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Prepared March 7, 2012 (for the March 9, 2012, hearing)

To: Coastal Commissioners and Interested Persons

From: Mark Delaplaine, Manager, Energy, Ocean Resources and Federal Consistency Division

Subject: STAFF REPORT ADDENDUM for Item 13a Consistency Determination (CD-001-12, U.S. Army Corps of Engineers, San Diego Bay Main Channel Deepening Project)

The staff is providing a response to the comment letter included in the second mailing on this item, from David Skelly, dated February 17, 2012 (Subject: Comments on Consistency Determination San Diego Bay Main Channel Deepening Project, San Diego, California).

Mr. Skelly's letter makes the following points:

1. Comparing 2008 to 1902 underwater contours off Coronado to recent contours, depth contours have moved landward "as much as 400 ft." and in some areas, are nearly perpendicular to the shoreline, whereas they were roughly parallel to the shoreline in 1902 (see Figure 2 of Mr. Skelly's letter (copy attached)). "The modification of the depth contours was the result of dredging within San Diego Bay. It is very clear that over time dredging of the bay has resulted in the steepening of the depth contours in the vicinity of First Street."

2. On "closer examination" of the Corps-provided 1999 and 2008 contour comparison, several facts … seem to be missed by the Corps:"

    (a) none of the contours extends above mean lower low water where the Corps 2001 and 2005 reports indicated erosion would occur;
    (b) comparing the enlarged 309 and 407 First St. profiles shows that at 245 ft. from First St., water profile elevations are 10 ft. deeper in front of 311 First St. as compared to 407 First St., indicating a steepened gradient; and
    (c) some erosion has occurred at 309 First St. near the shoreline and at -28 ft. MLLW, and some steepening of the profile has occurred between horizontal stations 3+00 and 4+00.

3. The Corps has not proven that artificial fill has occurred along First St. and is "shifting the focus from the true causes of erosion stated and clearly identified in the Corps' 2001 study."

4. Prior to dredging there was historically a much greater extent of eelgrass.

5. Sediment is moving, and "there needs to be a source of energy for the suspension and transport of this sediment. There is significant vessel traffic within the bay that would not be taking place if the channel was not repeatedly dredged."

6. The west end of First St. is eroding much faster than other quasi-natural shorelines in the bay. "Based upon the Corps' explanation the bay should be experiencing erosion in all areas relatively equally, where there is material to erode."

7. "Why has erosion accelerated within the last two decades when, by the Army Corps' own account, the sediment deficit was created by alterations to the bay ecosystem (damming, shoreline development, etc.) that occurred about [a] century ago?"

8. "Every property along First Avenue has shore protection along the bay." This has "likely slowed the erosion of the shoreline, but as evidenced by the Corps own profile data there are still changes (both erosion and accretion) in the depth contours below MLLW."

9. The Corps's 2001 report was not "cursory" but rather "more comprehensive than the original environmental analysis for the dredging projects at issue. The report is an inconvenient truth for the Corps!"

The Commission staff does not believe any of the points made in Mr. Skelly's letter can be considered evidence that the two foot deepening of the Main Channel reviewed in the subject consistency determination has accelerated erosion along First St. The Commission's staff engineer and geologist have reviewed this additional material and also agree that the conclusions contained in the recommended findings, which are that "No evidence has been presented establishing that shoreline erosion has accelerated since the implementation of the channel deepening in 2004/2005, or that ship traffic has increased," remain valid. The differences shown in the 309 First St. profile are statistically meaningless; the 1999 and 2008 profiles are nearly identical. The Commission staff does not disagree that there has been erosion of the First St. shoreline; the staff report explains why, due to historical fill and cessation of sediment inputs, as well as the above-acknowledged shoreline protection devices lining the bay side of the First St. properties, such erosion is inevitable. As the staff report states:

> *… both the Corps and the Navy have provided an objective examination of the questions raised by the information in the Appraisal Reports, and the available evidence leads to the conclusion that the channel deepening project did not increase erosion or the extent of boat wakes affecting the shoreline. Shoreline profiles from 1929 to 2000 support the Corps' and Navy's statements that the shoreline is still bayward of its last natural location (see Exhibit 3, showing 1953, 1970, 1985 and 2000 shorelines in relation to the 1929 shoreline, and Exhibit 4, Shoreline profiles comparing 1999 (pre-project) and 2008 (post-project) conditions). No evidence has been presented establishing that shoreline erosion has accelerated since the*

implementation of the channel deepening in 2004/2005, or that ship traffic has increased. The Commission therefore concludes that that project has not accelerated erosion and is consistent with the requirements of the geologic hazards policy (Section 30253) of the Coastal Act.

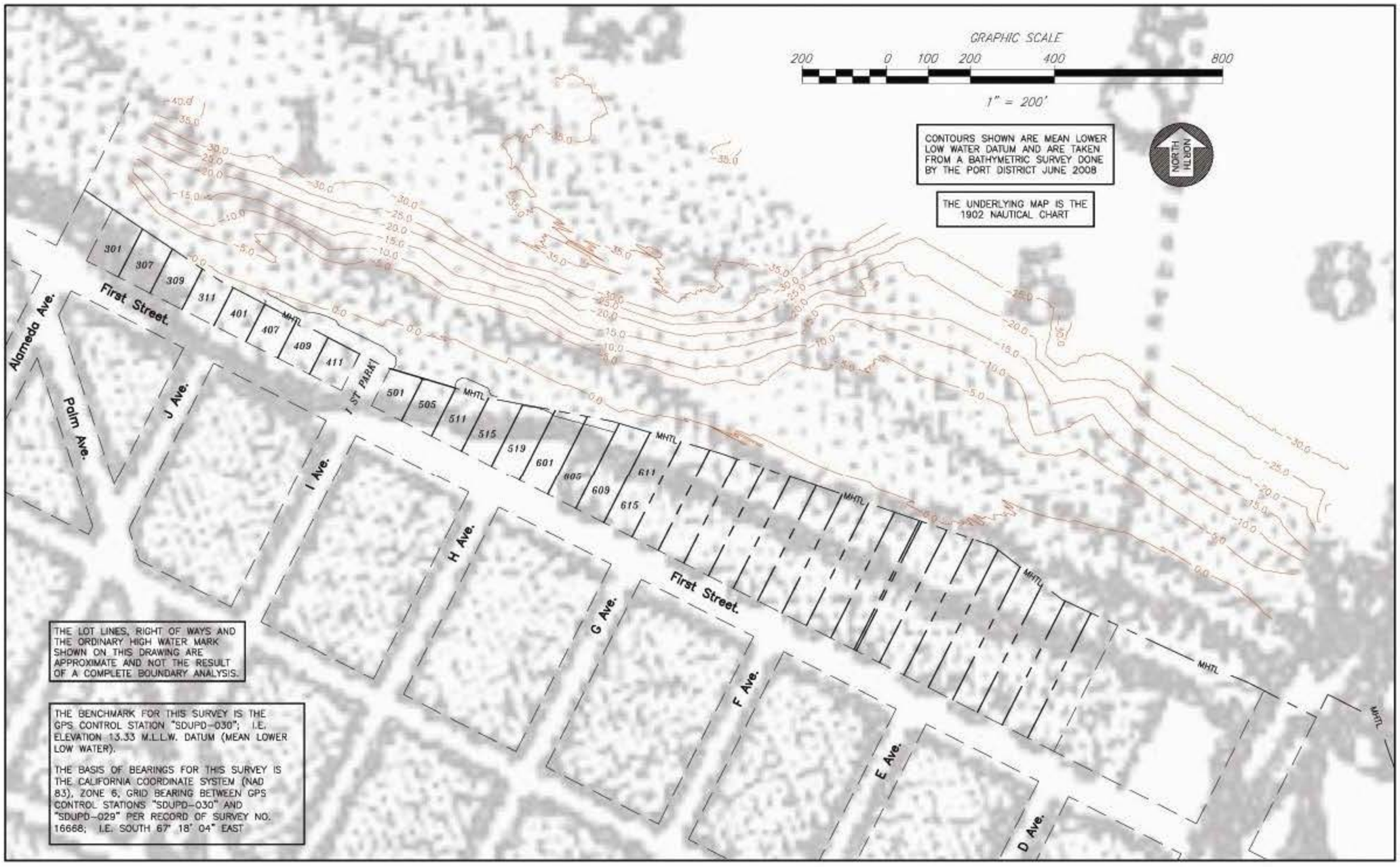

Figure 2. The 1902 Navigation Chart in fathoms overlain with the 2008 Port of San Diego bathymetric survey, in feet below MLLW, denoted in red. The Coronado streets are First Street property address are marked.

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STAFF RECOMMENDATION

ON SUPPLEMENTAL CONSISTENCY DETERMINATION

See additional correspondence received.

Consistency Determination No.	**CD-001-12**
Staff:	MPD-SF
File Date:	10/13/11
60th Day:	12/12/11
75th Day:	12/27/11
Extended to:	3/10/12
Commission Meeting:	3/9/12

FEDERAL AGENCY: **U.S. Army Corps of Engineers**

PROJECT LOCATION: Main Channel, between the Coronado Bridge and the Naval Turning Basin at Naval Air Station North Island (NASNI), San Diego Bay, and offshore of Imperial Beach (Exhibits 1 & 2)

PROJECT DESCRIPTION: 550,000 cu. yds. (420,000 cu. m.) of dredging to deepen the main channel by two feet, from -40 ft. MLLW (mean lower low water) to -42 ft. MLLW, with disposal in nearshore waters offshore of Imperial Beach

SUBSTANTIVE FILE DOCUMENTS: See page 16.

Staff Recommendation: Concurrence. Motion is on page 5.

Exhibits
Exhibit 1 – General Area
Exhibit 2 – Main Channel
Exhibit 3 – First Street Shoreline Location Plots Over Time
Exhibit 4 – Offshore Cross Sections
Exhibit 5 – Coronado Street Map

Appendices
Appendix A - Corps Supplemental Consistency Determination (SCD)
Appendix B - Previous Commission Findings (CD-090-02)

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers ("Corps" or "USACE") has submitted a supplemental consistency determination ("SCD," Appendix A) for a project that it previously determined to be consistent with the California Coastal Management Program (CCMP). The Commission concurred with that original Corps consistency determination in May, 2003 (CD-090-02) (Appendix B), and the Corps undertook the project in 2004/2005. Several shorefront property owners along First Street in Coronado sued the Port of San Diego, the Corps, and the U.S. Navy in connection with that project, alleging that the dredging and deepening project was causing erosion of their properties. The Commission was not a party to that litigation. The result of that litigation was that the U.S. District Court for the Southern District of California determined that the Corps had not supplied the Commission with all relevant documents available at the time of the Commission's 2003 review and ordered the Corps to submit this supplemental consistency determination. The District Court directed the Corps to include copies of several Corps studies (at least one of which was published prior to the Commission's action), but which had not been included in the Corps' original consistency determination. These studies, which were performed to determine whether there was a federal interest in protecting the Coronado shoreline, included statements that ship and boat wakes could cause or contribute to shoreline erosion in Coronado. Accordingly, the District Court directed the Corps to include a more detailed analysis of whether the deepening project had accelerated erosion, through increasing ship/boat wakes and/or by creating a larger offshore sediment sink north of Coronado.

In response, the Corps has submitted this supplemental consistency determination, which addresses the informational concerns cited by the court and "contains an appropriate disclosure and evaluation of the impact the 2004 dredging and waves generated by ship wakes had on the erosion of the Coronado shoreline." (SCD, p. 4)

This supplemental consistency determination discloses and includes the Corps' 2000, 2001, and 2005 studies (Appraisal Reports), which had included statements that:

1) extensive boat and ship traffic in the Bay, with a predictive average height of 2 to 3 feet "are large enough in magnitude, and occur frequently enough, to have an effect on the shoreline."

2) A "fairly steep" off-shore profile contributes to the erosion of the properties on First Street. "Water depths drop to 30 feet within 300 feet of the east end of the study area and within 160 feet at the west end. In addition to this, the presence of shipping channels over 40 feet deep provides a sink for sediment. Therefore, the presence of deepwater sinks and a fairly steep off-shore gradient will have an affect on coastal erosion."

3) ship wakes were causing shoreline erosion of 1.7 feet per year, and the Appraisal Reports predicted that the foundations of the homes on First Street would be in jeopardy in approximately 10 years, if no organized effort to protect the shoreline was executed. (SCD, p. 8)

In its supplemental consistency determination, the Corps maintains that these studies were not "scientifically vetted" and were "not intended to be a comprehensive study of erosion at First Street." Rather, the Corps states they were intended as "initial appraisals of the shoreline prepared for the purpose of determining a Federal interest in a shoreline protection study." The Corps further maintains that these appraisals were "cursory, based mainly on aerial photography alone" and that "a comprehensive technical analysis was not completed by the USACE because the 2005 report concluded that there was no Federal interest in a project." (SCD, p. 10)

The Corps further states, among other things, that:

(1) the erosion rate that had been predicted in the appraisals has not been occurring;

(2) the north Coronado shoreline will naturally erode because it is a result of artificial fills placed in the bay, and because the bay is sediment starved (due to significant hydrological modifications, such as the diversion of the San Diego River towards Mission Bay);

(3) the deepened channel did not result in steeper slopes along the channel;

(4) the lack of a need for maintenance dredging shows that large amounts of sediment are not falling into the channel;

(5) the deepening has not led to an increase in wake-generated erosion along First Street; and

(6) additional quantities of ship trips have not resulted since the dredging.

The Corps concludes: "Consequently, the Deepening Project did not result in any erosion attributable to ship wakes" and "Eleven years have passed since the report was issued, and this prediction has not proven to be true. Erosion has occurred at a much slower rate than the report forecast."

The Corps also offers in support of its assertions the Navy's Nuclear Aircraft Carrier (CVN) Homeporting Supplemental Environmental Impact Statement (SEIS) (2008), which includes a chapter (Chapter 5) analyzing the erosion conditions and causes along

First Street, including examining whether Navy Homeporting and Channel Deepening caused erosion. This document analyzes: (1) the history of placing loosely consolidated artificial fills in the "Spanish Bight" (the previously underwater area located between North Island and Coronado), and along other development along First Street; (2) the significant reductions (82%) in historic sediment inputs into the bay; and (3) current studies showing that Navy dredging in the Turning Basin *decreases* current velocities "by negligible amounts along First Street." The Navy concluded that "dredging in the turning basin does not promote transport of sediments away from First Street in bay currents." The Navy also opines that healthy eelgrass communities bayward of First Street are further evidence of lack of erosion occurring, noting that "eelgrass cannot tolerate physical disturbance or alterations to the bay floor, whether natural (i.e., slumping, sliding, or erosion) or non-natural (i.e., prop wash, trampling)."

The Navy's analysis looked at varying shoreline locations dating back to 1929, noting that from 1929 to 1985, the shoreline accreted due to artificial unconsolidated fills, that this practice ended after 1985, and that any erosion since that time only appears to be occurring more quickly "because no comprehensive, uniform erosion barriers were built or maintained by the private property owners and the natural sources of sediment were no longer supplying sediment to the Bay as compared to the past."

(The District Court did not question the Navy's analysis and conclusion that the Navy's dredging had not increased erosion.)

The Corps therefore believes the available evidence supports its conclusion that the deepening project is not causing erosion, and that the deepening project is consistent with the requirement of Section 30253 of the Coastal Act to avoid contributing significantly to erosion, geologic instability, or destruction of the surrounding area.

The Commission agrees. The Commission's staff engineer has reviewed the material and agrees with the Corps' conclusions. The Corps' Appraisal Reports citing erosion attributable to boat wakes and offshore sinks were "not scientifically vetted," as the Corps notes. Furthermore, both the Corps and the Navy have provided an objective examination of the questions raised by the information in the Appraisal Reports, and the available evidence leads to the conclusion that the channel deepening project did not increase erosion or the extent of boat wakes affecting the shoreline. Shoreline profiles from 1929 to 2000 support the Corps' and Navy's statements that the shoreline is still bayward of its last natural location (see Exhibit 3, showing 1953, 1970, 1985 and 2000 shorelines in relation to the 1929 shoreline, and Exhibit 4, Shoreline profiles comparing 1999 (pre-project) and 2008 (post-project) conditions). No evidence has been presented establishing that shoreline erosion has accelerated since the implementation of the channel deepening in 2004/2005, or that ship traffic has increased. The Commission therefore concludes that that project has not accelerated erosion and is consistent with the requirements of the geologic hazards policy (Section 30253) of the Coastal Act.

I. STAFF RECOMMENDATION:

The staff recommends that the Commission adopt the following motion:

MOTION: **I move that the Commission concur with supplemental consistency determination CD-001-12 and determine that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the California Coastal Management Program (CCMP).**

STAFF RECOMMENDATION:

Staff recommends a **YES** vote on the motion. Passage of this motion will result in an agreement with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

RESOLUTION TO CONCUR WITH CONSISTENCY DETERMINATION:

The Commission hereby **concurs** with the supplemental consistency determination CD-001-12 submitted by the Corps as directed by the U.S. District Court, on the grounds that the project is fully consistent, and thus consistent to the maximum extent practicable, with the enforceable policies of the CCMP.

II. FINDINGS AND DECLARATIONS.

The Commission finds and declares as follows:

A. Project Description. The Corps has submitted a supplemental consistency determination for the San Diego Bay Main Channel Deepening Project (Appendix A). The project is further described in the project description from the originally submitted consistency determination (CD-090-02), with which the Commission concurred in 2003 (Appendix B) Those previous Commission findings are incorporated by reference into this document. The purpose of this submittal of a supplemental consistency is to focus on issues identified by the U.S. District Court as needing further analysis and review, as described below.

B. History. On May 6, 2003, the Commission concurred with the Corps' consistency determination (CD-090-02) for the San Diego Harbor Central Navigation Channel Deepening Project ("Main Channel Deepening Project"). The Corps implemented this project in 2004 and 2005, dredging approximately 300,000 cu. yds. of material, to deepen the channel from -40 feet mean lower low water (MLLW) (i.e., 40 feet below MLLW) to -42 feet MLLW. The Corps disposed the dredged material in the nearshore area off Imperial Beach.

Several property owners owning homes along First St., on the north side of Coronado, filed litigation against the San Diego Unified Port District, the Corps of Engineers and the U.S. Navy (Navy). The suits sought, among other things, judicial review of the Corps' Channel Deepening project. In their suit against the Corps, the plaintiffs contended that the Corps had failed to evaluate the erosion caused by ship wakes and nearby off-shore steepened channel slopes, and had ignored the Corps' own Coronado Shoreline Reports which had attributed erosion to ship and boat wakes.

On August 4, 2009, the U.S. District Court for the Southern District of California issued an Order granting summary judgment to the Plaintiffs, finding the Corps' 2003 consistency determination was "arbitrary and capricious": (1) because the Corps failed to disclose the results of a concurrent Corps study at the Coronado Shoreline; and (2) the Corps did not evaluate or inform the Commission of the information contained in the Coronado Shoreline Study about ship wakes, deep sinks, and steep slopes. The Corps describes the court order as follows:

> *The District Court remanded the decision to the USACE for reconsideration on a complete record as it relates to the impact of dredging on the Coronado shoreline. The remand is to focus on the adverse impact of ship wakes, in connection with the exacerbation caused by the steeper drop in the deep water sink, as outlined in the 2001 Coronado Shoreline Study and discussed in the Court's Order. In addition, the Court set aside the consistency determination the USACE prepared in May 2003 and ordered the USACE to submit a supplemental application to the CCC that contains an appropriate disclosure and evaluation of the impact the 2004 dredging and waves generated by ship wakes had on the erosion of the Coronado shoreline. In response to the 2009 Court Order, the USACE has supplemented its analysis specific to erosion along the Coronado shoreline from the USACE's 2004 Deepening Project.*

The court order on the cause of action relevant to the Corps' consistency determination concluded as follows:

> *D. Remedy*
>
> *Because Plaintiffs have established that the 2004 decision to conduct further dredging was arbitrary and capricious under the APA and not in accordance with the CZMA, the Court* ***REMANDS*** *the decision to the ACOE for reconsideration on a complete record as it relates to the impact of the dredging on the Coronado shoreline. The remand shall focus on the adverse impact of ship wakes, in connection with the exacerbation caused by the steeper drop into the deep water sink, as outlined in the 2001 Coronado Shoreline Report and discussed in this Order.*

> *In addition, the Court set asides the Consistency Determination the ACOE prepared in May 2003. See Sausalito, 386 F.3d at 1201. The Court* ***ORDERS*** *the ACOE to submit a supplemental application to the California Coastal Commission that contains an appropriate disclosure and evaluation of the impact the 2004 dredging and waves generated by ship wakes on the erosion of the Coronado shoreline. The ACOE shall include a copy of this Order as well as the most current copy of the Coronado Shoreline Report with its supplemental application.*
>
> *Because the erosion jeopardizes the habitability of the homes, the Court agrees with Plaintiffs that a time line is appropriate. The ACOE shall conduct the remand described above and obtain a new Consistency Determination* **within 18 months**, *and implement any required mitigation measures* **within the following 12 months**.

On October 13, 2011, in compliance with the court ordered timeline, the Corps submitted this supplemental consistency determination to the Commission with the accompanying analysis ordered by the Court.

B. Federal Agency's Consistency Determination. The Corps has determined that the project is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP).

C. Erosion and Geologic Hazards Section 30253 of the Coastal Act provides:

> *New development shall…:*
>
> *(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
>
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

The Corps' Supplemental Consistency Determination (SCD, p. 7-8) notes that its original 2003 consistency determination had provided the following discussion concerning geologic hazards and Section 30253:

> *No geologic processes (i.e., major landsliding or erosion) would be triggered or accelerated by dredging or disposal activities. Sloughing of channel walls into the channel would be expected to occur as the channel stabilizes after dredging. Placement of dredged material as a bar-like submarine berm would reduce erosion rates by dissipating incident wave energy and increasing the sediment budget input, partially blocking offshore migration of beach materials during*

> *storms. Historically, the erosion rate at beach receiver sites has exceeded the input of sediment. Beach nourishment would counter these effects and reduce the rate of shoreline retreat. This is a beneficial impact.*

The Corps' Supplemental Consistency Determination (SCD, p. 7-8) states that:

> *The project's consistency with all other applicable enforceable policies of the CCMP evaluated in the 2003 CD remains unchanged and those evaluations are hereby incorporated by reference.*

The Commission agrees and, in addition to the discussion below, is incorporating by reference here its analysis of the other enforceable policies of the Coastal Act raised by the project (Appendix B: CCC's 2003 Findings, CD-090-02), which remain unchanged.

The Corps' SCD (p. 8) then goes on to describe and summarize several studies intended to determine whether there was a federal interest in protecting the Coronado shoreline. In those documents, dated 2000, 2001, 2005, the Corps studied the approximately one half mile of shoreline along First St., between Orange and Alameda Aves (Exhibits 3-5). The first of these studies (Draft Coronado Shoreline Initial Appraisal Report, USACE 2000) stated, among other things:

1. up until 1985, artificial fill was placed along the shoreline;

2. wind driven waves were not an erosion factor;

3. extensive boat and ship traffic in the Bay, with a predictive average height of 2 to 3 feet "are large enough in magnitude, and occur frequently enough, to have an effect on the shoreline;"

4. a contributing factor to the erosion of the properties on First Street was the "off-shore profile." That is, the edge of the shipping channel had a "fairly steep" gradient, and the "deepwater sink" dropped to 30 feet with a 40 foot deep shipping channel; and

5. ship wakes were causing shoreline erosion of 1.7 feet per year, and the Report predicted that the foundations of the homes on First Street would be in jeopardy in approximately 10 years, if no organized effort to protect the shoreline was executed.

In a footnote to item 5, the Corps now states: "Eleven years have passed since the report was issued, and this prediction [i.e., the prediction that there would be 1.7 feet of shoreline erosion per year] has not proven to be true. Erosion has occurred at a much slower rate than the report forecast." (SCD, p. 8):

The 2000 Appraisal Report also stated that erosion along the shoreline was "a consequence of inadequate shoreline protection and the artificial filling of the shoreline extending it into deeper water."

The 2000 Appraisal Report concluded that the study could not proceed to a "feasibility level evaluation" under "Section 111" authority, because that authority did not allow federal Corps funds to be used for "projects that prevent or mitigate erosion caused by vessel generated wave wash, which was identified by the 2000 report as the primary cause of erosion at First Street." (SCD, p. 9).

The Corps then prepared a 2001 study under a different authorization authority. That report also concluded that the Corps could not fund the project, as the applicable authority allowed funding "for protection from storm driven waves and currents, but not vessel generated waves."

In its 2005 revised appraisal, the Corps concluded that the shoreline study should be terminated based on the lack of applicable project authorities.

The Corps' SCD, p. 10, notes:

> *While the USACE's Coronado Shoreline reports addressed potential causes of erosion at First Street, the results of these reports were not scientifically vetted. The Coronado Shoreline reports were not intended to be a comprehensive study of erosion at First Street. The reports served as initial appraisals of the shoreline prepared for the purpose of determining a Federal interest in a shoreline protection study.*
>
> *The Coronado Shoreline reports' analyses of erosion at the shoreline were cursory, based mainly on aerial photography alone. The analysis of erosion based on aerial photography cannot "explain variations to conditions in the subject area that have a direct effect on erosion rate" (U.S. Navy 2008). Such variations may include "sediment inputs and outputs, wave climate, currents, vessel traffic, or the effects of physical changes to other parts of the Bay" (U.S. Navy 2008). Such a comprehensive technical analysis was not completed by the USACE because the 2005 report concluded that there was no Federal interest in a project.*

The Corps' SCD, p. 10, follows the summary of its earlier "appraisal" studies with an 11 page analysis of the Channel Deepening Project on Coronado's shoreline (Appendix A, pp. 10-20). In this analysis, the Corps indicates that the channel was deepened by two feet, with 300,000 cu. yds. dredged, and with an average vertical cut in the dredged area of eight inches. The Corps maintains:

1) The dredging of the Central Navigation Channel did not impact the slopes of the surrounding harbor bottom. Slopes of the harbor floor remained the same.

2) The closest point of the channel to the Coronado shoreline is 2,000 feet away. Since the dredging did not affect any of the surrounding bayfloor, it did not affect the Coronado shoreline 2,000 feet away.

3) Deepening activities performed in 2004/2005 do not represent a source of wake-generated erosion along First Street.

4) … [T]he majority of the vessels operating in the Bay did not require a deepening of the Federal Navigation Channel to continue operating, and the vast majority of vessel movements (more than 99 percent) are unrelated to the 2004 Deepening Project.

5) A 2-foot deeper Central Navigation Channel allows a ship to transit with a 2-foot deeper draft and to carry more cargo. More cargo can be transported per trip, and carriers can make fewer trips per year. This Deepening Project was not expected to increase the number of ship calls to the 10th Avenue Marine Terminal, and could possibly have decreased the number of ship calls.

6) Of the ships that access the 10th Avenue Marine Terminal, only a small percentage of those are bulk carriers that could utilize the advantages of a deeper Central Navigation Channel.

7) Out of 1,905 ships passing the Coronado shoreline on an annual basis, 7 ships could possibly enter the harbor and utilize a 2 foot deeper draft provided by the deepening of the Central Navigation Channel. This is an insignificant proportion of ship movements in the bay to have any impact on the Coronado shoreline.

8) No additional shipping has occurred as a result of the 2004 Deepening Project. Thus, deepening of the Central Navigation Channel did not increase boat-generated waves in San Diego Bay.

9) Consequently, the Deepening Project did not result in any erosion attributable to ship wakes.

The SCD proceeds to incorporate a more recent (and post-dredging) analysis of the impact of Channel Deepening on erosion in Coronado, which the Navy prepared as part of it's Navy's Nuclear Aircraft Carrier (CVN) Homeporting Supplemental Environmental Impact Statement (SEIS) (2008). In Chapter 5 of this SEIS, as well as in its Response to Comments section of the SEIS, the Navy responded to similar concerns raised as to

whether Navy Homeporting of CVNs (which also entailed Main Channel Deepening, adjacent to NASNI) contributed to erosion. The Corps' summary of the Navy's analysis (SCD, p. 13-19) includes the following points:

> *Geomorphology*
>
> *Historically, the configuration of San Diego Bay included the Spanish Bight, a natural trough located between North Island and Coronado …. The Spanish Bight is a result of the "undulating geology" between local fault zones, which "coincides with lower bedrock in the Spanish Bight and San Diego Bay relative to North Island and Coronado" (U.S. Navy 2008). The Spanish Bight was filled with artificial material in 1944 and 1945.*
>
> *As a consequence of the filling of the Spanish Bight, the subject shoreline at First Street is "underlain by loosely consolidated artificial fill consisting of bay mud deposits" (U.S. Navy 2008). Specifically, along the bay on Coronado, the artificial fill spans the land north of First Street between Alameda Boulevard and G Avenue. Between G Avenue and A Avenue the land trends further bayward.*
>
> *Artificial fill along the shoreline was placed hydraulically, a method that mixes marine sediments with water and that allows for little or no consolidation. … This artificial fill along First Street, therefore, is at higher risk of erosion, due to the lack of protection and the presence of continual water and energy, compared to protected artificial fill or well-consolidated sediments.*
>
> *Reduced Sedimentation*
>
> *Prior to human intervention, several rivers and other drainages deposited sediment into San Diego Bay, including the San Diego, Otay, and Sweetwater rivers. … After human alterations to the Bay, however, this dynamic equilibrium was disrupted. Alterations include "the construction of dams, flood control channels, jetties and shoreline protection structures," which cut off the natural supply of sediment to shorelines in the Bay and threaten their long-term stability (U.S. Navy 2008).*
>
> *Substantial alterations to these sediment inputs occurred in the late 19th and early 20th centuries including the diversion of the San Diego River to Mission Bay in 1876; the construction of the Zuniga Jetty in 1893, which prevented sediments transported north in the Silver Strand Littoral Cell from entering San Diego Bay; and the damming of the Sweetwater, Otay, and Tijuana rivers by 1937. Removal of these sediment inputs caused a reduction of up to 82 percent of historic*

sediment discharges into the Bay; historically 800,000 to 1,100,000 cubic meters of sediment were discharged annually while today only approximately 140,000 to 190,000 cubic meters are discharged annually.

Sediment inputs are important for North Island and Coronado shorelines because it enables beaches to grow, maintains a buffer between the backbeach bluffs and the water, and diffuses wave and current energy before it hits the bluffs. When no beach is present as a buffer, the bluffs are directly exposed to this energy. Lack of a buffer typically "corresponds to a steeper gradient in the exposed shoreline, which can weaken the lateral support of loosely consolidated or unconsolidated bluffs" (U.S. Navy 2008).

As North Island and Coronado were filled in the 1930s and 1940s, the shoreline was widened and moved outward into the Bay and closer to deeper waters. Here wave propagation from winds is greater, proximity to the shipping channel is closer, and tidal energy is more direct, "thereby further reducing the shallower and calmer areas of the Bay where sediments are more likely to settle out and still remain in circulation" (U.S. Navy 2008). Sediments that settle out in deeper areas are less likely to be recirculated back to the shoreline to replenish and grow the beach.

Currents

In 2008, the Space and Naval Warfare System (SPAWAR) Command performed a study to measure currents at 3 locations along the Coronado shoreline. The study showed that currents in the Bay become stronger further from shore, not closer to shore. In 1998, a hydrodynamic model was used to simulate tides and currents in San Diego Bay under pre-dredge conditions (U.S. Navy 2008). This model was then used in the 2008 study to evaluate the potential for dredging to alter currents in the Bay. Results showed that the Navy's dredging in the Turning Basin actually decreases current velocity by negligible amounts along First Street, and that currents were too weak to move sediments along the shore. The Navy concluded that dredging in the turning basin does not promote transport of sediments away from First Street in bay currents (U.S. Navy 2008).

Shoreline Configuration

Back beach bluffs are another significant contributor to shorelines that have been altered by human development. Historically, the area from North Island south along First Street was lined with sediment-laden beaches and bluffs. These unconsolidated bluffs would periodically provide sediment to the shoreline during "extreme tidal and wave action, surface water run-off, or slumping due to gravitational forces" (U.S. Navy 2008). These bluffs were developed post-World

War II, where they were "stabilized", built upon, and "frozen-in-place". Therefore, sediment that was previously provided to the system from the bluffs was no longer delivered to the shoreline.

As North Island and Coronado were expanded and the shoreline was moved outward into the bay, closer to deeper waters, "the new shoreline position was not historically, bathymetrically, or geomorphologically supported by the natural state of the bay" (U.S. Navy 2008). Artificial filling along the shoreline occurred from the late 1920s until the mid-1980s, when it reached its maximum bayward extent. After artificial filling activities were discontinued, evidence in aerials from 2000 showed that several places along the artificial shoreline had eroded. Removal of sediment sources to the shoreline due to human alterations through river damming and bluff stabilization have reduced the width of the shoreline buffer. The bluffs were, thereby, exposed to additional wave and current action, which encouraged and accelerated erosion.

<u>Bay Floor</u>

Although sediment input to the bay and its shorelines has been substantially reduced, the primary sediment sink, naturally deep portions of the bay, remain. While dredging has deepened the main channel, it continues to function as a sediment sink in the same manner that it historically has.

The presence of eelgrass along the shoreline can serve as an indicator of shoreline stability since eelgrass anchors and stabilizes bay floor sediments. Eelgrass cannot grow if the sediments or the bay floor are active, and sediments that are stirred up create turbidity and poor sunlight penetration, which can kill or prevent growth of eelgrass. Furthermore, eelgrass cannot tolerate physical disturbance or alterations to the bay floor, whether natural (i.e., slumping, sliding, or erosion) or non-natural (i.e., prop wash, trampling).

In 2004, a large bed of eelgrass was present starting just east of the rocky revetment offshore approximately from the intersection of First Street and Alameda Blvd. and continuing along an easterly direction for approximately 2,800 linear feet. The presence and population of eelgrass demonstrates stability of the bay floor and sediments in this area.[2]

The above footnote states:

A large bed of eelgrass remains present along the shoreline at First Street. A March 2010 eelgrass survey of the First Street area showed that eelgrass beds were growing and expanding, and that the beds remain extremely dense, since a survey performed in 2009 (WSSI 2010).

The Navy concluded:

> *In addition to the underlying artificial fill, between 1929 and 1985, there was artificial fill replenishment along First Street. This artificial fill at First Street and the Spanish Bight migrated the "shorelines seaward, toward the deeper, faster water at mid-Bay" (Stople 2011; pt. 20, 21), and the unconsolidated material is more susceptible to erosion and deformation from water and energy (U.S. District Court 2011; p. 19 l. 21, p. 20 l. 3). Under natural conditions, the unconsolidated nature of this artificial fill and its extension outward into the Bay correspond to a higher risk of erosion.*
>
> *Sediment input levels in the Bay have been reduced over time, in part due to the diversion of the San Diego River and the damming of the Sweetwater, Otay, and Tijuana rivers between 1876 and 1937, which "accounted for the direct loss of sediment to the Coronado shoreline" (U.S. District Court; p. 6 l. 16). Additionally, bluffs lining the beaches contributed sediment to the shoreline. When these bluffs were developed, this source of sediment to the shoreline was also eliminated (U.S. Navy 2008). These altered conditions in the Bay created a negative sediment budget (i.e., less input of sediment into the system than transport out of the system).*
>
> *While natural conditions would have eroded the Coronado shoreline due to loss of sediment input, the shoreline did not appear to shrink as artificial fill material was placed "in quantities and at frequencies sufficient to "grow" the shoreline bayward as much as 90 feet." (U.S. District Court; p. 6 l. 19). Photographs show that there was "not enough room to build a house between First Street and the Bay until the area was created with artificial fill" (U.S. District Court; p. 19 l. 8).*
>
> *After 1985, after artificial fill was no longer placed along Coronado, it only appeared that erosion was happening more quickly because no comprehensive, uniform erosion barriers were built or maintained by the private property owners and the natural sources of sediment were no longer supplying sediment to the Bay as compared to the past (U.S. District Court; p. 20 l. 21). If "left unprotected in the existing low sediment environment, the shoreline would 'naturally' retreat, not only to its historic (19th Century) location, but it would retreat further since the historical sediment conditions no longer exist" (Stople 2011; pt. 25), and a negative sediment budget has since been created. The Coronado Shoreline reports stated that "1.7 feet of shoreline was eroding each year", however, this referred to erosion of the artificial shoreline that had been created (U.S. District Court; p. 6, l. 21), which occurs under natural conditions given the lack of input of sediment into the system.*

The Corps concludes:

> *Deepening activities performed in 2004 have not contributed to erosion of the Coronado shoreline.*
>
> *Generally, the underwater atmosphere, which is denser, exerts pressure on sediment grains and creates nearly vertical slope angles (U.S. District Court; p. 22 l. 24). For these offshore bay bottom slopes to effect shoreline erosion, the slopes must collapse. According to Stople, if these slopes are stable and do not collapse, then they have no impact on shoreline erosion (Stople 2011; pt 26). A comparison of profiles of the central channel taken by the USACE in 1999 and 2008 (prior to and after the Deepening Project)*[Exhibit 4] *show that the slope offshore of the Coronado shoreline and the slope of the Central Navigation Channel, which is approximately 2,000 feet from the Coronado shoreline, are almost identical. Thus, the slope from the Coronado shoreline to the Central Navigation Channel sink is stable and has not collapsed. There is no evidence of slope collapse offshore of Coronado shoreline, and therefore no evidence that the Deepening Project contributed to erosion there.*
>
> *Data show that the marine traffic supported by the Deepening Project accounts for a small fraction of the overall deep draft traffic in the Bay. Such vessels travel slowly, limiting the potential for generating sizeable wakes that would impact the shoreline. Moreover, no additional shipping has occurred as a result of the 2004 Deepening Project. Thus, deepening of the Central Navigation Channel did not increase boat-generated waves in San Diego Bay. Consequently, the Deepening Project did not result in any erosion attributable to ship wakes.*
>
> *Erosion is occurring along the shoreline due to the unconsolidated artificial fill characteristics, the natural configuration and conditions in the Bay, and a negative sediment budget created by historic alterations to the Bay and shoreline bluffs. Deepening activities have not contributed to an erosion process that is naturally occurring in the Bay. Furthermore, the presence of persistent and expanding eelgrass near the Coronado shoreline indicates a stable shoreline in the area. Eelgrass could not be supported in a highly erosive environment.*
>
> *The Deepening Project is consistent with Section 30253 of the CCA. It does not <u>create nor contribute to erosion, geologic instability, or destruction of the Coronado Island shoreline or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs</u>.* [Emphasis in original]

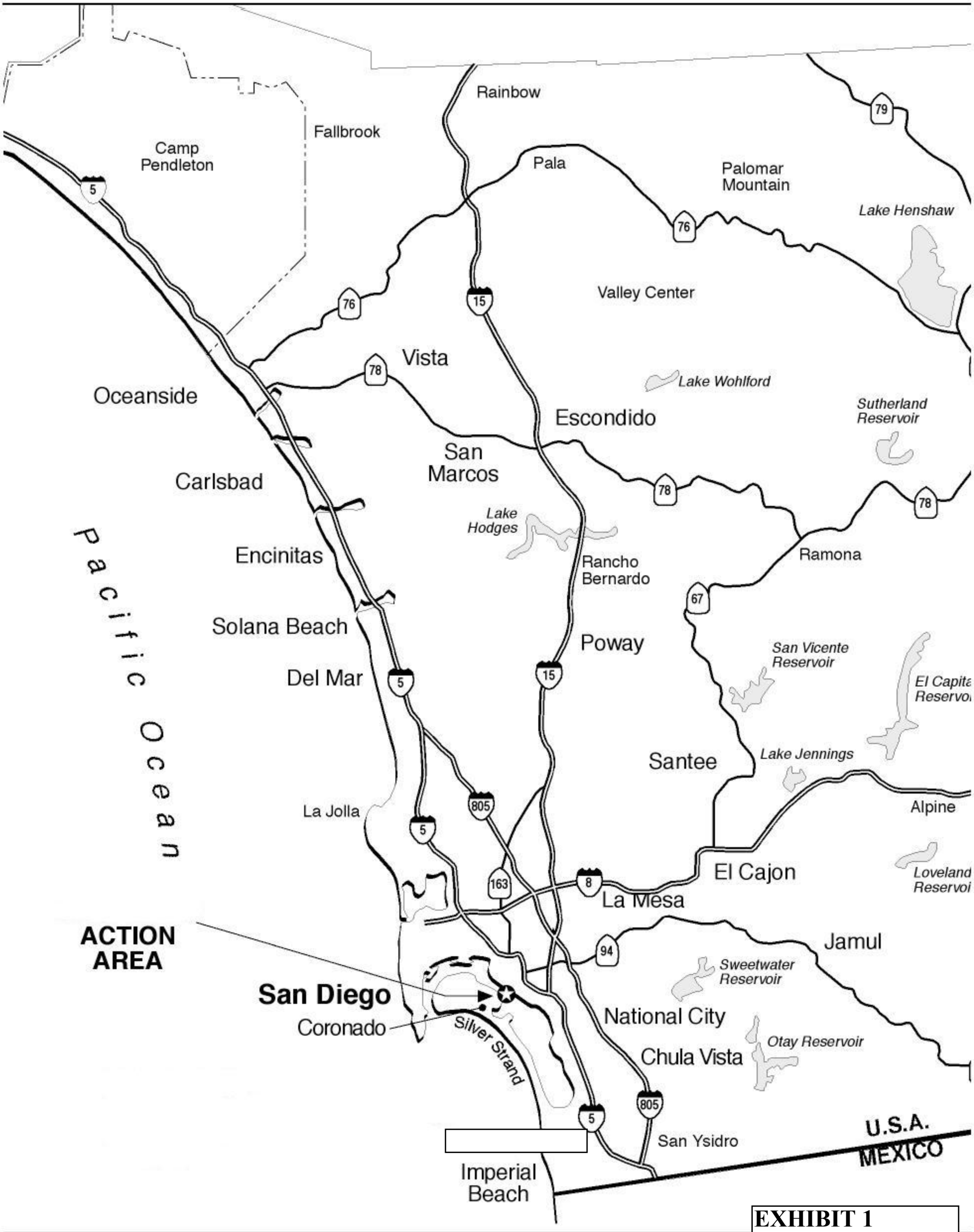
The Commission agrees. The Commission staff engineer has reviewed the material and also agrees. The Corps Appraisal Reports citing erosion attributable to boat wakes and offshore sinks were "not scientifically vetted," as the Corps indicates. Furthermore, both the Corps and the Navy have provided an objective examination of the questions raised by the information in the Appraisal Reports, and the available evidence leads to the conclusion that the channel deepening project did not increase erosion or the extent of boat wakes affecting the shoreline. Shoreline profiles from 1929 to 2000 support the Corps' and Navy's statements that the shoreline is still bayward of its last natural location (see Exhibit 3, showing 1953, 1970, 1985 and 2000 shorelines in relation to the 1929 shoreline, and Exhibit 4, Shoreline profiles comparing 1999 (pre-project) and 2008 (post-project) conditions). No evidence has been presented establishing that shoreline erosion has accelerated since the implementation of the channel deepening in 2004/2005, or that ship traffic has increased. The Commission therefore concludes that that project has not accelerated erosion and is consistent with the requirements of the geologic hazards policy (Section 30253) of the Coastal Act.

As noted previously in this report, the Commission is incorporating by reference its previous findings (Appendix B). Those findings included analyzing: (1) the suitability of the material for beach replenishment; (2) sediment testing to establish the lack of contaminants in the material, and its suitability for ocean disposal; (3) the need to schedule the activity to avoid the least tern nesting season; (4) water quality impacts from potential spills and the need for contingency planning to minimize drill fluid spills and eelgrass impacts; (5) the need to avoid eelgrass impacts by leaving the portions of the cable in place in shallower waters; and (6) recreation issues, including the temporary use of South Embarcadero Marina Park for the electric cable relocation construction activities and the need for temporary replacement parking nearby. In analyzing these issues the Commission found that the project was consistent with the Coastal Act's: (1) marine resources and water quality policies (Sections 30230 and 30231); (2) allowable use, alternatives, mitigation, and beach nourishment requirements of the dredging policy (Section 30233(a) and (b)); and (3) public access and recreation policies (Sections 30210-30212).

III. SUBSTANTIVE FILE DOCUMENTS:

1. U.S. Army Corps of Engineers Consistency Determination CD-090-02 (February 6, 2003) and Supplemental Consistency Determination CD-001-12 (June 7, 2011), San Diego Harbor Central Navigation Channel Deepening.
2. San Diego Harbor Safety Plan (SDHSP, Mandated by California Oil Spill Prevention and Response Act of 1990), May 2010.
3. Stople, Richard C., 2011 Declaration. March 14, 2011.
4. U.S. Army Corps of Engineers (USACE), 2000 Draft Coronado Shoreline Initial Appraisal Report. December 2000.

5. U.S. Army Corps of Engineers (USACE), Draft Coronado Shoreline Initial Appraisal Report. December 2000.
6. U.S. Army Corps of Engineers (USACE), Draft Coronado Shoreline Initial Appraisal Report, March 2001.
7. U.S. Army Corps of Engineers (USACE), San Diego Harbor Central Navigation Channel Deepening Feasibility Report. Volume II, Environmental Impact Statement/Environmental Impact Report (EIS/EIR), September2003.
8. U.S. Army Corps of Engineers (USACE), Draft Coronado Shoreline Reconnaissance Study, Initial Appraisal Report. Revised September 2005.
9. U.S. Army Corps of Engineers, Engineering Regulation 1105-2-100. Appendix F, Amendment #2: Continuing Authorities Program. January 31, 2007.
10. U.S. District Court, Southern District of California, Order (1) Granting Plaintiffs' *Ex Parte* Application to Continue Motion for Summary Judgment on Fourth Claim; (2) Granting Plaintiffs' and Denying Federal Defendants' Motion for Summary Judgment on Fifth Claim; (3) Denying Federal Defendants' Motion for Summary Judgment on Sixth Claim; and (4) Denying as Moot Federal Defendants' Motion to Strike. Case No. 06 CV 1327 MMA (POR). August 4, 2009.
11. U.S. District Court, Southern District of California, Order Denying Federal Defendants' Motion for Reconsideration. Case No. 06 CV 1327 MMA (POR). June 8, 2010.
12. U.S. District Court, Southern District of California, Order granting defendant Navy's renewed amended motion for summary judgment and denying Plaintiffs' cross-motion for summary judgment on fourth cause of action. Case No. 06 CV 1327 MMA (POR). May 2, 2011.
13. U.S. Navy, 2008 Supplemental Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the CVN Homeporting, San Diego. Chapter 5. December 2008.
14. WSSI Environmental Consulting, Eelgrass Survey, 501 and 505 First Street, Coronado, CA, March 2010.



Source: Developed by Patrick J. Burke, SCS, Escondido, Calif., with technical input from Peter H. Bloom, staff research biologist, National Audubon Society -- Condor Research Center, Ventura, Calif.

NORTH

No Scale

EXHIBIT 1
CD-001-12

1

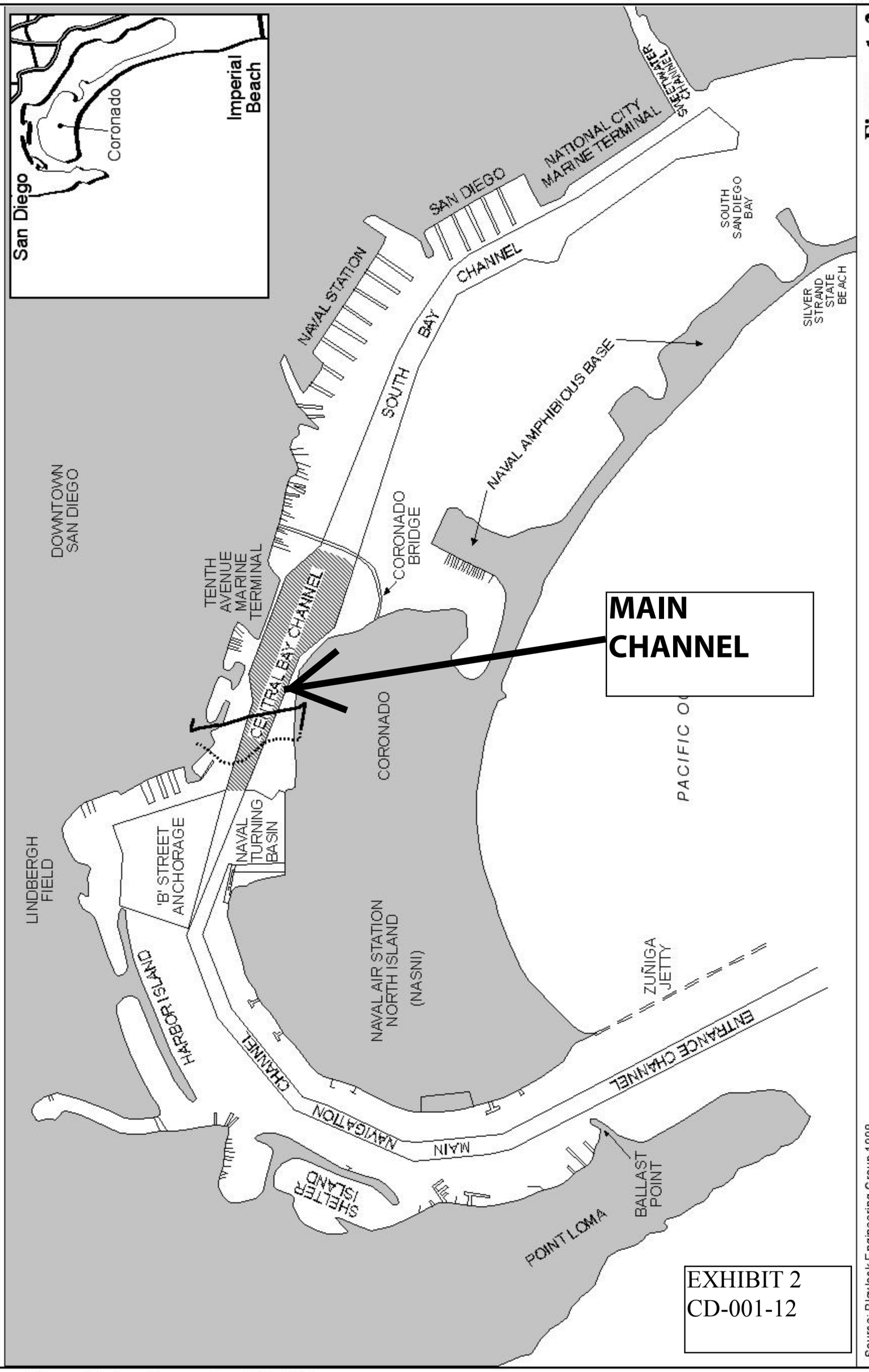
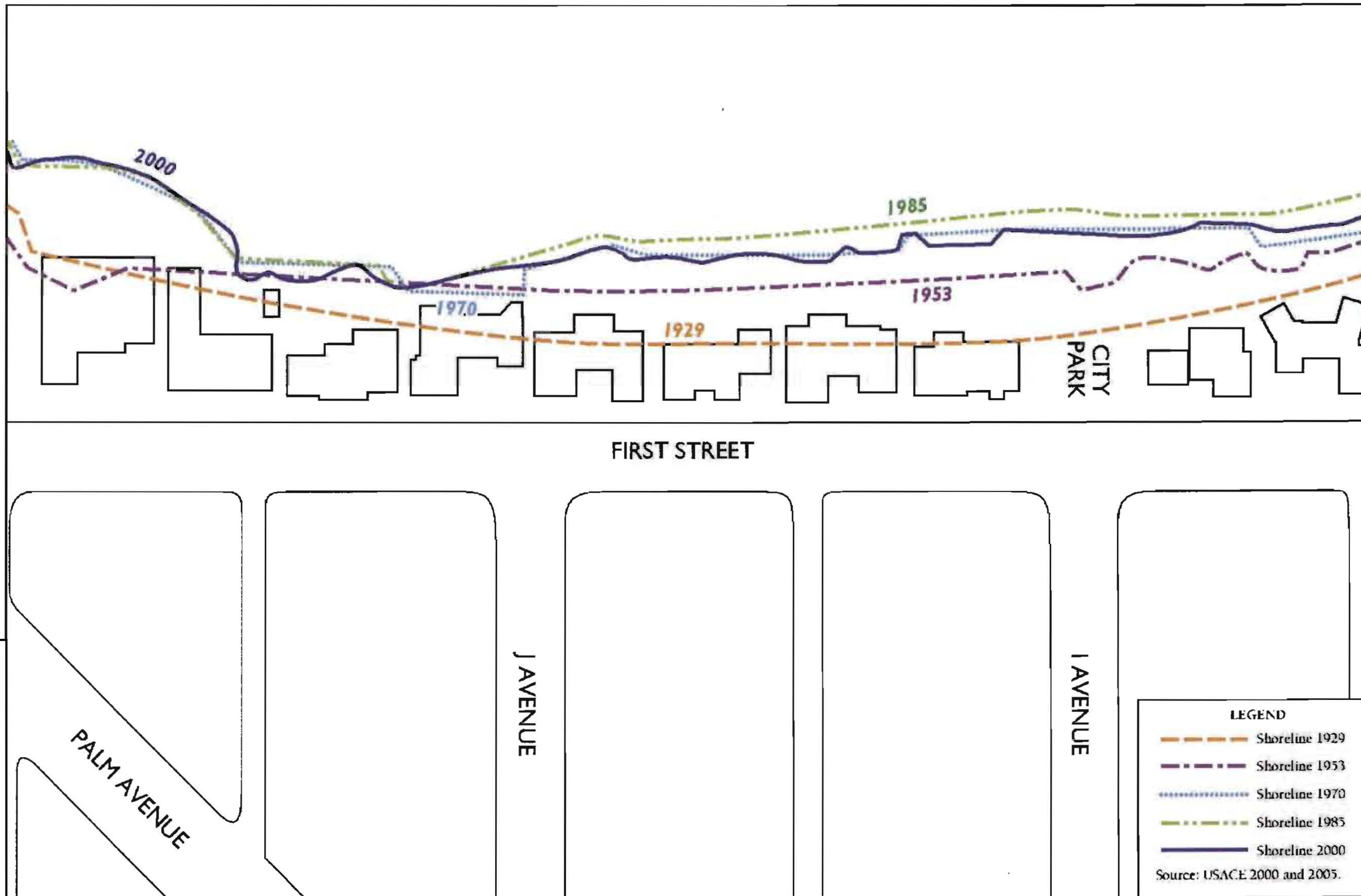


Figure 1-2
Project Area

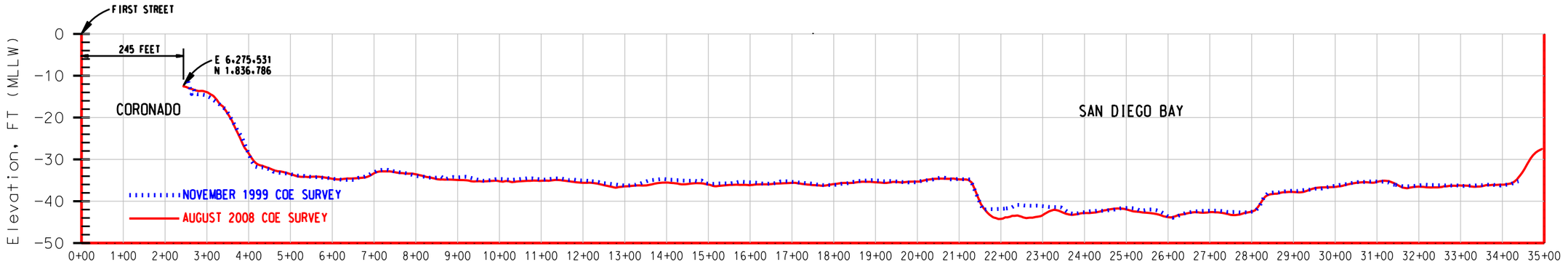


0 Meters 35
0 Feet 120

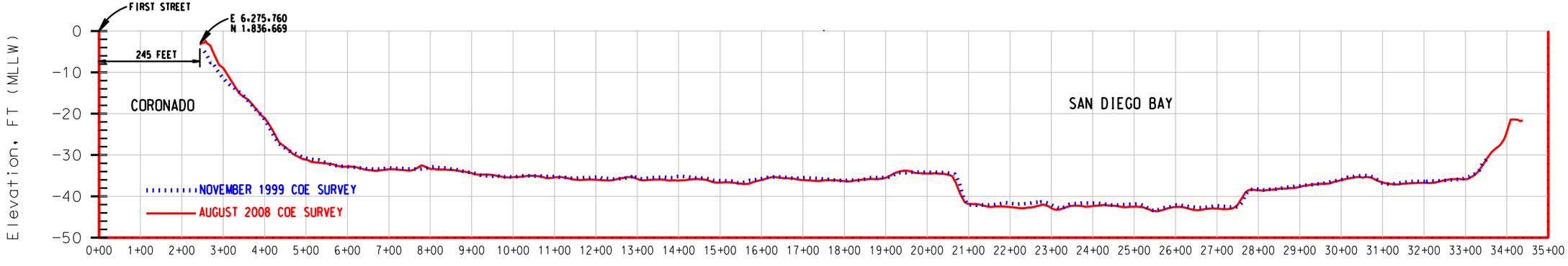
Figure 5.2-4
Shoreline Position Change Along First Street in Coronado Between 1929 and 2000

EXHIBIT 3
CD-001-12
Source: Navy SEIS

USA-063210



CORONADO-309 FIRST ST.- SAN DIEGO BAY PROFILES



CORONADO-407 FIRST ST.- SAN DIEGO BAY PROFILES

EXHIBIT 4
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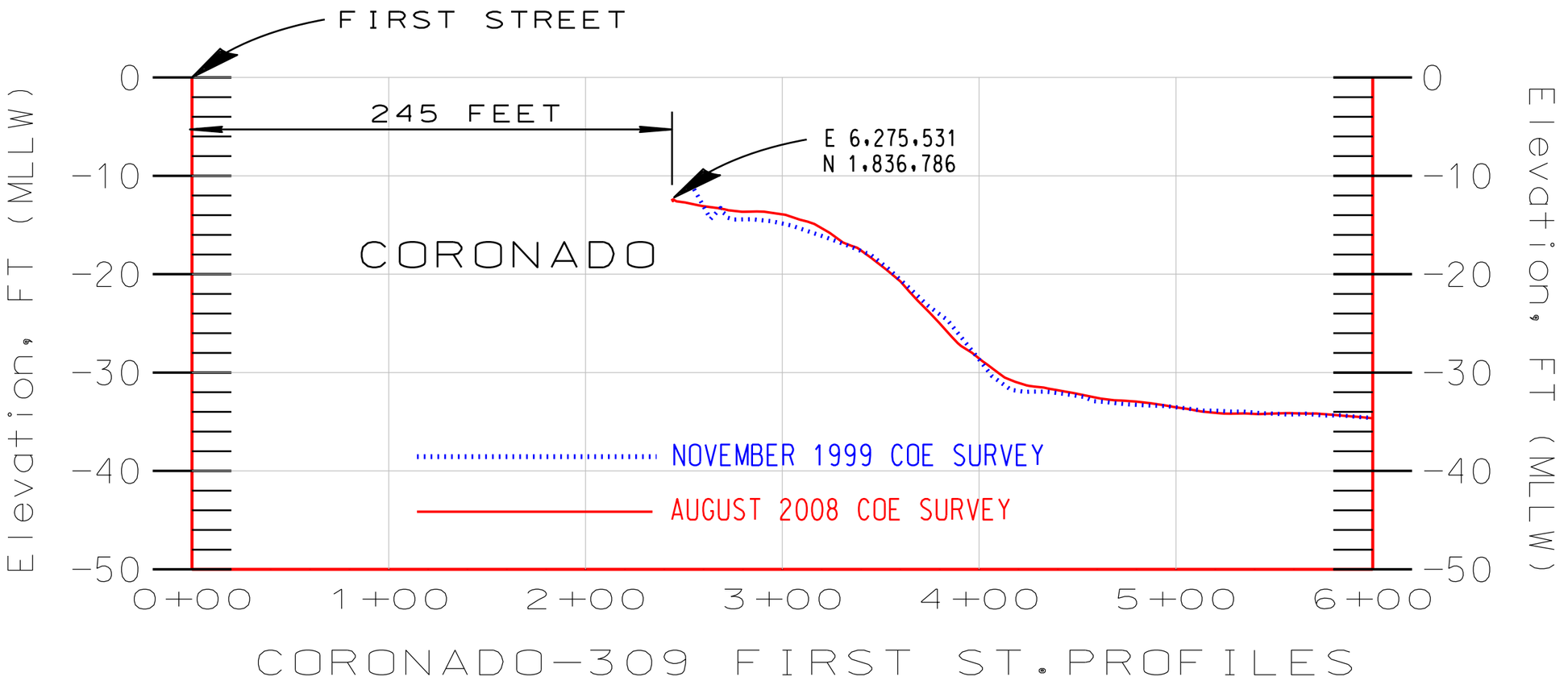
COE SCD



CORONADO–309 FIRST ST. PROFILES

EXHIBIT 4
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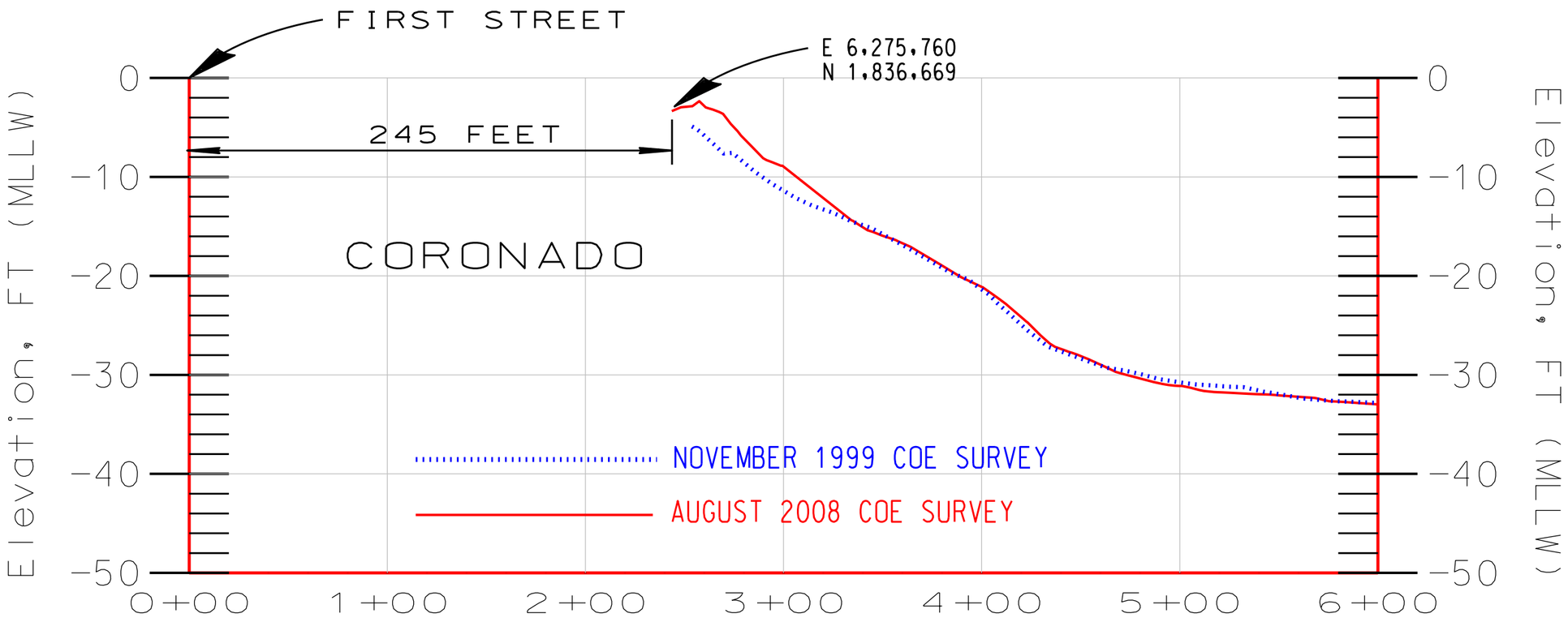

CORONADO-407 FIRST ST. PROFILES

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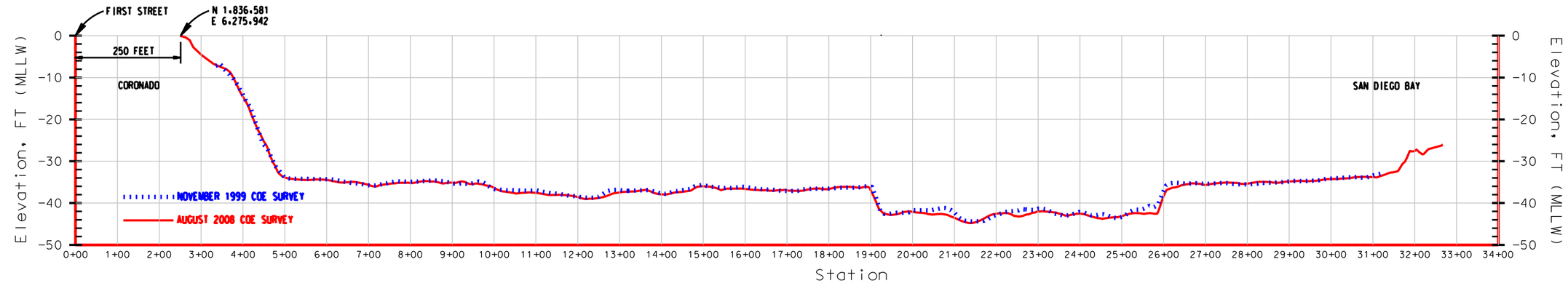
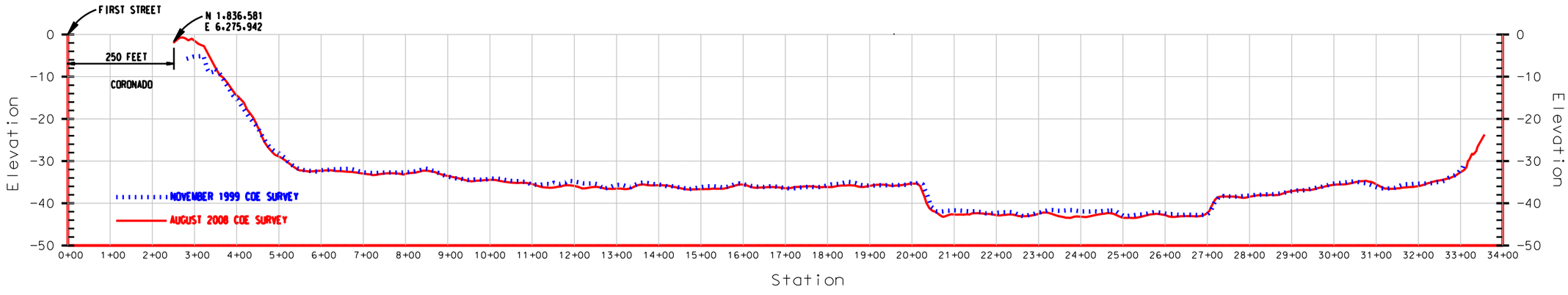
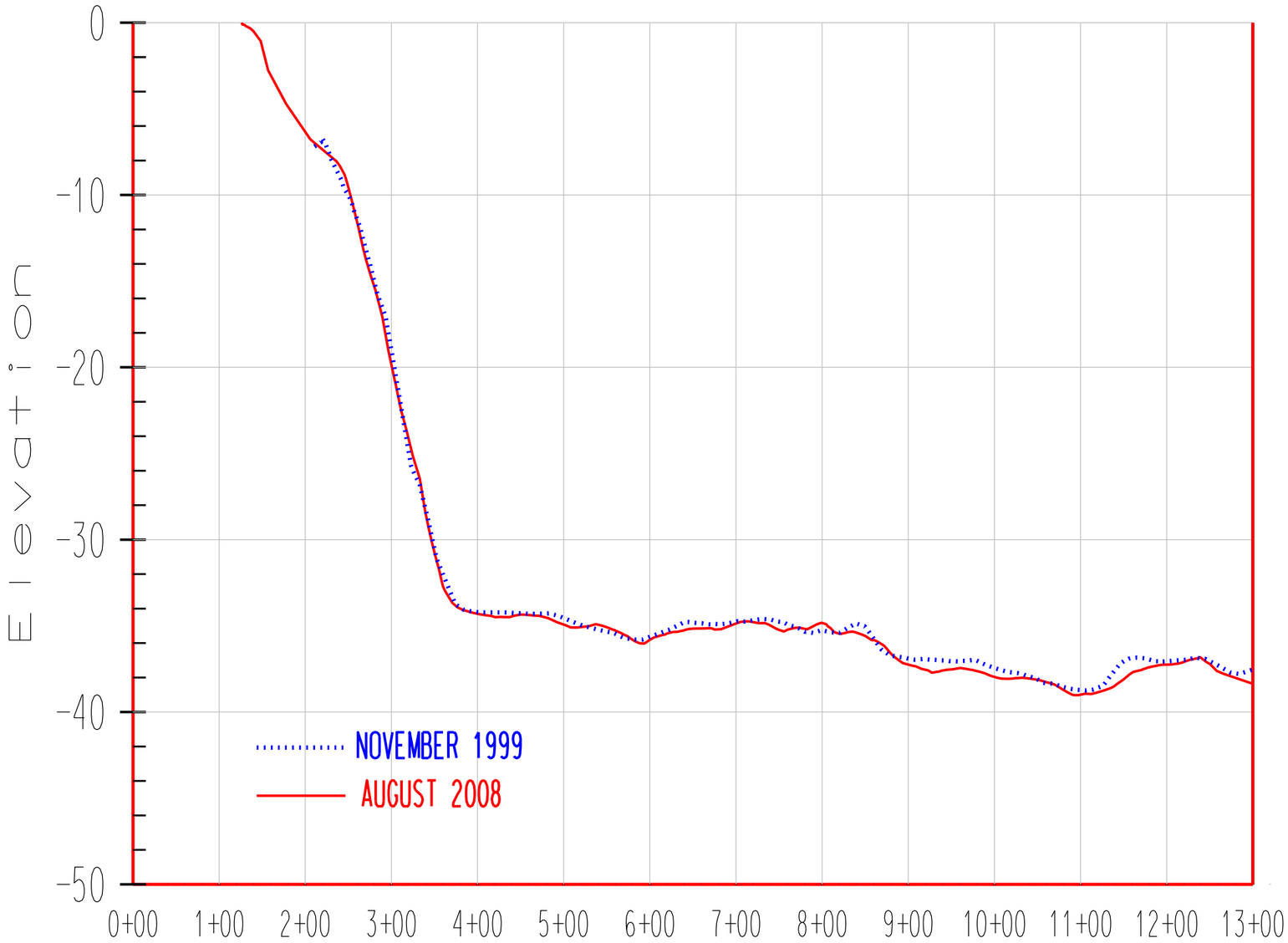


CORONADO–SAN DIEGO BAY AREA "H" PROFILES



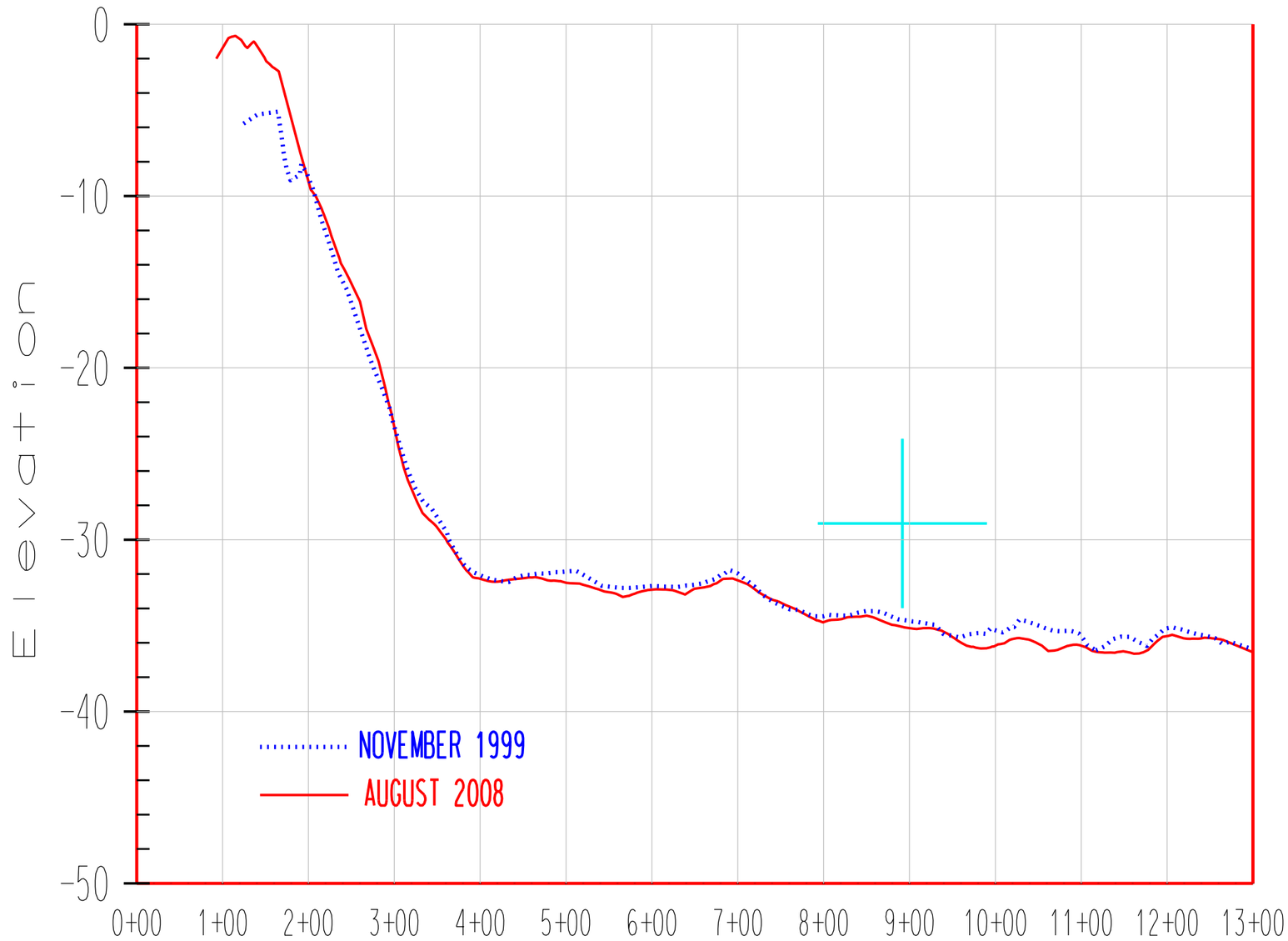
CORONADO–SAN DIEGO BAY AREA "I" PROFILES

EXHIBIT 4
p. 4 Source:
COE SCD



CORONADO-AVENUE "H" PROFILES

EXHIBIT 4
p. 5 Source:
COE SCD



CORONADO-AVENUE "I" PROFILES

EXHIBIT 4
p. 6 Source:
COE SCD

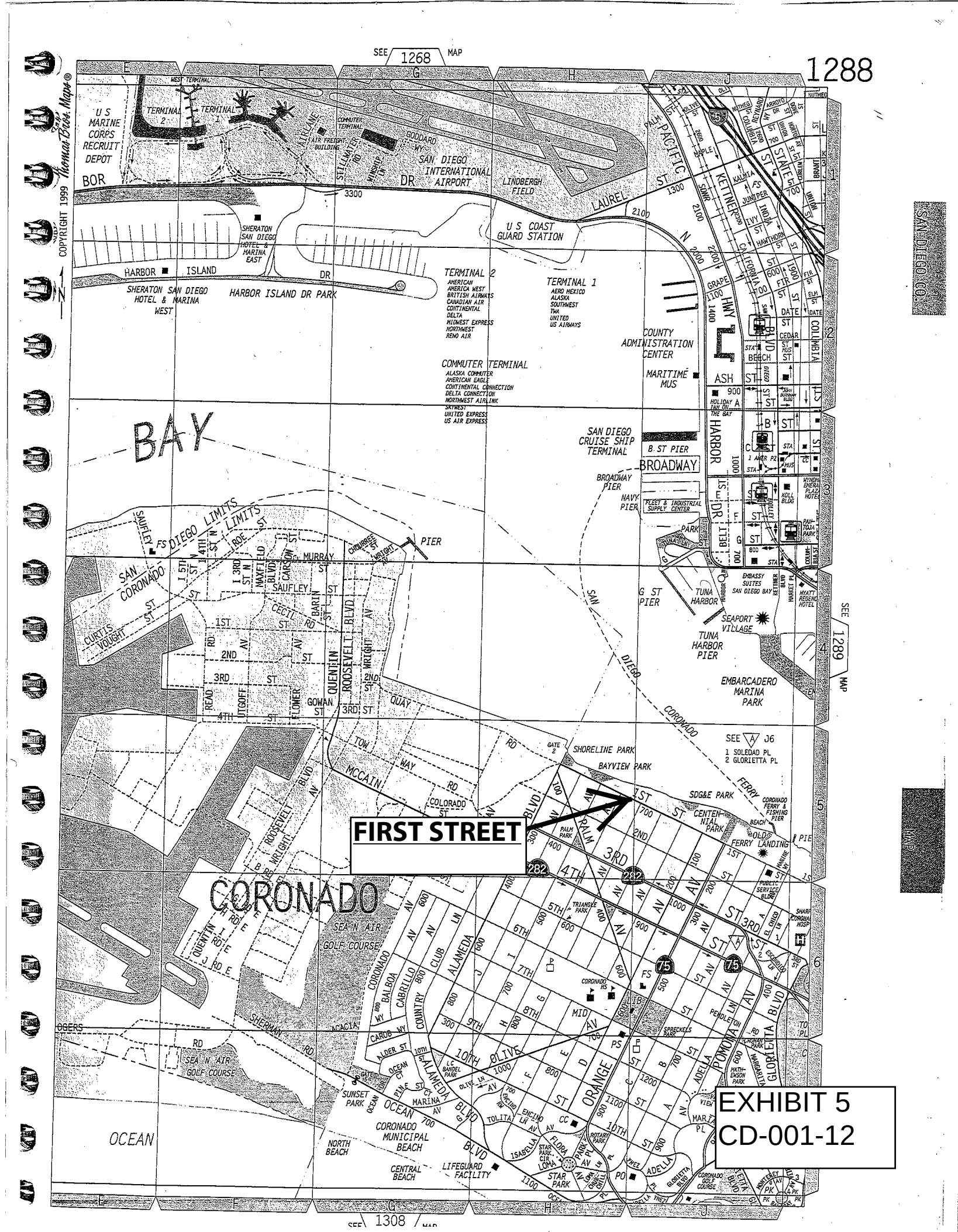


EXHIBIT 5
CD-001-12

SAN DIEGO HARBOR

CENTRAL NAVIGATION CHANNEL DEEPENING PROJECT

SAN DIEGO, CALIFORNIA

CONSISTENCY DETERMINATION

U.S. Army Corps of Engineers

Los Angeles District

Revised October 2011

APPENDIX A
COE SCD

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The United States Army Corps of Engineers' San Diego Harbor Central Navigation Channel Deepening Project was undertaken in a manner consistent with the enforceable policies of the approved California Coastal Management Plan.

The presence of the Federal Central Navigation Channel ("Central Navigation Channel") as a deepwater sink does not actively contribute to erosion of the shoreline. The sink merely functions to passively receive eroded sediments settling out of the water column. Additionally, the 2004 dredging of the Central Navigation Channel did not impact the slopes of the surrounding harbor bottom. Slopes of the harbor floor remained the same. This is evident from the comparison of survey profiles dated November 1999 and August 2008. Therefore, the central channel as a deepwater sink does not contribute to the erosion occurring on the Coronado shoreline.

Data show that the ship traffic specifically supported by the Federal project accounts for a small fraction of the overall traffic in the Bay, and therefore the deepening did not contribute to any erosion that might be due to wave energy caused by ship wakes.

A Supplemental Environmental Impact Statement prepared by the U.S. Navy in 2008 confirms that dredging activities have not increased erosion of the Coronado Island shoreline. Erosion is occurring along the shoreline due to the unconsolidated artificial fill characteristics, the natural configuration and conditions in the Bay, and a negative sediment budget created by historic alterations to the Bay and shoreline bluffs. Furthermore, the presence of persistent and expanding eelgrass near the Coronado shoreline indicates a stable shoreline in the area. Eelgrass could not be supported in a highly erosive environment.

Accordingly, deepening activities performed in 2004/2005 have not contributed to erosion of the Coronado shoreline.

I. INTRODUCTION

In 2003, the U.S. Army Corps of Engineers (USACE) and San Diego Unified Port District (SDUPD) proposed to deepen the San Diego Harbor Central Navigation Channel for navigation improvement as documented in the project's Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) (USACE 2003). The proposed project was determined to be technically feasible, environmentally justified, in accordance with environmental statutes including the Coastal Zone Management Act (CZMA), and in the public interest (USACE 2003). All necessary coordination with the resource agencies was completed and applicable permits, approvals, and authorizations were obtained by the USACE, including concurrence from the California Coastal Commission with the project's Coastal Consistency Determination (CD-90-02) on May 6, 2003.

In 2004 and 2005, the channel was deepened from -40 feet mean lower low water (MLLW) to -42 feet MLLW with disposal of dredged material in the nearshore at Imperial Beach. The

project also included relocation, disposal, and abandonment of a 69 kilovolt (KV) electrical cable that was performed by San Diego Gas and Electric.

SLPR, LLC, Barbara Sewall, and Ann Goodfellow (collectively "Plaintiffs") are property owners along Coronado Island's bay front. On February 2, 2006, SLPR, LLC filed a state court complaint against the SDUPD, alleging various state law claims. On May 26, 2006, Plaintiffs added the USACE as a defendant, and on June 26, 2006, the United States removed the action to Federal Court. On December 5, 2007, Plaintiffs filed a Second Amended Complaint, adding the United States Navy as an additional party. In Count V of their Second Amended Complaint, they claimed the USACE violated the CZMA, and sought judicial review of the USACE's San Diego Harbor Central Navigation Channel Deepening Project (hereinafter the "Deepening Project") pursuant to the Administrative Procedure Act. In 2008, the parties filed cross-motions for summary judgment. Plaintiffs contended the USACE failed to evaluate the erosion caused by ship wakes and near off-shore steepened dredged slopes by ignoring a 2001 Coronado Shoreline Report when the USACE evaluated the environmental impact of deepening the central navigation channel. The USACE defended its action by arguing that it had satisfied its legal obligations under the CZMA before concluding that dredging would not significantly affect the environment.

On August 4, 2009, the District Court for the Southern District of California issued an Order granting summary judgment to the Plaintiffs, finding the USACE's 2003 consistency determination was arbitrary and capricious (1) because the USACE failed to disclose the results of a concurrent USACE study at the Coronado Shoreline and (2) the USACE did not evaluate or inform the CCC of the information contained in the Coronado Shoreline Study about ship wakes, deep sinks, and steep slopes. In 2010, the USACE requested that the Court reconsider certain findings with respect to the parties' cross-motions for summary judgment on the Fifth Cause of Action. On June 8, 2010, the Court denied the motion.

The District Court remanded the decision to the USACE for reconsideration on a complete record as it relates to the impact of dredging on the Coronado shoreline. The remand is to focus on the adverse impact of ship wakes, in connection with the exacerbation caused by the steeper drop in the deep water sink, as outlined in the 2001 Coronado Shoreline Study and discussed in the Court's Order. In addition, the Court set aside the consistency determination the USACE prepared in May 2003 and ordered the USACE to submit a supplemental application to the CCC that contains an appropriate disclosure and evaluation of the impact the 2004 dredging and waves generated by ship wakes had on the erosion of the Coronado shoreline. In response to the 2009 Court Order, the USACE has supplemented its analysis specific to erosion along the Coronado shoreline from the USACE's 2004 Deepening Project.

a. San Diego Harbor Central Navigation Channel Deepening Project

i. Purpose and Need

The purpose of the USACE's Deepening Project was to deepen the Federal Navigation Channel for ships entering the Port of San Diego's 10th Avenue Marine Terminal, to allow for ships to access the terminal with a deeper draft.

The purpose and need of the Deepening Project is described in more detail below, as provided in the Environmental Impact Statement/Environmental Impact Report (EIS/EIR)(USACE 2003) prepared for the Deepening Project:

> "The current commercial shipping operations in San Diego Bay are less efficient than would otherwise be the case due to the inability to load deep draft vessels to maximum capacity. Deeper draft vessels already loaded to full capacity cannot call on the Port of San Diego until partial unloading at other ports first. This inefficiency causes additional traffic and ship calls to transport the same amount of cargo. The Tenth Avenue Marine Terminal is also underutilized, in part due to the limitations of the Federal Central Navigation Channel depths. The [San Diego Unified Port District] SDUPD has determined that this reduced business potential is partially due to the commercial shipping limitations imposed by the existing depth of the Central Navigation Channel in San Diego Bay. Specifically, many fully loaded cargo ships cannot access the Tenth Avenue Marine Terminal because they require deeper berths and a deeper channel.
>
> "Shipping interests at the Tenth Avenue Marine Terminal have expressed the need to deepen the Central Navigation Channel in San Diego Bay. Channel deepening would (1) allow existing underutilized portions of the terminal to be more fully utilized by deeper draft vessels; and, (2) attract a greater variety of ships and cargo to San Diego Bay which, in turn, would create additional jobs and increase the economic viability of the Tenth Avenue Marine Terminal. More trade routes and additional cargo capacity at the terminal are needed to stimulate regional economic growth and cargo movement efficiencies.
>
> "The San Diego Harbor Deepening Project would also reduce additional shipping costs that currently occur because the Tenth Avenue Marine Terminal cannot handle larger or more heavily loaded ships. It would do so by:
>
> (1) enabling deeper draft vessels to call on the port, thereby enabling larger shipment sizes and reduced number of shipments;
>
> (2) allowing vessels that currently call on the port to traverse the channel more fully loaded; and
>
> (3) reducing or eliminating the need for some vessels to wait for high tides to enter the harbor." (USACE 2003)

ii. Project Description

San Diego Harbor includes the entrance, central, and South Bay channels, as well as anchorage and turning basins. The Federal Navigation Channel in San Diego Bay provides safe navigation and access to marine terminals, marine-related industrial areas, and military installations. The Central Navigation Channel is used by Navy ships en route to Naval Station San Diego and by commercial vessels transporting cargo to the Tenth Avenue and National City Marine Terminals.

The Tenth Avenue Marine Terminal is located on the north side of the Central Navigation Channel, and approximately 0.35 mile northwest of the Coronado Bridge. Occupying approximately 96 acres, it is the center of commercial shipping activity for break-bulk and bulk-handling operations of the SDUPD. Specifically, the terminal handles bulk loading/unloading and distribution of various materials, including grain, chemicals, cottonseed, fertilizers and cement, and is a major distribution terminal for fresh produce from South America and Australia-New Zealand.

The Deepening Project consisted of deepening the central channel and disposal of dredged material in the nearshore at Imperial Beach. The depth of the central channel prior to deepening was approximately -40 feet MLLW. Channel deepening occurred to a depth of -42 feet MLLW plus overdredge, a deepening of approximately 2 feet. Dredging was performed using a clamshell dredge on a barge and scows. Approximately 300,000 cubic yards of material was dredged.

Although not part of the USACE's Deepening Project, the 2003 EIS/EIR for the Dredging Project analyzed the impacts of relocating, disposing, and abandoning a 69 kilovolt (KV) electrical cable by the San Diego Gas and Electric Company as the actions were located within the project vicinity.

iii. Project Location

The project was located in the north-central portion of San Diego Bay. Dredging occurred from the Navy's Aircraft Carrier Turning Basin at Naval Air Station North Island (NASNI) to within approximately 750 feet northwest of the San Diego-Coronado Bay Bridge center line (**Figure 1**, attached). The dredge footprint was approximately 275 acres. The portion of the dredge area closest to First Street in Coronado is approximately 2,000 feet away.

The nearshore receiver site was located within the City of Imperial Beach, approximately 0.75 mile south of the Imperial Beach Pier. Dredged material was placed in the nearshore environment in depths ranging from -15 to -28 feet MLLW, within an area of approximately 40 acres.

The utility relocation alignment is within and adjacent to the western portion of the dredge footprint and is approximately 0.63 mile in length.

b. Consistency Determination

To comply with the Coastal Zone Management Act (CZMA) and maintain consistency to the maximum extent practicable with the enforceable policies of the approved California Coastal Management Plan (CCMP), the USACE submitted a consistency determination (CD) (May 2003) to the California Coastal Commission (CCC) as part of the USACE's Deepening Project EIS/EIR (USACE 2003; Appendix I). Documentation of USACE and CCC correspondence during preparation of the CD and EIS/EIR was included in Appendix L. The enforceable policies of the CCMP are found in Chapter 3 of the California Coastal Act (CCA). Section 30253 of the CCA addresses project impacts to erosion. Specifically, it states that new development shall:

(1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

(3) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Control Board as to each particular development.

(4) Minimize energy consumption and vehicle miles traveled.

(5) Where appropriate, protect special communities and neighborhoods which, because of their unique characteristics, are popular visitor destination points for recreational uses.

The USACE's 2003 CD provided the following discussion concerning item (2) of Section 30253 of the CCA.

> "No geologic processes (i.e., major landsliding or erosion) would be triggered or accelerated by dredging or disposal activities. Sloughing of channel walls into the channel would be expected to occur as the channel stabilizes after dredging. Placement of dredged material as a bar-like submarine berm would reduce erosion rates by dissipating incident wave energy and increasing the sediment budget input, partially blocking offshore migration of beach materials during storms. Historically, the erosion rate at beach receiver sites has exceeded the

input of sediment. Beach nourishment would counter these effects and reduce the rate of shoreline retreat. This is a beneficial impact."

The project's consistency with all other applicable enforceable policies of the CMMP evaluated in the 2003 CD remains unchanged and those evaluations are hereby incorporated by reference.

c. Draft Coronado Shoreline Reconnaissance Study Initial Appraisal Reports

In 2000, the USACE prepared a Draft Coronado Shoreline Initial Appraisal Report (USACE 2000) that was intended to be used as a decision document to determine Federal interest in a shoreline protection study for the Coronado shoreline. The study area consisted of approximately 2,800 linear feet of shoreline along First Street between Orange Avenue and Alameda Avenue along San Diego Bay, in Coronado, California.

In this draft report, the USACE analyzed the existing baseline conditions of the Coronado shoreline along First Street. The USACE visited the site and analyzed "historical records, bathymetric surveys, site photographs, aerial photographs, environmental reports and economic reports." The analysis showed that up until 1985, artificial fill was placed along the shoreline in the study area. After filling activities were halted, erosion became evident. The USACE identified wave energy as the main factor in the erosion problem. The USACE concluded that waves generated by wind had a maximum height of 2.2 feet, "occurred infrequently," and thus did "not play a major role in erosion." By contrast, the USACE concluded that extensive boat and ship traffic in the Bay, with a predicted average height of 2 to 3 feet, "are large enough in magnitude, and occur frequently enough, to have an effect on the shoreline." The USACE found that a contributing factor to the erosion of the properties on First Street was the "off-shore profile." That is, the edge of the shipping channel had a "fairly steep" gradient, and the "deepwater sink" dropped to 30 feet with a 40 foot deep shipping channel.

The draft report concluded "that the mechanism by which erosion occurs along this shore is off-shore transport of sediments due primarily to wave energy created by boat and ship traffic . . . . This erosion is assisted by the relatively steep off-shore gradient and the presence of deep water sinks." The report further concluded that ship wakes were causing shoreline erosion of 1.7 feet per year, and predicted that the foundations of the homes on First Street would be in jeopardy in approximately 10 years, if no organized effort to protect the shoreline was executed.[1] Such erosion along the shoreline was determined to be a consequence of inadequate shoreline protection and the artificial filling of the shoreline extending it into deeper water.

[1] Eleven years have passed since the report was issued, and this prediction has not proven to be true. Erosion has occurred at a much slower rate than the report forecast.

The 2000 draft report recommended that the study proceed forward into a cost shared feasibility level evaluation of shoreline protection alternatives for the Coronado Shoreline, under the authority of Section 111 of the River and Harbor Act of 1968 (PL 90-483).

Section 111 is one of 10 legislative authorities, referred to as the Continuing Authorities Program (CAP), under which the Secretary of the Army, acting through the Chief of Engineers, is authorized to plan, design, and implement certain types of water resources projects without additional project specific congressional authorization (USACE 2007). The purpose of the CAP is to plan and implement projects of limited size, cost, scope, and complexity.

Section 111 specifically authorizes the planning for a justified level of work for prevention or mitigation of damages to both non-Federal public and privately owned shores to the extent that such damages can be directly identified and attributed to Federal navigation works located along the coastal shorelines of the United States. However, works for prevention or mitigation of shore damages caused by vessel generated waves may not be addressed under Section 111 authority (USACE 2007).

Therefore, the Coronado Shoreline study could not proceed to a feasibility level evaluation under Section 111, as recommended in the 2000 report, because this authority does not apply to projects that prevent or mitigate erosion caused by vessel generated wave wash, which was identified by the 2000 report as the primary cause of erosion at First Street.

In 2001, the USACE revised the Coronado Shoreline Initial Appraisal Report to rely on a different CAP authority, Section 103 of the River and Harbor Act of 1962 (PL 87-874) (USACE 2001), as a basis for pursuing further study. Additional minor revisions were made including a summary of net benefits of each alternative in the conclusion. All technical analyses, alternatives, and final recommendations were the same as in the 2000 report.

Section 103 authorizes projects to protect multiple public and private properties and facilities and single non-Federal public properties and facilities against damages caused by storm driven waves and currents (USACE 2007). Applicable projects must be formulated to provide hurricane and storm damage reduction.

The Coronado Shoreline study could not proceed to a feasibility level evaluation under Section 103, either, because this authority only applies to damages caused by storm driven waves and currents, not by vessel generated waves.

In 2005, the USACE further revised the Coronado Shoreline Initial Appraisal Report to recommend that the Coronado Shoreline study be terminated based on the lack of applicable project authorities (USACE 2005). All technical analyses and alternatives were the same as in the 2000 and 2001 report. As opposed to the 2000 and 2001 reports, the 2005 report "determined that there is no Federal interest and

responsibility set forth in the legislative authorities under the continuing authority program from vessel generated wave wash". In order to proceed to a feasibility level evaluation and project construction, additional project specific congressional authorization would be required.

While the USACE's Coronado Shoreline reports addressed potential causes of erosion at First Street, the results of these reports were not scientifically vetted. The Coronado Shoreline reports were not intended to be a comprehensive study of erosion at First Street. The reports served as initial appraisals of the shoreline prepared for the purpose of determining a Federal interest in a shoreline protection study.

The Coronado Shoreline reports' analyses of erosion at the shoreline were cursory, based mainly on aerial photography alone. The analysis of erosion based on aerial photography cannot "explain variations to conditions in the subject area that have a direct effect on erosion rate" (U.S. Navy 2008). Such variations may include "sediment inputs and outputs, wave climate, currents, vessel traffic, or the effects of physical changes to other parts of the Bay" (U.S. Navy 2008). Such a comprehensive technical analysis was not completed by the USACE because the 2005 report concluded that there was no Federal interest in a project.

Because the USACE did not mention the potential adverse impact of ship wakes on coastal erosion, as described in the Coronado Shoreline reports, in its 2003 CD for the Deepening Project, a more thorough evaluation of impacts of the 2004 Deepening Project on the Coronado shoreline along First Street is included below.

II. ENVIRONMENTAL EFFECTS OF DEEPENING PROJECT ON SHORELINE EROSION

The Deepening Project took place from October 25, 2004 to March 22, 2005. The purpose of the project was to establish a depth of -42 feet MLLW over the length of the 10,000 foot long Central Navigation Channel, to allow the current vessel fleet to utilize deeper draft to call upon the 10th Avenue Marine Terminal, the Port of San Diego's center of commercial shipping activity. See **Figure 1**, attached, for project location.

The authorized depth of the Central Navigation Channel prior to this project was -40 MLLW. The Central Navigation Channel had been deepened from -32 feet to -40 feet MLLW in 1976. The existing depths of the channel in 2004 were in the range of -40 feet MLLW, with some portions of the channel at -42 feet MLLW.

Deepening required dredging of 300,000 cubic yards of material from the Central Navigation Channel. The footprint of the Central Navigation Channel is 11,845,000 square feet. Approximately half of the project area was already at or deeper than the design depth of -42 feet MLLW prior to commencement of dredge operations. When averaged over the entire project

footprint, the removal of 300,000 cubic yards of material equates to an average cut of 0.7 feet (8 inches).

a. The Deepening Project Had No Impact on Slopes of Harbor Bottom

The dredging of the Central Navigation Channel did not impact the slopes of the surrounding harbor bottom. Slopes of the harbor floor remained the same. This is evident from the comparison of survey profiles dated November 1999 and August 2008. See **Appendix A** showing profiles covering the area in the vicinity of First Street Coronado, to the Central Navigation Channel.

The closest point of the channel to the Coronado shoreline is 2,000 feet away. Since the dredging did not affect any of the surrounding bayfloor, it did not affect the Coronado shoreline 2,000 feet away.

b. The Deepening Project Did Not Result in Any Erosion Attributable to Ship Wakes

Deepening activities performed in 2004/2005 do not represent a source of wake-generated erosion along First Street.

The 2005 Coronado Shoreline Report concluded that "the mechanism by which erosion occurs along this shore is offshore transport of sediments due primarily to wave energy created by boat and ship traffic, and that there is the potential for storm damage to private and public facilities. This erosion is assisted by the relatively steep offshore gradient and presence of deep water sinks" (USACE 2005).

The 2005 Coronado Shoreline Report also states that boat and ship traffic within San Diego Bay is extensive. This traffic is not limited to vessels using the Federal Channel or to vessels that require a 42 foot channel depth. In other words, the majority of the vessels operating in the Bay did not require a deepening of the Federal Navigation Channel to continue operating, and the vast majority of vessel movements (more than 99 percent) are unrelated to the 2004 Deepening Project.

The purpose of the Deepening Project was to increase the efficiencies of existing operations through deeper channels, thereby allowing existing ships to access the 10th Avenue Marine Terminal more fully loaded. A 2-foot deeper Central Navigation Channel allows a ship to transit with a 2-foot deeper draft and to carry more cargo. More cargo can be transported per trip, and carriers can make fewer trips per year. This Deepening Project was not expected to increase the number of ship calls to the 10th Avenue Marine Terminal, and could possibly have decreased the number of ship calls. The factors that affect the number of ship calls to the 10th Avenue Marine Terminal are more aligned with the state of the economy and the health of the construction industry. A booming economy would translate to more volume of products being moved, and therefore more ship calls.

Of the shipping traffic that passes the First Street area of Coronado, a very small percentage accesses the 10th Avenue Marine Terminal. Of the ships that access the 10th Avenue Marine Terminal, only a small percentage of those are bulk carriers that could utilize the advantages of a deeper Central Navigation Channel.

The following **Table 1** lists the number of ship calls to the 10th Avenue Marine Terminal from 2003 to 2010, and calls out the number of ships with a draft of 35 feet or greater. Ships with drafts greater than 35 feet could potentially benefit from the deeper central Navigation Channel.

Table 1

	10th Ave Vessel Calls	Draft >35 ft
Year	**# of ships**	**# of ships**
2003	128	8
2004	127	11
2005	165	12
2006	173	11
2007	165	5
2008	111	5
2009	106	1
2010	87	4
Average	133	7

Since 2003, there has been an average of 133 ship calls per year to the 10th Avenue Marine Terminal, with an average of 7 ships per year with a draft of 35 feet or greater. So, 7 ship calls per year could possibly utilize the additional 2-foot of depth of the Central Navigation Channel. All ships calling on the 10th Avenue Marine Terminal are assisted by tugs, and adhere to maximum speed limits of 5 MPH, thereby limiting the potential for generating sizeable wakes that would impact the shoreline.

The San Diego Harbor Safety Plan of May 2010 cites approximately 200 car-ship transits per year to the National City Marine Terminal, and approximately 225 cruise ship transits per year to the Embarcadero, located northwest of the Coronado shoreline. The report lists 3,144 military vessels transiting the harbor per year. If we assume that half of these 3,144 military vessel transits are passing the Coronado shoreline that would be 1,572 ship moves.

Summarizing ship moves passing the Coronado shoreline on an annual basis:

Military vessels:	1,572
Car Ships to National City:	200
10th Avenue Terminal:	133
TOTAL:	1,905 ship moves per year

Out of 1,905 ships passing the Coronado shoreline on an annual basis, 7 ships could possibly enter the harbor and utilize a 2 foot deeper draft provided by the deepening of the Central Navigation Channel. This is an insignificant proportion of ship movements in the bay to have any impact on the Coronado shoreline.

No additional shipping has occurred as a result of the 2004 Deepening Project. Thus, deepening of the Central Navigation Channel did not increase boat-generated waves in San Diego Bay.

Consequently, the Deepening Project did not result in any erosion attributable to ship wakes.

III. U.S. NAVY'S NUCLEAR AIRCRAFT CARRIER (CVN) HOMEPORTING SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) (2008) ANALYSIS OF SHORELINE EROSION

The USACE's conclusion that the Deepening Project did not increase shoreline erosion is further confirmed by analysis performed by the U.S. Navy in its Nuclear Aircraft Carrier (CVN) Homeporting Supplemental Environmental Impact Statement (SEIS) (2008). Chapter 5 of the SEIS is summarized below and incorporated herein by reference.

a. Factors Affecting Shoreline Erosion in San Diego Bay

Shoreline erosion is a consequence of several factors, including coastal processes, historic conditions, and human alterations to San Diego Bay. These factors are detailed in the U.S. Navy's Nuclear Aircraft Carrier (CVN) Homeporting Supplemental Environmental Impact Statement (SEIS) (2008) and are discussed below.

i. Geomorphology

Historically, the configuration of San Diego Bay included the Spanish Bight, a natural trough located between North Island and Coronado (**Figure 2**, attached). The Spanish Bight is a result of the "undulating geology" between local fault zones, which "coincides with lower bedrock in the Spanish Bight and San Diego

Bay relative to North Island and Coronado" (U.S. Navy 2008). The Spanish Bight was filled with artificial material in 1944 and 1945.

As a consequence of the filling of the Spanish Bight, the subject shoreline at First Street is "underlain by loosely consolidated artificial fill consisting of bay mud deposits" (U.S. Navy 2008). Specifically, along the bay on Coronado, the artificial fill spans the land north of First Street between Alameda Boulevard and G Avenue. Between G Avenue and A Avenue the land trends further bayward.

Artificial fill along the shoreline was placed hydraulically, a method that mixes marine sediments with water and that allows for little or no consolidation. This lack of consolidation presents a potential liquefaction hazard, which "can occur when loosely consolidated or unconsolidated sediments are saturated with water and are exposed to energy at a magnitude or duration capable of breaking down sediment cohesion" (U.S. Navy 2008). The loosely consolidated artificial fill along the San Diego Bay shoreline and First Street is unprotected and exposed to water and energy (waves and currents) daily. While a higher input of energy, such as an earthquake, would be required to initiate liquefaction of the sediments, the "low cohesive properties" of the artificial fill that establishes the liquefaction hazard indicate that the unprotected artificial fill layer has a "higher probability to fail when exposed to water and energy" (U.S. Navy 2008). This artificial fill along First Street, therefore, is at higher risk of erosion, due to the lack of protection and the presence of continual water and energy, compared to protected artificial fill or well-consolidated sediments.

ii. Reduced Sedimentation

Prior to human intervention, several rivers and other drainages deposited sediment into San Diego Bay, including the San Diego, Otay, and Sweetwater rivers. Without human alterations, it has been theorized that enough sediment was deposited in the Bay that over geologic time it would have filled up with sediment delivered by these rivers. Historically, shorelines in San Diego Bay were stable as sediments removed during natural processes were replenished by the supply of sediment from the rivers. This stable state is referred to as dynamic equilibrium, whereby sediment inputs are in balance with sediment outputs, and little long-term change to the shoreline position of beach widths is observed.

After human alterations to the Bay, however, this dynamic equilibrium was disrupted. Alterations include "the construction of dams, flood control channels, jetties and shoreline protection structures," which cut off the natural supply of sediment to shorelines in the Bay and threaten their long-term stability (U.S. Navy 2008).

Primary sources of sediment in San Diego Bay included the rivers and creeks. Secondary sources include the Tijuana River, which deposits sediment into the Silver Strand Littoral Cell that is subsequently transported north via longshore

ocean currents. This sediment collects to "form the tombolo (a spit of land connecting an island to the shore) that includes Silver Strand, Coronado, and North Island" (U.S. Navy 2008).

Sediments from the Tijuana River and the Silver Strand Littoral Cell also enter the Bay during storm events when the ocean breaches the Silver Strand which allows for direct passage of these sediments into the Bay. Additionally, sediments in the littoral cell area deposited on the Silver Strand, and are subsequently transported into the Bay via wind transport from the sand dunes.

Substantial alterations to these sediment inputs occurred in the late 19th and early 20th centuries including the diversion of the San Diego River to Mission Bay in 1876; the construction of the Zuniga Jetty in 1893, which prevented sediments transported north in the Silver Strand Littoral Cell from entering San Diego Bay; and the damming of the Sweetwater, Otay, and Tijuana rivers by 1937. Removal of these sediment inputs caused a reduction of up to 82 percent of historic sediment discharges into the Bay; historically 800,000 to 1,100,000 cubic meters of sediment were discharged annually while today only approximately 140,000 to 190,000 cubic meters are discharged annually.

Sediment inputs are important for North Island and Coronado shorelines because it enables beaches to grow, maintains a buffer between the backbeach bluffs and the water, and diffuses wave and current energy before it hits the bluffs. When no beach is present as a buffer, the bluffs are directly exposed to this energy. Lack of a buffer typically "corresponds to a steeper gradient in the exposed shoreline, which can weaken the lateral support of loosely consolidated or unconsolidated bluffs" (U.S. Navy 2008).

Dredging and filling activities in the Bay, since these first human alterations began, have created a flat bay floor with steep shorelines that require armoring for protection. This bathymetric configuration is not the natural state of the bay that exhibited shallow 20:1 slopes. Sediments settling out of the water column on these wide, shallow slopes (such as the Spanish Bight) were more likely to remain in circulation and within the volume of sediment capable of being transported in the Bay.

As North Island and Coronado were filled in the 1930s and 1940s, the shoreline was widened and moved outward into the Bay and closer to deeper waters. Here wave propagation from winds is greater, proximity to the shipping channel is closer, and tidal energy is more direct, "thereby further reducing the shallower and calmer areas of the Bay where sediments are more likely to settle out and still remain in circulation" (U.S. Navy 2008). Sediments that settle out in deeper areas are less likely to be recirculated back to the shoreline to replenish and grow the beach.

iii. Currents

Currents in San Diego Bay are generally stronger near the mouth of the Bay and diminish towards the head, "as the tidal prism volume (the difference in the amount of water between low and high tide) is reduced relative to the cross sectional area" (U.S. Navy 2008). However, there is potential for stronger currents in areas of constriction and expansion of the tidal prism volume, such as the area between Seaport Village and First Street, where the width of the Bay becomes narrower. Furthermore, the position of the former Spanish Bight, now filled with artificial material, "places [the area of the Bight] directly in the path of ingoing and outgoing tidal flows due to the "dog leg" hook in San Diego Bay" (U.S. Navy 2008). Even under natural sediment conditions, the stronger currents and deeper waters in this narrow corridor between Seaport Village and First Street do not support the formation of wide beaches along the shoreline. Prior to alterations to sediment inputs and artificial expansion of the shoreline, historic maps and aerial photos showed that wide beaches were not naturally formed in these areas.

In 2008, the Space and Naval Warfare System (SPAWAR) Command performed a study to measure currents at 3 locations along the Coronado shoreline. The study showed that currents in the Bay become stronger further from shore, not closer to shore. In 1998, a hydrodynamic model was used to simulate tides and currents in San Diego Bay under pre-dredge conditions (U.S. Navy 2008). This model was then used in the 2008 study to evaluate the potential for dredging to alter currents in the Bay. Results showed that the Navy's dredging in the Turning Basin actually decreases current velocity by negligible amounts along First Street, and that currents were too weak to move sediments along the shore. The Navy concluded that dredging in the turning basin does not promote transport of sediments away from First Street in bay currents (U.S. Navy 2008).

iv. Shoreline Configuration

Back beach bluffs are another significant contributor to shorelines that have been altered by human development. Historically, the area from North Island south along First Street was lined with sediment-laden beaches and bluffs. These unconsolidated bluffs would periodically provide sediment to the shoreline during "extreme tidal and wave action, surface water run-off, or slumping due to gravitational forces" (U.S. Navy 2008). These bluffs were developed post-World War II, where they were "stabilized", built upon, and "frozen-in-place". Therefore, sediment that was previously provided to the system from the bluffs was no longer delivered to the shoreline.

As North Island and Coronado were expanded and the shoreline was moved outward into the bay, closer to deeper waters, "the new shoreline position was not historically, bathymetrically, or geomorphologically supported by the natural state of the bay" (U.S. Navy 2008). Artificial filling along the shoreline occurred from

the late 1920s until the mid-1980s, when it reached its maximum bayward extent. After artificial filling activities were discontinued, evidence in aerials from 2000 showed that several places along the artificial shoreline had eroded. Removal of sediment sources to the shoreline due to human alterations through river damming and bluff stabilization have reduced the width of the shoreline buffer. The bluffs were, thereby, exposed to additional wave and current action, which encouraged and accelerated erosion.

This process may be avoided by the construction of continuous and uniform shoreline protection structures. Currently, property owners at First Street have attempted a variety of methods to protect the shoreline, including seawall, rip-rap, and pocket-beaches. However, these efforts have not been coordinated or uniform. Such an approach would be more effective than individual, isolated efforts to protect the shoreline, as "the entire line of coastal defense is only as strong as its weakest link" and non-continuous structures may encourage erosion at the flanks "as a result of increased turbulence from wave reflection. (U.S. Navy 2008).

v. Bay Floor

Historically, the San Diego Bay has always supported a narrow, natural channel, which has been used for safe passage of ships. However, the bay floor has been repeatedly modified "in response to civic, commercial, recreation, military, and environmental needs" (U.S. Navy 2008). Generally, the channel gets deeper from the head to the mouth of the bay, and deepens as the channel ends and drops down to the deeper ocean floor. Sediments that fall to the deepest parts of the bay and follow the downward gradient out to sea are unlikely to return against the gradient to shallow depths and remain in circulation.

Although sediment input to the bay and its shorelines has been substantially reduced, the primary sediment sink, naturally deep portions of the bay, remain. While dredging has deepened the main channel, it continues to function as a sediment sink in the same manner that it historically has.

The bay floor was further altered when artificial fill of the Spanish Bight began in the 1940s, using material that was dredged from the main channel of the bay as it was deepened to -35 feet. Some of this material was also used to provide additional fill along First Street. Currently, approximately 27 percent of the Bay has been filled, and only "17 to 18 percent of the original Bay floor remains undisturbed by dredging or filling." (U.S. Navy 2008).

The presence of eelgrass along the shoreline can serve as an indicator of shoreline stability since eelgrass anchors and stabilizes bay floor sediments. Eelgrass cannot grow if the sediments or the bay floor are active, and sediments that are stirred up create turbidity and poor sunlight penetration, which can kill or prevent growth of eelgrass. Furthermore, eelgrass cannot tolerate physical disturbance or alterations

to the bay floor, whether natural (i.e., slumping, sliding, or erosion) or non-natural (i.e., prop wash, trampling).

In 2004, a large bed of eelgrass was present starting just east of the rocky revetment offshore approximately from the intersection of First Street and Alameda Blvd. and continuing along an easterly direction for approximately 2,800 linear feet. The presence and population of eelgrass demonstrates stability of the bay floor and sediments in this area.[2]

b. Navy's Summary and Conclusions

Natural conditions in San Diego Bay supported a natural trough, the Spanish Bight, between NASNI and Coronado. Since natural conditions in San Diego Bay supported this deep water basin, and never supported dry, hard substrate land in the area of the Spanish Bight, the area between NASNI and Coronado is currently underlain by unconsolidated artificial fill consisting of bay mud deposits (U.S. Navy 2008; Stople 2011, point 18).

In addition to the underlying artificial fill, between 1929 and 1985, there was artificial fill replenishment along First Street. This artificial fill at First Street and the Spanish Bight migrated the "shorelines seaward, toward the deeper, faster water at mid-Bay" (Stople 2011; pt. 20, 21), and the unconsolidated material is more susceptible to erosion and deformation from water and energy (U.S. District Court 2011; p. 19 l. 21, p. 20 l. 3). Under natural conditions, the unconsolidated nature of this artificial fill and its extension outward into the Bay correspond to a higher risk of erosion.

Sediment input levels in the Bay have been reduced over time, in part due to the diversion of the San Diego River and the damming of the Sweetwater, Otay, and Tijuana rivers between 1876 and 1937, which "accounted for the direct loss of sediment to the Coronado shoreline" (U.S. District Court; p. 6 l. 16). Additionally, bluffs lining the beaches contributed sediment to the shoreline. When these bluffs were developed, this source of sediment to the shoreline was also eliminated (U.S. Navy 2008). These altered conditions in the Bay created a negative sediment budget (i.e., less input of sediment into the system than transport out of the system).

Additionally, shorelines are not naturally static; they "reflect a dynamic equilibrium of sediment input from rivers and eroding bluffs, balanced against sediment output transported away from the shoreline" (Stople 2011; pt. 23). The Coronado shorelines, therefore, naturally advance and retreat with accretion and erosion of sediment in a dynamic system (Stople 2011; pt. 23). Under natural conditions, the shoreline would retreat based on the balance of this dynamic equilibrium and the negative sediment budget in the system.

[2] A large bed of eelgrass remains present along the shoreline at First Street. A March 2010 eelgrass survey of the First Street area showed that eelgrass beds were growing and expanding, and that the beds remain extremely dense, since a survey performed in 2009 (WSSI 2010).

While natural conditions would have eroded the Coronado shoreline due to loss of sediment input, the shoreline did not appear to shrink as artificial fill material was placed "in quantities and at frequencies sufficient to "grow" the shoreline bayward as much as 90 feet." (U.S. District Court; p. 6 l. 19). Photographs show that there was "not enough room to build a house between First Street and the Bay until the area was created with artificial fill" (U.S. District Court; p. 19 l. 8).

After 1985, after artificial fill was no longer placed along Coronado, it only appeared that erosion was happening more quickly because no comprehensive, uniform erosion barriers were built or maintained by the private property owners and the natural sources of sediment were no longer supplying sediment to the Bay as compared to the past (U.S. District Court; p. 20 l. 21). If "left unprotected in the existing low sediment environment, the shoreline would 'naturally' retreat, not only to its historic (19th Century) location, but it would retreat further since the historical sediment conditions no longer exist" (Stople 2011; pt. 25), and a negative sediment budget has since been created. The Coronado Shoreline reports stated that "1.7 feet of shoreline was eroding each year", however, this referred to erosion of the artificial shoreline that had been created (U.S. District Court; p. 6, l. 21), which occurs under natural conditions given the lack of input of sediment into the system.

Furthermore, even under natural conditions, the stronger currents and deeper waters in the narrow corridor of the Bay at First Street do not support the formation of wide beaches along the shoreline. Before the Coronado shoreline was artificially filled outward into the Bay, this area "experienced faster currents, steeper drops, and substantial depth; wide beaches were never naturally formed" (Stople 2011; pt. 19). In other words, the shoreline that was "created with artificial fill was not historically, bathymetrically, or geomorphologically, supported by the natural state of the bay" (U.S. District Court; p. 20 l. 21).

Considering the conditions within the Bay, including the historic placement of unconsolidated artificial fill and the negative sediment budget created by past development activities, the Coronado shoreline is expected to erode naturally. The artificial shoreline that was created with fill material is not supported by the natural state of the bay, and without the replenishment of artificial fill material or comprehensive and uniform erosion barriers, the shoreline is expected to erode.

IV. CONCLUSION

Deepening activities performed in 2004 have not contributed to erosion of the Coronado shoreline.

Generally, the underwater atmosphere, which is denser, exerts pressure on sediment grains and creates nearly vertical slope angles (U.S. District Court; p. 22 l. 24). For these offshore bay bottom slopes to effect shoreline erosion, the slopes must collapse. According to Stople, if these slopes are stable and do not collapse, then they have no impact on shoreline erosion (Stople 2011; pt 26). A comparison of profiles of the central channel taken by the USACE in 1999 and

2008 (prior to and after the Deepening Project) show that the slope offshore of the Coronado shoreline and the slope of the Central Navigation Channel, which is approximately 2,000 feet from the Coronado shoreline, are almost identical. Thus, the slope from the Coronado shoreline to the Central Navigation Channel sink is stable and has not collapsed. There is no evidence of slope collapse offshore of Coronado shoreline, and therefore no evidence that the Deepening Project contributed to erosion there.

Data show that the marine traffic supported by the Deepening Project accounts for a small fraction of the overall deep draft traffic in the Bay. Such vessels travel slowly, limiting the potential for generating sizeable wakes that would impact the shoreline. Moreover, no additional shipping has occurred as a result of the 2004 Deepening Project. Thus, deepening of the Central Navigation Channel did not increase boat-generated waves in San Diego Bay. Consequently, the Deepening Project did not result in any erosion attributable to ship wakes.

Erosion is occurring along the shoreline due to the unconsolidated artificial fill characteristics, the natural configuration and conditions in the Bay, and a negative sediment budget created by historic alterations to the Bay and shoreline bluffs. Deepening activities have not contributed to an erosion process that is naturally occurring in the Bay. Furthermore, the presence of persistent and expanding eelgrass near the Coronado shoreline indicates a stable shoreline in the area. Eelgrass could not be supported in a highly erosive environment.

The Deepening Project is consistent with Section 30253 of the CCA. It does not *create nor contribute to erosion, geologic instability, or destruction of the Coronado Island shoreline or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

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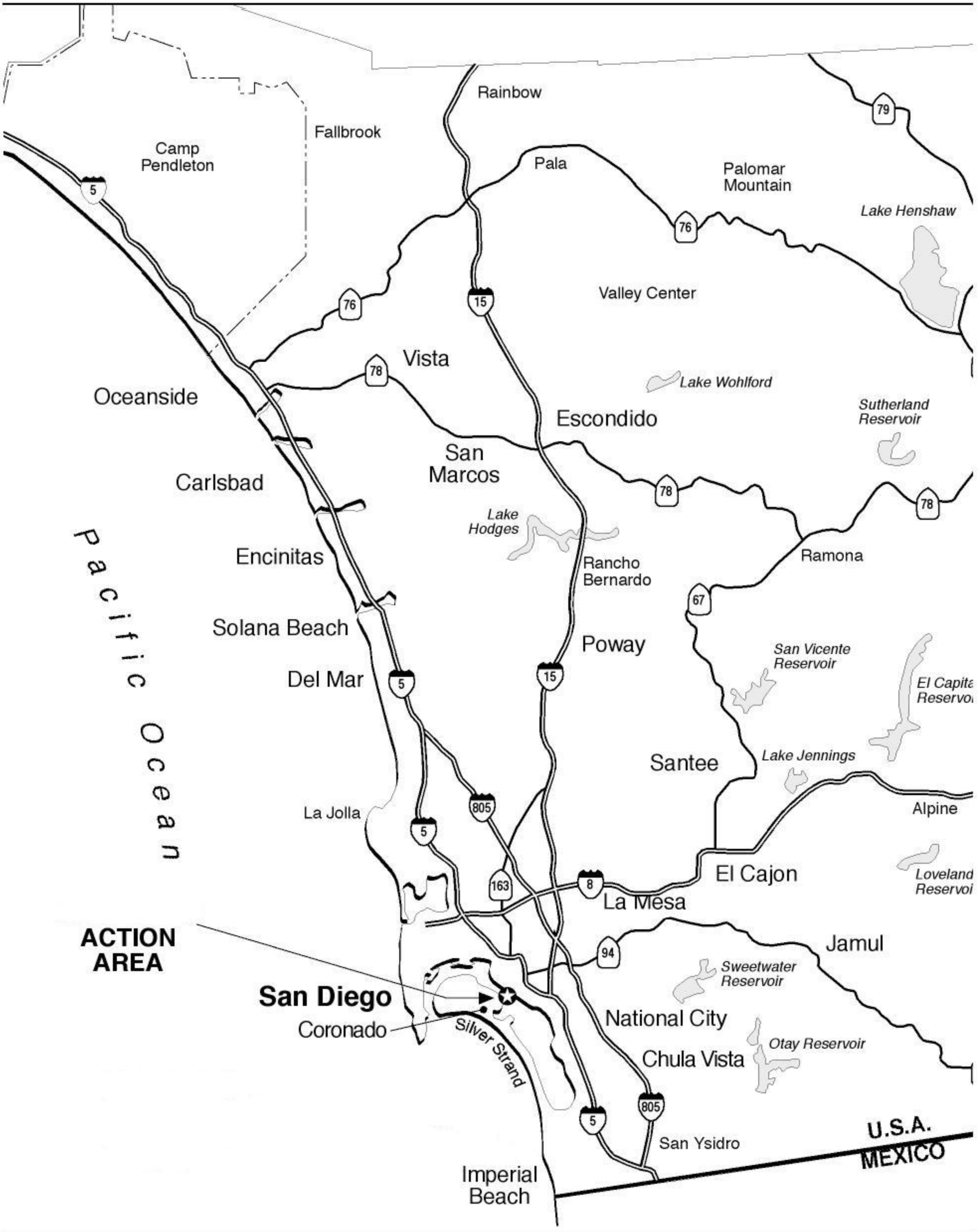


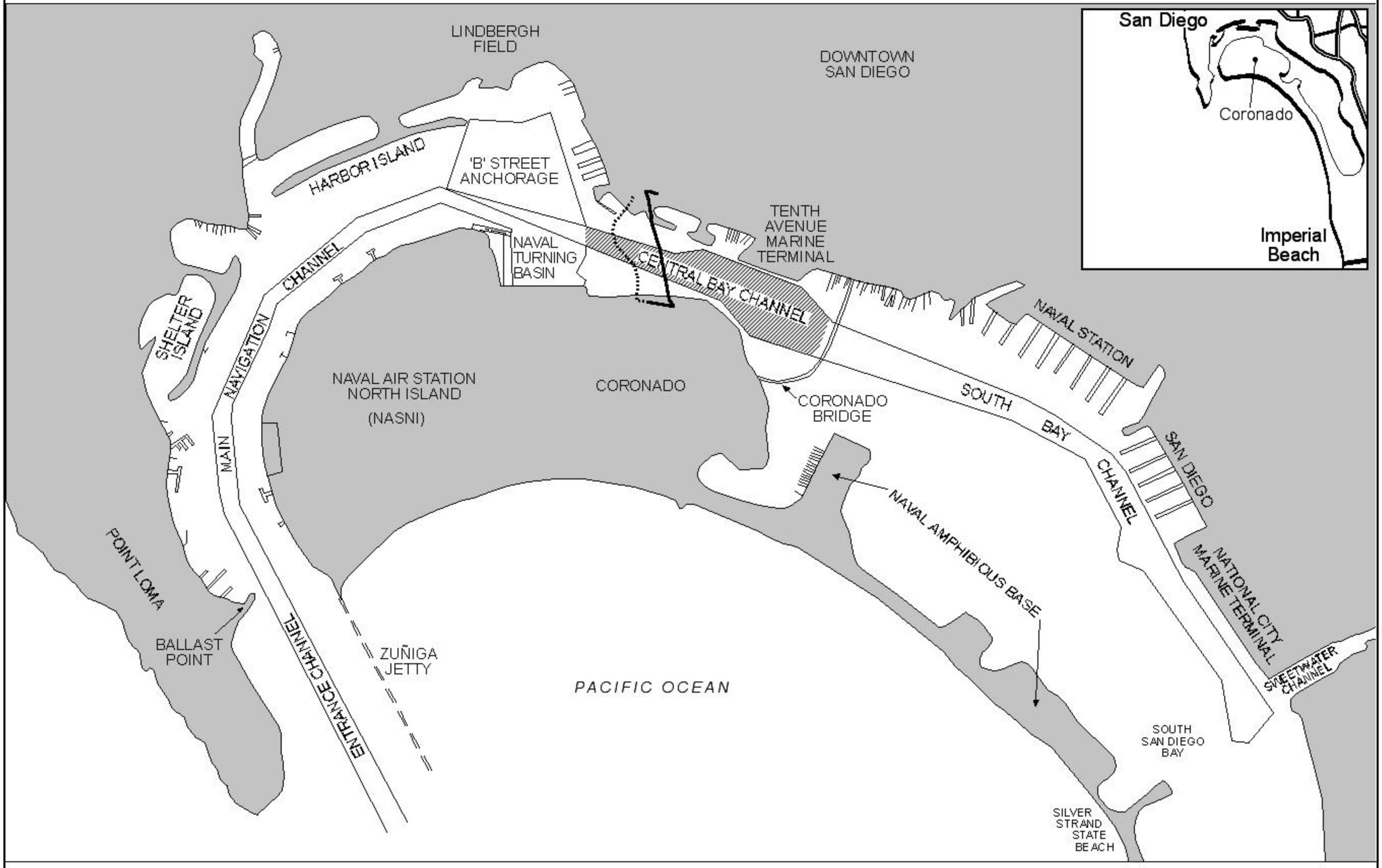
Source: Developed by Patrick J. Burke, SCS, Escondido, Calif., with technical input from Peter H. Bloom, staff research biologist, National Audubon Society -- Condor Research Center, Ventura, Calif.

Figure 1-1

NORTH

No Scale

983.8 SD Harbor Dredging\Figures\Fig ES_2 Project Area.FH9 3/11/02



Source: Blaylock Engineering Group 1998

NORTH

800 0 800 Feet

1: 9600; 1 inch = 800 feet

Proposed Dredge Area

Existing 69kV Cable

Proposed 69kV Cable

Figure 1-2
Project Area

Figure 2-1

33. AIR VIEW, LOOKING NORTHEAST ACROSS NORTH ISLAND. AUGUST 15, 1924.

Spanish Bight 1924

Figure 2-2

Spanish Bight 1926

Figure 2-3

Spanish Bight 1929

APPENDIX A: OFFSHORE PROFILES

-47

-49

-42

370+00

380+00

390+00

400+00

410+00

E 6,277,048
N 1,839,662

E 6,277,251
N 1,839,494

#22

N 1,839,229.1

E 6,275,064.3
N 1,838,316.1

E 6,275,531
N 1,836,786

E 6,275,760
N 1,836,669

309

407

#22A

#23

TURNING BASIN

PACIFIC HIGHWAY

KETTNER BLVD

HARBOR DRIVE

N560 514.54
E1 913 584.94

N560 527.84
E1 913 824.88

5th AVE. MARINA

ALAMEDA BLVD.

1ST ST.

PALM AVE.

I AVE.

H AVE.

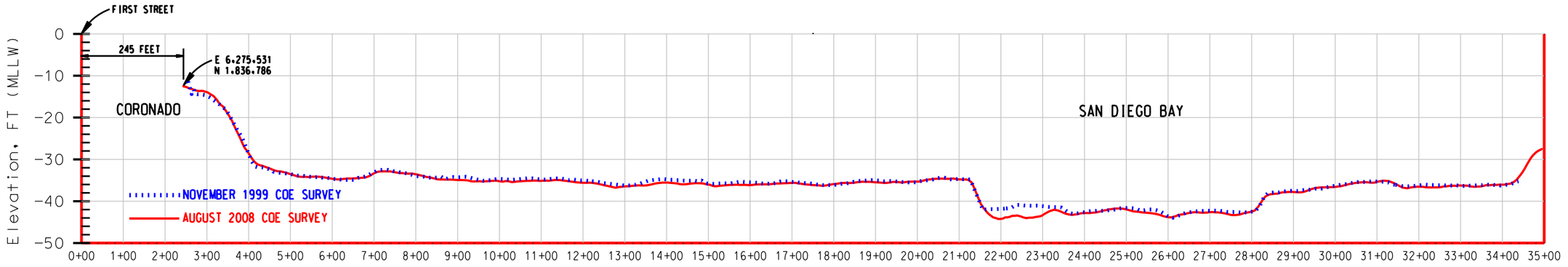
G AVE.

F AVE.

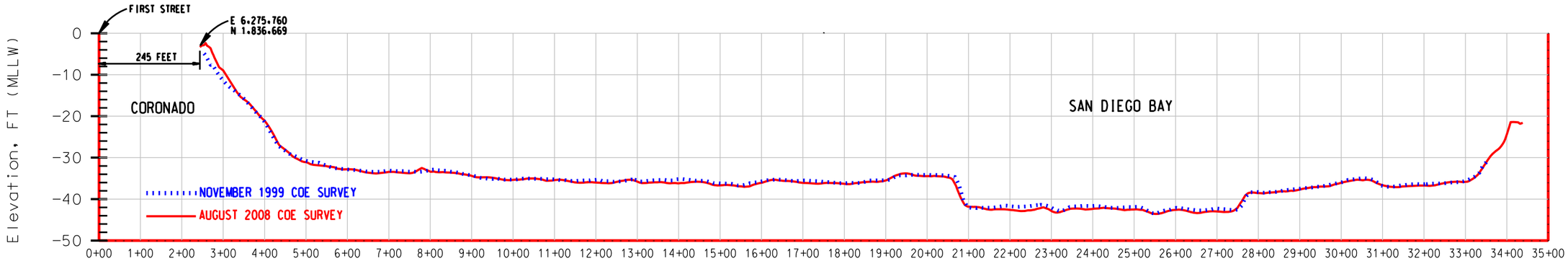
LEGEND:

NOVEMBER 1999 COE SURVEY

AUGUST 2008 COE SURVEY



CORONADO-309 FIRST ST.- SAN DIEGO BAY PROFILES



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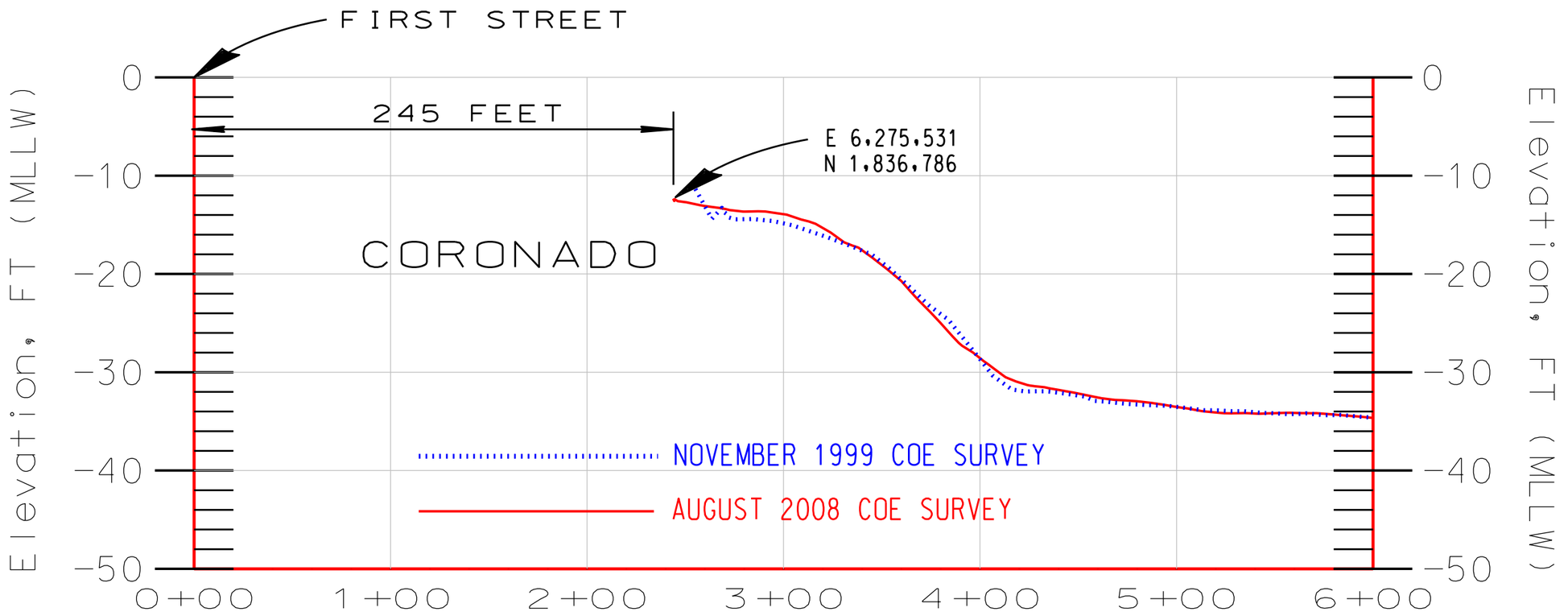

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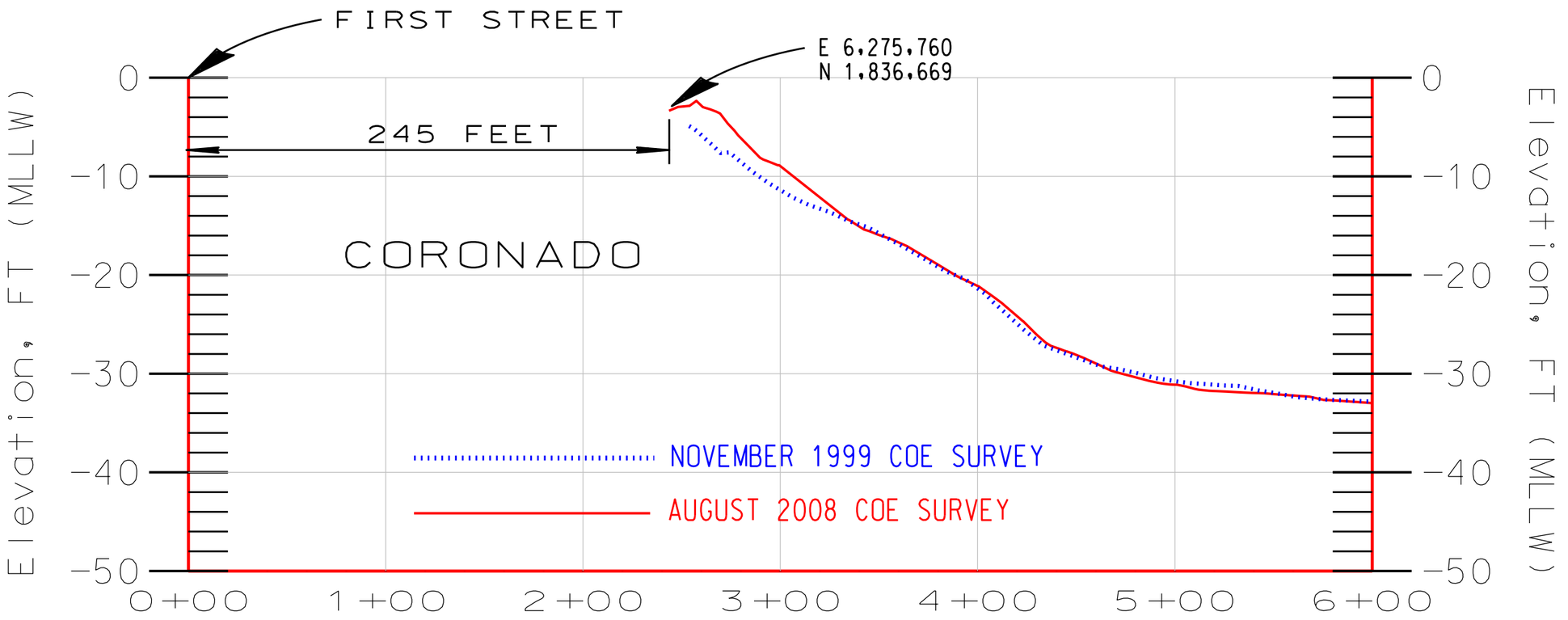

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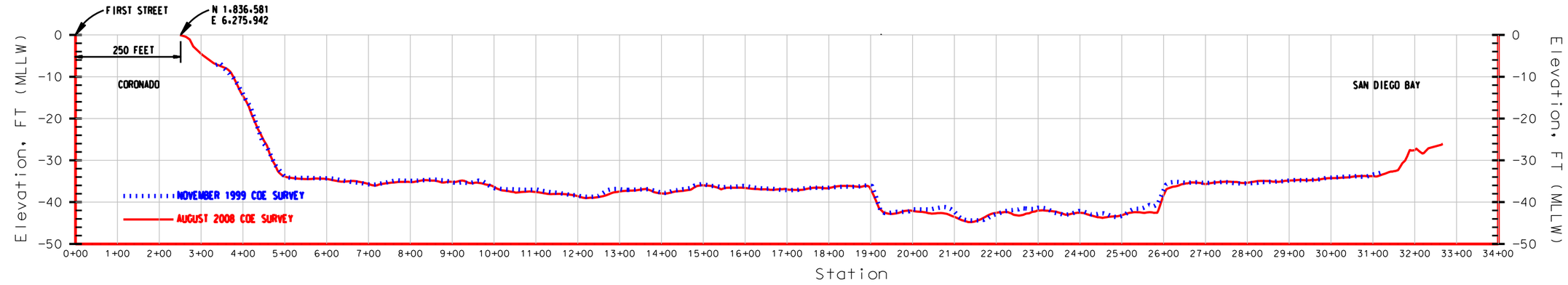
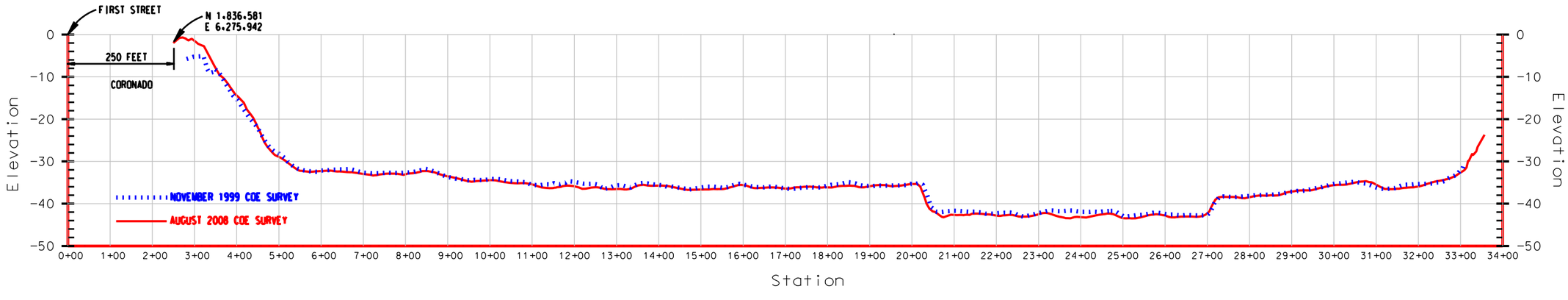


CORONADO-SAN DIEGO BAY AREA "H" PROFILES



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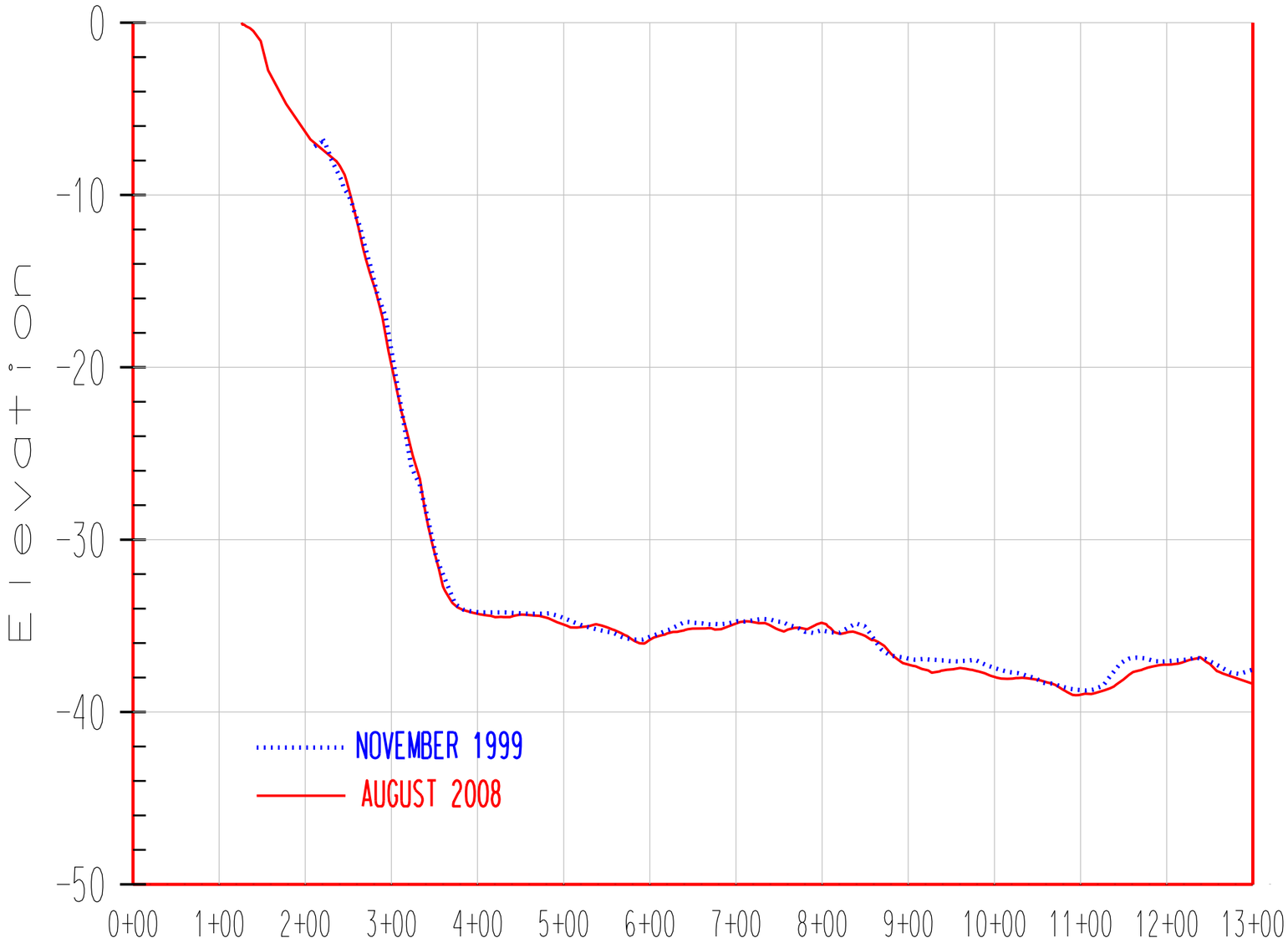
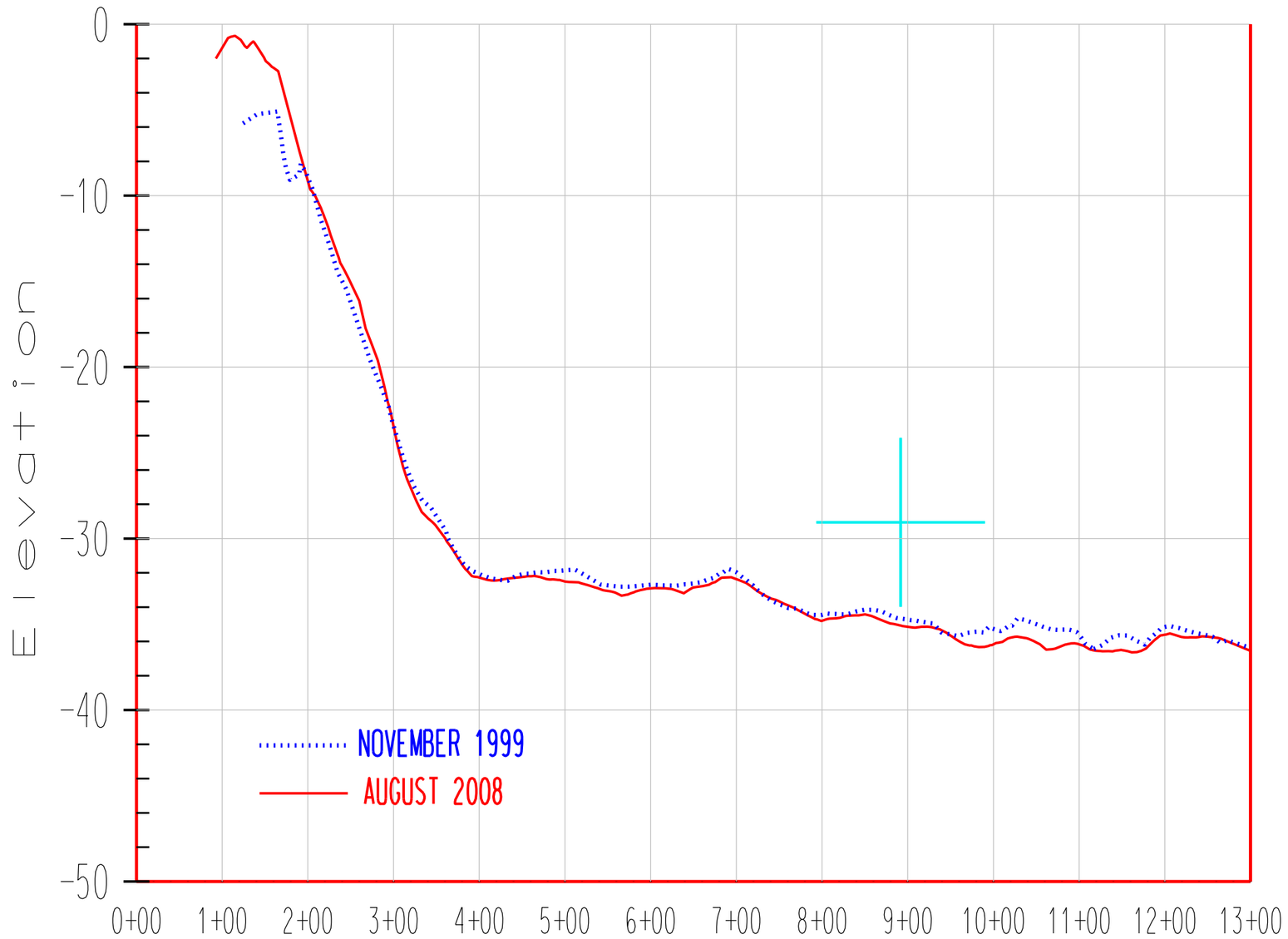


CORONADO-AVENUE "H" PROFILES



CORONADO-AVENUE "I" PROFILES

APPENDIX B: REFERENCES

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REVISED STAFF REPORT AND RECOMMENDATION

ON CONSISTENCY DETERMINATION

Consistency Determination No.	**CD-090-02**
Staff:	MPD-SF
File Date:	2/6/2003
60th Day:	4/7/2003
75th Day:	4/22/2003
Extended to:	5/9/2003
Commission Meeting:	5/6/2003

FEDERAL AGENCY: **U.S. Army Corps of Engineers**

PROJECT LOCATION: Main Channel, between the Coronado Bridge and the Naval Turning Basin at Naval Air Station North Island, San Diego Bay, and offshore of Imperial Beach (Exhibits 1-4)

PROJECT DESCRIPTION: 550,000 cu. yds. (420,000 cu. m.) of dredging to deepen the main channel to -42 ft. MLLW (mean lower low water), with disposal in nearshore waters offshore of Imperial Beach; the project also includes relocation of a 69 kV electrical cable (Exhibits 2,3,7,8,15)

SUBSTANTIVE FILE DOCUMENTS: See page 15.

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers ("Corps") is proposing 550,000 cu. yds. (420,000 cu. m.) of dredging to deepen the San Diego Bay Main Channel to -42 ft. below mean lower low water (MLLW)(from existing depths of -40 ft.), between the Coronado Bridge and the Naval Turning Basin at Naval Air Station North Island, with disposal of the material south of the Imperial Beach Pier in nearshore waters off Imperial Beach. The project also includes relocation of a 69 kV electrical line that runs under the Bay from San Diego to Coronado.

APPENDIX B

The Corps states the deepening is needed due to shipping inefficiencies based on existing channel depths, which constrain shipping of deep draft vessels and necessitates their partial unloading at other ports (Los Angeles and Long Beach) before transiting to San Diego Bay destinations. Inefficiencies have also resulted in underutilization of the Tenth Avenue Marine Terminal in the Port of San Diego.

The primary issues raised by the proposal involve biological sediment testing and the suitability of the material for nearshore disposal (i.e., beach replenishment). The latter issue involves both grain size and the potential for munitions in the material (a concern raised during Navy dredging in the entrance channel in 1997). The material is predominantly (over 80%) sand, which makes it suitable for beach or nearshore disposal. While the Corps initially proposed disposal at the EPA-approved offshore dredge disposal site LA-5, in response to concerns raised by the Commission staff and the San Diego Association of Governments' (SANDAG's) Shoreline Erosion Committee, the Corps modified the project to provide for nearshore disposal in waters above –30 ft. in elevation, offshore of Imperial Beach. Given the high sand content in the proposed dredge material, the fact that the sediment tests have established that the material is suitable for ocean disposal, and absent any evidence of munitions in the material, nearshore disposal is appropriate and consistent with the requirement of Section 30233(b) of the Coastal Act that material suitable for beach nourishment be disposed within littoral beach systems. Also, the project has passed the necessary "Green Book" sediment tests and is suitable for ocean disposal. Dredging has been scheduled to avoid the least tern nesting season. Commitments are in place for contingency planning to minimize drill fluid spills and eelgrass impacts, and to avoid eelgrass impacts by leaving the portions of the cable in place in shallower waters. As modified, the project is consistent with the marine resources and water quality policies (Sections 30230 and 30231) and the allowable use, alternatives, and mitigation tests of the dredging policy (Section 30233(a)) of the Coastal Act.

Nearshore disposal maximizes access and recreation opportunities in a region of the coast with serious shoreline erosion problems. Placing the material at the beginning of the littoral cell in Imperial Beach means that the disposal will help build beaches throughout the Silver Strand littoral cell. Recreation impacts associated with the temporary use of South Embarcadero Marina Park for the electric cable relocation construction activities have been addressed by a commitment for replacement parking nearby during the three-month cable relocation construction period. The project is consistent with the public access and recreation policies (Sections 30210-30212) of the Coastal Act.

I. STAFF SUMMARY AND RECOMMENDATION:

A. Project Description. The Corps has submitted a consistency determination for dredging 550,000 cu. yds. (420,000 cu. m.) of sediment to deepen the San Diego Bay main channel to -42 ft. (plus 1.6 to 2 ft. overdredge) below mean lower low water (MLLW), with disposal in Imperial Beach nearshore waters (above –30 ft. Mean Lower Low Water (MLLW) (Exhibits 1, 2 & 14). The project also includes relocation of a 3,300 ft. long 69 kilovolt (kV)

electrical cable. The Corps created the main channel in 1974, when it dredged the navigation channels in the center of the Bay. In 1998, the Navy deepened the entrance channel (up to the area the Corps now proposes to deepen) to accommodate the homeporting of deep draft nuclear aircraft carriers (CD-90-95).

The main channel in this portion of the bay is currently at a –40 ft. depth, varying in width from 600 to 1,900 ft. The Navy recently dredged the entrance channel to the west to –47 ft. (CD-95-95), and the Naval Turning Basin (between the entrance channel and the Naval Air Station North Island (NASNI)) to –50 ft. (CD-89-99) (Exhibit 3). The South Bay channel to the east (from the Coronado Bridge to Sweetwater Channel) is at a -35 ft. depth.

The deepening would occur between a point approximately 250 ft. (75 m.) northwest of the Coronado Bridge and the area the Navy previously deepened at the Naval Turning Basin. The Corps originally planned to dispose the material at LA-5, the EPA-approved dredge disposal site located 5.4 miles southwest of Point Loma (Exhibit 1). However the Corps has modified the project and now proposes nearshore disposal offshore of Imperial Beach (Exhibits 1, 2 & 14). Dredging is scheduled to occur between September 15 and March 31, to avoid impacts to least terns. If dredging does continue into least tern season, the Corps will implement operational modifications to reduce turbidity.

Several utility lines cross under the Bay where they intersect the narrowest part of the Main Channel. The proposed dredging would necessitate the relocation of one of these lines, a San Diego Gas and Electric (SDG&E)) 69 kV electrical cable, between its landfalls at Seaport Village in San Diego to the north and the Ferry Landing Marketplace in Coronado. The new cable would be located 300-350 ft. (90-150 m.) east of the current alignment (Exhibit 5) and would be installed by horizontal or water jet–assisted drilling. The existing cable would be removed or abandoned, depending on location. The portion of the cable within the dredge footprint (and within 100 ft. on either side) would be removed or disposed of at an existing landfill or recycled. Any vegetated landscaped areas at the construction sites that are temporarily disturbed will be revegetated.

Dredging would occur using either a clamshell or hopper dredge, with the possible use of a handheld dredge in areas where tight controls are needed, such as around utility cables.

The new cable would be installed from San Diego, with drilling to occur from the Embarcadero Park parking lot (Exhibits 5-8 & 15) (located just south of Seaport Village), which would be occupied for 3 months. The cable construction is tentatively scheduled to commence in September 2003, with the dredging to commence in December 2003. The overall project would last approximately 7 months and end in April 2004, based on the current schedule. The Corps anticipates future maintenance dredging of the main channel would be needed approximately once every 25 years. Construction staging would occur at the Tenth Avenue Marine Terminal.

B. <u>History of Munitions Found in San Diego Bay Sediments</u>. On November 16, 1995, the Commission concurred with a U.S. Navy consistency determination for the homeporting of a NIMITZ-Class nuclear aircraft carrier and associated improvements, including dredging for entrance channel deepening to –47 ft. MLLW (CD-95-95). The project originally included beach/nearshore disposal of up to 7.9 million cu. yds. of clean sandy material at four beaches throughout the County (Imperial Beach, Del Mar, Oceanside, and Mission Beach).

The Navy commenced disposal operations in September 1997, beginning with South Oceanside beach disposal and Mission Beach nearshore disposal. After disposing approximately 50,000 cu. yds. of sand at South Oceanside, the Navy discovered hazardous munitions (including live ordnance) in the dredge material. No ordnance was found in investigations of nearshore disposal at Mission Beach, where about 7,000 cu. yds. were disposed.

Concerned about public health, but wishing to proceed expeditiously with the project, the Navy immediately ceased its beach and nearshore disposal operations, and on October 1, 1997, sought Commission authorization for disposal at LA-5 of the "Area 1" material (Exhibit 11). The Commission staff asked the Navy to request only the minimum necessary disposal at LA-5, since at that time the Navy was still considering whether any of the Area 1 material could be safely used for beach replenishment. The Navy later abandoned that effort, and the Commission objected to the Navy's revised consistency determination (CD-140-97). The Navy subsequently found additional munitions at Oceanside from "Area 4" sediments and proposed disposal of all material at LA-5. On November 19, 1997, the Navy informed the Commission that it was proceeding with the modified project for disposal at LA-5, despite the Commission's objection.

After the Commission filed a lawsuit, on January 28, 1998, the U.S. District Court issued a preliminary injunction enjoining the Navy from conducting further dredging (5 Fed.Supp.2d 1106 (S.D.CA 1998)). The injunction was "... conditioned upon the Commission's expeditious study of proposed alternatives to offshore dumping, including those set forth in the Harris Report, and the good faith of the parties to negotiate a resolution which is the stated goal of both sides."

On January 30, 1998, the Navy submitted Consistency Determination CD-9-98 for the disposal of all the remaining material at LA-5. Also on January 30, 1998, the Commission's Executive Director wrote the Navy outlining a potential solution involving: (1) obtaining an authorization to use any excess existing project funds not spent by the Navy for beach replenishment; (2) increasing the federal match ratio to allow the Navy to spend up to $9.6 million in federal funds (to match $4.7 million in State funds); (3) obtaining additional funding

(up to approximately $10 million) to make up for lost sand, "so that the end result is the placement of approximately the same amount of on-shore and near-shore sand as had been originally included in the Navy's project."

On February 10, 1998, the Navy agreed to pursue legislative changes to allow the use of any remaining channel dredging project funds for beach nourishment, providing for alternative sources of sand including borrow site sand instead of channel sand for beach nourishment, as well as to support efforts to seek additional funds for beach nourishment "... up to or equal to the amount needed to provide the total amount of sand identified for beach replenishment in the project as approved [i.e., originally concurred with] by the Commission …." Based on this agreement the Commission and the Navy jointly stipulated to a lifting of the District Court's preliminary injunction. The Navy subsequently modified its consistency determination, and on March 10, 1998, the Commission concurred with the Navy's modified consistency determination, which authorized LA-5 disposal but included these commitments for beach replenishment (CD-9-98).

On April 20, 1999, SANDAG, which became the lead agency implementing the beach replenishment project using the Navy's funds and matching State funds, published a Notice of Preparation of an EIR for the San Diego Regional Beach Replenishment Project. This project consisted of dredging two million cu. yds. of sand from offshore borrow sites and placing the sand on 12 beaches in San Diego County (Exhibit 12). The Commission granted SANDAG Coastal Development Permit No. CDP-6-00-038 in November 2000 (with subsequent amendments 6-00-038-A1 and A-2). SANDAG commenced the replenishment activity in April 2001 and completed it on September 23, 2001.

Finally, in response to concerns over the extent of munitions possibly remaining in San Diego Bay, the Navy conducted a survey entitled: "Final Preliminary Assessment of Munitions in San Diego Bay Primary Ship channels and U.S.S. *Stennis* Beach Replenishment Areas," (October 2001). The study (Exhibits 16-17) concluded: "No evidence was found that indicates dumping or implies that large quantities of munitions are present in the sediment."

C. <u>Status of Local Coastal Program</u>. The standard of review for federal consistency determinations is the policies of Chapter 3 of the Coastal Act, and not the Local Coastal Program (LCP) or Port Master Plan (PMP) of the affected area. If the Commission certified the LCP or PMP and incorporated it into the CCMP, the LCP or PMP can provide guidance in applying Chapter 3 policies in light of local circumstances. If the Commission has not incorporated the LCP or PMP into the CCMP, it cannot guide the Commission's decision, but it can provide background information. The City of San Diego's and Coronado's LCPs and the Port of San Diego's PMP have been certified by the Commission and incorporated into the CCMP.

D. Federal Agency's Consistency Determination. The Corps of Engineers has determined the project to be consistent to the maximum extent practicable with the California Coastal Management Program.

E. Staff Recommendation: The staff recommends that the Commission adopt the following motion:

MOTION: I move that the Commission **concur** with consistency determination CD-090-02 that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the California Coastal Management Program (CCMP).

STAFF RECOMMENDATION:

Staff recommends a **YES** vote on the motion. Passage of this motion will result in a concurrence with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

RESOLUTION TO CONCUR WITH CONSISTENCY DETERMINATION:

The Commission hereby **concurs** with the consistency determination by the Corps for the proposed project, on the grounds that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the CCMP.

II. Findings and Declarations:

The Commission finds and declares as follows:

A. Dredging, Sand Supply, and Marine Resources.

1. Coastal Act Policies. The Coastal Act provides:

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....

Section 30233. (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:

(l) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities. …

(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.

2. Overview. In order to concur with the Corps' consistency determination, the Commission must find the project would not adversely affect marine resources, water quality, and other environmentally sensitive habitat, and, because the project involves dredging within a coastal estuary, that the project complies with the three-part test of Section 30233(a) of the Coastal Act (i.e., the allowable use, alternatives, and mitigation tests). Under Section 30233(b), the Commission must also find that the project provides for beach replenishment where dredged material is suitable.

The project is an allowable use for dredging under Section 30233(a) as a new or expanded port and/or coastal-dependent boating facility. The analysis of consistency with the alternatives and mitigation tests of Section 30233(a) hinges on whether the Corps' biological test results establish the material's suitability for ocean disposal, and, if clean and predominantly sand, the material's suitable for beach or nearshore disposal. When the previous Commission staff report on this project was published (for the March 2003 Commission meeting), the test results had not been completed, as the Corps had not completed the necessary final bioassay and bioaccumulation tests. As will be discussed below, these tests are now complete and have been reviewed by EPA and the Commission staff.

Potential impacts of dredging on marine water quality include temporarily increased turbidity, reductions in dissolved oxygen, and potential resuspension, remobilization, and redistribution of any chemical contaminants present in the sediments. Dredging would result in losses of infaunal and epifaunal biota, and some burrowing and bottom dwelling fish within the dredge footprint. These impacts are typical of all dredge projects, and the Commission has historically determined no mitigation necessary for the temporary impacts from dredging harbors and disposal of clean, predominantly sandy sediments on beaches or in surf zone or nearshore marine environments.

3. Biological Effects/Dredging and Disposal. To determine the appropriate alternative and analyze the material's suitability for ocean disposal, the Corps evaluated sediments proposed for dredging and disposal pursuant to the procedures described in the 1991 EPA/Corps testing manual, Evaluation of Dredged Material Proposed for Ocean Disposal -- Testing Manual (i.e., the "Green Book"). The testing procedures described in the Green Book allow for a tiered approach to analysis of the dredged sediments. It is necessary to proceed through the tiers only until information sufficient to determine compliance or noncompliance with EPA's regulations has been obtained. Only if there is not enough information to determine suitability or unsuitability for ocean disposal after the completion of a tier, will the applicant be required to complete the next tier testing.

To assure the material's suitability for ocean disposal, the Corps analyzed the physical and chemical characteristics of the dredged sediments. Because state and federal sediment quality criteria are not available for interpreting sediment chemical analysis, the National Oceanic and Atmospheric Administration (NOAA) sediment criteria (developed by Long and Morgan in 1990) are often used to interpret sediment data. If the levels of contaminants are higher than the ER-L, then it is **possible** that there will be a biological effect from the contaminant. If the level is above the ER-M, then adverse effects are **likely.** Levels between the ER-L and ER-M are considered to have possible effects, especially on sensitive species.

The Corps' submittal included test results from 1998 (Ogden 1998) which concluded that the material passed the Green Book standards and was suitable for ocean disposal. However EPA requested that the Corps undertake confirmatory test at the proper depths, as the 1998 results were for different dredge depths than now proposed by the Corps, and therefore may not be fully representative of the dredge material. The Corps' subsequent sediment chemistry tests showed slightly elevated contaminants in several core samples; the sample results of concern consisted of: (1) exceedences of ER-L levels in mercury in Cores # 6, 11 and 12; (2) an exceedence of ER-L levels in 2 PAHs (Acenaphythlene and Fluorine) in Core #4; and (3) overall high PAH levels (although none specifically exceeding an ER-L number) in Cores 11-15. Based on these levels, EPA requested additional bioassay and bioaccumulation tests. The bioassay and bioaccumulation tests have now been completed.[1] The test report concludes:

> ***6.0 CONCLUSION***
>
> *In conclusion, the Port of San Diego is proposing to conduct a dredging project in the San Diego Bay Navigation Channel that will yield approximately 550,000 cy of dredged sediment. The sediment was tested to determine if it is acceptable for disposal nearshore at Imperial Beach or at the LA-5 ocean disposal site. The tests indicated that the sediment is of adequate*

[1] Draft Report, Central San Diego Bay, Navigation Channel Deepening Project, Port of San Diego, AMEC Earth & Environmental, Inc., March 2003.

> *grain size for beach nourishment, and met the water column, benthic, and bioaccumulation LPCs as required by the Clean Water Act and the Ocean Dumping Law. The sediment, therefore, is suitable for disposal at either location.*

Based on these test results and conclusions, the Corps states:

> *In addition, the proposed dredge material was analyzed for its chemical suitability for disposal and a subset of the samples underwent bioassay and bioaccumulation testing. According to "Green Book" guidelines and standards, the material is found to be suitable for disposal at either LA-5 or Imperial Beach nearshore waters, as it meets the water column, benthic, and bioaccumulation LPCs as required by the Clean Water Act and the Ocean Dumping Law. The Corps has coordinated results of chemical analysis with Mr. Steven John of the EPA. As per his review of the completed bioassay and bioaccumulation data for the Central San Diego Bay Navigation Channel Deepening Project, Port of San Diego, the EPA concurs formally on the Corps determination that the proposed dredge materials are suitable for aquatic or ocean disposal.*

Addressing marine resources at the revised disposal site, the Corps states:

> *The implementation of the new proposed disposal action would involve potential impacts to a different area than discussed in the Draft EIS/EIR. The Corps is coordinating with resource agencies, including the National Marine Fisheries Service, to ensure any potential impacts are avoided or minimized. The kelp beds occurring in the Imperial Beach nearshore areas are of concern, however, disposal actions could avoid the kelp beds by providing a buffer zone. The Corps is also coordinating with concerned local fishermen to minimize impacts to fishing in the Imperial Beach area.*

The Commission finds that the Corps has addressed the biological issues raised and that the material has passed the tests needed to assure that dredging and nearshore disposal would not adversely affect marine resources. The Commission therefore finds the project consistent with the marine resources and water quality policies (Sections 30230 and 30231) and with the alternatives and mitigation tests of the dredging policy (Section 30233(a)) of the Coastal Act.

4. <u>Sand Supply/Beach Replenishment</u>. Beach erosion is a major problem along many of the beaches in San Diego County. To be considered suitable for beach nourishment, sediment must be free of chemical contamination (i.e., pass Green Book tests described above) and consist primarily of sand of an acceptable grain size (usually approximately 80% sand, although another commonly used "rule-of thumb" is that the material should ideally fall within 10% of the percentage of sand content at the receiver beach). If placed on the dry upland portion of the beach, the grain size should ideally be compatible with the predominant grain size on the receiver beach as well. The "Ogden 1998" test results indicated that the dredge

material is 77-98% sand. The Corps' more recent and more accurate confirmatory testing (AMEC, 2003) showed an average of cores 1-10 of 83.04 % sand, and 77.2% sand in cores 11-15. The Corps then conducted an additional beach compatibility analysis based on the AMEC results; these results provide a more precise representation of 81.8% sand (Exhibit 9).

The Commission would normally expect an applicant to implement beach or nearshore disposal where the sand content is above 80%. In this case, while the Corps initially proposed LA-5 disposal, after concerns over this proposal were expressed by the Commission staff and at SANDAG (Shoreline Preservation Committee) meetings, the Corps reconsidered its position and modified the project to include nearshore disposal off Imperial Beach (Exhibit 14).

In analyzing the compatibility of the material with the receiver beach (nearshore Imperial Beach) sediments, the Corps states:

> *A recent sediment sampling of the proposed dredge material was conducted to determine its suitability for disposal at the EPA-approved ocean disposal site LA-5 and Imperial Beach…. For the purposes of the study, Imperial Beach as a potential disposal site is broken down into two zones: nearshore and onshore areas. The nearshore area is that area that falls between –6 to –8 meters of elevation. The onshore area is that part of the beach which falls between –4 and +4 meters of elevation. From a geotechnical standpoint, the main criterion involved in determining a borrow sites' compatibility with a potential receiver site is the fines content of the sample. That is to say the amount, expressed as a percentage of weight of a given sample, of material that will pass unimpeded through a #200 sieve. The fines in a potential borrow site may not exceed the fines percentage in a potential receiver site by more than ten percentage (10%) points. The proposed dredge material sampled in December 2002 had an average fines content of 18% while the Imperial Beach nearshore area had an average fines content of approximately 11-12%. The proposed dredge material is within the 10% criterion and is therefore considered to be geotechnically compatible with the nearshore zone of Imperial Beach….*

Addressing concerns over the potential for munitions in the sediments, the Commission notes that the area proposed for dredging is at least 3 miles from the nearest area where the Navy found munitions during the first homeport dredging project (i.e., in Area 4, Exhibit 11). In addition, for the Navy's most recent large dredging/homeporting project (CD-89-99), which included 534,000 cubic yards of dredging from Berth J deepening, and which was located much nearer (just west of) the Corps' proposed main channel dredging (i.e., the Navy area is identified as "Naval Turning Basin" on Exhibit 3), the Navy placed the material in nearshore bay waters creating intertidal/subtidal habitat, southeast of the Naval Amphibious Base in Coronado. The Navy conducted pre- and post-disposal surveys to determine whether any munitions could be detected in sediments that were being dredged and disposed in the Bay. The pre-construction magnetometer and diver surveys, completed in May 1998 in the vicinity of Pier J/K, did not detect munitions. Sediments were also tested for explosive compounds and

none were detected. Post-construction surveys for munitions (required by the Regional Water Quality Control Board) have also not shown evidence of any active munitions from this dredge material.[2] In fact, the Corps' initial technical analysis for its dredging (Draft EIS Appendix B, p. B-11) noted:

> *Ordnance was not encountered during the 1998 explorations and is not expected to be encountered during dredging for this project, since it was not observed or encountered in any of the materials removed during the Corps 1975-dredging project…" [emphasis added]*.

In addition, in response to concerns raised at the time of the Navy's 1997 San Diego Bay dredging and discovery of munitions disposed at Oceanside (Navy consistency determinations CD-95-95, CD-140-97 and CD-160-97), which raised issues about the overall extent of munitions possibly remaining in San Diego Bay, the Navy conducted a survey for munitions throughout San Diego Bay.[3] This Navy study extensively surveyed historic information including military accidents, incidents, and weapons storage and transfer operations, including interviews of and Naval and ex-Naval personnel, in an attempt to characterize the extent of the problem in San Diego Bay and to identify areas of potential concern. The study concluded:

> ***San Diego Bay Primary Ship Channels***
>
> *After an exhaustive search for the possible source of munitions in sediment from the San Diego Bay primary ship channels, an exact source of the munitions found during beach replenishment could not be pinpointed. The Navy and other military services have a long history of activity in the San Diego Bay primary ship channels that includes training with and transport of munitions and eras of wartime preparation when munitions handling was more common and more frequent. No evidence was found that indicates dumping or implies that large quantities of munitions are present in the sediment. Evidence was found indicating that small quantities of mostly smaller ordnance may be present in sediment in the San Diego Bay primary ship channels (see the AOPCs [Areas of Potential Concern] in Section 6.*

Section 6 (Areas of Potential Concern) and 9 (Conclusions and Recommendations) of that report are attached as Exhibits 16-17.

For the revised project, the Corps' conclusion concerning the potential for munitions to be present at the disposal site and any hazard that might exist is as follows:

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[2] See Final Summary Report, Site Surveys During the Period of 9 July 2001 to 23 September 2002, Munitions Debris Site Survey at the Naval Amphibious Base Habitat Enhancement Site Coronado, California, U.S. Navy, 15 January 2003.

[3] Final Preliminary Assessment of Munitions in San Diego Bay Primary Ship channels and U.S.S. *Stennis* Beach Replenishment Areas, October 2001.

The issue of possible munitions in the proposed dredge footprint has been a public safety concern. However, a 1976 Corps project dredging the same area found no evidence of munitions in the material. Since the proposed dredge footprint lies within the 1976 dredging footprint, the Corps does not anticipate munitions being found in the material and therefore does not propose to screen the material for possible munitions. As a precautionary measure, the Corps has coordinated with the San Diego County Sheriff Communications Station. The bomb squad there has jurisdiction overseeing the shoreline from Coronado to Imperial Beach and they would remove any possible munitions that may end up on the shoreline. The squad has provided training for all lifeguards to identify munitions that may be found on the beaches. Upon finding any munitions, lifeguards would immediately notify the squad, whose responsibility would be to remove the munitions appropriately.

In conclusion, the Commission finds that the available evidence does not support claims that the material is unsuitable for beach nourishment based on concerns over the potential for munitions in the sediments. As the Corps is now proposing beach nourishment in the form of nearshore disposal offshore of Imperial Beach, the Commission finds the project, as modified, consistent with the sand supply policy (Section 30233(b)) of the Coastal Act.

5. Cable Relocation. An additional issue raised by the project is the potential for impacts from the proposed 69 kV electric cable relocation. Drilling for the cable installation could result in drilling fluid releases on land where they could escape from the surface boring, or in the bay due to pressurization and release through sub-seafloor cracks in underlying bay sediments of the fluids. The Corps estimates the potential for bay releases to be small. Material and equipment will be on-site, if needed, to enable berms to be placed around the upland drill sites to capture any fluids released. The Draft EIS mentions the potential for adverse effects from such releases on eelgrass beds in the Bay; again, the Corps estimates any effects to be minimal, "… as the mud would likely spread along the bottom and below the leaves of the eelgrass." The Corps also notes any cleanup operations, if needed, would need to be carefully planned, as they could have more adverse effects than the releases themselves. The Corps has included the following minimization/mitigation measures to address potential fluids releases and eelgrass impacts:

- Pre-construction eelgrass surveys within 200 ft. of either side of the cable alignment, with post-construction surveys triggered in the event drill fluids are released;
- Controlled drill advance rate to minimize sudden pressure changes;
- Drill pressure and mud loss monitoring;
- Visual inspections in shallow waters;

- If fluids are released, the RWQCB (and the Corps, Regulatory Branch) will be contacted;

- Surface returns in shallow waters and in the eelgrass beds would be evaluated to determine if additional measures are warranted.

    a) Minor surface returns would be monitored; if effects minor, no cleanup activities triggered;

    b) Other surface returns would be monitored. Use of water jets may be considered to help disperse muds from eelgrass beds if necessary. Such water jets would be gentle enough to avoid direct disturbance of plants or their substrate. Other cleanup actions may also be desirable, and such actions would be determined quickly in consultation with appropriate regulatory agencies.

- A response plan would be prepared by the contractor and in place to deal with a potential surface return on dry land and in areas where muds could enter the bay from overland. In this situation, the surface return would be contained before it reaches the bay.

The Corps also states that, to minimize eelgrass impacts, the cable would not be fully removed:

> *It is not necessary to remove the entire cable. The nearshore portions of existing 69 kV cable would be abandoned in place to avoid direct impacts to eelgrass on the Coronado side of the alignment.*

According to the Corps' Draft EIS, San Diego Gas and Electric (SDG&E) will be preparing a Storm Water Pollution Prevention Plan (SWPP) to comply with the Clean Water Act. The Corps also states that Best Management Practices for erosion and sediment controls would be implemented for any trenching activities. The Corps has indicated that it can assure any necessary controls will be implemented by SDG&E to comply with the BMPs. The Commission staff has requested additional project details concerning: (1) drilling fluid spill contingency planning and monitoring; (2) identifying the drill location; and (3) details about where the cable would remain in place and, where it would not, the disposal method and location. The Corps' has responded to these request, including a commitment for Commission staff review and concurrence, prior to commencement of construction, of a drill fluid spill contingency planning and monitoring (and in fact the Commission staff has received such a monitoring plan from SDG&E, dated April 7, 2003.[4] The Corps has also: (1) agreed to add the Commission to the agencies to be contacted in the event of a spill; and (2) provided an additional environmental analysis of the drilling activity (prepared by SDG&E).[5] The

[4] Drilling Fluid Release Monitoring Plan for Horizontal Directional Drilling, 69 kv TL655 Relocation – San Diego Bay Bore Project, San Diego Gas and Electric, April 7, 2003.

[5] Evaluation of the Environmental Effects of the Proposed Horizontal Direction Drill Project to Relocate the existing

Commission believes the Corps has adequately addressed any concerns raised and finds that with the commitments made, the cable relocation activity would not adversely affect marine resources.

6. Conclusion. The Corps has now completed the applicable biological test results, which indicate the material is suitable for ocean or beach disposal. The material is over 80% sand, and there is no evidence supporting a concern that live munitions would be in the material. As modified to include nearshore disposal, the project is consistent with the requirement of Section 30233(b) that material suitable for beach nourishment be disposed within the littoral beach system (i.e., in nearshore waters offshore of Imperial Beach). Dredging has been scheduled to avoid the least tern nesting season. Commitments are in place for contingency planning to minimize drill fluid spills and eelgrass impacts, and to avoid eelgrass impacts by leaving the portions of the cable in place in shallower waters. The Commission concludes that the project consistent with the marine resources and water quality policies (Sections 30230 and 30231), the allowable use, alternatives and mitigation tests of the dredging policy (Section 30233(a)), and the sand supply policy (Section 30233(b)) of the Coastal Act.

B. Public Access and Recreation. Sections 30210-30212 of the Coastal Act provide for the maximization of public access and recreation opportunities. The proposed nearshore disposal will benefit public recreation by providing for beach replenishment. Access and recreation impacts on boating in the bay from dredging activities would be temporary. Construction activities associated with relocation of the 69 kV utility cable would result in temporary (3 months) effects on public use of South Embarcadero Marina Park, near Seaport Village/Kettner Blvd. in San Diego, and to a lesser degree, across the bay at the Ferry Landing Marketplace in Coronado.

In response to its questions, the Commission staff has received a discussion from the Port of San Diego (Exhibit 18), which addresses issues raised from the proposed closure of the South Embarcadero Marina Park parking lot for 3 months during the cable relocation construction period. The discussion clarifies that while the entire lot will be inaccessible for public parking, the park will remain open for pedestrian public access, and, further, that replacement parking will be available nearby. The discussion (Exhibit 18) states: "Replacement public parking shall be made available at Seaport Village, Harbor Seafood Mart, and/or the Old Police Headquarters site" (Exhibit 19).

69kV Electric Transmission Line Across San Diego Bay, San Diego Gas and Electric, July 23, 2002.

Nearshore disposal maximizes access and recreation opportunities in a region of the coast with serious shoreline erosion problems. Placing the material at the beginning of the littoral cell in Imperial Beach means that the disposal will help build beaches throughout the Silver Strand littoral cell. Recreation impacts associated with the temporary use of the South Embarcadero Marina Park for the electric cable relocation have been addressed by a commitment for replacement parking nearby during the three-month cable relocation construction period. For these reasons, the Commission concludes that the project is consistent with the public access and recreation policies (Sections 30210-30212) of the Coastal Act.

III. SUBSTANTIVE FILE DOCUMENTS:

1. Draft EIS/EIR for San Diego Harbor Deepening (Central Navigation Channel), U.S. Army Corps of Engineers, November 2002.

2. U.S. Navy Consistency Determinations No. CD-95-95, CD-140-97, CD-161-97, CD-9-98, and CD-89-99, and Negative Determination ND-63-00 (Homeporting of Nuclear Air Craft Carriers, Naval Air Station North Island).

3. Consistency Determination No. CD-46-02 (Corps of Engineers, 2.2 million cu. yds. beach nourishment project, Imperial Beach).

4. Coastal Development Permit and Amendments CDP-6-00-038 (and subsequent amendments 6-00-038-A1 and A-2, San Diego Association of Governments (SANDAG), Regional Beach Replenishment Project.

5. Final Report Central San Diego Bay Navigational Channel Deepening Project, Ogden, November 1998, for Port of San Diego.

6. Evaluation of Dredged Material Proposed for Ocean Disposal, Testing Manual, 1991 EPA/Corps (“Green Book”).

7. Final Summary Report, Site Surveys During the Period of 9 July 2001 to 23 September 2002, Munitions Debris Site Survey at the Naval Amphibious Base Habitat Enhancement Site Coronado, California, U.S. Navy, 15 January 2003.

8. Final Preliminary Assessment of Munitions in San Diego Bay Primary Ship channels and U.S.S. *Stennis* Beach Replenishment Areas, U.S. Navy, October 2001.

9. Drilling Fluid Release Monitoring Plan for Horizontal Directional Drilling, 69 kv TL655 Relocation – San Diego Bay Bore Project, San Diego Gas and Electric, April 7, 2003.

10. Evaluation of the Environmental Effects of the Proposed Horizontal Direction Drill Project to Relocate the existing 69kV Electric Transmission Line Across San Diego Bay, San Diego Gas and Electric, July 23, 2002.

11. Draft Report, Central San Diego Bay, Navigation Channel Deepening Project, Port of San Diego, AMEC Earth & Environmental, Inc., March 2003.

12. Parking and Public Access Issues – SDG&E Utility Upgrade Project, Port of San Diego.

APPENDIX B

CALIFORNIA COASTAL COMMISSION
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SAN FRANCISCO, CA 94105- 2219
VOICE (415) 904- 5200
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F 13a

Correspondence

CD-001-12, U.S. Army Corps of Engineers, San Diego

Attached is a letter from David Skelly

February 17, 2012

Dr. Charles Lester
Executive Director
California Coastal Commission
Attn: Mr. Mark Delaplaine
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

SUBJECT; Comments on Consistency Determination San Diego Harbor Central Navigation Deepening Project, San Diego, California.

REFERENCES:

Skelly, David W., 2008 "Comments on CVN Homeporting Draft SEIS, Regarding Causes and Consequences of Shoreline Erosion and Shore Protection Failure Along First Street, Coronado." dated September.

Skelly, David W. 2009 "Comments on CVN Homeporting Final SEIS, Regarding Causes and Consequences of Shoreline Erosion and Shore Protection Failure Along First Street, Coronado." dated January 12.

US Army Corps of Engineers, Los Angeles District, 2011, "Central Navigation Channel Deepening Project San Diego, California, Consistency Determination." dated October.

Dear Dr. Lester:

The following comments are in response to statements contained in the referenced 2011 US Army Corps of Engineers consistency determination. These comments are being submitted on behalf of homeowners SLPR, LLC, Ann Goodfellow as Trustee of the Survivors' Trust Under the Goodfellow Family Trust, and Jerry Cannon and Michael Morris as Co-trustees of the Sewall Family Trust of 1985. The comments are based upon my review of the above referenced documents, site inspections, bathymetric survey comparisons, and general knowledge of coastal processes. The following comments add to my comments referenced above, which were submitted in response to the draft SEIS. I have over 30 years of experience as a coastal engineer. My CV is enclosed with this letter.

For ease of review I will provide the US Army Corp of Engineers statement (paraphrased) in bold follow by my comment.

The statement that the shoreline profiles fronting First Street have not steepened.

Figure 1 enclosed with this letter shows the 1902 nautical chart of the area in front of First Street. The depth contours, shown here in fathoms (1 fathom = 6 feet), are relatively parallel to the shoreline. There is a broad terrace feature fronting First Street, particularly in front of the 300 to 500 block of First Street that extends from the shoreline

to the 1 fathom line. Based upon the distance between the Coronado streets, which has remained constant over time, the 1 fathom terrace area extends from about 400 feet from the centerline of First Street to about 780 feet from the First Street centerline, directly in front of the 400 block. This is a 400-foot wide relatively level area located directly in front of where the homeowners' properties are now located. There is even a broad flat area to the west of First Street within the fault-controlled Spanish Bight.

Figure 2 shows the 2008 Port of San Diego bathymetric survey overlain upon the 1902 nautical chart. What is very clear is that the depth contours have moved landward as much as 400 feet in the bay fronting J thru H Avenues. It is also very clear that the depth contours in front of G Avenue are now almost perpendicular to the shoreline. The modification of the depth contours was the result of dredging within San Diego Bay. It is very clear that over time dredging of the bay has resulted in the steepening of the depth contours in the vicinity of First Street.

The referenced 2011 Corps report provides superimposed bathymetric survey data taken in November 1999 and August 2008 across the bay. They offer this data to prove that the profiles have not steepened. Obviously, if you look at a very large area over a short time frame an argument can be made that there is nothing changing. Closer examination of these profiles, however, reveals several facts that seem to be missed by the Corps. First, none of the profiles extend above Mean Lower Low Water (WLLW) where the erosion is occurring as identified and reported in the Corps of Engineers 2001 and 2005 reconnaissance reports. Second, a comparison of the enlarged 309 and 407 First Street profiles show that at a distance of 245 feet from First Street the elevation of water profiles are 10 feet deeper in front of 311 First as compared to 407. This is a steep alongshore gradient where a 10-foot elevation change occurs along about 200 feet of shoreline. As shown in Figure 1, prior to dredging activities within the bay system the depth contours where relatively parallel to the shoreline. This is clearly a steepened gradient. It should be also noted that the 1999 and 2008 profiles do not match (lie on top of each other). They clearly show that sediment is moving across the profile. At 309 First Street from elevation -10 feet MLLW to about -30 feet MLLW there has been erosion near the shoreline, some accretion at elevation -15 MLLW, and erosion at about elevation -28 MLLW. This profile shows some steepening of the profile between horizontal station 3+00 and 4+ 00. This contradicts the statement that the profiles are not steepening, even over the short 9-year period. The fact that offshore profiles are steepening over the last several decades is undisputable.

The issue with fathoms versus feet on Navigation Chart used in part by the Corps to discredit my analysis.

The Corps contends that I mistook the 6-fathom contour for the 6-foot contour on the 1902 navigation chart in my previous comments on record. This is just wrong. Figure 2 clearly shows that I am correct that the 30-foot depth contour has moved about 500 feet towards First Street in 1902. What is more disturbing is that this misrepresentation, which I was not given an opportunity to respond to, was parroted by a federal judge as a reason to rule against the homeowners.

The argument that the shoreline was augmented with artificial fill and that the erosion is because nobody is replacing the sand anymore.

The Corps continues to make statements about fill being placed along the First Street shoreline yet provides no evidence. It would seem that if it were placed along First Street there would be some record. There are many historical bathymetric surveys that delineate the shoreline over the time period the suggested artificial filling occurred, yet no evidence is offered to support the Army Corps' statement. This unsupported conclusion incorrectly identifies in-filling (and the subsequent cessation thereof) as the cause of erosion, shifting the focus from the true causes of erosion stated and clearly identified in the Corps' 2001 study.

The argument that eelgrass proves the shoreline is stable.

Eelgrass has natural, seasonal blooms and die-offs. The erosion of the shoreline and steepening of the offshore gradients has occurred over time scales much greater than the eelgrass annual cycle. What is clear is that prior to dredging activities within San Diego Bay there was much more intertidal and shallow subtidal area within the bay, particularly within the bay fronting the west end of First Street. It should also be noted that the Navy's own eelgrass study show how the eelgrass bed width becomes narrower and narrower moving to the west along the First Street shoreline until there is no eelgrass at all fronting about 300 First Street.

The argument that ship wakes do not contribute to erosion.

This is an attempt to walk back the 2001 and 2005 Corps reports that clearly and correctly identified wakes as a cause of erosion along First Street. The comparison of the 1999 and 2008 profiles offered in the Corps' 2011 report clearly show that sediment is moving in the intertidal and subtidal areas in front of 309 to 407 First Street. There needs to be a source of energy for the suspension and transport of this sediment. There is significant vessel traffic within the bay that would not be taking place if the channel was not repeatedly dredged. The cumulative impact of wakes over the years has resulted in the suspension of shoreline sediment, which is then transported away along the shoreline and into the depths created by the dredging activities. On the open coast of San Diego sand that is on the beach in Oceanside is lost down the Scripps Submarine Canyon over 22 miles away. The fact that the navigation channel is 1000 feet from the shoreline does not eliminate it as a sink for sediment from along the First Street shoreline.

The erosion problem is created by a negative sediment budget due to damming of rivers and other sediment sources

The Corps fails to understand or explain why the erosion problem along First Street is relatively unique within the bay. The west end of First Street is eroding much faster than other quasi-natural shoreline areas within the bay. Based upon the Corps' explanation the bay should be experiencing erosion in all areas relatively equally, where there is material to erode. This is not the case. The Corps' theory fails to address

some very basic questions such as: Why are the ~700 feet of shoreline at the western end of First Street eroding at such a high rate? Why are the current depth contours bay ward of G Avenue perpendicular to the shoreline when they are clearly parallel to the shoreline to the east of G Avenue? Why has erosion accelerated within the last two decades when, by the Army Corps' own account, the sediment deficit was created by alterations to the bay ecosystem (damming, shoreline development, etc.) that occurred about century ago?

The rate of erosion has been slower than predicted in the 2000 Army Corps report.

Every property along First Avenue has shore protection along the bay. This armoring of the shoreline has likely slowed the erosion of the shoreline, but as evidenced by the Corps own profile data there are still changes (both erosion and accretion) in the depth contours below MLLW.

The 2001 Army Corps report was "cursory."

The 2001 report actually was more comprehensive than the original environmental analysis for the dredging projects at issue. The report actually contains bathymetric profiles which clearly show the steepening of the submerged gradients within the bay adjacent directly to areas of dredging activity. The report meets the industry standard of coastal engineering analysis of available data and as such is not cursory. The report is an inconvenient truth for the Corps!

In closing, the California Coastal Commission has worked hard to mitigate potential impacts of coastal projects on shoreline sediment distribution on the open coast for projects as small as 40 feet of seawall. Here in San Diego Bay, the cumulative impact of the dredging projects over time has resulted in the significant loss of intertidal and subtidal area and habitat, and shoreline erosion. These impacts are clearly observable and expressed along hundreds of feet of shoreline and submerged bay lands along First Street, Coronado.

David W. Skelly MS, PE
RCE#47857

Cc: Beus Gilbert PLLC

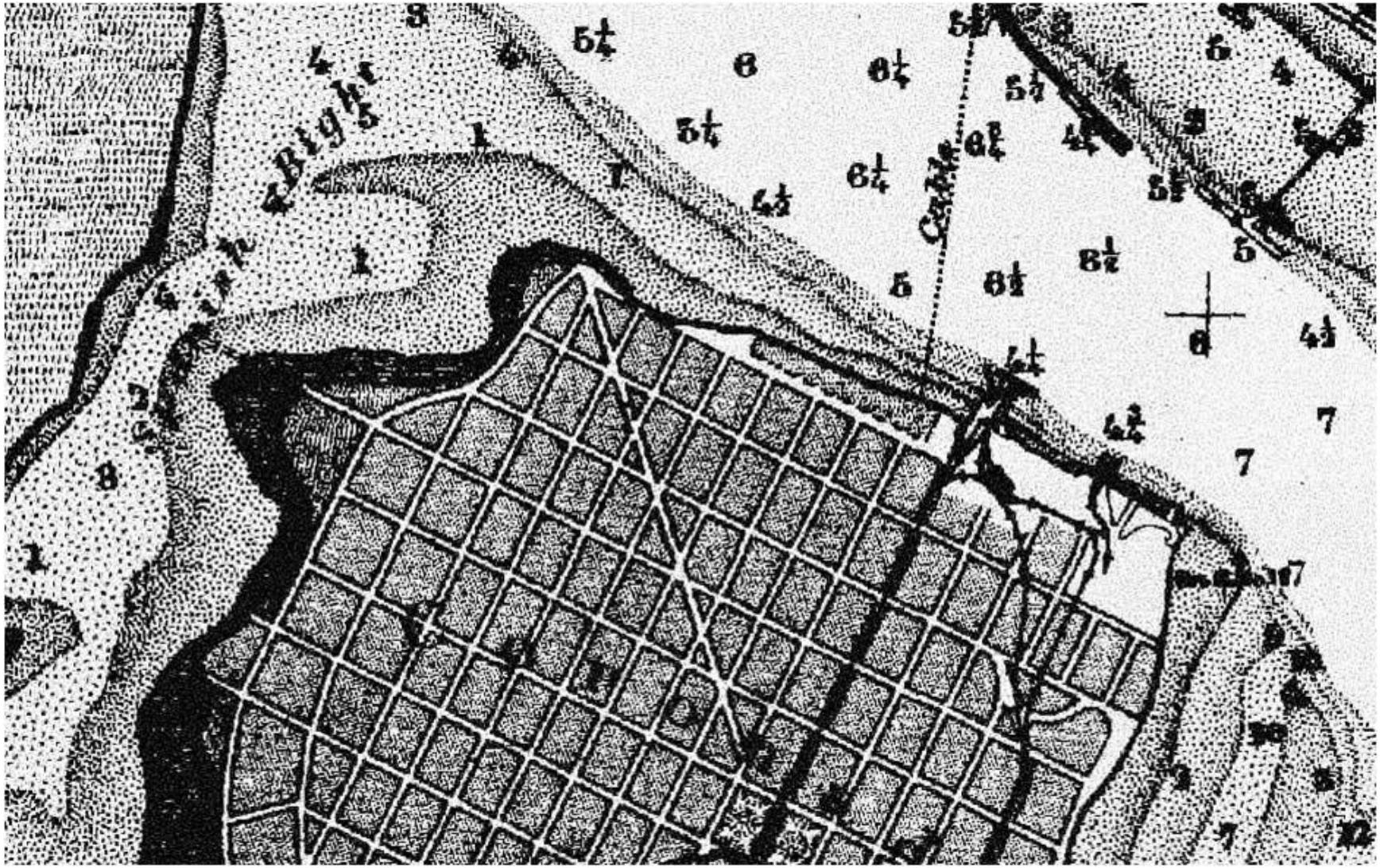

Figure 1. 1902 Navigation Chart of San Diego Bay. The depth is in fathoms (1 fathom = 6 feet).

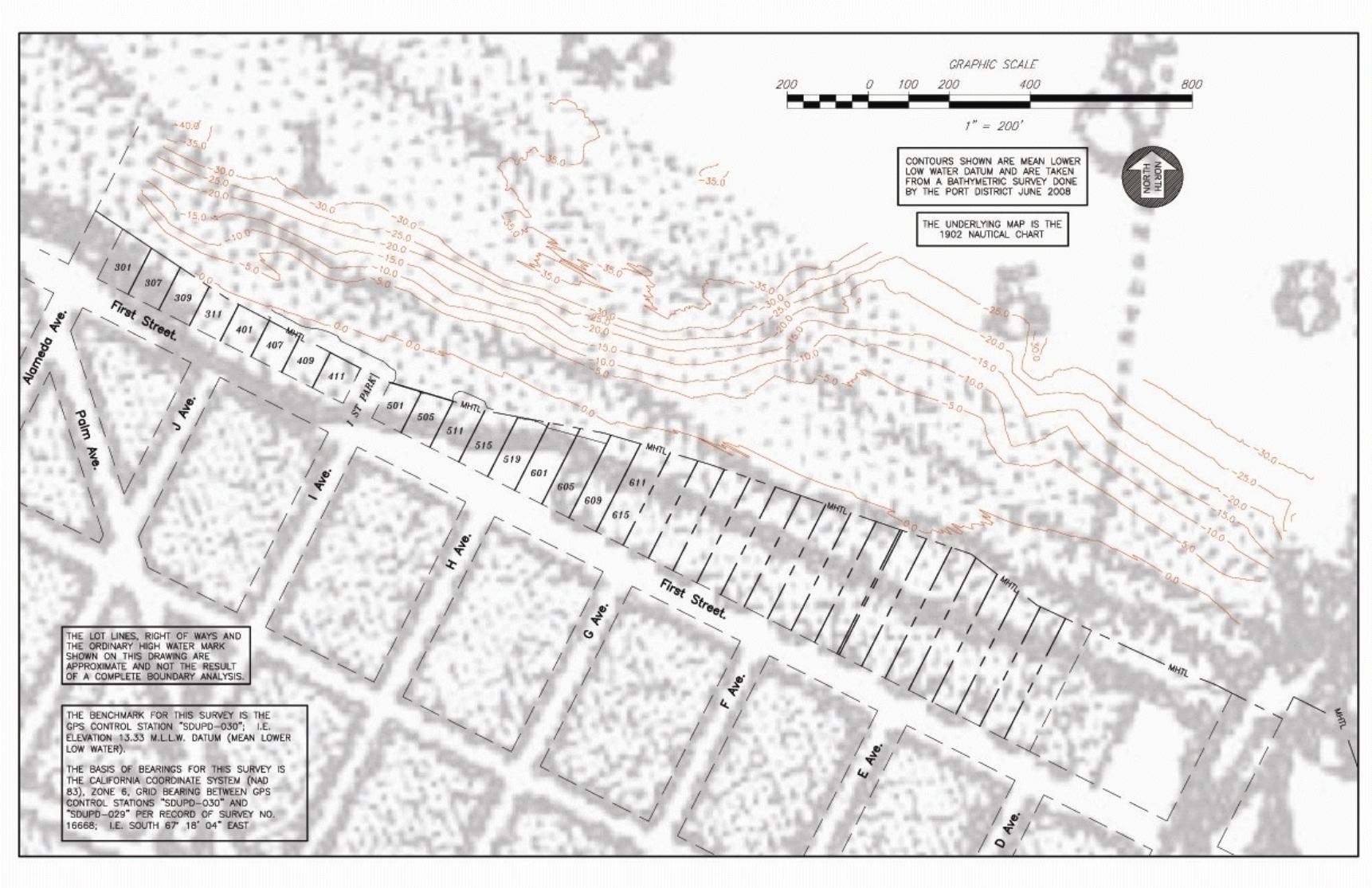

Figure 2. The 1902 Navigation Chart in fathoms overlain with the 2008 Port of San Diego bathymetric survey, in feet below MLLW, denoted in red. The Coronado streets are First Street property address are marked.

DAVID W. SKELLY, P.E.
VICE PRESIDENT/PRINCIPAL ENGINEER

EDUCATION

B.A., Applied Mechanics and Engineering Sciences, 1975, University of California
M.S., Oceanography, 1979, University of California, Scripps Institution of Oceanography.

REGISTRATION

Registered Civil Engineer: California R.C.E. 47857
Registered Civil Engineer: Oregon P.E.70939
Registered Civil Engineer: Hawaii P.E. 9877

ACADEMIC HONORS

Graduated Magna Cum Laude, Revelle College, 1975.
Regents of University of California Fellow, Scripps Institution of Oceanography, 1975-1976.

EXPERIENCE

Mr. Skelly is Vice President and Principal Engineer for GeoSoils, Inc. (GSI). He has worked with GSI for the last decade on numerous land development projects throughout California. Mr. Skelly has over 30 years experience in coastal engineering. Prior to joining the GSI team, he worked as a research engineer at the Center for Coastal Studies at Scripps Institution of Oceanography for 17 years. During his tenure at Scripps, Mr. Skelly worked on coastal erosion problems throughout the world. He has written numerous technical reports and published papers on these projects. He was a co-author of a major Coast of California Storm and Tidal Wave Study report. He has extensive experience with coastal processes in San Diego County. Mr. Skelly also performs wave shoring and uprush analysis for coastal development, and analyzes coastal processes, wave forces, water elevation, longshore transport of sand, and coastal erosion.

Mr. Skelly has extensive experience in producing environmental documentation concerning coastal projects on the federal, state, and local level. Mr. Skelly has contributed to several recent and on-going EIR/EIS investigations. Mr. Skelly was a sub-consultant to Science Applications International Corporation (SAIC) for the beach nourishment project at Imperial Beach, the Navy Homeporting Project, and the San Dieguito Lagoon restoration project. Mr. Skelly is responsible for the impacts of the project on coastal processes, which includes the beach nourishment phase of the project. Finally, Mr. Skelly produced the Initial Study (CEQA&NEPA) for the Surfrider Foundation Pratte's Surfing Reef project in Los Angeles. The Initial Study was thorough, well received, and will serve as a template for environmental documentation concerning future surfing reefs.

Mr. Skelly has extensive experience in shoreline erosion, bluff erosion, soils engineering, and the design, permitting, and construction of shore protection devices. Projects include levee engineering and design in San Francisco Bay, seawall and marina engineering in Baja California Sur, coastal boardwalk design and protection in Pacifica, and seawall projects throughout southern California. Mr. Skelly has served as an expert witness for coastal processes litigation.

PROFESSIONAL AFFILIATIONS

Member, American Society of Civil Engineers
Member, American Shore and Beach Preservation Association
Founding Member, Association of Coastal Engineers