO-5 for this project be restricted so that operations start at those portions of the borrow site farther from the Del Mar shoreline, thereby leaving the sand in the areas closer to shore available for future sand replenishment projects pursued by the City.

5. IMPACTS TO TIDAL FLOWS OF THE SAN DIEGUITO LAGOON AND RIVER CORRIDOR HAVE NOT BEEN ADEQUATELY ADDRESSED.

A major restoration of the San Dieguito Lagoon intended to restore historic tidal flows in the area adjacent to Borrow Site SO-5 was completed in 2012. Considering that proximity, the project raises the following question: How will the quantity of sand extracted from Borrow Site SO-5 affect the tidal flows of the San Dieguito Lagoon project? The DEIR/EIS contains virtually no analysis of these potential impacts. The concern here is that a depletion of beach sand in the area of the Lagoon's mouth could skew the tidal flows and post-project beach profiles identified in the Lagoon Restoration Project. Such skewed results would have a detrimental effect on the long-term success of the Lagoon Restoration project.

6. <u>CONSTRUCTION-PHASE IMPACTS</u>.

The City is concerned about the construction-phase impacts of dredging at borrow site S0-5, specifically the duration of future dredging operations and the potential noise impacts of the dredging. With reliance on a major portion of sand using Borrow Site SO-5, the extent of such impacts would be concentrated in one location rather than being distributed to a number of dredging sites. On the issue of potential noise impacts, the City notes the major increase in the potential for noise impacts if dredging were to be accomplished using cutter-head equipment rather than hopper type equipment. The DEIR/EIS does not adequately address this differential in potential noise impacts including any on-shore equipment. For this reason, the City requests that the Final EIR/EIS contain a more in-depth analysis of the noise impacts and/or that the project be limited to the use of hopper versus cutter-head type dredging equipment.

7. <u>CONCLUSION.</u>

The DEIR/EIS predicts that there will not be an impact on the sand levels and/or wave action along Del Mar's beaches. However, in the City's view, the document is not adequate in providing information and analyses to support that conclusion. Nor does the document contain appropriate alternatives to address the very real potential of such impacts or mitigation measures and funding for such to address those impacts were they to occur. Additionally, the project holds the potential to limit the City of Del Mar's ability to have a nearby sand borrow site available should it pursue a sand replenishment project in the future.

The City asks that the concerns and questions included in this letter be addressed in the environmental document.

Thank you for the opportunity to comment.

Sincerely,

Adam Birnbaum, Planning Manager
City of Del Mar

cc: Del Mar City Council
Scott W. Huth, City Manager
Kathleen A. Garcia, Planning and Community Development Director
File

Surfrider Foundation San Diego County Chapter
9883 Pacific Heights Blvd, Suite D
San Diego, CA 92121
Phone: (858) 622-9661 Fax: (858) 622-9961

Josephine R. Axt, Ph.D.
Chief, Planning Division
U.S. Army Corps of Engineers
Los Angeles District
P.O. Box 532711
ATTN: Mr. Larry Smith (CESPL-PD-RN)
Los Angeles, California 90053-2325
Phone: 213.452.3246
Fax: 213.452.4204
Email: Lawrence.J.Smith@usace.army.mil

Mr Smith:
Thanks for the opportunity to contribute to the planning process of the Draft Encinitas-Solana Beach Coastal Storm Damage Reduction Project Integrated Feasibility Study & Environmental Impact Statement/Environmental Impact Report (Draft EIS/EIR). As stakeholders in this project, our staff and volunteers have dedicated hours of time meeting with the local cities and consultants as well as reviewing the over 1500 pages of the draft EIR/EIS and its 14 appendices. We thank you for the additional week you gave us to prepare our comments.

Surfrider Foundation is an organization representing 250,000 surfers and beach-goers worldwide that value the protection and enjoyment of oceans, waves and beaches. For the past decade, San Diego chapter of the Surfrider Foundation has reviewed and commented on coastal construction projects and policy in San Diego County. We take a project of this size and expense very seriously.

We feel your draft provides a fair look at the coastal processes that are affecting San Diego County. However, we feel the beach fill amounts associated with this project are too large and will negatively impact surfing conditions at surf spots within the project area. Surfing is an economic driver for San Diego County, and the project area contains iconic surf spots such as Swamis and Cardiff Reef, which are known worldwide for their unique and enjoyable waves. Surfrider is a member-driven organization that is dedicated to the preservation of surfing resources. Any impacts to surfing and surf spots are not acceptable to us, our membership, or the public at large. Given that the severe impacts to surfing identified in this study are not part of the monitoring or mitigation of this project, it is not possible for us to support any of the project alternatives. Our specific comments to the document follow.

Surfrider Foundation San Diego County Chapter
9883 Pacific Heights Blvd, Suite D
San Diego, CA 92121
Phone: (858) 622-9661 Fax: (858) 622-9961

IMPACTS TO SURFING NOT CONSIDERED IN ALTERNATIVES

Section 5.12.2 - Surfing Change Analysis

Impacts to surfing that are identified in Section 5.12.2 need to be considered in project alternatives.

The surfing analysis is a welcome change to beach nourishment project EIRs. It was well done and provides an accurate description of the core resource Surfrider is concerned with preserving. Given that, it makes it much harder to understand why the negative impacts to surfing in the project alternatives are not discussed in project design and the determination of fill amounts. According to your analysis (Appendix B Table 11.4.7), the amount of sand used in this project will impact Stone Steps, Table Tops, and Pillbox in ways detrimental to surfing with the likely transformation of these surf spots from reef break to beach break. We strongly object to the statement that follows this table, "the overall frequency of surfable waves within the study area are not expected to change significantly as a result of the Project alternatives." We believe the quality and frequency of the surfing experience will be severely altered by degrading prized reef breaks within the study area. Table Tops will be altered in a way that would cause a traditional reef break to transform into a beach break. Table Tops has an important distinction as a surf spot in San Diego County, as it is one of a few that is rideable when the larger, longer period swells of winter hit. It is unlikely that as a beach break Table Tops will continue to break in the same manner. The many surfers that surf there during larger swells will have to travel to other breaks out of the area, thereby reducing the recreational activity at the beach. Please view this 4-minute video (http://vimeo.com/61054486) which captures the reactions and comments of local surfers and members of the surf industry.

Additionally, the reef at Table Tops provides an interesting and unique nearshore environment of sea grass, birds, mammals, fish and invertebrates for families to explore. It is hard to imagine how this will look under a carpeting of sand.

UNCERTAINTY WITH MEDIAN GRAIN SIZE OF FILL MATERIAL

We request clarification regarding the grain size of the fill material. Please provide the median grain size to be used in the beach fill.

In the Surfing change analysis, there is language that suggests some unknowns about the median grain size of the fill material (d_{50}). For example, "However, if an increase in d_{50} is expected..." and "If the nourishments result in no change to d_{50}…". In "Impacts of coastal engineering projects on the surfability of sandy beaches" L. Benedet, T. Pierro, M. Henriquez, Shore & Beach, Vol. 75, No. 4, Fall 2007, p3, the authors note that beach fill can *"... affect surfing over the long-term if the fill sediments have a mean grain size and a sediment distribution that significantly differs from the sediments that are currently on the beach."*

SURFRIDER FOUNDATION SAN DIEGO COUNTY CHAPTER

Surfrider Foundation San Diego County Chapter

9883 Pacific Heights Blvd, Suite D
San Diego, CA 92121
Phone: (858) 622-9661 Fax: (858) 622-9961

SURF SPOT/SURFABILITY MONITORING NEEDS TO BE A COMPONENT OF PROJECT MONITORING

Section 4.13.6 - Surfing

Include mitigation for loss of surfing resources, which should allow adaptation of the fill amounts and frequency. Surfrider monitoring program will end before this project starts, but Surfability monitoring should be implemented at least one year before first beach fill.

Given the predicted impact to surfing within the project area, it is imperative that Surf Spot/Surfability monitoring be required as part of this project. As mentioned in section 4.13.6, Surfrider Foundation San Diego Chapter has designed and implemented a surf spot monitoring program in response to SANDAG's RBSP II, which seeks to provide understanding of the immediate and short term effects of beach fill on surf spot quality. Unfortunately, Surfrider's Surf Monitoring Study program will end in December 2013, and will not be able to provide the type of monitoring that this project requires. However, there is precedent for US Army Corps of Engineers (US ACOE) projects to include Surfability monitoring. The recently completed San Clemente Shoreline Feasibility study includes Surfability monitoring designed by Chuck Mesa (US ACOE SPL). We feel this methodology is sufficient for monitoring impacts to surfing resources. However, monitoring must be implemented for a year or more prior to any beach fill to provide an adequate baseline of surfing conditions at surf spots within the project area.

Mitigation of any observed impacts to surfing should be included in Section 5.12.

If surf spots will be impacted by this project, a reasonable mitigation plan should consist of an adaptive strategy to adjust subsequent fill amounts and frequency. If impacts are shown through the surf spot monitoring, then fill amounts should be reduced.

FILL AMOUNTS ARE TOO LARGE

Section 3.2 - Final Array of Alternatives

Decrease the beach width and fill amounts for all alternatives. Proposed beach fill volumes exceed traditional/historical beach widths for the region. There is very little understanding how this extreme amount of sediment will behave in project area.

It is clearly understood that the major goal of this project is protection of private property. To this end, the project has been designed to maximize the protective nature of beaches by building the widest beach possible, given an acceptable cost to benefit ratio. However, the beach widths that are considered as alternatives in this project are extreme and well beyond what typically occurs at beaches in front of bluffs. Additionally, it is unclear what the justification for such a large difference in the proposed beach widths and intervals for Solana Beach (200 feet every 13 years) and Encinitas (100 feet every 5 years). Please provide clarification on this disparity.

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It is well known that erosion of coastal bluffs provide sediment to the beach in front of them. In "Sea Cliffs, Beaches, and Coastal Valleys of San Diego County" (1984) by Kuhn and Shepard, they write of bluff-fronted beaches: "*Prior to 1978 the beaches in this area varied in width from 40 to 60 feet, with few sandbars offshore. This changed in 1978, however, when stormy weather caused extensive erosion of the bluffs and canyons, which in turn provided sediment that widened the beach by at least 40 feet and caused sandbars to form offshore."* In the current environment of armored bluffs, seawalls have trapped the bluff sand and prevent the beaches from building. However, even after large amounts of bluff erosion, area beach widths are not as wide as the 150-200ft beach widths proposed as alternatives for this project. In particular, the 200 feet width seems extreme and will likely cause temporary impacts (steepened beach, surfing impact) to last longer.

There is no explanation for using such large beach widths. The potential negative impacts to the nearshore environment, seagrass and surfing are an unknown that is difficult to forecast using state of the art computer modeling. Appendix H Section 1 states: *"...the influences of nearshore reefs on local sand movement are also poorly understood and likely complex because of reef geometry and orientation (e.g., channels between reefs may facilitate sand movement [AMEC 2005] and reef structure may retain sand [SAIC 2007])."*

We suggest, rather than depend on computer modeling, that the US ACOE follows the results from SANDAG's RBSP II project as they are being compiled. The Imperial Beach portion of RBSP II placed close to 4 times the amount of sand as compared to RSBP I. Significant unintended consequences have followed at Imperial Beach, including extensive flooding and damage to private property, the formation of dangerous beach profiles, significant sand migration within close proximity to federally protected resources, and significant reduction of surfing resources. The US ACOE needs to work closely with SANDAG to understand how those unintended consequences impacts came about. We strongly urge that this project reduce the amounts of sand as part of a "Locally preferred alternative" to avoid such negative intended consequences of placing such large amounts of sand.

SEDIMENT MONITORING NEEDS TO TAKE PLACE MORE THAN TWICE A YEAR

<u>Provide a sediment monitoring program that utilizes state of the art science and high frequency profiling similar to that which has been implemented by local scientists from Scripps Institution of Oceanography.</u>

The only way to understand the impacts and behavior of the larger beach fills proposed for this project is through intensive monitoring. The Draft EIR/EIS does not outline a very substantive monitoring program. Measuring profiles in Fall and Spring only, does not provide any information on how the fill is dispersed in the weeks and months after placement. Two profiles a year will only provide some seasonal dynamics, and will not provide adequate evidence to understand the impacts of the beach fill on surrounding nearshore environment and surf spot quality as they are happening. Please strengthen your monitoring program, and involve local

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experts at Scripps Institution of Oceanography who have implemented this high frequency monitoring during RBSP I and II as part of the Southern California Beach Processes Study (http://cdip.ucsd.edu/SCBPS/).

It is also unclear what the minimum beach width is that would trigger the next round of sand placement. In other words, if erosion rates are higher than expected and the beach narrows, is there a point when additional fill will be placed? These uncertainties could change both costs and severity/duration of impacts. Please clarify the mechanism to identify what conditions would call for more fill to be placed.

ECONOMIC ANALYSIS DOES NOT INCLUDE SURFING
<u>Section 3.5.2 needs to include recreational benefits and losses due to surfing quality.</u>

In order for this project to be authorized, the cost benefit ratio needs to include contributions to recreation. The cost of this project is too expensive for the US ACOE (and US tax payers) if only the protection of private property is the motivation. The study relies on a simple correlation of “towel space” to income generated by the linear extent of the beach. In the EIR, surfing and the quality of surf breaks are not considered recreation. Nor are the family and friends that travel with a surfer to another break. These are significant economic drivers and must be considered. Please re-examine the cost benefit ratio taking these benefits into consideration, and provide clear language as to how those benefits and impacts have been accounted for.

SURF SPOT AND BEACH DEGRADATION ECONOMIC ANALYSIS UNDER THE ALTERNATIVES ARE AN OMISSION AND ERROR IN THE STUDY
Economic analysis for the impact of increased backwash from the no project alternative is not studied. This is an error and omission. Backwash from seawalls will lead to diminished beach visits and decreases the value of of surrounding property that derives part of its value from walking to the beach. In addition, all recreational visits are impacted with this alternative.

In the Planned Retreat Alternative where seawalls are incrementally removed, there will be an anticipated decrease in backwash, increase in beach width, and increase in beach visits and surfing. This predicted increase in backwash if the seawalls are left intact should be used to determine the decrease in backwash if the seawalls are removed as part of a managed retreat strategy. Additionally, preserving the surfing and beach resources in a state that more closely resembles the present conditions would preserve property values of non-beachfront property in the project area as well as increasing the beach and surfing visits to the project area.

As discussed in Appendix B Section 11.4.1, “Eventually, for the without Project condition, with sea level rise, reflection and backwash are expected to increase significantly. A good example of what to expect can be found at the nearby Sunset Cliffs, as shown in Figure 11.4-3, where there is typically no beach and waves reflect off the cliffs regularly during high tide. As stated by one of the locals on Wannasurf.com, “Getting in and out at a low tide is not hard. Higher tide, big day? Better not surf here unless you are a really strong swimmer. Getting

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out of the water is challenging." Clearly, with a properly designed Managed Retreat Alternative, the natural bluff line would be allowed to retreat and this impact would be reduced or eliminated. Again, the analysis fails to include economic impacts of various alternatives as a result of surf break degradation or beach visit decreases.

MANAGED RETREAT PROPOSED DOES NOT MEET GUIDELINES OF A PROPER ALTERNATIVE

Section 3.1.4 needs to properly propose a Managed Retreat Alternative.

The total expected cost for the 50-year life of the project is nearly $177 million for a total project length of about 3.4 miles or $52 million per mile. The cost and time authorization for this project requires an exhaustive review of alternatives. Judging from the brevity and lack of explanation of a managed retreat plan, it is clear that this alternative was not taken seriously. The analysis does not provide any quantitative examination to provide a realistic comparison of costs for project vs. retreat. The breakdown of costs associated with Managed Retreat in Appendix E, is unfortunate in that the Cities have indicated they still intend to armor the cliffs when roads and infrastructure are threatened. This topic will take leadership and discussion that is absent from the EIR. Furthermore, a reason given for screening of retreat is that coastal cities don't want to support this. This is unfair to coastal cities, as their budgets obviously don't allow for buying out all of the bluff top houses. The "retreat scenario" that was modeled only relies on property owner action, not pro-active action by the cities or US ACOE. If the Federal taxpayers are asked to support the $177 million to authorize this project, at least a serious analysis needs to be done. Managed retreat is now being pursued as a preferred alternative for dealing with the aftermath of Super Storm Sandy, and will become more important in a period of sea level rise.

There are several errors in this analysis as appears in Section 3.1.4 and Appendix E Section 4. First, the US ACOE fails to propose any funding as part of the project alternative. As specifically quoted in the EIR/EIS, Surfrider proposed that, "The funding for property acquisition would come from a combination of Land Lease Fees for use and encroachment on Public Land with seawalls, Army Corps Shore Protection Funding and other Funding Mechanisms as outlined in the LUP Policy 4.36. Acquisition of blufftop property meets the US ACOE goals of Shoreline Protection in that the value of threatened structures will be preserved by buying blufftop property and removing structures at fair market value." The funding from US ACOE was completely ignored in the alternative analysis. Additionally, the analysis in Section 3.1.4 falsely concludes that the fees for Land Lease are $1000. This is not a fee. This is a deposit for a yet to be determined fee. From the LUP, "The City is collecting a $1,000 per linear foot fee deposit to be applied towards a future Public Recreation/Land Lease Fee. Therefore, until such time as a final Public Recreation / Land Lease Fee is adopted by the City following Coastal Commission approval of such a payment and certification of an LUP amendment adding the fee program to the City's LCP, the City will continue to impose an interim fee deposit in the amount of $1,000 per linear foot to be applied as a credit toward the Public Recreation/Land Lease Fee. The City shall complete its Public Recreation/Land Lease fee study within18 months of effective certification of the LUP."

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Additionally, the alternative improperly includes replacement of private stairways as a cost (Appendix E Section 4.4.4). Such replacement of stairways is inconsistent with the LUP as adopted by the Solana Beach City Council as well as with guidance on amendments from the Coastal Commission. Private beach stairways are non-conforming uses that must eventually be abated or converted to public use.

The analysis also assumes that threatened public infrastructure would automatically lead to applications for armoring by the city. The cities actually claim that if the first row of houses were lost they would attempt to armor the entire stretch in order to protect their shore-parallel roads and utilities. This scenario (Section 4.5 of Appendix E) was calculated simply as a way to show possible expenses if the Corps does not undertake any project, and does not represent the potential costs of a managed retreat project. This analysis does not appear to account for the fact that much of the coast is already armored, and instead uses a natural bluff erosion rate. Clearly along stretches that currently have seawalls or revetments the true bluff retreat rate would be much slower, even without the nourishment project. This would allow time for relocation of infrastructure as it naturally deteriorates irrespective of marine erosion thus alleviating the City's fear of infrastructure damage and the process outlined in Section 4.3. In fact the GSL line for 75 years of erosion in the City of Solana Beach indicates that the setback line is approximately Pacific Ave. An additional source of revenue for acquisition of Blufftop Properties would be from acquisition and rental prior to removal. The economic justification of the entire project relies on this worst-case scenario whereby the entire first row of homes, their contents and the land they sit on will eventually be lost to catastrophic bluff failures if the Corps project is not built.

Further confusing to the description of Retreat is this statement in Section 4.3, "Structure loss, structure demolition & removal, and land loss valued at non bluff-top price levels are additional damage categories present in the Retreat Scenario but not present in the Armoring Scenario because the Retreat Scenario models parcel owners that do not or cannot react in time to secure the necessary seawall construction permits, financing, and construction experts prior to structure failure brought about by episodic erosion events. The Retreat Scenario also distinguishes between bluff-top and non bluff-top land value to account for land loss that occurs between the bluff edge and structure as well as land loss that occurs after the structure has failed." If the Retreat alternative were truly analyzed assuming acquisition, this statement should not be a part of describing the option.

In the same section, the No Project Alternative with seawalls omits, and in error fails to include an analysis of the impact on adjacent properties through loss of beach and recreation including surfing. Recreation is solely analyzed based on the value of towel space. This is unacceptable, and must be rectified.

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THE ENGINEERING ANALYSIS FAILS TO PROPERLY CHARACTERIZE THE IMPACTS OF SEA LEVEL RISE ON EROSION PROCESSES

Appendix C carefully analyzes the effect of sea level rise on the erosion over the past 6000 years. Appendix C Section 5 states,

> "Before anthropogenic changes in the 20th Century, the coastal bluffs retreated in accordance with long-term sea level rise since the last glacial maximum. By approximately 6,000 years ago, sea level had rapidly risen to within 12 to 16 ft of the present level. The rate then slowed by an order of magnitude to approximately 0.002 foot per year from an earlier rate of 0.028 foot per year. The configuration of the bluffs was similar to the pre-anthropogenic configuration throughout the more recent period of slow sea level rise, consisting of a transient sandy beach, sea cliffs and upper bluffs. Using this history of sea level rise, the geologic retreat rate before anthropogenic changes can be estimated by finding the distance on the shore platform between the sea level or the sea cliff and the 12- and 16-foot depth contours. Where the base of sea cliff is below sea level, an assumption is made that the same condition existed previously and the depth below sea level is used to adjust the 12-foot or 16-foot depth downward. Anthropogenic influences typically consist of flood protection and intensive urbanized and or modern agricultural development that has occurred within the last ±125 years along the coastal areas in the vicinity of the project. This type of influence has gradually reduced the available load of sediment that was naturally present in larger amounts as beach nourishment fill during pre-anthropogenic times.
>
> For the Encinitas/Solana Beach coast, eleven profiles of nearshore bathymetry are available in Appendix B. Evaluation of these profiles using the 12-foot depth indicates the geologic rate of coastal bluff retreat is 0.11 foot per year, with about 640 ft of retreat occurring gradually in the last 6,000 years (Table 4.1-1)."

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32 **Table 4.1-1 Geologic (Pre-Anthropengic) Rate of Coastal-Bluff Retreat**

Transect	Location	Reach No.	Source	R_{total}* (ft)	R/yr (ft/yr)	0 to -12' Shore Platform Slope
SD710	Parliament Road	1	COE	509	0.085	0.024
SD700	Grandview Street	1	COE	639	0.107	0.019
SD695	Jupiter Street	1	COE	658	0.110	0.018
SD690	Jason Street	1	COE	654	0.109	0.018
SD680	Beacons Beach	2	COE	695	0.116	0.017
SD675	Stone Steps	3 / 4	COE	651	0.109	0.018
SD670	Moonlight Beach	4 / 5	COE	640	0.107	0.019
SD660	Swami's	6	COE	580	0.097	0.021
SD650	San Elijo Park	6	COE	635	0.106	0.019
SD620	Seaside	7 / 8	COE	670	0.112	0.018
SD600	Fletcher Cove	8	COE	696	0.116	0.017
Average: Using 12-foot depth Using 16-foot depth				639 852	0.107 0.142	0.019

Encinitas-Solana Beach Shoreline Study C-20 Draft Report

The implication is that the 6000-year sea level rise trend corresponds to an approximate erosion rate of 0.1 to 0.14 ft/yr with a sea level rise trend of 0.002 ft/yr.

In Appendix B, it is reported that over the last century, sea level rise has accelerated to between 0.003 to 0.008 ft/yr. Specifically in La Jolla, the rate is reported as 0.0068 ft/yr. This is a rate 3 times higher than the 6000-year trend. This may imply that the erosion rate would be correspondingly higher, yet all of the erosion loss appears to be attributed to loss of sand in the study and project discussion. This would predict an erosion rate of 0.3 to 0.42 ft/yr, which corresponds to observed rates in the project area. The omission of this conclusion is a gross distortion of the presumed need for the project.

From Appendix B,

> "3.2.3 Sea Level Rise
>
> Long-term changes in the elevation of sea level relative to the land can be engendered by two independent factors: (1) global changes in sea level, which might result from influences such as global warming, and (2) local changes in the elevation of the land, which might result from subsidence or uplift. The ocean level has never remained constant over geologic time, but has risen and fallen relative to the land surface. A trendline analysis of yearly Mean Sea Level (MSL) data recorded at La Jolla in San Diego County 1924 to 2006 indicates that the MSL upward trend is approximately 0.0068 feet per year, as shown in Figure 3.2-1.

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According to the Intergovernmental Panel on Climate Change (IPCC), global average sea levels have risen approximately 0.3 feet to 0.8 feet over the last century and are predicted to continue to rise between 0.6 ft and 2.0 ft over the next century (IPCC, 2007). In a 2009 study performed by the Pacific Institute on behalf of the California State Coastal Conservancy (SCC) scientific data gathered from 1980 to 1999 suggests that global sea level rise has outpaced the IPCC predictions (Rahmstorf, 2007). To the contrary, an analysis of U.S. Tide Gauge records spanning from 1930 to 2010 found the rate of sea level rise for this period to be decelerating (Houston and Dean, 2011). Potential effects from an acceleration of sea level rise on coastal environments, such as erosion, net loss of shorefront, increased wetland inundation, and storm surge have the potential to displace coastal populations, threaten infrastructure, intensify coastal flooding, and ultimately lead to loss of recreation areas, public access to beaches, and private property."

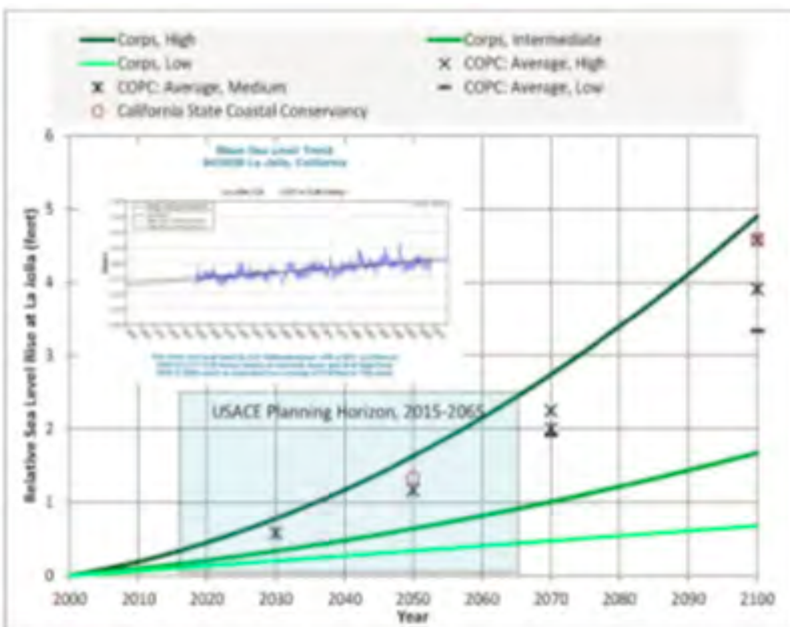

Figure 3.2-2 Relative Sea Level Rise Estimates

Further discussed in Appendix B above is that predicted Sea Level Rise would make the rate annually 0.006 ft/yr to 0.02 ft/yr. This would keep the same erosion rate as has occurred in the last century to a rate about 3 times higher or 1.2 ft/yr. Even at this high end estimate of 1.2ft/yr, about 60 ft of erosion would occur in the project area over the 50 year project life likely irrespective of sand input.

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In conclusion, we recognize that projects like the one proposed are part of our future. We appreciate the balancing act that coastal managers must perform in order to protect coastal property while protecting coastal resources. Generally, we prefer beach fill projects to hard structures. However, the volume of sand proposed for this project will cause negative impacts to the coastal resources our membership is most concerned about. We hope you will take our comments seriously and we look forward to further discussions with you regarding this project.

Sincerely,

Tom Cook
Expert Advisor and Beach Preservation Co-Chair
San Diego Chapter
Surfrider Foundation

Jim Jaffee
Expert Advisor and Beach Preservation Co-Chair (Solana Beach Resident)
San Diego Chapter
Surfrider Foundation

Kristin Brinner
Beach Preservation Volunteer (Solana Beach Resident)
San Diego Chapter
Surfrider Foundation

Julia Chunn-Heer
Campaign Coordinator (Encinitas Resident)
San Diego Chapter
Surfrider Foundation

SURFRIDER FOUNDATION
SAN DIEGO COUNTY CHAPTER

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February 4, 2013 ***Delivered via email***

Ms. Wende Protzman
wprotzman@cosb.org
City of Solana Beach
635 South Highway 101
Solana Beach, CA 92075

Kathy Weldon
KWeldon@encinitasca.gov
City of Encinitas
505 S. Vulcan Ave.
Encinitas, CA 92024

RE: Request for Extension regarding Army Corp of Engineers Coastal Storm Damage Reduction Project Comments

Dear Ms. Protzman and Ms. Weldon,

The Surfrider Foundation is a non-profit, environmental organization dedicated to the protection and enjoyment of the world's oceans, waves and beaches for all people, through a powerful activist network. The Surfrider Foundation has over 50,000 members and 80+ chapters in the United States. Please consider this request on behalf of the San Diego Chapter of the Surfrider Foundation.

As avid users of our coastline, the Surfrider Foundation is keenly interested in this proposed project, and would like to fully participate to the process allowed under CEQA. However, due to the timing of the release of the EIR/EIS for this project, and to the sheer size of the documents, we are respectfully requesting a 30-day extension to provide meaningful comments.

As you know the EIR/EIS was released on Dec 28th, 2012 during the holiday season. The demands associated with the start of the year, and previous commitments to priority projects in the same area did not allow us to begin review of the document when it was first released. In addition, due to the extensive size and complexity of the documents, we feel that more than 60 days is necessary to complete a proper review.

Not only is our organization keenly interested in this project, but the public is as well. We believe the twenty days between the public hearings on this project and the deadline for comments is not sufficient.

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Due to our previous experience, subject matter interests, and relevant expertise we believe our comments are crucial in strengthening the EIR/EIS. Please allow for meaningful public participation in this potentially long-term project and extend the comment period.

Thank you for your time and consideration.

Sincerely,

Julia Chunn-Heer
Campaign Coordinator

Jim Jaffee and Tom Cook
Expert Advisors
San Diego Chapter
Surfrider Foundation

From:	John Steel
To:	Smith, Lawrence J SPL
Cc:	"David Ott"; lheebner@cosb.org; tcampbell@cosb.org; mnichols@cosb.org; dzito@cosb.org; pzann@cosb.org; wprotzman@cosb.org
Subject:	US Army Corps of Engineers Encinitas-Solana Beach Coastal Storm Damage Reduction Feasibility Study
Date:	Sunday, February 10, 2013 1:32:33 PM

Attention: Lawrence J. Smith

Re: US Army Corps of Engineers Encinitas-Solana Beach Coastal Storm Damage Reduction Feasibility Study

My name is John Steel. I am the President of the Surfsong Owners Association at 205-243 South Helix Avenue, Solana Beach, CA 92075. We are a 72 Unit condominium complex on the bluffs overlooking the Pacific Ocean and adjacent to the Solana Beach Post Office. The current market value of our condominium property is approximately $86,400,000.00. I attended the ACOE Public Hearing on February 7th at the Solana Beach City Hall. Thank you and your ACOE team for the time and money invested to date to craft a viable plan to protect our ocean front property from further erosion.

The Surfsong HOA Board of Directors is strongly supportive of the Army Corps of Engineers proposed Storm Damage Reduction (beach sand nourishment) Plan for Encinitas and Solana Beach.

Surfsong HOA Bluff Failure & Cost History:

* Since early 2000, Surfsong HOA has had 5 actual and and/or imminent bluff failures on our property.
* To date, Surfsong HOA owners have invested $3,569,340.00 to build sea walls (actual construction costs) to protect our bluffs from further erosion.
* In addition, we have spent another $1,120,173.00 on engineering and consulting, sand mitigation fees, beach access fees, beach mitigation fees, permits, etc.
* To date, the 72 Surfsong HOA owners have invested a total of $4,689,513.00 to protect our property with sea walls. This amounts to a total cost per owner of $65,132.00.

Surfsong HOA Future Sea Wall Needs/Costs:

* Our bluff consultants and sea wall engineers forecast that we will need to permit another $2,285,000.00 (actual construction cost) for sea wall construction within 8-10 years, if the beach in front of our condominium complex is not “nourished” with additional sand.
* We estimate that associated engineering costs, access fees, land lease fees and mitigation fees will be an additional $2,774,332.00.
* The total future costs to the owners of Surfsong HOA property (without beach nourishment) is projected to be $5,059,322.00 or $70,268.00 per owners.
* In summary, without an effective beach nourishment program, Surfsong owners will pay a total of $9,748,845 (or $135,400 per owner) between 2000 and 2020 to protect our property from further bluff erosion and bluff failure.
* Additionally, with the uncertainty surrounding the “permitted retention and life” of our current and

future sea walls, the market value of our condominium property may be perceived to be compromised.

Bottom Line: Surfsong HOA strongly supports the Army Corp of Engineers' plans to nourish the beaches in front of our complex with additional sand, thus retarding further erosion of the bluffs and potentially mitigating the need for additional armoring.

* Our properties would be better protected from further erosion.
* The need for additional sea walls would be diminished.
* The perceived market value of our property would be enhanced.
* Our 72 owners could potentially avoid spending an additional $5,000,000.00 (about $70,000.00 per owner) to build future sea walls.

Thank you for your consideration of this information and our "Get Sand" needs.

John Steel

President, Surfsong Owners Association

Mailing Address: PO Box 747, Solana Beach, CA 92075

E-mail: gosurfsong@cox.net

Phone: 858-254-5418

From:	Ming, Susan M SPL
To:	Smith, Lawrence J SPL
Cc:	Abellera, Marriah S
Subject:	FW: Public Comment re sand replenishment (UNCLASSIFIED)
Date:	Monday, January 07, 2013 11:51:21 AM

Classification: UNCLASSIFIED
Caveats: NONE

Hi Larry

First comment letter/email. Are you printing these all out and logging them in??

Thanks, Susie

From: Leslea Meyerhoff [mailto:leslea.meyerhoff@att.net]
Sent: Monday, January 07, 2013 11:02 AM
To: Ming, Susan M SPL
Subject: Fw: Public Comment re sand replenishment

Comment letter on the EIR EIS

From: kelly tucker [mailto:kellytucker1@hotmail.com]
Sent: Friday, January 04, 2013 12:34 PM
To: Wende Protzman
Subject: Public Comment re sand replenishment

To Wende Protzman:

Hi Wende. We are Solana Beach residents and want to voice our support for the proposed 2015 sand replenishment project. THANKS to you and the City of Solana Beach for pursuing this. Our vote is for the sooner, the better. Can the sand replenishment project be moved up to 2014? Also our vote is for the more sand, the better. With global warming and the resulting higher ocean levels, you can't stroll along our beach except at low tide, and during some of the higher low tides you still can't stroll along our entire beach. We're sure tourism in Solana Beach will increase dramatically once the sand replenishment is in place.

Also, is there any way we can get around not putting sand north of Tide Park? I've heard there's an issue about some sort of seagrass or something, but that doesn't seem to be a good enough reason to block people from walking along Solana's beach up to the large parking lot on the beach in Cardiff, and beyond to Encinitas if they so desire.

We've always wondered why we see huge, government-funded sand replenishment projects all along the East Coast from Florida to New York, and also in Hawaii. We've always wondered why we don't get the same treatment here in California, especially since we are the most populated state and pay the highest amount of taxes into the Federal Treasury. We wonder why our senators and representatives don't get more sand replenishment projects for our beaches?

I would also like to point out that although we are lifelong Democrats and environmentalists, we think the Surfriders organization is an overly radical, extremist organization that doesn't speak for most environmentalists like us. I don't know the Surfriders position on this issue, but I hope the City of Solana Beach doesn't bend to whatever the Surfriders want. There is a lot of feeling in Solana Beach that the Surfriders control the Solana Beach City Council, which seems to think the Surfriders represent mainstream environmentalists but they most certainly do not.

Thank you very much for pursuing this sand replenishment project.

Michael Tucker in Solana Beach
(858) 880-8605

Classification: UNCLASSIFIED
Caveats: NONE

From:	Steve Aceti
To:	Smith, Lawrence J SPL
Cc:	Ming, Susan M SPL; "Kim Sterrett"; "Katherine Weldon"; "Leslea Meyerhoff"
Subject:	Draft Integrated Feasibility Study and Environmental Impact Statement /Environmental Impact Report (EIS/EIR) for the Encinitas-Solana Beach Coastal Storm Damage Reduction Project
Date:	Tuesday, February 26, 2013 12:15:13 PM

Dear Dr. Axt,

On behalf of the California Coastal Coalition's (CalCoast) board of directors and its local government and private sector members, I want to thank the Los Angeles District of the U.S. Army Corps of Engineers (USACE) staff, as well as USACE personnel around the country, the Department of Boating and Waterways, USACE consultants, and city staff in Encinitas and Solana Beach for the hard work and funding that was necessary to prepare the Draft Integrated Feasibility Study and EIS/EIR for the Encinitas-Solana Beach Coastal Storm Damage Reduction Project (Feasibility Study). The Feasibility adequately describes the bluff and shoreline challenges facing the cities of Encinitas and Solana Beach (Cities) and proposes alternatives that ensure these challenges would be addressed over a 50-year term. Improved shoreline and bluff stabilization, increased public safety, better recreation opportunities and environmental restoration of important habitat can best be achieved by a plan for periodic beach nourishment in the Cities.

CalCoast supports the NED Plan for Segment 1 (EN-1A) and the NED Plan for Segment 2 (SB-1A). We are concerned, however, about any alternatives that would result in sand being placed at intervals longer than five years because that could result in a loss of project benefits before the next cycle of beach nourishment occurs. In addition, we have heard unofficially that the President's Office of Management and Budget (OMB) has raised the benefit/cost ratio (BCR) for USACE-sponsored storm damage reduction projects. If what we have heard is true, the BCR for the proposed projects in the Cities would not meet OMB's guidelines. We hope OMB has not raised the acceptable BCR for projects like the ones described in the Feasibility Study or, in the alternative that something can be worked out between the USACE and OMB in this regard.

We look forward to the proposed projects being constructed and we would be happy to do whatever we can to assist the USACE and the Cities toward that end.

Sincerely,

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The California Coastal Coalition (CalCoast), is a non-profit advocacy group comprised of 35 coastal cities; five counties; SANDAG, BEACON and SCAG; private sector partners and NGOs, committed to protecting and restoring California's coastline through beach sand restoration, increasing the flow of natural sediment to the coast, wetlands recovery, improved water quality, watershed management and the reduction of marine debris and plastic pollution.

COMMENTS ON THE USACE EIS/EIR FOR THE ENCINITAS-SOLANA BEACH SHORE COASTAL PROTECTION PROJECT

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Introduction by Axt only cites borrow sites at SO-5, MB-1, SO-6 (line 24; what about SM-1, which is mentioned in numerous sections.

Introduction by Axt; lines 27-29: "Impacts associated with the Encinitas alternatives have been evaluated for all resource topics 28 and were determined to be less than significant for all resources except cultural resources (discovery) and noise during construction." Based on failure to assess the impacts on the "trees" in the borrow sites, this evaluation is badly flawed, especially in view of the 50-year duration of this project and the large areas that will need to be dredged to accomplish the goals of the project. Moreover, the nearshore evaluations failed to assess the potential impacts on the long-lived Pismo clams, which are also "trees". See my comments later in this regard.

Depth of closure" is mentioned in numerous places relative to borrow sites (e.g., S-14, line 17, p, 65, line 5; p. 67, line 31; p. 94, line 9; p. 331, line 36) but not described or defined. This seems important in view lf the proposed shallow depths of the borrow sites compared to the depths of the same borrow sites in to earlier dredge programs.

Borrow site designations – SO-5, MB-1, SO-6; what about SM-1? It is omitted from discussions at several points (e.g., S-14, line 18).

Table ES-2. All three EN alternatives are listed as having "less than significant" biological resources. This is not supported by valid research in the ecosystems.

S-10, line 16: Appropriate studies have not been conducted to assess cumulative impacts for borrow sites.

S-10, line 35: Appropriate studies have not been conducted to assess long-term significant impacts for borrow sites.

Table ES-3. Should add an environmental commitment to avoid the borrow sites with highest ecological value based on the "trees" in the ecosystem.

p. 91, line 25: Managed Retreat through p. 93, line 28: I object to the omission of Managed Retreat from the alternatives under consideration in this EIS/EIR. All of the alternatives presently proposed for consideration (beach nourishment every 5-10 years, notch fills, the hybrid beach nourishment/notch fill approach, or seawalls) are merely "Band-Aids" fixes, designed to "kick the can down the road" for the next 50 years. All have been employed previously in local areas and will not deal with eroding beaches and bluffs in a permanent and rational manner.

It is my impression that neither USACE nor its consultants did a thorough investigation of the Managed Retreat option or discussed it seriously. My impression is based on a comparison of the Literature Cited section in the EIS/EIR and a quick Google search using the search term “managed retreat” in conjunction with several geographic locations (e.g., California, New York, or South Carolina). Such a search reveals a very large literature base describing or evaluating the manage retreat alternative. Based on this search, it is clear that managed retreat is becoming national coastal policy and is being implemented in many locations in the U. S. Moreover, it is being seriously considered or implemented in many countries around the world that are subject to coastal erosion and sea-level rise. Nevertheless, the term “Managed Retreat” does not appear in the Literature Cited section and the only document cited in the Managed Retreat discussion to present an opposing view in the EIS/EIR is the comments letter by the Surfrider Foundation regarding the CEQA NOP. The EIS/EIR does not cite or discuss any of the recent studies or conclusions by numerous investigators in several regions of the U. S.

In contrast, Managed or Planned Retreat and other variants are being employed at multiple locations along the coast of central and southern California, in New York State, and in South California. This approach is being considered as a very important and rational approach in many coastal regions to a problem that is growing in the U. S. Revell et al. (2008), included Rolling Easements, Relocation and Removal as some of the approaches for accomplishing Managed Retreat. Revell and Heberger (2008) discuss erosion problems that occurred at Fort Ord and Monterey Bay and describe how that approach resolved the issues permanently. Revell (2011) discussed these issues and several non-traditional approaches for resolving them in a more permanent fashion.

Battalio and Lowe (2009) discussed projects at Pacifica State Beach, south of San Francisco; Surfer’s Point, in Ventura; Coyote Point Park, in San Mateo; Goleta Beach, north of Santa Barbara; and the failed project and wasted expenditures and effort at Ocean Beach, near San Francisco.
http://www.coastalconference.org/h20_2009/pdf/2009presentations/2009-10-28-Wednesday/Session%204C-Sea%20Level%20Rise%20II/Battalio_Managed_Retreat_and_Realignment.pdf

Writing in ESA PWA (2012) regarding Monterey Bay, Revell et al. reported, “Managed retreat is more cost effective with higher net benefits over the long term than most of the traditional erosion mitigation strategies. Rolling easement, conservation easement and fee simple are all superior to armoring over these entire reaches.
http://montereybay.noaa.gov/research/techreports/esapwa2012.pdf

Eiser (2011) described the long-term issue of beach erosion at Wild Dunes, Kiawah Island, South Carolina (1970s to present). The solutions to date involve a wide variety of approaches, including blends of Managed Retreat” and beach nourishment. The state spends $3-5 million per year to protect the residences and resorts in this area.

From this brief survey, it is clear that many Federal, state, and local agencies and NGOs (e.g., Surfrider Foundation) are proving serious discussions and implementing “Managed Retreat” and a variety of non-tradition approaches for dealing with coastal erosion and rising sea-level issues. NOAA Ocean & Coastal Resource Management (2007) was discussing this issue over five years ago. Their intent appears to be to approach this long-term problem in a rational and realistic manner, and avoid wasted expenditures, and just “kicking the can down the road” for future generations. The brief treatment and rejection of this alternative in the EIS/EIR, is based primarily on a very limited cost-benefit analysis that does not consider most alternatives evaluated in detail by ESA PWA (2012). It seems this lack of discussion of the various alternatives has the potential of misleading the Cities of Encinitas and Solana Beach and led them to accept the USACOE’s preferred suite of alternatives. It seems quite unfortunate and shortsighted that the USACOE has eliminated further discussion of this forward-thinking and rationale approaches for this long-term (50-year) project.

p. 93, Table 3.1-1: Are the asterisks for Reaches 6 and 7 correct? The asterisk for Reach 7 is the only one of two in the table that is explained.

P. 98, line 11: report is ambiguous about whether SO-7 will be used as a borrow site.

p. 117, line 5: report mischaracterizes the borrow sites according to information presented in Appendix C. The sites propose are near the sites characterized in earlier projects but are different plots of habitat that have not been surveyed for biological characteristics, which vary considerably on a spatial basis (see discussion below). Moreover, none of the sites, previous or current, has been assessed to evaluate their ecological value on the basis of the “trees”. (Again, see the discussion below).

Table 3.3-1 (p. 117) provides yet another set of water depths for the borrow sites. MB-1: -60 to -74 ft; SO-5: -34 to -95 ft; SO-6: -42 to -56 ft. Moreover, they do not agree with the depths listed in Appendix B, the listed source.

Table 4.1-1 lists Biological Resources as an Environmental Topic/Issue and specifies the Area of Influence as “Study area plus offshore borrow sites, as footnoted with an *. However, it does not indicate the meaning of *. Moreover, sandy habitats in both these areas have been inadequately studies.

Table 12.1-1 lists water depths for borrow sites as follows:

SO-5: -35 to -60 ft; is this SO-5 Del Mar, depths from -34 to -47 ft (p. C-45, line 40)? If so, previous infaunal sampling is not applicable. The area needs to be surveyed and evaluated on basis of “trees”.
SO-6: -19 to -27 ft; shallow depth violates criterion 2 of Appendix C – Geological Engineering, p. C-44, line 4. Is this SO-6 San Elijo, depths from -42 to -56 ft (p. C-46, line 2)? Again, this area needs to be surveyed and evaluated on basis of “trees”.

MB-1: -18 to 24 ft; shallow depth violates criterion 2 of Appendix C – Geological Engineering, p. C-44, line 4. The area proposed is not the original MB-1 (p. C-46, line 13) and needs to be surveyed and evaluated on basis of “trees”.
SM-1: -21 to -24 ft; shallow depth violates criterion 2 of Appendix C – Geological Engineering, p. C-44, line 4. The biota in this area has never been surveyed (p. C-46, line 22); it needs to be surveyed and evaluated on basis of “trees”.

In contrast, the depths listed for these borrow sites in the Final EIS/EIR for the San Diego Regional Beach Sand Project were:

SO-5: -50 to -80 ft
SO-6: -60 to -80 ft
SO-7: -60 to -85 ft; off Batiquitos Lagoon; volume no longer adequate
MB-1: -68 to 75 ft
SM-1: -not listed, only SO-9 at -45 to -55 ft

Why is there a discrepancy in the depths?

p. 193: Figure 4.2-2 shows the area of beach replenishment (receiver site) and borrow site SO-6 in Encinitas encroach into the Swami’s State Marine Conservation Area. This seems to violate the concept of a marine conservation area and taking of living marine resources, but it appears an exception has been made for this MPA. Moreover, the text indicates this figure should be depicting the SO-6 borrow site, the San Elijo wastewater outfall, and the San Elijo Lagoon. None of these is shown on that map.

p. 203: Information indicated as included in Tables 4.4-3 and 4.4-4 appears to be missing in the tables shown. Table 4.4-3 presents water quality data and Table 4.4-4 presents beach sediment data. Maybe Table 4.4-5 presents that info but data on TOC, etc. are not shown.

Biological resources Section

p. 206, line 7,8: Again, “depth of closure” is an unexplained term.

p. 206, line 12: The report states: “Pismo clam (*Tivela stultorum*) beds occur in sandy substrate in localized areas extending from intertidal to nearshore depths, but are not known to occur within the study area.” II believe this is a dangerous assumption. I’m not aware of, and you don’t cite, any studies conducted to determine whether Pismo clam beds occur in these areas.

p. 206, line 39 to p. 207, line 9: This list of references only provides information on reef dives, surfgrass, LIDAR, and habitat mapping. It doesn’t provide any information on the long-lived macroinfauna living in the borrow sites, which would suffer major impacts from the proposed 50-year duration dredging program. This is completely inadequate.

P. 208, lines 20-22: The report states: “Soft-bottom nearshore communities have similar characteristics for a given water depth, sediment type, and wave energy. Thus, sandy nearshore communities off Oceanside would generally be similar to those found at similar depths and bottom type off Imperial Beach.” This is an inaccurate characterization of the nearshore infauna, which is far more varied than indicated by this statement. For example, (Fager 1971) reports on an infauna dominated by the tubicolous worm *Owenia fusiformis* off Scripps Institution of Oceanography, in La Jolla, whereas Morin, Kastendiek et al. (1988), and Lees (1973, 1974, 1974,1974a, 1974b. 1974c, 1975) reported on communities dominated by several different tubicolous worms (e.g., *Diopatra ornata* and *D. splendidissima*) and sand dollars at similar depths in the vicinity of Oxnard and other areas in the southern California bight.

p. 208, line 48: Indicates that only two borrow sites are proposed.

p. 208, line 51: Stating that small, mobile crustaceans dominate the infauna in the inner to middle shelf indicates a bias toward describing assemblages, making decisions, and projecting effects and recovery trajectories on the basis of the "weeds" in the system., i.e., the ephemeral, seasonally variable organisms, rather than on the basis of the "trees", the larger, longer-living organisms such as large tubicolous worms, clams, large snails, sea pens, burrowing sea anemones, sea stars, sand dollars, sea urchins, burrowing sea cucumbers, etc. The types of "trees" listed here are long-term residents of these areas and reflect long-term conditions with regard to sediment stability, food availability, and oceanographic conditions. In contrast, the "weeds" represent primarily response by whatever larvae were in the water column following recent disturbances.

4.12 Land Use

p. 299, Borrow Sites: This section is incomplete as it lists only two of the potential four borrow sites, SO-5 and SO-6.

5 Environmental Consequences

p. 313, lines 44,45: Finally you have defined "depth of closure" – "Depth of closure is the depth beyond which no significant longshore or cross-shore transports take place due to littoral transport processes." Put this up at the beginning of the document.

An apparent consequence of this condition is that several decades will be required before the dredges pits refill appreciably. It is likely that drift kelp and other marine plants will collect in these pits and create anoxic conditions as these materials decompose. This will result in very poor productivity and recovery in these areas. I have observed this problem in the pit dredged to allow submergence of the floating dry docks at the Sub Base at Pt. Loma in San Diego Bay. This is a considerable unrecognized or acknowledged impact.

p. 314, lines 45,46: The report states: "The change to borrow site bathymetry is not expected to significantly impact site topography or geology." With the initial depths of SO-6 ranging from ≈-35 to -80 ft, a 20-foot cut will increase the depth of the seafloor by 25-60 %. Considering the magnitude of this change and the potential loss of ecological productivity or value, that statement and those listed below seem very inaccurate and misleading. These are significant impacts to site topography and the footprint will expand considerably as the cut banks slump into the pit over time in response to gravity and long-period swells.

All of these comments apply equally to the section on Solana Beach.

5.1.5 Summary of Potential Impacts to Geology and Topography

p. 320, lines 42, 43: The report states: “The modifications to the offshore borrow sites would not be substantial.” Based on my comments above, this is a very inaccurate characterization of the large-scale impacts that will occur in the borrow sites. The dredging programs will result in major impacts to the borrow sites and the immediately surrounding areas.

5.1.6 Mitigation Measures

p. 320, line 3: The report states: “No mitigation would be required as no significant impacts have been identified.” There will, indeed, be significant impacts. However, there are not mitigation measures that can be employed to replace the substantial productivity that will be lost due to the dredging program. However, USACE must at least acknowledge that these impacts will occur.

5.1.7 Potential Effects of Mitigation Reef

p. 321, lines 7-9: The report states: “The mitigation reef would result in the conversion of 16.8 acres (maximum) of natural soft sandy seafloor substrate to rocky substrate. The conversion would result in a permanent change to the seafloor topography.” Construction of this reef will result in additional loss of nearshore soft sediments but the lost productivity in soft sediments will be more than compensated for by the greater productivity of the mitigation reef. It is interesting, however, that a 20-foot increase in depth in the borrow sites is characterized in this report as no impact to topography but that a decrease in depth of 5 feet is considered a significant change in topography.

p. 322, line 10-12: The report states: Over the life of the project, the maximum dredge cut is expected to be 20 ft at both borrow sites. The maximum surface area impacted at SO-5 is expected to be 2.07 acres, and 0.94 acres at SO-6. This is either very inaccurate or very misleading. The following table reflects the areas and volumes extracted from several sections of this report.

	Area of Borrow Site (acres)*	Volume of Sand (cy)	Projected Dredged Footprint (acres)**	Estimated Volume Dredged (cy)
SO-5	124	4,001,067	2.07	66,792
SO-6	44	1,419,733	0.94	30,331
MB-1	107	3,452,533	Not discussed	
SM-1	Not discussed			

* p. 117, Table 3.3-1
** p. 322, line 10-12

Based on this comparison, it is unclear why USACE is claiming that the sand supply will be exhausted in any of the borrow sites. The areas dredged comprise only about 1.8% of the area included in the borrow sites, based on the proposed 20-foot cut in each of the borrow sites. Moreover, the amount of sand dredged is small compared to the volume of sand in the borrow sites (again, about 1.8%).

However, the volumes provided for placement on the beaches over the life of the project in Section 3.4 (Encinitas- from 2,790,000 to 4,700,000 cy; Solana Beach- from 1,790,000 to 4,040,000 cy) indicate that up to 146 acres of borrow site will be required for Encinitas and 125 acres of borrow site would be required for Solana Beach. Thus, the statement that the areas impacted at SO-5 and SO-6 are only 2.07 or 0.94 acres is completely false and misleading. It is very unclear how this estimate was achieved; it certainly is not based on a single 5-year dredging event proposed in the EIS/EIR.

5.2.6 Summary of Potential Effects to Oceanographic and Coastal Processes

p. 331, lines 36 – 38: The report states: "Due to the location of the borrow sites beyond the depth of closure, and the broad and shallow design of the borrow pits, project dredging is not expected to alter nearshore wave characteristics." It is unclear how a 25-60% increase in depth or a 20-ft cut can be considered "shallow design". This summary statement appears to indicate a biased rather than an objective view of the proposed project.

p. 331, lines 48-50, and onward: "The report state: "Nearshore currents are primarily a function of wave action, and beach nourishment activities are not expected to permanently alter or change wave characteristics. Considering the moderate migratory nearshore sedimentation that could result from the sand placement, no significant adverse impacts to nearshore currents are expected from beach nourishment 1 activities. The inclusion of notch fill along the coastal bluff face is not expected to impact nearshore currents." This is tacit admission that the project is only a temporary solution in arresting the long-term natural process of coastal erosion ass accelerated by sea-level rise. At the end of the 50-year project and the associated expenditure of public funds, nothing will have been accomplished that resolves the issue for the changes that will ultimately need to be made to deal with the naturally occurring geologic and oceanographic processes. All expenditures of the public (taxpayer) and private funds will have been in vain, i.e., a waste of money benefiting primarily the property owners on the bluffs above the beaches in Encinitas and Solana Beach. By the end of the project, "Restaurant Row" and Pacific Coast Highway will have been flooded out and relocated and many of the properties on the bluffs will have been lost to bluff failure. Regarding the homes on the bluff, this will be particularly true for the area north of Beacon's Beach, which is not projected to receive any of the sand from this program.

5.3 Water and Sediment Quality

p. 332, line 39-44: The report states: "An impact would be significant if it would: …

- Result in water or sediment quality conditions that could be harmful to aquatic life or human health."

As pointed out above, the 20-ft deep depressions created in the borrow sites by the dredging program would function as collection points for organic debris (kelp, seaweeds, surf- and eelgrass fragments, terrestrial material coming down the streams during flood events, etc.). Because of reduced wave energy and circulation of currents, these large areas would develop anaerobic conditions and the natural suspension-feeding biota would be unable to become re-established. The natural productivity of these areas (at least 275 acres excluding the area potentially dredged in SM-1) would be lost for an unknown period, far beyond the 50-year duration of this project. This certainly must be considered a "long-term substantial decrease in water and sediment quality" and a significant adverse impact. It is likely the area affected by this program would be larger than the Zones of Initial Dilution for the major wastewater outfalls for the San Elijo, Encina, and Oceanside wastewater treatment facilities and the level of injury from anoxia and eutrophication would be significantly greater. This section should be revised to reflect the nature, magnitude, and duration of these impacts.

p. 332 – 336 5.3.2 Borrow Sites, Water Quality and Sediment Quality

These sections are unacceptably optimistic and must be rewritten to reflect the discussion presented above. Turbidity is admittedly a short-term issue.

However, these sections ignore major long-term water and sediment quality issues and changes to the ecosystem that will result from this program. The duration of impacts will likely extend many decades or centuries beyond the life of the program because the borrow sites are located outside the "depth of closure", i.e., the 20-ft deep depressions will not be refilled by sediments carried in the long-shore transport systems.

p. 333, lines 16,18: The report states: "The low TOC of the sediment along with the mixing and dilution capacity of the open water at the borrow sites would be sufficient to ensure concentrations that phytoplankton blooms would not occur (SANDAG 2011a). This statement is either garbled or nonsense. Sediment TOC has no effect on phytoplankton blooms. Inorganic nitrogen is the major factor affecting phytoplankton blooms. Moreover, the claim that TOC is low is not supported by a presentation of the data for TOC in either this document or Appendices B or C.

p. 341, 5.4.2 Borrow Sites: Does not discuss SM-1, which is mentioned as a potential borrow site at numerous locations in the document and appendices. Thus, a figure is lacking to compare with Figures 5.4-1 and 5.4-2.

5.4 (Environmental Consequences) Biological Resources

p 342, lines 7-16: The report states: "There would be a temporary reduction in benthic invertebrate biomass and a temporary alteration of the benthic community species composition at the borrow sites associated with the sediment removal. Studies indicate that recovery of the benthic invertebrate community after borrow site dredging depends on several factors such as dredging method, local environmental conditions, hydrodynamics, and sediment infill rates (SAIC 2007). Recovery is quicker when relatively shallow dredging is conducted rather than creation of deep pits, dredging occurs in areas where sand movement naturally occurs, and sediments at dredged depths are similar to surrounding sediment. The design of the borrow sites for this project includes a limitation of dredge depths to a maximum of 20 ft. Benthic recovery at these depths would be expected to be similar to RBSP I (SANDAG 2011)."

This paragraph contains numerous inaccurate claims and unsupported assumptions.

- The claim the reductions in benthic invertebrate biomass and alteration of the benthic community species composition in the dredged areas of the borrow sites would be "temporary" appears quite inaccurate based on the discussions above.
- Initial recruitment to these areas will be primarily by "weedy" species rather than the long-term "trees" that were removed by dredging, as is easily viewed in the sediments were recently deposited on the beaches in this region. It is likely the "weeds" will colonize the new seafloor in great abundance; that is, in fact, what "weeds" do, whether on land or in the ocean.
- However, as detrital material accumulates in these basins and the sediments become more anoxic, the numbers of "weed" species that will recolonize these sediments as the short-live initial "crops" die off will decline and finally only include species that are highly tolerant of anoxic conditions and sulfides.
- These species will not include any of the suspension-feeding "trees" that initially characterized this habitat. Moreover, because these basins are located outside the "depth of closure", the time required for the basins to refill is unknown.
- The validity of my arguments is supported by the findings that recovery occurs quicker in shallower basins or in areas where sand movement occurs naturally.
- However, the studies assessing recovery (SAIC 2007) have been based on methods that assess primarily the "weeds in the assemblages and have not lasted long enough to assess long-term recovery.
- Traditionally, recovery trajectories predicted by infaunal studies estimate that recovery will occur in 1-3 years. Moreover, studies assessing recovery report that same pattern. However, most of these studies are fundamentally flawed because they are assessing the short-lived, ephemeral "weed" rather than the long-lived "trees" in the system, both before and after a disturbance. This is analogous to assessing effects and recovery from a clear-cut in a redwood forest on the basis of the grasses and shrubs on the forest floor rather than on the basis of the redwoods and other trees that form the forest. Recovery of the weeds is rapid; recovery of the trees takes far more time. This flaw applies to all of the studies that have been performed locally (e.g., SAIC 207b and Merkel & Associates 2010).
- It is correct to conclude that these impacts are insignificant on a regional basis but the magnitude of these impacts locally must be discussed and acknowledged.

5.4.6 Summary of Potential Impacts to 1 Biological Resources

This section should be revised to reflect the discussions above, particularly with regard to the problems related to conclusions based on the "weeds" rather than the "trees".

6.1 Description of Cumulative Projects

p. 473, lines 45-49: Region of Influence (ROI) of the dredging program around the borrow sites is estimated to be 300 ft in width. This increases the area affected by dredging substantially above the 275 acres.

p. 487, line 34: This discussion indicates the effects of the dredging affect “less than 2 percent of the inner shelf”. It then indicates this is not a significant impact but that conclusion is based on the various analyses of the “weeds” rather than the “trees”. Would this same conclusion be reached if a project in the redwood forests affected ≈2 percent of the redwoods, especially if the impacts had the potential to persist for many decades because of altered habitat characteristics (increased depth, aggregation of organic debris, anoxic conditions, failure of the “trees” to recolonize the habitat, etc.)?

Appendix B: Coastal Engineering

Uses borrow sites SO-5, SO-6, MB-1, and SM-1; need to correct Introduction

Appendix H: Potential Impacts to Nearshore Resources and Mitigation and Monitoring Plan

This is the section where potential long- and short-term impacts to the habitats in the vicinity of the proposed borrow sites should be discussed in detail. As a benthic ecologist, this is the first section of this document that I reviewed and I was very surprised to see the sandy nearshore habitats “panned”. Instead, there is no mention of impacts on borrow sites, Pismo clams. The discussion of impacts in this section is limited to rocky reefs, esp. surfgrass and bedrock. As pointed out above, the potential impacts to these habitats are quite significant and long-term, and likely exceed the duration of this proposed 50-year program by many years. Moreover, since the alternatives proposed for this program do not resolve the problems associated with beach and bluff erosion, the impacts to the sandy nearshore habitat would continue on into the foreseeable future. This is a major flaw in this EIS/EIR.

Appendix M: Mitigation Strategy – No mention of mitigation for borrow sites or Pismo clams.

An important means of mitigating the effects of dredging on the nearshore habitat is to grade ecological values of the various borrow sites on the basis of the “trees” characterizing each site. Nearshore soft sediments exhibit considerable variability in ecological value (see following discussion in General Remarks). Because ecological value translates to better fisheries (good fishing holes vs. poor fishing holes), strong effort should be exerted to avoid borrow sites with high ecological value. A problem with the existing plan is that it considers only a very limited number of borrow sites, only two for each set of receiver sites.

Avoidance of Pismo clam populations should be considered as a useful mitigation measure. However, I am not aware of studies in nearshore habitats that have surveyed for Pismo clam populations. A survey offshore of the receiver sites should be conducted to search for Pismo clam populations and efforts should be made during beach nourishment activities to avoid burying these population with layers of sand that exceed the ability of these clams to return to an optimal depth in the sand. An issue with this measure is that I don't believe studies on the ability of Pismo clams to dig back to an optimal depth for survival have been conducted. A study of this type should be funded and conducted.

General Questions and Remarks

Why is sand for Encinitas deposited approx. 1000 ft south of Beacon's Beach? This leaves all the bluffs north of Beacon's unprotected. Why is the sand not deposited off the mouth of Batiquitos Lagoon, which has historically been the source of sand for this stretch of coastline? This would emulate the natural flow of sand in this region.

A major criticism of the EIS/EIR is that it makes no effort to prioritize or rank the proposed borrow sites on the basis of their ecological value and that the information collected to date would not allow those values to calculate in a realistic manner. In fact, the type of information is completely inadequate for addressing ecological value in a meaningful, realistic manner because the sampling has been limited to the "weeds" in the system. Valid ecological values must be based on the "trees" in the system. In fact, the ecosystems on soft sediments are the only ones I am aware of where the descriptions of the assemblages, estimates of potential effects of disturbances to the assemblages, or analysis of real effects, and the projections for recovery rates, are based on the "trees", i.e., the long-live organisms that characterize those ecosystems. This next section is provided to support this argument and provide USACE and its consultants with greater insight into the nature of the infaunal assemblages in our nearshore sediments. These ideas are based on my experience in shallow sandy and other unconsolidated sedimentary habitats in southern California, Alaska, and the Arabian Gulf since 1972.

One of the problems with the current approach to analyzing ecological value of infaunal assemblages is that it depends on grab or core sampling. This approach examines only a very small area at the sampling locations and does not penetrate into the sediments deeply enough to provide good information on the "trees". Then the statistical analyses, which now focus on multivariate approaches, generally cut out the rare species. These include most of the "trees", which were already inadequately sampled. Consequently, the descriptions of the biota living in and on the sediments and predictions regarding effects and recovery rates are quite limited because they are based on the "weeds" in the system. Needless to say, then, predicted effects are minimal and predicted recovery rates are rapid.

Dredging in the borrow sites is an activity that could cause important impacts to valuable biological resources, although such resources are not at this time considered "critical". It is important to recognize the concept that "all patches of sand are not equal". As all fishermen know, some places are better for fishing than others are. This is a result of the same concept, i.e., not all fishing holes are equal. Generally, this difference in productivity is a result of differences in food availability, hydrodynamic conditions, and environmental stability. In the case of the infaunal assemblages inhabiting potential borrow sites, sediment quality is an important element that can be added to the above list of factors.

Recognition of this concept and, in response, incorporating a process that evaluates the ecological values of potential borrow and dump sites should be an important element of any environmentally sensitive dredging program. Selection of borrow or receiver sites can have appreciable long-term effects on the productivity of nearshore sand habitats if the dredging or sand placement activities obliterate especially productive assemblages. An effort should be made to identify and avoid the more productive assemblages, especially in the more stable habitats where the borrow sites are located.

Considerable data exist locally showing that “all sand patches are not equal”. In fact, this point is nicely demonstrated in Table 3.4-3 of the EIR for SANDAG’s Regional beach sand project (KEA 2000), where total number of individuals characterizing the samples from the borrow sites ranged from 133 to 491 (≈270% difference) and total number of species ranged from 29 to 118 (>300%). The implications of these differences to ecological value and their relationship to depth or particle grain size were not discussed in the EIR. Rather, that analysis implied that all borrow sites were similar.

In fact, they differed substantially, despite the limitation posed by the focus of the sampling method on “weeds”. As pointed out above, abundance and species richness varied among the sites by ≈300%. Numbers of species considered most abundant ranged from 5 to 11. Numbers of important polychaete worms ranged from 1 to 9. Numbers of tubicolous polychaetes, typically relatively long-lived and indicating somewhat the degree of stability of a site, ranged from 3 to 9 and the number of those considered most abundant ranged from 0 to 7. This variability indicates that these sites differ substantially in their productivity and their ability to support fisheries, and in their ability to recover within a reasonable period after they are disturbed, for example, by a dredging program.

To illustrate the point that “all sand patches are not equal”, data were compiled for a series of sites ranging from depths of 45 to 95 feet in samples collected off San Diego County by the Allan Hancock Foundation (AHPE), Univ. of So. California, from 1956 to 1958 for the California State Water Quality Control Board (Anon. 1965). This depth range was selected because it approximates the range of depths in the borrow sites. The standard Hayward orange-peel grab sampler sampled ≈0.25 sq. m. of the seafloor at each site. These data were used to construct the comparative figures below.

These data provide good documentation that sand patches vary substantially in several important physical and ecological aspects. With regard to median particle grain size (Figure 1), coarser sediments were not common on the shelf. This is an important consideration with respect to selecting appropriate borrow sites for beach replenishment projects. In this region, it appears that most areas were characterized by coarse silt to fine sand but some areas had moderate to coarse-grained sand. Within this depth range, median grain size did not appear to change appreciably with depth but a couple of areas with sufficiently coarse sands for beach nourishment were observed in the AHPE surveys.

Availability of organic nutrients or detrital material, as represented by Total Kjeldahl Nitrogen, varies widely in the sediments within this depth range (Figures 2 and 3). Moreover, the abundance and species richness of the infaunal assemblages correspond quite well with the available food. This correspondence provides support for the premise that ecological value varies by site and that there are "good" and "poor fishing holes".

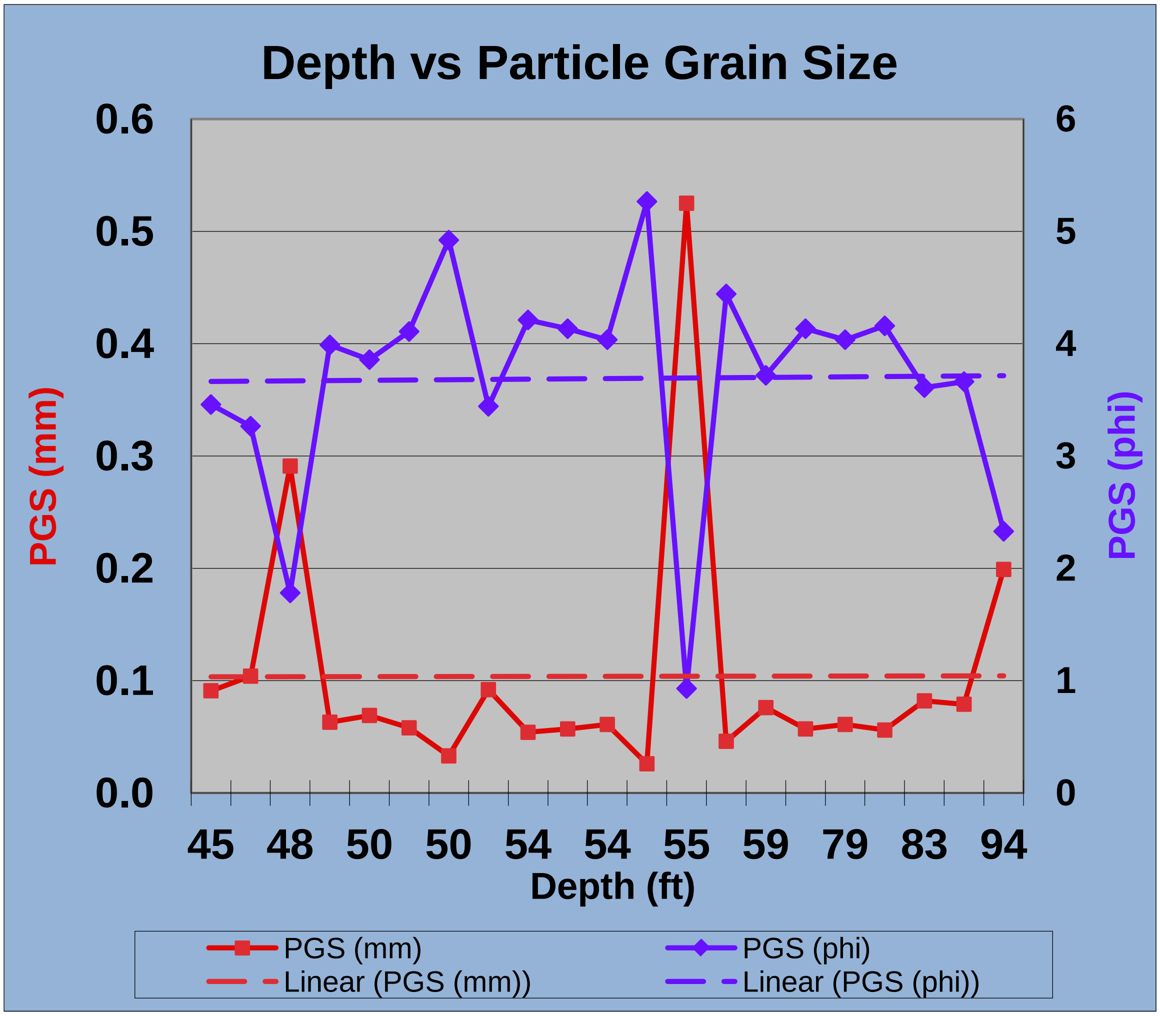

Figure 1. Variation in median particle grain size (as both mm and phi) with depth off San Diego County. Dotted lines represent regression curves for the variables.

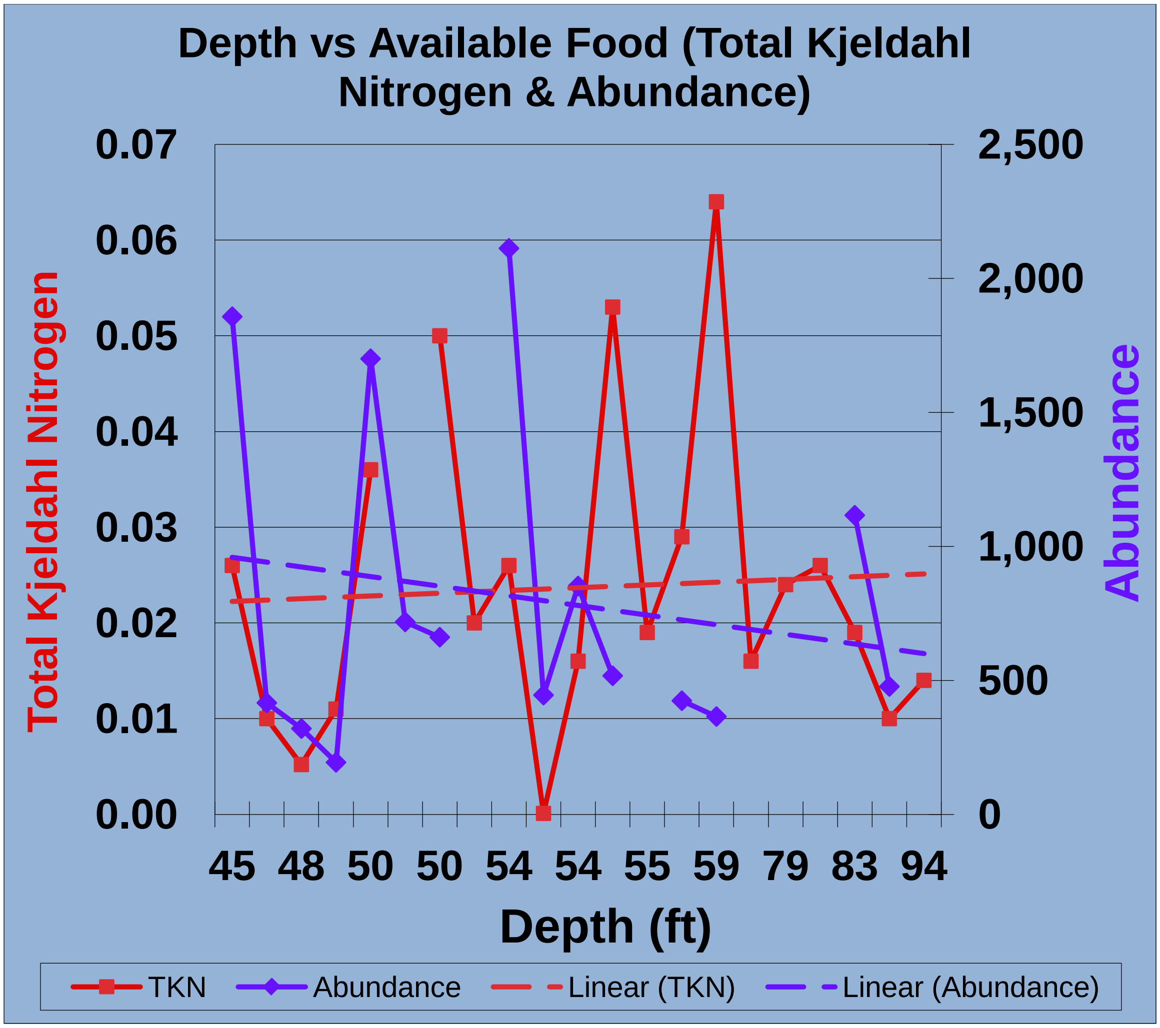

Figure 2. Variation in available food, as indicated by Total Kjeldahl Nitrogen) and infaunal abundance with depth off San Diego County. Dotted lines represent regression curves for the variables.

In addition to the physical characteristics of the seafloor, sandy substrata differ significantly in biological or ecological terms. In particular, different areas vary in terms of abundance, species richness, wet weight, nature and stability of their biotas, their direct and indirect contributions to fisheries and other ecological phenomena, and in the length of time that would be required for recovery following a massive disturbance such as a dredging program for beach replenishment.

The magnitude of variation at sites off San Diego County is demonstrated for abundance, species richness (numbers of species), and wet weight in Figure 4. Abundance varied by an order of magnitude, species richness by 300 percent (similar to the variation reported in the EIR), and wet weight by two orders of magnitude within this narrow depth range. Abundance and species richness generally corresponded relatively well but wet weight was not closely tied to the other variables. Generally, the regression lines indicate that abundance declined with increasing depth but species richness and wet weight were relatively unchanged across the depth gradient.

Wet weights of the major component groups also varied considerably across the depth gradient (Figure 5). These organisms are major forage items for higher trophic levels that form the basis for several important fisheries in this region. Wet weights for molluscs, often a major driver for total sample wet weight, varied by more than two orders of magnitude within the depth range. Weights of polychaete worms varied by more than an order of magnitude. Brittlestar weights varied by nearly three orders of magnitude. In many cases, the peaks and valleys are complementary among the groups, suggesting that site characteristics are an important factor in the observed differences between sites. Obviously the reason for the great range of variation is the patchiness in distribution that occurs naturally in these habitats as a consequence of differences in site characteristics relative to food sources, wave exposure, sediment types, foraging and recruitment histories, bathymetric features, etc.

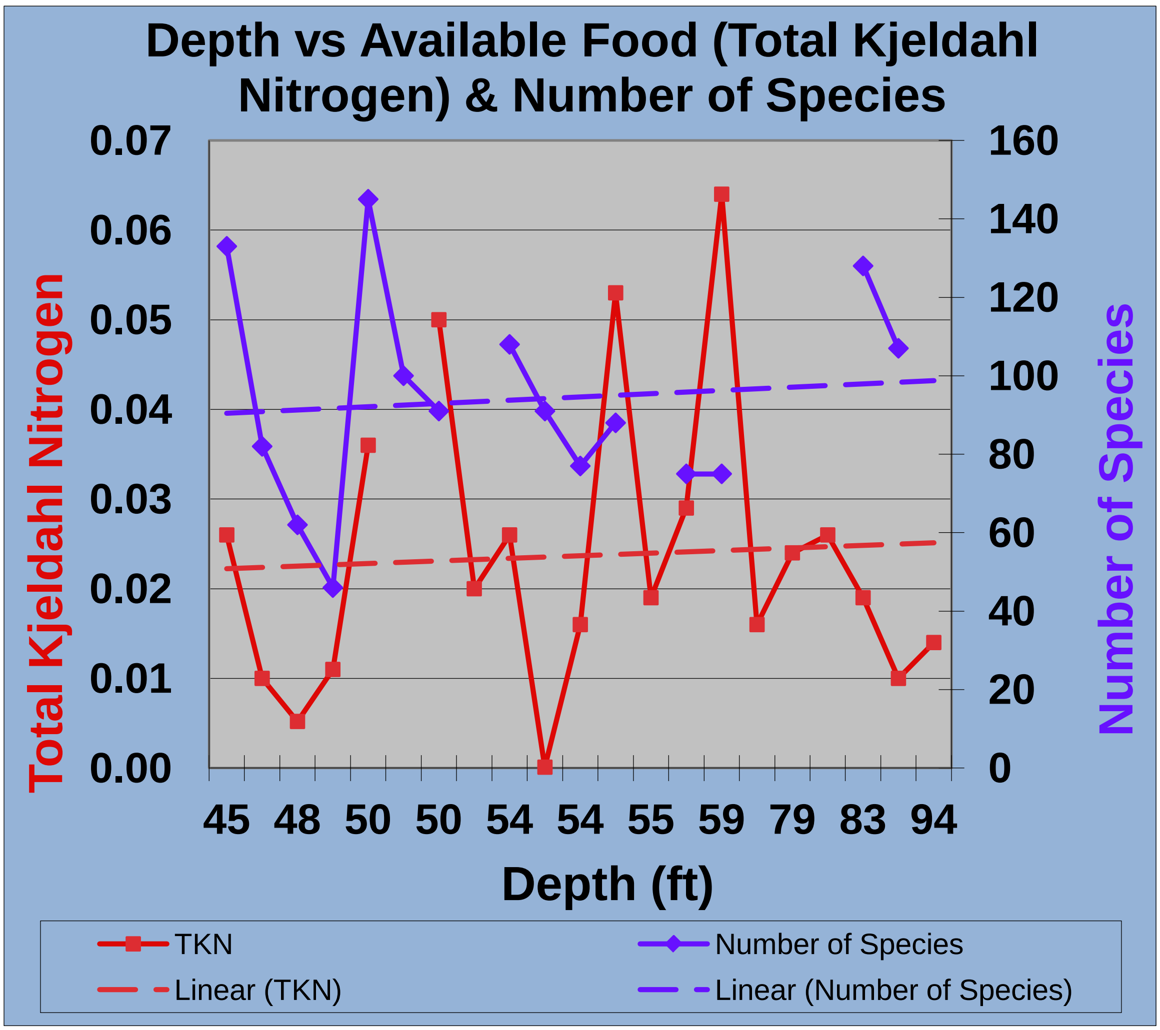

Figure 3. Variation in available food, as represented by Total Kjeldahl Nitrogen, and number of infaunal species with depth off San Diego County. Dotted lines represent regression curves for the variables.

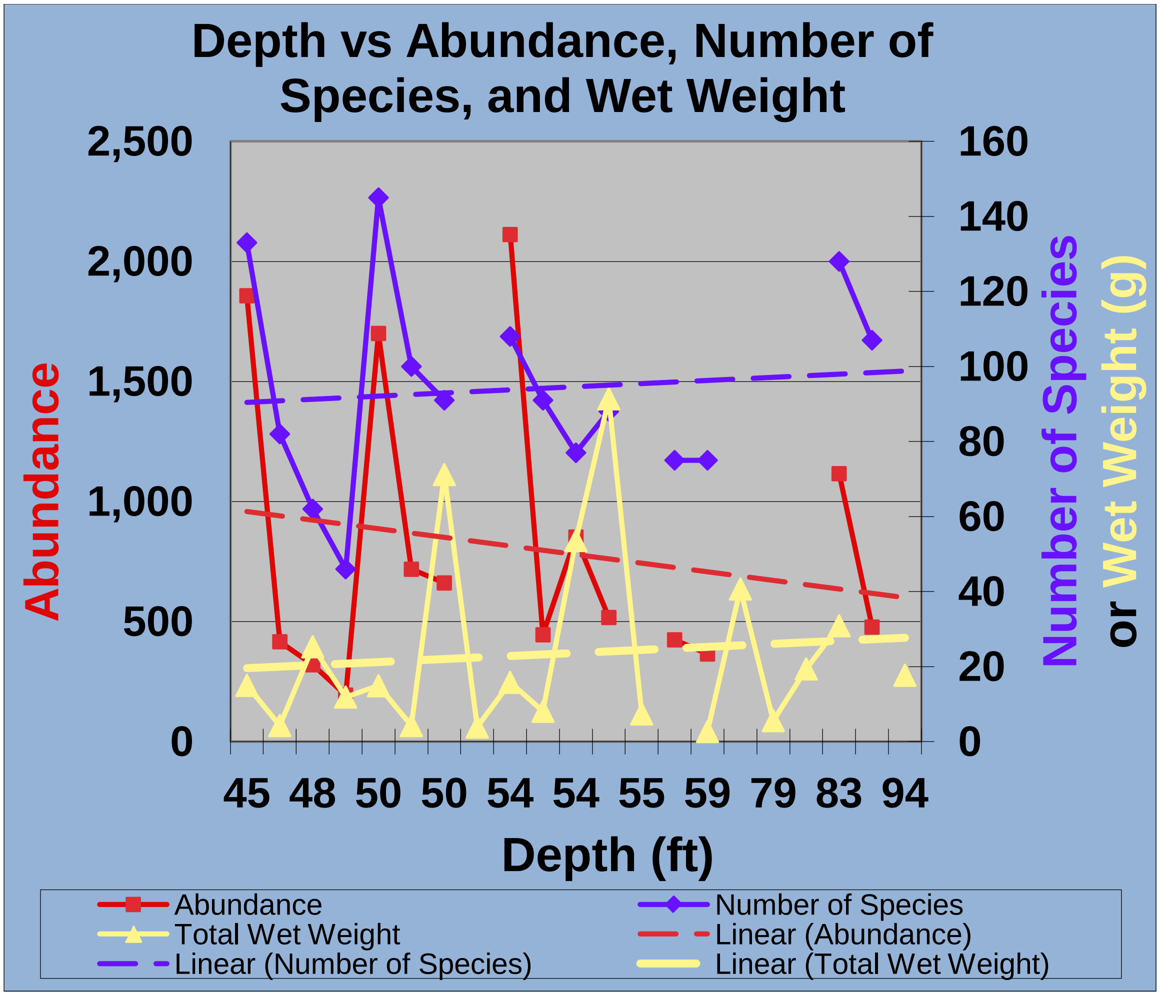

Figure 4. Variation in abundance, species richness, and wet weight with depth off San Diego County. Dotted lines represent regression curves for the variables.

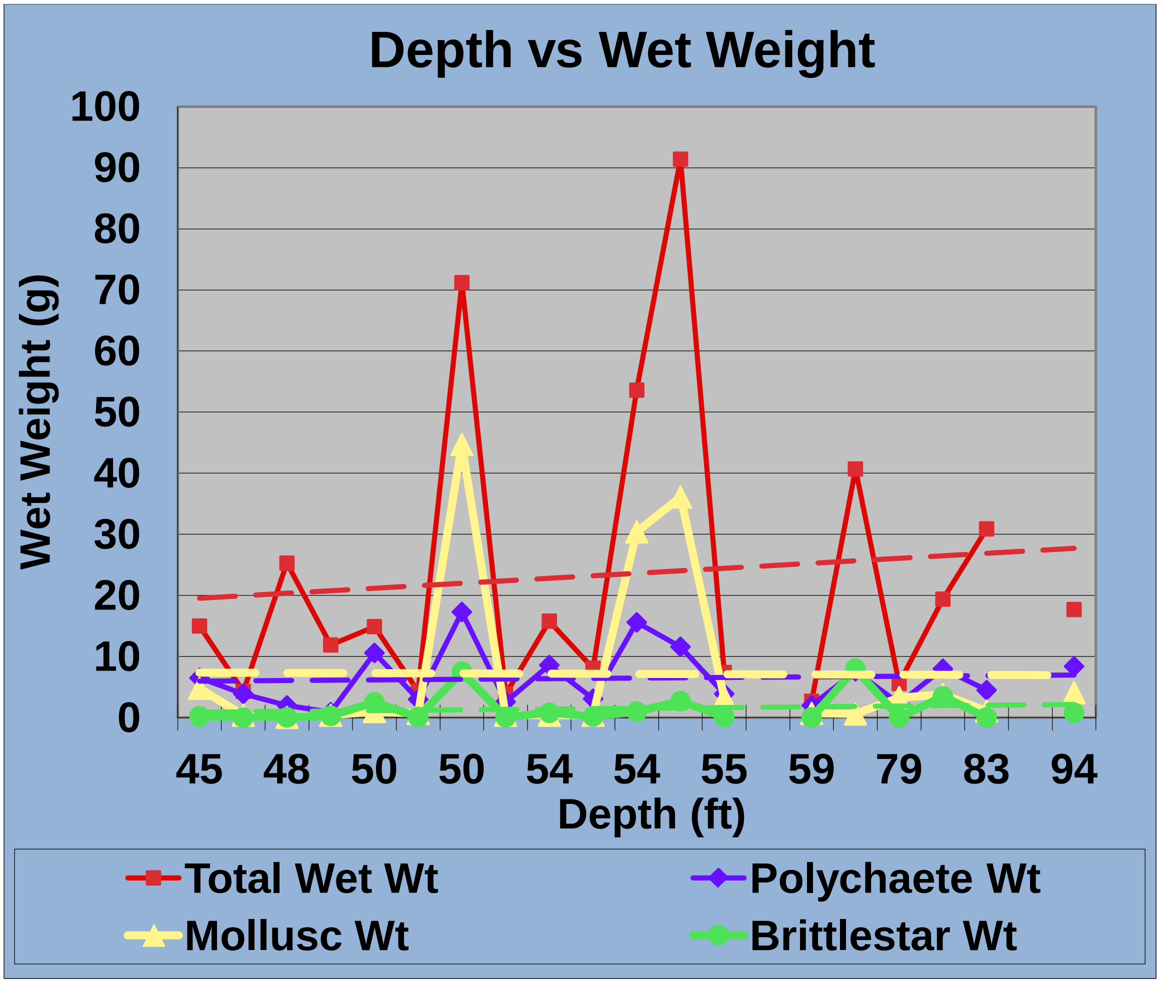

Figure 5. Variation in total wet weight and wet weight of polychaetes, molluscs, and brittlestars with depth off San Diego County. Dotted lines represent regression curves for the variables.

Tube-building (tubicolous) polychaete worms are generally a relatively long-lived inhabitant of sandy substrates and are therefore useful indicators of the stability of an area. Moreover, where abundant, tubicolous polychaetes are an important but sustainable forage item for many commercially or ecologically important fish and invertebrate species. They are sustainable because foraging activity often does not kill these worms. The predator typically only "harvests" the upper part of the body of a worm. Tubicolous worms then retract into their tubes and regenerate the lost parts, to come back and feed and grow again. One can safely assume that abundance of long-lived tubicolous worms is strongly correlated with long-term conditions in an area, especially environmental stability and food availability. Typically, tubicolous polychaetes are less abundant in shallower water where wave action is greater and are more abundant with increasing proximity to good nutrient sources such as kelp beds. It is likely that areas characterized by tubicolous worms, representing the "trees" in this habitat, will require a longer recovery times following major perturbations, than areas where shorter lived animals (the "weeds") predominate. This is closely analogous to comparing recovery times from disturbance for the weed assemblage on the shoulder of a highway or a pine forest. Dredging operations are analogous to clear-cutting in a forest.

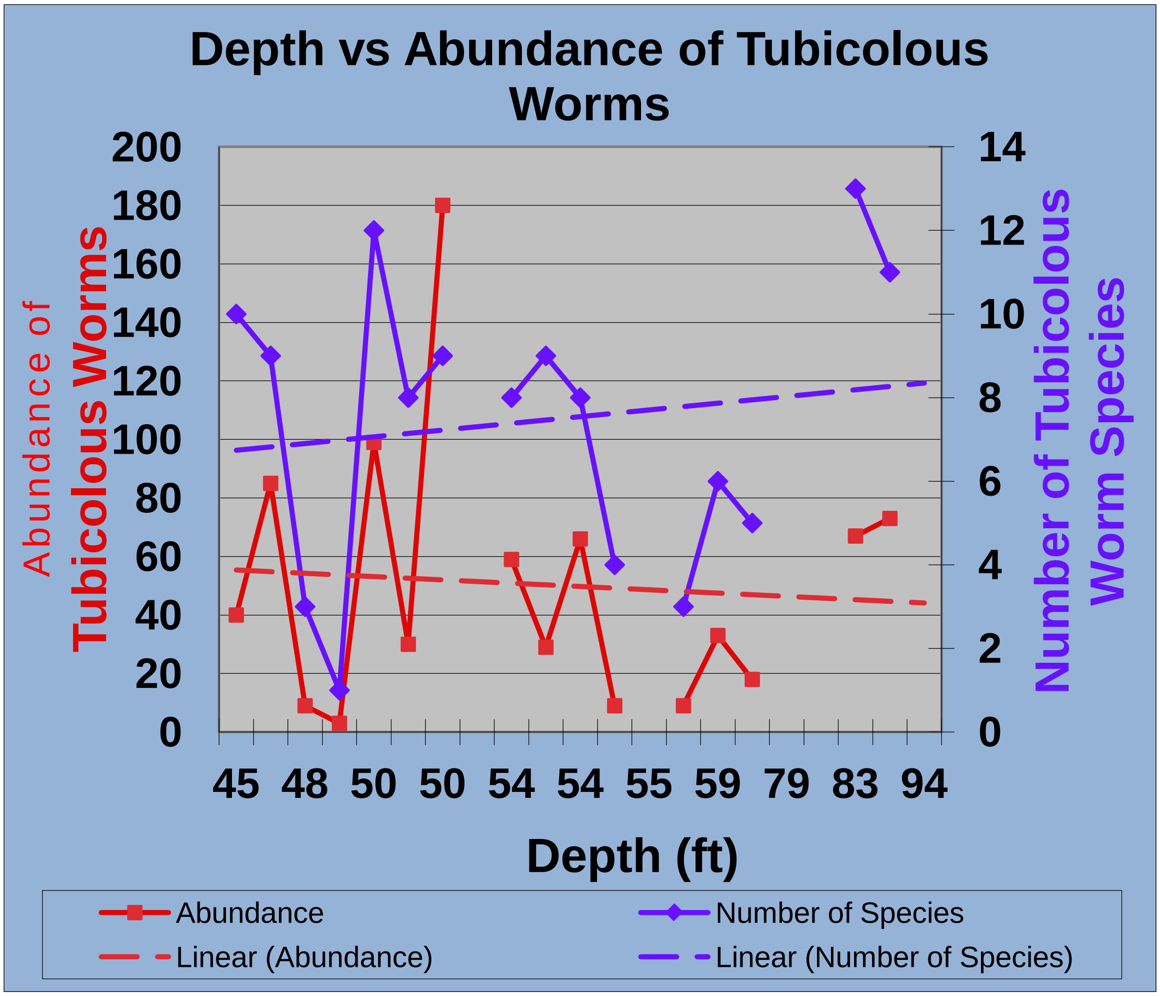

Figure 6. Variation in abundance and species richness for tubicolous polychaetes with depth off San Diego County. Dotted lines represent regression curves for the variables.

Consequently, knowledge of the abundance and species richness of tubicolous worms and other “trees” can contribute very useful information on the ecological value and the stability of an area. It is clear in Figure 6 that both the abundance and species richness of tubicolous worm species vary considerably among samples in sandy areas off San Diego County. Abundance per sample ranged from 3 to 180 and species richness ranged from 1 to 13. These ranges suggest a considerable range of productivity and stability in the sandy sediments in this region. They do not appear to exhibit any important depth-related trends over the depths considered here.

Median particle grain size also does not appear to influence the level of variation observed for overall abundance of infaunal organisms in the samples. However, it may exert an influence on wet weights (Figure 7). Thus, it appears that wet weights decline with increasing median particle grain size. This is a well-recognized pattern among infaunal ecologists. In any event, both variables exhibit a high level of variability at any point along the depth gradient.

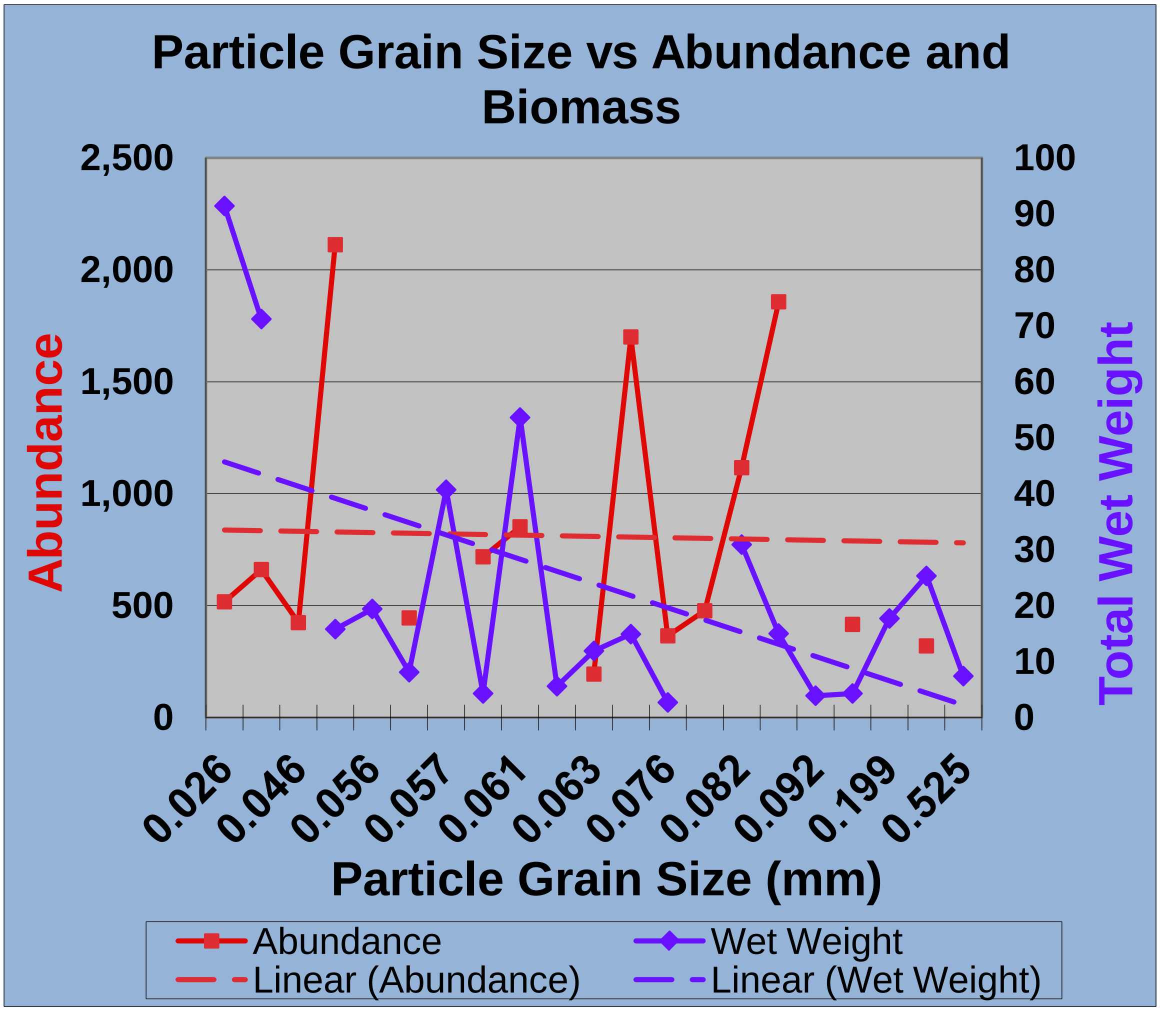

Figure 7. Variation in abundance and total wet weight with median particle grain size off San Diego County. Dotted lines represent regression curves for the variables.

Benthic Assemblages and Habitats: The most widespread types of assemblage in nearshore sandy habitats off southern California include infaunal and epifaunal organisms. These assemblages, which vary appreciably with depth, are best characterized on the basis of the long-lived organisms inhabiting these sediments. However, that has not been the common practice because of the perceived difficulty in sampling these somewhat deeply buried organisms. These assemblages are often dominated by tubicolous polychaete worms but include many other types of invertebrates (clams, snails, crabs, sea cucumbers, sea pens and sea pansies, and peanut and acorn worms). In shallower water, sand dollar beds often dominated the biota in this area (e.g., Anonymous 1965). These forms are generally relatively long-lived (5-25 years) and provide a strong indication of long-term environmental conditions in an area (*e.g.*, surge and current intensity, nutrition regime, sediment texture, and nutrient overload or eutrophication). Species composition and abundance in these assemblages are reasonably stable seasonally, especially in comparison with the great temporal and spatial variability observed for the “weed” species. With regard to understanding the status of the benthic community, these assemblages are analogous to the trees in a forest.

In addition to these larger, longer-lived forms (the “trees”), smaller, short-lived, but animals that are far more abundant live in the sediment. This component of the infaunal assemblage also varies appreciably with depth and is generally characterized by a wide variety of small free-living and tubicolous polychaete worms and crustaceans and includes other types of invertebrates (clams and snails). Typically, this component of the infauna comprises short-lived animals that live only a few weeks to a few years. Abundance of this component is often strongly dominated by recently recruited individuals of short-lived species. In many cases, these recruiting individuals are found far beyond the normal habitat in which their adults occur. Species composition and abundance vary dramatically seasonally. With regard to understanding the status of the benthic community, it is analogous to the weeds living on the floor of the forest or along the shoulder of a highway. These “weeds” provide substantially less insight into long-term environmental conditions that characterize an area than the larger, long-lived form and provide little insight into the ecological value of an area.

These two different components of nearshore infaunal assemblages must be sampled by two different approaches. The larger, less abundant long-lived infaunal forms that provide the best indication of long-term conditions should be sampled by direct observation, where diver-biologists specifically trained in this component of the infauna identify and enumerate the macrofaunal species that can be observed at the surface of the sediment. A diver-biologist that knows the species being observed has 95% of the data needed to start analysis of the site when he/she comes out of the field. In contrast to the traditional approach employed for sampling the “weeds”, very little additional lab work is required.

The smaller, more numerous but shorter-lived infaunal forms, more analogous to short-lived weeds, are typically sampled with grab or core samplers. After sieving to separate the animals from the sediments, these samples are transferred to a laboratory, where they are identified to the lowest practical taxon and enumerated. This analysis incurs substantial expense and takes an extended period.

Further comments:

Regarding earlier infaunal sampling programs used to justify the conclusion that impacts in borrow sites would be or were negligible, KEA (2000) stated: “Two SCUBA diving biologists swam transects at each of the stations and recorded observations of fish and benthic macroinvertebrates. Divers collected samples for infaunal and sediment analysis.” These methods are very unspecific on number of transects, method or volume of infaunal sample and details of diver observations, or depths sampled. Moreover, quantitative data were not presented that supported the conclusions.

Moreover, KEA (2000) stated: “Dredging at borrow sites would also have some beneficial aspects because many of the infaunal organisms recruit rapidly to disturbed and newly exposed sediments. This produces heterogeneity in the environment, which can contribute to increased biodiversity of the community. Furthermore, most epibenthic invertebrates and demersal fish are opportunistic in their feeding. They could be attracted to disturbed areas where feeding opportunities may be increased by dredging activity."

"Recovery rates of benthic infauna after offshore dredging may be relatively rapid (e.g., 2 to 3 years) in relatively shallow nearshore areas with sandy substrates; however, recovery may take several years in more stable, gravelly sands and deeper water communities Recovery also may take years in areas subject to high intensity dreging (sic) over multiple years…. (SAIC 2007). (See Recovery discussions above).

Recommendation: I recommend implementation of either the "No Action" or "Managed Retreat" alternatives. This puts the onus of expenditures for seawalls, etc., on the individual property and business owners and does not force taxpayers to expend limited tax revenues on wasted effort that attempts to "defeat" the massive, world-wide efforts of Mother Nature". Both alternatives would avoid causing significant adverse impacts on the biota in areas (probably in excess of 300 acres) in and around the borrow sites.

The "Managed Retreat" option could include limited beach replenishment on the beaches where most tourism occurs, i.e., Moonlight Beach, the strand west of San Elijo Lagoon, and Fletcher Cove. It could also include assisting business on the beach (Restaurant Row) in relocating and redesigning and relocating Pacific Coast Highway west of San Elijo Lagoon.

If beach replenishment is selected as the preferred alternative, add additional borrow sites to those already considered so that it is possible to prioritize among them on the basis of ecological value, in order to reduce potential impacts on local fisheries.

Conduct comprehensive biological studies of borrow sites and nearshore habitats offshore of the receiver beaches using specifically trained biologists (naturalists) to assess potential impacts to "Trees", e.g., Pismo clams off the receiver beaches or tubicolous worms, sand dollars, clams, sea stars, etc., in the borrow sites. In this regard, it is important to recognize that very few diving biologists are currently trained to conduct field surveys of the species inhabiting these habitats.

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ADDED COMMENTS ON THE USACE EIS/EIR FOR THE ENCINITAS-SOLANA BEACH SHORE COASTAL PROTECTION PROJECT

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In an effort to demonstrate my argument regarding the failure of previous analyses for the proposed borrow sites to base descriptions, decisions, and estimates of recovery durations on the "trees" in the infauna rather than the "weeds", I spent about an hour examining the sand that was deposited at Moonlight Beach in Encinitas during the recent beach nourishment program. My purposes were to: 1) collect and identify the clam and snail shells that were included in the sand that was dredged from the borrow site; and 2) compare this list of mollusc species with the mollusc species listed as most commonly collected among infaunal invertebrates species occurring offshore from Oceanside to Imperial Beach (Table 3.4-3 in the Final EIS for the San Diego Regional Beach Sand Project; KEA, 2000). The objective was to gage how accurately the approach taken in previous beach replenishment programs measures potential long-term impacts.

The mollusc species represented by shells in the dredged sand at Moonlight Beach are listed in the table below. In all, nineteen species of clams and six snail that typically reside in nearshore sand habitats similar to the borrow sites were collected and identified based on a variety of shell characteristics. All of the shells collected represent large, long-lived species, i.e., are analogous to "trees". The sizes of the shell fragments shown in the photograph below provide a basis for estimating the sizes of the various species. It is notable that most of the shells have been broken during the passage though the dredge and pipeline while being transported to the beach.

A large part of the shell breakage is due to the large quantity of small and large pebbles included in the dredged material. Comparison of quantity of "gravel" in this sediment with the particle size analyses conducted for the borrow sites indicates that the sediments in the borrow sites were inadequately sampled. Gravel and coarse sand was not reported in the upper 2-feet of sediment sampled at both SO-5 or SO-6 in Table 4.4-5 but it is quite conspicuous in the sand at the Moonlight Beach receiver site. Obviously, sampling the upper 2 feet of sand is inadequate when the dredging plan calls for 20-feet dredge cuts. Any gravel in the material pumped onto the receiver sites subtracts from the effectiveness of the nourishment effort and, moreover, adds to the amount of coarse material that the program is supposed to deal with.

Only one of the mollusc species listed in the table below is similar to those listed in Table 3.4-3 (*Tellina* sp., see below) and it is likely that species is a short-lived "weed" species that is common in shallow grab or core samples rather than one of the two longer lived species found among the shells collected at Moonlight Beach. Thus, it is clear that the species used in previous studies to measure long-term impacts and recovery durations have been completely inaccurate and inadequate. Many of the species for which shells were collected and abundant in the dredged material live over 10 years and only recruit to the ecosystem infrequently. For these species, even if conditions are suitable, recovery of a stable, balanced age structure will require decades.

What this comparisons clearly shows is that the species collected in previous surveys and used to assess the ecological value and recovery periods for the potential borrow sites is inadequate. It is clear from a brief survey of the dredged material deposited on Moonlight Beach that large numbers of long-live species ("trees") were "harvested" by the dredging process but were not surveyed by the types of surveys that have been conducted previously to assess the ecological impacts of the dredging and beach nourishment programs. In particular, several species of large clams (e.g., Pismo, surfclams, and butterclams) were common in the shell debris.

BIVALVES

Pectinidae	**Lucinidae**	**Cardiidae**
Argopecten ventricosus – Pacific Calico scallop	*Here excavate* – Pit lucine	*Trachycardium quadragenarum* – spiny pricklecockle
	Lucinisca nuttalli – Nuttall lucine	
Veneridae		**Mactridae**
Amiantis callosa – White venus	**Tellinidae**	*Mactromeris ?catilliformis* – Dish surfclam
Chione californiensis – California venus	*Leporimetis obesa* – California fat-tellin	*?Simomactra* sp. – surfclam
Chione undatella – Frilled venus	*Macoma nasuta* – Bent-nose macoma	*Tresus* sp. – Gaper
Leukoma staminea – Pacific littleneck	*Macoma ?secta* – White-sand macoma	
Saxidomus nuttalli – California butterclam	*Tellina ?idae* – Ida tellin	**Semelidae**
Tivela stultorum – Pismo clam	*Tellina bodegensis* – Bodega tellin	*Semele decisa* – Clipped semele

SNAILS

Polinices lewisii – Lewis's moon-shell	*Neverita reclusiana* – Recluz's moon-shell	*Nassarius fossatus* – Great Western nassa
Bursa californica California frog-shell	*?Ophiodermella* sp. - turrid snail	*Megasurcula carpenteriana* – Carpenter's turrid

As would be expected when dredge depth exceeds 3 feet, shell condition indicated that the largest proportion of the clams and snails had not been freshly "harvested". Nevertheless, their presence in the sediments indicates they occur locally. However, the presence of periostracum on the exterior surface and the shiny interior surfaces on many of the shells indicated that an appreciable proportion had been killed by the recent dredging project.

This collection of shells represents only a hint of the magnitude of the injury that the "trees" in the infaunal assemblages in the borrow sites experienced as a consequence of the beach nourishment project. The largest proportion of the "trees" in this ecosystem do not have a shell that would survive dredging and transport through the pipelines to the beach. Thus, no evidence of that loss would be observed by examining the beach.

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Table 3.4-3
Summary of the Most Commonly Collected Infaunal Invertebrate Species Occurring Offshore from Oceanside to Imperial Beach (at water depths of 59 to 177 feet)

Scientific Name	Common Name	SO-9 Station 2286	SO-7 Encina R1	SO-6 Station 2293	MB-1 Station 1791	SS-1 Station 1944
Polychaetes		45-55'	60-85'	60-80'	68-75'	
Dipatra sp.	Onuphid	P	✗		✗	
Dispio uncinata	Spionid	✗		P	✗	
Euclymeninae sp. A	Maldanid	P	P			P
Mediomastus spp.	Capitellid		P			
Melinna oculata	Ampharetid	P	✗	✗		
Metasychis disparidentatus	Maldanid	P				
Monticellina sp.	Cirratulid	✗	✗			P
Lumbrineris sp.	Lumbrinerid	✗	✗	✗	✗	
Myriochele sp. M	Oweniid		P		✗	
Mooreonuphis sp.	Onuphid	✗	✗	✗		
Paraprionospio pinnata	Spionid	P	P			P
Petalodymene pacifica	Maldanid	P				
Pista disjuncta	Terebellid	P	✗			
Prionospio sp. A	Spionid		P			
Owenia sp.	Oweniid		✗	✗	P	P
Onuphis sp.	Onuphid	✗	✗	✗	✗	✗
Sigalion spinosa	Sigalionid		✗		✗	✗
Spiophanes bombyx	Spionid			✗	P	✗
Spiophanes missionensis	Spionid	P	P	✗	✗	✗
Streblosoma sp.	Terebellid	P	✗			
Sthenelanella uniformis	Sigalionid	✗	P			
Crustaceans						
Ampelisca brevisimulata	Amphipod	✗	P			
Ampelisca cristata	Amphipod	P	✗		✗	✗
Cerapus tubularis	Amphipod			✗		
Euphilomedes carcharondonta	Ostracod		P			
Leptochelia dubia	Tanaid		✗		P	
Pinnixa sp.	Crab		✗		✗	P
Rhepoxynius sp.	Amphipod	✗	✗	✗	P	✗
Photis sp.	Amphipod	✗	✗		✗	✗

Table 3.4-3. Continued

Scientific Name	Common Name	SO-9 Station 2286 Oceanside	SO-7 Encina R1 Carlsbad	SO-6 Station 2293 Cardiff	MB-1 Station 1791 Mission Beach	SS-1 Station 1944 Imperial Beach
Synchelidium shoemakeri	Amphipod				✗	
Tiburonella viscana	Amphipod			P	P	
Echinoderms						
Amphiodia urtica	Brittlestar		P	✗		
Dendraster excentricus	Sand dollar			✗	P	
Leptosynapta sp.	Cucumber		✗	✗	P	✗
Molluscs						
Acteocina harpa	Snail					✗
Caecum crebrinctum	Snail			P	P	
Halistylus pupoides	Snail			P	P	
Macoma yoldiformis	Tellinid clam	✗	✗		✗	✗
Olivella baetica	Purple olive snail					✗
Solen sicarius	Solen clam	✗				
Solamen columbiana	Clam				P	
Tellina sp.	Tellinid clam	✗	P			P
Turbonilla sp.	Snail		✗	✗		✗
Other Phyla						
Glottidia albida	Brachiopoda	✗				
Branchiostoma californiense	Sand lancelet			✗	✗	
Lineidae	Nemertea	✗	✗	✗	✗	✗
Tubulanus polymorphus	Nemertea		✗			✗
Phoronis sp.	Phoronida		✗	✗	✗	✗
Molgulidae sp. A	Tunicate			P		
Total Number of Individuals		256	491	171	164	133
Total Number of Species		62	118	29	51	43

P = Most abundant taxa ✗ = Identified as present

Sources: MEC and SCCWRP, refer to Appendix C.

From:	Dennis Lees
To:	Smith, Lawrence J SPL; kweldon@ci.encinitas.ca.us; lmeyerhoff@COSB.org
Subject:	Comments on Encinitas-Solana Beach EIS?EIR
Date:	Wednesday, February 20, 2013 1:04:09 PM
Attachments:	ACOE EIS-EIR comment ltr.docx

Hi, Larry,

It was good to see you again at your presentation of the proposed coastal protection project to the City of Encinitas. I wish I'd been able to also attend the presentation at Solana Beach but I was doing field work on the infaunal assemblages in the heterogeneous coarse-grained sediments at Lower Trestles on the afternoon low tide. I'm working there to extend the ideas that I've developed while assessing the effects of the beach cleanup for the Exxon Valdez oil spill.

I'm sending you my review of the USACE's EIS/EIR for the proposed coastal storm damage reduction project. As you can see, I did a fairly extensive review of several aspects of the proposed project. In particular, I focused on Managed Retreat, etc., and on the impact analyses for the natural resources in the borrow sites and the nearshore sand habitats adjacent to the receiver sites. I suspect you won't be thrilled with my comments as I've carried them along quite a bit further than I gave in my Powerpoint presentation.

I found the document lacking in many regards and I believe it is a very misleading and flawed document. Moreover, it contains numerous inconsistencies and ambiguities, or misrepresentations in the data presented. I was particularly disturbed by the limited treatment of Managed Retreat or other approaches to deal with beach and coastal erosion in a long-term, rational manner. I spent most of yesterday reviewing and discussing studies that have been conducted in California and elsewhere and have provided a brief discussion of some of that large body of work, none of which was discussed in the brief section in the EIS/EIR in which Managed Retreat was dismissed for further consideration. Moreover, the discussion of the potential impacts to the borrow sites and nearshore resources in sandy habitats in the vicinity of the receiver sites, e.g., Pismo clams, is superficial and ignores the physica, oceanographic,l and biological effects of creating 20-foot deep basins in which circulation will be dramatically reduced. Furthermore, it appears the proposed borrow sites, which apparently are different from the originally proposed borrow sites (one of the inconsistencies or ambiguities), have not been surveyed at all, let alone in a manner that allows a realistic assessment of their ecological value. In view of the proposed 50-year duration of this project, these issues are very important and must be addressed.

Thanks for bringing my inaccuracy regarding the coverage of borrow sites in the EIS/EIR. What I found was that I had looked particularly at Appendix H - Potential Impacts to Nearshore Resources and Mitigation and Monitoring Plan, where I would have expected a detailed description of potential impacts to the borrow sites. There, my comment regarding only a single reference to borrow sites was correct and that reference pertained to only cultural resources. However, in reviewing the main document, I found that my conclusion was correct. The potential impacts were either grossly underestimated or poorly evaluated. As you will see in my comments, my estimation for impacts in the borrow sites differs considerably from what is suggested in the document. I believe the project would cause substantial impacts in these areas that would last far longer than the 50-year duration of the project.

I hope my comments are useful to you and your team. If there is any way I can help to improve this document or develop meaningful biological data to address potential impacts, please feel free to contact me.

Cheers, Dennis

Littoral Ecological & Environmental Services
1075 Urania Ave.
Leucadia, CA 92024

From:	Ming, Susan M SPL
To:	Schlosser, Heather R SPL; Smith, Lawrence J SPL
Subject:	FW: ACOE Impute February 24, 2013 (UNCLASSIFIED)
Date:	Monday, February 25, 2013 5:49:50 PM
Attachments:	6_3-Magnitude Earthquake Strikes Off San Diego Coast KPBS_org.htm

Classification: UNCLASSIFIED
Caveats: NONE

-----Original Message-----
From: Leslea Meyerhoff [mailto:lmeyerhoff@cosb.org]
Sent: Monday, February 25, 2013 5:48 PM
To: Ming, Susan M SPL
Subject: FW: ACOE Impute February 24, 2013

Leslea Meyerhoff, AICP

From: Ron [prosth@cox.net]
Sent: Sunday, February 24, 2013 5:11 PM
To: Leslea Meyerhoff
Subject: ACOE Impute February 24, 2013

Ms. Leslea Meyerhoff, AICP
Project Manager – City of Solana Beach
635 S. Highway 101
Solana Beach, California 92075
Phone: (858) 720-2446
LMeyerhoff@cosb.org<mailto:LMeyerhoff@cosb.org>

Ms. Leslea,

I strongly support the Army Corps Shoreline Protection Project Alternative SB-1A. Sand is long overdue for the Solana Beach shoreline.

December 14, 2012 a 6.3 magnitude earthquake occurred off the California coast. (See attachment). On February 22, 2013 a 4.3 magnitude earthquake was reported 50 miles southwest San Diego, 40 miles off Baja California. It was felt as far north as Vista, California.

Whether it is the potential of a Tsunami from an earthquake, the normal winter storms or Sea Level Rise from Global Warming, a substantial sandy beach will help protect the bluffs in Solana Beach and the homes on those Bluffs.

We live on the north rim of the bluffs above Tide Park. It is called Tide Park as in the winter when the sand is out and the tide in, there is no park and vice versa. There are also varying combinations of the two.

Tide Park is a Solana Beach City Park, taking it over from San Diego County in 1986 when Solana Beach became a City. Most winters the sand leaves Tide Park and the high surf comes close to or does go over the top of the revetment.

A few years ago the City placed sand up against the revetment wall in Tide Park. The sand remained all winter providing protection for the revetment and the homes above. Our home is the 1st bluff home north of the revetment.

The revetment is not a very strong wall but a sand berm has shown that it can keep the waves from hitting the wall extending its life. The revetment was constructed by San Diego County prisoners. It was made out of sand bags filled with cement and after their placement they were wet down. The south 1/3 was made 1st and several years later the northern 2/3s was made around 1973. It had no foundation or a small one. In approximately 1997 a sink hole developed behind the wall at 509 Pacific Ave (the last house above the north end of the wall). The sink hole developed from the waves washing the sand out from under the wall. The City filled the sink hole with concrete. At some time the City put in a foundation which is currently exposed from the sand removal by the surf.

The recent SANDAG 2012 sand replenishment put no sand on the beach from the north end of Solana Beach south to just before Fletcher Cove. Tide Park got no sand. The recent winter storms have reclaimed considerable sand out of Tide Park. Cobble stones are off and on exposed and the foundation of the revetment is showing at the Park. Some years there has been a lot of cobble stone.

If ACOE places sand in Tide Park, in the winter, 70% of any leaving shore will travel south in the Oceanside Littoral Cell. The sand will not interfere with the surfing at Table Tops which is north of Tide Park and it will keep the waves from hitting the revetment and sand stone.

I wonder if no sand is placed in Tide Park will the storms be funneled into the Park due to there being more sand north and south of the Park.

The Environmental Impact Statement and Report is very thorough.

Thank you for all you are trying to accomplish.

Ron Lucker
517 Pacific Ave
Solana Beach, CA 92075

Classification: UNCLASSIFIED
Caveats: NONE

From:	Jack Mariani
To:	Smith, Lawrence J SPL
Date:	Monday, February 25, 2013 3:41:30 PM

We strongly recommend support of the sand replenishment program for many reasons, but first and foremost, public safety. There have already been too many fatalities because of lack of seawalls and the need for proper sand replenishment.

Jack and Marjorie Mariani

347 Pacific

Solana Beach, Ca 92075

2/6/13

CITY OF ENCINITAS
CITY CLERK

2013 FEB -6 PM 4:02

LYNN + RUSSELL MARR
434 LA VETA AVE
LEUCADIA, CA 92024

Josephine R. Axt, Ph.D
Chief Planning Division
U.S. Army Corps of Engineers
Los Angeles District
P.O. Box 532711
Attn: Mr. Larry Smith (CESDL-PD-RN)
Los Angeles, CA 90053-2325

Please accept the following as public comment re the sand replenishment program that is being reviewed for Encinitas and Solana Beach. We feel that excessive sand is destroying valuable flora and fauna. There are signs warning us not to pick up sand dollars, etc., at D Street beach access and the Cardiff Tidepools. Yet the recent dredging project first smothered the flora and fauna, destroying the environment. Then winter storms washed all the sand away.

We feel the only viable option is "Managed Retreat." I have used Denis Lee's post on Encinitas You Need Us on February 3,2012, http://encinitasyouneedus.blogspot.com/ to compile the following remarks.

Mitigation or viable alternatives for "impacts to nearshore resources in the ACOE EIS/EIR for its proposed Encinitas/Solana Beach beach protection program are insufficient in your report.

In addition to eliminating a discussion on managed retreat, the ACOE document doesn't address environmental or fisheries impacts in the borrow sites at all. In fact, the only mention of "borrow sites" was to mention that a cultural resources survey will be conducted prior to dredging.

It is likely, based on research conducted in nearshore waters, that biological resources in these areas vary substantially. However, studies assessing potential impacts to these habitats have failed to address this variation or adequately evaluate the ecological value of any of the proposed borrow sites and use the differences in ecological value as a criterion for site selection. These evaluations should be used to ensure that any dredging that occurs avoids the areas of highest ecological value, as demonstrated by intensive surveys by qualified benthic ecologists with experience in this habitat. Basically, previous studies have evaluated the "weeds" in the system, i.e., the ephemeral organisms living in the upper few inches of the sand, rather than the "trees", i.e., the long-lived organisms that live down to 2 or more feet deep in the sand (and equal to dredging depth) and contribute the most to fisheries. A consequence of this flawed approach is that the potential effects of dredging and the projections for recovery times are grossly underestimated.

In the past, agencies have not understood these issues and have accepted this approach. However, we are seeing changes in agency philosophies regarding the approaches for evaluating borrow sites and beach restoration programs. The California Coastal Commission is now starting to request studies addressing the issues involving the "weeds" and the "trees", which is the approach taken in discussions of nearly every other ecosystem subjected to development activities. (For example, when we assess the effects of clear-cutting in a redwood forest, an activity analogous to the proposed dredging program, we make the decisions based on the long-lived redwoods and other trees in the forest, not on the ephemeral grasses and short-lived shrubs growing on the forest floor.) In addition, the National Marine Fisheries Service appears to be leaning this direction.

However, the bottom line here is that the ACOE has completely omitted any discussion of Managed Retreat and borrow-site impacts from a proposed 50-year project that would require dredging many times more sand for the beaches in Encinitas and Solana Beach than all the dredging done for beach "nourishment" to date. These omissions are unacceptable. These environmental issues need to be addressed to protect the environment and our fisheries. Moreover, we need to protect the taxpayers. Particularly in light of sea-level rise, this is a battle that we cannot and will not win. We should make a wise decision to cut our losses and put the money into efforts that make sense for ALL taxpayers, not just wealthy landowners and businesses.

Recent comprehensive cost-benefit studies in Monterey Bay have show is the best environmental and economic alternative in the long term. Investigators, led by Dr. David Revell, have been evaluating the costs and short- and long-term benefits of a variety of approaches to shoreline preservation and restoration (beach nourishment, revetments, sea walls, armor rock, artificial reefs, etc.) and has come to some very interesting conclusions. I believe they have concluded that all but Managed Retreat are basically pouring money down a rat hole. Mother Nature will win in the end, whatever we do, and we are just delaying the final outcome at great expense to the taxpayers.

Managed Retreat, however, definitely does not satisfy the influential property and business owners, who are pushing to have their property protected at taxpayer expense.

The footprint for the proposed Encinitas/Solana Beach project is 3-4 times larger than the recently completed beach nourishment program and about two-thirds of it would occur here in Encinitas. The remainder is off San Elijo Lagoon and Solana Beach."

For these reasons we object to the proposed Encinitas/Solana Beach project. Bluff failure does not constitute an emergency situation that necessitates wasting money and degrading our shoreline ecological resources. We have had too much sand, already. The entire bottom flight of stairs at Stonesteps Beach, in Encinitas/Leucadia, has been buried beneath sand, for years. Excessive sand is killing the kelp, affecting the surf, affecting fishing and lobster catches. A few cobbles on the beach are not going to cause economic ruin. We do not have wide, sandy beaches here, naturally, as in Florida.

The Coastal Coalition, under Director Steve Aceti, is part of what we describe as BIG SAND, a group of self-awarding, sand lobbyists that is under contract with the City of Encinitas, the City of Carlsbad, and private bluff top property owners. Many homes have been built on unstable bluffs, and continue to be "intensified" in their use through remodels and expansions. We do not feel that the people, we taxpayers should have our money wasted and our ecological resources, our environmental heritage devastated by excessive sand replenishment, which disproportionately benefit the economic interests of a blufftop property owners. No study has shown that tourist businesses suffered before we began initiating sand replenishment, or that sand replenishment, itself has incurred more sales tax revenues for the City of Encinitas..

We do not want seawalls, and concur with the Coastal Commission policy, as we understand it, that these would only be installed in cases of extreme emergencies, which immediately threaten public health and safety. Permits should not be renewed, once the emergency has been addressed, for intensification of the variance given for a seawall. A seawall at Beacons is unacceptable.

We would advocate for sand replenishment every 10 years, maximum, as part of a process of "managed retreat." This alternative should be further explored and presented to the public in depth, for our review and more comments.

Lynn and Russell Marr
434 La Veta Avenue
Leucadia, CA 92024

760-436-0129

Lynn Marr 2/6/13

RMarr

USACE 50 YR. BEACH REPLENISHMENT PLAN PRESENTATION 6 FEBRUARY 2012

ANALYSIS OF PROPOSED USACE PLAN EFFICACY IN ACCOMPLISHING ENCINITAS CITY BEACHES LONG TERM MANAGEMENT GOALS

Garth Murphy
Integrated Ecosystem Management
The economy of unified social, business, natural and technological ecosystems
649 South Vulcan Avenue
Encinitas, CA 92024
Phone 760 7538360

ABSTRACT: The USACE Plan as presented does not address the complex of Encinitas City beach erosion and sand replenishment management needs or goals. It only addresses beach sand augmentation at the bluff toe of 1.5 miles of the City's 6 miles of sandy beaches, **excluding** another 1.5 miles of bluff and beach, from 1000 feet south of Beacon public access north through Leucadia to Batequitos Lagoon, and all 3 miles of beach south of H Street, including restaurant row and the rest of the San Elijo estuary frontage sandbar. Under the Plan, the volume of sand to be deposited on the 1.5 miles of beach just north of Swamis Reef is unprecedented in the last 55 years, with unknown consequences, positive or negative, for the affected beach, bluff retreat prevention or the adjacent subtidal marine ecosystem. The single borrow site for Encinitas is in the middle of the Swamis MPA. Alternate, less ecologically valuable sand borrow sites were not evaluated or considered. (See response of Dennis Lees for detail on Plan dredge site evaluation faults.)

The five hundreds of pages of scientific papers and research published in the USACE Plan are basically sound. But many studies are incomplete and important study elements are missing. What is critically unsound is the unfounded USACE recommendation drawn from the volumes of reports - that a large sand pile placed every five years along a small portion of the bluffs in the middle of 6 miles of Encinitas beaches will resolve City beach and bluff erosion, public access and safety issues for the next 50 years, without significant negative impacts.

The proposed initial cost of creating the Plan and proposed constructions, payment sharing structure, liability and management sharing responsibilities, leave the City in a costly legal, financial and management bind, without accomplishing beach erosion goals. The Plan, as is, is unacceptable. The overall inadequacy of the Plan to address Encinitas' suite of beach and bluff erosion goals in an efficient, cost/beneficial manner, makes the Plan a losing proposition for City of Encinitas residents and US taxpayers, who will share the bill.

The only reasonable response, if this is to be considered a finished plan, is the no action option.

Because most of the basic research presented is sound, the plan could be augmented and modified, with well designed City, SANDAG and some current scientific input and updates, to give it a reasonable chance of achieving City of Encinitas integrated beach ecosystem social and business management goals, while reducing total and plan development costs and potential negative impacts to the subtidal marine ecosystem, especially the reef and sandy habitats and related flora and fauna within Swamis MPA. (Moonlight to Seaside Bluff at Solana Beach)

PLEASE CONSIDER THE FOLLOWING ANALYSIS AND SUGGESTIONS:

I. CITY OF ENCINITAS BEACHES - INTEGRATED SAND REPLENISHMENT GOALS:

* **Protect**, preserve, restore and stabilize our 6 miles of valuable public beaches.
* **Reduce** bluff erosion to protect safe public access and bluff-top private property, by securing the toe of the Encinitas bluffs with a well placed strip of sandy beach.
* **Retain** and maintain sandbar beaches at the estuary mouths at Batequitos, San Elijo and Cottonwood Creek (Moonlight), to protect and safeguard public access and property; to protect private property at Restaurant Row in San Elijo/Cardiff; the highway, parking and buildings. (These beaches are not Bluffs, wave-cut terraces naturally subject to retreat. They are created by wave action on river and creek sediment flow. Estuary mouth sandbar protection strategies may include beach sand replenishment, beach widening or estuary fill, mechanical water flow maintenance and grade adjustments.)
* **Minimize** negative impacts of beach replenishment to the marine ecosystem, at the offshore borrow sites and to nearshore intertidal marine species and particularly the seagrass meadows, red and brown carpet algae and mussel beds that are exposed at low tide at Swamis and Seaside, where underlying reefs extend above low tide level to the bluff face.
* **Establish** adaptive management strategies and parameters to guarantee efficient maintenance and stability of City beaches over time with respect to these goals.

II. EFFECTIVE SAND REPLENISHMENT: GENERAL ISSUES
* Does replenishment work? Yes, if done correctly
* Does it protect the Bluffs from erosion? Partially
* Does it protect the Sand Bars from erosion? Yes
* Who pays? When? Federal, State, County and City financing
* Costs/benefits? Positive only if designed and implemented efficiently. Constant monitoring and a delicate touch are required for successful mechanical beach sculpting, that mimics and enhances natural processes during and between work cycles.
* What are the potential impacts to the Marine Ecosystem: With respect to borrow site dredging? Beach deposits, where, when, shape, volume? Known episodic and continuous erosion patterns of added sand? The formation of new offshore sand bars? Reef flora and fauna covered by new sand? Temporary turbidity? Direct biological effects at dredging and placement sites; deaths or new life for plants and animals?
* STRATEGIES to maximize benefits and minimize costs and damages: Locating and Timing dredging and sand placement activities, yearly and seasonally. Depth and size (acreage) of dredging sites. Determining the repeatability of dredge sites as borrow sources. Determining amounts of sand deposited each cycle. Designating deposit sites and beach sculpting shape designed for maximum stability and minimum erosion.
* MONITORING to inform **adaptive management**: Geophysical and biological impacts at borrow sites and beach deposits, before and after the mechanical activities: natural sand replenishment and restoration of biota rates in the borrow hole, to determine subsequent borrow location; on the beaches to determine best subsequent replenishment locations, timing, deposit volume and sculpting. Long term, **replenishment is an experiment to be fine tuned and improved over time with experience and strategic observation.**
* Establishing ADAPTIVE MANAGEMENT goals strategies and parameters.
* Designation of and assigning planning, management and monitoring responsibilities to various government entities and personnel, including decision making hierarchy, costs, liabilities, fair payment sharing and donor percentages.

III. HOW USACE PLAN EN1A FAILS TO ACHIEVE ENCINITAS CITY INTEGRATED BEACH REPLENISHMENT AND EROSION ABATEMENT GOALS
  * Studies and affects only 1.5 miles of city beach, between the 700 block of Neptune Avenue, south of the Beacon's public access, and H Street in downtown Encinitas.

* Deposits 680,000 cubic yards in this 1.5 mile stretch, 1/4 of the City's 6 miles of beach, creating a beach berm and slope 210 feet wide, more than twice the maximum beach at any time in the last 50 years, in a location destined to quickly erode directly onto the shoreline reef at Swamis MPA. (Sand flow is down-current and downhill, north to south and east to west.) This large amount of sand is justified by the USACE as required to exceed all anticipated seasonal erosion and episodic storm beach retreat for 5 years; a level to be maintained by 5 yearly dumps of a third to a half the initial sand deposit.
* Failure to consider that this stretch of beach is a point, that has the largest surf and strongest shoreline sand transport rate in Encinitas.
* Plans of estimated 2 year sand position at the dump site are not realistic. Very little sand transport is acknowledged or anticipated. The formation of offshore bars on nearshore reefs is ignored. Sand is a liquid element that does not stick to rocky bluffs or points. The offshore reefs are flat, covered with surfgrass and kelp forest. By nature they are vulnerable to sand coverage.
* Failure to consider or protect Beacon and the 1.5 miles of Leucadia city beach north of 700 Neptune, upstream in the well documented north to south sand flow literal. Not a speck of deposited sand will infill to mitigate bluff retreat in this critical stretch of beach.
* Failure to consider or protect the other 3 miles of city beaches south of H street, including the State Park, Highway and Restaurant Row at the San Elijo estuary.
* Does not recognize, analyze or provide specific solutions for the Encinitas City beaches that are not backed by bluffs - the natural sandspits and sand bars at Batequitos and San Elijo that are not always in retreat, that suffer from being too low, not too high, that are mostly not built upon, that require sand replenishment to widen beaches as well as grade adjustments to withstand episodic storm surges and anticipated rising ocean levels.
* **The ignored San Elijo's sand bar strip, with Coast Highway restaurants and bars, is unique, with unique problems and solutions. It is also potentially a golden opportunity for City visitor public recreation, with many unexamined options for maintenance and long term beach and access improvements.**
* At the meeting on Feb 6th, the USACE officially decoupled their beach replenishment Plan from the San Elijo estuary dredging and restoration project of ten years union, which potentially would have contributed a large amount of sand to the adjacent sand bar strip and increased natural sand flow both at the existing north outlet and a new second one at the south. No reason for this decoupling was given except expediency.
* The Plan deliberately ignores all city wide bluff erosion above the high water mark at the base or toe. Management of erosion of the soft upper 60 feet of bluff is consigned to the City and property owners.
* The plan does not consider erosion from wind, rain, earthquake, ground water or deep rooting tree impacts to the upper or lower bluffs.
* Heavy groundwater seepage, rotting and weakening the lower bluff between E Street and San Elijo State Park, is not analyzed or resolved. This task is left up to the City.
* Changes to the management of California coastal subtidal ecosystems, mandated by the Marine Life Protection Act, and in particular the Swamis MPA that went into effect in January of 2012, were ignored.
* Underwater parks and leases in State Waters, formerly belonging to State Parks, at San Elijo to D Street, and the City of San Diego in La Jolla/Del Mar, were cited in the Plan as reasons for actions/inactions. **All former state and city marine protected areas, leases or underwater parks were formally canceled or adopted into the new network of California MPAs. Very important to note this change in offshore MPAs.**
* Potential impacts to the new Swamis MPA, especially red and brown carpet algae and surfgrass, growing right up to shore at Swamis Point, exposed at low tide, and the

unmentioned intertidal mussel beds were underestimated considering the amount of sand deposited at H street, just up sand-littoral from the point, and the episodic nature of beach sand erosion. Surfgrass is a true flowering grass with roots. It only lives in shallow sunlit water, unlike kelp. Surfgrass can survive a short stint under sand but needs light to make chlorophyl. No light, the leaves turn brown, rot and die. If the roots also die they are slow to regenerate, and may not return at all, as wave action in the nearshore makes new rooting difficult.   **The reef habitats, Surfgrass meadows, persistent Kelp beds and San Elijo estuary connection are the most important rationale for the siting of the Swamis MPA in Encinitas**. There is no logical, ecological or economic reason to negatively impact them with this over-concentrated, unjustified, sure to under-perform beach replenishment scheme. (Plan EN1B has an admitted lesser impact on adjacent reefs, but the preferred Plan is Option EN1A.)

* EN1A and EN1B are both listed as having 100 ft augmentation for 210 ft of total beach on pages 432/433 and as 100ft EN1A and 50 ft EN1B on page 497/498???
* Impacts and natural history of SANDAG's 2000 to 2012 Encinitas sand deposit projects were not monitored photographed or properly studied by the USACE.
* There was little evidence of any USACE cooperation with SANDAG engineers and their history of research and monitoring of sand placement and episodic or continual erosion patterns or effects in their Encinitas projects. No before and after photos.
* The USACE Plan overestimates the chances of silting the lagoon mouths at San Elijo and Batequitos, citing the danger of lagoon silting as the reason they put their big sand bank in the center of Encinitas. There is no chance at all of silting Batequitos lagoon to the north, with a prevalent north to south sand flow, and very little at San Elijo, which naturally silts in summer, after the rains end, and is maintained open mechanically by periodic bulldozing to enhance lagoon tidal flushing. This silting non-issue is obvious in the decoupled San Ellijo lagoon restoration plans.
* The USACE Plan does not resolve beach safety issues from block falls at the designated placement site, nor bluff failures and emergency access on the other miles of eroded City beaches.
* There was no Plan study of seasonal timing merits for dredging and deposit.
* Adaptive management was barely mentioned in an annex to the plan; not elaborated, strategized, prioritized or assigned a place in the management chain of command in the core summary or Recommendations. **Adaptive management is an absolute requirement for maintenance of beach stability, in order to efficiently modulate sand replenishment volumes, sculpting and siting in an ecosystem subject to constant waves and currents, exacerbated by episodic severe weather events,.**

* PLAN IMPLEMENTATION AND RECOMMENDATIONS OF R. Mark Toy, Colonel, USACE, (pages 500 and 520) contain disturbing cost revelations, with inequitable contract terms, potentially detrimental to City of Encinitas residents and US taxpayers: 1. Costs quoted depend on receiving a waiver by Congress of the 100% cost share billed to beach front private property owners who do not comply with legal requirements of maximum 1/4 mile distance to nearest public access and lot build out. 2. Cost sharing is about 64% Federal and 36% City for the first deposit, 50/50 for all subsequent deposits. 3. Encinitas and Solana Cities costs are not differentiated or billed separately. 4. California Department of Boating and Waterways **may pay** up to 85% of City shares. 5. The Cities have to organize all of their funding before implementation and pay 25% of planning costs up front. 6. Costs of Implementation are diverse in Implementation and Recommendations sections, pages 501 and 520: $177,121,000 and $166,900,000 total costs respectively; $38,635,000 or $45,900,000 initial dump payment including all study/planning costs or PED; $138,486,000 or $121,000,000 total continuing dump payments to completion. 7. Taking the Colonel's

figures of $45,900,000 initial dump and ten subsequent five year dumps at $12,100,000 = $121,000,000, for a $166,900,000 total, with the subsequent dumps contributing about 40 to 50 percent of the initial dump volume, depending on which of the conflicting Option EN1A initial volumes quoted on page 420, at 680,000 cy and page 501, as 820,000 cy, with succeeding 10 yr. volumes of 280,000 or 340,000 to 400,000 cy., you use. 8. **The planning and management costs portion of the initial dump payment would be 19 to 21 million dollars with $24,200,000 est. cost for the double size initial sand deposit, for a total $45,900,000.** These are rough, tough figures to decipher because the plan is replete with errors of fact and all hidden planning costs are absorbed in the initial deposit. What is definite is that the Cities pay 34% of the exorbitant costs of initiating this flawed plan, 25% in advance. 9. The City of Encinitas has to assume **ALL public and private LIABILITIES** that might arise as a result of USACE Plan implementation unless negligence of the USACE is proven. 10. The City of Encinitas is required to operate, maintain, repair, rehabilitate and replace the project or functional part of the project between sand deposits. 11. The City is responsible for monitoring the beach and determining sand losses twice yearly. 12. The City is to prepare a yearly beach protection report to submit to USACE. (10, 11, 12 have no funding for the City works described therein.) 13. The USACE retains all rights and funds for contracting, supervising construction and monitoring, after all Federal/City funding is pledged.

* These costs, structure of payments, management and contract responsibilities are not acceptable to City of Encinitas Residents.
* The Plan in general and Option EN1A in particular are replete with errors of fact and judgement.
* The cost of elaboration of the Plan itself is unacceptable.

IV. WHAT DOES THE USACE PLAN OFFER THAT COULD HELP ADVANCE CITY BEACH ECOSYSTEM GOALS

* The hundreds of pages of basic scientific studies cited and published in the plan, legal language and laws quoted, and the copious annexes are mostly accurate/acceptable.
* There is a solid general legal and scientific structure within the plan to request and receive Federal funding for Hurricane and Severe Storm Relief.
* The cost benefits analysis is positive, which would be true of replenishment under an augmented and improved plan that is well researched, designed, monitored and executed under an adaptive management regime.
* Because no significant negative marine ecosystem impacts were detected as a result of the plan, because the plan’s defects were in illogical replenishment solution specifics and study omissions, not the merits of well designed replenishment, the plan could be altered and augmented to allow it to comply with the finding of no significant negative impacts, while at the same time enhancing integrated beach ecosystem stability goals of the City of Encinitas.

V. SUGGESTED ALTERATIONS AND ADDITIONS TO THE USACE PLAN TO COMPLEMENT CITY OF ENCINITAS INTEGRATED BEACH ECOSYSTEM MANAGEMENT GOALS.

* Abandon the current USACE plan with its errors and crippling development costs and start anew, taking its good sections into a new short, sweet plan.
* Use SANDAG’s last sand replenishment plan and experience as a base. It was excellent in most aspects; we can expand and improve on it.
* Establish adaptive management goals, hierarchy, procedures and strategies as the controlling system for the 50 year replenishment plan duration.
* Establish local control of replenishment activities and timing, SANDAG or City.

* Prepare a contract between the partners that is fair, efficient and likely to succeed.
* Spread most of an initial deposit of 600,000 cu. yd. over the entire bluff beach of Encinitas from Batequitos lagoon to H street, about 3 miles total. (Like EN1B with 50 ft of new beach but at twice the length)
* Reserve some of the initial sand allotment for deposit at San Elijo Estuary sandbar beach, if needed by 2015, the target start year.
* Examine borrow sites outside of Swamis MPA, at Batequitos etc., to locate the best sand with the least biological values. Cardiff sandy habitat and its intact suite of species is needed for interactions with reef habitat species to the north and south and the critical conjunction with San Elijo Lagoon for breeding and juvenile rearing, in order to a complete food web life cycles for maximum sustainable MPA biomass. There are alternate sand dredge sites outside of Swamis MPA, which already must contend with dredging at the San Elijo estuary mouth and a high volume sewer outlet.
* Sculpt deposit sand banks to slope toward the water line to absorb the energy of wave run-up without scouring, with the slope summit at 8 to 10 feet above the highest tide line at bluffs or rocks or seawalls. Slope one foot for every ten at natural waterline and graduating to 1 in 4 at bluff. The beach should be a bleacher, not a volleyball court, to better absorb wave energy in run-up, while retaining the maximum volume of sand at bluff base for the maximum amount of time. This shape of beach will mimic the natural crumbling and slide of sand from the bluffs to the base that we seek to stop, and mechanically replace.
* Study the lagoon front sand bars and examine all opportunities and remedies for the unique problems they face.
* Explore the option of permanently widening the beach and parking from Cardiff Chart House Restaurant to Seaside Beach, eventually raising the road grade and putting a causeway bridge over a section of the south end to allow another natural San Elijo lagoon opening. This is an area of beach opportunity without negative impacts.
* Carefully monitor all points along the beach, before and after sand placements,noting the first dates and points where waves reach the cliffs at high tide, any anomalies in sand transport, formation of offshore banks, reef coverage and seasonal variations. The lifeguards should be the vanguard in this effort. Find, analyze and map weak points to determine best places for future augmentation.
* Devise a way to collect and pump the ground water in downtown Encinitas to water local parks, especially the Hall property which will require a lot of water which will seep down to the water table and return to the beach.
* Study and choose the best ways to stabilize the soft upper bluffs. Ask private property owners to adopt or install them. There are good examples already in place.
* Fund and post bilingual signs explaining bluff failure dangers in the 8 feet of beach closest to the bluff, along all bluffs. Post signs on every existing block fall as examples to beware.
* Adjust existing rip rap stones for stability and wedge shape, with high side to the bluff. (Loose rip rap needs help immediately, at D street and south Beacon.)
* Plan and post signs extolling the Swamis MPA and explaining its role, rules and rationale. This MPA should be considered a potential tourist magnet, once it matures, if marketed properly.
* Beach sand replenishment is not rocket science. It is a logical, observable physical construct that requires intelligent adaptive management based on timely observation and experience.

Garth Murphy

From:	Katherine Weldon
To:	Ming, Susan M SPL
Cc:	Smith, Lawrence J SPL
Subject:	FW: Comments on 50-Year Sand Replenishment Project
Date:	Friday, February 08, 2013 8:40:35 AM

Not sure how to handle this one.

From: Eric Ziegast [mailto:ziegast@gmail.com]
Sent: Thursday, February 07, 2013 5:22 PM
To: Katherine Weldon
Subject: Comments on 50-Year Sand Replenishment Project

Thank you Ms. Weldon for making the "Encinitas-Solana Beach Coastal Storm Damage Reduction Project; San Diego County, California; Appendix D 404(b)(1) Evaluation" document available online for public review. I was unfortunately unable to attend the meeting.

I have read the plan provided online, and it seems to me to have an Environmental Impact Review board as its primary audience. The plan is wanting for details that are important to Encinitas residents.

Please also let me know if I should be reading any other materials not provided by this "Appendix D". This document does not look like a 50-year plan as described in the press (http://thecoastnews.com/2013/01/public-can-weigh-in-on-50-year-beach-replenishment-plan/) or the Encinitas web site (http://www.encinitasca.gov/index.aspx?page=30&recordid=371). Are there other documents made available at the Feb 6th, 2013 meeting that were not made available on the encinitasca.gov web site?

There are no definitions or map included to describe "Segment 1" or "Segment 2" in any detail. As best as I can deduce, "Segment 1" roughly means "Encinitas". There is no description of what "High SLR" or "Low SLR" means in the plan option charts. The sites for borrowing and depositing material is not defined or illustrated within the document. The "hybrid" options and "notch fills" are not clearly defined. This document does not appear to be complete, or is at least not targeted toward the general public.

How much is each option expected to cost? What are the benefits of each option? What are the physical, environmental and economic impacts of the "No Action" plan?

How do artificial reefs work in "Section 2" and what are their expected impacts on the beaches of Solana Beach? Why are artificial reefs being considered for only Solana Beach? Should artificial reefs be considered for Encinitas?

The plan appears to be a choice between 1) actions we already seem to do and 2) doing nothing. I do not see how the plan takes into consideration options that look 50 years ahead. I see no discussion of technology like jetty/groin systems or underground breakwaters or dune and bluff management. Even if the cities of Solana Beach and Encinitas and the Army Corps of Engineers agree that plain beach replenishment is the best option, I would like them to have at least state that they reviewed and considered other options as part of due diligence. Is there anything we can invest in now that will reduce the need for replenishment 50 years from now?

Instead of planning beach replenishment along the entire coast or doing nothing, has anyone considered a point defense system surrounding public beach areas used by the public? Is it fair to ask taxpayers to pay for beach replenishment in front of residential bluffs when the housing owners above the bluffs are the primary beneficiaries of beach replenishment in front of their bluff? Should the homeowners on the bluffs be asked to contribute more?

In a "No Action" plan, what is the viability of commercial structures and roadway and rail infrastructure south of the San Elijo Lagoon outlet in Cardiff? Is it more cost effective to protect the roadway and railway without beach replenishment using barrier systems or other technology?

What effects do already-constructed bluff sea walls have on beach erosion? Are there any policy changes on sea walls that could positively or negatively affect future beach replenishment efforts? Can land use changes or land management policies above the bluffs make a positive impact on the effectiveness of beach replenishment?

What impact do any beach replenishment plans made by Encinitas or Solana Beach have on neighboring communities, and what impact will beach replenishment or other measures in other communities have? Should other San Diego Countymunicipalities contribute to the costs? Should a beach replenishment program be expanded into Carlsbad or Del Mar? What role will Federal or State funding have on the project? Is sustainable funding available for 50 years?

If one researches tide and weather models over the next 50 years, do we need to make extra preparations in beach replenishment plans to consider increasing erosion? Based on current projections (are there any?), are the costs 30-50 years from now expected to significantly increase or is the frequency of replenishment expected to increase? Are projections severe enough such that a 50-year plan for beach replenishment would be considered an exercise in futility? Should we attempt a 20-year plan instead and see how well it works and let predictions and science catch up before committing funding to a 50-year plan? If the City of Encinitas cannot yet agree on a 35-year General Plan, especially on the growth and land use projected for our city, how can its residents agree on a 50-year beach replenishment plan? Where will the money come from? Will funding sources be sustainable?

Aside from providing more information about environmental impacts, this report made available on the Encinitas web site raises more questions than answers. I request that our elected representatives require a more complete report that answers important questions before choosing any plan proposed in the existing "Appendix D" document.

--
Eric Ziegast, Resident
1628 Clearwater Place
Encintias, CA 92024

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ATTORNEYS AT LAW

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ENCINITAS, CALIFORNIA 92024

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February 26, 2012

Josephine R. Axt, Ph.D.
Chief, Planning Division
ATTN: Mr. Larry Smith (CESPL-PD-RN)
U.S. Army Corps of Engineers
Los Angeles District
P.O. Box 532711
Los Angeles, California 90053-2325

Email: Lawrence.J.Smith@usace.army.mil

Wendé Protzman
Community Development Director
City of Solana Beach
635 S. Sierra Avenue
Solana Beach, CA 92075

Email: WProtzman@cosb.org

Re: Coastal Storm Damage Reduction Project
Comments from Coastal Property Owners

Dear Dr. Axt and Ms. Protzman:

We write to provide comments on the Draft EIR and EIS for the Coastal Storm Damage Reduction Project ("Project"). These comments are submitted on behalf of the Beach & Bluff Conservancy, the Condominium Owners of South Sierra Avenue, the HOAs for the most of the oceanfront condominium projects in Solana Beach, numerous individuals, and the undersigned. Together, these organizations and my firm represent more than 1,400 coastal property owners in Solana Beach, Encinitas, and Carlsbad, California.

We strongly support the Project. This project will save lives, save money, preserve property and property values, improve surf break quality, improve our local economy and ecology, and make our communities more desirable places to live and visit.

The beaches in both Encinitas and Solana Beach are characterized by steep and unstable bluffs that tower 70 to 80 feet above sea level. When these bluffs collapse anyone within 40 feet of the bluff toe is in grave danger. Since 1995, five persons have died from unexpected and sudden bluff collapses between north Torrey Pines state beach and Carlsbad state beach alone.

In Southern California, intensive and unprecedented development within the upland watershed blocks more than 95% of natural sediment flow to the beach. This highly unnatural condition causes beach erosion, access problems, safety problems, and it endangers coastal development giving rise to the need for seawalls and other hard structures. Your Project, <u>which will bring sand to the beach in the same manner that Nature herself used to do it during storm events</u>, begins to solve this very serious man-made problem.

In highly urbanized areas, especially at beaches backed with coastal bluffs, it is critically important to replenish the sand that development has permanently removed from the littoral system. Sand on the beach has many proven benefits including:

1. Increased public safety;
2. Improved vertical and lateral access to a wider, safer beach;
3. Increased property values and property tax base;
4. Enhanced tourism opportunities and desirability;
5. Enhanced beach quality;
6. Enhanced surf break quality;
7. Enhanced habitat for seabirds, aquatic animals, and marine plants;
8. Protects coastal dependent facilities and coastal structures; and,
9. Reduces the need for seawalls and similar coastal protection devices.

As you know, beach nourishment has already occurred in both Encinitas and Solana Beach in 2001 and 2012 with no documented adverse impact on surfing or ecological resources. Many surfers have stated that the RBSB projects have improved surfing quality at many locations. We believe that the Project will continue this very positive trend.

While we understand that some might be concerned about the possibility of negative impacts on surfing resources, we believe that these skeptics have bad information. Beach nourishment is no different than what used to occur naturally during heavy rains prior to damning of rivers and the massive urbanization of Southern California. Moreover, beach nourishment has been used to enhance surfing in many locations. For example, nourishment at Super Bank in Australia created a world-class wave. Most surf spots in Encinitas and Solana Beach are bedrock low tide terraces (e.g., Rock Pile, Fletcher Cove, Boneyards, “D” Street, Moonlight, Beacons, Grandview, etc.) or fault-controlled uplifted benches (e.g., Table Tops, Cardiff Reef, and Swamis). These breaks are not impacted by the longshore movement of sand. Beach break areas are very likely to improve as well as the restoration of sand acts to contour the ocean bottom.

We also applaud and agree with your thorough analysis and rejection of so-called managed retreat as a Project alternative. Managed retreat is neither realistic nor constitutional. It will cost federal, state and local governments many, many times more dollars than the Project. Additionally, managed retreat will directly lead to more beach loss, unsafe beaches, more hard bluff retention devices, and huge legal costs.

The California constitution guarantees all people the right to protect their property and obtain safety. Article 1, Section 1 of the California Constitution provides:

> All people are by nature free and independent and have <u>inalienable rights</u>. Among these are enjoying and defending life and liberty, acquiring, possessing, and <u>protecting property</u>, and pursuing and <u>obtaining safety</u>, happiness, and privacy. (emphasis added).

Among other serious problems, managed retreat would violate this constitutional provision by denying people the right to protect their property and obtain safety, leading to protracted litigation, huge public liabilities and unnecessary and heated administrative proceedings. To be blunt, managed retreat will kill people and cost the public 100s of millions of dollars that it does not have.

One of the reasons that managed retreat would be so expensive is that its costs cannot be measured by just the value and tax loss associated with oceanfront properties alone. This is because managed retreat has no end point. Not only will it cause the loss of oceanfront property, but then it marches landward taking the so-called "first road" with it. Once the first road is no longer useable, and after the public infrastructure beneath it is relocated, the next row of homes become inaccessible and valueless.

Thus, one of the biggest problems with managed retreat is its huge and untenable public expense. These expenses will come in the form of:

1. Repair and replacement of critical public infrastructure;
2. Compensation to property owners for takings;
3. Litigation and liability for takings, property damage, and bluff collapse casualties;
4. Diminution of the property tax base;
5. Decreased TOT and sales tax revenue;
6. Decreased tourism dollars; and,
7. Increased demands on fire, policy and city personnel.

The idea that if we just let coastal bluffs erode we would naturally create a copasetic beach environment for every man is a total fallacy. Unless we restore the sand that used to accumulate on our beaches naturally, marine erosion will continue to erode the bases of our coastal bluffs and a safe angle of repose will never be achieved. Instead, the bluffs will retain their near vertical orientation forever, posing serious safety and economic threats for generations to come. Undoubtedly, our communities, residents, and visitors will be far better off with the wide sandy beach that the Project will create.

Thank you for your excellent work. Please do everything within your power to make the Project a reality.

Respectfully submitted,

AXELSON & CORN, P.C.

Jon Corn

Jon Corn

From: Aaron Richter
To: Smith, Lawrence J SPL
Subject: Protect Surfing Resources in Encinitas and Solana Beach
Date: Monday, March 04, 2013 3:45:45 PM

I am writing to you with concerns regarding the proposed 50-year beach nourishment project by the Army Corp of Engineers. We have seen significant and unexpected impacts in Imperial Beach following RBSP II, and would advise against such large volumes of sand. This project needs to examine the affects of the “as-built” beach profile and equilibrium, and not rely on a “bigger is better” approach. Beachfront property owners in Imperial Beach are dealing with continual flooding after the RBSP II beach fill project, which is less than half the size of this proposed project.

I also have grave concerns regarding the impacts to surfing resources from this project. The variety of surf spots and beaches are part of what makes life in San Diego enjoyable and unique. Any negative impacts should be taken very seriously! The EIR/EIS states that reef breaks in Solana Beach and Encinitas will likely be converted to beach breaks, yet this is not deemed a significant impact! Changing a surf spot from reef break to beach break is not acceptable, and must be avoided!

The economics section does not include anything about surfing! The EIR shows that the cost of this project is too expensive for the US Govt. to fund if only the protection of private property is considered, but passes when recreational benefits are included. The study relies on a simple correlation of “towel space” to quantify a recreational benefit. This is short sighted, and does not consider the quality of surf breaks as a recreation resource. Your economic analysis does not account for surfers who may not go to a beach where surf has been impacted by this project. It also excludes the family and friends that travel with a surfer to another break.

Furthermore, the short analysis of the Managed Retreat alternative in the EIR/EIS is setup to be "impractical and infeasible [sik]". Managed retreat does not happen over night and requires leadership and planning. Just discounting the policy because the cities cannot afford to buy all the property is unfair to the local cities and completely misses the point. This is a costly Federal project, and more than a cursory hand waving should be used to evaluate Managed Retreat. Project proponents should take a close look at the aftermath of hurricane Sandy for lessons learned and how those cities are now turning to managed retreat.

Please don’t take consideration of this long-term project lightly! Fifty years is a significant planning horizon, and I support Surfrider’s comments on this project. Finally, please include these comments in the EIR.

Sincerely,

Aaron Richter
1542 Pacific Beach Dr
San Diego, CA 92109

2-13-2013 Dear Leslea Meyehoff:

I read the beach restoration article on page 6 of today's NCT. Thought you might be interested in another approach to shoreline management. As you can see below, I've sent this to others in the past, but it is still relevant. Hope this will give you different perspective on an age old problem.   Thank you for your time. Sincerely yours, Bill Elliott, Engineering Geologist

****

1-7-2013

Dear Honorable Oceanside City Councilman Jack Feller:

After reading about your beach-sand replenishment and subsequent loss concerns (NCT/U-T 12-26-2012, p. 1 and 4), I thought you might be amused by my response to Mr. Jenkins' U-T article regarding a Scripps study of sand loss at Cardiff-by-the-Sea.

Respectfully, Bill Elliott, Engineering Geologist

P. O. Box 541, Solana Beach, CA 92075

****

12-19-2012 Dear Mr. Jenkins:

I read with interest your 12-18-2012 NC Times article regarding the SIO sand research at Cardiff.

I have great respect for the research being done by Dr. Flick and his cohorts at Scripps.

The following is an FYI with respect to our shoreline between Dana Point and La Jolla. Hope this provides some perspective.

As with the sand project of 2001, I have little doubt the same fate will befall the sand project of 2012.

Prior to European settlement on the west coast, the natural process was for beach sand replenishment was with intermittent large storm events that would wash clay, silt, sand and gravel from our mountains to the beaches.

Over time, this "gift" was re-distributed and spread out along our beaches.

The net long-term effect for the Oceanside Littoral Cell, is for sand to travel from Dana point to the La Jolla Submarine Canyon where it is lost "forever" to very deep, and out of reach submarine valleys.

In the short-term, however, some of this sand is "parked" temporarily in off-shore bars.

It is these near-shore sand bodies that are being mined for our current beach replenishment projects.

Clearly, the loss of 2001 sand, as well as the already on-gong loss of 2012 sand, should cause one to pause and ask why?

Why is nothing being done to encourage the sand to stay put on our beaches?

The obvious answer is politics, regulations, special interests, and the list goes on....

Wide sandy beaches benefit everyone.

I too, as a child, remember burning feet during the long walk (or run) to the surf line.

The benefits of wide sandy beaches include: reduced sea cliff erosion, reduced need for sea cliff armor, access to more beach -- even during high tides, not to mention the economic impact of tourist dollars.

The fish, eel grass, kelp, crabs, and shell-fish will easily adjust to new shorelines -- always have and always will.

Short of removing all human infrastructure west of the Laguna and Palomar mountains, in an effort to return to natural replenishment, there ARE easy ways to keep existing sand in place.

Nature does this naturally by placing barriers in the way of sand movement.

For example, Point Loma is a natural barrier that protects Coronado's wonderfully wide sandy beach -- where I too, played and got the worst sunburn of my young life!

Between Dana Point and Newport Beach there are a number of "pocket" beaches, where natural rock formations jut out into the ocean for a short distance.

Between each of these barriers, sand collects and is prevented being carried away by long-shore currents.

Hence, the name "pocket" beach -- adjacent to some of the most expensive real estate in California.

La Jolla Cove and the Children's pool are good local examples of natural and human-made pocket beaches.

Manufactured pocket beaches, using rip rap, are a relatively permanent way to keep the expensive dredged sand in place.

Short "groins" (placed perpendicular to the coast line) can be strategically located along our beaches to keep sand in place.

This tried-and-true method is not new, and is used extensively on beaches around the world.

This is nothing more than copying what nature has already figured out that works.

Also, submerged off-shore breakwaters (parallel to the coastline) are an other clever way to encourage sand to stay in place, where it can do the most good -- on the beach.

Surfers already know about this scheme -- an off shore shoal causes wave energy to slow and build into the waves they love to ride....

So far, nothing new under the sun.

The wide sandy Santa Monica beach results from a submerged off shore breakwater built back around the time of WWII.

This method too, is in common use.

Submerged barriers provide a habitat for marine life, as well as recreational fishing and diving.

I'll end with this.

I attended a meeting prior to the 2001 sand project, and after long and boring discussions about all the pros and cons of dredging and placing sand on our beaches, I raised my hand and asked a simple question.

How do you plan to keep this expensive sand in place?

I was told on no uncertain terms that that was not a consideration and that there would be no further discussion regarding that topic.

So, here we are, 11 years later spending more millions of our tax dollars on yet another government junket.

Seems to me that a million or two could have been spent to build structures that would keep those multimillion-dollar sand grains in place in the first place.

Sorry, Great Lakes Dredge and Dock, I'm sure you are nice guys, but it would be much more cost effective if we could employ your services once and then be done with it.

Sincerely yours,

Bill Elliott, Engineering Geologist

From:	Chris Novak
To:	Smith, Lawrence J SPL
Subject:	Protect Surfing Resources in Encinitas and Solana Beach
Date:	Monday, March 04, 2013 9:12:29 AM

I am writing to you with concerns regarding the proposed 50-year beach nourishment project by the Army Corp of Engineers.

Turning reef breaks into beach breaks is a terrible choice in an area known for great surfing. Beaches are for the enjoyment of everyone, not just for the 1% of citizens that live on bluffs.

Surfing should be considered a significant part of this area's beauty and culture.

Sincerely,
Chris Novak

Chris Novak
542 Via de la Valle Unit K
Solana Beach, CA 92075

From:	jhammonds50@cox.net
To:	Smith, Lawrence J SPL; WProtzman@cosb.org
Subject:	US Army Corps of Engineers Encinitas-Solana Beach Coastal Storm Damage Reduction Feasibility Study
Date:	Monday, February 25, 2013 4:59:26 PM
Attachments:	ACOE Comment.docx

TO:

Lawrence.J.Smith@usace.army.mil <mailto:Lawrence.J.Smith@usace.army.mil>

and

WProtzman@cosb.org <mailto:WProtzman@cosb.org>

Josephine R. Axt, Ph.D.
Chief, Planning Division
ATTN: Mr. Larry Smith (CESPL-PD-RN)

U.S. Army Corps of Engineers
Los Angeles District
P.O. Box 532711
Los Angeles, California 90053-2325

Wendé Protzman

Community Development Director

City of Solana Beach

635 S. Sierra Avenue

Solana Beach, CA 92075

Dear Dr. Axt and Ms. Protzman:

My name is James Hammonds and I own condominium unit No. 20 at 675 S. Sierra in Solana Beach.

I applaud your thorough analysis and rejection of so-called "managed retreat" as a project alternative. Managed retreat is not realistic and will cost the federal, state and local governments many times more dollars than the project that you have proposed. It will cause tremendous property damage, infrastructure problems, lawsuits, urban blight, more fatalities, and general misery for beach communities, their residents and visitors. Additionally, managed retreat will directly lead to more beach loss, unsafe beaches, and more hard bluff retention devices. Our communities, residents, and visitors will be far better off with the wide sandy beach that your project envisions.

Managed retreat is a fallacy. The idea that coastal bluffs will simply erode back to a safe angle of repose and open new safe beach areas, if we just let them, is not correct or realistic. Without large-scale and steady sand replenishment, marine erosion will continue unabated causing coastal bluffs to remain in a constant state of collapse. With our unstable bluffs at 70 to 80 feet tall, our beaches include a collapse danger zone that extends 30 to 40 feet from the bluff toe. At most medium and high tides our current beaches are not even this wide meaning that all beachgoers are forced to recreate in the collapse danger zone unless they leave the beach.

Thank you for your excellent work on this feasibility study. Please do everything within your power to make this project a reality.

Sincerely,

James W. Hammonds

From:	Renita
To:	Smith, Lawrence J SPL
Cc:	WProtzman@cosb.org
Subject:	Sand Replenishment Solana Beach
Date:	Monday, February 25, 2013 3:13:33 PM

I live at 327 Pacific Ave., Solana Beach and am grateful for the san replenishment project.

There is already a significant and visible benefit to our beach from the sand which was put back during the last year.

Thank you for continuing to provide this program to the residents.

Renita Greenberg

From:	Rex Upp
To:	Smith, Lawrence J SPL; WProtzman@cosb.org
Subject:	Encinitas-Solana Beach Coast
Date:	Wednesday, March 06, 2013 9:07:42 PM

Josephine R. Axt, Ph.D.
Chief, Planning Division
ATTN: Mr. Larry Smith (CESPL-PD-RN)

U.S. Army Corps of Engineers
Los Angeles District
P.O. Box 532711
Los Angeles, California 90053-2325

Wendé Protzman

Community Development Director

City of Solana Beach

635 S. Sierra Avenue

Solana Beach, CA 92075

Re: US Army Corps of Engineers Encinitas-Solana Beach Coastal Storm Damage Reduction Feasibility Study

Dear Dr. Axt and Ms. Protzman:

My name is R. Rexford Upp, Ph.D. My father, Brigadier General Robert D. Upp (97 years old), resides at 341 Pacific Avenue in Solana Beach. I am a California licensed Geotechnical Engineer and Engineering Geologist. I have been studying the bluff below my dad's home for almost 40 years. I strongly support the Army Corps of Engineers proposed Storm Damage Reduction (beach sand nourishment) Plan for Encinitas and Solana Beach. This project will save lives, save money, preserve property and property values, improve surf break quality, and improve the general environment for our communities.

To protect their bluff-top property, owners have built sea walls. The sea walls do not deprive the beaches of a significant amount of sand. It is the recent lack of sand carried by the near-shore ocean currents that have deprived the beaches of the sand. The loss of this sand has allowed the ocean waves to impact on the sea bluffs, causing their erosion. The intensive development within the upland watershed, along with man-made harbors, blocks more than 95% of natural sediment flow to our beaches. This highly unnatural condition causes beach erosion, access problems, safety problems, and it endangers coastal development giving rise to the need for seawalls. Since 1995, five persons have died from bluff collapses between north Torrey Pines state beach and Carlsbad state beach alone!

In highly urbanized areas, especially at beaches backed with coastal bluffs, it is critically important to replenish the sand that development within the upland watershed has removed from the littoral system.

I applaud your thorough analysis and rejection of so-called “managed retreat” as a project alternative. Managed retreat is not realistic and will cost the federal, state and local governments many times more dollars than the project that you have proposed. It will cause tremendous property damage, infrastructure problems, lawsuits, urban blight, more fatalities, and general misery for beach communities, their residents and visitors. Additionally, managed retreat will directly lead to more beach loss, unsafe beaches, and more hard bluff retention devices. Our communities, residents, and visitors will be far better off with the wide sandy beach that your project envisions.

Managed retreat is a fallacy. The idea that coastal bluffs will simply erode back to a safe angle of repose and open new safe beach areas, if we just let them, is not correct or realistic. Without large-scale and steady sand replenishment, marine erosion will continue unabated causing coastal bluffs to remain in a constant state of collapse. With our unstable bluffs at 70 to 80 feet tall, our beaches include a collapse danger zone that extends 30 to 40 feet from the bluff toe. At most medium and high tides our current beaches are not even this wide meaning that all beachgoers are forced to recreate in the collapse danger zone unless they leave the beach.

Thank you for your excellent work on this feasibility study. Please do everything within your power to make this project a reality.

Sincerely,

R. Rexford Upp, Ph.D.

Geotechnical Engineer GE 2046
Professional Engineer C 37340
Professional Geologist PG 3641
Engineering Geologist CE 1083
Hydrogeologist HG 62

DRAFT INTEGRATED FEASIBILITY STUDY AND ENVIRONMENTAL IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT FOR THE COSTAL STORM DAMAGE REDUCTION ENCINITAS - SOLANA BEACH, CALIFORNIA

PRESENTATION AND PUBLIC COMMENT MEETING

ENCINITAS, CALIFORNIA

FEBRUARY 6, 2013

Reported by: Johnell M. Gallivan
CSR No. 10505

DRAFT INTEGRATED FEASIBILITY STUDY AND ENVIRONMENTAL
IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT FOR
THE COSTAL STORM DAMAGE REDUCTION
ENCINITAS - SOLANA BEACH, CALIFORNIA

PRESENTATION AND PUBLIC COMMENTS,

commencing at the hour of 6:00 p.m., on Wednesday, February 6, 2013, at 505 South Vulcan Avenue, Encinitas, California, before Johnell M. Gallivan, Certified Shorthand Reporter No. 10505, State of California.

MR. KRANZ: Good evening. Let's get started here. I am Tony Kranz. I'm on the City Council here in Encinitas. I am here to formally welcome Colonel Toy and his team, who have been involved in studying our sand replenishment for quite some time now. So we thank you for all the efforts of your team and for the in-depth studies that you are doing and look forward to the opportunity to continue the program once something has been decided in terms of the options that are before us tonight.

We've got -- as I'm sure all of you are aware, we live in the most beautiful place on earth. Encinitas has five miles of coastline out in front of us there and we're on the north and south bordered by our lagoons, and we have a very complex ecosystem that I think it's critical that we spend the time making certain that whatever we do in terms of sand replenishment is not damaging that ecosystem. And so I appreciate everybody's taking the time to speak to the Colonel and offer your thoughts along those lines.

We're going to conduct this meeting very similar to what we do during City Council meetings, which is there are speaker slips on the side -- each side of the room. If you want to speak you can have three minutes to speak. We can do up to two time donations. So if somebody is with you and you want to speak more than three minutes, if you have a friend that can donate three minutes, you can have up to nine minutes to speak.

So with that I will turn it over to Glenn Pruim. He is the Director of Engineering and Public Works here in Encinitas and he has a little bit more to say about the studies.

MR. PRUIM: Thank you, Councilmember Kranz. Again, my name is Glenn Pruim. I'm the new Director of Engineering and Public Works For the City of Encinitas.

So after many years the City of Encinitas is really, really proud to support the release -- the re-release of the draft feasibility study for the coastal storm reduction project.

We've all heard the debate about global warning and about sea level rise, but one thing -- even before those predictions we always had problems with storm surges, high tides and surf events that cause major erosion along the coast. Without a sand barrier along the shorelines things like the Highway 101, Cardiff State Beach and restaurant row become inundated with floodwater, so this project is really important to try to protect the investment in infrastructure improvements we have in the City of Encinitas.

The city is an advocate for a softer approach. We like the placement of sand as opposed to harder improvements along the coastline. By placing sand along the shoreline we can improve the habitability for shorebirds, sand crabs and fish, like the grunion. We can also provide improved public safety. If you make the bluff safer you won't get the erosion on the bluffs and the failures that can occur, and if people are sitting back closer under the bluff it's more dangerous. So give them a wide sandy beach and it will be better for everybody.

And, yes, including improvements to the surf breaks we can also improve tourism, which is the lifeblood for any costal community, so it's really important from that perspective too. And the goal is not to protect individual properties, it's to protect the public property so that everybody can enjoy it. Excuse me.

And I would certainly like to thank the Corp of Engineers, particularly Colonel Toy, for all his hard work here. Moving these projects forward takes a long time, and a lot of effort, and we do appreciate that, and we look forward to getting this feasibility plan done and to get a final document and the chief's report done later this year.

So with that, unless anybody else has anything else to say, I'm going to turn it over to Colonel Toy.

COLONEL TOY: Thank you, Glenn and thank you Councilmember Kranz. Thank you for the warm welcome and I think you will have no argument from my staff about the agreement with -- that you have a beautiful city. And we had a wonderful dinner at Leucadia Restaurant just before this and we feel good.

Anytime we get out of downtown Los Angeles and be in an area like this, you'll see happy faces up here. So we are really happy to be here.

Ladies and gentlemen, I want to thank you joining us tonight. My name is Colonel Mark Toy and I'm Commander and District Engineer of Los Angeles District, U.S. Army Corp of Engineers, and I appreciate you taking time from your busy schedules to join us tonight.

We will be presenting our findings of the draft integrated feasibility study and our proposed plan to reduce coastal storm damage along the Encinitas and Solana Beach shorelines. Our purpose is to hear your ideas, your concerns and your questions regarding our recommended plan to reduce coastal storm damage along the shorelines within the cities of Encinitas and Solana Beach.

This meeting is part of a public review process that ends February 26th. I'll talk more about the details of this meeting and the public review timeframe a little later in the presentation, but let me just introduce my staff that are sitting here tonight.

First, Mr. David Van Dorpe, Deputy District Engineer and Chief of Program and Project Management Division. He's my battle buddy. David over there.

Dr. Josephine Axt, my Chief of Planning Division. Did you wave already, Josephine?

MS. AXT: Sorry. I smiled.

Mr. Ed Demesa, Chief of our Plan Formulation Branch.

Ms. Susie Ming, Project Manager for this project who has had three kids over the whole time that this was in the planning phase.

Mr. Art Shak, Chief of our Coastal Engineering section. Thanks, Art.

Mr. Larry Smith, the Environmental Coordinator and Project Ecologist.

And Mr. Jacob Hensel, or Project Economist. Thank you.

I also want to acknowledge the city staff in attendance, including Councilmember Tony Kranz, which you met, and Glenn Pruim, Director of Public Works and Engineering, and, of course, Ms. Kathy Weldon, Encinitas

Project Manager.

Now, let's first -- let me describe tonight's proceedings. We will first hear a few words -- well, actually we got that already with Councilmembers, but after we -- after I finish my part of my presentation, Susie Ming and my staff, to my left, will present the study findings and details of our tentatively recommended plan. And, finally, the most important part of tonight's meeting is hearing from all of you.

Everyone who is interested in speaking tonight should have filled out one of our comment cards. If you did not have the opportunity to fill out a card, please do so now. Kathy Weldon, over to my left, will come around and collect those in a few minutes. We will be having a transcript made documenting this public meeting.

There are six steps to the Corps' civil works project process. It begins when local residents perceive to have a problem that they may not be capable of solving on their own. Residents contact their congressional representative and ask for federal assistance. Congress acts by authorizing and appropriating funds for Corp of Engineers to study the problem. The Corp, along with our local partners, study the problem and investigate its potential solutions.

Once an acceptable project is proposed by the Corp, and it has gone through the review and approval process, Congress will then authorize the project's construction and a Water Resources Development Act, or WRDA.

Project implementation could begin once federal and local funds are received. We have completed steps one through three in this process and are now at step four. Susie, in her presentation, will discuss our proposed schedule to complete the planning phase and implement the project.

Before this project begins I just wanted to check one last time if Councilmember Kranz or Glenn want to make one final comment before we proceed. If you're good to go I'll turn it over to Susie.

MR. KRANZ: We're good.

COLONEL TOY: Thank you. Susie.

MS. MING: Great. Thank you, sir. Once again, I'm Susie Ming, I'm the project manager for the study. I'll give you a little bit of background and walk you through the project.

The legislative authority, the U.S. Army Corp received authorization from Congress to study the Encinitas shoreline through a house resolution dated 13 May 1993. The Corp received authority study the Solana Beach shoreline separately through a resolution dated 22

April 1999.

The Corp conducted preliminary studies for each city and found federal interest in continuing the studies of the blush erosion project along the shoreline and the ecosystem restoration of the San Elijo lagoon. The lagoon restoration and the shoreline project -- protection project were originally joined into one feasibility study and initiated in July 2001. However, the lagoon restoration and the coastal storm damage reduction investigations were to be coupled prior to 2005.

To give a little background of the study history, in 2005 a Draft Report was provided for public comment, which many of you may already know. There were public concerns and issues raised that were related to potential impacts of the tentatively recommended plans on nearshore resources, surfing, recreation, water quality during construction, lack of mitigation and public safety.

As a result the Corp and the cities reformulated the study and conducted analyses to address these concerns that included additional coastal engineering, re-site investigations as well as coordinating with the different resource agencies and stakeholders as part of the reformulation.

The Draft document that was released on December 26th is the subject of tonight's meeting and describes the findings and recommendations for the reformulated coastal storm damage reduction study.

A little bit about the study area. The eight mile study area was broken down into nine distinct reaches. Reaches 1 through 7 encompass the shoreline in Encinitas. Reaches 8 and 9 are within the City of Solana Beach, and the Reaches were broken up based on their geology and land use.

Within the study area two segments were identified as presenting the greatest potential for coastal storm damage reduction. Segment 1, as you can see in red up top, is Reaches 3, 4 and 5, is a portion of the beach within the city limits of Encinitas that extends approximately 7800 feet from the 700 block of Neptune Avenue south to West H Street.

Segment 2, below, Reaches 8 and 9, is the majority of the beaches in Solana Beach, approximately 7200 feet long extending from the southern limits north to Tide Park, close to the northern city limits of Solana Beach.

The Encinitas and Solana Beach shoreline has narrow beaches with coastal bluffs exposed to crashing waves particularly during the winter storm season. As sea levels rise the bluffs will be even more exposed to crashing waves which cause notches into the bluffs. Bluffs affected by these notches are then prone to episodic collapse. Consequently public facilities, public infrastructure and residential properties on the upper bluff experience land loss and damage to the property. In addition to this problem, the study area has also a high demand for recreation with -- while the narrow beach area combined with the bluff represent a significant safety issue for those recreating.

As you can see in the picture the erosion of the bluff toe occurs at the base of the bluff where waves impact and results in a notch at the base of the bluff which can grow to many feet in depth. When the notch reaches a sufficient depth, the weight of the overhang bluff exceeds the cohesive support of the soil and the bluff collapses without warning.

Both communities have been subject to repeated bluff collapses resulting in property damage, large debris falling to the beach and even loss of life. In the past decade numerous bluff failures have continued to occur and threaten public safety. Since the collapses are episodic, with little to no warning, city officials have displayed signs along the beach cautioning beach-goers to stay a safe distance away from the base of the bluff at all times.

As you can see in the loss of human life, in 2000 a woman was killed in a bluff collapse while sitting on the beach in Leucadia. There have also been other fatalities outside the study areas as noted.

In addition, the cities keep track of bluff safety contacts which are counted when the lifeguards are required to inform beach-goers to either get out of the caves, away from the bluff overhangs, or areas that are currently eroding for their safety.

During this past summer, strictly for 2012, which is June through August, Encinitas and Solana Beach had 1700 and 2863 bluff contacts, respectively.

The potential structure. The project will provide protection for key public infrastructure including public beach access stairs, as you can see in the picture, lifeguard towers, marine safety headquarters, storm drain facilities, community center, roads and essential public utility along the bluff. Here are some more pictures of the potential storm damage reduction structure and infrastructure.

Based on the problems and needs in the study area the primary objectives of the study are, to reduce the coastal storm damage to property and infrastructure along the study area shoreline and the bluff top prior to the need for emergency action throughout the period of analysis.

Second is to improve public safety in the study area by reducing the threat of life-threatening bluff failures caused by wave action against the bluff base throughout the period of analysis. And the period of analysis is a 50-year analysis period.

Reduce -- third is to reduce coastal erosion shoreline narrowing to improve recreation beaches within the study area. Some of the constraints in the planning process that we considered were preserving the natural beauty of the coastline, maintaining public access to the beach, preserving the recreational opportunities and preserving environmental resources.

Our without project condition or no action alternative assumes that the narrowed beach condition will continue to persist throughout the study area. There is a history of beach fill projects within the study area that includes the 2001 and the more recent 2012 SANDAG beach replenishment project that placed 1.5 million cubic yards of sand on eight San Diego County beaches from Imperial Beach to Oceanside from September to December in 2012. Four of those beaches were located within the study area that included Batiquitos, Cardiff, Moonlight and Fletcher Cove in Solana Beach.

Its effects are expected to diminish over time as coastal processes gradually erode the beach fill. The analysis assumed -- our analysis assumed that there will be volume remaining within the study area prior to the construction of the proposed project. It is assumed that property owners will continue to take actions to protect their properties by installing shore protection devices. Historically local property owners have been granted emergency permits to construct seawalls at the base of the bluff to prevent further erosion. Our without project conditions assume that this process will persist until the entire shoreline in the critical region is protected. With this protection in place, properties will not incur any further significant storm damages.

A full array of non-structural and structural measures were formulated to address the identified problems and opportunities. Models of studies, prepared for the study, were used to evaluate and compare proposed alternative measures primarily to this no action plan. The no action of future without project scenario is necessary for comparing the cost and benefits of different alternatives. It serves as the baseline by which all our alternatives may be compared to each other. This is defined by no federal project occurring. This -- the assumption is made that existing seawalls will continue to be maintained, and in accordance with state law, private homeowners will be granted permits to build new ones. Under this scenario most of the shoreline will be armored within 20 to 30 years, but in an inefficient, piecemeal, uncoordinated process and only after significant loss of land.

Managed -- the one -- another non-structural alternative we looked at was managed retreat, the term commonly used to describe a policy that restricts or opposes efforts to protect the shoreline. It has been used to describe scenarios that range from complete removal of all structures and bluff top structures to simply not allowing new structures to being built.

Some of the structural alternatives that were looked at to reduce coastal storm damage caused by wave attack to the base and toe of the exposed bluff include beach nourishment at various increments and include placement of compatible sands from either upland site or offshore borrow areas.

And emergent breakwaters are concrete or rock structures built roughly parallel to the shore just beyond the breaker zone to absorb wave energy by stopping transmission or breaking the wave before it impinges on the beach.

Submerged breakwaters and artificial reefs come in many forms but can be roughly broken down into soft nearshore berms -- sand berms and hard reef structures.

Groins are alongshore sand retention structures construct- -- constructed perpendicular to the shore to form fillets that can slow beach erosion by trapping sediment being transported by littoral transport.

Notch fill only is an option that we looked at involved filling sea caves and bluff toe options with engineered concrete fill which prevents significant erosion of the cliff base and provides vertical support for the overhang.

The hybrid-beach, which is a combination of beach nourishment and the notch fills, it was looked at for varying increments of beach nourishment with renourishment.

Seawalls are solid structures designed to withstand the full force of storm waves without being overtopped or undermined. Alternatives consist of a continuous seawall approximately 25 to 35 feet tall.

And the last was revetments, which are structures made of placed quarry stone designed to protect the bluff toe from erosion by wave action. They're generally effective if maintained but width requirements result in encroachment onto the beach.

Talk a little bit about the screening for the alternative plans. Several iterations of alternative screens were conducted to identify a final array of alternative plans. Looking at the preliminary screening eliminated the following alternatives: Managed retreat, emergent breakwaters, submerged breakwater, artificial reefs, groins and revetments.

Managing retreat was analyzed, but found that under this scenario public beach access, public roads, including Highway 101, and public facilities would be acquired and removed -- would be acquired and removed so that costal erosion could continue unabated along this highly urbanized developed shoreline. Acquiring private lands and converting these for public use could only be accomplished through acquisition of high cost real estate. The high cost of real estate would make this option not viable. In addition the analysis of land and structured damages under a managed retreat scenario indicate that these damages are more than twice the cost of implementing a long-term coastal storm damage reduction program.

Breakwaters, artificial reefs, groins and revetments were all dismissed from further consideration due to the environmental and aesthetic impacts, impacts to the down coast sediment transport and lack of public support.

In addition, these alternatives were screened out because they would not meet the project needs and objectives and the cost implementation to meet the needs and objectives would be just disproportionately high.

The second screening of notch fill seawalls were dismissed. Seawalls were dismissed because of the visible impact to the area, lack of public support and both were found to be economically unjustified. These alternatives also did not meet all the project needs and objectives. Furthermore, the degree to which a screened out alternatives are effective considering the implementation cost is not favorable compared to the alternatives that were carried forward.

So finally after the final array of alternatives were beach nourishment and hybrid alternatives. These meet the project and objectives. Due to the geographical separation of the shorelines conditions Segments 1 in Encinitas, and Segment 2 in Solana Beach were analyzed and justified independently. A full array of beach widths and renourishment segments for both alternatives, both segments, were considered from benefits and environmental consequences perspective as well as the ability to meet the planning objectives.

The most viable and implementable plans are presented in the following slide for each city. The period of analysis associated with all of the alternatives is 50 years.

We'll first start with the City of Encinitas. The final array of alternatives has two beach nourishment alternatives; EN-1A and EN-1B and two hybrids, EN-2A and 2B and a no action plan, EN-3.

As you can see 1A is beach nourishment with 100-foot beach nourishment renourished every five years. And 1B is 50-foot beach nourishment renourished every five years. EN-2A and 2B are the hybrids. First 100-foot beach nourishment renourished every ten years and EN-2B 50-foot beach nourishment renourished every 5 years.

Show you a picture of the proposed plan that is the shoreline of Encinitas. The red is our proposed project. The yellows are there for your prospective of the SANDAG projects so you can see where those are and the magnitude of the fill.

Next we'll move on to Solana Beach. The final array there consists of three beach nourishment alternatives; SB-1A through 1C. Two hybrids and a no action. SB-1A is beach nourishment. 200-foot beach nourishment renourished every 13 years. SB-1B is a 150-foot beach nourishment renourished every ten years.

And these we looked at so that there's the potential to sync the projects between Encinitas and Solana Beach for nourishment. SB-1C beach nourishment is 100-foot beach nourishment renourished every ten years.

And the hybrids are SB-2 hybrid 150-foot beach nourishment renourished every ten years with notch fill and hybrid SB-2B hybrid 100-feet beach nourishment renourished every ten years with notch fill and then the no action.

And, again, here's the plan for Solana Beach. The red is our proposed tentatively recommended project and the yellow is the SANDAG project.

And as I earlier stated, the tentatively recommended plan for Encinitas is EN-1A and for Solana Beach is SB-1A. The tentatively recommended plan is comprised of beach nourishment of a 100-foot wide beach for the City of Encinitas with renourishment cycles every five years and a 200-foot wide beach for the City of Solana Beach with renourishment cycles every 13 years.

The tentatively recommend plan will result in an initial placement of sand of 680,000 cubic yards in Encinitas and 960,000 cubic yards in Solana Beach. Sand would be dredged from offshore, beyond the depth of closure, using borrow sites designated as SO-5, MB-1 and SO-6. The material would then be placed directly on the two receiver sites you saw earlier within Encinitas and Solana Beach.

In compliance with the National Environment Policy Act and the California Environmental Quality Act, a draft Environmental Impact Statement, Environmental Impact Report is included as part of the integrated feasibility report document.

The purpose of today's meeting is to provide members of the public the opportunity to express the concerns about the project, comment on the Draft EIS and EIR.

The primary environmental concerns identified during the scoping process were potential impacts to nearshore rocky reef and surf grass habitats, air quality impacts, water quality impacts, noise impacts, effects on recreation including surfing, cultural resources and public safety. The Draft EIS/EIR are also evaluating geology, coastal processes, sediment quality, biological resources, socioeconomics, transportation, land use and public utilities.

Talking about the environment findings. The impact associated with the Encinitas alternative has been evaluated for all resource topics and were determined to be less than significant for all the resources except for cultural resources and discovery. No mitigation is proposed other than standard cultural resource monitoring.

Impacts associated with the Solana Beach alternative have been evaluated for all resource topics as well and determined to be less than significant for all resources except biological resources and cultural resources. Mitigation is proposed for the impacts identified under each alternative and the severity of these impacts is directly relative to the size of the proposed beach and associated number of days of construction.

Part of our project including -- includes monitoring commitments. Monitoring during sand placement. We would stop construction to assess cultural resources be discovered in consultation with the State Historic Preservation Office. Monitoring turbidity levels at borrows and placement sites. Determine if beach filled areas are suitable for grunion spawning at the start of the spawning season. If suitable, monitor during predicted spawning events. And avoid placement on beaches that support spawning for two weeks to allow eggs to hatch and grunion to swim out to sea.

We would also generate a safety plan to restrict public access at receiver and notch fill sites and obtain 150-foot buffer around construction area. Pre- and post-construction monitoring of nearshore habitats, rocky reef and surf grass is to determine nature and extent of any adverse impact resulting from the project would occur. Post-project -- I'm sorry, could you go back? Thanks.

Post-project mitigation measures, if necessary, would be to restore and create like habitat at a functional equivalent value, which we assume to be two to one for purposes of evaluation to be determined in consultation with the responsible federal and state resource agency offsetting the long-term significant impact, if any, to those marine resources.

This is the project's target completion schedule. This is an optimistic completion schedule and may change due to factors such as authorization, funding, approval process or environmental compliance issues.

Again, we will consider all comments received during this public review period and incorporate those comments along with our responses in the final report. A final decision will be made by the cities and Corps whether to proceed with the project. The final report will be forwarded to our Washington headquarters for their review and decision making. The project will be authorized -- may be authorized by Congress in a Water Resources Development Act, WRDA, contingent on a Chief of Engineer's Report completed by the end of this year. After final design and plans and specifications are completed we will execute a project cooperation agreement with the city and construction could begin in the fall of 2 -- 2015.

I want to thank you all for listening. This concludes my presentation and I will now turn it back over to Colonel Toy.

COLONEL TOY: Thank you very much, Susie.

We are now up to the most important part of our meeting, the comment section, where we receive your comments. There are several guidelines that we ask you to follow when you speak. To assure the completeness of the record, please identify yourself clearly and state the interest or organization that you represent. We ask that you confine your participation to the subject of the meeting, the Encinitas, Solana Beach Coastal Storm Reduction Study and keep your statements brief and to the point. In order to give everyone who wishes to speak tonight a chance to speak, please keep your comments to three minutes or less. If you have longer, more extensive comments, it would be more valuable to us if you submit them in writing. If you do not want to speak tonight but are still interested in commenting on the tentatively recommended plan, please make sure you take a comment card with you. Send comments to Larry Smith at the address shown on the card and on this slide. All written comments will be included in the final documentation if postmarked before February 26th. Detailed responses will be prepared for comments made this evening and written comments received before the end of the public review timeframe ending on February 26th.

Changes may be made to the tentatively recommended plan based on the comments that we will receive. We will not be responding in detail to the comments made tonight. With that we will begin our public comments period.

MS. WELDON: I believe we would like to start with Dennis Lees. And he has a presentation already prepared, and we have timed donations from at least three other people for him. So he has like nine minutes. About three minutes from Susan Turney, Gerald Sodomka, and I think his wife, Kathleen Lees. So you have plenty of time to do your presentation.

MR. LEES: Good evening, I'm Dennis Lees from

Leucadia. I'm a marine biologist. I have been working in the kind of habitat that you're proposing dredging in since 1972. I have several concerns about this -- about this document. One is on the alternatives that have been proposed. Basically these are Band-Aid's. They're not going to fix anything permanently. But, more importantly, I'm more concerned about the biological sides of that, that's really my game. The decisions on the beaches and the nearshore areas, nearshore biota, are based on what I am calling weeds, which I will talk about a little bit later, rather than the trees and the ecosystem.

And, finally, the most important is that there is a total lack of consideration in Chapter C of the appendix on the biological impacts, on the biological impacts of the dredging program on the borrow sites. It's totally omitted. The only mention in the document is that there will be culture resource surveys to borrow sites. That's it.

The alternatives you have gone, and in the interest of time, I'll pass this up. Go on. You have already been there. Obviously no action is something that's not going to happen.

The Corp omitted managed retreat from the alternatives, and in view of recent intensive studies in the Monterey Bay area and some others of Southern California, this omission, I think, should be reversed. The investigators in Monterey concluded that manage retreat is economically and environmentally the best alternative, at least in Monterey Bay.

Other approaches, they considered poor expenditures of tax payers money. They were only Band-Aid's and mother nature is going to win this battle regardless of what we do. Mother nature will win down the road. We don't need to pour money down a rat hole. Managed retreat has been a coastal issue nationally as well. Just yesterday on NPR they had about 15 or 20 minutes of discussion on managed retreat in the Washington, in the New York area, Manhattan, those areas discussing that by the Rockefeller Foundation in the State of New York it -- as a consequence of Hurricane Sandy. And I'll go through -- I'll not talk about that part.

Environmental concerns. The depths listed in the EIR for the borrow sites are much shallower than have been listed in previous documents. So we're talking 19 to 27 feet listed for the borrow sites currently -- in the current document. Where as in the previous documents, using the same borrow sites, at least, as I understood it, we're talking 50 to 80 feet.

This is important because biologically the studies that were done to evaluate impacts on the borrow sites for the previous studies were done in that 50 to 80-foot depth range. And the critters out there are very different from the critters in the shallow water. It's a very different set of assemblages. They're responding to different things. They have different -- different specious compositions. The whole system is different in 19 to 22 feet of water than it is in 50 to 80 feet of water. Earlier monitoring studies for beach replenishment did not assess the -- the long-lived animals living in the shallow areas; the Pismo clams, the sand dollars, those types of things. And they only really looked at the rocky habitat. So they avoided -- or did not avoid, they just did not look at those long-lived critters; Pismo clams, living 20 or 30 years. They're a long-lived animal.

Second concern, again, the EIR/EIS does not discuss potential impacts on the -- to the infauna and borrow sites. And that's a major problem. You're doing major damage out there numerous times over the next 50 years and that needs to be addressed.

The third is that all previous studies evaluating the biological impacts base their descriptions, their conclusions and theirs projections on recovery periods on the weeds rather than the trees. And let's talk about those. The weeds basically are small, very abundant animals, lives two years -- or three months to up to two years. They live in the upper couple of inches of sediment, which is what is easy to sample, and the species change dramatically on a seasonal basis. These are tiny worms, crustaceans, some small clams, things like that.

The trees, on the other hand, are long-lived. They're big. They live much deeper in the sediment. They're much harder to sample using conventional techniques and they live five to 30 years or more. You get out into 90 feet of water you are getting animals that live up to 100 years. These species are stable in the system from season to season, from year to year. They represent long-term conditions in the area. They establish robust aged structure. They're important food items for -- for the fisheries. And these -- these comprise large worms, many of which live in tubes, clams, snails, crabs, sand dollars. A lot of these big critters that live a long time. Sand dollars live 25 or 30 years. You can't mess with them. Takes them a long time to recover if you do mess with them.

And, finally, the trees are very hard to sample. They're sampled very poorly by conventional sampling techniques. Basically the best way to sample them in habitats you are talking about is visual observation. You put a naturalist down on the bottom that knows the critters. He -- he identifies and counts, over a much larger area than you ever will cover with a grab sampler, and he's looking at the trees and not the weeds.

An analogy here is assessing a clear-cut project on a redwood forest by using the weeds and the shrubs -- the grasses and the shrubs on the forest -- on the floor of the forest rather than on the basis of the trees that -- that form that forest. Those are what -- what you're going to be damaging. And in this situation that's basically what you're doing with -- with the dredging in these borrow sites. You're clear cutting. And these animals take a long time to recover.

Projections of impacts and recovery are grossly under estimated using the process that's been used traditionally. And that's not just here, it's used worldwide. It's -- I'm fighting a word-wide battle here.

Recovery of the nearshore habitats would probably take decades rather than the two to three years that routinely have been projected for these kind of habitats.

The ecological values of the nearshore habitats very dramatically on a spacial basis. You got good fishing holes and you got poor fishing holes. Everybody -- every fisherman knows that. And the way you get that kind of information, as I indicated, is by putting trained people down that know the critters in that area, and there aren't many of us left, because nobody has been looking at these habitats to count and identify what's going on in this system and it's a much more economical way to do it. Doesn't cost as much as the conventional method.

I've got a series of figure that I'll go through as quickly as I can here and I think I've -- I think I'm doing okay on time.

These data were taken from a major study that the Allan Hancock Foundation did for the state water quality control board back in the late '50s. They did the survey work in the '50s. It's a major document that's been largely overlooked recently but it has a huge amount of information from Point Conception to the Mexican border. I extracted information for this coast down here because I was putting this stuff together for the SANDAG programs earlier.

Basically what we have here is the depths are a long the bottom of this graphic and the same depth range that the earlier programs were listing for the depths of the borrow sites. What we're looking at here on the left access is total Kjeldahl Nitrogen. That represents the food that's available to the animals in the system. The right access is the abundance of the animals. They track pretty nicely. But notice -- the other take-home message here is notice the variability between these samples. Each of these points represents a sample that I pulled out of that database across that depth gradient. And there's tremendous variation. You got a couple orders of magnitude in some cases of variation between the different areas that were sampled. That's not the way we've been looking at these -- at the borrow sites.

What you want to be doing is selecting the areas at the bottom of this -- of these graphs and -- and getting -- staying away from the areas at the top that are highly productive. This is another example of pretty much the same thing, and I won't cover it in great detail, basically you got the same grade variation from location to location in -- in the biomass of the sample, the numbers of species in the sample, and the number of individuals. This is with -- we're looking at three major types of fish groups, very important fish groups, the worms, the polychaete, the mollusc, which are clams and gastropods and brittle stars.

Conclusions. Basically I -- I think that we need a revision. We need the -- to revise the project alternatives to evaluate -- evaluated by adding and discussing managed retreat. The people need to get into it, and I don't know that you've considered the new work that's come out of Monterey, but Dr. David Rebel is somebody you should be in contact with about this. It was a major study. The Coastal Commission is changing their approach on what they will accept for dredging programs, beach replenishment programs. They just came out recently with a public letter, a comment letter, in response to a major dredging program up north, and basically on the basis of -- of what I read here, and what I read in their letter, this EIR or EIS/EIR will not be approved by the Coastal Commission.

Recommendation. Again, add managed retreat. Number two, conduct comprehensive biological studies of the borrow sites and nearshore habitats using specifically trained biologists, naturalists, that know how to identify these animals and to assess the potential impact to the trees. Thank you.

MS. WELDON: I would like to call Charles Marvin, please.

MR. MARVIN: Kathy, I think I had a timed donation.

MS. WELDON: Three minutes?

MR. MARVIN: Another three minutes.

MS. WELDON: Got it.

MR. MARVIN: My name is Charlie Marvin. I live at 200 Neptune in Leucadia. I support alternative EN-1A. I've been on the bluff for 43 years. I'm not an expert, but I've sure watched that beach a lot during that period of time. So I think I got a pretty good idea of what happens down there, both in the water and on the beach. My history goes back to the early '70s when I came down here from L.A.

At that time we had a lot of beach sand. We had volleyball courts that we put in in May and we took them out in October. And I mean full-width volleyball courts with plenty of soft sand. All soft sand. And in the early '80s we lost five to eight vertical feet from the El Nino. Then all of a sudden there was no beach, no sand. There was cobble and I'm talking cobble on top of rock. There was no sand, period. The surf breaks got wiped out by the lack of -- by the lack of -- by the beach erosion. The sea caves started getting worse and worse. If you go to the sand replenishment, what's going to happen is there will be no beach. There will be bluff collapses. You notice we haven't had a lot of bluff collapses lately. What do you attribute that to, because I can remember back in the '80s when we had the El Nino and the post-El Nino years. We had a lot of bluff collapses all the way up until the early -- the -- about the year 2000. You had a picture up there in your display as you were going through the program. That was Len Oatley's (phonetic) house. He lost half of his home into the ocean about 12 years ago.

You're going to have bluff collapses and when you have bluff collapses they're going to kill people. It's happened already. It will happen again. Homes will be heading to Hawaii. I heard somebody say something to the effect, "Well, we can -- the economic worth to buy a home." I just did a rough calculation. To buy the homes along our Encinitas stretch, probably talking about half a billion dollars to take those homes. Last time I checked the city, and probably the county, wasn't in a position to do that, much less state, which doesn't have a lot of money.

The next thing that will happen is we will kill Encinitas. Our beautiful city will no longer be a beautiful city because we've had this amenity, which we have all taken for granted for so long, until we lost it in the early '80s, but it came back, and it came back somewhat through the natural process and very much help by the 2001 SANDAG program. You're going to kill tourism. Why do people come here, it's a cool little town, but it's got a great beach. You take that beach out, it's not going to be a cool town for tourism anymore. With your sand replenishment you take all those problems I talked about and you reverse it.

Sea caves. Pre-2001. Sand replenishment. Just below my home there was a sea cave 18-feet long and about four or five-feet deep. 2001 we had the sand replenishment up in Beacon's, I haven't seen that sea cave since, which means that our beach from Beacon's most the way down to Moonlight has gone up about five feet, just as a result of 2001. Now we have the new stuff. Unfortunately that -- that sand replenishment didn't go in in time, because that lady was killed in 2000. She was killed three houses north of my -- my home. I found out about it because a daughter of mine in Florida called me, "Look at CNN." I was up in Idyllwild. "I think they -- they had a video over your house and somebody got killed on the beach."

You know who those people were, they lived on the street, husband was a surfer, he was walking back up -- he almost got hit -- out of the water. Wife 50-feet away from the bluff died. Got crushed.

Post-2001 replenishment surf breaks, sand is held. We have very few failures -- bluff failures. And you look back and we just haven't hardly any. We had a spatter before that. I had a conversation with the Coastal Commission chair at one time when they came down and took a look at what happened when that lady got killed. I won't go into the details, but I said, "What are you people doing about public safety?" "That's not our job. We are not responsible for public safety." Staff down there told me the same thing when I went down with Dr. Oatley. What our job is here is public safety, preserving this wonderful asset that we have.

Manage retreat, all I can say when I hear that, is if it was your home, Mr. Managed Retreat, and you brought up your kids and your grandkids in that home, would you use that term quite so cavalierly? Thank-you.

MS. WELDON: How about Julia -- I don't know how you say it, Chunn-Heer? Do you have any time donations?

MS. CHUNN-HEER: I'll be brief. I'm coming back tomorrow.

Julia Chenn-Heer from Surf Rider San Diego. I'm here representing the organization and also Encinitas residents as well.

So I do have a copy of a letter that we submitted earlier this week requesting a 30-day extension on the comment period since the document is very long, complex and released over the holidays.

Due to the timing of that structure we were able to get initiated just right off the bat so under CEQA we're requesting a 30-day extension.

And I have to be honest, I haven't completed a review of the entire document. I have been keeping busy. I do know that our current surf monitoring study is mentioned in the document. Unfortunately we only have -- that is on track only to be completed next year, April 2014. So based on this project horizon, unless there was some mechanism for continuing that study, it's -- it's probably not fair to acknowledge that or account that for any type of monitoring for the impact to surfing resources. And that's probably the crux of our other comments would be obviously the EIR begins to address or look into impact of surfing resources, but no monitoring is currently required, and that's one of our most profound comments we have been sharing with the city, both cities, for some time.

And, last, I'll close -- I would like to echo the gentleman's comments about managed retreat. We have had similar conversations, and would have suggested a more thorough analysis of that alternative before it was fully rejected. Thank you.

MS. MING: Julia, I just want to respond to your letter. We did receive it. We are going to discuss it and we will respond to you.

MS. CHUNN-HEER: Thank you.

MS. WELDON: Susan Steele?

MS. STEELE: No.

MS. WELDON: Franz Birkner. Three minutes.

MR. BIRKNER: Good evening, my name is Franz Birkner, and I'm a lucky man. I'm a lucky man because I have lived, for the last 31 years, on Neptune Avenue on the ocean bluff in Leucadia, and that's been wonderful. And in the course of 31 years, I am an engineer, electrical engineer, not a biologist, but speaking as an engineer I think we've reached a point where we know some things that work with respect to how to protect our beaches.

And what works is what you're recommending, sand replenishment. There is no question about that at this point. The sand replenishment project in 2001 was hugely successful. What was interesting to me is I was talking about the people who were actually doing the dredging and I expressed wonderment at this excellent outcome that was happening right before my eyes, right in front of my house, 100 yards of sand. And they said, "Well, don't you know that this works. We've been doing this on the east coast for 50 years. Longer. This is how we keep sand on the beaches in the east and southeast that they get washed out in the hurricanes. If we didn't have sand replenishment, we wouldn't have beaches." Those words were said to me, or something to that effect. And we can know that. It does work. It's worked extremely well for 50 years or more. I think probably 80 years on the east coast. And we have now solid evidence that it works here in San Diego because the great success we had in the 2001 project. It only took a few months or less to complete and we go five, eight years of, I'll say, 30 to 50-foot beach extension. That we had a second project now in the last six months is a miracle, and it also is working.

So I congratulate you on the careful and broad research you have undertaken of all the different alternatives to address this crucial problem. But I think we now know, with certainty, what works and what may not work. And I would add also that with respect to the projects, the sand replenishment projects that have been undertaken in Leucadia, as far as I can determine there has been no loss whatsoever. There is still a great surf break there. If there's any complaint about the surf, it's crowding. It's not that there's not waves. There's plenty of waves. There's still lobsters. There are still stingrays. I got stung twice just in the last two months. There lots of marine life flourishing off that coast. And to suggest that we're damaging that or we damaged it is just contrary to the evidence that's right in front of us.

So, again, I thank you for reaching these -- or reaching towards these kinds of conclusions. What I would urge at this point is that collectively we all get together and take this to Washington because that's where the real battle is going to be, it's going to be getting these projects funded. We studied them to death. It's time for action and it's time for action that will lead to success in getting it funded and having permanent sand replenishment of our beaches. Thank you.

MS. WELDON: Right on time. Garth Murphy.

MR. MURPHY: Can you put the slide up for the Encinitas project, please.

My name is Garth Murphy. One of my questions is why -- why you're not doing the same area SANDAG did? I just I had not seen that slide to analyze it. I wanted introduce to myself, I'm a second generation ecologists specializing in marine ecology. I worked for two years on the Marine Life Protection Act Initiative and hope you're all aware there is a marine protected area in Encinitas between Moonlight Beach and Seaside, and that I helped negotiate the borrow and placement sites in that. And -- and had a lot to do with the -- with that particular marine protected area. And I think that sand replacement is a reality. I think the work of research has just started. I would like to know if you have examined any of the borrow sites to see how quickly they refill. I think that's important. I think how you do things is -- is as important as what you did to yesterday and the day -- and today. I walked the entire beach in Encinitas from one lagoon to the other and there's a huge difference in how that sand replenishment has worked, which is really interesting to me. I have lived here since 1961. I have seen my 50 years of -- of beach changes here. I think you used the word episodic to start your conversation. I think you need to put the word episodic in your replenishment scheme. I was here in 1969 when the beach disappeared for a 10-year period. And when you get things like that you need re -- replenishment right then. You can't use a 5 or 10-year plan. It's not Russia. 50 years doesn't matter either. You need to respond in an adoptive management way. So I would -- I would encourage putting adoptive management into the whole plan. You need 50 years, but you might need that replenished every year for three years and then you might integrate a light break.

We also have sand che that runs north and south about 70 percent of the time, south to north 30, so you're getting sand back in the summer. Sometimes, it depends on the swells, I'm a surfer, you get 40 or 50 percent of south to north. So you get real good summertime. The other thing is you have to -- so there's timing, there's episodicness, there's what time of the year you put the sand in. Do you put it before winter to -- so that the storms don't hit the bluffs, in which case by summer there's no more sand, or do you put it before summer so everybody has a great beach and then it disappears before winter. So there are subtle things.

And as far as the marine life itself goes, there you have -- you're doing from -- that's from Swami's to Moonlight?

MS. WELDON: From Beacon's to Swami's.

MR. MURPHY: Beacon's to Swami's, okay. In that area you got from E Street to Swami's, you have a horrible groundwater problem that's causing bluff failures. I was here for the study in 1976. You got a huge groundwater problem and the -- the problems with the bluff can be alleviated by pumping that groundwater. Will somebody give me three minutes. I need to finish.

Thanks.

I'm actually an expert on the whole thing. There's an easy way to tell how much sand you should put in each time. You're talking 680,000 cubic meters. I think personally that's too much. We just had 278,000 and when I walk the beach I see that that's just about enough. The critical area is at Swami's point and beaches like to be straight. They don't like points. So that point the sand never sticks. It gets cut away. And there are three mussel beds that are also not mention in your EIR. There are mussels there and at the point of Seaside, the next one are at Big Rock, Windansea and La Jolla, and then there's a few in Point Loma, and then there's none. So this is really important. Going north there are no mussels until you go up to oil derricks or get up to Laguna Beach.

So we have this marine protected area that's designed to protect 14 different habitats. And the reason it's here is because there are more habitats in one place, and that's right here, than any other place on the coast. So this -- this part of the MPA has the job of protecting all habitats available and the 5,000 local species.

In between the border and Laguna beach is the next one. La Jolla is a very specific habitat that is protected there. So you got the surf grass, which is super important. It's right along the shore. If you put 100 feet of sand you're going to heavily affect the surf grass if you walk on it now. If you put 50 feet you will be all right. The surf grass is a true grass. It flowers, it's got a root, it's not like kelp. It grows in the shallow water. It needs a lot of sun. If you cover it with sand it turns brown and dies. And you can walk out there at low tide tomorrow, if you're around, and look at it at Swami's. You will see the part that's covered with sand will die and you will also see that the mussel beds are now in sand and they are just high enough so. As you put the sand down, a really easy way to tell if you put the right amount of sand is just to go down that point, and also to Solana Beach, and see if the mussels are. Covered if they're covered they will die. 100 feet of sand will kill them. So my suggestion, and I agree with everybody, the reality is up. The other thing is you have three objectives and you don't know have an objective to rebuild the beaches, which to me, that's the most important thing for people here is we want the beaches. Maybe Washington doesn't like that. And you also have bluff protection, which is a completely separate issue. And the bluffs erode from the bottom, and also from the tops, so the city can do things with their zoning to keep the bluffs from eroding. They erode from wind and rain and from being eatin away from the bottom. There are also new kinds of seawalls to do. Wave action is alleviated by a slope. It doesn't like to hit something straight up and down. If it hits there, it smashes, and then goes sideways and causes scouring so you don't get any sand stuck to that so you can put these rip-rap che walls or you can use a slope that's kind of like a beach. And they have one in Solana Beach that's really successful at Seaside in the parking lot where they have got the parking lot ramp going to the beach and it has grooves in it. And it's about at the same angle as a beach and sand comes up and sticks on it and then the other stand sticks.

So what I'm trying to say is it's not what you do so much with ecosystems, it's how you do it. And my specialty -- I'm actually a consultant in integrating natural ecosystems with social technological and business ecosystems so you have integration of them. And I think if you apply that to what you're doing we can get a system that actually works where beach sand replenishment is kind of the strong arm of it and then we got these other parts.

One final thing, groins are not appropriate in the bluffs, but I think they're appropriate from the last restaurant going toward -- toward Seaside. Short groins that would make the beach, after the last restaurant, which is the Chart House, as wide as that same beach is. And that would just increase public access, keep the sand there and require less sand.

In Newport Beach the groins work great and they have them from the Santa Ana River jetty to Newport Pier. You can do short groins. I worked in Australia a lot and the sand can actually get around the end of a short groin and then you don't get so much scouring on the back side of them and you actually get a little wider beach. So I would not reject groins where there's a sand bar -- that's a natural sand bar. I also would not reject the plan we have had for a long time of opening the estuary at the Seaside end as well as the Cardiff end because it's putting out the sand at the Cardiff end.

That's kind of a mouthful and I'll do a detailed written report, but I have been working on this for a few years, and I'm not here all the time. Luckily I was here to speak and thank you for listening.

MS. WELDON: Thank you. Tom Cook.

MR. COOK: Hi. Good evening, my name is Tom Cook. I'm from San Diego, California, talking to you tonight as part of the Surf Rider Foundation. Most of my comments are regarding impacts to surfing resources, but I would also like to, you know, echo the sentiment that others have mentioned, that the managed retreat section is lacking. And I believe that the way that it's -- the analysis is set up is destining it to fail your matrix that you go through to see whether or not it's worthwhile. I don't think anybody is pushing for managed retreat to be an overnight thing. This is something that requires leadership and planning and -- but just to broad swipe it out of the report because the city, you know, obviously can't afford to buy all the real estate is really missing the point. And the point is the discussion needs to start happening. These projects, while they're very successful are also very costly and deserve a little bit more attention placed on the analysis.

Personally trained as a physical oceanographer and following beach nourishment projects for most of my career, and, in general, I believe that they're a very positive way of coastal management when they're done with the proper volumes.

The City of Encinitas has participated in the scoop che program over the last few years, and it basically used sand taken from just around the corner here and other opportunistic volumes of sand from construction sites. And I believe that those are placed with a more close to the natural process, the natural amounts of sand that -- that are placed. When you're putting out volumes of 600, 800, 900,000 cubic yards, the impact to the beach system is going to be great. And everyone up here is very happy with the SANDAG project that just completed this year.

You go down to IB, Imperial Beach, where they've placed about 400 or 400,000 cubic yards of sand and people are not that happy. Homeowners are having issues with flooding as well as surfing is pretty much knocked out for 90 percent of the Imperial beach. So the surfing analysis, while we're very thankful that you did such a dedicated large part of the EIR to surfing analysis their -- their findings is that surfing will be impacted at many of the reef breaks south of here in Solana Beach.

We don't think that is acceptable in any regard. We do we understand that there are short-term impacts in that surfing, especially at beach breaks, will adapt over time. However places like Tabletops and Pillbox, which are reef and hybrid reef breaks, need to continue to break in a traditional manner. So thank you for your time.

MS. WELDON: David Oakley, please.

MR. OAKLEY: I donated my time to Mr. Marvin.

MS. WELDON: How about Craig Bruce.

MR. BRUCE: Good evening, Craig Bruce. I live in Leucadia. Nice job. I like the presentation. Like the work. I'm astounded how long it has been going on. I didn't realize that. It's pretty impressive.

My point is, I'm the president of Sea Coast, which is the largest coastal property group in all of California; the oldest and the largest.

So on that point, obviously sand is a yes. That's a big one. But, you know, listening to some of the comments, I want to throw something out there about the sand, about the homes, and, essentially, to the homeowners, to all of us beach property owners up and down the California coast.

You know, we don't like seawalls at all. You know, I'm in so many meetings and so many hearings and so many arguments and so many lawsuits about the seawalls, but it's a really good point to tell everybody that we're totally against them. Absolutely 100 percent against them. It's not our fault that we have to put seawalls in. And a project like this just not knocks it all. It's an absolutely fantastic project. The opportunity here is huge. We all know it's going to be a funding issue, but, you know, just by your work, by your research, you can see exactly why it's necessary and how it's necessary and weighing the other option we have, like planned retreat, which you can clearly see is not going to work. And if they would work they would be fantastic, but that's a -- a planned retreat is a bit of a common sense issue for anybody. I think it needs to be clarified a planned retreat is -- there's no ending to a planned retreat. So, in other words, a planned retreat is just keep retreating. We lose our houses. We lose our streets. We lose our access. You lose everything. You just let it go. Obviously that wouldn't work. It's never worked for anything. It's not working with the public education.

So, anyway, we're actually for it. Personally, I'm a surfer. I have been surfing my whole life. I know every break around. I know every break in Encinitas, to Solana Beach, all the way down to Mexico, and I can tell you that a good surfer -- the breaks change every day. There's no two waves alike anywhere. So when you change the sand, when you change -- when a storm comes in or a storm goes out, the breaks change. The current changes. Everything changes. So surfers adapt. And to hear someone say, "Well, you change the sand, we're going to have problems with the surf," that is absolutely incorrect.

The waves will break one way or another. You cannot stop the way it's going to break whether it breaks dead center, to the right or left, it's going to break. You are going to alter it. The weather will alter our waves more than this project or any project -- any manmade project will ever do.

Otherwise we're absolutely for the project. A five-year renewal is much better than a 10-year renewal because we can obviously see weather plays a huge role in the movement of our sand so the more often it can be replaced, the better. Thanks a lot.

MS. WELDON: Mark, starts with a W.

MR. WISNIEWSKI: Mark Wisniewski. Thank you. Good evening, my name is Mark Wisniewski. I'm a relatively newbie around here. I've only been here since '87. I moved to Leucadia and lived a block from Beacon's.

My concerns are whether a couple of items were addressed in your report. I haven't had a chance to review it. Between a 10-year period, approximately from 1880 to early 1890, there was 600 feet of bluff retreat centered at Moonlight Beach. 600 feet. It's documented in a publication by Gerald Coon, who was a co-author, that studied the entire geology of San Diego County from Orange County to Mexico, including erosion.

Also, was sea level rise that's going to be influenced by climate change considered a near approach. I would also like to state, as one other speaker did, a concern of groundwater exiting out the base of the cliff, primarily from the street down towards Swami's. It also contributes to bluff failures. Has that contribution been weighed, analyzed and studied and given it's -- it's due.

Along with groundwater other causes of bluff failure and erosion in that area are exotic plants including Mexican Fan Palms, Myoporum, Arundo, Pampas Grass, Tree Tobacco. Expanding roots cause bluff failure. They cause sections of the bluff to flake off. Also ice plant has a tremendous weight and you can see mounds of it at the base of the cliff whereas it pulled down the soil from weight. There's also erosion from rain and runoff. And, hopefully, those issues have been considered and addressed. Thank you.

MS. WELDON: Dolores Welty? Okay. Next. Bob Eubank.

MR. EUBANK: My name is Bob Eubank. I have lived near the Grand View steps since 1976. Originally came down here because I like to surf and the solitude and the funkiness of living in Leucadia and set up business here and everything else, but I have seen all the El Nino's come and go, beaches come and go, as Charlie mentioned. And I remember there was one time there during the time when there was just pebbles all over beach, and my jogging on the beach had to stop. There was -- at high tide people had no place to even put their blankets. So literally unless we dumped sand back on that beach on a consistent basis we're not going to be able to have the life-style that we look forward to and being here -- I'm going to live here all my life. My family is going to live here long after I'm gone. I would encourage you to really consider that.

I have become very close friends with Karen Greene who is a marine biologist who did the original research on this project that was started, what, 2001. And I talked to her again about a month ago and this issue started to come up again and she -- I talked about lobster fishing and the marine impact. She said, "This is ridiculous. It doesn't have that kind of impact. It's all pure speculation."

And so I wonder where people are getting their information because I think they ought to go back and give Karen another call.

And so high tide, you can't go anywhere. We have a win, win solution here with the sand on the beach. People don't have to watch their houses fall on the bluff. We don't have to argue over planned retreat. And as far as planned retreat, how would you like to be having your house be condemned as part of the planned retreat, you know. I just can't even believe that people would not even be allowed to protect their own houses. But I have surfed there. I have seen, this last winter, after the sand went up, I have never seen so many wonderful, wonderful sandbars going out within a few hundred yards of Grand View. There is surf -- there's breaks every 100 yards going off right now that never were going off before. It's happening. I have been there every single day since 1976. I know what I'm talking about. And I like to surf there. I like to run there. You know, my family goes down there. We picnic down there. This is our life and it's the life of our community and it's the lifeblood of our community.

We need to decide if it's going to go the possible way of losing a few sea worms or our life-style. Thank you.

MS. WELDON: All right. Dolores.

MS. WELTY: Dolores Welty from Leucadia and I don't really have a whole lot to say except that I live on Batiquitos and I'm gradually losing all my property any way because it's going off into the lagoon every time it rains. And you do lose your property that way.

But it's not going to collapse like along the shore. No one wants to fall off into the water, we do realize that. At the same time I fought the dredging of Batiquitos and I fought it very hard and I did not succeed accept partially. And when -- when they were decide to go dredge Batiquitos they were -- they kept telling me that there's no life in the soil in -- under the water. There's no life in that biota, but there was plenty of biota in the water column.

Batiquitos was dead in the soil because it would be -- it would transfer between freshwater and saltwater depending upon whether it was open to the ocean or whether the ocean had closed it up. So from 1986 until the present Batiquitos has had to be dredged, but nobody ever goes back to see if there's life in the soil in the biota. I'm not using that word correctly. If there's biota in the soil under the water is what I'm talking about. Nobody ever checks on that. And so we don't know.

Fish and wildlife come out and net the fish, count those up and throw them back, but nobody ever looks at what grows or what is there for them to eat.

So I would be very interested in what Mr. Lees said and the -- the hesitation or the concern he has about plant life and crustaceans, et cetera, that the trees and the weeds that live offshore. Who's going to look at it?

One of the problems, of course, is there is so much division of authority. Once you finish your project you will only ever come back and put sand, if you do that, or you may hire someone to do that, and that's -- you'll be gone. You are aren't biologists. You won't come back and monitor. That will be hired. Somebody else will do that. And the money is never there for that. If it's there for sand it's very rarely there for monitoring or if so they hire one person.

I would like to know, too, you said "littoral." I always say "literal." Where is the start and end along here? Does it end at La Jolla? Where -- there's a canyon there, where is the other canyon?

MS. MING: It starts up at Oceanside and goes down to there.

MS. WELTY: So were kind of in the middle then. Okay. Thank you.

MS. WELDON: Jim Jaffe.

MR. JAFFE: Jim Jaffe, resident of Solana Beach, also the San Diego Chapter of the Surf Rider Foundation. And I was pleased that we were able to meet on a continuous basis throughout the planning stages of this EIR with the EIR preparation team and most -- most of what happened has been included in their report. Tom brought up a few interesting points, as well as did Julia.

I just want to address a couple of key things here. What we're really talking about with these types of projects, it already is -- if we fix the shoreline, which is what this project proposes to do, we're effectively doing planned retreat, were retreating from the ocean in a sense, because what happens when we fix the shoreline in a place that under natural conditions would normally erode -- the gentleman alluded to, I don't believe the rate is as high as 600 feet, but it's clearly been eroding for centuries. And we discussed this during our meetings. And I'm not sure it was adequately communicated to the public that this shoreline retreats even if you put the sand in to the extent that nature would have put it there. This is an eroding shoreline. Now if we increase the sea level the rate of shoreline erosion increases from the natural state. So the question is, if you fix it, sea level rises, you will bury essentially all of your surfing reefs under higher elevations of the water and you no longer break. So the solution we're proposing is you dump sand on top of it. When you dump sand on top of these reefs the no longer act as surfing reefs any longer. The natural process is that when cliffs have erodes as they have done for, I believe, 18,000 years, you get emergent reefs depending on the geology of the remanent bluff. So we will no longer have those emergent reefs. And as was pointed out by Tom, and as identified in the EIR, it's not something we made up, there's a likely impact with this sand replenishment that we're proposing that we're going to bury the reefs in Solana Beach. It was clearly identified but it was not listed as a significant impact. I think I'm going to paddle out tomorrow and ask everybody what they think -- if the break would be likely impacted, according to the EIR, what they would think about that. So it's just -- it's just a little concerned that it wasn't identified as a significant impact. I don't know what the threshold was for a significant impact on the surfing break. But the essence of what we're doing is we're fixing the shoreline because we're trying to protect these folks' houses, and I understand their position, but we're going to destroy the beach for the other row of houses and all the way to the desert. Thank you for your time and I'll be submitting some written comments as well.

MS. WELDON: Charlene Zettel.

MS. ZETTEL: Good evening, my name is Charlene

Zettel, and I'm a resident here in Leucadia. Not a long-time resident, but a person who has enjoyed our beaches here in San Diego County for the better part of 40 years.

First of all, I want to thank you for being here and thank your team for all the work. And I testify in support of your recommendation EN1-A.

First of all, I think the important thing that you're addressing is public safety. When we have had, as was mentioned, over 1700 bluff contacts here in Encinitas just this one year. That is 1700 potential life-threatening incidents that could have occurred because we have these bluff failures, small and large, ongoing over the six years that I've lived here personally.

So thank you for being concerned about human life. We all value, you know, the species in the ocean, but I think it's easier to bring a clam back, and if that is your son or daughter's life that is lost, that is an irreplaceable life and tragedy that doesn't need to happen.

Second of all, our beaches are an important resource for our community. Not only for the -- for the beach residents but for our neighbors that come from inland to come to visit our beautiful beaches and tourists from countries all over the world. This has a great economic benefit for the City of Encinitas. Businesses thrive, restaurants thrive, jobs are created. So there's a tremendous economic benefit for the -- and produces a healthy community. It produces healthy life-styles because people enjoy their beaches. They run. They jog. You know, it used to they played volleyball, but -- and I would love to see that kind of again. Thank you so very, very much and I support your project and I do hope it goes forward. Thank you.

MS. WELDON: I'm out of speaker slips unless somebody else has something they want to make a comment on.

With that I believe we're done with public comments. So back to you.

MS. MING: Just want to thank you all for coming. Appreciate your comments. We will, as we said, address them all in the final report. So we will be around if there's anybody that does have a question that we can answer quickly we will try to do so. Otherwise we will answer those comments that you had.

Thank you very much.

(Whereupon the meeting was concluded at 7:30 p.m.)

* * *

I, Johnell M. Gallivan, Certified Shorthand Reporter for the State of California, do hereby certify:

That the public meeting was taken by me in machine shorthand and later transcribed into typewriting, under my direction, and that the foregoing contains a true record of the public meeting.

Dated: This day of , 2013, at San Diego, California

____

Johnell M. Gallivan
CSR No. 10505

DRAFT INTEGRATED FEASIBILITY STUDY AND ENVIRONMENTAL
IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT FOR
THE COSTAL STORM DAMAGE REDUCTION
ENCINITAS - SOLANA BEACH, CALIFORNIA

PRESENTATION AND PUBLIC COMMENT MEETING
SOLANA BEACH, CALIFORNIA
FEBRUARY 7, 2013

Reported by: Johnell M. Gallivan
CSR No. 10505

DRAFT INTEGRATED FEASIBILITY STUDY AND ENVIRONMENTAL IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT FOR THE COSTAL STORM DAMAGE REDUCTION ENCINITAS - SOLANA BEACH, CALIFORNIA

PRESENTATION AND PUBLIC COMMENTS,

commencing at the hour of 6:00 p.m., on Thursday, February 7, 2013, at 635 South Highway 101, Solana Beach, California, before Johnell M. Gallivan, Certified Shorthand Reporter No. 10505, State of California.

MR. NICHOLS: In the essence of time we're going to get going here. We're actually videotaping this evening so we will have the court reporter transcribe what is said so no comments will missed. Hopefully they will arrive shortly, but we appreciate your time and your patience and value that and want to get this up and underway here and get finish by 8:00 p.m.

Welcome, this evening. My name's Mike Nichols. I am the current mayor and I'm here representing the City Council this evening. I want to welcome you to the workshop for the 50 year Solana Beach/Encinitas Army Corps of Engineers shoreline beach project, also known as the 50-year project.

It is to address coastal storm damage go reduction along the shoreline here. It is a 50-year project, as I mentioned, that spans from 2015 to 2065.

We appreciate your attendance and your willingness to provide opportunities for additional comments this evening. The comment period is open until February 26th, so if you're willing and able and you don't have with the opportunity to make comment tonight, or you haven't prepared, you still have some time. And please inform others that the in EIR is available on the city's website. There's also a copy that's available at the Planning Department, if you would like to take a look.

I would like to take a quick moment here to introduce Colonel Toy with the Army Corps of Engineers, sitting to my left. He has his team here assembled this evening and he will make more formal introductions of those folks. I want to take a quick moment here to introduce City Manager, David Ott to my right. Leslea Meyerhoff, City Staff. And then sitting at the end here we have Tina Estell.

If you would like to speak this evening we have speaker slips at the back of the room and if you could hand one to Tina here on the corner she will call your name when the time is appropriate.

Tonight you have three minutes as an individual to speak or you can donate time so an individual may speak for up to six or nine minutes if they have one or two persons which are willing to donate the three minute time

If you have a group this evening where the group is three persons or more, you can speak for ten minutes. I hope I didn't confuse anybody with that but it's three minutes each, but you can donate time. If you're a group you get ten minutes.

Anything to add to that?

MR. OTT: Yeah. If they have a presentation.

MR. NICHOLS: We will have a presentation.

MR. OTT: That's if you have a PowerPoint presentation, if you have one.

MR. NICHOLS: With that said, this is the final phase of a 13-year study, so we're excited to be at this point and time and we're very interested in receiving your comments. And I will turn it over now to Colonel Toy. He'll make his introductions and outline of the events for this evening, but we really do appreciate you being here.

Thank you.

COLONEL TOY: Thank you very much, Mayor Nichols. Good evening, ladies and gentlemen, and thank you for joining us tonight. As the mayor said, my name is Colonel Toy, I'm the Commander and District Engineer for the Los Angeles District U.S., Army Corps of Engineers.

I really want to thank you for taking time out of your busy schedules to join us for this public hearing. Tonight we will present our findings of the Draft Integrated Feasibility Study and our proposed plan to reduce coastal storm damage along the Encinitas and Solana Beach shorelines.

Our purpose is to hear your ideas, your

concerns and your questions regarding our recommended plans to reduce coastal storm damage along the shorelines within the cities of Encinitas and Solana Beach. The meeting is part of the public review process that ends February 26th. I'll talk more about the detail of this meeting and the public review timeframe a little bit later, but let me first introduce a few others sitting with me to my left.

Joining from my staff are Mr. David Van Dorpe, Deputy District Engineer and Chief of Program and Project Management Division.

All right. If you will raise your hand so they see you. All right.

Dr. Josephine Act, Chief of our Planning Division.

Mr. Ed Demesa, who's out in the audience there, Chief of Plan Formulation Branch.

Immediately to my left is Susie Ming, Project Manager for the project.

Mr. Art Shak, Chief of Our Coastal Engineering Section.

Mr. Larry Smith, the Environmental Coordinator and Project Ecologist.

And Mr. Jacob Hensel, our Project Economist.

I want to thank Mayor Nichols, David, Leslea and Tina for their warm hospitality and it's been great working with you on this project and I thank you for the partnership.

I want describe tonight's proceedings. After I finish my first part I'm going to have Susie Ming from my staff present the study findings and details of our tentatively recommended plan.

Finally, and most importantly, we want to hear from all of you tonight. Everyone who is interested in speaking tonight should have filled out of one of out comment cards. If you did not have the opportunity to fill out a card, please do so now, and we will have people come around and collect those in a few minutes and we will have a transcript made documenting this public meeting. All right.

Before I describe the meeting, how I will proceed, I'd like to a few words about the Los Angeles District motto, building strong and taking care of people. I talk about this vision at nearly every event or gathering that I can because I think it's one of the most important things that we do as a Corps of Engineers and as a community that what we can do, and that is building strong and taking care of people.

We all have ideas about the benefits of shoreline protection and wonder whether the cost is worth the effort. For proof we need to look no farther than the New Jersey shoreline after Hurricane Sandy. Areas without protected shorelines washed away and took homes, business and memories with them. But the protected shorelines withstood the on-slot and the homes, business and infrastructure emerged with minimal or no damage.

Our shoreline here is different, but the principal remains the same, building strong and taking care of people. I grew up not far from here in Huntington Beach, California before I joined the Army, and had the great fortune to spend my early years there with all the benefits and a few of the drawbacks of living near the shore. After many years I have the good fortune to return as a district manager. Many of you out there in the audience share my story and have remained residents of the area your entire lives. You know the feeling of a beach town, a seaside community, and that it has its own identity. That's basically what we're talking about when we present our shoreline protection study, a community. How can we build strong and take care of people who call this place home.

The Encinitas/Solana Beach project was a Los Angeles District priority long before my arrival. The team was in place, the groundwork had been laid, the relationships necessary for a successful project were well-established. Through years of discussions and negotiations we, you here, and all of those that contributed, examined nearly every good, bad or neutral suggestion on how to protect the shoreline and its residents from an often turbulent sea.

You know better than I do the teamwork, the partnerships, the agreements and the disagreements, the funded years and the lean years have brought us to this point.

Your enthusiasm and participation in every step of this project resinates among your representatives in Congress and it is no small coincidence those efforts have resulted in the continued funding in these economically lean times.

This study was an FY-13 President's budget and has been for the last few years and it is likely this is where we are today, we are in the final stages of preparation to present this project to the Army Corps of Engineers, Civil Works Review Board.

Projects that require Congressional authorization must be presented to the Corps' Civil Works Review Board. The purpose is to gain Corps' headquarter concurrence on the recommendations before the final State and agency review.

This is the second study I'll present to the board. Since it's inception in October of 2005, 44 projects have been presented to the board. However, not all get approved. The fact that we have gotten this far is something to be proud of. But we can't allow ourselves to believe we have arrived at the conclusion of this project just yet. We still need support from the public and from the city to move forward.

Our meetings here with you are not just a formality, we really do care about what you have to say and make no mistake, your participation and contributions have been instrumental in helping us develop a plan that far exceeds what we could have developed on our own.

We have concurrent of our chain of command through our division in San Francisco and at Corps headquarters in Washington DC. They believe in this project moving forward and your support is essential in helping get their approval. We need to finalize this project. Tonight is the next step in this process.

There are six steps to the Corps' Civil Works project process. It begins when local residents perceive to have a problem that they may not be capable of solving on their own. Residents contact their congressional representative and ask for federal assistance. Congress acts by authorizing and appropriating funds for the Corps of Engineers to study the problem. The Corps, along with our local partners, studies the problem and investigates potential solutions. Once an acceptable project is proposed by the Corps, and it has gone through the review and approval process, Congress will then re-authorize the project's construction in a Water Resources Development Act, or WRDA.

Project implementation could begin once federal and local funds are received. We have completed steps one through three in this process and are now at step four. Susie, in her presentation, will discuss our proposed schedule to complete the planning phase and implement the project.

Now turn it over to Susie.

MS. MING: Thank you so much. I'm Susie Ming, I'm the project manager for the study. I'm going to walk you a little bit through the study history and the project. At the end you'll have public comment.

The U.S. Army Corps received authorization from Congress to study the Encinitas shoreline through a house resolution dated 13 May 1993. The Corps received authority to study the Solana Beach shoreline through a resolution dated 22 April 1999.

The Corps conducted preliminary studies for each city and found federal interest in continuing the studies of the bluff erosion problem along the shoreline and the ecosystem restoration of the San Elijo lagoon. The lagoon restoration and the shoreline protection project were originally joined into one feasibility study and initiated in July of 2001. The lagoon restoration and the coastal storm damage reduction investigations were to decoupled prior to 2005.

In 2005 a Draft Report was provided for public comment. There were public concerns and issues raised that were related to potential impacts of the tentatively recommended plan on nearshore resources, surfing, recreation, water quality during construction and lack of mitigation and public safety.

As a result the Corps and the cities reformulated the study and conducted analyses to address these concerns that included additional coastal engineering and re-site investigations as well as coordinating with the resource agencies and stakeholders as part of this reformulation.

The Draft document that was released on December 26th, 2012 and located at the website -- oops -- website -- thank you -- the subject of tonight's meeting and describes the findings and recommendations for the reformulated coastal storm damage reduction study. Thank you.

The eight-mile study area was broken down into nine distinct reaches. Reaches 1 through 7 encompass the shoreline in Encinitas. Reaches 8 and 9 are within the City of Solana Beach. The Reaches were broken up based on their geology and land use.

Within the study area two segments were identified as presenting the greatest potential for coastal storm damage reduction. Segment 1, which you see up top, Reaches -- which encompasses Reaches 3, 4 and 5, is a portion of the beach within the city limits of Encinitas that extends approximately 7800 feet from the 700 block of Neptune Avenue, south to West H -- H Street.

Segment 2, as you see below, is Reaches 8 and 9, is the majority of the beaches within the city limits of Solana Beach, approximately 7200 feet long extending from the southern city limits north to Tide Park, close to the northern city limits of Solana Beach.

The Encinitas/Solana Beach shoreline has narrow beaches with coastal bluffs exposed to crashing waves particularly during the winter storm season. As sea levels rise the bluffs will be even more exposed to crashing waves with -- which cause notches into the bluffs. Bluffs affected by these notches are then prone to episodic collapse. Consequently public facilities and infrastructure and residential properties on the upper bluff experience land loss and damage to the property. In addition to this problem, the study area also has a high demand for recreation while the narrow beach area combined with the bluff failures represent a significant safety issue.

Erosion of the bluff toe occurs at the base of the bluff where waves impact and results in a notch at the base of the bluff which can grow to many feet in depth. When the notch reaches a sufficient depth, the weight of the overhanging bluff exceeds the cohesive support of the soil and the bluff collapses without warning.

Both of the communities have been subject to repeated bluff collapses resulting in property damage, large debris falling to the beach and even loss of life. In the past decade numerous bluff failures have continued to occur and threaten public safety. City officials have displayed signs along the beach cautioning beach-goers to stay a safe distance away from the base of the bluff at all times.

In 2000 a woman was killed in a bluff -- bluff collapse while sitting on the beach in Leucadia. And additional fatalities have occurred outside the study areas as indicated on the slides.

In addition, the cities keep track of bluff safety contacts which are counted when the lifeguards are required to inform beach-goers to either get out of the caves, away from the bluff overhangs, and bluff overhangs for their safety.

During just this past summer, 2012, which encompasses June through August, Encinitas and Solana Beach had over 1700 and 2800 bluff contacts, respectively.

The project will provide protection of key public infrastructure including beach -- public beach access stairs, lifeguard towers, marine safety headquarters, storm drain facilities, community center, roads and essential public utilities on the bluff. Here are some more pictures of the potential storm damage structures.

Based on the problems and needs in the study area the primary objectives are to reduce the coastal storm damages to property and infrastructure along the study area shoreline and the bluff top prior to the need for emergency action.

Second is to improve public safety in the study area by reducing the threat of life-threatening bluff failures caused by wave action against the bluff base and to reduce coastal erosion shoreline narrowing to improve recreational opportunities to beach users within the study area.

Important considerations that were identified for alternative development were preserving the natural beauty of the shoreline, maintaining public access to the beach, preserving those recreational activities that occur with the study area and preserving environmental resources -- environmental resources.

Our without project condition or, as we call it, the no action alternative assumes that the narrowed beach condition will continue to persist throughout the study area. It also assumes that there will sand from the 2012 SANDAG beach replenishment project remaining in the study area prior to the construction of the proposed project. It is assumed that property owners will continue to take actions to protect their properties by installing shore protection devices. Historically local property owners have been granted emergency permits to construct seawalls at the base of the bluff to prevent further erosion. Our without project condition assume that this process will persist until the entire shoreline in the critical area -- critical region is protected. With this protection in place, properties will not incur any further significant storm damages.

A full array of non-structural and structural measures were formulated to address the identified problems and opportunities. Models of studies prepared for this study were used to evaluate and compare proposed alternatives, alternative measures and plans. The no action of future without project scenario is necessary for comparing the cost and benefits of different alternatives. It serves as the baseline by which other alternatives may be compared to each other.

The assumption is made that the existing seawalls will continue to be maintained and private homeowners will be granted permits to build new ones. Under this scenario most of the shoreline will be armored within 20 to 30 years.

Managed retreat is a term commonly used to describe a policy that restricts or opposes efforts to protect the shoreline. It has been used to describe scenarios that range from complete removal of all structures and bluff top structures to simply not allowing new structures to be built.

Structural alternatives include beach nourishment at various increments and include placement of compatible sands from either upland sites or borrow -- offshore borrow areas.

Emergent breakwaters are concrete or rock structures built roughly parallel to the shore just beyond the breaker zone to absorb wave energy by stopping transmission or breaking the wave before it impinges on the beach.

Submerged breakwaters are artificial reefs and come in many forms but can be roughly broken down into soft nearshore sand berms and hard reef designs.

Groins are alongshore sand retention structures constructed perpendicular to the shore to form fillets that can slow beach erosion by trapping sediment being moved by littoral transport.

Notch fill only alternative involves filling of sea caves and bluff toe notches with engineered concrete fill which prevents significant erosion of the cliff base and provides vertical support of the overhang.

The hybrid-beach nourishment is a combination of the beach nourishment and the notch fills in varying increments of beach nourishment and renourishment.

Seawalls are solid structures designed to withstand the full force of storm waves without being overtopped or undermined. The alternatives consist of a continuous seawall approximately 25 to 35-feet tall.

The revetments are structures made of placed quarry stone designed to protect the bluff toe from erosion by wave action. They are generally effective if maintained but width requirements result in encroachment onto the beach.

Several iterations of alternative screening were conducted to identify a final array of alternative plans. A preliminary screening eliminated the following alternatives: Managed retreat, emergent breakwaters, submerged breakwaters and artificial reefs, groins and revetments.

Managed retreat was analyzed but found that under this scenario public beach access, public roads, including Highway 101, and public facilities need to be acquired and removed so that costal erosion could continue unabated along this highly urbanized and developed shoreline. Acquiring private lands and converting these for public use could only be accomplished through acquisition of high cost real estate which makes this option not viable.

In addition the analysis of land and structured damages under a managed retreat indicates that these damages are more than twice the cost of implementing a long-term coastal storm damage reduction program.

Breakwaters, artificial reefs, groins and revetments were all eliminated from further consideration due to environmental aesthetic impacts,

impacts to the down coast sediment transport and lack of public support.

In addition, these alternatives were screened out because they would not meet the project needs and objectives and/or the cost implementation to meet the needs and objectives would be disproportionately high.

Notch fill only and seawalls were eliminated in a secondary iteration of screening. Seawalls were dismissed because of the visible impacts to the area, lack of public support and both were found to be economically unjustified. These alternatives did not meet all the project needs and objectives as well.

The alternatives carried forward, beach nourishment and hybrid alternatives meet the project needs and objectives. Due to the geographical separation of the shorelines conditions Segments 1 in Encinitas and two in Solana Beach, those alternatives were analyzed and justified independently.

A full array of beach widths and renourishment cycles for both alternatives were considered from benefits and environmental consequences as well as the ability to meet the planning objectives.

The most viable and implementable plans are presented in the following slides for each city. The period of analysis associated with all of the alternatives is 50 years.

Let's start with the City of Encinitas. This is the final array. There are two beach nourishment alternatives; EN-1A and EN-1B. Two hybrid alternatives, EN-2A and 2B and a third, the no action, EN-3.

As you can see from there it tells you a little bit about the initial placement volumes and renourishment volumes for each of the alternatives and the renourishment cycle are the first three lines. It talks about the total placement volumes which is over the 50-year time period at an additional at E-level width is what would be placed. So you can see for EN-21 it's a hundred feet.

We also have to look, as we said, about the cost and benefits so the next five slides really talk about we look at benefits to cost ratio. We have to determine the average annual cost, the average annual benefits to come up with our net average annual benefits and this really goes into our benefits and cost ratio. In order to move forward with the project a benefits to cost ratio has to be greater than one.

The residual risk is a percentage of what was the normal risk after the project is built. I won't go into the all the numbers but we will have available so you can look at them.

Next slide is a picture of the Plan B of the proposed project in Encinitas. The red outline is our project. The yellow is the SANDAG regional beach sand project used for your reference.

Now we'll move on to Solana Beach. The final array for the city has three beach nourishment alternatives; SB-1A through SB-1C and two hybrids SB-2A and 2B and a no action.

And then we have the full information there about the placements volumes and all the benefits and cost ratio information.

Next is the plan view which shows the placement of the sediment would be pretty much the whole city. We did talk about doing initial construction to avoid impacts to Table Tops, so that as part of the plan as well. The diagram might not show that, but that's what it is.

And the yellow, again, is the regional beach sand project. And during our analysis we determined the tentatively recommended plan for both the cities of Encinitas and Solana Beach.

For Encinitas it's EN-1A. For Solana Beach it's SB-1A. The tentatively recommended plan is comprised of beach nourishment of a 100-foot -- foot wide beach for the City of Encinitas with renourishment cycles every five years with a volume of 680,000 cubic yards. The BC ratio is 1.53 and the net average annual benefits is 1.2 million.

For the City of Solana Beach it's 200-foot every 13 year renourishment. The initial volume is 960,000 cubic yards. The BC ratio is 1.91 and the net average annual benefit is 0.869. The tentatively recommended plan for both the cities of Encinitas and Solana Beach.

Sand would be dredged from offshore, beyond the depth of closure, using borrow sites designated SO-5, MB-1 and SO-6. That material would then be placed directly onto the two receiver sites within Encinitas and Solana Beach.

In compliance with the National Environmental Policy Act and the California Environmental Quality Act, a Draft Environmental Impact Statement, Environmental Impact Report is included as part of the integrated feasibility report document.

The purpose of today's meeting is to provide members of the public the opportunity to express the concerns about the project and to comment on the Draft EIS and EIR.

The primary environmental concerns identified during the scoping process were potential impacts to nearshore rocky reef and surf grass habitats, air quality impacts, water quality impacts, noise impacts, effects on recreation including surfing, cultural resources and public safety.

The Draft EIS/EIR are also evaluated geology, coastal processes, sediment quality, biological resources, socioeconomics, transportation, land use and public utilities.

The impact associated with the Encinitas alternative has been evaluated for all resource topics and were determined to be less than significant for all of the resources except for cultural resources and discovery. No mitigation is proposed other than standard cultural resource monitoring.

Impacts associated with the Solana Beach alternative have been evaluated for all resource topics as well and determined to be less than significant for all resources except biological resources and cultural resources. Mitigation is proposed for the impacts identified under each alternative and the severity of these impacts is directly relative to the size of the proposed beach and associated number of days of construction.

Monitoring commitments occurred, monitoring during sand placement, and stopping construction to assess should cultural resources be discovered in consultation with the State Historic Preservation Office. Monitoring turbidity levels at borrows and placement sites. Determine if beach filled areas are suitable for grunion spawning at the start of the spawning season. If suitable, we will monitor during predicted spawning events. Generate a safety plan to restrict public access at receiver and notch fill sites and obtain 100-foot buffer around construction area. Pre- and post-construction monitoring of nearshore habitats including rocky reef and surf grass is to determine nature and extent of any adverse impact resulting from the project.

Post- -- post-project mitigation measures, if necessary, are to restore and create like habitat at a functional equivalent value, which we assumed, for our analysis, to be two to one, are to be determined in consultation with the responsible federal and state resource agencies offsetting the long-term significant impact, if any, to those marine resources.

Talk about our next step in the schedule, this project target completion schedule is an optimistic completion schedule and may change due to factors such as authorization, funding, approval process or environmental compliance issues.

Again, we will consider all comments received during this public review period and incorporate those comments along with our responses in the final report.

A final decision will be made by the cities and Corps whether to proceed with the project. The final report will be forwarded to our Washington headquarters for their review and decision making. The project will be authorized by Congress in a Water Resources Development Act, WRDA, contingent on a Chief of Engineer's Report completed by the end of this year.

After final design and plans and specifications are completed we will execute a project cooperation agreement with the city officials. Construction could begin in 2015.

I want to thank you all for listening. This concludes my presentation and I will now turn it back over to Colonel Toy.

COLONEL TOY: All right. Thank you very much, Susie.

We are now up to the most important part of our meeting, the comment section, where we will receive your comments. There are several guidelines that we ask you to follow when you speak to assure the completeness of the record. Please identify yourself clearly and state the interest or organization that you represent. We ask that you confine your participation to the subject of the meeting, the Encinitas, Solana Beach Coastal Storm Damage Reduction Study and keep your statements brief and to the point. The mayor has already reviewed the time rules and timed donations up to nine minutes, ten minutes for presentations will be accepted.

If you do not want to speak tonight but are still interested in commenting on the tentatively recommended plan, please make sure you take a comment card with you. Send comments to Larry Smith at the address shown on the card and on this slide. All written documents will be included in the final documentation if postmarked before February 26th. Detailed responses will be prepared for comments made this evening and written comments received before the end of the public review timeframe ending on February 26th.

Changes may be made to the tentatively recommended plan based on the comments that we receive. We will not be responding in detail to comments made tonight. With that let's begin with the first comment and I'll turn it over to Leslea or Tina who will control the proceedings.

MS. ESTELL: First speaker is Adam -- Adam Burnham.

MS. MEYERHOFF: Birnbaum.

MS. ESTELL: Birnbaum, excuse me.

MR. BIRNBAUM: No problem. Thank you. Good evening and I thank you for the opportunity to hear more about the project. Really appreciate that coming into the communities. I'm planning manager for the City of Del Mar and we're located at 1050 Camino Del Mar.

First off the City of Del Mar is supportive of these restoration efforts. We recognize that we will be the recipients of sand as part of the littoral sand transport. Some of what I saw presented here is reminiscent to what we saw in the regional beach sand replenishment project that was instituted by SANDAG, and I congratulate all those involved with that effort because it looks like it's been really successful.

But the city did comment in the planning stages of that project because one of the major burrow sites of the project is -- was SO-5, which is located immediately off- -- offshore of Del Mar's beach. And, in this case, I believe that SO-6 is in the similar location.

We commented at that time that we had concerns to be sure that the work that was carried out was beyond the depth of closure so there wouldn't be any impact on Del Mar's beach profile. And we now have the experience of that project being implemented but we haven't had the benefit of seeing long-term, or even a short period of time, whether the claims that were made and the assumptions that were made are actually is what is going to occur. So we hope that with this analysis there is some consideration and potentially mitigation included to address if there are, in fact, impacts of the result of borrowing a large amount of sand off the Del Mar beach front.

I intend to submit comments, similar to those we submitted last time, and we appreciate the opportunity and we are supportive of the project, but as you can understand with the large amount of sand being dredged from the nearshore off Del Mar it is of a concern to the city that project be appropriately designed and implemented. Thank you.

MS. ESTELL: The next speaker is Jim Jaffe and he has -- Kristin Brinner has donated time, so you'll have six minutes.

MR. JAFFE: Good evening, Jim Jaffe here, resident of Solana Beach, also on the advisory board of the San Diego County Chapter of the Surf Rider Foundation. I came to last night's meeting but I wanted to speak tonight as well. One of the important things I want to bring up is Mayor Nichols is also a surfer and he surfs a lot of breaks in this region, for those of you who don't know, so one of the things we raised last night, and I just want to make sure he hear's it, flat up, straight up if you didn't hear it already, was that one of the impacts that was determined from the project was that the reef breaks in Solana Beach were likely to be impacted, and there's a possibility they could be converted to beach breaks. So to this group of surfers and Mayor Nichols himself, who is also a surfer, like I said, we don't know if that's deemed a significant impact. It didn't seem like it was identified as a significant impact, but if we did a survey on-line I can guarantee it would be some concern.

Another thing to bring to your attention, I've done some further reading since last night, is that Table Tops is identified as a right. I can tell you that I've probably surfed more lefts there in my life when it -- of surfing that break. In the summertime it predominantly breaks left and there's lefts there even when it breaks in the wintertime. So that's just something that probably needs to be corrected in the description of that break.

As far as the alternatives go, what's being proposed, it's a little unclear to me. I just want to -- maybe -- maybe this can be clarified after I speak, but it says it's 100 feet beach width, I just want to understand is that initial the curved out placement or is that what it equilibrates to over the project period. Because there's a difference between putting a 100-foot wide berm of beach in place and what it might equilibrate to giving up equilibrium beach profile concepts that I'm familiar with under my studies under Robert Dean at the University of Florida.

So commenting that there's a surfing impact and Surf Rider is involved with this and the SANDAG project, although I understand that there's going to be monitoring for surfing, it didn't appear that that was on the list of monitoring. And as you know we have instituted a monitoring program but it's not funded against next year. And we were very lucky to get grants from the county and other people to put that monitoring program in place for the SANDAG project that is ongoing right now.

As far as the managed retreat alternative, we think it may have been dismissed a little too prematurely. One thing to consider is that if -- if there was retreat and the bluffs did migrate shoreward, that you would get -- end up with additional recreational benefit that could offset the additional costs, because it's my understanding you can -- you can bring up -- the recreation benefit is hit the top limit in this project. You can't exceed it any further because you're only allowed to go 50 percent as a recreation benefit.

Now, however, if you spent more on the structural side you're allowed to increase your recreational benefit. So my question would be, did you consider that when you dismissed the managed retreat alternative. Also, did you consider the impact fees and other costs associated that would burden these properties and the -- and the land use plan that is currently drafted, what it's impact my be on the economic value of these properties.

Lastly, I just want to bring up another point, which is that in looking through all the data I see you -- I see Mr. Krantson's (phonetic) here and you relied heavily on his data, and Mr. Oakley, and -- and with all do respect these folks that supplied considerable date for this project stand to benefit considerably from it. His -- Mr. Krantson's clients and Mr. Oakley is -- is a member of the Cedros Preservation Association and a costal property owner and just -- it just would be nice if you disclosed in there where you did use people that had direct benefits as a reference for the creation of this document and the peer review committee might be interested that kind of data as well.

Lastly -- I said that was the last. I forgot one thing on my list here. As far as safety benefits, the City of Solana Beach did do a study on what recreational benefits, what safety benefits might occur because of the presence of seawalls in other words. And that benefit was found to be inconsequential and that was -- you use the study to get the (inaudible) I believe, but I'm not sure if you used the aspects of that study that related to the safety benefit. So I've covered a lot of ground there. Of course we'll be submitting written comments along the lines. I thank you for your time.

And I also want to point out, thank you, the Army Corps did meet on a regular basis with Surf Rider and we appreciate that time and a lot of our input did get put into the EIR. Thank you.

MS. ESTELL: Next is Julia Chunn-Heer.

MS. CHUNN-HEER: Good evening. Julia Chunn-Heer, Campaign Coordinator for Surf Rider San Diego. I come here mostly to benefit those who weren't at the meeting last night. I will be somewhat redundant from those meetings.

The Surf Rider Foundation as avid users of the coastline are keenly entrusted in this project and would like to fully participate in the process allowed under

CEQA. However, due to the timing and release of the EIR/EIS and the mere size of the document we're respectfully requesting a 30-day extension to provide meaningful comment, to include the letter that I submitted in February 4th. As you know the EIR/EIS was released on December 28th during the holiday season. The demands associated with the start of the year and previous commitments to priority projects in the same area did not allow us to begin our review immediately.

In addition, due to the extensive size and complexity of the document we feel that a more than 60-day comment period is necessary for proper review. So not is only our organization keenly interested in the project, but the public is as well and we believe the 20 days between these hearings and the deadline for comment is not sufficient. Due to our previous experience, subject matter, as well as expertise, we believe our comments are crucial in strengthening the EIR. Please allow for meaningful public comment -- excuse me -- participation of the potentially long-term project and extend the comment period.

So that's regarding the request. A couple more specific comments echoing Jim's sentiments. We do have some feedback regarding the short shift towards managed retreat. It was deemed impractical and infeasible. But that takes leadership and oversight. And this is a costly federal project. With -- that alternative deserved more than just a cursory hand wave. It should be more substantially evaluated.

And then, lastly, Onrey (phonetic) mentioned in the EIR/EIS that offshore monitoring should not be considered a part of this project. Surf monitoring study does not have funding continue throughout this duration. In fact, it's one year in to its two-year funding period. The surf monitoring should be required of this project and the methods that we've established in lessons learned in our current studies should be incorporated. Thank you.

MS. ESTELL: And I'm going to ask to confirm whether Bonnie Kemper would like to speak or not.

MS. KEMPER: No. Thank you.

MS. ESTELL: That's it.

MS. MING: Well, great. Well, thank you so much for your comments. We're going just take a few minutes to going around our group here and see if we can provide a little bit of a short answer to some of these questions. I'm going to ask Art to give a response.

MR. SHAK: All right. I'm Art Shak, Coastal Engineer for the L.A. District.

One of the questions I can easily respond to as a quick question that's the -- well, we're adding 100 feet after the beach. So we're adding enough sand density basically cubic yards per foot to have the mean sea level pushed out 100 feet from where it is today. I think -- oh, and the only other thing I was going to say is I was looking at Table Tops today and it is a left. I agree with you 100 percent. The rate was maybe six inches. So we'll make that correction. And it's an -- it's -- it was way on the north side of Table Tops today; right, so that's all I have.

MS. MING: Thank you. I think one of the other issues was then maybe a little bit from Jacob about the economics of managed retreat, if you could address that.

MR. HENSEL: Hi, my name's Jacob Hensel. I'm also from the Los Angeles District, the project economist. Well, there are many criterion and constraints that are considered when we evaluate these different alternatives. One of the them that is -- is important is the -- that a federal water resource project must be economically justified. In other words, the -- the benefits from the project, in this case the coastal storm reduction, needs to at least exceed the cost of implementing that. And so we evaluated that for -- for our alternatives. In the case of managed retreat we're talking about costs associated with structure loss, land loss. I've got a list here. Demolition of the structures, relocation, and then measures to protect public infrastructure such as utility drills and other things that could be potentially impacted.

So on the other side allowing a -- having a managed retreat alternative would provide some benefits, primarily recreation. As the private lands would be repurposed for public use, at least what's remaining of the parcels. There's generally not a safe distance developed in structures, so these would be kind of limited public use facilities. Maybe paths, parkways, parks and that sort of nature.

So based on the -- based just on the economic justification alone the cost of the managed retreat are -- are significant and the -- the benefits that we can capture are -- are very limited. And so that was at least one reason why benefit retreat -- managed retreat was not a tentatively recommended plan that we we're proposing to.

If you want to read more about that it is discussed in the main report. You can also refer to the economic appendix, which is appendix E, where managed retreat is discussed. I believe it's Section 4.

So with that -- I think there was also a question about the land use fees and the study that was used -- done at Solana Beach and cited for recreation figures, that -- that is correct, recreation figures were used from that study. I went -- need to get back to you about -- in more detail about the impact to Onrey. You mentioned that the life safety -- there was a life safety -- relatively life safety effects from reduction from Onrey, so I'm not familiar with that personally. I would need to look into that report.

So if you submit a written comment I'll have a chance to respond to that. I think that's it.

MS. MING: Great. Thank you. I wanted to see if the city wanted to add anything at the end.

MALE SPEAKER: The city actually did an analysis in 2002 of managed retreat as well, that is attached to the actual document for your review as well. Came up with somewhat of the same conclusions. Some of the data is a little different but came up with the same conclusions in the sense that the cost of managed retreat, because of the actual having to purchase those properties, the demolition of those properties, the relocation costs, the public infrastructure and the roadway systems and then to try to re-route those roadway systems if there's even available to do that, significantly was larger than beach enrichment.

Also I want to try to just -- not give a definitive answer, but I do want to response to the Surf Rider's comment about an extension, since there's some things that are out of our control as far as the time limitations. Serious consideration's being given to -- in response to you, but there are some things that are out of our control. So I would encourage you to do everything you can do to get the comments in but I will be talking to you also on that and we haven't finished our discussions yet so.

MS. MING: Great. Well, we really want to thank you for coming out tonight and providing your comments and encourage you to submit those written comments by the deadline. If you have any questions, I'll put the website, whoops, one more time. It's kind of long, but if you probably Google Encinitas/Solana Beach it will come up with that. The report is there. We encourage you to submit those comments, so thank you so much.

MAYOR NICHOLS: So we'll close the meeting by thanking the Army Corps for being here this evening. We appreciate the opportunity for you to present to us and give us some insight and hear comments from the public, and again for the public for taking the time to come in this evening and taking the time to comment. We appreciate that very much so thank you and everyone has a good evening.

(Whereupon the meeting was concluded at 6:45 p.m.)

* * *

I, Johnell M. Gallivan, Certified Shorthand Reporter for the State of California, do hereby certify:

That the public meeting was taken by me in machine shorthand and later transcribed into typewriting, under my direction, and that the foregoing contains a true record of the public meeting.

Dated: This day of , 2013, at San Diego, California

____

Johnell M. Gallivan
CSR No. 10505

Encinitas-Solana Beach Coastal Storm Damage Reduction Project

San Diego County, California

Appendix M

Mitigation Strategy

U.S. Army Corps of Engineers
Los Angeles District

April 2015

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Table of Contents

Section **Page**

List of Tables

List of Figures

1 INTRODUCTION

The Los Angeles District of the U.S. Army Corps of Engineers (USACE) is conducting a Feasibility Study for a coastal storm damage reduction project in the cities of Encinitas and Solana Beach, San Diego County, California. Potential impacts to rocky reef habitats off shore of Solana Beach have been predicted to require mitigation. The purpose of this document is to describe the process used by the USACE to determine the acreage of rocky reef mitigation that may be required for this project. No impacts to surf grass are predicted for any of the action alternatives. If surf grass mitigation is required it will be performed as described in **Appendix H**.

2 FUNCTIONAL ASSESSMENT

The Functional Assessment is used to provide a quantitative valuation of existing and mitigation features to support a mitigation functional equivalent to offset unavoidable losses to rocky reef habitat resulting from the Project.

USACE guidance for establishing mitigation requirements in the Civil Works Program is provided in ER 1105-2-100. USACE planning policy is clear on the use of functional habitat evaluation assessment or functional assessments (FA): “Mitigation planning objectives are clearly written statements that prescribe specific actions to be taken to avoid and minimize adverse impacts, and identifies specific amounts (units of measurement, e.g., habitat units) of compensation required to replace or substitute for remaining, significant unavoidable losses” [ER 1105-2-100, App C, Paragraph C-3.b (13) 22 April 2000] and “habitat-based evaluation methodologies…shall be used to describe and evaluate ecological resources and impacts” [ER 1105-2-100, App C, Paragraph C-3.d (5)]

This guidance requires that USACE not use standardized ratios, but instead a scientific-based approach through the use of habitat evaluation through functional assessment (FA).

Following consultations with resource agencies in March 2012, USACE decided to proceed with a process based, in part, on the National Oceanic and Atmospheric Administration (NOAA) mitigation calculator (King & Price, 2004). USACE also assembled a panel to assist in populating the mitigation calculator. That process is described below.

This process was chosen because it allows for a structured procedure tailored to the project site, it allows for a quantified assessment of mitigation, and it results in a written documentation of the determination process.

Reef habitat mitigation shall consist of shallow-water, mid-water, or deep-water reef. Shallow water reef would be for any surfgrass mitigation, mid-water reef would be located inshore of the existing kelp beds, and deep-water reef would be located offshore of the existing kelp beds. The mid-water reef would be the first priority as it is most like the reef being impacted and is thus closer to an in-kind mitigation. However, deep-water reef mitigation may be required.

Separate mitigation requirements were established for each reef type. Each of the three reef types have differing locations and characteristics that result in different functional values.

3 NOAA MITIGATION CALCULATOR

The FA is based in part on the NMFS Wetland Mitigation Ratio Calculator (King and Price, 2004). This use of the mitigation ratio calculator was adopted following recommendations made by NMFS and CDF&G during a conference call on 1 March 2012. This mitigation ratio calculator represents a systematic, peer-reviewed approach to the calculation of a mitigation ratio for wetlands. The calculator is heavily dependent on best professional judgment, but it is tailored to the specific study area and project.

The calculator uses the following parameters and formula to estimate a mitigation ratio:

A: The level of wetland function provided per acre at the mitigation site prior to the mitigation project, expressed as a percentage of the per acre value of the original wetland. Values for this parameter ranged from 0 to 1. A value of 0 means that the mitigation site prior to mitigation had no wetland functions; e.g. the mitigation is constructed on a parking lot. A value of 1 means that the mitigation site has the same wetland functions as the original wetland; e.g. the mitigation is constructed on a fully functioning wetland.

B: The maximum level of wetland function each acre of mitigation is expected to attain, if it is successful, expressed as a percentage of the per acre value of the original wetland. Values for this parameter ranged from 0 to 1. A value of 0 means that the mitigation site is expected to achieve none of the wetlands functions of the original wetland. A value of 1 means that the mitigation site is expected to achieve the same wetland functions as the original wetland.

C: The number of years after construction that the mitigation project is expected to achieve maximum function. This parameter is measured in years and is not bound by the calculation. The expert panel chose to use whole years for this parameter due to uncertainties in predicting design and construction time as well as time to reach maximum function.

D: The number of years before destruction of the original wetland that the mitigation project begins to generate mitigation values (negative values represent delayed compensation). This parameter is measured in years and is not bound by the calculation. The expert panel chose to use whole years for this parameter due to uncertainties in predicting design and construction time as well as development time.

E: The percent likelihood that the mitigation project will fail and provide none of the anticipated benefits (with mitigation failure, wetland values at the mitigation site return to level A). Values for this parameter ranged from 0 to 1. A value of 0 means that the mitigation site will fail and provide none of the anticipated benefits; e.g. the mitigation does not function as designed. A value of 1 means that the mitigation site provides all of the expected benefits; e.g. the mitigation functions as designed.

L: The percent difference in expected wetland values based on differences in landscape context of the mitigation site when compared with the impacted wetland (positive values represent enhanced landscape context at mitigation site). Values for this parameter ranged from -1 to +1. A value of 0 means that the mitigation site has the same landscape context as the impacted wetland; e.g. in kind mitigation. A value of -1 means that the mitigation site has none of the landscape context of the impacted wetland. A value of +1 means that the mitigation site has none of the landscape context of the impacted wetland, but is enhanced relative to the impacted wetland.

r : The discount rate used for comparing values that accrue at different times at their present value (tables provide estimates based on discount rates of 0%, 5%, and 10%). ER 1105-2-100 Paragraph E-36 c.(1) states that: "Ecosystem restoration outputs are not discounted, but should be computed on an average annual basis, taking into consideration that the outputs achieved are likely to vary over time." The above excerpt is in the Ecosystem Restoration appendix of the ER. HQ policy interpretation is that it applies to impact analysis and mitigation planning as well as ecosystem restoration. USACE will instead separately apply an average annualized habitat evaluation using software developed and certified by the Institute for Water Resources (IWR). A value of 0 will be used in the calculator.

Tmax: The time horizon used in the analysis. (Using the OMB recommended discount rate of r=7% comparisons of value beyond about t=75 years are of negligible significance). This parameter is measured in years and is not bound by the calculation. The time horizon used for this calculation is 50 years, which is the life of the project.

R: Under the circumstances described above, the discrete time equation that can be used to solve for the appropriate mitigation ratio is as follows:

$$R = \frac{\sum_{t=0}^{T_{\max}} (1+r)^{-t}}{\left(B(1-E)(1+L)-A\right)\left[\sum_{t=-D}^{C-D-1} \frac{(t+D)}{C(1+r)^{t}} + \sum_{C-D}^{T_{\max}} (1+r)^{-t}\right]}$$

Modifications were made by Jodi Creswell, USACE Ecosystem Restoration Planning Center of Expertise to correct the formulae in Worksheet "Mitigation Ratio Calculator" Column K which calculates the output for years -D to C-D. The prior version of the spreadsheet was incorrectly calculating negative numbers for year t to -D. The formulae were revised to only calculate when t is between -D and C-D as stated in the equation in Worksheet "Definitions and Equation".

Each parameter was assigned a value by a panel of experts identified in the following table. Rationale for the assigned value is provided below. The expert panel, other than discussed above, was not restricted in its assignment of values, including the number of significant figures. The calculation was carried out in a spreadsheet application provided by the NMFS. **Table 5.1-1** shows calculated functional equivalents for low, high, average, and USACE-selected values for each variable.

Values for variables A, B, E, L, and r are percentages. The range for these variables are 0 to 1. Variable C is the number of years and varies from 0 to the number of years that the mitigation project is expected to achieve maximum function. Variable D is the number of years before destruction of the original wetland that the mitigation project begins to generate mitigation values (negative values represent delayed compensation). Values may be positive or negative. Tmax is the time horizon for the project. The lifetime of this project is 50 years.

4 EXPERT PANEL

The expert panel consisted of the following technical experts:

Larry Smith, U.S. Army Corps of Engineers (USACE)
Bryant Chesney, National Marine Fisheries Service (NMFS)
Jon Avery, U.S. Fish and Wildlife Service (USFWS)
Bill Paznokas, California Department of Fish and Wildlife (CDFW)
John Dixon, California Coastal Commission (CCC)
Keith Merkel, Merkel & Associates, Inc.

5 PANEL RECOMMENDATIONS

The panel specifically addressed mid-water reef mitigation in detail. The values for deep water reefs were discussed in lesser detail as this is seen as unlikely and is considered to be out of kind mitigation. Values for this scenario were developed by the USACE, keeping the discussion with the panel in mind when assigning values. The values for the shallow water (surf grass) reef were determined in a similar fashion.

5.1 NOAA Mitigation Calculator

A: The panel identified a consensus range of 0 – 0.23. The average value proposed by the panel is 0.106. The calculator assumes that the impact site retains no habitat value. It is, in essence, converted into a parking lot. The impacted area, for this project, however will retain some habitat value as it will be converted from rocky reef to sandy bottom habitat. Conversely, the mitigation area will be converted from sandy bottom habitat to rocky reef. Forcing the calculator to take this into the calculation requires that either A=0, the rationale for some panel members scoring this parameter, or that B be given a correspondingly higher value.

B: Near shore reefs are very diverse and artificial reefs colonize rapidly and with a high functional value. The panel agreed on a value of 1 for this variable.

C: The panel identified a consensus range of 5 – 7 with an average value of 6. Near shore reefs generally show rapid colonization, although it does take time to reach "full development".

D: The panel agreed on a value of -4 for this variable and USACE will use that value for its calculation. This value is based on a two-year delay to determine long-term rocky reef losses and an additional two-year period to identify acreage of rocky reef losses, design, contract, and build the mitigation reef. The mitigation reef would be in place and beginning to function four years after sand placement.

E: The panel identified a consensus range of 0 – 0.5. The mitigation reef is a feature of the project and any mitigation reef built would have some benefit. The variable is defined as will "provide none of the anticipated benefits". However, there was some doubt as to whether USACE could build a large enough mitigation site or build a site that would meet its objectives. The first is mostly a funding concern. Should mitigation be greater than estimated would USACE be able to obtain additional funding to enlarge the mitigation site. The second is based on an unknown mitigation site design and mitigation site features. Is the bottom of a character suitable for building an artificial reef, are the reef materials of a size and weight to be stable in the near shore environment. This project will include funding for mitigation plus a sizable contingency fund should our estimated impact be low. Additionally, the technology for artificial reef construction is a proven technology that is relatively simple compared to other kinds of mitigation commonly evaluated using the calculator (salt water marsh, eelgrass, etc.).

L: The panel agreed on a value of -0.1 for this variable and USACE will use that value for its calculation. This value is based on the fact that the mitigation site is in slightly deeper water than the impacted site and is likely to have slightly different habitat values.

r: ER 1105-2-100 Paragraph E-36 c.(1) states that: "Ecosystem restoration outputs are not discounted, but should be computed on an average annual basis, taking into consideration that the outputs achieved are likely to vary over time." The above excerpt is in the Ecosystem Restoration appendix of the ER. HQ policy interpretation is that it applies to impact analysis and mitigation planning as well as ecosystem restoration. USACE will instead separately apply an average annualized habitat evaluation using software developed and certified by the Institute for Water Resources (IWR). A value of 0 will be used in the calculator.

Tmax: The time horizon used for this calculation is 50 years, which is the life of the project.

Table 5.1-1 Summary of Recommended Values

	A	B	C	D	E	L	r	Tmax	R
Low	0	1	5	-4	0	-0.1	0	50	1.35
High	0.23	1	7	-4	0.5	-0.1	0	50	5.58
Average	0.106	1	6	-4	0.26	-0.1	0	50	2.18
Average*	0.106	1	6	-4	0	-0.1	0	50	1.54
*Confidence of success high									

6 MID WATER MITIGATION REEF

6.1 NOAA Mitigation Calculator

A = 0.106

The panel identified a consensus range of 0 – 0.23 and an average value of 0.106. The calculator assumes that the impact site retains no habitat value. It is, in essence, converted into a parking lot. The impacted area, for this project, will retain some habitat value as it will be converted from rocky reef to sandy bottom habitat. Conversely, the mitigation area will be converted from sandy bottom habitat to rocky reef. Forcing the calculator to take this into the calculation requires that either A=0 or that B be given a correspondingly higher value. USACE has decided to use a value of 0.106, the average value proposed by the panel, for this variable for its calculation.

B = 1

Near shore reefs are very diverse and artificial reefs colonize rapidly and with a high functional value. The panel agreed on a value of 1 for this variable and USACE will use that value for its calculation.

C = 6

The panel identified a consensus range of 5 – 7 with an average value of 6. Near shore reefs generally show rapid colonization, although it does take time to reach "full development". USACE has decided to use the average value of 6 for its calculation as being a conservative estimator of this function.

D = -4

The panel agreed on a value of -4 for this variable and USACE will use that value for its calculation. This value is based on a two-year delay to determine long-term rocky reef losses and an additional two-year period to identify acreage of rocky reef losses, design, contract, and build the mitigation reef. The mitigation reef would be in place and beginning to function four years after sand placement.

E = 0.2

The panel identified a consensus range of 0 – 0.5 with an average value of 0.26. The mitigation reef is a feature of the project and any mitigation reef built would have some benefit. The variable is defined as will "provide none of the anticipated benefits". However, there remains some doubt as to whether USACE could build a large enough mitigation site or build a site that would meet its objectives. The first is mostly a funding concern. Should mitigation be greater than estimated would USACE be able to obtain additional funding to enlarge the mitigation site. The second is based on an unknown mitigation site design and mitigation site features. Is the bottom of a character suitable for building an artificial reef, are the reef materials of a size and weight to be stable in the near shore environment. USACE has decided to go with a value of 0.2 because this project will include funding for mitigation plus a sizable contingency fund should our estimated impact be low. Additionally, the technology for artificial reef construction is a proven technology that is relatively simple compared to other kinds of mitigation commonly evaluated using the calculator (salt water marsh, eelgrass, etc.). The contingency funding is also available to either enlarge the mitigation site or make additions to the initial site should post-construction monitoring show that the reef is not fully functional. Adding a large measure of uncertainty only compounds this contingency unnecessarily driving up costs. The Corps has chosen to address uncertainty in the mitigation by incorporating a contingency fund into the project. Addressing uncertainty by increasing the value of this parameter increases the size of the mitigation site without reducing the risk of failure.

L = -0.1

The panel agreed on a value of -0.1 for this variable and USACE will use that value for its calculation. This value is based on the fact that the mitigation site is in slightly deeper water than the impacted site and is likely to have slightly different habitat values.

r = 0

ER 1105-2-100 Paragraph E-36 c.(1) states that: "Ecosystem restoration outputs are not discounted, but should be computed on an average annual basis, taking into consideration that the outputs achieved are likely to vary over time." The above excerpt is in the Ecosystem Restoration appendix of the ER. HQ policy interpretation is that it applies to impact analysis and mitigation planning as well as ecosystem restoration. USACE will instead separately apply an average annualized habitat evaluation using software developed and certified by the Institute for Water Resources (IWR).

Tmax = 50

The time horizon used for this calculation is 50 years, which is the life of the project.

Table 6.1-1 Summary of Mid Depth Values

	A	B	C	D	E	L	r	Tmax	R
Mid Depth	0.106	1	6	-4	0.1	-0.1	0	50	1.67

6.2 Institute of Water Resources (IWR) Annualizer

Annualizing ecosystem costs and outputs is required by the USACE planning guidance. The annualizer utility, developed by the IWR, allows users to interpolate benefits over the period of analysis, in this case the life of the project. The utility estimates average annual benefits. For purposes of average annual habitat units, the NER module of the annualizer is used. This module was designed to evaluate average annual habitat values (as opposed to costs).

Assumptions used in the utility are presented here. The first assumption is that the mitigation reef assumes equal value with the impacted reef when it reaches full development. This is the same as variable B in the wetlands mitigation calculator, so it is a safe assumption. Habitat value for years 0-4 are set at 0.106 as this is the value of the mitigation area during the period between impact and construction of the mitigation reef (2 years post-construction monitoring plus two years to estimate impact acreage, design, contract, and build the mitigation reef). This is the same as variable A in the wetlands mitigation calculator. I am assuming that the time from construction of the reef to full functionality is 6 years. This corresponds to the average value identified by the panel for variable C of the wetlands mitigation calculator. An underlying assumption is that the reef develops linearly over those six years. This is a conservative estimator as the Wheeler North reef gained a lot of value the first two years with slower development in the subsequent year. This value is relative to the impacted reef and meets the first assumption. The mitigation sites should be outside the area of influence, so renourishment should not have a direct or indirect impact. While the mitigation sites are within the depth of closure, sands in this area from the project (which are at higher volumes than renourishment) show levels of one foot or less. High relief reefs should therefore see no effect. These are the type of reef under consideration as mitigation reefs. Once the mitigation reef reaches a value of 100 (in year 10) it stays there for the life of the project (50 years). This basically means that any variation in mitigation reef quality over time is matched by variation that the impacted reef would have experienced.

Applying the assumptions above into the annualizer yields a value of 87.484 for average annual value. The average annual value of the impacted reef without project is assumed to be 100. Assuming that the ratio obtained from the mitigation calculator is for an average annual value of 100, multiplying that number by the ration of 100/87.484 yields a recommended functional equivalent of 2.91:1.

6.3 Recommended Mitigation Functional equivalent

Other factors taken into consideration when setting a mitigation functional equivalent are the location of the mitigation site relative to the impact, time delay between impact and implementation of mitigation, time delay for the mitigation site to achieve full potential, functional value of the mitigation site in comparison to the impacted site, confidence that the mitigation will be built, confidence that the mitigation design will achieve mitigation goals, constructability of the mitigation, added benefits of the mitigation to the original project objectives, long-term functionality of the mitigation site, and maintenance requirements of the mitigation site.

The location of the proposed mitigation reefs are in the same general area as the impacted reefs and are shown in the Integrated Report of mitigation site locations map. They are in slightly deeper water (roughly 5-10 feet deeper) and adjacent to existing rocky reef habitat. Therefore, they are expected to develop habitat similar, but not identical, to the impacted habitat. Additionally, the adjacent rocky reef habitat is expected to serve as a source for plant and animal colonization of the mitigation reef resulting in rapid initial colonization. This is not a factor in the wetland mitigation calculator, but it does add confidence to the expectation that the mitigation reef can be constructed and that it can reach maximum functionality.

Beach nourishment leads to an initial direct impact to the placement site. Over time, sand is spread through the system leading to indirect burial. The initial fill footprint for this project avoids all sensitive resources in the area (e.g. rocky reef and surf grass beds). Indirect burial, however, is expected to impact rocky reef habitat off of the Solana Beach segment for the selected alternative. Impacts are not expected off of the Encinitas segment from the selected project. Both segments were designed to avoid impacts by placing sand away from sensitive resources. Both segments were designed to minimize impacts by selecting the beach width that provides maximum benefits at minimum width. Larger beach widths than selected would result in greater protection benefits, but would also result in greater environmental impacts, greater mitigation costs, and lower net benefits.

The indirect nature of the impacts to sensitive resources also means that determination of the magnitude, or acreage, of impacts cannot be determined immediately. Nor is there sufficient confidence in the impact assessment process to construct mitigation based on estimated impacts. USACE, for that reason, chose to identify the magnitude of indirect impacts by monitoring two years after completion of the initial beach fill. This time frame was established following coordination with the National Marine Fisheries Service (NMFS) and the California Department of Fish and Wildlife (CDFW). It is therefore, not feasible to construct the mitigation feature prior to or concurrent with the impact.

The wetlands mitigation calculator assumes that the impact is immediate and that habitat value is lost during or immediately after construction. This is not the case for this project, where impacts may actually be one to two years post construction as the placed sands are distributed through the system resulting in indirect burial of sensitive resources. Additionally, the mitigation calculator assumes that the impacted area will have no habitat value. That is not true for this project. The impacted area is expected to transition from rocky reef to sand bottom habitat. Sandy bottom habitat still possesses habitat value. The rocky reef area that is buried could also transition into an ephemeral reef that is unburied for part of the year thus providing higher habitat value than the sand habitat. A lower mitigation functional equivalent than calculated could be supported or a shorter duration used in the calculation. Changing the delay in the calculator from four to three years results in a reduction from 1.54 to 1.48 functional equivalent.

The biota and function of a rocky reef habitat takes time to develop. As discussed above, placing the mitigation close to existing rocky reefs should allow for rapid initial colonization of the mitigation reef. Monitoring of other man-made reefs has shown a rapid initial colonization over the first one to two years followed by a slower growth to maturity. This was the rationale used in the wetlands mitigation calculator for a six-year period. Growth and development will be tracked by monitoring.

Expectations for the mitigation reefs are that they will achieve equal functionality to the impacted reefs. The mitigation reefs will be slightly deeper, but they are located in habitat close to and similar to that of the impacted reefs. The panel convened to implement the wetland mitigation calculator felt that the mitigation reef would develop to have equal functionality, a position supported by USACE. This is supported in the results of the wetland mitigation calculator.

This project is a Feasibility Study authorized by Congress. The result will be a project specifically authorized and funded by Congress (assuming that it moves forward). Construction costs include the cost of mitigation based on impact estimates and including a contingency amount should that impact estimate be low when compared to actual impacts or should adjustments be required to the mitigation reef. The latter would increase the mitigation requirements and costs. However, mitigation will be a project component of the authorized project and it will be funded, if the project is funded. There is no scenario that would result in project construction without mitigation construction. The panel was not so sure and thus rated this factor lower in the wetlands mitigation calculator.

Building artificial reefs is a proven technique. Factors contributing to success or failure are relatively well known. Techniques are fairly standard and utilize standard types of construction equipment and readily available building materials.

Building mitigation rocky reefs is a relatively simple process. Construction requires the identification of an area with suitable substrate, sizing of rock to ensure that the reef is stable in the shallow water environment, and accurate placement of the selected building material. Construction methods have been standardized and have been used over a long time not only for the construction of artificial reefs, but also for the construction for shore and harbor protection structures (i.e. jetties, breakwaters, shoreline protection). Confidence in the constructability of the mitigation reef is high. This is particularly true when compared to the construction of wetland mitigation features in salt and fresh water systems.

Artificial reefs have been shown to be functional over long periods of time, times equivalent to the project duration of fifty years. Once built, reefs are rapidly colonized and tend to remain valuable habitat. There is variation over time, similar to natural reefs, but artificial reefs tend to remain high quality habitat over long periods of time. Other types of wetland mitigation, perhaps experience problems with this characteristic, which often result in higher mitigation functional equivalents for projects impacting riparian wetlands or coastal marsh wetlands. Incremental impacts from nearby development could undermine mitigation features resulting in short term development prior to failure. This is not seen as a problem faced by artificial reefs, particularly reefs placed in the open ocean and not within enclosed bays and/or estuaries.

Artificial reefs do not require long-term maintenance. Once established they are self-supporting. Maintenance in the forms of watering, additional plantings, reconstruction of eroded or damaged features are not required for artificial reefs.

Based on the panel's application of the wetland mitigation calculator, proposed USACE modifications to the wetland mitigation calculator variables, and the qualitative discussion above, USACE proposes to implement a mitigation plan that addresses impacts to rocky reef habitat by the creation of mid-depth, artificial rocky reef habitat on 2:1 functional equivalent.

These additional factors support the calculated functional equivalent. The major loss in value is temporal due to the time delay between impact during initial sand placement and identification of impacts, design, and construction of mitigation reefs. This time delay is unavoidable as it is very difficult to identify indirect impacts[1] in such a dynamic environment. It also reflects the resource agency viewpoint that mitigation may be more difficult than anticipated.

7 DEEP WATER MITIGATION REEF

7.1 NOAA Mitigation Calculator

A = 0.106

The panel identified a consensus range of 0 – 0.23 and an average value of 0.106. The calculator assumes that the impact site retains no habitat value. It is, in essence, converted into a parking lot. The impacted area, for this project, will retain some habitat value as it will be converted from rocky reef to sandy bottom habitat. Conversely, the mitigation area will be converted from sandy bottom habitat to rocky reef. Forcing the calculator to take this into the calculation requires that either A=0 or that B be given a correspondingly higher value. USACE has decided to use a value of 0.106, the average value proposed by the panel, for this variable for its calculation.

B = 1.3

Deeper water kelp reefs have greater habitat value than a shallow water reef. There is higher productivity and diversity as kelp extends protective habitat from the reef itself up the water column to the surface.

C = 7

The panel identified a consensus range of 5 – 7 with an average value of 6. Near shore reefs generally show rapid colonization, although it does take time to reach "full development". USACE has decided to use the average value of 6 for the shallow water reef for its calculation as being a conservative estimator of this function. Kelp generally takes a longer time to develop, so we have elected to go with the high end of the range, or 7 for this variable.

D = -4

The panel agreed on a value of -4 for this variable and USACE will use that value for its calculation. This value is based on a two-year delay to determine long-term rocky reef losses and an additional two-year period to identify acreage of rocky reef losses, design, contract, and build the mitigation reef. The mitigation reef would be in place and beginning to function four years after sand placement. This value is based on the schedule, so there is no change when considering a deep water mitigation site.

E = 0.2

[1] The project was designed to avoid direct impacts to rocky reef and surf grass habitats. Placement sites were limited to areas that lacked these resources. However, natural littoral transport processes are expected to result in movement of the placed sand indirectly burying rocky reef habitat in Solana Beach. No indirect burial of surf grass is predicted for the project. Indirect burial of rocky reef is not predicted for Encinitas. Natural processes at the site results in burial and uncoverage of low relief reefs. Monitoring will be required to determine if reef burial is a result of indirect burial by the project or natural movement of sand.

The panel identified a consensus range of 0 – 0.5 with an average value of 0.26. The mitigation reef is a feature of the project and any mitigation reef built would have some benefit. The variable is defined as will "provide none of the anticipated benefits". However, there remains some doubt as to whether USACE could build a large enough mitigation site or build a site that would meet its objectives. The first is mostly a funding concern. Should mitigation be greater than estimated would USACE be able to obtain additional funding to enlarge the mitigation site. The second is based on an unknown mitigation site design and mitigation site features. Is the bottom of a character suitable for building an artificial reef, are the reef materials of a size and weight to be stable in the near shore environment. USACE has decided to go with a value of 0.2 because this project will include funding for mitigation plus a sizable contingency fund should our estimated impact be low. Additionally, the technology for artificial reef construction is a proven technology that is relatively simple compared to other kinds of mitigation commonly evaluated using the calculator (salt water marsh, eelgrass, etc.). The contingency funding is also available to either enlarge the mitigation site or make additions to the initial site should post-construction monitoring show that the reef is not fully functional. Adding a large measure of uncertainty only compounds this contingency unnecessarily driving up costs. The Corps has chosen to address uncertainty in the mitigation by incorporating a contingency fund into the project. Addressing uncertainty by increasing the value of this parameter increases the size of the mitigation site without reducing the risk of failure. Additionally, it is slightly easier to gain access to the deep water areas than the mid-depth for the construction equipment, which should reduce uncertainty. However, this change was not large enough to justify changing this parameter.

L = -0.1

The panel agreed on a value of -0.1 for this variable and USACE will use that value for its calculation. This value is based on the fact that the mitigation site is in slightly deeper water than t he impacted site and is likely to have slightly different habitat values.

r = 0

ER 1105-2-100 Paragraph E-36 c.(1) states that: "Ecosystem restoration outputs are not discounted, but should be computed on an average annual basis, taking into consideration that the outputs achieved are likely to vary over time." The above excerpt is in the Ecosystem Restoration appendix of the ER. HQ policy interpretation is that it applies to impact analysis and mitigation planning as well as ecosystem restoration. USACE will instead separately apply an average annualized habitat evaluation using software developed and certified by the Institute for Water Resources (IWR).

$Tmax$ = 50

The time horizon used for this calculation is 50 years, which is the life of the project.

Table 7.1-1 Summary of Deep Water Values

	A	B	C	D	E	L	r	Tmax	R
Deep Water	0.106	1.3	7	-4	0.1	-0.1	0	50	1.25

7.2 IWR Annualizer

Annualizing ecosystem costs and outputs is required by the USACE planning guidance. The annualizer utility, developed by the IWR, allows users to interpolate benefits over the period of analysis, in this case the life of the project. The utility estimates average annual benefits. For purposes of average annual habitat units, the NER module of the annualizer is used. This module was designed to evaluate average annual habitat values (as opposed to costs).

Assumptions used in the utility are presented here. The first assumption is that the mitigation reef assumes equal value with the impacted reef when it reaches full development. This is the same as variable B in the wetlands mitigation calculator, so it is a safe assumption. Habitat value for years 0-4 are set at 0.106 as this is the value of the mitigation area during the period between impact and construction of the mitigation reef (2 years post-construction monitoring plus two years to estimate impact acreage, design, contract, and build the mitigation reef). This is the same as variable A in the wetlands mitigation calculator. I am assuming that the time from construction of the reef to full functionality is 7 years. This corresponds to the average value identified by the panel for variable C of the wetlands mitigation calculator. An underlying assumption is that the reef develops linearly over those seven years. This is a conservative estimator as the Wheeler North reef gained a lot of value the first two years with slower development in the subsequent year. This value is relative to the impacted reef and meets the first assumption. The mitigation sites should be outside the area of influence as well as the depth of closure, so renourishment should not have a direct or indirect impact. Once the mitigation reef reaches a value of 100 (in year 11) it stays there for the life of the project (50 years). This basically means that any variation in mitigation reef quality over time is matched by variation that the impacted reef would have experienced.

Applying the assumptions above into the annualizer yields a value of 86.59 for average annual value. The average annual value of the impacted reef without project is assumed to be 100. Assuming that the functional equivalent obtained from the mitigation calculator is for an average annual value of 100, multiplying that number by the ration of 100/86.59 yields a recommended mitigation functional equivalent of 1.44:1.

7.3 Recommended Mitigation Functional Equivalent

Other factors taken into consideration when setting a mitigation functional equivalent are the location of the mitigation site relative to the impact, time delay between impact and implementation of mitigation, time delay for the mitigation site to achieve full potential, functional value of the mitigation site in comparison to the impacted site, confidence that the mitigation will be built, confidence that the mitigation design will achieve mitigation goals, constructability of the mitigation, added benefits of the mitigation to the original project objectives, long-term functionality of the mitigation site, and maintenance requirements of the mitigation site.

The location of the proposed mitigation reefs are in the same general area as the impacted reefs. They are somewhat farther offshore than the mid-depth reef sites. They are in deeper water (roughly 30 feet deeper), but are adjacent to existing rocky reef, kelp habitat. Therefore, they are expected to develop richer, kelp habitat similar, compared to the impacted habitat. Additionally, the adjacent rocky reef habitat is expected to serve as a source for plant and animal colonization of the mitigation reef resulting in rapid initial colonization. This is not a factor in the wetland mitigation calculator, but it does add confidence to the expectation that the mitigation reef can be constructed and that it can reach maximum functionality.

Beach nourishment leads to an initial direct impact to the placement site. Over time, sand is spread through the system leading to indirect burial. The initial fill footprint for this project avoids all sensitive resources in the area (e.g. rocky reef and surf grass beds). Indirect burial, however, is expected to impact rocky reef habitat off of the Solana Beach segment for the selected alternative. Impacts are not expected off of the Encinitas segment from the selected project. Both segments were designed to avoid impacts by placing sand away from sensitive resources. Both segments were designed to minimize impacts by selecting the beach width that provides maximum benefits at minimum width. Larger beach widths than selected would result in greater protection benefits, but would also result in greater environmental impacts, greater mitigation costs, and lower net benefits.

The indirect nature of the impacts to sensitive resources also means that determination of the magnitude, or acreage, of impacts cannot be determined immediately. Nor is there sufficient confidence in the impact assessment process to construct mitigation based on estimated impacts. USACE, for that reason, chose to identify the magnitude of indirect impacts by monitoring two years after completion of the initial beach fill. This time frame was established following consultation with the National Marine Fisheries Service (NMFS) and the California Department of Fish and Wildlife (CDFW). It is therefore, not feasible to construct the mitigation feature prior to or concurrent with the impact.

The wetlands mitigation calculator assumes that the impact is immediate and that habitat value is lost during or immediately after construction. This is not the case for this project, where impacts may actually be one to two years post construction as the placed sands are distributed through the system resulting in indirect burial of sensitive resources. Additionally, the mitigation calculator assumes that the impacted area will have no habitat value. That is not true for this project. The impacted area is expected to transition from rocky reef to sand bottom habitat. Sandy bottom habitat still possesses habitat value. The rocky reef area that is buried could also transition into an ephemeral reef that is unburied for part of the year thus providing higher habitat value than the sand habitat. A lower mitigation functional equivalent than calculated can be supported or a shorter duration used in the calculation. Changing the delay in the calculator from four to three years results in a reduction from 1.48 to 1.42 functional equivalent.

Rocky reef habitat takes time to develop. As discussed above, placing the mitigation close to existing rocky reefs should allow for rapid initial colonization of the mitigation reef. Monitoring of other man-made reefs has shown a rapid initial colonization over the first one to two years followed by a slower growth to maturity. This was the rationale used in the wetlands mitigation calculator for a six-year period. Growth and development will be tracked by monitoring.

Expectations for the mitigation reefs are that they will achieve equal functionality to the impacted reefs. The mitigation reefs will be slightly deeper, but they are located in habitat close to and similar to that of the impacted reefs. The panel convened to implement the wetland mitigation calculator felt that the mitigation reef would develop to have equal functionality, a position supported by USACE. This is supported in the results of the wetland mitigation calculator.

This project is a Feasibility Study authorized by Congress. The result will be a project specifically authorized and funded by Congress (assuming that it moves forward). Construction costs include the cost of mitigation based on impact estimates and including a contingency amount should that impact estimate be low when compared to actual impacts. The latter would increase the mitigation requirements and costs. However, mitigation will be a project component of the authorized project and it will be funded, if the project is funded. There is no scenario that would result in project construction without mitigation construction. The panel was not so sure and thus rated this factor lower in the wetlands mitigation calculator.

Building artificial reefs is a proven technique. Factors contributing to success or failure are relatively well known. Techniques are fairly standard and utilize standard types of construction equipment and readily available building materials.

Building mitigation rocky reefs is a relatively simple process. Construction requires the identification of an area with suitable substrate, sizing of rock to ensure that the reef is stable in the shallow water environment, and accurate placement of the selected building material. Construction methods have been standardized and have been used over a long time not only for the construction of artificial reefs, but also for the construction for shore and harbor protection structures (i.e. jetties, breakwaters, shoreline protection). Confidence in the constructability of the mitigation reef is high. This is particularly true when compared to the construction of wetland mitigation features in salt and fresh water systems. Additionally, it is slightly easier to gain access to the deep water areas than the mid-depth for the construction equipment, which should reduce uncertainty.

Artificial reefs have been shown to be functional over long periods of time, times equivalent to the project duration of fifty years. Once built, reefs are rapidly colonized and tend to remain valuable habitat. There is variation over time, similar to natural reefs, but artificial reefs tend to remain high quality habitat over long periods of time. Other types of wetland mitigation, perhaps experience problems with this characteristic, which often result in higher mitigation functional equivalents for projects impacting riparian wetlands or coastal marsh wetlands. Incremental impacts from nearby development could undermine mitigation features resulting in short term development prior to failure. This is not seen as a problem faced by artificial reefs, particularly reefs placed in the open ocean and not within enclosed bays and/or estuaries.

Artificial reefs do not require maintenance. Once established they are self-supporting. Maintenance in the forms of watering, additional plantings, reconstruction of eroded or damaged features are not required for artificial reefs.

Based on the panel's application of the wetland mitigation calculator, proposed USACE' modifications to the wetland mitigation calculator variables, and the qualitative discussion above, USACE proposes to implement a mitigation plan that addresses impacts to rocky reef habitat by the creation of deep water, artificial rocky reef habitat on 1.5:1 functional equivalent.

8 SHALLOW WATER (SURF GRASS) MITIGATION REEF

8.1 NOAA Mitigation Calculator

A = 0.106

The panel identified a consensus range of 0 – 0.23 and an average value of 0.106. The calculator assumes that the impact site retains no habitat value. It is, in essence, converted into a parking lot. The impacted area, for this project, will retain some habitat value as it will be converted from rocky reef to sandy bottom habitat. Conversely, the mitigation area will be converted from sandy bottom habitat to rocky reef. Forcing the calculator to take this into the calculation requires that either A=0 or that B be given a correspondingly higher value. USACE has decided to use a value of 0.106, the average value proposed by the panel, for this variable for its calculation.

B = 1

Near shore reefs are very diverse and artificial reefs colonize rapidly and with a high functional value. The panel agreed on a value of 1 for this variable and USACE will use that value for its calculation.

C = 7

The panel identified a consensus range of 5 – 7 with an average value of 6. Near shore reefs generally show rapid colonization, although it does take time to reach "full development". Surf grass develops rather more slowly. USACE has decided to use the high value of 7 for its calculation as being a conservative estimator of this function.

D = -4

The panel agreed on a value of -4 for this variable and USACE will use that value for its calculation. This value is based on a two-year delay to determine long-term rocky reef losses and an additional two-year period to identify acreage of rocky reef losses, design, contract, and build the mitigation reef. The mitigation reef would be in place and beginning to function four years after sand placement.

E = 0.26

The panel identified a consensus range of 0 – 0.5 with an average value of 0.26. The mitigation reef is a feature of the project and any mitigation reef built would have some benefit. The variable is defined as will "provide none of the anticipated benefits". However, there remains some doubt as to whether USACE could build a large enough mitigation site or build a site that would meet its objectives. The first is mostly a funding concern. Should mitigation be greater than estimated would USACE be able to obtain additional funding to enlarge the mitigation site. The second is based on an unknown mitigation site design and mitigation site features. Is the bottom of a character suitable for building an artificial reef, are the reef materials of a size and weight to be stable in the near shore environment. USACE has decided to go with a value of 0.26 because this project will include funding for mitigation plus a sizable contingency fund should our estimated impact be low. Additionally, the technology for artificial reef construction is a proven technology that is relatively simple compared to other kinds of mitigation commonly evaluated using the calculator (salt water marsh, eelgrass, etc.). The contingency funding is also available to either enlarge the mitigation site or make additions to the initial site should post-construction monitoring show that the reef is not fully functional. Adding a large measure of uncertainty only compounds this contingency unnecessarily driving up costs. The Corps has chosen to address uncertainty in the mitigation by incorporating a contingency fund into the project. Addressing uncertainty by increasing the value of this parameter increases the size of the mitigation site without reducing the risk of failure. Surf grass restoration, however, is not certain, so a higher uncertainty value is used in this case. Should surf grass restoration fail, it would be replaced by kelp transplants that have a high confidence level.

L = -0.1

The panel agreed on a value of -0.1 for this variable and USACE will use that value for its calculation. This value is based on the fact that the mitigation site is in the same water depth as the impacted site and is likely to have similar habitat values.

r = 0

ER 1105-2-100 Paragraph E-36 c.(1) states that: "Ecosystem restoration outputs are not discounted, but should be computed on an average annual basis, taking into consideration that the outputs achieved are likely to vary over time." The above excerpt is in the Ecosystem Restoration appendix of the ER. HQ policy interpretation is that it applies to impact analysis and mitigation planning as well as ecosystem restoration. USACE will instead separately apply an average annualized habitat evaluation using software developed and certified by the Institute for Water Resources (IWR).

Tmax = 50

The time horizon used for this calculation is 50 years, which is the life of the project.

Table 8.1-1 Summary of Shallow Water Values

	A	B	C	D	E	L	r	Tmax	R
Shallow Water	0.106	1	7	-4	0.26	-0.1	0	50	2.12

8.2 Institute of Water Resources (IWR) Annualizer

Annualizing ecosystem costs and outputs is required by the USACE planning guidance. The annualizer utility, developed by the IWR, allows users to interpolate benefits over the period of analysis, in this case the life of the project. The utility estimates average annual benefits. For purposes of average annual habitat units, the NER module of the annualizer is used. This module was designed to evaluate average annual habitat values (as opposed to costs).

Assumptions used in the utility are presented here. The first assumption is that the mitigation reef assumes equal value with the impacted reef when it reaches full development. This is the same as variable B in the wetlands mitigation calculator, so it is a safe assumption. Habitat value for years 0-4 are set at 0.106 as this is value of the mitigation area during the period between impact and construction of the mitigation reef (2 years post-construction monitoring plus two years to estimate impact acreage, design, contract, and build the mitigation reef). This is the same as variable A in the wetlands mitigation calculator. I am assuming that the time from construction of the reef to full functionality is 7 years. This corresponds to the average value identified by the panel for variable C of the wetlands mitigation calculator. An underlying assumption is that the reef develops linearly over those seven years. This is a conservative estimator as the Wheeler North reef gained a lot of value the first two years with slower development in the subsequent year. This value is relative to the impacted reef and meets the first assumption. The mitigation sites should be outside the area of influence as well as the depth of closure, so renourishment should not have a direct or indirect impact. Once the mitigation reef reaches a value of 100 (in year 11) it stays there for the life of the project (50 years). This basically means that any variation in mitigation reef quality over time is matched by variation that the impacted reef would have experienced.

Applying the assumptions above into the annualizer yields a value of 86.59 for average annual value. The average annual value of the impacted reef without project is assumed to be 100. Assuming that the functional equivalent obtained from the mitigation calculator is for an average annual value of 100, multiplying that number by the ration of 100/86.59 yields a recommended mitigation functional equivalent of 2.45:1.

8.3 Recommended Mitigation Functional Equivalent

Other factors taken into consideration when setting a mitigation functional equivalent are the location of the mitigation site relative to the impact, time delay between impact and implementation of mitigation, time delay for the mitigation site to achieve full potential, functional value of the mitigation site in comparison to the impacted site, confidence that the mitigation will be built, confidence that the mitigation design will achieve mitigation goals, constructability of the mitigation, added benefits of the mitigation to the original project objectives, long-term functionality of the mitigation site, and maintenance requirements of the mitigation site.

The location of the proposed mitigation reefs are in the same general area as the impacted reefs and are show in the Integrated Report of mitigation site locations map. They are in slightly deeper water (roughly 5-10 feet deeper) and adjacent to existing rocky reef habitat. Therefore, they are expected to develop habitat similar, but not identical, to the impacted habitat. Additionally, the adjacent rocky reef habitat is expected to serve as a source for plant and animal colonization of the mitigation reef resulting in rapid initial colonization. This is not a factor in the wetland mitigation calculator, but it does add confidence to the expectation that the mitigation reef can be constructed and that it can reach maximum functionality.

Beach nourishment leads to an initial direct impact to the placement site. Over time, sand is spread through the system leading to indirect burial. The initial fill footprint for this project avoids all sensitive resources in the area (e.g. rocky reef and surf grass beds). Indirect burial, however, is expected to impact rocky reef habitat off of the Solana Beach segment for the selected alternative. Impacts are not expected off of the Encinitas segment from the selected project. Both segments were designed to avoid impacts by placing sand away from sensitive resources. Both segments were designed to minimize impacts by selecting the beach width that provides maximum benefits at minimum width. Larger beach widths than selected would result in greater protection benefits, but would also result in greater environmental impacts, greater mitigation costs, and lower net benefits.

The indirect nature of the impacts to sensitive resources also means that determination of the magnitude, or acreage, of impacts cannot be determined immediately. Nor is there sufficient confidence in the impact assessment process to construct mitigation based on estimated impacts. USACE, for that reason, chose to identify the magnitude of indirect impacts by monitoring two years after completion of the initial beach fill. This time frame was established following coordination with the National Marine Fisheries Service (NMFS) and the California Department of Fish and Wildlife (CDFW). It is therefore, not feasible to construct the mitigation feature prior to or concurrent with the impact.

The wetlands mitigation calculator assumes that the impact is immediate and that habitat value is lost during or immediately after construction. This is not the case for this project, where impacts may actually be one to two years post construction as the placed sands are distributed through the system resulting in indirect burial of sensitive resources. Additionally, the mitigation calculator assumes that the impacted area will have no habitat value. That is not true for this project. The impacted area is expected to transition from rocky reef to sand bottom habitat. Sandy bottom habitat still possesses habitat value. The rocky reef area that is buried could also transition into an ephemeral reef that is unburied for part of the year thus providing higher habitat value than the sand habitat. A lower mitigation functional equivalent than calculated could be supported or a shorter duration used in the calculation. Changing the delay in the calculator from four to three years results in a reduction from 1.54 to 1.48 functional equivalent.

The biota and function of a rocky reef habitat takes time to develop. As discussed above, placing the mitigation close to existing rocky reefs should allow for rapid initial colonization of the mitigation reef. Monitoring of other man-made reefs has shown a rapid initial colonization over the first one to two years followed by a slower growth to maturity. This was the rationale used in the wetlands mitigation calculator for a six-year period. Growth and development will be tracked by monitoring.

Expectations for the mitigation reefs are that they will achieve equal functionality to the impacted reefs. The mitigation reefs will be slightly deeper, but they are located in habitat close to and similar to that of the impacted reefs. The panel convened to implement the wetland mitigation calculator felt that the mitigation reef would develop to have equal functionality, a position supported by USACE. This is supported in the results of the wetland mitigation calculator.

This project is a Feasibility Study authorized by Congress. The result will be a project specifically authorized and funded by Congress (assuming that it moves forward). Construction costs include the cost of mitigation based on impact estimates and including a contingency amount should that impact estimate be low when compared to actual impacts or should adjustments be required to the mitigation reef. The latter would increase the mitigation requirements and costs. However, mitigation will be a project component of the authorized project and it will be funded, if the project is funded. There is no scenario that would result in project construction without mitigation construction. The panel was not so sure and thus rated this factor lower in the wetlands mitigation calculator.

Building artificial reefs is a proven technique. Factors contributing to success or failure are relatively well known. Techniques are fairly standard and utilize standard types of construction equipment and readily available building materials.

Building mitigation rocky reefs is a relatively simple process. Construction requires the identification of an area with suitable substrate, sizing of rock to ensure that the reef is stable in the shallow water environment, and accurate placement of the selected building material. Construction methods have been standardized and have been used over a long time not only for the construction of artificial reefs, but also for the construction for shore and harbor protection structures (i.e. jetties, breakwaters, shoreline protection). Confidence in the constructability of the mitigation reef is high. This is particularly true when compared to the construction of wetland mitigation features in salt and fresh water systems.

Artificial reefs have been shown to be functional over long periods of time, times equivalent to the project duration of fifty years. Once built, reefs are rapidly colonized and tend to remain valuable habitat. There is variation over time, similar to natural reefs, but artificial reefs tend to remain high quality habitat over long periods of time. Other types of wetland mitigation, perhaps experience problems with this characteristic, which often result in higher mitigation functional equivalents for projects impacting riparian wetlands or coastal marsh wetlands. Incremental impacts from nearby development could undermine mitigation features resulting in short term development prior to failure. This is not seen as a problem faced by artificial reefs, particularly reefs placed in the open ocean and not within enclosed bays and/or estuaries.

Artificial reefs do not require long-term maintenance. Once established they are self-supporting. Maintenance in the forms of watering, additional plantings, reconstruction of eroded or damaged features are not required for artificial reefs.

Based on the panel's application of the wetland mitigation calculator, proposed USACE modifications to the wetland mitigation calculator variables, and the qualitative discussion above, USACE proposes to implement a mitigation plan that addresses impacts to rocky reef habitat by the creation of shallow water, artificial rocky reef habitat on 2.5:1 functional equivalent.

9 SUMMARY

Reef habitat mitigation shall consist of shallow water, mid depth, or deep water reef. Shallow water reef would be for any surfgrass mitigation (none currently predicted), mid depth reef would be located inshore of the existing kelp beds, and deep water reef would be located offshore of the existing kelp beds. The mid-water reef would be the first priority as it is most like the reef being impacted and is thus closer to an in-kind mitigation. However, deep water reef mitigation may be required if insufficient acreage of suitable mid depth reef is available.

The value of the contingency for mitigation construction for the NED Plan and the Locally Preferred Plan (LPP) is approximately $1 million each. This value represents 48% and 53% for the NED Plan and LPP, respectively of the estimated construction costs for reef mitigation. As a fixed percentage it increases as the construction costs are increased for mitigation functional equivalents higher than those proposed in this appendix. A higher mitigation functional equivalent, owing to an increase in the uncertainty factor, therefore results in a doubled increase to projects costs due to the increase in direct construction costs and to increase to the fixed percentage contingency costs. For example, an increase in mitigation functional equivalent for mid depth reefs from 2:1 to 2.5:1 would increase contingency costs by almost $1 million. As an extreme example, $3 million is sufficient to build up to an additional 6 acres of either mid depth and deep water mitigation reefs, if all of the contingency were used to create replacement mitigation area. Use of this level of contingency funding comes with the added bonus of allowing the Corps the flexibility to modify reef that is not fully functional rather than being forced to construct new reef during initial mitigation construction. This allows the Corps the opportunity to correct for unforeseen difficulties in design and/or construction of the mitigation site rather than placing all of our funding into design and construction of a larger mitigation site. Identification of the functionality of the mitigation reef and proposed modifications would be done in consultation with members of the expert panel and their respective organizations.

Table 8.3-1 Summary of All Results

	A	B	C	D	E	L	r	Tmax	R_{calc}	$R_{Annualized}$
Mid Depth	0.106	1	6	-4	0.1	-0.1	0	50	1.73	2.0
Deep Water	0.106	1.3	7	-4	0.1	-0.1	0	50	1.30	1.5
Shallow Water	0.106	1	7	-4	0.26	-0.1	0	50	2.19	2.5

10 REFERENCES

King, Ph.D., Dennis M. and Price, M.S., Elizabeth W. 2004 Developing Defensible Wetland Mitigation Ratios: A Companion to “The Five-Step Wetland Mitigation Ratio Calculator”. NOAA, Office Conservation, Habitat Protection Division, September 30, 2004.

Figure 8.3-1 Encinitas Plan

Figure 8.3-2 Solana Beach Plan

Encinitas (EN)		Alternative EN - 1A: Beach Nourishment (100 ft; 5-yr cycle)	Alternative EN - 1B: Beach Nourishment (50 ft; 5-yr cycle)		Alternative EN-2A: Hybrid (100 ft; 10-yr cycle)	Alternative EN-2B: Hybrid (50 ft; 5-yr cycle)	Alternative EN -3: No Action
Initial Placement Volume (cy)	High SLR	730,000	390,000		800,000	390,000	Assumes that the continued practice of emergency permitting for seawalls along the segment would continue.
	Low SLR	680,000	340,000		700,000	340,000	
Re-Nourishment Cycle	High SLR	5-yr	5-yr		10-yr	5-yr	
	Low SLR	5-yr	5-yr		10-yr	5-yr	
Added Beach MSL Width	High SLR	100 ft	50 ft		100 ft	50 ft	
	Low SLR	100 ft	50 ft		100 ft	50 ft	
Solana Beach (SB)		**Alternative SB - 1A: Beach Nourishment (200 ft; 13-yr cycle)**	**Alternative SB - 1B: Beach Nourishment (150 ft; 10-yr cycle)**	**Alternative SB-1C: Beach Nourishment (100 ft; 10-yr cycle)**	**Alternative SB-2A: Hybrid (150 ft; 10-yr cycle)**	**Alternative SB-2B: Hybrid (100 ft; 10-yr cycle)**	**Alternative SB-3: No Action**
Initial Placement Volume (cy)	High SLR	1,620,000	790,000	540,000	790,000	540,000	Assumes that the continued practice of emergency permitting for seawalls along the segment would continue.
	Low SLR	960,000	700,000	440,000	700,000	440,000	
Re-Nourishment Cycle	High SLR	14-yr	10-yr	10-yr	10-yr	10-yr	
	Low LSR	13-yr	10-yr	10-yr	10-yr	10-yr	
Added Beach MSL Width	High SLR	300 ft	150 ft	100 ft	150 ft	100 ft	
	Low SLR	200 ft	150 ft	100 ft	150 ft	100 ft	

Table 8.3-1 Alternatives EN-1A and SB-1A constitute the NED Plan

Encinitas-Solana Beach Coastal Storm Damage Reduction Project

San Diego County, California

Appendix N

Consistency Determination

U.S. Army Corps of Engineers
Los Angeles District

April 2015

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Schlosser, Heather R SPL

From: Simon, Larry@Coastal [Larry.Simon@coastal.ca.gov]
Sent: Tuesday, January 20, 2015 1:47 PM
To: Schlosser, Heather R SPL
Subject: [EXTERNAL] RE: Encinitas-Solana Beach Consistency Determination (UNCLASSIFIED)

Hi Heather,

I have reviewed the email communications attached to your January 15, 2015, email to me regarding the proposed modification to the Corps of Engineers consistency determination CD-0203-13 for the Encinitas/Solana Beach project. In addition, you and I have discussed this modification during several telephone conversations in 2014. The Commission staff agrees with your determination that the proposed modification to the project (eliminate trenching on Moonlight Beach designed to identify the seaward extent of a possible buried cultural resource) will not affect coastal resources. With this modification, the proposed project remains consistent with the California Coastal Management Program. Please contact me should you have any questions regarding this matter. Best regards,

Larry Simon
Federal Consistency Coordinator
Energy, Ocean Resources and
Federal Consistency Division
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219
(415) 904-5288
larry.simon@coastal.ca.gov
www.coastal.ca.gov

From: Schlosser, Heather R SPL [mailto:Heather.R.Schlosser@usace.army.mil]
Sent: Thursday, January 15, 2015 11:38 PM
To: Simon, Larry@Coastal
Cc: Smith, Lawrence J SPL; Ming, Susan M SPL; Moriarty, Elizabeth A SPL; Killeen, John J SPL; Schlosser, Heather R SPL
Subject: Encinitas-Solana Beach Consistency Determination (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

January 15, 2015

Dear Mr. Simon,

This letter is to inform you that USACE has identified a minor modification to the project described in our September 2013 Consistency Determination (CD) concurred with by the Coastal Commission (CCC) on November 14, 2013 (CD-0203-13). In the CD, USACE indicated that it would conduct a cultural resources survey of Moonlight State Beach to determine the western extent of a possible buried cultural resource identified adjacent to the project area. This commitment was included, in part, to address concerns of California State Parks. Subsequent to the CD, USACE coordination with both the SHPO and California State Parks has concluded that further cultural resource survey, in the form of trenching, could damage the resource if it is present, and such survey results are unnecessary to evaluate effects to historic properties due to the scope of the undertaking in the subject area. The proposed undertaking would have no effect on the resource regardless of its western extent. No further investigation of cultural resources, or mitigation for adverse effect to historic properties (if any), at Moonlight State Beach is thus necessary. The undertaking, without modification, would place sand on the area identified; sand has been placed at this location by others previous to the proposed undertaking. The sand placement will, incidental to the undertaking, preserve the potential resource.

USACE has reached informal agreement with both SHPO and California State Parks on the identified change (emails attached).

Because the trenching was included as a component of the project described in the CD, USACE has evaluated whether the proposed project would affect any coastal use or resource substantially different than originally described and has concluded it will not. The project therefore, remains consistent with the CCMP.

Sincerely,

Heather Schlosser

Heather Schlosser
Chief, Coastal Studies Group
DEPARTMENT OF THE ARMY
Los Angeles District, U.S. Army Corps of Engineers
915 Wilshire Blvd., Suite 930
Los Angeles, CA 90017-3401
(213) 452-3810 (213) 452-4204 (fax)
(213) 453-3076 (cell)
Heather.R.Schlosser@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

Schlosser, Heather R SPL

From: Turner, Nicole@Parks [Nicole.Turner@parks.ca.gov]
Sent: Monday, December 15, 2014 1:34 PM
To: Killeen, John J SPL
Cc: Schlosser, Heather R SPL
Subject: [EXTERNAL] RE: Encinitas-Solana Beach Renourishment Project cultural resources

Hi John,

I apologize for the delay. I am in agreement per our conversation and email below that archaeological testing (trenching) will not be necessary since the project does not include any subsurface work for the berm construction. If you can please provide any project related cultural reports and final monitoring report for our records that would be great. Please keep me posted regarding scheduling and let me know if you need anything else.

Thank you,

Nicole Turner
San Diego Coast District Archaeologist
California Department of Parks and Recreation
4477 Pacific HWY
San Diego, CA 92110
619-933-9013
Nicole.Turner@parks.ca.gov

-----Original Message-----
From: Killeen, John J SPL [mailto:John.J.Killeen@usace.army.mil]
Sent: Monday, December 15, 2014 12:50 PM
To: Turner, Nicole@Parks
Cc: Schlosser, Heather R SPL
Subject: FW: Encinitas-Solana Beach Renourishment Project cultural resources
Importance: High

Hi Nicole,

Was wondering if you would send a quick email acknowledging our informal agreement on November 20? My summary is below for your information. Thanks,

John J. Killeen, R.P.A.
Archaeologist/Environmental Coordinator U.S. Army Corps of Engineers, Los Angeles District
915 Wilshire Boulevard
Los Angeles, California 90017
(213) 452-3861 (phone)
(213) 452-4204 (fax)
John.J.Killeen@usace.army.mil

-----Original Message-----
From: Killeen, John J SPL
Sent: Thursday, November 20, 2014 3:41 PM
To: 'Tudor, Jessica@Parks'; 'nicole.turner@parks.ca.gov'
Cc: Schlosser, Heather R SPL; Moriarty, Elizabeth A SPL; Troxel, Tiffany A SPL; Clifford, Jodi L SPL; 'lsimon@coastal.ca.gov'
Subject: Encinitas-Solana Beach Renourishment Project cultural resources
Importance: High

Hi Jessica and Nicole,

I will summarize my conversation with you both today and would appreciate a brief, quick return email confirming our informal agreement.

I stated that there were 2 components to the project: the receiver sites (i.e., the 2 beaches) and the borrow sites (3). The construction on the receiver sites will not include excavation, only placement of dredged sand on the beach and sand placement will be monitored. To date, record searches and survey have not found any historic properties on the beaches. The possibility of the site found on the City of Encinitas' public facilities construction project existing seaward of the seawall is possible, but unlikely. There is no evidence of that site visible on the beach. The contract archaeologist for the City monitored during construction, but did not make an eligibility determination. The site is potentially eligible for the NRHP. They did no investigation seaward of the seawall.

SANDAG constructed sand berms (twice) that covered the exact location of the possible site seaward of the seawall. The same location that the current berm will be built. These actions were monitored. As a result of comments supplied by State Parks to the Coastal Commission, USACE committed to the Coastal Commission that we would trench to find out if the prehistoric site existed seaward of the seawall but, all (SHPO, State Parks) have agreed in the last week that excavation of trenches would in itself be an unnecessary impact since the project does not include any subsurface work for the berm construction. The project will not include excavation of the existing beach.

The dredging will be in the borrow sites that were used for construction of the SANDAG berms. The previous dredging was monitored with no work stoppage for unanticipated discoveries. This dredging will also be monitored. Since, the sites were previously dredged, we may potentially need to do new remote sensing surveys prior to construction. We also agreed that a document (i.e., MOA or PA) would not be necessary, if the project proceeds as described here because there would be no historic properties affected. Next step will be to send a letter requesting concurrence with the APE and No Historic Properties Affected determination.

I hope I covered all. Thanks to all for your time,

John J. Killeen, R.P.A.
Archaeologist/Environmental Coordinator U.S. Army Corps of Engineers, Los Angeles District
915 Wilshire Boulevard
Los Angeles, California 90017
(213) 452-3861 (phone)
(213) 452-4204 (fax)
John.J.Killeen@usace.army.mil

P Please consider the environment before printing this email !

Schlosser, Heather R SPL

From: Killeen, John J SPL
Sent: Friday, November 21, 2014 10:16 AM
To: Moriarty, Elizabeth A SPL; Schlosser, Heather R SPL; Clifford, Jodi L SPL; Wong, Kenneth SPL
Subject: Fw: [EXTERNAL] RE: Encinitas-Solana Beach Renourishment Project cultural resources

FYI

Sent from my BlackBerry 10 smartphone on the Verizon Wireless 4G LTE network.

From: Tudor, Jessica@Parks <Jessica.Tudor@parks.ca.gov>
Sent: Friday, November 21, 2014 9:25 AM
To: Killeen, John J SPL
Subject: [EXTERNAL] RE: Encinitas-Solana Beach Renourishment Project cultural resources

Hi John,

Thank you for summarizing our conversation. Based on the information you have provided thus far, I would agree that trenching would be unnecessary and that no MOA or PA are needed if the project proceeds as currently proposed. Please submit documentation of your identification efforts, your APE and finding of effect for us to review and provide comments
Thank you,

Jessica Tudor, MA, RPA
Associate State Archaeologist
California Office of Historic Preservation
Project Review Unit
1725 23rd Street, Suite 100
Sacramento, CA 95816
(916) 445-7016

From: Killeen, John J SPL [mailto:John.J.Killeen@usace.army.mil]
Sent: Thursday, November 20, 2014 3:41 PM
To: Tudor, Jessica@Parks; Turner, Nicole@Parks
Cc: Schlosser, Heather R SPL; Moriarty, Elizabeth A SPL; Troxel, Tiffany A SPL; Clifford, Jodi L SPL; Simon, Larry@Coastal
Subject: Encinitas-Solana Beach Renourishment Project cultural resources
Importance: High

Hi Jessica and Nicole,

I will summarize my conversation with you both today and would appreciate a brief, quick return email confirming our informal agreement.

I stated that there were 2 components to the project: the receiver sites (i.e., the 2 beaches) and the borrow sites (3). The construction on the receiver sites will not include excavation, only placement of dredged sand on the beach and sand placement will be monitored. To date, record searches and survey have not found any historic properties on the beaches. The possibility of the site found on the City of Encinitas' public facilities construction project existing seaward of the seawall is possible, but unlikely. There is no evidence of that site visible on the beach. The contract archaeologist for the City monitored during construction, but did not make an eligibility determination. The site is potentially eligible for the NRHP. They did no investigation seaward of the seawall.

SANDAG constructed sand berms (twice) that covered the exact location of the possible site seaward of the seawall. The same location that the current berm will be built. These actions were monitored. As a result of comments supplied by State Parks to the Coastal Commission, USACE committed to the Coastal Commission that we would trench to find out if the prehistoric site existed seaward of the seawall but, all (SHPO, State Parks) have agreed in the last week that excavation of trenches would in itself be an unnecessary impact since the project does not include any subsurface work for the berm construction. The project will not include excavation of the existing beach.

The dredging will be in the borrow sites that were used for construction of the SANDAG berms. The previous dredging was monitored with no work stoppage for unanticipated discoveries. This dredging will also be monitored. Since, the sites were previously dredged, we may potentially need to do new remote sensing surveys prior to construction. We also agreed that a document (i.e., MOA or PA) would not be necessary, if the project proceeds as described here because there would be no historic properties affected. Next step will be to send a letter requesting concurrence with the APE and No Historic Properties Affected determination.

I hope I covered all. Thanks to all for your time,

John J. Killeen, R.P.A.
Archaeologist/Environmental Coordinator
U.S. Army Corps of Engineers,
Los Angeles District
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Los Angeles, California 90017
(213) 452-3861 (phone)
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John.J.Killeen@usace.army.mil

STATE OF CALIFORNIA – NATURAL RESOURCES AGENCY
EDMUND G. BROWN, JR., *GOVERNOR*

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE (415) 904-5200
FAX (415) 904-5400
TDD (415) 597-5885

November 18, 2013

Josephine R. Axt, PhD
Chief, Planning Division
Los Angeles District
U.S. Army Corps of Engineers
P.O. Box 532711
Los Angeles, CA 90053-2325

Subject: Consistency Determination CD-0203-13 (Coastal Strom Damage Reduction Project, Encinitas-Solana Beach, San Diego County)

Dear Dr. Axt:

On November 14, 2013, the California Coastal Commission unanimously concurred with the above-referenced consistency determination. The Commission found that the proposed project was consistent with the California Coastal Management Program. Please contact me at (415) 904-5288 should you have any questions regarding this matter.

Sincerely,

Larry Simon

Larry Simon
Federal Consistency Coordinator

Consistency Determination
Encinitas-Solana Beach Coastal Storm Damage Reduction Project
San Diego County, California

Prepared by

US Army Corps of Engineers
South Pacific Division
Los Angeles District

September 2013

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Coastal Consistency Determination
Encinitas-Solana Beach Coastal Storm Damage Reduction Project
San Diego County, California

CONTENTS

List of Figures

List of Tables

Consistency Determination
Encinitas-Solana Beach Coastal Storm Damage Reduction Project
San Diego County, California

1 INTRODUCTION AND DETERMINATION

This document constitutes the Consistency Determination (CD) of the U.S. Army Corps of Engineers (USACE) for the Encinitas-Solana Beach Coastal Storm Damage Reduction Project, a 50-year project to protect the cities of Encinitas and Solana Beach (San Diego County) with sand dredged from offshore borrow sites. The USACE previously submitted a CD in December 2012, on which the California Coastal Commission voted in July 2013. The USACE and the non-Federal sponsors, the Cities of Encinitas and Solana Beach, have revised the recommended Project to adopt a Locally Preferred Plan and include additional and revised monitoring provisions. The USACE has evaluated the recommended Project for coastal storm damage reduction at Encinitas and Solana Beach and has determined it is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP), pursuant to the requirements of the Coastal Zone Management Act of 1972, as amended, (CZMA), and the California Coastal Act of 1976, as amended (CCA). The Project, for purposes of this CD, is defined as the combined EN-1B and SB-1B beach nourishment alternatives. The environmental consideration and consistency sections below provide the basis for the finding. The USACE requests the concurrence of the California Coastal Commission (CCC) with this CD.

2 AUTHORITY FOR STUDY

The Encinitas and Solana Beach Coastal Storm Damage Reduction Feasibility Study was authorized by two resolutions of the House Public Works and Transportation Committee as follows:

"Resolved by the Committee on Public Works and Transportation of the United States House of Representatives, That, in accordance with Section 110 of the River and Harbor Act of 1962, the Secretary of the Army, acting through the Chief of Engineers, is directed to make a survey to investigate the feasibility of providing shore protection improvements in and adjacent to the City of Encinitas, California, in the interest of storm damage reduction, beach erosion control, and related purposes." (May 13, 1993)

"Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, That the Secretary of the Army, in accordance with Section 110 of the River and Harbor Act of 1962, is hereby requested to conduct a study of the shoreline along the City of Solana Beach, San Diego County, California, with a view to determining whether shore protection improvements for storm damages reduction, environmental restoration and protection, and other related purposes are advisable at the present time." (April 22, 1999)

3 STANDARD OF REVIEW

Under Section 307(c)(1) of the CZMA, 16 USC Section 1456(c)(1), federal activities that affect any land or water use or natural resource of the coastal zone are required to be consistent with the affected state's coastal management program to the "maximum extent practicable." Section 15 CFR 930.32 of the National Oceanic and Atmospheric Administration's regulations implementing the CZMA defines "consistent to the maximum extent practicable" as: *"fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency."*

4 PROJECT DESCRIPTION

4.1 Project Background and Location

This study was initiated in May 1993 to evaluate Encinitas and expanded to include Solana Beach in September 1999. The *Encinitas Shoreline, San Diego County, California*, *905(b) Reconnaissance Report*, was completed by USACE in September 2000 and found that there was federal interest to study the feasibility of solutions to coastal erosion problems in Encinitas and Solana Beach. The feasibility phase of this study was initiated in 2000.

The feasibility study produced a public draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) in 2005, but that document was not finalized. Based upon the comments provided during the public/agency review period, the USACE Project Delivery Team (PDT) revisited the inventory of conditions, problems and opportunities in the study area and reformulated the project alternatives. A new draft Integrated Feasibility Study and EIS/EIR (*Integrated Report*), based on the reevaluated information and reformulated alternatives, was made available for public comment from 28 December 2012 to 26 February 2013.

The Encinitas-Solana Beach Coastal Storm Damage Reduction study area is located along the Pacific Ocean in the Cities of Encinitas and Solana Beach, in San Diego County, California. Encinitas is approximately 10 miles south of Oceanside Harbor, and 17 miles north of Point La Jolla, as shown in **Figure 4.1-1**. Immediately south of Encinitas is the City of Solana Beach, which is bounded by San Elijo Lagoon to the north and the City of Del Mar on the south. It is approximately 17 miles south of Oceanside Harbor and 10 miles north of Point La Jolla.

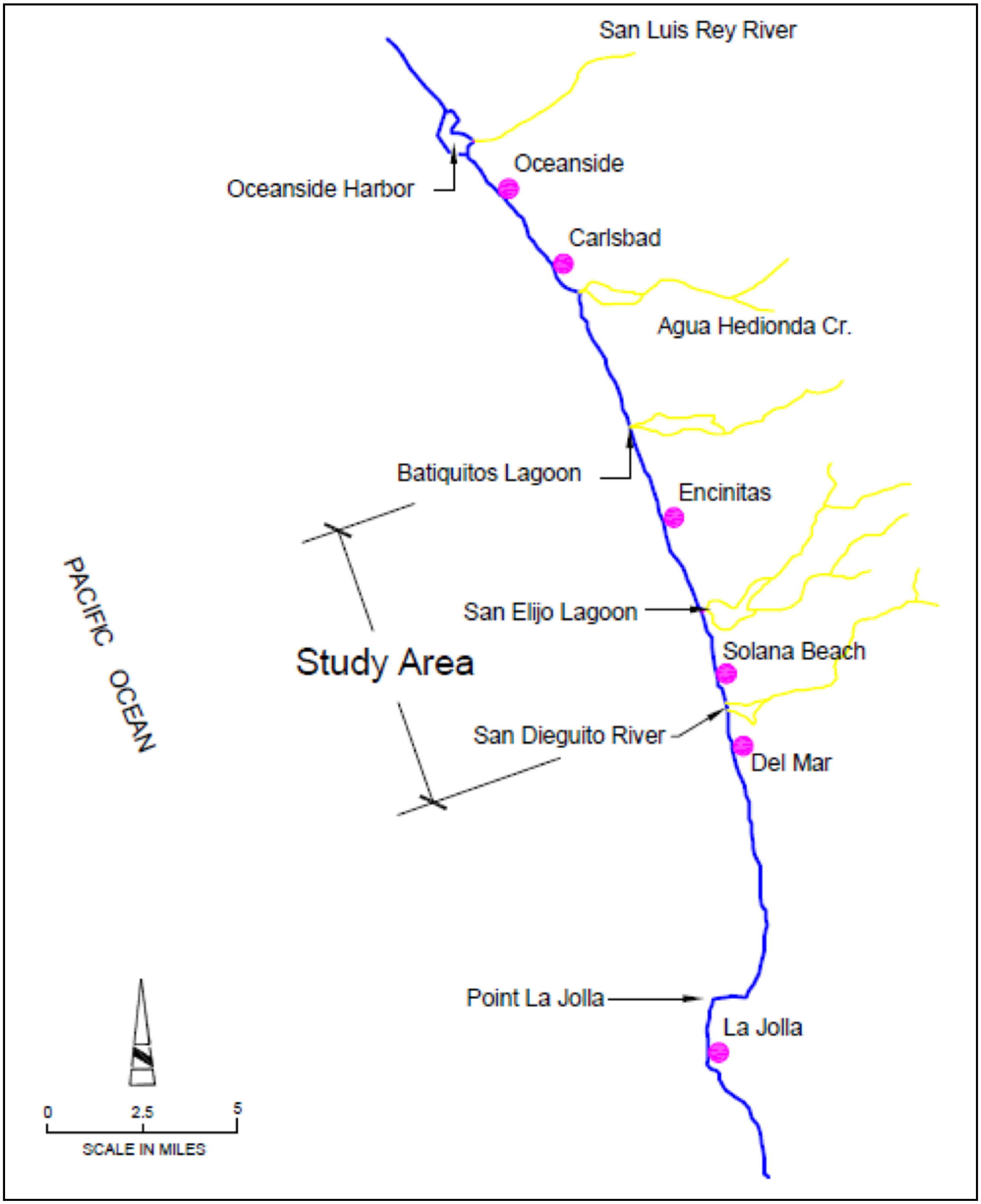


Figure 4.1-1 Project Location

4.2 Need for and Objectives of the Project

4.2.1 Need

The need for the Project is that ongoing bluff erosion and storm waves along unprotected shorelines threaten public safety and cause structural damages that includes catastrophic damage to occupied buildings. Ongoing beach erosion will also result in reduced recreational use of beaches.

The Encinitas-Solana Beach shoreline has narrow beaches with coastal bluffs exposed to crashing waves, particularly during the winter storm season. As sea levels rise, the bluffs will be even more exposed to crashing waves, which carve notches into the bluffs. Bluffs affected by theses notches are then prone to episodic collapse. Consequently, public facilities and residential properties on the upper bluff experience land loss and damages to the property.

In addition to the residences at risk, the following public facilities, public structures, and infrastructure are at risk from storm damage and bluff erosion:

City of Encinitas:

- Coast Hwy 101 (Emergency evacuation route and I-5 alternative)
- 18" gas line under Hwy 101 & other utilities
- Sewer pump station at Cardiff State Parking lot
- Restaurants (Beach House, Charthouse, Pacific Grill)
- Cardiff State Beach Parking Lot
- Cardiff State Beach Campground
- Public beach access ways/staircases:
    - 10 staircases for San Elijo State Beach campground
    - State lifeguard access road (north end of day use parking lot)
    - Swamis
    - D Street
    - Stonesteps
    - Beacons
    - Seabluff
- Moonlight Beach Lifeguard Tower
- Public roads

City of Solana Beach:

- Public beach access stairways at Tide Park , Fletcher Cove and Del Mar Shores
- All public shoreline and beaches in the City including Tide Park Beach and Fletcher Cove Beach
- Fletcher Cove Community Park
- Solana Beach Marine Safety Headquarters
- Fletcher Cove Community Center
- Lifeguard stations at Tide Park Beach and Del Mar Shores
- Stormwater interceptor facilities
- Fletcher Cove public access ramp
- Multiple public beach parking lots providing free public beach parking
- Public roadways
- Numerous wet and dry utilities located on or in the bluffs including sewer lines, electric distribution lines, natural gas lines, and existing stormwater facilities

In addition to this problem, the study area's high demand for recreation with the narrow beach area combined with bluff failures represent a significant safety issue for those recreating. That is, bluff failures can result in injury or death for people recreating on the beach.

The threat of episodic bluff failure due to coastal storm damage has led many property owners to seek emergency seawall permits. The construction of individual seawalls results in substantial armoring of the coast. At the same time, some property owners either cannot afford to construct seawalls or incorrectly assess the risk. In those cases, the failure to armor the parcel would allow structure collapse. If a homeowner does not construct a seawall, once the structure is lost and major public infrastructure is in jeopardy, the affected City would take action, anticipated to be in the form of emergency seawall construction.

The narrow beaches also mean less opportunity for recreational use. While the major focus of the Project is on addressing public safety, loss of life and damage to public facilities and residences caused by bluff failure resulting from coastal storm damage, narrowing of beaches used for recreation is a secondary impact. Episodic bluff failure also results in damages to stairways that provide access to beaches located below high bluffs. This loss of access is expected to accelerate with sea level rise.

4.2.2 Objectives

Based on the analysis of the identified problems and opportunities and the existing conditions of the study area, planning objectives were identified to direct formulation and evaluation of alternative plans. These were established as objectives for the alternatives developed.

- Reduce coastal storm damages to public property and infrastructure along the study area shoreline and the bluff top, prior to the need for emergency action, throughout the period of analysis.
- Improve public safety in the study area by reducing the threat of life-threatening bluff failures caused by wave action against the bluff base, throughout the period of analysis.
- Reduce coastal erosion and shoreline narrowing to improve recreational opportunities for beach users within the study area throughout the period of analysis.

The period of analysis used for the study is 50 years, applying best available information and analysis.

4.3 Plan Formulation

This section summarizes the process used to formulate alternative plans and evaluation criteria leading to the recommendation of the Project for implementation. Under the National Environmental Policy Act (NEPA), reasonable alternatives are those that are practical or feasible from a technical or economic perspective and based on common sense. Alternatives must be responsive to the purpose and need. Factors used to determine feasibility include site suitability, economic limitations, consistency with local plans and policies, other plan or regulatory limitations, and jurisdictional boundaries. Details on the process used to formulate alternative plans and evaluation criteria can be found in the *Integrated Report* (Section 3).

Alternatives considered included:
- Beach Nourishment
- Notchfill Only
- Hybrid – Beach Nourishment and Notchfill
- Managed Retreat
- Revetment

- Seawall
- Groin
- Emergent Breakwater
- Submerged Breakwater/Artificial Reef

4.3.1 Comparison of Alternatives to Evaluation Criteria

Ultimately, the alternative plans identified in this study should follow the general guidelines listed below.

Technical Feasibility - The recommended plan presented should be complete and sound, and in sufficient detail to allow development of engineering plans and specifications.

Economic Feasibility - Any potential project that is in the Federal interest must display feasibility by satisfying benefit-cost (B/C) criteria. Generally, this ratio must be greater than one to allow Federal participation in continued study and any project proposal. In addition, the sponsoring agency is required to show their ability and willingness to fund their share of any recommended project as required by the Principles and Guidelines.

Environmental Impacts - Applicable environmental requirements must be met for a feasibility level study. Environmental acceptability must be ascertained; and adverse impacts should be avoided if possible or minimized if avoidance is not possible. The screening of alternatives based on environmental acceptability limitations are conducted with respect to Federal environmental statutes. Federal examples include the Coastal Zone Management Act (CZMA) and the Fish and Wildlife Coordination Act (FWCA). The California Coastal Commission currently interprets the CZMA in a manner that favors almost any type of shore protection over rock revetments and/or seawalls, especially in areas where there is a lot of public beach use and recreation.

Public Acceptability - The alternative options and plans should be acceptable to the local residents, agencies, organization, and the non-Federal sponsor(s), as well as the interested State and Federal agencies. The local sponsors have indicated that they are severely constrained by public opinion and cannot support any recommendation that meets with severe public opposition.

Table 4.3-1 compares the preliminary alternatives to the evaluation criteria.

Table 4.3-1 Comparison of Preliminary Alternatives to Environmental Evaluation Criteria

Alternatives Considered	Meets Purpose and Need	Technically Feasible	Economically Feasible	Environmentally Acceptable	Acceptable to Public
Beach fill	Yes	Yes	Yes	Yes	Yes
Hybrid	Yes	Yes	Yes	Yes	Yes
Notchfill Only	Maybe	Yes	No	Yes	Maybe
Managed Retreat	No	Yes	No	No	No
Revetment	Maybe (Encinitas) and No (Solana)	Yes	Maybe	No	No
Seawall	Maybe	Yes	No	No	Maybe
Groin	Maybe	Maybe	No	No	No
Emergent Breakwater	Yes	Yes	No	No	No
Submerged Reef	Maybe	Maybe	Unknown	Maybe	Maybe

4.4 <u>Alternatives Eliminated from Further Study</u>

Preliminary and secondary screenings eliminated the following alternatives because they would not meet project needs and objectives, would be far more damaging than other alternatives, and/or because the costs for implementation to meet the needs and objectives would be disproportionately high.

- Notchfill Only
- Managed Retreat
- Revetment
- Seawall
- Groin
- Emergent Breakwater
- Submerged Breakwater/Artificial Reef

4.4.1 Notchfill Only

The notchfill only alternative would provide modest coastal storm damage reduction benefits and does not provide any additional protection with added sand in the system; therefore, recreational benefits were not included. This alternative moderately improves life safety and may not be acceptable to the public. The results showed that this alternative had a benefit to cost ratio less than 1.0 as required for federal economic justification, and coupled with the modest coastal storm damage reduction and life safety improvements, was eliminated from any further consideration.

4.4.2 Managed Retreat

Managed Retreat is a term commonly used to describe a policy that restricts or opposes efforts to protect the shoreline. It has been used to describe policies ranging from complete (active) removal of all shore protection structures and bluff top structures to (passive) simply not allowing new structures to be built. It also includes property acquisition and planned relocation of structures and infrastructure that would eventually be damaged or destroyed by bluff retreat, shoreline advance or storm surge inundation. Under this alternative the Cities would purchase property as part of the land acquisition.

Under this scenario, public beach access, public roads including Highway 101, the North County Transit District (NCTD) railroad, the Fletcher Cove Community Center, Solana Beach Marine Safety Center, lifeguard facilities, public parking lots, State Parkland and all other structures would be acquired and removed or relocated so that coastal erosion could continue unabated along this highly urbanized/developed shoreline.

Acquiring private lands and converting these for public use could only be accomplished through acquisition of high cost real estate. The high cost of real estate would make this option not viable. In addition the analysis of land and structure damages under a managed retreat indicates that these damages are more than twice the cost of implementing a long-term shoreline protection project. The USACE does not have authority to implement such a program, and there are no quantitative economic benefits that would enable this alternative to qualify for a federal interest since the benefit to cost ratio (BCR) would be less than one.

In this scenario, homeowners would have to be compensated for their property loss at fair market value due to outright acquisition or as a “regulatory taking”. The non-federal sponsors - the Cities of Encinitas and Solana Beach have indicated that they do not have the resources to provide this compensation on the scale required, and do not support a Managed Retreat Alternative. Although a Surfrider comment letter states that “Land Lease Fees” (which are currently collected at a rate of $1000 per linear foot of seawall for new seawalls) could be used to acquire properties and remove seawalls and bluff top structures, land lease fees collected by the CCC and the City of Solana Beach total less than one million dollars as of the date of this *Integrated Report*. The cost of this alternative makes it infeasible.

4.4.3 Revetments

In Solana Beach there is a large lens of unconsolidated sand in the mid-bluff zone which is not present in Encinitas. Any stabilization measure in Solana Beach must therefore extend significantly higher up the bluff face than in Encinitas. For this reason, revetments are impractical in Solana Beach because their footprint would extend over 60 ft seaward of the bluff toe, which is an unallowable impediment to coastal access and recreation. Revetments may be effective in Encinitas, where the bluff geology may be more suitable. However, because of the following reasons revetments were eliminated from further consideration: consistency with Coastal Zone Management Act, public access impacts, aesthetic impacts, recreation impacts, and public opposition.

4.4.4 Seawalls

The seawall alternative is a seawall constructed at the base of the bluff for all unprotected parcels. The unprotected parcels the seawall would be constructed on are approximately 6,300 ft in Encinitas and 4,300 ft in Solana Beach. Seawall costs were determined and costs were subtracted from the benefits. The results showed that this alternative had a benefit to cost ratio less than 1.0 as required for federal economic justification, and was therefore eliminated from further consideration. In addition, due to the potential impact the seawall would have on natural shoreline processes and its potential for the seawall to be considered inconsistent with the Coastal Zone Management Act, this alternative was not carried forward.

4.4.5 Groins

Groins were considered as an alternative, but because of the potential adverse effects on downdrift beaches, groins and similar structures should be used only after careful consideration of the factors involved and should always incorporate a pre-fill component whereby the amount of sand that could be trapped by the structure is placed concurrent with structure construction thereby avoiding downdrift impacts. Groins were considered as an alternative but were not considered further in the study due to the following:

- Groin placement would be perpendicular to the shore and would create a barrier to sediment transport, worsening downcoast erosion.
- Potential impacts to EFH due to lost habitat area occupied by construction footprints and/or turbidity impacts during rock placement in the nearshore.
- Potential impact to lateral beach access
- Potential impact on aesthetics due to a visible structure.
- Lack of support from the local sponsors and local community for a structure that includes any visible offshore structure or impact to downcoast littoral transport.
- Potential impact on surfing due to alteration in nearshore wave conditions,
- Groins could interfere with safe navigation and recreation because they would be placed perpendicular to shore and provide a barrier for water recreation use.

4.4.6 Emergent Breakwaters

Emergent breakwaters were considered in the development of the plan alternatives; however they were screened out of the final analysis contained in this study for several reasons:

- Emergent breakwaters interfere with safe navigation and recreation activities because the top of the structure is at times above the surface of the water.
- Extremely high construction and maintenance costs due to large volumes of armor rock needed and performing construction in the nearshore/surfzone.
- Potential increase in downcoast erosion due to sand retention limiting sediment transport.
- Emergent breakwaters have potential to interfere with nearshore wave conditions by dissipating the incoming wave energy and therefore impact surfing conditions.
- Potential impact on aesthetics due to a visible structure in the nearshore.
- Lack of support from the local sponsors and local community for a structure that includes any visible offshore structure or impact to downcoast littoral transport.

4.4.7 Submerged Breakwater/Artificial Reef

Although much theoretical research has been done, real world data on the performance of artificial reefs as sand retention structures is only now becoming available, because few have been built. In addition, most of those were either in Florida or Australia, where conditions differ greatly from the Southern California coastline. Pratte's Reef was constructed off El Segundo, California out of large geotube sand bags, but was too small and located too far offshore to have any noticeable impact on the shoreline and has since been removed. At this time, extremely high costs coupled with extremely high uncertainty of the performance of this measure, lack of support from the local sponsors have resulted in this measure being excluded from further consideration.

4.5 Alternatives Carried Forward

The alternatives carried forward, beach nourishment and hybrid alternatives, meet the project needs and objectives. Numerous scenarios for potential beach widths at each segment at high and low sea level rise (SLR) scenarios were explored to determine the most prudent and practicable design widths, from 50 ft to 400 ft of additional width at 50–ft increments to meet the objectives. The larger beach widths (for Encinitas > 100 ft; for Solana Beach > 200 ft) were eliminated from further consideration due to their environmental impacts and the costs for mitigation.

Due to the geographical separation and shoreline conditions of Segment 1 (in Encinitas) and Segment 2 (in Solana Beach), alternatives for each segment were analyzed and justified independently of each segment. The alternatives for Encinitas could be paired with any of the alternatives for Solana Beach (and vice versa). The alternatives carried forward in the *Integrated Report* are considered at an equal level of detail so decision makers and the general public can make a fully informed decision regarding coastline management.

4.5.1 No Action

The USACE is required to consider the "No Action" or a Future without Project scenario as one of the alternatives in order to comply with the requirements of NEPA (40 CFR 1502.14(d)) and the cities consider it under CEQA (2012 State CEQA Guidelines §15126.2(e)). The No Action Alternative assumes that no project would be implemented by the Federal government to achieve the planning objectives.

The No Action Alternative is necessary for comparing the costs and benefits of different alternatives and serves as the baseline by which other alternatives will be evaluated and compared. For the purposes of the initial screening, the No Action Alternative assumes that existing seawalls will continue to be maintained, and in accordance with State law, private homeowners will continue to be granted permits to build new ones. Under this scenario, most of the shoreline will be armored within 20 or 30 years, but in an inefficient, piecemeal, uncoordinated process and only after significant loss of land. A variety of bluff protection methods and materials have been used, including bluff notch (sea cave) filling, rock riprap revetments, seawalls, and concrete-based facing (shotcrete) of bluff sections. Over the last couple of decades, approximately half of the coastline in the study area has been armored to some degree in response to bluff failures, storm wave damage, and flooding.

Without Project Scenarios – Retreat and Armoring Scenarios

It is important to define the future without project conditions for the project area in order to determine the benefits of the proposed alternatives. The assumption is made that existing seawalls will continue to be maintained, and in accordance with State law, private homeowners, and the cities in order to protect vital infrastructure, will continue to be granted permits to build new ones. There are two scenarios that were modeled that would ultimately lead to the without project condition that would result in most of the shoreline being armored within 20 to 30 years and the entire shoreline armored by 2065. The two scenarios that were modeled to simulate two distinct behaviors to episodic bluff failure were *Retreat Scenario* and *Armoring (Seawall) Scenario*.

The *Armoring* and *Retreat Scenarios* model two mutually exclusive behavior patterns to impending bluff collapse. It is expected that each parcel owner will follow one of these two patterns: either armor the parcel with a seawall to prevent structure collapse or fail to armor the parcel and allow structure collapse. However we do not know which behavior pattern each individual parcel owner would follow under without project conditions. A weighting scheme for armoring and retreat for all of the property owners was developed and used to determine the overall without project condition. What follows briefly explains how the Retreat and Armoring Scenarios were developed. Once developed and analyzed, the two scenarios were combined to forecast future conditions if the "No Action" alternative is taken.

Retreat Scenario

For financial, personal, regulatory, or other reasons some owners will not build seawalls before their structures are rendered uninhabitable from bluff-top collapses. This behavior is captured under the *Retreat Scenario,* where owners do not build seawalls in time to protect their structures. Under this scenario, when episodic bluff failure occurs, first staircases are lost, if present, then land near the bluff-top edge is lost. Repeated bluff failures could undermine the structure. If that happens, the structure value and a portion of the contents inside are lost, the structure is demolished, and land loss continues. Eventually additional episodic bluff failures could threaten major public infrastructure and this would lead to publically financed seawall construction and maintenance since the cities would seek emergency seawall permits and seek funding to construct public seawalls rather than incur the costs and disruptions of a "true" retreat scenario (financial costs and disruptions necessary to relocate buried and above-ground utility lines, loss of public roadways, and additional demands to acquire and relocate residences interior to the existing bluff-top parcels.).

Armoring (Seawall)

The *Armoring Scenario* assumes that homeowners will build seawalls before their structures are rendered uninhabitable. Under this scenario, when episodic bluff failure occurs, first staircases are lost, if present, then land near the bluff-top edge is lost. Before the structure can be undermined by repeated bluff failures, a seawall is constructed and maintained by the parcel owner.

4.5.2 Beach Nourishment

The width of protective beach and its periodic re-nourishment period is optimized through a National Economic Development (NED) analysis that relates to how well alternatives address the need. Alternate widths were developed in 50-ft increments up to an increased width of 400-ft or until the analysis demonstrated a decline in net benefits. This analysis is in accordance with the USACE's planning guidelines to select an optimal beach width responsive to the identified problem. The project alternatives were formulated to reduce erosion to the base/toe of the bluff exclusively. Preventable bluff erosion damages are the total without project damages excluding residual sloughing at the bluff top edge that would not be prevented by a Federal-interest project. *Prevented bluff erosion damages* are the NED Plan coastal storm damage reduction (CSDR) benefits. *Residual Preventable Damages* is the expected amount of damage that could occur with the NED Plan implemented. These optimal beach fills were based on the overall project net benefits and include details such as initial beach nourishment width and sand replenishment cycles. The design sand placement densities, or volume of sand placed per alongshore length (cy/ft) is based on the analysis of site specific beach profiles. The construction beach fill prism dimensions are typical for the California coasts with a crest height at +10 ft MLLW, foreshore slope of 15:1 (horizontal to vertical), and tapering to the back beach elevation ranging from about +12 to +18 ft above MLLW. The linear extent of each receiver site was designed to maximize economic benefits while avoiding sensitive environmental resources. Reaches were limited to existing sandy beaches, avoiding rocky intertidal areas. Reaches also avoided entrances to nearby coastal lagoons (Batiquitos and San Elijo Lagoons). The distance between the receiver sites and lagoon mouths are far enough that no impacts are expected. Receiver site locations are shown on **Figure 4.5-1** and **Figure 4.5-2**.

4.5.3 Hybrid – Beach Nourishment and Notch Fill

The cyclic variation of annual wave climate in a short time span (e.g., 4 to 7 years) may accelerate or slow down sediment loss during a particular replenishment cycle as compared to the average projection derived from historical observations or model simulations. As a consequence, there exists some risk that a protective beach may be eroded away before the next designated sand replenishment cycle is carried out. Under such conditions, the bluff base would again be vulnerable to direct wave attack. Bluff failure may be triggered from additional toe erosion, if a substantial toe notch has previously been developed. To prevent the bluff base from toe erosion during a short period in which the beach is almost or completely depleted, a hybrid plan combining notch fill and a beach fill with a narrower beach fill than a beach only plan is an alternative. The plan provides the flexibility of a required beach width necessary for bluff base protection.

Figure 4.5-1 Encinitas Receiver Site

Figure 4.5-2 Solana Beach Receiver Site

4.6 Final Array of Alternatives Considered

A full array of beach widths and renourishment cycles for both alternatives was considered from a benefit and environmental consequence perspective as well as the ability to meet the planning objectives. The most viable and implementable plans are presented below to be considered for plan recommendation.

The alternatives for Encinitas are:

- EN-1A Beach Nourishment (100-ft beach renourished every 5 years)
- EN-1B Beach Nourishment (50-ft beach renourished every 5 years)
- EN-2A Hybrid (100-ft beach renourished every 10 years and notchfill)
- EN-2A Hybrid (50-ft beach renourished every 5 years and notchfill)
- EN-3 No Action

The alternatives for Solana Beach are:

- SB-1A Beach Nourishment (200-ft/300-ft beach renourished every 13/14 years)
- SB-1B Beach Nourishment (150-ft beach renourished every 10 years)
- SB-1C Beach Nourishment (100-ft beach renourished every 10 years)
- SB-2A Hybrid (150-ft beach renourished every 10 years and notchfill)
- SB-2A Hybrid (100-ft beach renourished every 10 years and notchfill)
- SB-3 No Action

The period of analysis associated with all the alternative is 50 years (2015-2065). Each of these plans would use the offshore borrow sites further described below.

The final array of alternatives is shown in **Exhibit 2**.

4.7 Identification of the LEDPA

In accordance with the Clean Water Act Section 404(b)(1) Guidelines, the USACE is prohibited from implementing a project unless it is the least environmentally damaging practicable alternative (LEDPA) on the aquatic ecosystem or it applies Section 404(r) in a report authorized by Congress. The NED plans, SB-1A and EN-1A, have been identified as the LEDPAs for each segment. While the NED Plan in the Solana Beach segment has 1.6 acres greater indirect impact to nearshore resources then the next smaller increment (SB-1B, 150-foot additional beach width), the smaller alternative would result in greater cumulatively adverse environmental impacts on the aquatic environment because of the higher residual risk. Residual risk is an indicator of life and safety risk as well as continued coastal storm damage (land loss, structure damage, emergency seawall construction) that may persist even after constructing the Project. By implementing a smaller plan for reducing storm damage protection, the most likely scenario is that more seawalls would be constructed and that those seawalls have greater adverse environmental impacts, including potentially increasing downcoast erosion, potentially altering surfing conditions because of wave reflection off the walls, and increasing the armoring of the coast. The greater residual risk also means a greater risk of bluff failure in areas where residents do not construct a seawall, increasing risks to public safety. A similar process identified alternative EN-1A as the LEDPA for the Encinitas segment. Because the revised recommended Project does not recommend the LEDPA in order to respond to the Commission’s stated concerns, the USACE will apply the provisions of section 404(r) from the Clean Water Act.

4.8 Recommended Plan Alternatives

The recommended plan is EN-1B and SB-1B. These plans would provide some coastal storm damage reduction throughout the designated segments. The project is expected to have insignificant impacts to environmental resources within the City of Encinitas, including the Swami's SMCA, but is estimated to have significant impacts to nearshore habitat within the City of Solana Beach that will be mitigated. Additionally, a comprehensive monitoring and mitigation plan has been incorporated in the project and physical monitoring of the performance of the project will be required periodically throughout, the 50-year period of Federal participation. The recommended plans are shown in **Figure 4.8-1**and **Figure 4.8-2**.

4.8.1 Alongshore Project Limits

For the Encinitas (EN-1B) approximately 7,800 ft of shoreline within the City from the 700 block of Neptune Avenue south to West H Street are recommended for nourishment. EN-1B has an initial dredged volume of 410,000 cy that extends the base year beach width at mean-sea level approximately 50 ft. Nourishments would occur every 5 years and require dredging 260,000 cy of material.

For the Solana Beach (SB-1B) approximately 7,200 ft of shoreline within the City from the southern city limits north to Tide Park are recommended for nourishment. SB-1B has an initial dredged volume of 860,000 cy that extends the base year beach width at mean-sea level approximately 150 ft. The beach nourishment in the Solana Beach segment will not extend north of Tide Beach Park, specifically the northern edge of the small cove located at the base of the stairway that connects the beach with the top of the bluff at the end of Solana Vista Drive. Nourishments would occur every 10 years and require dredging 350,000 cy of material. Implementation of this alternative would include mitigation for the estimated loss of 6.8 acres of subtidal and intertidal rocky reef habitat from indirect, long-term burial.

4.8.2 Beach Width

Beach widths along the Encinitas and Solana Beach shorelines have varied substantially over time and still vary according to the wave climate, tides, and the season (e.g. beaches are wider in summer and more narrow in winter). The beaches are reported to have been much wider in the 1970's, and lost much of their sand during the 1982-83 El Nino storms. The figures show the proposed mean beach profile as compared to the projected without project profile. Also shown is the envelop around the extensive profile monitoring undertaken by USACE, SANDAG and the Cities between 1983 and 2010. The label on the figure ("Historic Maximum Sand Level (1983-2012") represents the highest sand level along the profile for this time period.

The beach widths presented in the Project are defined at Mean Sea Level (MSL), meaning that it does not represent a dry beach width. In the most recent beach profile monitoring report (prepared by Coastal Frontiers covering the period Fall 2000 to Fall 2012), MSL beach widths at Moonlight in Encinitas have ranged from 124 feet to 271 feet. The beach profile monitoring report (Coastal Frontiers covering the period Spring 1996 to Fall 2011) shows MSL widths at Fletcher Cove has ranged from 90 to 171 feet.

The Segment 1 (Encinitas) target MSL width is 160 feet and the mean Project profile is within the 1983-2010 envelop of measured profiles (**Figure 4.8-1**).

The Segment 2 (Solana Beach) target MSL width is 220 feet and the mean Project profile is slightly above the 1983-2010 envelop and matches the historical beach maximum at the MSL elevation (**Figure 4.8-2)**.

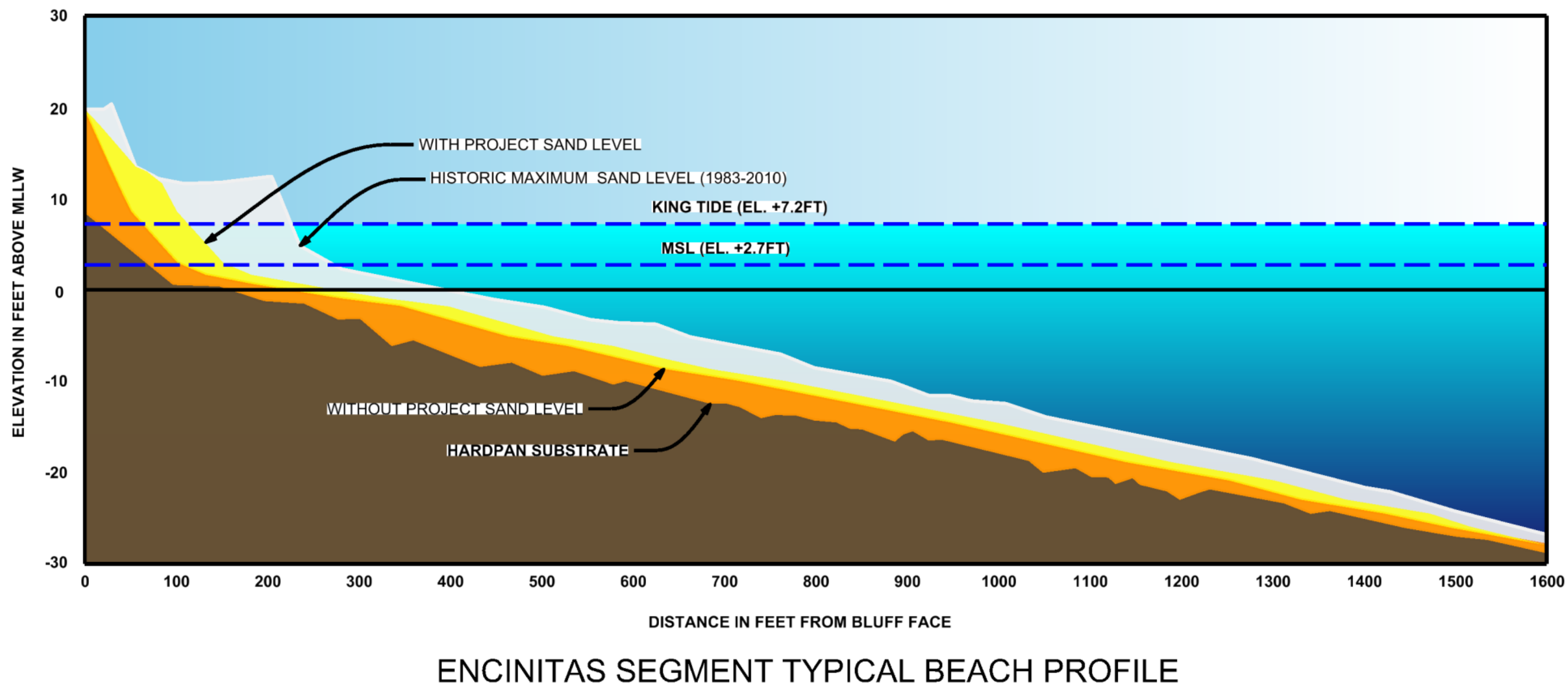


Figure 4.8-1 Encinitas (EN-1B) Segment Typical Beach (50' MSL) Profile Plan

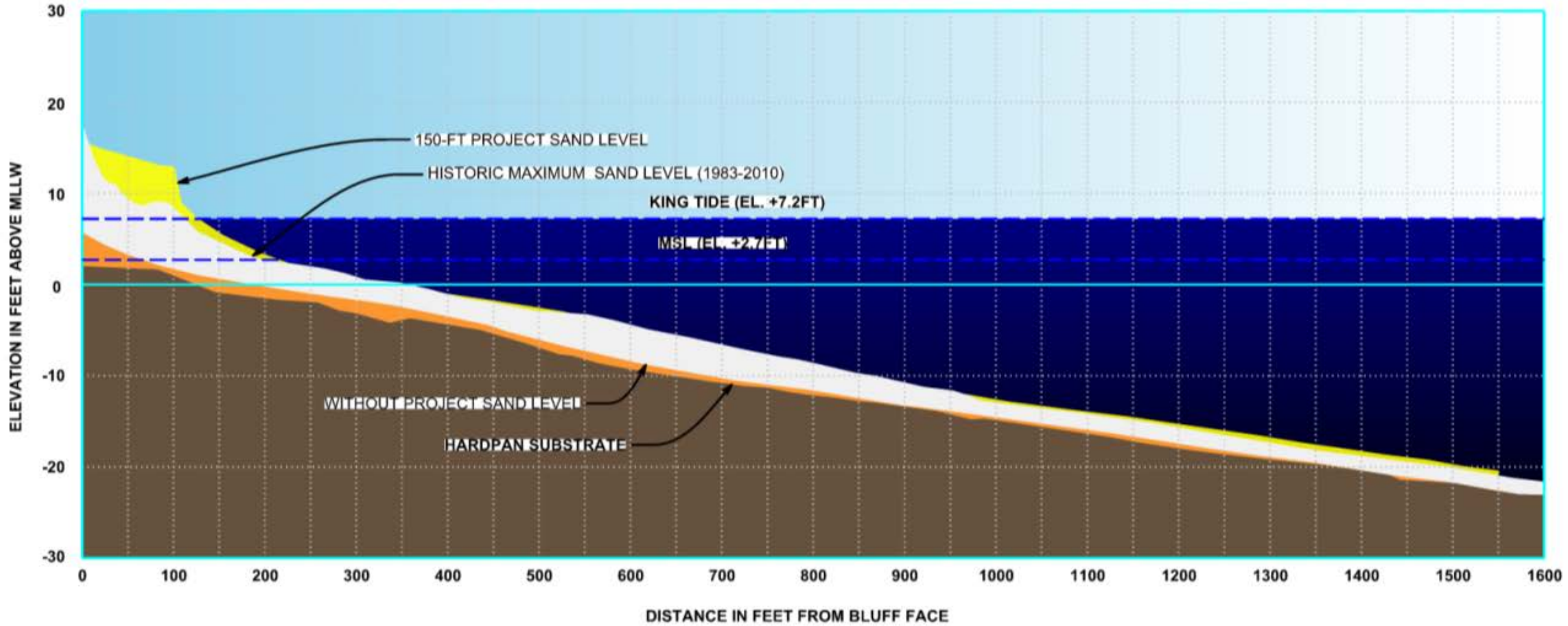


Figure 4.8-2 Solana Beach (SB-1B) Segment Typical Beach Profile (150’ MSL) Plan

4.8.3 Offshore Borrow Sites

Prior offshore studies of the area conducted by USACE and other government agencies like SANDAG have identified at least three potential sources of sand suitable for use as offshore borrow sites. The approximate location of these sites is given in **Figure 4.8-3**. The Potential Offshore Borrow Sites in the study area investigated for the SANDAG RBSP II are designated SO-5, SO-6, SO-7, and MB-1. This project would use SO-5, SO-6, and MB-1, but not SO-7. These borrow sites were identified based on compatibility with the existing beach material. **Table 4.8-1** provides a summary of the volumes of sand available and surface areas for each of these borrow sites.

All offshore dredging at Borrow Sites SO-5, SO-6, and MB-1 to obtain beach nourishment materials will occur below the depth of closure (i.e., outside the littoral drift zone and no shallower than -40 feet mean lower low water) at those locations, and only dredged materials physically compatible with receiver beaches will be placed at those locations.

Table 4.8-1 Offshore Borrow Sites Summary

	MB-1	SO-5	SO-6
Volume Available (approximate)	5,850,000 cy	7,810,000 cy	1,855,000 cy
Surface Area	204 acres	270 acres	78 acres
Depth of the Dredge Cut (ft)	20	20	20
Depth of Borrow Site (MLLW)	-55 to -90 ft	-33 to -72 ft	-36 to -75 ft

4.8.4 Construction Methods

Under each of the alternatives evaluated, the equipment for dredging and placement of dredged material would be selected from the following two types of dredges.

<u>Hopper Dredge</u>

Based on past beach renourishment projects in the region, this is the type of dredge that is anticipated to be used for this Project. The hopper dredge is a self-contained vessel that loads sediment from an offshore borrow site then moves to a receiver site for sand placement. The hopper dredge contains two large arms that have the ability to drag along the ocean floor and collect sediment. The hopper dredge moves along the ocean surface with its arms extended, passing back and forth in the designated borrow site until the hull is fully loaded with sediment. The hopper dredge can generally reach within approximately 0.5 mile of shore to offload. The hopper dredge requires a monobuoy to discharge its sand onto the beach.

The vessel then discharges a mixture of sediment and seawater onto the receiver site using a monobuoy. A monobuoy is a floating pipeline connection platform that is moored to the seafloor, and is used to interconnect with a steel sinker pipeline that carries the slurry along the seafloor to the beach. The monobuoy is generally anchored to the seabed at an appropriate depth and location to serve the project needs, depending on locations of sensitive resources and engineering considerations. For this project the monobuoy would be anchored in at least 25 ft of water, between 2,500 ft and 5,000 ft from shore. From one monobuoy location, sand can be pumped directly onshore and up to approximately 2,000 ft alongshore in either direction. Once this 4,000 ft (maximum) stretch of beach has been filled, the monobuoy is picked up and moved to the next fill zone. Submerged lines would be sufficiently and anchored to prevent abrasion of the ocean floor, reefs, or other seabed habitats. One hopper dredge would be required.

<u>Cutterhead Dredge</u>

The cutterhead is a floating vessel equipped with a rotating cutter apparatus surrounding the intake end of the suction pipe. This dredge has the capability of pumping dredged material long distances to upland disposal areas. Costs increase for sources over approximately 16,000 ft from the receiver site, which means it would be likely only be considered for dredging at SO-6. The cutterhead dredge is usually equipped with two stern spud anchors used to hold the dredge in working position and to advance the dredge into the cut or excavating area. During operation, the cutterhead dredge swings from side to side alternately using the port and starboard spuds as a pivot. Cables attached to anchors on each side of the dredge control lateral movement. Forward movement is achieved by lowering the starboard spud after the port swing is made and then raising the port spud. The dredge is then swung back to the starboard side of the cut centerline. The port spud is lowered and the starboard spud lifted to advance the dredge. Pipeline is then connected from the barge to the beach. One cutterhead dredge would be required, with one anchor tender vessel to move the spuds as needed and a crew boat to ferry crew and supplies to the rig from the shoreside support facility, most probably located at Oceanside.

For the cutterhead pipeline discharge, the pipe would be laid on the seafloor from SO-6 straight into shore at Cardiff State Beach for distribution up coast to Encinitas and down coast to Solana Beach. A booster pump, located on the beach, would be required to pump the slurry up or down coast from that point. The beach pipeline would be partially buried so it would not impede public access or present a hazard on the beach (except at the point of discharge).

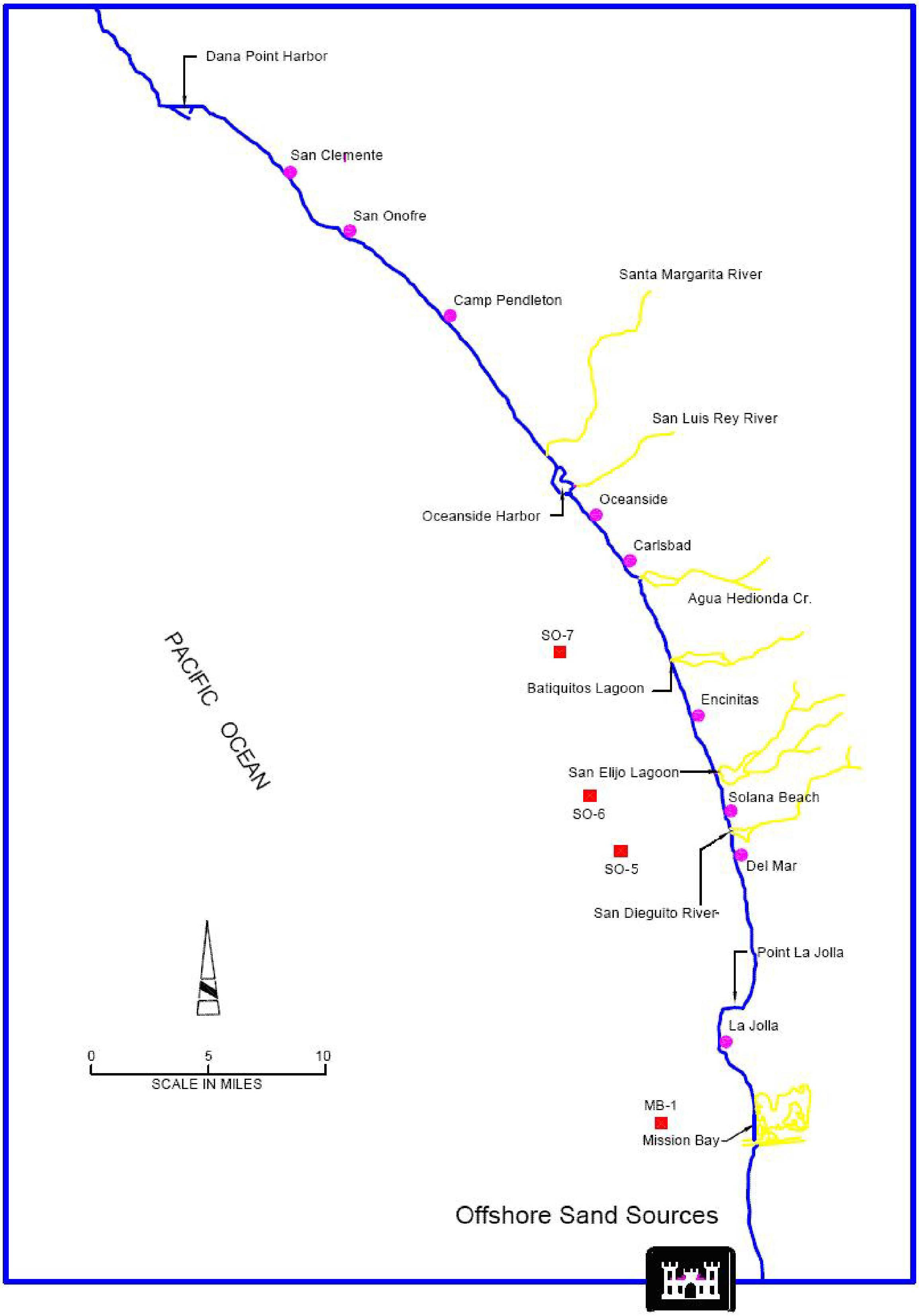


Figure 4.8-3 Regional Offshore Borrow Sites (not to scale)

Onshore Placement Method

For both the hopper and cutterhead dredging methods, sand would be combined with seawater as part of the dredging process to produce a slurry. It would then be conveyed to the beach either via pipeline or a combination of hopper dredge and pipeline. Existing sand at each receiver site would be used to build a small, "L"-shaped berm to anchor the sand placement operations. The short side of the "L" is perpendicular to the shoreline and approximately the same width as the design beach for each receiver site. The long side is parallel to shore, at the seaward edge of the design beach footprint.

The slurry would be pumped onto the beach into the angle of the "L" between the berm and the bluff toe. This berm would reduce ocean water turbidity allowing all the sand to settle out inside the bermed area while the seawater is channeled just inside the long side of the berm until it reaches the open end where it would drain across the shore platform and into the ocean. As filling progresses the berm would be continuously extended to maintain its designed length.

As the material is deposited behind the berm, the sand would be spread using two bulldozers and one front-end loader to direct the flow of the sand slurry and form a gradual slope to the existing beach elevation. A crew of up to 10 people would be required for the beach work. The construction sequence is described in further detail below.

For each receiver site, berm construction may be adjusted from the design requirements during fill placement depending on actual field conditions. The measurements indicated for the width of the berms for each nourishment alternative are the initial placement widths. The berms would be subject to the forces of the waves and weather once constructed, and would eventually settle down to a natural grade for the beach. Nourishment alternatives herein are all designed to achieve a berm after two years of being reworked by ocean processes (waves, currents and winds), also referred to as the 2-year equilibrium, as this is the actual project state that would provide storm damage reduction.

Construction Sequence and Duration

Beach nourishment related activities (sand dredging, placement, and dispersal) would occur on a 24-hour, 7-day a week (24/7) basis, by operating three shifts per day. Beach operations would only occur during the day (12 hours). Approximately two days would be required to set up the pipeline leading from the dredge or monobuoy to the shoreline. The contractor would typically assemble two sets of pipeline to avoid delays associated with moving and setting up the pipelines as each section of sand placement is completed. Sand discharge would be continuous as long as the dredge is operating. Daily average production rate would be approximately 10,000 cy for the hopper dredge with pumpout, excluding site preparation and post dredge grooming and cleanup. Daily average production rate would be approximately 15,000 cy for the cutterhead dredge, excluding site preparation and post dredge grooming and cleanup.

The estimated duration for Encinitas is 62 days; for Solana Beach 107 days.

Public Access

Construction would be carried out such that the only impacts to public beach access would occur at the point of discharge. Approximately 200 ft of beach would be inaccessible to the public around the discharge pipeline and berms. In addition, there would be intermittent restrictions on public access for approximately 200 ft on either side of this discharge zone. This space would be needed for maneuvering heavy equipment during construction of the temporary berms and for relocating discharge pipelines.

Timing to minimize public access impacts

As the USACE develops the final construction calendar for the project, the USACE will make every practicable effort to schedule beach nourishment activities outside the peak summer recreation season in order to minimize project impacts on public access and recreation. The USACE will submit the draft construction calendar to the Commission's Executive Director for review, will carefully consider the comments made by the Executive Director, and will make all reasonable efforts to ensure that the concerns expressed regarding construction scheduling and timing are resolved prior to construction.

Construction Access and Staging Areas

Under each nourishment alternative, existing public beach access points would be used for the construction equipment and crew at Moonlight Beach in Encinitas. Beach access for the construction equipment and crew at Solana Beach would be provided at Fletcher Cove. Should dredged sediment from San Elijo Lagoon be used as a sand source, Cardiff State Beach north of the City of Solana Beach would be used as a staging area and pipeline corridor. This, however, is highly unlikely given the timing of the projects and the nature of the sediments in the San Elijo Lagoon. Seaside parking lot, located at the southern end of Cardiff State Beach, may be used as an access point to the Solana Beach segment in lieu of Fletcher Cove, which might be too small to accommodate heavy construction equipment. Should equipment need to be temporarily moved off the beach, it would be stored in parking lots at the access points. Any fueling or maintenance activities would occur at the staging areas, and the contractor would be required to provide and comply with a Spill Prevention, Control, and Containment (SPCC) plan for hazardous spill prevention and containment. Any equipment left on the beach overnight will be protected so that any materials that could leak from stored equipment do not enter the ocean; and these areas will be designed not to obstruct or impede public access to or along the shoreline. Public parking areas are available for use by the construction crew. The dredge crew would park at the port of operations for the dredge.

Pipeline Survey

Prior to the start of project construction, surveys will be conducted to locate suitable corridors for pipeline to move sediment from offshore sources to the beach fill areas. Corridors will avoid sensitive benthic habitat to the maximum extent practicable building on the experience of RBSP I & II.

Staging Plan Details

The construction staging plans will assure that: (a) temporary easements for staging areas at Moonlight Beach and Fletcher Cove will be obtained; these areas will have fencing for public safety and security; these areas will be the minimum size necessary and will be operated in conjunction with larger upland staging areas; the USACE will avoid storing vehicles and earthmoving equipment in these areas to the maximum extent practicable to avoid potential water quality impacts; any equipment left on the beach overnight will be protected so that any materials that could leak from stored equipment do not enter the ocean; and these areas will be designed not to obstruct or impede public access to or along the shoreline; (b) the minimum number of public parking spaces (on and off-street) that are required for the staging of equipment, machinery, and employee parking that are otherwise necessary to implement the project will be used; and (c) staging will avoid using to the maximum extent feasible public beach parking lots, but when the use of these lots is unavoidable to implement the project, only the minimum amount of space in these lots will be used. The construction staging plan will be submitted to the Executive Director for review prior to the start of project construction.

4.8.5 Pre-Construction, Construction and Post-Construction Monitoring and Mitigation Program

Implementation of the Proposed Project includes a comprehensive monitoring program which is described below. The monitoring and mitigation program includes the following elements, each of which is described in greater detail below:

- Turbidity and Water Quality Monitoring Plan
- Habitat Monitoring Plan
- Mitigation Monitoring Plan/Mitigation Monitoring and Reporting Program
- Borrow Site Monitoring Plan
- Grunion Monitoring and Avoidance Plan
- Cultural Resources Surveys
- Cultural Resources Monitoring Plan
- Snowy Plover Avoidance Plan
- Noise Monitoring Plan
- Beach Profile Monitoring Plan
- Surfing Monitoring Plan
- Stormwater Pollution Prevention Plan
- Oil Spill Prevention Plan
- Public Safety Plan
- Air Quality Monitoring Plan

<u>Turbidity and Water Quality Monitoring Plan</u>

The primary goal of the Project to keep the dredged sand on the beach. This is accomplished by building shore-parallel sand berms that allow the water to drain and leave the maximum amount of sand behind. This construction method also reduces turbidity relative to standard discharge methods.

The Turbidity and Water Quality Monitoring Plan will include weekly monitoring at the dredge and beach receiver sites for salinity, pH, temperature, dissolved oxygen, and turbidity/light transmissivity; monthly water samples will be taken and analyzed for total dissolved solids. Baseline conditions will be established by conducting monitoring events the week before construction starts and the week after construction ends.

<u>Habitat Mitigation and Monitoring Plan - Pre- and Post-Construction Monitoring Program</u>

The project has been designed to avoid or minimize impacts to sensitive biological resources to the maximum extent practicable. This was done by selecting fill alternatives that limit fill volume while achieving project objectives. Encinitas, for example, was able to select a beach width that avoids losses of rocky and surf grass habitats while still achieving shoreline protection objectives. Solana Beach selected an alternative that resulted in no impacts to surf grass resources while impacting minimal reef resources. Fill footprints for both cities avoid any direct impacts to sensitive resources; all estimated impacts are the result of indirect burial.

However, for several alternatives, potential project impacts have been identified using a conservative coastal engineering model.

Indirect covering of vegetated rocky substrate within the near shore could result from implementation of the Project at the Solana Beach receiver site, requiring mitigation consisting of providing additional rocky substrate in the near shore that can be vegetated, as well as monitoring to record effects and whether any unexpected adverse effects occur. Sand introduced into the system could indirectly impact up to 6.8 acres of marine biological resources (benthic habitat) as a result of burial or degradation of sensitive habitats and resources, under the low sea level rise scenario. Mitigation in the form of a 13.6-acre artificial reef would be required.

The requirement to construct 13.6 acres as suitable habitat was determined in coordination with state and federal resource agencies using a Functional Assessment. The Functional Assessment used was approved for a single use by the USACE internal model certification process. The Functional Assessment is described in detail in Appendix M to the *Integrated Report.*

Prior to the implementation of construction of the project, the extent of reef habitat and vegetation throughout and adjacent to the entire predicted equilibrium footprint will be mapped using remote sensing techniques such as multi-spectral aerial photography and/or interferometric side scan sonar. Multi-spectral aerial photography utilizes an airplane to capture multispectral reflectance characteristics that allow the identification and separation of various bottom substrates and vegetation, while interferometric side scan sonar is a type of technology used to interpret seabed features, material, and textures from acoustic backscatter response intensity, as well as, bathymetry. When the techniques are combined, data sets include bathymetry, bottom substrate type, and vegetation type information. Results from similar methodologies were used for this study to provide the baseline data (i.e., SANDAG 2002), and the proposed mapping provides the most cost-effective approach for surveying the large study area. This pre-construction monitoring is to establish baseline conditions to compare post-construction conditions against. All data would be geo-rectified, and habitat types digitized as a theme over an aerial image to calculate the coverage of various habitat types and show its distribution. Diver surveys would also be conducted to ground truth or verify remote sensing data. The diver surveys would be at a level appropriate to effectively ensure that data were representative (e.g., 20 random locations for each substrate or habitat type). The proposed mapping would be repeated during years one and two post-construction to determine what long-term impacts result from the project that require mitigation. Based on the data collected, a decision will be made as to whether, and to what extent, mitigation is necessary.

Pre- and post-construction monitoring of the nearshore environment will be conducted to allow for identification of project-related impacts for purposes of delineating mitigation requirements. Given the high degree of sediment transport that occurs in the nearshore zone, sampling at control sites would provide some level of natural variability. By sampling control sites, any change in the sediment cover could be put into a regional/local perspective, and natural variation taken into account. If this was not measured, any increase in sediment cover in the project area would have to be considered project related. This is especially helpful if there is a reduction in surf grass at the project site that may be the result of a natural decline (measured at the reference area) and not a project impact.

Any loss of nearshore rocky reef or surf grass habitat based on Year 2 monitoring results would require mitigation.

The general approach for assessing impacts would be similar to that used to identify potential project-related impacts to eelgrass as per the Southern California Eelgrass Mitigation Policy (SCEMP; NMFS 1991). The project area and control site(s) will be surveyed prior to construction, and annually for two years following construction. The expected monitoring schedule includes:

Pre-construction baseline monitoring (year prior to construction):
- Spring Survey
- Fall Survey

Post-construction (annually for two years following construction):

- Spring Survey
- Fall Survey

The final monitoring plan will be prepared during the pre-construction engineering design phase of the project in consultation with resource and regulatory agencies.

Reef construction would be temporary and short-term, and is expected to be completed in 28 days. The reef height would vary, but is generally expected to be approximately 3 ft in height, on average. The mitigation reef would be constructed offshore in waters of -30 to -40 ft MLLW. Reef shall be constructed in a fashion similar to the SCE Wheeler North Reef, which was constructed as mitigation for the impacts of the San Onofre Nuclear Generating Station. The described "push off" method utilized for the mitigation fabrication proved to be more than adequate in building the modules to meet design specifications. A flat-deck barge will be tethered to the derrick barge equipped with GPS navigation system to guide barges to exact coordinates of any given site. A front-end track loader will place quarry material at the edge of the flat-deck barge, and at a calculated distance of separation between the boulders. Once in position, the front end track loader operator will push the boulders into the water.

<u>Mitigation Monitoring Plan (MMP) /Mitigation Monitoring and Reporting Program (MMRP)</u>

The MMP/MMRP shall be prepared to monitor mitigation features to ensure that the reefs function as designed. All mitigation features shall be monitored for five years after construction of the mitigation feature. The MMP will be prepared in coordination with the National Marine Fisheries Service and the California Department of Fish and Wildlife with copies provided to the California Coastal Commission.

Mitigation would be implemented in the project area at sites to be determined in consultation with the resource and regulatory agencies. Monitoring of completed mitigation would be conducted for five years. The final mitigation and monitoring plan will be prepared during the pre-construction engineering design of the mitigation in consultation with resource and regulatory agencies.

Post- mitigation implementation monitoring schedule:

Year One

- within one month after completion
- 3 months after completion
- 6 months after completion
- 1 year after completion

Years Two through Five

- Spring survey
- Fall survey

Out of Kind Mitigation: Any loss of surf grass habitat (none is predicted) would be mitigated in-kind using experimental transplant methods. If the experimental method fails, the USACE will mitigate out of kind using kelp reefs in lieu of surf grass. If the in-kind method fails, the USACE will proceed to the approach for out of kind mitigation consistent with the MMP and will provide the approach to the Executive Director for review. The USACE will carefully consider all comments by the Commission's Executive Director and will make all reasonable efforts to ensure that concerns expressed are resolved and any necessary revisions incorporated.

Borrow Site Monitoring Plan

Prior to the start of project construction, the USACE will submit a borrow site monitoring plan to the Commission's Executive Director for review. The plan will also be reviewed by representatives from the California Department of Fish and Wildlife and the National Marine Fisheries Service. The plan will include measures to document the actual areas dredged during each nourishment project, the biological community affected, and the physical and biological temporal changes, including physical (multibeam sonar) and biological (benthic and infaunal sampling) monitoring of the borrow sites and nearby reference sites. The plan will include provisions for pre- and post-dredging surveys of all borrow areas used during nourishment projects, including all renourishment events. The USACE will carefully consider all comments by the Executive Director and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to each construction phase.

It should be noted that use of these borrow sites is anticipated by other entities including the City of Del Mar (see their letter to the Mary Shallenberger dated July 5, 2013) as well as SANDAG and potentially other entities. Importantly, these borrow sites have been used for beach replenishment on numerous occasions since 2001 and are therefore disturbed sites. Additionally, one or more of these borrow sites may be "refilled" by a proposed future lagoon restoration project which would also affect monitoring data. Any use of the borrow sites by other agencies or projects will also be noted in the monitoring plan.

Grunion Monitoring and Avoidance Plan

The Project will monitor and avoid potential impacts to grunion in the entire construction area which may include areas beyond the beach sand placement footprint. Most of the equipment would be located above the mean high tide line. During the pre-construction surveys prior to all predicted runs in construction years, surveys will be conducted to assess the potential for suitable grunion spawning habitat (any beaches with a dry beach at spring high tide levels) and will include the placement footprint plus all adjacent beach area including beach access routes, construction staging areas, pipelines, pumps and other equipment or construction activity to minimize potential effects on grunion. Project Staff will also review available literature to address flexibility over the 50-year life of the Project.

The season for grunion is identified as March 15 to September 1. Beach fill sites shall be surveyed for suitable grunion spawning habitat by March 1 to allow for agency coordination of results. Should beach fill occur during the California grunion spawning season, those suitable habitats would be monitored during scheduled grunion spawning runs for grunion spawning in construction area, where practicable establish a buffer extending 100 ft upcoast and downcoast (total 200 ft), until eggs hatch (minimum of one lunar month) and surveys show no subsequent spawning.

Cultural Resources Surveys

An archaeological site located at Moonlight Beach has been partially recovered by the City of Encinitas as part of recently completed effort to reconstruct the public facilities at Moonlight Beach. This cultural resource site was located approximately 100 feet east of the mean high tide line, east of an existing sea wall. The western extent of the site is unknown. A complete survey of this site, including trenching to locate subsurface features, will be conducted west of the sea wall prior to construction and any portion of the site within the proposed fill area will be avoided if it still exists. Trenching is necessary to determine if the site exists at all west of the sea wall and, if it does, to determine the boundaries of the site to enable avoidance. Any portion of the site located on the beach, west of the sea wall, has likely eroded away, however the proposed surveys will be used to confirm this assumption. The Project, therefore, will avoid impacts to any known cultural resources. Additionally, the Project includes a monitoring program for unknown cultural resources and the standard construction clause to halt construction activities should any unknown resources be detected will be included in the construction contract specifications.

A cultural resource survey of the borrow site would also be performed prior to construction. A cultural resource survey of the mitigation sites would be needed prior to mitigation construction.

Cultural Resources Monitoring Plan

Cultural Resources Mitigation Measure 1 (CR-1): To avoid potentially significant impacts, a monitoring program designed to identify cultural resources encountered during dredging operations will be implemented. Monitoring procedures would be specified in a monitoring plan that is approved before dredging is initiated. The monitoring would be conducted by a qualified archaeologist and would be instituted as material is dredged from each borrow site. Monitoring would consist of periodic spot-checking of materials dredged from low and moderate-sensitivity contexts and continuous monitoring of materials from high-sensitivity contexts. If monitoring reveals cultural materials indicating that dredging had entered into an archaeological deposit, construction in that area should cease until the requirements of 36 CFR 800.13(b) are met. Then the dredging operation would be permanently relocated away from that site and a 250-ft-wide buffer would be established around the site. Underwater investigations will be conducted prior to disturbance; if cultural resources are found, they will be evaluated for National Register eligibility. With implementation of the mitigation measure CR-1, potential impacts to sensitive cultural resources would be reduced to less than significant.

Monitoring procedures would be specified in a monitoring plan that is approved before dredging is initiated. The monitoring would be conducted by a qualified archaeologist and would be instituted as material is dredged from each borrow site. Monitoring would consist of periodic spot-checking of materials dredged from low-and moderate-sensitivity contexts and continuous monitoring of materials from high-sensitivity contexts. If monitoring reveals cultural materials indicating that dredging had entered into an archaeological deposit, construction in that area should cease until the requirements of 36 CFR 800.13(b) are met. Then the dredging operation would be permanently relocated away from that site and a 250-ft-wide buffer would be established around the site. Underwater investigations will be conducted prior to disturbance; if cultural resources are found, they will be evaluated for National Register eligibility.

Snowy Plover Avoidance Plan

Prior to each renourishment event, all areas to be used for construction activity shall be surveyed for the presence of western snowy plover. If snowy plovers are present, the USACE will coordinate with the US Fish and Wildlife Service to avoid impacts and monitor effectiveness and compliance for those areas that we are unable to stay out of, we will and will avoid to the maximum extent feasible those areas occupied by western snowy plover. It is likely that, at the time of renourishment, the beaches would not be suitable habitat, however this will be confirmed prior to any on-beach construction activities for each of the renourishment events.

Noise Monitoring Plan

Noise monitoring shall be performed during all beach construction activities to verify that noise levels remain below significant levels. If noise levels exceed significant levels, the contractor shall be required to modify operations to reduce noise levels. All construction equipment shall be properly maintained and tuned to minimize noise emissions. All equipment shall be fitted with properly operating mufflers, air intake silencers, and engine shrouds as effective or more than as originally equipped. Stationary noise sources (e.g., booster pumps, generators, and compressors) shall be located as far from residential receptor locations as is feasible, ideally 250 ft or greater. Where feasible, use an electric motor to drive the booster pump, rather than a diesel engine. For work in Encinitas, a noise variance shall be obtained under Section 9.32.424 of the City of Encinitas Municipal Code prior to the commencement of any work. For work in Solana Beach, a noise variance shall be obtained from the City of Solana Beach under Section 7.34.240 of the City Municipal Code.

Beach Profile Monitoring Plan

The beach profile monitoring plan will include semi-annual beach profile surveys along 19 shore perpendicular transects and oblique photos at each of the receiver sites. The beach profile data will be obtained in the Spring and Fall, corresponding to the transitions between the winter and summer wave seasons, commencing prior to construction and continuing until two years post construction. The oblique aerial photos will be obtained semi-annually in the Spring and Fall during the first two years post construction. The transect locations will begin at SD-710 in the north and end at DM-0560 in Del Mar at the southern end. Monitoring will include the geographical area between the Encinitas and Solana Beach segments of the project, in order to accurately document possible downcoast movement of sand placed in the Encinitas segment.

Lagoon entrance monitoring will focus on the condition of three lagoon entrances in the Oceanside Littoral Cell: Batiquitos, San Elijo, and San Dieguito. Monitoring will consist of oblique aerial photography, monthly inspections, and an assessment of lagoon closure and maintenance records. In addition, the USACE will coordinate with the Cities and SANDAG to monitor 1-2 additional transects north of the Los Penasquitos Lagoon as part of the SANDAG Regional Shoreline Monitoring Program for 5 years following the initial beach sand placement.

Surfing Monitoring Plan

The Surfing Monitoring Plan will include the following features:

- Adequate baseline data collection, including, if feasible, a full year of pre-construction monitoring to determine the baseline condition (conditions at the project area and, as appropriate, at control sites).
- Identification of locations to be monitored, the length of the pre-project monitoring, and interest groups to be involved in establishing the monitoring effort to identify surfing or surf quality changes that might be attributable to the nourishment project, including identifying criteria for a determination of what constitutes a significant alteration or impact. Monitoring will include the geographical area between the Encinitas and Solana Beach segments of the project, in order to accurately document possible downcoast movement of sand placed in the Encinitas segment.
- Another location within the region might also be chosen to act as a control site to help determine if there are changes within the region to surfing conditions that could be attributable to other factors other than project implementation.
- Supplementing the "wave observation" component of the surf monitoring with observations about the surfing activities, including a usage scale of surfers in the water, both morning and mid-day, and describing the average and maximum ride lengths.
- If observer counts are too difficult for one observer, video may be used to augment observer counts.
- When collecting user data, the analysis should be disaggregated into weekday and weekend data.

- For mid-day observations on days when surfers are kept out of the water by lifeguards, these should be recorded as restricted use days (not zero use days).
- Establishing mechanisms for forming the local community about the project, and encouraging public comments on surfing quality (or other recreational concerns), including but not limited to: (i) a web site, (ii) pre-construction notifications to the public; and (iii) signs.

Storm Water Pollution Prevention Plan (SWPPP)

The Contractor will be required to prepare an SWPPP that will assure that: (a) the contractor will not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion; (b) no machinery will be placed, stored or otherwise located in the intertidal zone at any time, except for the minimum necessary to implement the project; (c) construction equipment will not be washed on the beach; (d) where practicable, the contractor will use biodegradable (e.g., vegetable oil-based) lubricants and hydraulic fluids, and/or electric or natural gas powered equipment; and (e) immediately upon completion of construction and/or when the staging site is no longer needed, the site shall be returned to its preconstruction state.

Oil Spill Prevention Plan

The contractor shall generate a plan for hazardous spill prevention and containment. Maintenance for land-based vehicles will occur in staging area away from beach and sensitive areas and proper BMPs will be used during vehicle fueling. Any equipment left on the beach overnight will be protected so that any materials that could leak from stored equipment do not enter the ocean; and these areas will be designed not to obstruct or impede public access to or along the shoreline.

Public Safety Plan

The contractor shall generate a safety plan to restrict public access at receiver and notch fill sites and maintain 100-ft buffer around fill areas.

Air Quality

Construction equipment will be properly maintained and tuned.

The surveys and monitoring plans will include the following:

	Purpose	Pre-Initial-Event Construction	Initial Event Construction	Post-Initial-Event Construction	Renourishment Event?
Water Quality Monitoring Plan	Monitoring at receiver and borrow sites for salinity, pH, temperature, dissolved oxygen, and light transmissivity (turbidity).	One week prior.	Weekly.	One week post.	Same as construction.
Habitat Monitoring Plan	Map extent of reef habitat and submerged aquatic vegetation. Used to determine if there are project impacts and will include control sites.	1 year pre-construction (spring and fall).		Repeat pre-construction surveys at years 1 and 2 post-construction (spring and fall).	
Biological Mitigation and Monitoring Plan	Monitoring for success of mitigation project, if needed.			1, 3, 6 and 12 months post-construction; spring and fall for years 2-5 post-construction	
Cultural Resources Plan Monitoring	Avoid impacts to previously undiscovered cultural resources.	Survey conducted of borrow site(s); survey of mitigation site, if necessary.	Periodic spot-checking of dredged materials from low- and moderate-sensitivity contexts and continuous monitoring from high-sensitivity contexts.		
Cultural Survey	Survey cultural resources site at Moonlight state Beach to determine lateral extent.	Trench site west of seawall to determine lateral extent and avoid if present.			
California Grunion Monitoring and Avoidance Plan	Avoid/minimize impacts to spawning grunion	Receiver sites and access/staging areas surveyed for suitable habitat	Seasonal monitoring may be required if suitable habitat is identified in project area.		Same as construction.
Shoreline Monitoring Plan	Determine changes in beach and seabed morphology. Trigger renourishment events	Profile data from back beach to wading depth; 1 yr prior to construction in the spring and fall		Annually for 2 years post construction in the spring and fall	Annually throughout the life of the project.

	Purpose	Pre-Construction	Construction	Post-Construction	Renourishment Cycle?
Noise Monitoring Plan	Verify noise levels remain below significant levels.		Performed during all beach construction activities.		Performed during all beach construction activities.
Surfing Monitoring Plan	Monitor surfing conditions to confirm if impacts occur.	Monitor one year prior to construction.		Repeat pre-construction surveys at years 1 and 2 post-construction.	
Snowy plovers	Screen, for presence, monitor effectiveness of avoidance measures, if present.	Propose avoidance measures if Seaside parking lot is used for staging	Monitor avoidance measures if Seaside parking lot is used for staging		Survey all beach fill and access and staging areas for presence. Avoid/monitor if present
Stormwater Pollution Prevention Plan (SWPPP)	Control runoff of construction-related contaminants into the sea.	Construction contractor prepares SWPPP.	Construction contractor implements SWPPP.	Construction contractor reports on SWPPP.	Same as construction.
Oil Spill Prevention and Response Plan (OSPRP)	Details spill prevention measures and cleanup plans.	Construction contractor prepares OSPRP.	Construction contractor implements OSPRP.	Construction contractor reports on OSPRP.	Same as construction.
Borrow Site Monitoring Plan	Monitor seafloor morphology, water quality, and benthic habitat quality.	1 year pre-construction (spring and fall).		Repeat pre-construction surveys at years 1 and 2 post-construction (spring and fall).	Same as construction.
Safety Plan	Detail safety procedures, including OSHA and safety for recreational beach users.	Construction contractor prepares Safety Plan.	Construction contractor implements Safety Plan.	Construction contractor reports on Safety Plan.	Same as construction.

Staging Plan	Details on location of staging areas, precautions for maintenance and fueling of construction equipment, precautions for storing equipment on the beach, minimizing space requirements, safety precautions for equipment operations and fueling to avoid public beaches and public beach parking lots to the maximum extent feasible, utilize minimal number of public parking spaces when not avoidable.	Construction contractor prepares Staging Plan.	Construction contractor implements Staging Plan.	Construction contractor reports on Staging Plan.	Same as construction.

4.8.6 Resource Agency Coordination and Regulatory Compliance

The USACE will be completing the monitoring and mitigation plans described in this section in close coordination with federal and state resource agencies, including the Coastal Commission, USFWS, CDFW, RWQCB and NOAA.. All plans and reports will be shared with agency staff as they become available. Additionally, if the USACE identifies through monitoring results or other information that the Project will affect any coastal use or resource substantially different than originally described, the USACE is obligated under 15 CFR 930.46 to coordinate with the Commission and supplement its CD. Additionally, the Commission, based on the information submitted to it or its own analysis may notify the USACE when it believes the Project should be subject to supplemental coordination, and to recommend changes to the Project that would allow the USACE to implement the Project consistent with the enforceable policies of the CCMP. The Commission can do this at any time during the Project's duration.

<u>Future Review of Renourishment Events</u>

The Project has a 50-year duration and will be authorized by Congress as a complete project. Six months prior to each renourishment event, the USACE will notify the Executive Director and provide for his review: (a) the results of all monitoring that the plans discussed in these conditions required to be performed since completion of the previous nourishment event (e.g., physical, biological, surfing); (b) an explanation of the status of completed and/or ongoing mitigation efforts associated with the original nourishment event; and (c) the proposed sand volume, beach width, and borrow site location for the upcoming nourishment event. The USACE will include in this notification its conclusions as to whether the project remains consistent to the maximum extent practicable with the enforceable policies of the CCMP.

<u>Final Monitoring Plans</u>

To continue to work cooperatively throughout the final project planning and construction phases, the USACE will provide, prior to commencement of construction of the initial dredging and nourishment event, a copy of the final Preconstruction Engineering and Design (PED) phase surveys and the monitoring plans, to include those described in Section 4.8.5, to the Commission's Executive Director for review. The USACE will carefully consider all comments by the Commission's Executive Director and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to the construction of this phase. All surveys and monitoring to be conducted in connection with this project are shown on Exhibit 5.

4.8.7 <u>Adaptive Management Program</u>

Adaptive Management is a systematic approach for improving resource management by learning from post-project monitoring outcomes. Adaptive Management focuses on learning and adapting in order to create and maintain sustainable resource systems.

The purpose of the proposed Adaptive Management Program is to the provide flexibility over the 50-year life of the Project to modify/adjust future renourishment events in terms of timing, location, volume, construction methods and other elements of the Project if post-construction monitoring data indicates that Project-related impacts are substantially different (e.g., greater or lesser) that those predicted by the *Integrated Report*. The key steps in the Adaptive Management process are the following:

- Design;
- Implement;

- Monitor;
- Evaluate;
- Assess; and
- Adjust.

Potential scenarios that could trigger an Adaptive Management action include no impacts, impacts are larger than expected, impacts are smaller than expected, higher erosion in the project area, slower erosion in the project area, climate change and sea level rise beyond maximum predicted levels.

The key actions that the USACE will use in the implementation of the Adaptive Management Program include the following:

- Monitor biological resources and monitor beach widths;
- Coordinate with State and Federal regulatory agencies including CCC, USFWS, CDFW to review monitoring data;
- Utilize the resulting data systematically for learning and improvement and,
- Adjust future renourishment events based on monitoring program findings.

5 CONSISTENCY WITH PROVISIONS OF THE CALIFORNIA COASTAL ACT

5.1 Previous Coastal Commission Recommendations

The USACE previously submitted a CD for the Encinitas–Solana Beach Coastal Storm Damage Reduction Project on 28 December 2012 and it was voted on at the July 2013 hearing in Ventura County following time extensions granted by the USACE to allow Commission staff added time to review the project. The previous CD recommended plans SB-1A and EN-1A, with 200-ft and 100-ft beaches respectively. The Coastal Commission objected to those plans as not fully consistent with the CCMP.

The Commission found that the project previously proposed was not the Least Environmentally Damaging Feasible Alternative under the Coastal Act, and would not be consistent with the marine resources, beach nourishment, and dredging and filling policies of the Coastal Act (Sections 30230, 30231, and 30233).

The Commission found that without modifications to the project to reduce sand volumes and beach widths, to avoid covering reefs that generate iconic surf spots, to provide for Commission review of future nourishment events, to provide for Executive Director review of final shoreline and surfing monitoring plans prior to the start of project construction, to provide for annual submittal of ongoing shoreline and surfing monitoring reports to the Executive Director, to ensure that shoreline and surfing monitoring will occur in the geographical area between the Encinitas and Solana Beach nourishment segments to document potential project impacts from downcoast movement of sand, and to make all efforts practicable to schedule beach nourishment activities outside the peak summer recreation season, the project would not be consistent with the public access and recreation policies of the Coastal Act (Sections 30210, 30211, 30212, 30213, and 30220).

The Commission found that without additional Native American consultation to confirm that the construction of the sand berm at Moonlight State Beach would not affect the listed archaeological site, and without Native American monitoring of the site during berm construction and sand placement, the project would not be consistent with Section 30244 of the Coastal Act, which requires reasonable mitigation measures for impacts to archaeological resources.

The Project addressed by this CD responds to the Commission's concerns regarding the previous proposal. Each relevant resource policy is addressed below.

5.2 Marine resources/beach nourishment/dredging and filling

Sections 30230 and 30231 of the Coastal Act require the protection of marine resources and biological productivity. These sections provide:

Section 30230. Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231. The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of groundwater supplies and substantial interference with surface water flow, Section 30233(a) of the Coastal Act applies to dredging and filling activities and provides in relevant part:

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following: …

(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

Section 30233(b) encourages beach replenishment, requires disposal to occur in a manner protecting sensitive habitat, and provides:

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems.

Previous Coastal Commission Finding. The Commission found that the project did not sufficiently minimize and avoid adverse impacts to marine resources, and did not include measures necessary for protection of marine resources throughout the life of the 50-year project

Project Modifications. The Project has been modified to smaller beach widths with reduced sand volumes in both segments. Additionally, modifications to the monitoring programs have been included. Refer to **Exhibit 5** for additional details.

5.2.1 Allowable Use

The Commission has historically found beach nourishment using materials dredged from offshore borrow sites to be an allowable use under Section 30233(a)(5), which allows dredging and filling for mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas. Moreover, Section 30233(b) encourages beach nourishment whenever dredge material is suitable, and material being dredged for the sole purpose of replenishing beaches is inherently suitable for use (assuming, as is the case in this consistency determination, it tests free of contaminants and is predominantly sand sized material). The borrow sites offshore of Encinitas and Solana Beach are not environmentally sensitive areas, as there is no hard-bottom habitat or kelp forests within the borrow site footprint. The sandy bottom habitat in those areas does support important but common and widespread populations of benthic and invertebrate species, and impacts to these resources from the proposed project, and mitigation for those impacts, are examined later in this section of the report. The beach disposal sites are also not environmentally sensitive areas, as they do not presently support Western snowy plover or California least tern nesting due to the lack of suitable sandy areas for such activity; these species may forage in offshore waters adjacent to the beach segments proposed for nourishment. There are no sensitive plant species that inhabit these shoreline reaches. The dredging and nourishment project is an allowable use under Section 30233(a)(5).

5.2.2 Alternatives

As described above, the USACE considered a wide range of alternatives, including both structural and non-structural alternatives:

1. No Action. No Federal project would occur, and the assumption is made that existing seawalls would be maintained; that public infrastructure and private property will continue to be

threatened, and in response, public agencies and private homeowners will continue to be granted permits to build new seawalls, as the Coastal Act requires; and most of the project area shoreline will be armored within 20 to 30 years in an inefficient uncoordinated process after significant loss of land.

2. Managed Retreat. The USACE does not have the statutory authority to implement such a program; in addition, the high cost of real estate in the project area would make implementing this alternative impracticable and infeasible.
3. Beach Nourishment (proposed). Alternate widths were developed in 50-foot increments up to an increased width of 400 feet.
4. Structural Measures. The USACE examined emergent breakwaters, submerged breakwaters/artificial reefs, groins, notchfills (filling toe notches and seacaves at the base of bluffs with engineered concrete), seawalls, and revetments, and concluded that these alternatives were not feasible and were more damaging than beach nourishment or hybrids.
5. Hybrid – Beach Nourishment and Notch Fill. The USACE examined a combination of narrower nourishment and notch fill to prevent erosion during periods between nourishment events.

In terms of alternatives within the category of beach nourishment, the USACE considered a wide range of beach widths and nourishment cycles, and further analyzed the following viable alternatives:

Encinitas:

- EN-1A Beach Nourishment (100-ft beach renourished every 5 years)
- EN-1B Beach Nourishment (50-ft beach renourished every 5 years)
- EN-2A Hybrid (100-ft beach renourished every 10 years and notchfill)
- EN-2A Hybrid (50-ft beach renourished every 5 years and notchfill)
- EN-3 No Action

Solana Beach:

- SB-1A Beach Nourishment (200-ft/300-ft beach renourished every 13-14 years)
- SB-1B Beach Nourishment (150-ft/300-ft beach renourished every 10 years)
- SB-1C Beach Nourishment (100-ft/300-ft beach renourished every 10 years)
- SB-2A Hybrid (150-ft beach renourished every 10 years and notchfill)
- SB-2A Hybrid (100-ft beach renourished every 10 years and notchfill)
- SB-3 No Action

In addition, the project alternative selected for each location is described in the *Integrated Report* under low sea-level rise and high sea-level rise prediction scenarios, which results in different predicted rates of erosion, fill volumes, and the design of each alternative. The *Integrated Report* states in Section 3.2.4 that:

It is important to understand the potential consequences of the necessary design adaptation should either of the scenarios be realized. The current and historical trends for sea level rise that have been recorded, as described in Appendix B, align with the low sea level rise scenario predictions. Consequently it is the low sea level rise scenario design in each alternative that, at the time of writing this report, is the assumed 2015 'base scenario' for design. Should high sea level rise scenario predictions become evident during the course of the project, adaption of the design to the high sea level rise scenario would be implemented. To achieve that adaption the higher renourishment volumes would be implemented if, or when, any recalibration of sea level indicated the high sea level rise scenario was in evidence. The descriptions herein and the analysis in Section 5.0 of this Integrated Report provide comparable levels of *information such that the consequences of the alternatives under either scenario can be effectively considered and compared. As with each of the other alternatives, should the switch to high sea level rise be necessary during the life of the project, renourishment would simply implement the volumes for the high sea level rise scenario from the time the switch is made.*

The USACE previously recommended SB-1A and EN-1A and addressed them in its December 2012 Consistency Determination, as these were the most optimal plans and the Least Environmentally Damaging Practicable Alternatives (LEDPA) under the Clean Water Act. However, based on the Commission's assessment that the plans did not constitute the least environmentally damaging feasible alternatives under the Coastal Act (a different analysis), the USACE has changed its proposed Project to consist of SB-1B and EN-1B. These alternatives provide reduced volumes of sand placement, reduced beach widths, and corresponding reductions in coastal storm damage reduction benefits. The selection of SB-1B rather than 1A reduces the potential impact to nearshore habitat in the Solana Beach segment.

It should be noted that by reducing the size of the proposed Project in both Segments 1 and 2, there are consequences to the amount of storm damage risk reduction provided by the project. This has impacts on the amount of life safety risk as well as storm damages to infrastrucuture. In Coastal Storm Damage Reduction projects, an important comparison tool is the residual risk that is estimated for each alternative. The components of risk for this project are shown below:

- **Life Safety Risk**
  - A relative assessment of injury and death that could occur from bluff collapse. It includes 1) the chance of bluff collapse and 2) the injury/death that could occur as a result. Important factors that influence life-safety risk are the likelihood of bluff collapse and the "safe" beach area away from the bluff available to recreate. Lower life-safety risk is preferable and, all else equal, larger nourishments that occur more frequently should reduce life safety risk.
  - ***EN-1B has higher life safety risk than EN-1A.***
  - ***SB-1B has higher life safety risk than SB-1A.***
- **Residual Coastal Storm Damage (%)**
  - The amount of damage that is expected to continue occurring with the respective plan constructed. It is shown relative to the damage that is expected to occur if no action is taken. In other words it conveys how much land loss, seawall armoring, and structure & other loss would occur compared to taking no action. A lower percentage is preferable because that indicates there would be less bluff collapse and a reduction in life safety risk (i.e., improved safety). In addition to less frequent bluff collapse, a lower percentage indicates there would be less land loss, fewer seawalls constructed, fewer structures at risk of collapse, and less public infrastructure damaged.
  - ***EN-1A reduces coastal storm damage significantly compared to taking no action, with a residual coastal storm damage of 32%. EN-1B, has a much higher residual risk of 62%.***
  - ***SB-1A reduces coastal storm damage significantly compared to taking no action, with a residual coastal storm damage of 45%. SB-1B has a higher residual risk percentage of 56%.***

Beach widths along the Encinitas and Solana Beach shorelines have varied substantially over time and still vary according to the wave climate, tides and the seasons (e.g. beaches are wider in summer and more narrow in winter). The beaches are reported to have been wider in the 1970's, and lost much of their sand during the 1982-83 El Nino storms. As documented in **Figure 4.8-1** and **Figure 4.8-2**, the proposed mean beach profile is compared to the project without project profile. Also, shown is the envelop around the extensive profile monitoring undertaken by USACE, SANDAG and the Cities between 1983 and 2010. The label on the Figure ("Historic Maximum Sand Level (1983-2012)") represents the highest sand level along the project for this time period.

The width additions presented in the Project are defined at Mean Sea Level (MSL), meaning that it does not represent a dry beach width. In the most recent beach profile monitoring report (prepared by Coastal Frontiers covering the period Fall 2000 to Fall 2012), MSL beach widths at Moonlight in Encinitas have ranged from 124 feet to 271 feet. The Segment 1 (Encinitas) target MSL width is 160 feet. For Encinitas Segment 1, the Project mean profile is within the 1983-2010 envelop of measured profiles.

For Segment 2 (Solana Beach) the target MSL is 220 feet, the beach profile monitoring report (Coastal Frontiers covering the period Spring 1996 to Fall 20111) shows MSL widths at Fletcher Cover has ranged from 90 to 171 feet. For Solana Beach Segment 2, the Project mean profile is slightly above the 1983-2010 envelop.

5.2.3 Habitat

The project area includes sandy beaches, beach areas with cobble coverage or exposed bedrock, sandy nearshore subtidal areas (broken down in the project area into the littoral zone to -30 feet mean lower low water (MLLW), an inner shelf zone to -80 feet MLLW, and a small portion of the middle shelf zone beyond -80 feet MLLW), and hard-bottom and vegetated habitats which include rocky intertidal shores and nearshore reefs supporting surfgrass beds and kelp forests, including nearshore reefs at Table Tops at the northern end of the Solana Beach segment.

The 2002 SANDAG seafloor mapping provides the best available comprehensive data of nearshore habitat and quantitative estimates of the vegetative indicator species in the study area (**Figures 5.2-1** thru **5.2-3**). Those data include acreage estimates for various habitat types: surfgrass, giant kelp (kelp canopy), and understory algae. The understory category includes several species, including feather boa kelp and sea palm indicators. Indicator species were selected in coordination with resource agencies to be consistent with previous reef characterization surveys and monitoring conducted in the study area (US Navy 1997a, b; MEC 2000b, AMEC 2005). The indicators represent dominant species that are sensitive to varying degrees of sand scour and sedimentation, as follows:

- Persistent indicator species considered relatively sensitive to sand scour and sedimentation (sea fans, giant kelp).
- Persistent indicator species considered relatively tolerant of some sand influence (surfgrass, sea palm).
- Opportunistic indicator species considered relatively sand tolerant (feather boa kelp).

The federal- and state-listed endangered California least tern is known to nest at Batiquitos Lagoon (north of Encinitas) and San Elijo Lagoon (north of Solana Beach), although no nesting has occurred at the latter site since 2005. Nesting at San Dieguito Lagoon was observed for the first time in 2013 since the lagoon was restored in 2008. Least terns forage in nearshore waters as far as five miles away from their nesting sites, although they generally remain within one mile. The federal-listed threatened Western snowy plover is known to nest at Batiquitos and San Elijo lagoons and forage along the shoreline north and south of the proposed receiver beaches at Encinitas and Solana Beach, including Cardiff State Beach.

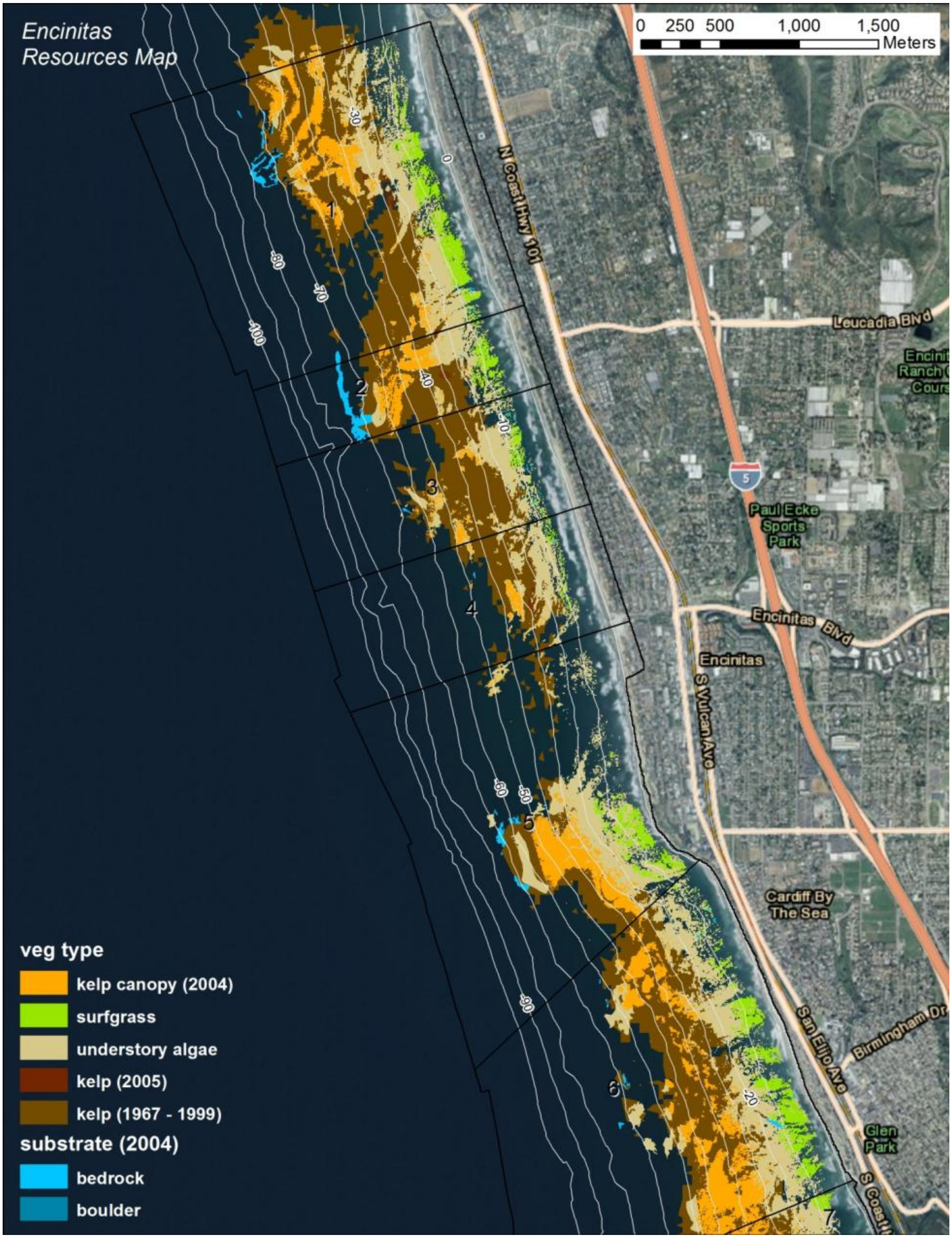


Figure 5.2-1 Nearshore hard-bottom resources mapped offshore the Encinitas study area

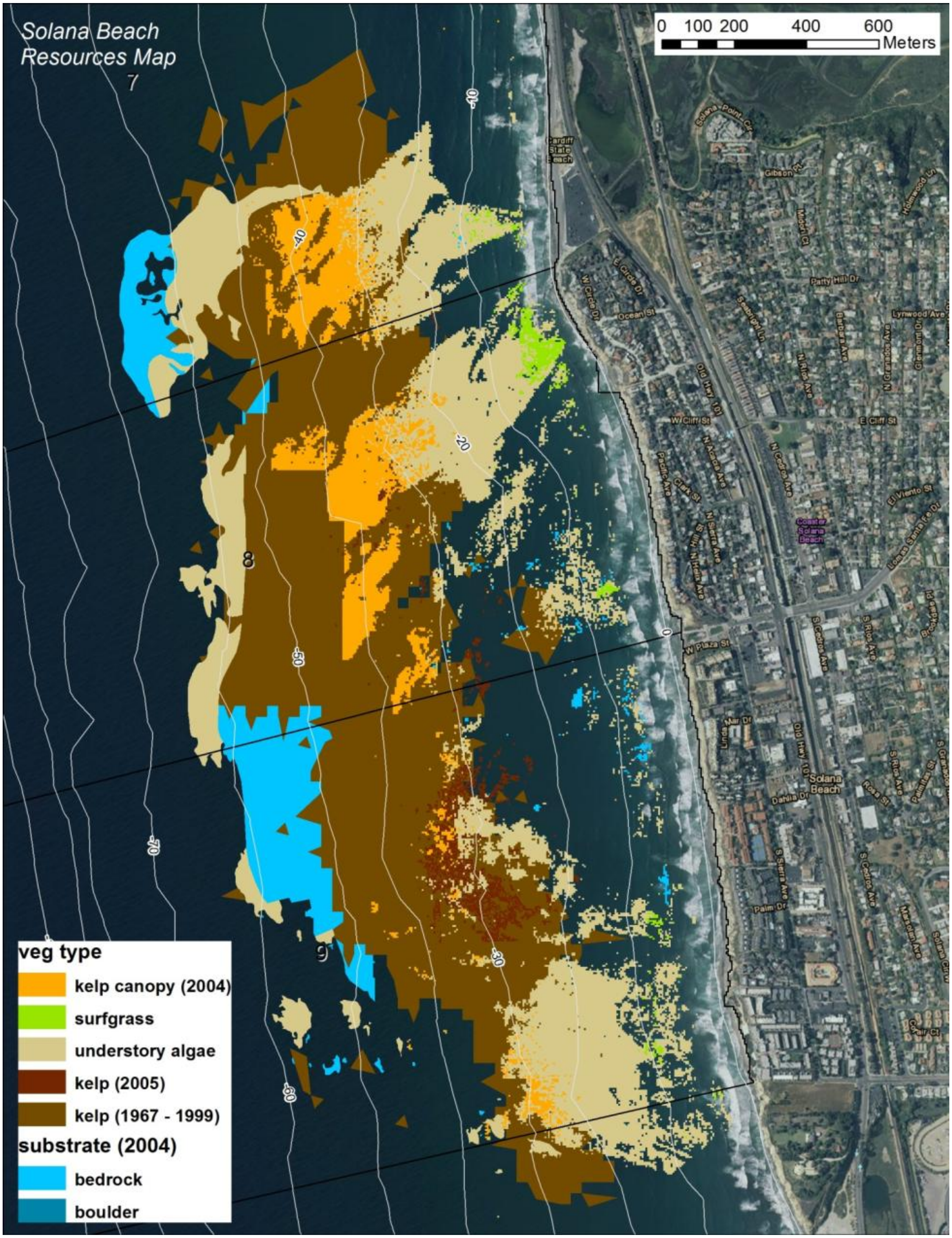


Figure 5.2-2 Nearshore hard-bottom resources mapped offshore the Solana Beach study area

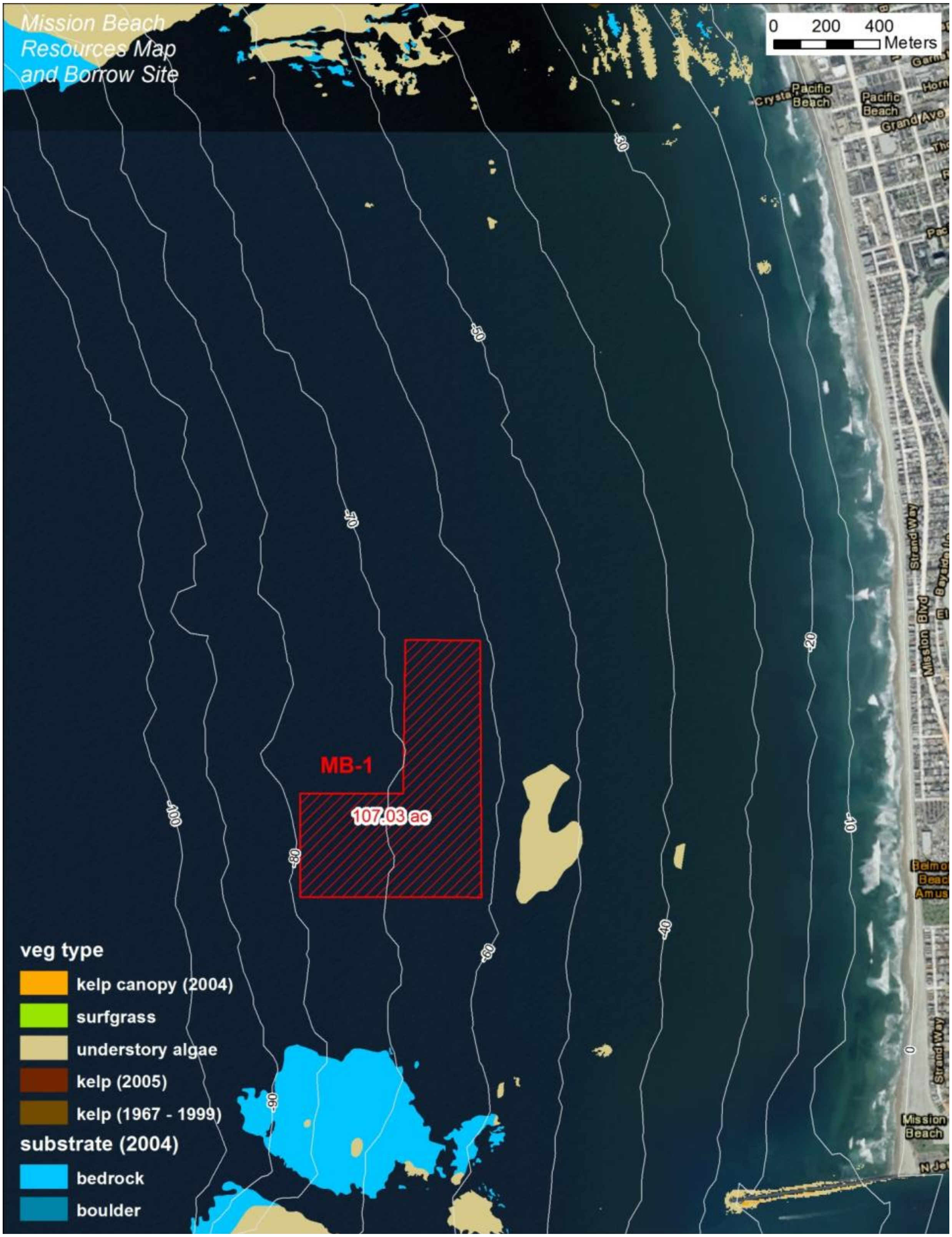


Figure 5.2-3 Nearshore hard-bottom resources mapped offshore Mission Beach and Borrow Site MB-1

Swami's State Marine Conservation Area (SMCA) was designated under the Marine Life Protection Act and is located in the offshore area from southern Encinitas to San Elijo Lagoon. Dredging within this SMCA for beach nourishment is allowed under the Marine Life Protection Act, subject to state and federal regulatory approval as noted in the relevant State regulations below (emphasis added):

Title 14, CCR, Section 632 (b) (138) Swami′s State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:

33° 02.900′ N. lat. 117° 17.927′ W. long.; 33° 02.900′ N. lat. 117° 21.743′ W. long.; thence southward along the three nautical mile offshore boundary to

33° 00.000′ N. lat. 117° 20.398′ W. long.; and 33° 00.000′ N. lat. 117° 16.698′ W. long.; thence northward along the mean high tide line onshore boundary to

33° 00.962′ N. lat. 117° 16.850′ W. long.; and 33° 00.980′ N. lat. 117°16.857′ W. long.

(B) Take of all living marine resources is prohibited except:

1. Recreational take by hook and line from shore is allowed.

2. The recreational take of pelagic finfish [subsection 632(a)(3)], including Pacific bonito, and white seabass by spearfishing [Section 1.76] is allowed.

3. Take pursuant to activities authorized under subsection 632(b)(138)(C) is allowed.

(C) Beach nourishment and other sediment management activities and operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

The SO-6 offshore borrow site included in the Project is located in the extreme southeast corner of the Swami's SMCA and has been used previously as a borrow site for RBSP 1 (2001) and RBSP 2 (2012).

5.2.4 Impacts and Monitoring

The *Integrated Report* examines potential direct and indirect project impacts on the offshore borrow sites, beach receiver sites, sensitive species, and essential fish habitat.

Direct impacts from dredging at the borrow sites would include removal of sediment and associated organisms, while construction at the receiver sites would result in burial impacts to marine biota; however, these impacts are considered short-term and localized. Due to the relatively small area affected, and the widespread occurrence and relatively rapid recovery rates of marine invertebrates, direct impacts to marine invertebrates within the borrow and receiver sites are expected to be less than significant. Receiver site construction may also potentially impact grunion spawning; however habitat suitability surveys and construction monitoring would minimize impacts to the species. Restoration and maintenance of stable, wide beaches would be expected to enhance grunion spawning habitat as well as general sandy beach habitat.

Indirect effects associated with removal on the forage base for other animals, and indirect effects associated with operation of the dredge equipment such as increased turbidity and noise are also considered short-term and localized and less than significant. However, there is the potential for sand introduced into the system to indirectly impact sensitive habitats and resources if sand deposits on those resources occur at sufficient depth and persistence to result in burial or degradation of those resources.

For Solana Beach, sediment transport modeling estimates indicate a potentially significant impact to intertidal reef platform and reefs with other indicator species for all alternatives in the final array considered. The modeling identified that approximately 6.8 acres nearshore reef habitat would be adversely affected at the end of Year 2 after initial nourishment. No impacts to reefs supporting surfgrass were predicted. The need for renourishment would be based on the equilibrium beach width that would be implemented, thus no additional impacts are anticipated from renourishment. Any impact to nearshore resources would be expected during the initial beach fill as all subsequent nourishments would occur in the same footprint and would be a reduced volume relative to the initial fill. In addition, an adaptive monitoring program is proposed for the project to also account for potential cumulative effects associated with other beach nourishment activities (e.g., opportunistic programs, lagoon maintenance, and the SLERP [San Elijo Lagoon Restoration Project]).

While the analysis relies on modeled impacts, actual impacts would be assessed by implementation of a construction monitoring program using established and agreed-upon methods, including use of control sites. Mitigation for indirect nearshore impacts would be triggered if certain conditions occur during, and persist through, the two year post-construction monitoring period. Because the monitoring program will be used to assess and evaluate actual impacts, some temporal loss of habitat, if impacts were to occur, is unavoidable. Recovery of impacted habitats may also occur as sand is redistributed within the littoral cell; some observed burial of reef or surfgrass habitat would be temporary because sand would be expected to move out of the project area. The two-year post-construction period was established in coordination with the National Marine Fisheries Service and the California Department of Fish and Wildlife to allow sand to equilibrate in the study area.

The general approach for assessing impacts is similar to that used to identify potential project-related impacts to eelgrass as per the Southern California Eelgrass Mitigation Policy (SCEMP; NMFS 1991) and the monitoring protocol used for the RBSP [Regional Beach Sand Project] (Engle 2005). The project area and control site(s) will be surveyed prior to construction, and two years following construction. Given the relatively high natural variation, multiple control sites will be sampled. Potential control areas, chosen for their similarity to potential impact sites, in the general project area include North Carlsbad (in the vicinity of Tamarack Boulevard) and South Carlsbad (north of Palomar Airport Road). Pre-construction (baseline) areal coverage will be compared to Year 2 (post-construction) areal coverage, taking into account any natural variation at control areas to identify potential project-related impacts.

The expected monitoring schedule includes:
Pre-construction baseline monitoring (year prior to construction):

- Spring Survey
- Fall Survey

Post-construction (two years following construction):

- Spring Survey
- Fall Survey

During the consideration of the previous CD, the Los Penasquitos Lagoon Foundation (LPLF) expressed concerns in a letter to the Coastal Commission, dated July 8, 2013, about possible impacts to the lagoon mouth from the Project and requested monitoring, although it had provided no comments to the USACE during the public notice period for the *Integrated Report* for the Project. The lagoon is five miles from the southern edge of the project area and is already subject to monitoring by the San Diego Association of Governments (SANDAG). However, discussion with SANDAG staff has led the USACE to include monitoring at up to two additional transects as part of project monitoring unless SANDAG incorporates them into their regional shoreline monitoring program first. This monitoring will be conducted in conjunction with the SANDAG monitoring and the Project habitat monitoring and is included in the project description above. The initial fill volume is not projected to restrict the lagoon entrance.

Unanticipated closure of Los Penasquitos Lagoon as a result of the Project would trigger adaptive management provisions.

At the same time, the proposed project would benefit marine resources, in addition to protecting public facilities, residences, and the public using the beach. Construction of a wide sandy beach where none currently exists would provide habitat for invertebrates, grunion, and bird species, and would reduce the demand for shoreline armoring which in turn would lead to the protection of more natural coastal processes and habitat formation.

5.2.5 Mitigation

The Project, as described above, avoids direct impacts to nearshore habitat, and it includes mitigation for indirect burial of nearshore rocky reef habitat in the Solana Beach segment, in accordance with a biological monitoring and mitigation plan. While the Project cannot reasonably avoid all indirect impacts to sensitive nearshore habitat while reducing coastal storm damage reduction and increasing life safety, the impacts are reduced under the revised Project compared to the previously proposed Project, and feasible mitigation measures are included. Mitigation will be based on the results of the monitoring program.

If post-construction monitoring identifies impacts attributable to the project, rocky reef mitigation would be conducted at a 2:1 functional equivalent to the area of reef affected as discussed in Appendix H of the *Integrated Report*.

Mitigation would be implemented in the project area at sites to be determined in consultation with the resource and regulatory agencies. Since potential impacts were identified under all action alternatives for Solana Beach, potential mitigation areas offshore of Solana Beach were identified (approximately 26 acres) and include areas that consist primarily of sandy bottom habitat, see **Figure 5.2-4**. No estimated impacts were predicted for Encinitas, and therefore no potential mitigation areas were identified offshore of Encinitas.

Reef habitat mitigation shall consist of shallow-water, mid-water, or deep-water reef, with mid-water reef prioritized as most similar to the reef impacted by the Project. Shallow water reef would be used for any surfgrass mitigation, mid-water reef would be located inshore of the existing kelp beds, and deep-water reef would be located offshore of the existing kelp beds.

Mid-depth reef would be constructed at sites shown on **Figure 5.2-4** at approximately -30 ft MLLW and is the preferred reef mitigation as it is closest to in-kind replacement. Mid- and deep- water reef shall be constructed similar to the SCE [Southern California Edison] Wheeler North Reef constructed as mitigation for the impacts of the San Onofre Nuclear Generating Station.

Deep water reef would be constructed at approximately -40 ft MLLW along the outside edge of the existing reefs. Mitigation using a deep water reef is proposed at a 1.5:1 functional equivalent owing to the higher habitat value for deep water reefs and easier construction in deeper water that is closer to the SCE Wheeler North Reef. This reef would only be constructed if insufficient area of mid-depth reef were available to fully mitigate for observed losses to rocky reef habitat.

In the event of surfgrass impacts and associated mitigation, shallow-water reef would be constructed inshore of the mid-depth mitigation sites shown on **Figure 5.2-4** in water shallow enough to support surfgrass. The top of the constructed mitigation reef would be at a final top elevation of -10 to -14 ft MLLW and deep water reef would be constructed at approximately -40 ft MLLW along the outside edge of the existing reefs. Shallow-water reef shall be constructed with a final top elevation of -10 to -14 ft

MLLW. Construction of a reef that is shallower than that is not proposed because construction methods would not be practical (e.g., a barge with the reef construction materials would not be able to operate in very shallow water). Although the surfgrass mitigation reef would be deeper than the impacted area, if surfgrass transplants are successful, the slightly deeper reef would replace the lost surfgrass resource.

Although several studies currently are being conducted to determine how to successfully transplant surfgrass and may show potential for success, success rates to date have not been consistent (Reed and Holbrook 2003, Reed et al. 1999). Due to the absence of an established, successful method for mitigation of surfgrass loss, proposed mitigation currently is focused upon restoration of the rocky reef that surfgrass currently uses as habitat. However, as previously described, if it is determined that surfgrass has been affected by the project and a change is shown not to be due to natural variation, an experimental surfgrass transplant shall be implemented. If the in-kind surfgrass mitigation is unsuccessful, as further described in the *Integrated Report* and consistent with the MMP, the USACE would proceed to out of kind mitigation after providing the approach to the Executive Director and considering any comments.

The mitigation for nearshore impacts after the first nourishment event would provide permanent mitigation for any recurring temporary impacts to those resources. Initial fill volumes are substantially larger than renourishment events. Impacts from renourishment events are primarily ones of maintenance and are not new impacts. Maintenance impacts are the continuance of impacts from the original fill event rather than allowing the area to recover following a one-time nourishment event.

The final mitigation and monitoring plans will be prepared during the pre-construction engineering design phase of the project in consultation with resource and regulatory agencies. If mitigation is implemented, mitigation monitoring would also be conducted.

The USACE finds that the proposed project is consistent with the marine resources, beach nourishment, and dredging and filling policies of the Coastal Act (Sections 30230, 30231, and 30233).

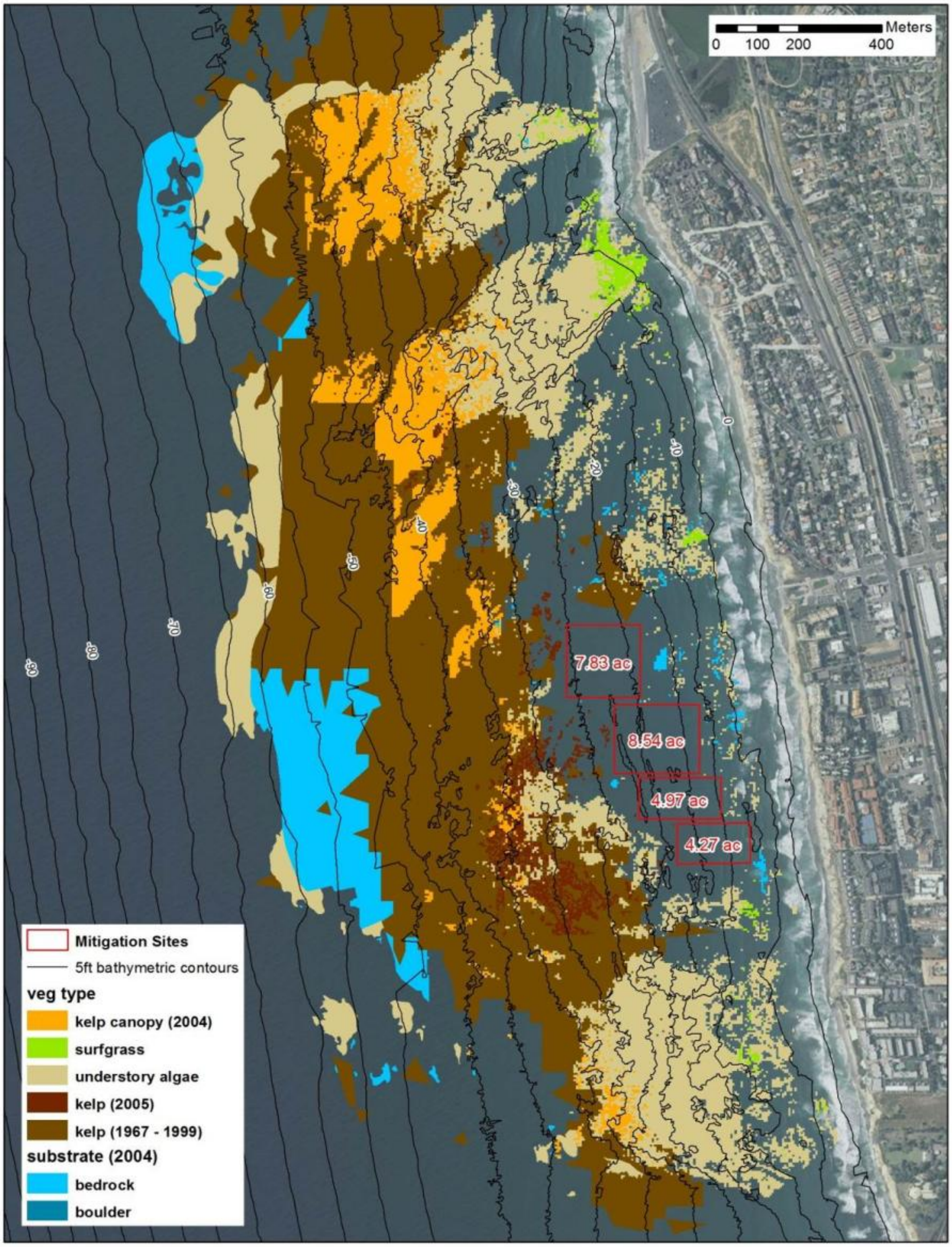


Figure 5.2-4 Potential mitigation areas off Solana Beach

5.3 Public Access and Recreation

Sections 30210, 30211, 30212, 30213, and 30220 of the Coastal Act require the protection of public access and recreation. These sections provide:

Section 30210:
In carrying out the requirements of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners and natural resource areas from overuse.

Section 30211:
Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Section 30212:
(a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where:
(1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources,
(2) adequate access exists nearby . . .

Section 30213:
Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.

Section 30220:
Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.

Previous Coastal Commission Finding. Notwithstanding the project benefits to public access and recreation, the Commission previously found that that the project holds the potential to adversely affect public access and recreation due to ocean water turbidity increases during sand placement, construction staging activities at shoreline locations, and the proposed construction schedule. The Commission also found that a project should reduce sand volumes and beach widths, avoid covering reefs that generate iconic surf spots, and provide for Commission review of future nourishment events.

Project Modifications. The USACE's Project has a reduced the volume of fill and narrower beach widths compared to the previously proposed project. It incorporates a Surfing Monitoring Plan, consistent with the Surfing Monitoring Plan it designed for the San Clemente Project, into this project. This plan would be submitted to the Executive Director for review. It also incorporated the following into its project description:

(1) submittal of the final turbidity monitoring plan to the Executive Director for review prior to the start of project construction;

(2) submittal of a revised construction staging plan to ensure that (a) staging will avoid public beaches; (b) the minimum number of public parking spaces (on and off-street) that are required for the staging of equipment, machinery, and employee parking that are otherwise necessary to implement the project will be used; and (c) staging will avoid using to the maximum extent feasible public beach parking lots, but

when the use of these lots is unavoidable to implement the project, only the minimum amount of space in these lots will be used;

(3) submittal of the draft construction calendar to the Executive Director for review, which will include every practicable effort to schedule beach nourishment activities outside the peak summer recreation season in order to minimize project impacts on public access and recreation.

The plan further includes submittal of monitoring reports to the Executive Director, and submittal prior to each renourishment event of the USACE's assessment of previous monitoring reports and conclusions about the continuing consistency of the Project. In the event that the Commission identified that impacts to surfing or other protected resources were substantially different than anticipated, the Commission could recommend remedial action or recommend that the Corps prepare a supplemental consistency determination to identify whether the project remains consistent.

5.3.1 Project Area Access and Recreation Resources.

Ongoing beach erosion results in reduced recreational use of the shoreline and hazards to visitors due to wave attack at the base of the bluffs and the proximity of visitors to the bluffs on narrow beaches. One of the planning objectives used by the USACE to direct formulation of project alternatives is the need to:
Reduce coastal erosion and shoreline narrowing to improve recreational opportunities for beach users within the study area throughout the period of analysis.

In addition, the planning constraints specific to the selection of a proposed project are:

- No adverse impacts to the aesthetics along the shoreline.
- Maintain public access to the beach.
- Preserve the recreational opportunities within the study area.
- Preserve the environmental resources within the study area.

The beaches in the project area are heavily used year-round, with more than 2.8 million visits in 2012. Recreational opportunities are facilitated by a series of state, county, and local parks that provide public access to the shoreline and a variety of recreational opportunities, including beachgoing, sightseeing, surfing, body-boarding, snorkeling, tide-pooling, fishing, and skin and SCUBA diving. However, recreational use of the shoreline is currently limited by the narrow beaches, wave run-up that limits access during high tides, cobble and exposed sandstone rather than sandy beaches, and hazards from potential bluff collapse.

The beaches in the project area have been severely eroding since the 1980s. While the primary purpose of the project is to reduce coastal storm damage from wave attack at the base of the bluffs and subsequent bluff failure, the sand nourishment of the two shoreline segments in Encinitas and Solana Beach will concurrently enhance and protect public access and recreation by expanding the width of the sandy beaches, allowing beachgoers to recreate further seaward of eroding bluff faces, and reducing the need for additional armoring along these shoreline segments. The additional sand placed on the two shoreline segments would not result in conditions that exceed the historic beach profile conditions and would thereafter become part of the natural variable littoral system.

The Project addresses potential adverse effects on public access and recreation, including construction activity timing, construction equipment placement, and short term turbidity. It further assessed possible changes to surfing sites.

5.3.2 Surfing Impacts.

The *Integrated Report* examined the surfing resources of the project area and the potential impacts from beach nourishment on surfing. Detailed descriptions of individual surfing sites are provided in Appendix B of the *Integrated Report* and are classified geographically as located north of the Encinitas receiver site, within the Encinitas receiver site, between the Encinitas and Solana Beach receiver sites, within the Solana Beach receiver site, and south of the Solana Beach site. The *Integrated Report* states that:
Each reef break within the study area was analyzed with respect to Project induced changes in sedimentation. If a beach fill alternative fills in the low areas around a naturally high relief reef, this can change the way the wave breaks over the reef. A silted in reef can make a reef break behave more like a beach break, with lower breaking intensities, shorter ride lengths, lower peel angles, and more closed out conditions. For the beach nourishment options and sea level rise scenarios, changes are likely at some of the reefs.

No significant adverse impacts to surfing would occur with project implementation. The wave/surfing modeling in the *Integrated Report* concluded that the potential exists for noticeable change at 4 of 21 surf breaks studied after Year 2 following project implementation. These changes were not determined to be adverse, and generally involve a transition to beach breaks from reef breaks for smaller waves.

The *Integrated Report* next reviewed the expected changes from the project to surf spots within and adjacent to the nourishment sites. Below are conclusions from the *Integrated Report* for several of the more iconic surf spots in the project area:

<u>Stone Steps</u>
There are conflicting reports on whether Stone Steps is a reef or beach break. WannaSurf.com and Surf-Forecast.com state that it is beach break, but with specific break locations during large swells. It is likely that this is a typical reef-beach break with rights and lefts. From the bathymetric contours it seems that whatever reef does exist is low relief. The surf site is not as clearly defined as a classical reef break since it is generally low relief. Peaks are more shifty, similar to a beach break, but there may be some reef focusing effect from the subtle variation in bottom contours. Bottom contours are mostly straight and parallel. The nearest profile is SD-675. The total profile volume is greater than the profile volume standard deviation, so measurable Project induced changes to surfing at this reef are likely. Thus, this surf site would be expected to behave more like a beach break under the alternatives analyzed. As reefs change to more like beach breaks, the reef effect is expected to be reduced as it becomes buried by sand. For beginning surfers, who generally go straight towards shore and do not take advantage of the peeling breakers along reefs, there would be very little change to their surfing experience at Stone Steps. For other surfers, the change would likely result in reduced peel angles, more closeouts, reduced section lengths, shorter rides, and reduced surfability.

<u>Swamis and Boneyards</u>
Swamis is the premier surf site within the project domain. The wave peels right over a bedrock reef for up to ¼ mile during large swell. The outside reef is known as Boneyards and only breaks during the largest west swells. During smaller days, a few lefts can be found. The breaking intensity is normally semi-hollow but can be mushy during south swells and during higher tides (Cleary and Stern, 1998). Since this is a well defined reef break, with waves breaking near the same location with regularity, it is possible to determine the peel angle and ride length. An analysis of four aerial photographs spanning 2003 through 2009 revealed peel angles ranging from 52 to 65 degrees with the median being 53 degrees and ride lengths from 170 to 980 feet. The peel line and wave crests for a long period west swell occurring on January 3, 2006. Surfers can be seen floating just to the south and west of the whitewash. Typical of shallow areas with broken waves, the LiDAR measured elevation contours reveal no data over

the reef and in the surf zone, so detailed wave transformation is not possible here. The deep water wave energy polar spectral plot is provided by CDIP (2011) at the 100 Torrey Pines gage for the condition shown in the figure. The year two, Project induced net change in profile volume under all alternatives analyzed are less than the profile volume standard deviation, so Project induced changes to surfing at this reef are not likely.

Table Tops

Table Tops is a hollow right reef break and is best represented by profile SD-610. The total profile volume is greater than the profile volume standard deviation, so measurable reef changes are likely. If this surf site were measurably changed to more like a reef-beach break, it is expected that the reef exposure above the sandy bottom would become less pronounced and the break would become somewhat less hollow, with lower breaker intensities. This could be considered an improvement for intermediate surfers, but would likely be a detriment to more advanced surfers. If the sand thickness were further increased, the reef could become completely buried, changing the surf site to a beach break. If this were to occur, the rather unique albeit fickle nature of this surf site would be lost, changing it to yet another beach break. Since this is currently an advanced surf site and it is far from shore, beginning surfers are not likely to attempt this surf site and would not experience any change to their surfing experience. For other surfers however this would likely result in more closeouts, shorter rides, and reduced surfability.

Pillbox & Southside

Pillbox is a right-peeling reef-beach break and the surf spot called Southside is a leftpeeling reef-beach break. These surf sites are best represented by profile SD-600. The total profile volume is greater than the profile volume standard deviation, so measurable reef changes are likely. With the added sand these two surf sites would become more like beach breaks, reducing their reef tendencies. Beginning surfers would not likely experience any change to their surfing experience, but for other surfers this would result in more closeouts, shorter rides, and less surfability.

The *Integrated Report* summarizes the overall expected impacts from beach nourishment on surfing in the project area:

- The locations of the break point of surfsites are expected to move seaward proportional to the amount of beach widening.
- Most waves at beach breaks that would have been surfable prior to project implementation would still likely be surfable after implementation.
- An overall reduction in backwash as a result of beach nourishment combined with sea level rise would likely result in an increase in the frequency in which a site would be surfable.
- Changing a surf site from a reef break to more of a beach break could reduce the surfing frequency.
- The overall frequency of surfable waves within the study area is not expected to change significantly.

The *Integrated Report* then concludes that the proposed project will affect reef break surfing but that these impacts will not be permanent or significant:

The project could add a relatively large sand volume to the system over a short time frame, thereby modifying existing sandbars and reefs by changing bottom conditions at the receiving beach sites as well as nearby beaches. Addition of sand to a beach break can steepen the nearshore beach profile, which can result in waves that closeout rather than peak on a more shallowly sloped nearshore bar. This impact could be adverse and significant if surfing is precluded by sand deposition causing waves to closeout over a long period of time (months) or result in a perpetual shorebreak at the beach rather than a nearshore bar for waves to break over. Shorebreak or closeout conditions may exist over a temporary short-term period while the sand is naturally redistributed over the bottom. The slight difference in grain size of sand proposed for placement as part of this project and existing beaches is not anticipated to substantially change these processes. Both placement sites are located in proximity to reefs that may be temporarily impacted by sand. Placement of sand at both receiving beaches could result in sand being transported to nearby reef breaks. Some sediment accumulation is anticipated in reef areas; however, natural transport processes continually move sediments through these reef areas under normal conditions. Additional sand placed as part of the proposed project would not substantially alter sand transport patterns in these areas. Some sand may accumulate in localized portions of existing reefs on a seasonal or short-term basis, which could temporarily affect confined portions of existing reef surf breaks. Appendix B9 of Appendix B presents details regarding the potential changes at surf spots in the vicinity of the receiver sites, summarized in Table 5.12-2 below. As described there may be short-term changes to the wave characteristics at individual surf breaks, these effects would be temporary as the sand is naturally distributed, and would not preclude the viability of the breaks. The project may cause potentially beneficial impacts to surfing in some areas by contributing sand to the nearshore that would be deposited in bars throughout the receiving beach cities. More sand in the system provides material for enhanced sandbar formation and may result in larger or longer lasting bars, and improved surfing conditions. Informal qualitative observations regarding changes in surfing conditions after implementation of RBSP I have been offered by various beach users and city representatives. At Beacon's, surfers noted that the reef was temporarily overtopped, modifying surfing conditions for a period (Weldon 2011). Several other locations were noted to have shown improved surfing conditions due to sandbar formation offshore (Gonzalez 2009; Dedina 2010). Permanent impacts would not result from sand placement as bathymetric changes are short term and would ultimately revert to pre-project conditions after a relatively short period. Therefore, implementation of the Alternatives would not preclude the viability of existing or planned land or water activities (including surfing).

The surfing analysis done for the *Integrated Report* demonstrates a change in surfing quality along five key measures but does not conclude the overall impact is beneficial or detrimental. The *Integrated Report* notes that several iconic surf breaks in the project area will be covered in sand, at least temporarily, and as a result the historic surfing experience at those locations will change. However, the USACE determined that the demonstrated change in surfing quality that will occur in the project area as a result of the beach nourishment is neither a beneficial or detrimental impact. Given that this detailed analysis of surfing does not indicate an overall direction from surfing impacts (positive or negative) and given that surfing visits presently make up a relatively small share of total beach visitations to the study area estimated at less than 10% of total visits to the study area shoreline, the overall impact to recreation values from surfing is not expected to affect plan selection if quantified. Further, surfing visits are not expected to increase as much as other recreation visits in the future due to the significant beach-based recreation that would be supported by the project. Consequently, surfing impacts have not been quantified to establish recreation benefits but have been analyzed to develop a qualitative understanding of how surfing could potentially be impacted to aid stakeholders. Surf breaks are expected to change in character in those areas where shallow reefs are covered in sand, but the number of surfing opportunities is not expected to change.

The USACE will implement a surfing monitoring plan, consistent with the surfing monitoring plan developed for the San Clemente Project, to assist in the evaluation of potential project impacts on surfing and which will include:
(a) baseline pre-construction data within the project area and at control sites;
(b) identification of surf areas to be monitored, user groups to be involved in the monitoring, and identification of criteria for determination of significant alterations or impacts;
(c) supplement wave observations with observations of surfing activities;
(d) use of video recordings to augment observer counts and observations;
(e) user data disaggregated into weekday and weekend data;
(f) tabulation of "restricted-use" days when surfing is not allowed; and

(g) establishment of mechanisms to inform local communities about and encourage their participation in the monitoring project. The monitoring plan will be submitted to the Executive Director for review.

The USACE will provide the Executive Director all shoreline monitoring and surfing monitoring reports as they are published. Should these reports indicate that the project has resulted in surfing impacts not anticipated in the *Integrated Report*, the Commission could recommend remedial actions or request the Corps develop a new consistency determination to determine whether the project remains consistent with the access and recreation policies of the Coastal Act, including whether any changes to the project are needed in light of the shoreline and surfing monitoring reports.

The USACE will also extend shoreline and surfing monitoring for the project into the geographical area between the Encinitas and Solana Beach nourishment segments, in order to accurately document potential project impacts on surfing in this area arising from possible downcoast movement of sand placed in the Encinitas segment.

All alternatives considered that include beach fill will have a temporary impact on surfing as does the Project. No alternative completely avoids impacts to surfing while meeting the objectives of the project. The Project as revised includes reduced beach widths and volumes compared to the previously recommended plan. Section 30210 calls for maximum access and recreational opportunities to be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse. The project results in wider beaches that enhance recreational opportunities along this stretch of coastline, and provide for a safer beach recreational experience. Public access would be substantially improved by the Project. The Project provides for maximum access and recreational opportunities consistent with public safety needs.

5.3.3 Project Construction Impacts.

The *Integrated Report* examined potential construction-related project impacts in the Encinitas shoreline segment:

The construction activity at the Encinitas receiver site would continually progress down the beach. Recreational activities such as surfing and fishing, as well as other beach activities would be less accessible during the period of construction. Under both low and high sea level rise scenarios, approximately 150 to 325 ft of the receiver site would be inaccessible to the public around the discharge pipeline and berms. In addition, there would be intermittent restrictions on public access for approximately 540 ft for low sea level rise scenario and 350 ft for high sea level rise scenario on either side of this discharge zone. This space would be needed for maneuvering heavy equipment during construction of the temporary berms and for relocating discharge pipelines. The access restriction would result in a temporary redistribution of beach activities to the adjacent areas, or other portions of this receiver site. However, as the daily construction effort continues to travel down the beach, the public accessibility would also change and only result in temporary construction effects . . . The sections of the receiver site restricted would be relatively small and construction would be managed to accommodate planned activities. Long-term, a beneficial impact would result from the increased sand and wider span of beach area, increasing the amount of usable recreation area, as well as safeguarding the bluff face and stairway. Construction staging for equipment and crew is proposed at Moonlight Beach, which would result in intermittent placement of heavy equipment and crew parking. Moonlight Beach provides restrooms, showers, snack bar and picnic tables and is popular for surfing, fishing and other uses which would only be impacted during sand replenishment for that portion of the project. Otherwise, those amenities would remain open, even with staging activities. Access to portions of the receiving beaches would be restricted during construction, but this restriction would be short term and temporary, with access restored at completion of the project. The surf zone would not be closed during construction. Surfers would be able to access surfing sites entering the water from either end of the construction area.

The *Integrated Report* reports that the construction restrictions identified above for the Encinitas shoreline segment also apply to the Solana Beach segment; expected construction staging effects at Solana Beach are as follows:

Construction staging for equipment and crew is proposed at Fletcher Cove and South Cardiff. The Fletcher Cove amenities of restrooms, showers, picnic tables, basketball and volleyball may be closed periodically during sand nourishment. Access and activities impacted include Table Tops tidepool and Beach park. The existing narrow accessibility of the beach is dependent on tidal stage. Under both low and high sea level rise scenarios, nourishment activities would require daily closure of approximately 200 ft of receiver site. Construction and special events or activities schedules would be coordinated; and ample notice would be given to potentially affected groups. If the affected groups are not able to temporarily move the activities to an adjacent location, then construction would be required to be rescheduled around these special activities. The sections of the receiver site restricted would be relatively small and construction would be managed to accommodate planned activities. Therefore, implementation would not result in substantial loss or interference of recreational activities during construction.

The *Integrated Report* addresses potential impacts from turbidity increases during project construction:

Turbidity would be generated by the project, which could result in temporary impacts to water clarity as discussed in Section 5.3. Turbidity would be monitored during construction in accordance with the project's RWQCB permit. Short-term turbidity would very likely occur during construction but would primarily be a public perception issue and not a health problem. This condition would only last as long as project construction and would return to normal shortly after completion. Therefore, the implementation of Alternative EN-1A would not result in a substantial loss or interference with recreational uses during construction.

Offshore dredging and sand placement would last approximately 82 days at Encinitas and 107 days at Solana Beach, and that these activities might occur partially within the summer recreation season. Due to the length of time that the initial nourishment project will take, it is not feasible for the longterm project to work seasonally and avoid the summer months. However, the USACE will attempt be to avoid summertime construction as much as possible in order to minimize adverse impacts to public access and recreation.

The USACE finds that the proposed project is consistent with the public access and recreation policies of the Coastal Act (Sections 30230, and 30211, 30212, 30213, and 30220).

5.4 **Water Quality.**

Sections 30230, and 30231 of the Coastal Act require the protection of water quality. These sections provide:

Section 30230:
Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231:
The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of groundwater supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Previous Coastal Commission Finding. The Commission adopted the water quality measures in Appendix B to the Revised Findings to address the need for the water quality monitoring, stormwater pollution prevention, and oil spill prevention and response plans to be submitted for review by the Executive Director in order to assure the Commission meets its obligation for continued involvement to ensure that project water quality impacts will be minimized. Thus, if the USACE were to agree to implement these conditions <u>measures</u>, the Commission concludes that the project would be consistent with the water quality policy (Section 30231) of the Coastal Act.

Project Modifications. The USACE has agreed to implement the above measures. Refer to Exhibit 5 for details.

Water quality impacts can occur at either the offshore borrow site or at the beach replenishment site, due to fuel spill and contaminant releases, or excessive turbidity from dredging or disposal. The USACE proposes to minimize these effects through adherence to a Water Quality Monitoring Plan, Stormwater Pollution Prevention Plan (SWPPP), and an Oil Spill Prevention and Response Plan (OSPRP).

The USACE' experience is that open ocean turbidity from beach nourishment projects, with their predominantly large grain sizes, are a minor impact. The *Integrated Report* reports that:
Impacts to water and sediment quality from the project are expected to be similar to those for beach nourishment projects performed as part of the RBSP I and RBSP II, specifically, the borrow sites proposed for this project (SO-5 and SO-6). The potential and measured impacts to water and sediment quality, which are described in a series of reports (SANDAG 2011a, AMEC 2002b), are used to assist in assessing the potential impacts for this project, where appropriate.

The *Integrated Report* examined water and sediment quality at the offshore borrow sites (used previously in SANDAG's RBSP I and II projects) and proposed beach receiver sites, and summarizes potential water quality impacts from the proposed project:
Dredging of sands from the borrow sites and placement of material at the receiver sites would result in short-term elevated turbidity levels and suspended sediment concentrations, but no appreciable long-term changes in other water quality parameters, including dissolved oxygen, pH, nutrients, bacteria, or chemical contaminants. Factors considered in this assessment include the relatively localized nature of the expected turbidity plumes for the majority of the dredging period and rapid diluting capacity of the receiving environment. Water quality monitoring would be required as part of the overall project. If monitoring indicated that suspended particulate concentrations outside the zone of initial dilution exceeded permissible limits, dredge operations would be modified to reduce turbidity to permissible levels. Therefore, impacts to water quality from dredging at the borrow sites and placement of material at the receiver sites would not violate water quality objectives or compromise beneficial uses listed in the Basin Plan; therefore, the impact would be less than significant.

Potential impacts to sediment quality at receiver sites could result from contaminants in dredged material or differences in physical characteristics of dredged material. SANDAG did not identify any significant impacts to sediment quality at receiver sites located within the project area based on the characterization of the SO-6 and SO-5 borrow sites. Sediment placed at Segments 1 and 2 would not exceed ER-L or ER-M guidelines (see Table 4.3-7), and both borrow and receiver sites have similar median grain size, proportions of sand, proportions of silt/clays, and TOC content. Thus, placing dredged material from SO-5 and SO-6 at the receiver sites would not affect sediment quality. Therefore, placement of sand would not alter sediment quality at the receiver sites that would be harmful to aquatic life or human health, and any impacts would be less than significant.

There would be no significant impacts to water or sediment quality, and accordingly, no mitigation measures are necessary. However, turbidity monitoring will be undertaken during dredging and placement of fill to determine if measures are necessary to reduce impacts during construction.

The *Integrated Report* next describes the project water quality monitoring plan that will be implemented:

The Water Quality Monitoring Plan will include weekly monitoring at the dredge and beach receiver sites for salinity, pH, temperature, dissolved oxygen, and light transmissivity; monthly water samples will be taken and analyzed for total dissolved solids. Dredging will be controlled to keep water quality impacts to acceptable levels. Controls include modifying the dredging operation. Locations of the eight survey stations are described below:

A. 100 ft up current of the dredging operations, safety permitting.
B. 100 ft down current of the dredging operations, safety permitting.
C. 300 ft down current of the dredging operations.
D. 300 ft up current - Control site (area not affected by dredging operations).
E. 100 ft north of the beach placement just off of the beach at approximately the -20 ft isobath.
F. 100 ft south of the beach placement just off of the beach at approximately the -20 ft isobath.
G. 300 ft south of the beach placement just off of the beach at approximately the -20 ft isobath.
H. Control site 300 ft north of the beach placement site (area not affected by disposal operations) at approximately the -20 ft isobath.

If monitoring detects high levels of turbidity, best management practice (BMP) measures will be taken to reduce turbidity to within acceptable levels. Measures to reduce turbidity at the dredge include modifications to the dredging operation to reduce turbidity such as ensuring that the dredge remains on the bottom and doesn't bounce or that the dredge is shut off when raising or lowering the dredge cutterhead to the sea bottom. Measures to reduce turbidity at the beach site include discharging sand behind berms that channel runoff into a single point resulting in a longer path for water to run before entering the ocean allowing for more sand to settle and reducing turbidity.

To address fuel and other equipment spill concerns the USACE will prepare a Stormwater Pollution Prevention Plan and an Oil Spill Prevention and Response Plan. These plans shall specify measures that shall be taken during dredging and beach construction to avoid introducing contaminants to the ocean via leaks and spills. All measures shall be adhered to during project construction.

The USACE finds that the proposed project is consistent with the marine resources, beach nourishment, and dredging and filling policies of the Coastal Act (Sections 30230, and 30231).

5.5 Archeological Resources.

Sections 30244 of the Coastal Act require the protection of archeological resources. These sections provide:

Section 30244:
Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

Previous Coastal Commission Finding. The Commission found that berm construction for sand placement in the Encinitas segment of the proposed project holds the potential to adversely affect a federally-listed archaeological site, and that the USACE should demonstratedin that the sand placement will avoid affecting this site. The Commission further found that without additional Native American consultation to confirm that the construction of a sand berm at Moonlight State Beach would not affect the listed archaeological site, and without Native American monitoring of the site during berm construction and sand placement, the project would not be consistent with Section 30244 of the Coastal Act, which requires reasonable mitigation measures for impacts to archaeological resources.

Project Modifications. The USACE has consulted with State Parks regarding a newly rediscovered archeological site located at Moonlight State Beach. This site had been mislocated in state records in an area that was outside the project area. The site was located at its current position by the City of Encinitas during reconstruction of public facilities at Moonlight State Beach. That project included partial recovery of the site under areas of direct impact only. The exact extent of the site is still undetermined, including its extent west of a seawall installed prior to the city project that could split the resource. It is considered highly unlikely that any portion of the site still exists west (seaward) of the seawall. Beach erosion should have destroyed any resource by the present time Nevertheless, the USACE has agreed to excavate in this area to determine the extent of the site, if any, west of the seawall. There would be no impact east of the seawall from the Project.

Project Area Archeological Resources

Initial Tribal coordination regarding potential project impacts on cultural resources commenced in 2003, State Historic Preservation Officer coordination began in 2005, and renewed coordination with both entities was initiated in April 2012. A records and literature search was conducted at the South Coastal Information Center at San Diego State University which is part of the California Historical Resources information System (CHRIS), a statewide system for managing information on prehistoric and historical resources identified in California. It is authorized and directed by the State Office of Historic Preservation (OHP). The information available at these centers consists of current and historic maps, historic register lists, site records, and survey reports. Historic registers include the National Register of Historic Places (2000), the California State Historic Resources Inventory (2000), the California Points of Historical Interests (1992), and the California Historical Landmarks (1996).

The search did not identify any previously recorded historic properties within the areas of potential effects (APE). A 0.5-mile radius of the APE indicates that sacred sites have been identified and recorded on the bluffs above the shoreline. With erosion, some of these artifacts have ended up underwater for divers to find. The APE was surveyed by a USACE Staff Archaeologist in June 2004 and again in June 2012. No cultural material was located. A search at the California Native American Heritage Commission (CNAHC) determined that no sacred sites are recorded within the project area.

However, the California Department of Parks and Recreation, in a *Integrated Report* comment letter dated February 26, 2013, expressed concerns about potential project impacts on an archaeological site at Moonlight State Beach (located in the Encinitas segment of the proposed project), stating that federally-listed archaeological site CA-SDI-17402 (also listed as P37026506/SDM-S-83) had been located on the beach itself in the previous six months. That comment letter identified that the site had been recorded prior to WWII and expressed concern that the site's shallow nature and unknown western boundary could be affected by the use of existing sand to create an L-shaped anchor berm for sand placement.

Since receiving that comment, the USACE and Cities have further investigated the matter. The site had not been identified as within the APE because its location was not correctly identified. The site was identified during work by the City of Encinitas on another project.

The exact extent of the site is still unknown, including its extent west of a seawall installed prior to the city project that could split the resource. It is considered highly unlikely that any portion of the site still exists west (seaward) of the seawall. Beach erosion should have destroyed any resource by the present time Nevertheless, the USACE has agreed to excavate in this area to determine the extent of the site, if any, west of the seawall. There would be no impact east of the seawall from the Project. A complete survey of this site, including trenching to locate subsurface features, will be conducted west of the sea wall prior to construction and any portion of the site within the proposed fill area will be avoided if it still exists.

Previous dredging has likely removed or disturbed any significant cultural resources that may have existed within the proposed dredging boundaries at the borrow sites. The potential for any of the fill sites to contain significant resources is also considered to be low owing to ongoing beach erosion.

The Project, therefore, will avoid impacts to any known cultural resources. Additionally, the Project includes a monitoring program for unknown cultural resources and the standard construction clause to halt construction activities should any unknown resources be detected will be included in the construction contract specifications.

The USACE finds that the proposed project is consistent with the archaeological resources policies of the Coastal Act (Section 30244).

6 SIMILAR PROJECTS THAT RECEIVED CALIFORNIA COASTAL COMMISSION APPROVAL

6.1 Regional Beach Sand Projects

Initially in 2000, and subsequently in 2011, the Commission has twice approved the countywide San Diego County beach nourishment program conducted by the San Diego Association of Governments (SANDAG Regional Beach Sand Project (RBSP) I and II - CDPs 6-00-038 (with several amendments) and 6-11-018). The permit conditions for both projects required, among other things, monitoring of recreational (including surfing) and biological impacts monitoring. Under the first of these permits, SANDAG placed approximately two million cubic yards of sand on twelve San Diego County Beaches (RBSP I), completed in the Spring and Summer of 2001. The Commission's findings on RBSP II noted:
Extensive monitoring was completed in association with RBSP I and found no significant impacts to biological resources. The Commission also did not receive any adverse comments in regard to public access during or following construction of RBSP I.

The second of these permits (RBSP II) involved placing 1.5 million cubic yards on eight San Diego County Beaches between September and December 2012. During the Commission's review of this permit the paramount issue of concern appeared to be grunion protection and monitoring, and the Commission adopted an extensive set of conditions and criteria to monitor and protect grunions. The Commission also adopted conditions requiring beach sand monitoring, biological monitoring, surf break monitoring, Executive Director review and approval of the Final Monitoring Plan, and of final Staging Plans, Lagoon monitoring and mitigation, and applicant assumption of risk.

6.2 San Clemente Shoreline Protection Project

In consistency determination CD-029-11, the USACE proposed and the Commission conditionally concurred with the San Clemente Shoreline Protection Project, a fifty-year beach nourishment project for San Clemente State Beach in northern San Diego County. This program consisted of initial nourishment of approximately 251,000 cubic yards of sand dredged from an offshore location and placed on a 50-foot-wide by 3,400-foot-long section of beach centered on the San Clemente Pier, with periodic renourishment every six years when the beach erodes to its base width of 35 feet. Dredging and placement would occur between late August and March to avoid the peak recreation, least tern breeding, and grunion spawning seasons. The Commission adopted nine conditions to assure the project's monitoring and mitigation measures are effective, adequate to protect, and, if impacts occur, mitigate the project's effects on marine resources, water quality, and public access and recreation. The USACE agreed to the conditions, although this project has yet to be implemented.

EXHIBITS

EXHIBIT 1

Public Property and Infrastructure Protected by Recommended Plans

City of Encinitas

- Coast Hwy 101 (Emergency evacuation route and 1-5 alternative)
- 18" gas line under Hwy 101 & other utilities
- Sewer pump station at Cardiff State Parking lot
- Restaurants (Beach House, Charthouse, Pacific Grill)
- Cardiff State Beach Parking Lot
- Cardiff State Beach Campground
- Public beach access ways/staircases:
- 10 staircases for San Elijo State Beach campground
- State lifeguard access road (north end of day use parking lot)
- Swamis
- D Street
- Stonesteps
- Beacons
- Seabluff
- Moonlight Beach Lifeguard Tower
- Public roads

City of Solana Beach

- Public beach access stairways at Tide Park, Fletcher Cove, and Del Mar Shores
- All public shoreline and beaches in the City including Tide Park Beach and Fletcher Cove Beach
- Fletcher Cove Community Park
- Solana Beach Marine Safety Headquarters
- Fletcher Cove Community Center
- Lifeguard stations at Tide Park Beach and Del Mar Shores
- Stormwater interceptor facilities
- Fletcher Cove public access ramp
- Multiple public beach parking lots proving free public beach parking
- Public roadways
- Numerous wet and dry utilities located on or in the bluffs including sewer lines, electric distribution lines, natural gas lines, and existing stormwater facilities

EXHIBIT 2

Final Array of Alternatives in the *Integrated Report*

Encinitas (EN)		Alternative EN - 1A: Beach Nourishment (100 ft; 5-yr cycle)	Alternative EN - 1B: Beach Nourishment (50 ft; 5-yr cycle)		Alternative EN-2A: Hybrid (100 ft; 10-yr cycle)	Alternative EN-2B: Hybrid (50 ft; 5-yr cycle)	Alternative EN -3: No Action
Initial Placement Volume (cy)	High SLR	730,000	390,000		800,000	390,000	Assumes that the continued practice of emergency permitting for seawalls along the segment would continue.
	Low SLR	680,000	340,000		700,000	340,000	
Re-Nourishment Cycle	High SLR	5-yr	5-yr		10-yr	5-yr	
	Low SLR	5-yr	5-yr		10-yr	5-yr	
Added Beach MSL Width	High SLR	100 ft	50 ft		100 ft	50 ft	
	Low SLR	100 ft	50 ft		100 ft	50 ft	
Solana Beach (SB)		**Alternative SB - 1A: Beach Nourishment (200 ft; 13-yr cycle)**	**Alternative SB - 1B: Beach Nourishment (150 ft; 10-yr cycle)**	**Alternative SB-1C: Beach Nourishment (100 ft; 10-yr cycle)**	**Alternative SB-2A: Hybrid (150 ft; 10-yr cycle)**	**Alternative SB-2B: Hybrid (100 ft; 10-yr cycle)**	**Alternative SB-3: No Action**
Initial Placement Volume (cy)	High SLR	1,620,000	790,000	540,000	790,000	540,000	Assumes that the continued practice of emergency permitting for seawalls along the segment would continue.
	Low SLR	960,000	700,000	440,000	700,000	440,000	
Re-Nourishment Cycle	High SLR	14-yr	10-yr	10-yr	10-yr	10-yr	
	Low LSR	13-yr	10-yr	10-yr	10-yr	10-yr	
Added Beach MSL Width	High SLR	300 ft	150 ft	100 ft	150 ft	100 ft	
	Low SLR	200 ft	150 ft	100 ft	150 ft	100 ft	

EXHIBIT 3

Surveys and Monitoring Plans

The surveys and monitoring plans will include the following:

	Purpose	Pre-Initial-EventConstruction	Initial Event Construction	Post-Initial-Event Construction	Renourishment Event?
Water Quality Monitoring Plan	Monitoring at receiver and borrow sites for salinity, pH, temperature, dissolved oxygen, and light transmissivity (turbidity).	One week prior.	Weekly.	One week post.	Same as construction.
Habitat Monitoring Plan	Map extent of reef habitat and submerged aquatic vegetation. Used to determine if there are project impacts and will include control sites.	1 year pre-construction (spring and fall).		Repeat pre-construction surveys at years 1 and 2 post-construction (spring and fall).	
Biological Mitigation and Monitoring Plan	Monitoring for success of mitigation project, if needed.			1, 3, 6 and 12 months post-construction; spring and fall for years 2-5 post-construction	
Cultural Resources Plan Monitoring	Avoid impacts to previously undiscovered cultural resources.	Survey conducted of borrow site(s); survey of mitigation site, if necessary.	Periodic spot-checking of dredged materials from low- and moderate-sensitivity contexts and continuous monitoring from high-sensitivity contexts.		
Cultural Survey	Survey cultural resources site at Moonlight state Beach to determine lateral extent.	Trench site west of seawall to determine lateral extent and avoid if present.			
California Grunion Monitoring and Avoidance Plan	Avoid/minimize impacts to spawning grunion	Receiver sites and access/staging areas surveyed for suitable habitat	Seasonal monitoring may be required if suitable habitat is identified in project area.		Same as construction.
Shoreline Monitoring Plan	Determine changes in beach and seabed morphology. Trigger renourishment events	Profile data from back beach to wading depth; 1 yr prior to construction in the spring and fall		Annually for 2 years post construction in the spring and fall	Annually throughout the life of the project.

	Purpose	Pre-Construction	Construction	Post-Construction	Renourishment Cycle?
Noise Monitoring Plan	Verify noise levels remain below significant levels.		Performed during all beach construction activities.		Performed during all beach construction activities.
Surfing Monitoring Plan	Monitor surfing conditions to confirm if impacts occur.	Monitor one year prior to construction.		Repeat pre-construction surveys at years 1 and 2 post-construction.	
Snowy plovers	Screen, for presence, monitor effectiveness of avoidance measures, if present.	Propose avoidance measures if Seaside parking lot is used for staging	Monitor avoidance measures if Seaside parking lot is used for staging		Survey all beach fill and access and staging areas for presence. Avoid/monitor if present
Stormwater Pollution Prevention Plan (SWPPP)	Control runoff of construction-related contaminants into the sea.	Construction contractor prepares SWPPP.	Construction contractor implements SWPPP.	Construction contractor reports on SWPPP.	Same as construction.
Oil Spill Prevention and Response Plan (OSPRP)	Details spill prevention measures and cleanup plans.	Construction contractor prepares OSPRP.	Construction contractor implements OSPRP.	Construction contractor reports on OSPRP.	Same as construction.
Borrow Site Monitoring Plan	Monitor seafloor morphology, water quality, and benthic habitat quality.	1 year pre-construction (spring and fall).		Repeat pre-construction surveys at years 1 and 2 post-construction (spring and fall).	Same as construction.
Safety Plan	Detail safety procedures, including OSHA and safety for recreational beach users.	Construction contractor prepares Safety Plan.	Construction contractor implements Safety Plan.	Construction contractor reports on Safety Plan.	Same as construction.
Staging Plan	Details location of staging areas, precautions for maintenance and fueling of construction equipment, precautions for storing equipment on the beach, minimizing space requirements, safety precautions for equipment operations and fueling to avoid public beaches and public beach parking lots to the maximum extent feasible, utilize minimal number of public parking spaces when not avoidable.	Construction contractor prepares Staging Plan.	Construction contractor implements Staging Plan.	Construction contractor reports on Staging Plan.	Same as construction.

EXHIBIT 4

Swami's State Marine Conservation Area

14 CCR § 632
Cal. Admin. Code tit. 14, § 632
Barclays Official California Code of Regulations Currentness
Title 14. Natural Resources
Division 1. Fish and Game Commission-Department of Fish and Game
Subdivision 2. Game and Furbearers
Chapter 11. Ecological Reserves (Refs & Annos)
§ 632. Marine Protected Areas (MPAs), Marine Managed Areas (MMAs), and Special Closures.

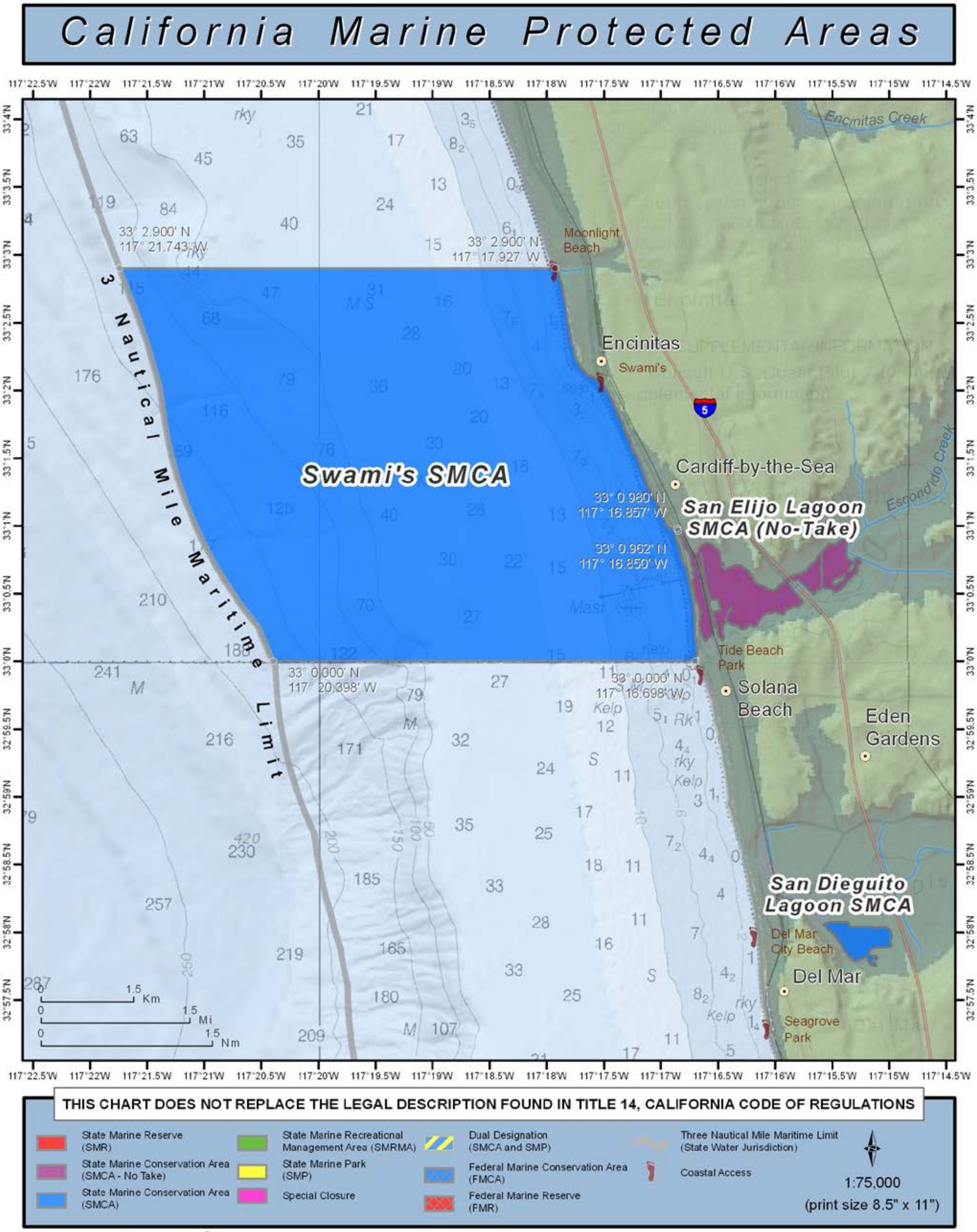
(b) Areas and Special Regulations for Use. Pursuant to the commission's authority in Fish and Game Code Section 2860 to regulate commercial and recreational fishing and any other taking of marine species in MPAs, Fish and Game Code Sections 10500(f), 10500(g), 10502.5, 10502.6, 10502.7, 10502.8, 10655, 10655.5, 10656, 10657, 10657.5, 10658, 10660, 10661, 10664, 10666, 10667, 10711, 10801, 10900, 10901, 10902, 10903, 10904, 10905, 10906, 10907, 10908, 10909, 10910, 10911, 10912, 10913, and 10932 are made inoperative as they apply to Subsection 632(b). All geographic coordinates listed use the North American Datum 1983 (NAD83) reference datum: (138) Swami's State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:
33° 02.900' N. lat. 117° 17.927' W. long.; and
33° 02.900' N. lat. 117° 21.743' W. long.;
thence southward along the three nautical mile offshore boundary to
33° 00.000' N. lat. 117° 20.398' W. long.; and
33° 00.000' N. lat. 117° 16.698' W. long.;
thence northward along the mean high tide line onshore boundary to
33° 00.962' N. lat. 117° 16.850' W. long.; and
33° 00.980' N. lat. 117°16.857' W. long.

(B) Take of all living marine resources is prohibited except:

1. Recreational take by hook and line from shore is allowed.
2. The recreational take of pelagic finfish [subsection 632(a)(3)], including Pacific bonito, and white seabass by spearfishing [Section 1.76] is allowed.
3. Take pursuant to activities authorized under subsection 632(b)(138)(C) is allowed.

(C) Beach nourishment and other sediment management activities and operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.



California Department of Fish and Wildlife, Marine Region GIS Lab ~ March 14, 2013

EXHIBIT 5

This exhibit summarizes the Commission's identified modifications to allow the project to be found consistent with the CCMP, from Appendix B of the Commission's Revised Findings, along with a summary of how the USACE has responded to each identified modification.

1. Reduced Sand and Beach Widths. A project alternative that includes a reduced volume of sand, narrower constructed beaches at Encinitas and Solana Beach, and reduced nourishment footprints to avoid sensitive nearshore habitat and the Swami's SMCA in order to further minimize potential adverse effects on marine resources, which in turn would reduce project mitigation requirements.

USACE Response. The Project now consists of smaller beach widths for both Encinitas and Solana Beach. It would reduce indirect burial of nearshore habitat in the Solana Beach segment and reduce mitigation needed. In order to provide an appropriate of storm damage reduction, the Project cannot avoid placing sediment within the SMCA and it is an allowable use and would not significantly impact sensitive habitat.

2. Phased Review for Renourishment Projects. Prior to each renourishment project, the USACE will submit to the Commission a consistency determination (pursuant to 15 CFR § 930.36(d)) that includes: the results of all monitoring required since completion of the previous nourishment project (e.g., physical, biological, surfing), including copies of all required monitoring reports; an explanation of the status of completed and/or ongoing mitigation projects associated with previous nourishment projects; and the proposed sand volume, beach width, and borrow site location for the proposed renourishment.

USACE Response. The USACE has proposed and evaluated a 50-year project. Phased consistency determinations and phased review are not applicable to this project. In lieu of the above the USACE would implement the following measure:

Coordination Prior to Renourishment Events. Six months prior to each renourishment event, the USACE will notify the Executive Director and provide for his review: (a) the results of all monitoring that the plans discussed in these conditions required to be performed since completion of the previous nourishment event (e.g., physical, biological, surfing); (b) an explanation of the status of completed and/or ongoing mitigation efforts associated with the original nourishment event; and (c) the proposed sand volume, beach width, and borrow site location for the upcoming nourishment event. The USACE will include in this notification its conclusions as to whether the project remains consistent to the maximum extent practicable with the enforceable policies of the CCMP.

The Executive Director may bring these conclusions, along with the Executive Director's analysis and recommendation for Commission action, to the Commission for a public hearing and a Commission determination as to whether the project remains consistent to the maximum extent practicable with the enforceable policies of the CCMP. As provided by the CZMA regulations, if the Commission determines the project has changed substantially or that the proposed project will affect coastal uses or resources substantially different than originally described, the Commission may request that the USACE take appropriate remedial action, prior to any subsequent renourishment event or may notify the USACE of activities which the Commission believes should be subject to a supplemental consistency determination, prior to any subsequent renourishment event.

3. Final Monitoring Plans. To continue to work cooperatively throughout the final project planning and construction phases, the USACE will provide, prior to commencement of construction of the initial dredging and nourishment project, a copy of the final Preconstruction Engineering and Design (PED) phase surveys and the monitoring plans to the Commission's Executive Director for review. The USACE will carefully consider all comments by the Commission's Executive Director and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to the construction of this phase. Any significant disagreement between the USACE and the Executive Director will be brought before the Commission for a public hearing. The PED surveys and monitoring plans will include:

(a) the final Biological (reef/surfgrass) Mitigation and Monitoring Plan (MMP), including all surveys conducted in preparation of that plan;
(b) the Surfing Monitoring Plan;
(c) the Turbidity Monitoring Plan;
(d) the Stormwater Pollution Prevention Plan (SWPPP);
(e) the Oil Spill Prevention and Response Plan (OSPRP); and
(f) the Shoreline Monitoring Plan.

USACE Response. The project includes provision of all such reports and plans to the Coastal Commission for review as they become available. It is up to the discretion of the Commission to consider information provided by the Executive Director at a public hearing. The USACE cannot commit the Executive Director or Commission to certain actions through its project description.

4. Biological Mitigation and Monitoring Plan Details. The final Mitigation and Monitoring Plan (MMP) shall assure: (a) that biological monitoring of all offshore potential impact areas shall be for a minimum of 2 years pre-construction and 2 years post-construction; (b) that monitoring and analytical methods are adequate to identify and accurately measure all short- and long-term impacts from all aspects of the dredging and nourishment effort; (c) that appropriate mitigation sites are available to address potential impacts; and (d) that the success criteria and analytical methods used are adequate to demonstrate a difference between impact/mitigation site and control sites and shall include the following:

(i) clear and specific identification of the potential impact areas that will be monitored before and after the beach nourishment efforts, including intertidal reef and nearshore reefs, and change criteria that will be used to establish thresholds of impacts for mitigation;

(ii) schedule and frequency of monitoring efforts and monitoring reports;

(iii) discussion of the monitoring and analytical methods that will be used to evaluate the sites based on the change criteria for both short- and long-term impacts;

(iv) delineation and characterization of the potential mitigation sites that will be used if short- or long-term impacts are identified that meet the threshold triggering the mitigation requirement;

(v) clear and specific criteria for identifying impacts and for evaluating the success of any necessary mitigation. If statistical tests are proposed, then the plan must specify biologically meaningful effect sizes (i.e., a difference between the control and the impact site, or between the control and the mitigation site) and specify alpha and beta, with alpha equal to beta. The field sampling plan must include sufficient replication to provide a statistical test with at least 80% statistical power (beta=0.2) to detect an effect of the stated size with alpha = 0.2. The proposed replication must be based on preliminary sampling data and a statistical power analysis. Smaller alpha and beta may be used. Alternatively, in the absence of a statistical analysis, project impacts will be measured as the change in the average metric of interest (e.g., area or density) at the potential impact site relative to the reference site. Prior to the start of construction, the USACE shall develop a quantitative sampling and analysis plan in cooperation with the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service, the California Department of Fish and Wildlife, Commission staff, and the USACE Engineering Research and Development Center (ERDC). This plan will include clear criteria to determine whether impacts to natural resources have occurred and whether any necessary mitigation has been successful. Such determinations will not be based simply on "best professional judgment."

(vi) Identification of the control or reference sites that will be used and the results of a preliminary field sample at both control and potential impact sites demonstrating that the control sites are appropriate.

To continue to work cooperatively throughout the final project planning and construction phases, the USACE will provide a copy of the final MMP to the Commission's Executive Director for review, prior to commencement of construction of the first phase of the dredging and nourishment project. The USACE will carefully consider all comments by the Executive Director and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to each construction phase. Any significant disagreement between the USACE and the Executive Director will be brought before the Commission for a public hearing.

USACE Response. The USACE has included the MMP consistent with the above, except that pre-construction surveys will be limited to one year before pre-construction not two years. The planning process that includes monitoring contracts does not allow time for two years of pre-construction monitoring, nor would it show any information not obtainable from the previous year. Submittals will be made as requested as soon as they become available. In addition, it is up to the discretion of the Commission to consider information provided by the Executive Director at a public hearing. The USACE cannot commit the Executive Director or Commission to certain actions through its project description.

5. Surfing Monitoring Plan Details. The USACE will submit to the Executive Director a Surfing Monitoring Plan to include and implement the following features:

(a) adequate baseline data collection, including, if feasible, a full year of pre-construction monitoring to determine the baseline condition (conditions at the project area and, as appropriate, at control sites).

(b) identification of locations to be monitored, the length of the pre-project monitoring, and interest groups to be involved in establishing the monitoring effort to identify surfing or surf quality changes that might be attributable to the nourishment project, including identifying criteria for a determination of what constitutes a significant alteration or impact. Another location within the region might also be chosen to act as a control site to help determine if there are changes within the region to surfing conditions that could be attributable to other factors other than project implementation.

(c) supplementing the "wave observation" component of the surf monitoring with observations about the surfing activities, including a usage scale of surfers in the water, both morning and mid-day, and describing the average and maximum ride lengths.

(d) given that video recordings are included, if observer counts are too difficult for one observer, video may be used to augment observer counts.

(e) when collecting user data, the analysis should be disaggregated into weekday and weekend data.

(f) for mid-day observations on days when surfers are kept out of the water by lifeguards, these should be recorded as restricted use days (not zero use days).

(g) establishing mechanisms for informing the local community about the project, and encouraging public comments on surfing quality (or other recreational concerns), including but not limited to: (i) a web site, (ii) pre-construction notifications to the public; and (iii) signs.

To continue to work cooperatively throughout the final project planning and construction phases, the USACE will provide a copy of the final Surfing Monitoring Plan to the Commission's Executive Director for review, prior to commencement of construction of the first phase of the dredging and nourishment project. The USACE will carefully consider all comments by the Executive Director and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to each construction phase. Any significant disagreement between the USACE and the Executive Director will be brought before the Commission for a public hearing.

<u>USACE Response.</u> USACE concurs with the commitments requested of the USACE and will incorporate into *Final Integrated Report*. Submittals will be made as requested as soon as they become available. It is up to the discretion of the Commission to consider information provided by the Executive Director at a public hearing. The USACE cannot commit the Executive Director or Commission to certain actions through its project description.

6. <u>Staging Plan Details.</u> The construction staging plans will assure that: (a) staging will avoid public beaches; (b) the minimum number of public parking spaces (on and off-street) that are required for the staging of equipment, machinery, and employee parking that are otherwise necessary to implement the project will be used; and (c) staging will avoid using to the maximum extent feasible public beach parking lots, but when the use of these lots is unavoidable to implement the project, only the minimum amount of space in these lots will be used.

<u>USACE Response.</u> The USACE has included this in the Project as proposed and will incorporate into the *Final Integrated Report*.

7. <u>Water Quality Plan Details.</u> The Storm Water Pollution Prevention Plan will assure that: (a) the contractor will not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion; (b) no machinery will be placed, stored or otherwise located in the intertidal zone at any time, except for the minimum necessary to implement the project; (c) construction equipment will not be washed on the beach; (d) where practicable, the contractor will use biodegradable (e.g., vegetable oil-based) lubricants and hydraulic fluids, and/or electric or natural gas powered equipment; and (e) immediately upon completion of construction and/or when the staging site is no longer needed, the site shall be returned to its preconstruction state.

<u>USACE Response.</u> USACE has included this in the Project as proposed and will incorporate into *Final Integrated Report*.

8. <u>On-Going Monitoring Reports.</u> The USACE will provide to the Executive Director copies of all the ongoing monitoring reports when they are published.

<u>USACE Response.</u> Submittals will be made as requested as soon as they become available.

9. <u>Out-of-Kind Mitigation.</u> For any biological mitigation shown necessary by monitoring, the USACE will not proceed to implement any out-of-kind mitigations (e.g., using kelp habitat to mitigate surfgrass impacts, or providing mid-water habitat to mitigate for shallow-water habitat impacts)

without first undertaking in-kind mitigation consistent with the MMP. If the USACE later concludes that such in-kind mitigation is infeasible (i.e., failure), it will proceed to the approach for out-of-kind mitigation consistent with the MMP and will provide the approach to the Executive Director for review. The Corns will carefully consider all comments by the Commission's Executive Director and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated.

USACE Response. USACE has included this in the Project as proposed and will incorporate the review and consideration commitment into the *Final Integrated Report*.

Dredging. All offshore dredging at Borrow Sites SO-5, SO-6, and MB-1 to obtain beach nourishment materials will occur below the depth of closure (i.e., outside the littoral drift zone and no shallower than -40 feet mean lower low water) at those locations, and only dredged materials physically compatible with receiver beaches will be placed at those locations.

USACE Response. Concur and will incorporate into *Final Integrated Report*.

Borrow Site Monitoring. Prior to the start of project construction, the USACE will submit a borrow site monitoring plan to the Commission's Executive Director for review. The plan will include measures to document the actual areas dredged during each nourishment project, the biological community affected, and the physical and biological temporal changes, including physical (multibeam sonar) and biological (benthic and infaunal sampling) monitoring of the borrow sites and nearby reference sites. The plan will include provisions for pre- and post- dredging surveys of all borrow areas used during nourishment projects. Prior to the start of construction of the first phase of the dredging and nourishment project, the plan will be reviewed by representatives from the California Department of Fish and Wildlife, National Marine Fisheries Service, and the Commission. The USACE will carefully consider all comments by the Executive Director and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to each construction phase. Any significant disagreement between the USACE and the Executive Director will be brought before the Commission for a public hearing.

USACE Response. USACE concurs with the commitments requested of the USACE and will incorporate into *Final Integrated Report*. It is up to the discretion of the Commission to consider information provided by the Executive Director at a public hearing. The USACE cannot commit the Executive Director or Commission to certain actions through its project description.

Monitoring between Encinitas and Solana Beach Segments. Prior to the start of the project monitoring, the USACE will submit evidence that shoreline, biological, and surfing monitoring for the project will also occur in the geographical area between the Encinitas and Solana Beach segments of the project, in order to accurately document potential project impacts to this area from possible downcoast movement of sand placed in the Encinitas segment.

USACE Response. USACE concurs and will incorporate into *Final Integrated Report*.

Timing. As the USACE develops the final construction calendar for the project, the USACE will make every practicable effort to schedule beach nourishment activities outside the peak summer recreation season in order to minimize project impacts on public access and recreation. The USACE will submit the draft construction calendar to the Commission's Executive Director for review, will carefully consider the comments made by the Executive Director, and will make all reasonable efforts to ensure that the concerns expressed regarding construction scheduling and timing are resolved prior to construction. Any significant disagreement between the USACE and the Executive Director will be brought before the Commission for a public hearing.

USACE Response. USACE concurs with the commitments requested of the USACE and will incorporate into *Final Integrated Report*. It is up to the discretion of the Commission to consider information provided by the Executive Director at a public hearing. The USACE cannot commit the Executive Director or Commission to certain actions through its project description.

Archaeological Resources. The USACE will ensure that Native American consultation would be undertaken to confirm that the construction of the sand berm at Moonlight State Beach would not affect the listed archaeological site, and Native American monitoring of the site would occur during berm construction and sand placement at this location.

USACE Response. USACE has addressed this in the project description and will incorporate into *Final Integrated Report*.