

**MINUTE ITEM**

This Calendar Item No. C15  
was approved as Minute Item  
No. 15 by the State Lands  
Commission by a vote of 3  
to 0 at its 9/23/91  
meeting.

**CALENDAR ITEM**

A 75  
S 38

**C 1 5**

09/23/91  
W 24755  
Fong

PRC 7571  
PRC 7579  
PRC 7580  
PRC 7581  
PRC 7582  
PRC 7583  
PRC 7584  
PRC 7585  
PRC 7586  
PRC 7587  
PRC 7588  
PRC 7589  
PRC 7590  
PRC 7591  
PRC 7592

**GENERAL PERMIT - PROTECTIVE STRUCTURE USE**

**APPLICANT:**

Earle Frey Jr., et al  
aka Del Mar Beachfront Homeowners  
1924 through 2102 Ocean Front  
Del Mar, California 92014

**AREA, TYPE LAND AND LOCATION:**

Filled historic tide and submerged lands located adjacent to  
and along the Pacific Ocean, City of Del Mar, San Diego  
County.

**LAND USE:**

Removal of existing riprap and portions of existing patios,  
decks, overhangs, sunrooms, walls and fences, restoration of  
the beach and construction of an approximately 727-foot-  
long, vertical seawall with concrete cap and protective  
screen wall to protect sixteen existing single-family  
residences and two public street ends.

**TERMS OF PROPOSED PERMIT:**

Initial period:

Ten (10) years beginning September 23, 1991.

Public liability insurance:

Combined single limit coverage of \$1,000,000.

**CONSIDERATION:**

The public use and benefit; with the State reserving the  
right at any time to set a monetary rental if the Commission  
finds such action to be in the State's best interest.

**BASIS FOR CONSIDERATION:**

Pursuant to 2 Cal. Code Regs. 2003.

**APPLICANT STATUS:**

Applicant is owner of upland.

CALENDAR ITEM NO. C 15 (CONT'D)

**PREREQUISITE CONDITIONS, FEES AND EXPENSES:**

Filing fee and processing costs have been received.

**STATUTORY AND OTHER REFERENCES:**

A. P.R.C.: Div. 6, Parts 1 and 2; Div. 13.

B. Cal. Code Regs.: Title 3, Div. 3; Title 14, Div. 6.

**AB 884:**

03/16/92

**OTHER PERTINENT INFORMATION:**

1. This activity involves lands identified as possessing significant environmental values pursuant to P.R.C. 6370, et seq. Based upon the staff's consultation with the persons nominating such lands and through the CEQA review process, it is the staff's opinion that the project, as proposed, is consistent with its use classification.
2. A Coastal Commission permit, No. 6-91-127, was adopted by the Coastal Commission on July 16, 1991.
3. The environmental analysis was prepared and adopted for this project by the Coastal Commission under its certified program (14 Cal. Code Regs. 15251(c)).
4. Staff has reviewed the document and determined that the conditions, as specified in 14 Cal. Code Regs. 15253(b), have been met for the Commission to use the environmental analysis document certified by the Coastal Commission as an EIR substitute in order to comply with the requirements of CEQA.
5. Staff has reviewed the findings made by the Coastal Commission in its permit no. 6-91-127, pages 4-10, and finds that changes or alterations have been required in, or incorporated into the project which avoid or substantially lessen the significant environmental effect as identified.
6. A mitigation monitoring and reporting program has been prepared and adopted by the City of Del Mar.
7. Del Mar has historically been subject to beach encroachments. Over the years, a series of private seawalls, riprap, patios, fences, landscaping and

CALENDAR ITEM NO. C 15 (CONT'D)

private stairs have been constructed by property owners to protect structures and to provide usable patio and walkway areas. Much of this development encroaches onto public land and was done with and without the necessary permits. The added rip-rap and other encroachments have diminished public access to the beach.

In April 1988, the City of Del Mar adopted ordinances, by voter initiative (the Beach Preservation Initiative-BPI) which includes policies establishing designs and alignments of new shoreline protective works and provided for the removal of existing encroachments within the beach area delineated in the initiative as the Shoreline Protection Area (SPA). The SPA and the line which identifies its boundaries establish the area where development would be allowed for only public recreational projects and, in certain instances with minimal encroachment, for shoreline protective devices to protect existing development.

In August 1990, the State Lands Commission authorized the settlement of the pending litigation at the City of Del Mar. The authorization provides for staff's cooperation in implementing the City's plan for removal of the encroachments and for construction of a protective seawall structure. The City of Del Mar has negotiated with the Applicants for the removal of the private encroachments located waterward of the SPA line. Therefore, although the staff of the Commission has not made a determination as to the extent of the State's interest at this location, staff recommends the issuance of a non-prejudicial permit for the removal of the encroachments and the construction of the seawall. The public benefit derived from this project is the increased beach area made available for public use.

**APPROVALS OBTAINED:**

Coastal Commission and City of Del Mar.

**EXHIBITS:**

- A. Land Description
- B. Location Map
- C. Coastal Commission permit no. 6-91-127
- D. City of Del Mar Resolution No. 91-41
- E. List of Homeowners

CALENDAR ITEM NO. C 1 5 (CONT'D)

IT IS RECOMMENDED THAT THE COMMISSION:

1. FIND THAT THIS ACTIVITY IS CONSISTENT WITH THE USE CLASSIFICATION DESIGNATED FOR THE LAND PURSUANT TO P.R.C. 6370, ET SEQ.
2. FIND THAT AN ENVIRONMENTAL ANALYSIS DOCUMENT (COASTAL COMMISSION PERMIT NO. 6-91-127 ATTACHED AS EXHIBIT "C") WAS PREPARED AND ADOPTED FOR THIS PROJECT BY THE CALIFORNIA COASTAL COMMISSION UNDER ITS CERTIFIED PROGRAM (14 CAL. CODE OF REGULATIONS 15251(c), THAT THE STATE LANDS COMMISSION HAS REVIEWED SUCH DOCUMENT AND THAT THE CONDITIONS AS SPECIFIED IN 14 CAL. CODE OF REGS. 15253(h) HAVE BEEN MET.
3. ADOPT THE FINDINGS OF THE CALIFORNIA COASTAL COMMISSION AND DETERMINE THAT THE PROJECT, AS APPROVED, WILL NOT HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT.
4. FIND THAT THE CITY OF DEL MAR HAS ADOPTED, AND WILL IMPLEMENT, A MITIGATION MONITORING PLAN FOR THIS PROJECT AS INCORPORATED IN RESOLUTION NO. 91-41 AND ATTACHED HERETO AS EXHIBIT "D".
5. AUTHORIZE ISSUANCE TO EARLE FREY JR., ET AL, AKA DEL MAR BEACHFRONT HOMEOWNERS, AS LISTED ON THE ATTACHED EXHIBIT "E", OF FIFTEEN INDIVIDUAL TEN-YEAR GENERAL PERMITS - PROTECTIVE STRUCTURE USE, BEGINNING SEPTEMBER 23, 1991; IN CONSIDERATION OF THE PUBLIC USE AND BENEFIT, WITH THE STATE RESERVING THE RIGHT AT ANY TIME TO SET A MONETARY RENTAL IF THE COMMISSION FINDS SUCH ACTION TO BE IN THE STATE'S BEST INTEREST; PROVISION OF PUBLIC LIABILITY INSURANCE FOR COMBINED SINGLE LIMIT COVERAGE OF \$1,000,000; FOR REMOVAL OF EXISTING RIPRAP AND PORTIONS OF EXISTING PATIOS, DECKS, OVERHANGS, SUNROOMS, WALLS AND FENCES, AND CONSTRUCTION OF AN APPROXIMATELY 727-FOOT-LONG VERTICAL SEAWALL AND PROTECTIVE SCREEN WALL ON THE LAND DESCRIBED ON EXHIBIT "A" ATTACHED AND BY REFERENCE MADE A PART HEREOF.

**EXHIBIT "A"**

W 24755

**LAND DESCRIPTION**

That strip of tideland in the City of Del Mar, San Diego County, California, more particularly described as follows:

1. Bounded on the west by the mean low tide line of the Pacific Ocean.
2. Bounded on the north by the westerly prolongation of the north line of Lot 13, Block 124, Del Mar Subdivision No. 3, Map 1450.
3. Bounded on the east by the mean high tide line of the Pacific Ocean.
4. Bounded on the south by the westerly prolongation of the south line of Lot 15, Block 114, Del Mar Subdivision No. 2, Map 1277.

**END OF DESCRIPTION**

PREPARED SEPTEMBER, 1991 BY LLB

RECORD - P. M. OF 127 4  
MINUTE PAGE 3091



## CALIFORNIA COASTAL COMMISSION

SAN DIEGO COAST AREA  
 1 CAMINO DEL RIO NORTH, SUITE 200  
 SAN DIEGO, CA 92108-1725  
 (619) 521-8036

Filed: June 3, 1991  
 49th Day: July 22, 1991  
 180th Day: November 30, 1991  
 Staff: EL-SD  
 Staff Report: July 1, 1991  
 Hearing Date: July 16-19, 1991



REGULAR CALENDAR  
STAFF REPORT AND PRELIMINARY RECOMMENDATION

Application No.: 6-91-127

Applicant: Earle Frey Jr., et al      Agent: Group Delta Consultants, Inc.  
           aka Del Mar Beachfront      Walter F. Crampton  
           Homeowners

Description: Removal of existing riprap and portions of existing patios, decks, overhangs, sunrooms, walls and fences, and construction of an approximately 727-foot-long, vertical seawall, with concrete cap and protective screen wall element, to protect sixteen existing single-family residences and two public street ends, to be located between 2.5 and 5 feet westward of the Shoreline Protection Line, on sandy beach.

Zoning	Public Parkland/R1-5B
Plan Designation	Beaches/Bluffs
Ht abv mean sea level	16.33 feet

Site: 1924 through 2102 Ocean Front, Del Mar, San Diego County.  
 APNs 299-096-01; 299-136-1 through 11; 299-137-12;  
 299-146-1 through 5, 10

Substantive File Documents: City of Del Mar draft LCP Land Use Plan  
 City of Del Mar Resolution #91-41  
 Shoreline Protection Permit #SPP-90-03  
 Geotechnical Report #1254-EC01 (10/22/90 -  
 Group Delta Consultants, Inc.  
 CCC Files #6-88-542; #6-90-312; #6-91-97

STAFF NOTES:

Summary of Staff's Preliminary Recommendation:

Staff recommends approval of the seawall project, with special conditions addressing future need for toestone, establishment of an appropriate user fee, seawall design and materials, future maintenance, construction and staging concerns, the applicants' assumption of risk, State Lands Commission review and an assertion of public rights.

CALENDAR PAGE 227 . 6  
 MINUTE PAGE 3093

PRELIMINARY STAFF RECOMMENDATION:

The staff recommends the Commission adopt the following resolution:

I. Approval with Conditions.

The Commission hereby grants a permit for the proposed development, subject to the conditions below, on the grounds that the development will be in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976, will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3 of the Coastal Act, and will not have any significant adverse impacts on the environment within the meaning of the California Environmental Quality Act.

II. Standard Conditions.

See attached page.

III. Special Conditions.

The permit is subject to the following conditions:

1. Future Toestone. The protective toestone required for installation when the sand level reaches 0.0 NGVD, through the City of Del Mar project approval, is not herein approved. If and when the sand level approaches 0.0 NGVD, the applicants, or the City of Del Mar, may submit an application for the toestone as an amendment to this permit or as a separate coastal development permit application. Said proposal shall be for the minimal amount and size of toestone necessary, and shall be supported by a new, detailed geotechnical report documenting the need for and design of said toestone, based on future shoreline conditions.

2. Encroachment/User Fee. Prior to the issuance of the coastal development permit, the applicants shall execute a recorded agreement wherein the applicants agree to participate in the user fee program to be established by the City of Del Mar under the Beach Preservation Initiative and its implementing guidelines, subject to approval of the Coastal Commission through the Local Coastal Program certification process, to compensate for private use of those portions of sandy beach lying west of the west property line upon which the project authorized by this permit encroaches. The agreement shall include a provision making the imposition of the user fees retroactive to the date of completion of construction of the seawall. The applicants, the Coastal Commission and the City of Del Mar shall be the parties to said agreement.

3. Construction Access and Staging Areas/Project Timing. Prior to the issuance of the coastal development permit, the applicants shall submit to the Executive Director for review and written approval, a construction schedule and construction access and staging plans. The Executive Director shall review the submitted documents to insure: a) that construction activities

309-7  
309-7

which would adversely affect public access to and enjoyment of the beach are avoided between Memorial Day and Labor Day of any year; b) that the duration of project construction is minimized to the greatest extent practicable; and, c) that public safety measures are provided.

4. Storm Design. Prior to the issuance of the coastal development permit, the applicants shall submit certification by a registered civil engineer, acceptable to the Executive Director, that the approved shoreline protective device is designed to withstand storms comparable to the winter storms of 1982-83. Said certification shall be subject to the review and written approval of the Executive Director.

Within 60 days following the completion of the project the applicants shall submit certification by a registered civil engineer, acceptable to the Executive Director, verifying that the seawall and rip rap elements of the project have been constructed in conformance with the final approved plans for the project.

5. Construction Materials. Disturbance to sand and intertidal areas shall be minimized. Beach sand excavated shall be redeposited on the beach. Local sand or cobbles shall not be used for backfill or construction material.

6. Maintenance Activities/Future Alterations. The property owners shall be responsible for the maintenance of the permitted protective device. Any change in the design of the project or future additions/reinforcement of the seawall will require a coastal development permit. If after inspection, it is apparent that repair or maintenance is necessary, the applicant(s) shall contact the Commission office to determine whether permits are necessary. The applicants shall also be responsible for the removal of debris that is deposited on the beach or in the water during or after construction of the shoreline protective device or as a result of the failure of the shoreline protective device.

7. Assumption(s) of Risk: Prior to the issuance of the coastal development permit, the applicants shall execute and record a deed restriction, in a form and content acceptable to the Executive Director, which shall provide: (a) that the applicants understand that the site(s) may be subject to extraordinary hazard from waves from storms, flooding and erosion and (b) that the applicants hereby waive any future claims of liability against the Commission or its successors in interest for damage from such hazards. The document shall run with the land, binding all successors and assigns, and shall be recorded free of prior liens and any other encumbrances which the Executive Director determines may affect the interest being conveyed.

8. Public Rights. By acceptance of this permit, the applicants acknowledge, on behalf of themselves and their successors in interest, that issuance of the permit shall not prejudice any subsequent assertion of, or constitute a waiver of, public rights, e.g., prescriptive rights, public trust etc. which may exist on or in front of the property. The applicants shall also acknowledge that issuance of the permit and construction of the permitted

development shall not be used or construed to interfere with any public prescriptive or public trust rights that may exist on or in front of the property.

9. State Lands Commission Review. Prior to the issuance of the coastal development permit, the applicants shall obtain a written determination from the State Lands Commission that:

- a. No State lands are involved in the development; or,
- b. State lands are involved in the development, and all permits required by the State Lands Commission have been obtained; or,
- c. State lands may be involved in the development, but pending a final determination, an agreement has been made with the State Lands Commission for the project to proceed without prejudice to that determination.

IV. Findings and Declarations.

The Commission finds and declares as follows:

1. Project Description/Background History. The project is a proposal by the owners of seventeen contiguous oceanfront homes in Del Mar to demolish/remove existing riprap seawalls with associated patio, deck and yard improvements and replace it with the construction of a new, approximately 727 foot-long, vertical steel sheetpile seawall with removable windscreen elements. As proposed, the vertical wall would be located a minimum of two and one-half feet and a maximum of five feet to the west of the western property lines of the applicant's homes, landward of the existing encroachments, but over a public area formerly comprised of sandy beach. The project site is located in Del Mar between 19th and 22nd Streets, actually beginning at the fifth residence north of 19th Street and ending with the first residence north of 21st Street. The area is characterized by a low-lying beach developed primarily with single family homes.

Although the Coastal Commission has had no previous involvement with these sites, other than approvals many years ago for some of the homes and additions to others, the City of Del Mar has been involved in lengthy legal actions for some time. The current application is in response to a settlement agreement between the property owners and the City to resolve the issue of private versus public lands, beach encroachments and appropriate protection for existing residential development. Through the settlement agreement, one property owner is relocating his residence (Coastal Development Permit Application #6-91-97, heard previously on this same agenda) further landward, since it is actually sited seaward of the western property line. Nearly all of the other properties have existing encroachments seaward of the western property lines (which coincide with the City of Del Mar's Shoreline Protection Area [SPA] line), consisting of riprap seawalls, concrete patios, walls, fences, stairways, etc.

All these encroachments will be removed under the subject application, and a single vertical concrete seawall will be constructed to protect all the properties. The seawall will be located two and one-half feet seaward of the SPA line, with the landward face of the wall on the line itself. In two locations, the wall will extend out to a maximum of five feet west of the SPA line, where existing principal structures are sited within five feet of the western property lines. At that close proximity, construction impacts of installing the seawall would seriously damage or potentially even destroy portions of the existing homes. At one location, a single property is involved; at the other, three properties are affected. There, the two outside homes are within five feet of the western property line; although the central home is not that close, it is preferred to minimize the number of seawall offsets, since these offsets can exacerbate erosion in front of the seawall.

The proposed seawall will extend approximately sixteen feet above mean sea level along its entire alignment, but, based on average beach profiles, only the top five or six feet of the wall will be visible most of the year. At the two street ends, provision for public pedestrian access are built into the design, with a discontinuity of the wall and concrete steps from street to sand level. There is an existing lifeguard tower at the 20th Street beach access, which will be afforded protection by the seawall improvements. Altogether, the applicants will be funding approximately \$200,000 in public improvements, within the approximately \$1,000,000 price tag for the entire development.

Over the past several years, the City of Del Mar has been developing a means to address shoreline development issues in a consistent manner. Foremost was the drafting of a Beach Overlay Zone Ordinance (BOZO) by the City of Del Mar, and subsequent adoption, by way of voter approval, of a similar ordinance, the Del Mar Beach Preservation Initiative (BPI). The intent of both the draft BOZO and the voter approved initiative was to regulate shoreline development and associated shoreline protective works. More recently, the City has prepared an LCP Land Use Plan (LUP), which incorporates the language of the BPI verbatim, and which is scheduled for Commission action on this same agenda. The language in those documents established the Shoreline Protection Area line (SPA line) which generally follows the western property boundaries of beachfront parcels. The ordinance(s) and LUP are discussed in more detail in subsequent pages of these findings.

2. Shoreline Protection Devices/Public Access Impacts. Coastal Act Section 30253 states, in part:

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

CONTINUED ON PAGE 127.10  
MINUTE PAGE 3097

landforms along bluffs and cliffs....

The project site is located on the beachfront in an area that has been subject to storm waves. Shoreline protection for most of the homes does exist in the form of riprap placed over sandy beach area to the west of the homes. The project application involves the demolition and removal of the existing shoreline protective devices and associated patio improvements and the construction of a new vertical seawall.

Section 30235 cited above allows for shoreline protective devices only when required to protect existing structures in danger from erosion and when designed to mitigate impacts on shoreline sand supply. The primary issue which has been identified and addressed in the review of proposals for shoreline protective works in this area of Del Mar has been their location and alignment more than the question of their necessity. It has been recognized for some time that all of the low-lying lots between Seagrove Park and the mouth of the San Dieguito River are and most likely will continue to be subject to impacts from storm waves. The vast majority of the residences in the area are protected by some form of device and with very few vacant lots in the vicinity, new seawalls represent infill development. Thus, if properly designed they can be found consistent with Section 30235 of the Act. Again, the critical issue has been the alignment of such shoreline protective devices so as to minimize their impacts on the shoreline processes and public access opportunities, while at the same time recognizing a need to assure stability of any new development pursuant to Section 30253 of the Act.

It has long been understood that all designs of shoreline protection, when placed in an intertidal area, do affect the configuration of the shoreline and the beach profile and do have an adverse impact on the shoreline. The precise measure of the impacts of shoreline structures on the beach is a persistent subject of controversy within the discipline of coastal engineering, and particularly between coastal engineers and marine geologists. Much of the debate focuses on whether seawalls or other factors (such as the rise in sea level) are the primary cause of shoreline retreat. This debate tends to obscure the distinction between the long-term trends of the shoreline, and the effects of seawalls on those long-term trends, and the shorter term effects that might not be permanent but may significantly alter the width and utility of a beach over the course of a year. The long-term and short-term effects of seawalls in general are discussed at length in Exhibit A, attached. The site-specific impacts of the proposed seawall will be addressed in the following paragraphs.

The Commission has recognized the need for a long-term, comprehensive solution in the Del Mar area which addresses the rights of property owners to protect their property and the Commission's mandate to minimize potential hazards and ensure maximum opportunities for public access to and along the shoreline. For years, the City has been working to establish a comprehensive solution to shoreline protective works in the area. An earlier result was the drafting of a Beach Overlay Zone Ordinance (BOZO). The drafting of BOZO covered a number of years and was never formally adopted in any form by the City. In April of 1988, a similar set of ordinances as those contained in the draft BOZO was

25711  
3095

adopted by way of a voter initiative (the Beach Preservation Initiative-BPI), which, in turn, has been included in the City's LCP Land Use Plan (LUP), currently before the Coastal Commission.

As mentioned, the BOZO, in its earlier draft form, the ordinances adopted via initiative, and the new LUP include policies which establish designs and alignments of new shoreline protective works and provide for the removal of existing encroachments within the beach area known in the initiative as the Shoreline Protection Area (SPA). The BOZO, BPI and LUP also established setbacks for new development and redevelopment projects to establish a new stringline of development which would accommodate necessary shoreline protection while minimizing private encroachment onto sandy beach area.

Again, a key element of the City's actions to date is the establishment of what is known as a Shoreline Protection Area. The SP area and the line which identifies its boundaries establish the area where development would be allowed for only public recreational projects and, in certain instances with minimal encroachment, for shoreline protective devices to protect existing development. The intent of these policies is to both protect shoreline processes and maximize public access opportunities. The Shoreline Protection Area (SPA) line established for the properties in question corresponds to the western property lines of the parcels.

The policies of the BPI and LUP identify the allowable uses within the SP area and the limitations as to when such encroachments are allowed. Some of the language was modelled after previous Commission actions on projects fronting the Del Mar beachfront. However, it should be noted that the previous draft BOZO and subsequent voter approved BPI contain ordinances which present the potential for inconsistency with Coastal Act policies regarding, among other issues, the minimization of hazards and the maximization of public access opportunities. These concerns have been addressed through suggested modifications to the LUP, currently scheduled for Commission action.

In the subject case, a 727-foot-long, vertical seawall is proposed in an alignment parallel to the shoreline, from two and one half to five feet to the west of the western property lines of sixteen existing homes on seventeen legal lots. Its eastern face will be on the SPA line for most of the alignment, and the width of the wall will extend two and one-half feet beyond the SPA line. In front of four properties, it will extend further westward, to the full five feet allowed in the BPI and LUP for vertical wall elements. On three of these properties, the principal structure is at or less than five feet from the western property boundary. The fourth property is sited between two of these, but it is considered prudent to minimize offsets in a seawall, to limit the amount of sand scour which increases wherever offsets exist. This alignment has been found consistent with Coastal Act mandates to minimize impacts to public beach access, as it is the least encroachment possible based on the constraints of existing development on these individual parcels.

The vertical wall will be composed of steel sheetpiles extending from an elevation of roughly +16 feet down into sand some 44 feet to an elevation of -28 feet. No toestone element is currently proposed, but the City's approvals

3099.12  
3099

require the applicants to form an assessment district to fund the project, including funding for future toestone support. This is to be installed only if and when the beach sand west of the seawall is depleted to the elevation of 0.0 NGVD. Since this is not within the scope of review at this time, and may or may not prove necessary in the future, Special Condition #1 provides that any toestone must be reviewed by the Commission separately, either as an amendment to this permit or as a new coastal development permit application. Since the toestone would actually be situated on publically-owned land, either the current applicants or the City could submit such a proposal. An up-to-date, site-specific geotechnical report, documenting the need for toestone, must be part of any such future application.

Even while recognizing the beneficial aspects of this development, based on the removal of existing beach encroachments, the Commission still must find that the proposed project may result in adverse impacts to public access opportunities and shoreline processes in general, since the new development will still occupy public land. The Commission finds that with the historic erosion of beach profiles in the area, and the background discussion on the effects of vertical seawall elements in Exhibit A, there is no assurance that the proposed seawall will not contribute to increased erosion in the future. Thus, the seawall holds the potential to usurp public beach area and impede access opportunities.

Special Condition #2 requires the applicant to pay a user fee for that area of public beach upon which the approved project would encroach. The concept of the user fee or rental payment is also consistent with the Commission's earlier action and with the City's draft BOZO, BPI, and LUP although the specific mechanism for the program has not yet been established. The condition requires the applicant to record an agreement to participate in the user fee program to be established by the City of Del Mar under the Beach Preservation Initiative, subject to approval by the Commission through review of the City's Local Coastal Program. The imposition of the user fee will be retroactive to the date of completion of construction of the seawall.

Special Condition #4 requires the applicant to submit certification by a registered civil engineer that the approved shoreline protective device has been constructed in accordance with the approved plans and is designed to withstand storms comparable to the winter storms of 1982-83. The condition requires such certification for the structural integrity of the wall itself, rather than for the homes it will serve to protect.

Special Condition #5 is an advisory condition. The conditions require that during construction, disturbance to sand and intertidal areas be minimized and that any beach sand excavated be redeposited on the beach. The condition also specifies that local sand or cobbles may not be used as backfill or construction material for the project. Special Condition #6 is attached to assure that the seawall and revetment will be properly maintained and the public beach kept free of materials both during and after project completion. The condition also advises the applicant of the need to secure a coastal development permit prior to future additions or modifications of the seawall. It should be noted that, with the alignment of the protective device approved

25713  
3100  
DATE BY GE

herein, any future seaward expansion would involve encroachment into public beach area.

There remains an inherent risk to construction of any structure along the shoreline. Special Condition #7 requires the applicant to record a deed restriction recognizing this risk and waiving any liability on the Commission's part for allowing this development. Pursuant to Section 13166(a)(1) of the Commission's Administrative Regulations, an application may be filed to remove Special Condition #7 from this permit if the applicants present newly discovered material information regarding the existence of any hazardous condition which was the basis for the condition, if they could not with reasonable diligence have discovered and produced such information before the permit was granted.

In summary, in review of shoreline protective devices, the Commission seeks to maximize the amount of beach area available to the public and minimize the adverse effects on shoreline sand supply. The City's Beach Preservation Initiative, much of which is incorporated into the LCP Land Use Plan, is designed to achieve the same goals for the City's oceanfront. The information previously presented demonstrates that the further seaward a shoreline protective device is placed, the greater the adverse effects on beach profiles. Additionally, the walls which encroach beyond the western property lines usurp sandy beach area which would be otherwise available for public use. The Commission also finds that the location of homes along the shorefront with a history of storm wave action warrants some expectation of the need for periodic protective maintenance activities (sandbagging, window boarding, etc.) and even some measure of minor damage.

Therefore, as in the coastal development permit process, the City's BPI and LUP are set up to allow for individual review of shoreline development on a property by property basis to determine the specific conditions which apply to the site. Through such individual review, the Commission and City can balance the private property owners need to protect their property and preserve views against the measure of risk and the need to protect beach area for public use. Therefore, the approved alignment in this particular case, should not be considered a precedent for a five foot encroachment by right for shoreline protective devices in front of all properties along the City's beachfront. With the conditions attached, the Commission finds the project consistent with Section 30235 and 30253 of the Coastal Act.

3. Coastal Access. Section 30604(c) of the Coastal Act requires that a specific access finding be provided for every project located between the first coastal road and the sea. Much of the discussion contained on the previous pages of this report included an assessment of the project's impacts on public access when balanced against the need to protect existing principal residential structures. Sections 30210 and 30212 of the Act further call for the maximization of public access opportunities and require that access be provided in conjunction with developments located between the first coastal road and the sea unless, among other things, adequate access exists nearby.

The project site is located on the beachfront in Del Mar. The relative

DATE 3-7-14  
PROJECT NO. 3101

popularity of this area of beach has already been discussed in earlier sections of this report. Vertical access is currently provided at the termini of 20th and 21st Streets respectively. These road ends are unpaved, sandy easements which have been utilized for vertical public access. The area in front of the structures is a public sandy beach with unlimited access. It has historically been used by the public for sunbathing, fishing, and other beach-related activities. The street ends in question have historically been used as vertical accessways to the sandy beach area, and there is also a lifeguard tower within the 20th Street right-of-way. The current proposal for a seawall includes vertical access structures to provide access from the street ends through the proposed shoreline protective device to the sandy beach to the west at both street ends. These elements include a discontinuous seawall and stairs from the street level to the sand.

Special Condition #3 requires the submittal of a plan for the construction phase of the project addressing storage locations for material and equipment and timing for project implementation. The plan shall be designed so that construction activities which would adversely affect public access to and enjoyment of the beach are avoided between Memorial Day and Labor Day. Also, the duration of project construction shall be minimized to the greatest extent possible with public safety measures provided.

Special Condition #8 serves to recognize that the public and/or the applicant may have certain rights to the area west of the parcel lines, none of which are affected by the granting of this permit. Special Condition #9 requires the submittal of documentation from the State Lands Commission that either no state lands are involved with the project or that the development on the state lands that are involved has either been authorized or may proceed without prejudice to a final agreement to use such lands. As conditioned, the project is consistent with Sections 30210, 30212 and all other Chapter 3 policies of the Coastal Act.

5. Local Coastal Planning. Section 30604 (a) requires that a coastal development permit shall be issued only if the Commission finds that the permitted development will not prejudice the ability of the local government to prepare a Local Coastal Program (LCP) in conformity with the provisions of Chapter 3 of the Coastal Act. In this case, such a finding can be made.

The City of Del Mar has just recently prepared an LCP Land Use Plan (LUP), which is scheduled for public hearing and Commission action at this time. Furthermore, the Del Mar Community Plan and existing zoning, including the BPI policies guide development within the coastal zone. The City has incorporated the provisions of the BPI into the LCP Land Use Plan for the Commission's review. The project, as specifically conditioned to minimize beach encroachment is consistent with the Commission staff's earlier comments on the draft BOZO and BPI and with many Commission permit decisions for the surrounding area. It is also consistent with the modifications suggested in review of the Land Use Plan. As conditioned, the project should not prejudice the ability of the City of Del Mar to prepare and implement a fully certifiable Local Coastal Program.

LINEAR FEET 487.15  
MINUTE PAGE 3102

STANDARD CONDITIONS:

1. Notice of Receipt and Acknowledgement. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. Compliance. All development must occur in strict compliance with the proposal as set forth below. Any deviation from the approved plans must be reviewed and approved by the staff and may require Commission approval.
4. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
5. Inspections. The Commission staff shall be allowed to inspect the site and the development during construction, subject to 24-hour advance notice.
6. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
7. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

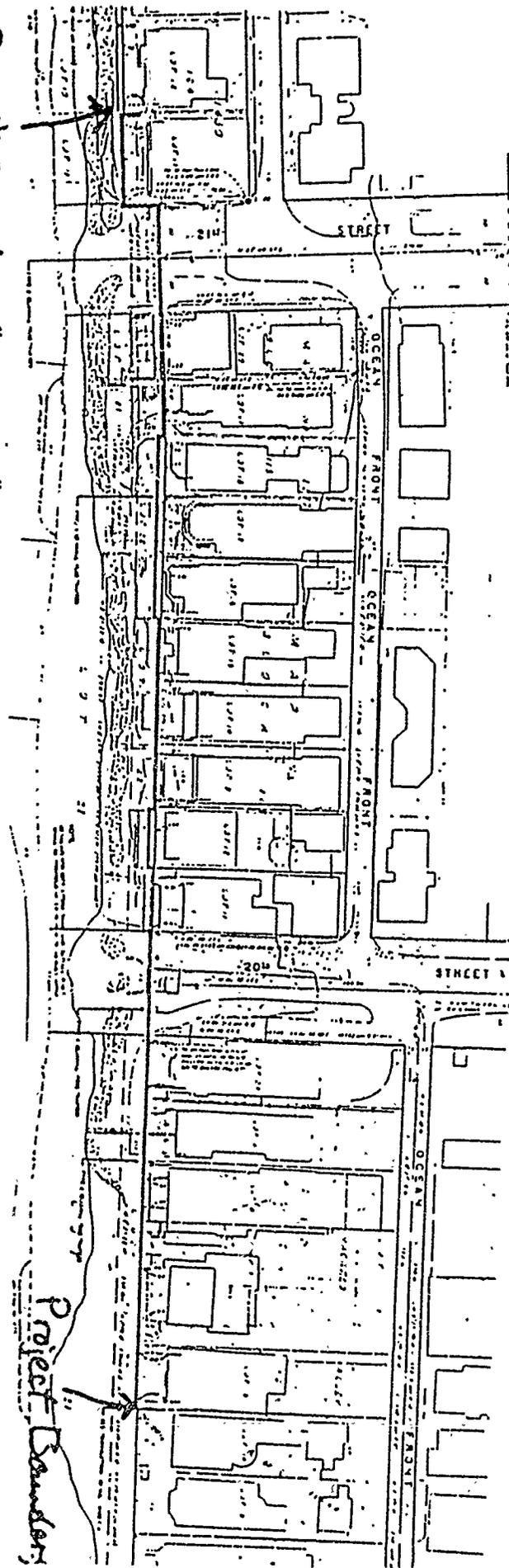
(1127R)

CALENDAR PAGE	117.16
MINUTE PAGE	3103



6-71-127

Project Boundary



Project Boundary

INDEXED 207 18  
 FILED 3105

EXHIBIT NO. 2
APPLICATION NO. 6-91-127
Site Plan

BACKGROUND FINDING:

Shoreline Protection Devices and Their Impacts on Coastal Access

The Coastal Act policies related to construction of shoreline protective devices are as follows:

Section 30235.

Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosions and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.

Section 30253.

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.

Refer to previous project description and specific findings on wave Hazards, and Shoreline protective devices.

A. There is an ongoing debate over the effects of seawalls on shoreline stability. The proposed project involves a shoreline structure which will affect the configuration of the shoreline and the beach profile and have an adverse impact on the shoreline. The precise impact of shoreline structures on the beach is a persistent subject of controversy within the discipline of coastal engineering, and particularly between coastal engineers and marine geologists. Much of the debate focuses on whether seawalls or other factors (such as the rise of sea level) are the primary cause of shoreline retreat. This debate tends to obscure the distinction between the long term trends of the shoreline, and the effects of seawalls on those long-term trends, and the shorter term effects that might not be permanent but may significantly alter the width and utility of a beach over the course of a year. The long term and short term effects of seawalls will be discussed separately below

EXHIBIT NO. A
APPLICATION NO. 6-91-12
Background Seawall Findings

The Coastal Act recognizes that protective devices may be needed to protect existing structures, that such structures may alter shoreline processes, and that those alterations should be minimized and mitigated. The ongoing debate in the literature does acknowledge that seawalls have some effect, at least on the supply of sand. A succinct statement of the adverse effects of seawalls, and the viewpoint of coastal geologists that view beach processes from the perspective of geologic time, is contained in Saving the American Beach: A Position Paper by Concerned Coastal Geologists (March 1981, Skidaway Institute of Oceanography) which was signed by 94 experts in the field of coastal geology (page 4):

These structures are fixed in space and represent considerable effort and expense to construct and maintain. They are designed for as long a life as possible and hence are not easily moved or replaced. They become permanent fixtures in our coastal scenery but their performance is poor in protecting community and municipalities from beach retreat and destruction. Even more damaging is the fact that these shoreline defense structures frequently enhance erosion by reducing beach width, steepening offshore gradients, and increasing wave heights. As a result, they seriously degrade the environment and eventually help to destroy the areas they were designed to protect.

It is widely recognized that large structures such as groins and breakwaters will have significant and obvious impacts on sand supply and beach profiles, but even a relatively small structure such as the one proposed can have an impact on the site and the adjoining area. As stated in a publication by the State Department of Boating and Waterways (formerly called Navigation and Ocean Development), Shore Protection in California (1976) (page 30):

While seawalls may protect the upland, they do not hold or protect the beach which is the greatest asset of shorefront property. In some cases, the seawall may be detrimental to the beach in that the downward forces of water, created by the waves striking the wall rapidly remove sand from the beach.

This impact is reiterated in the paper, "Economic Profiling of Beach Fills" by Herman Christiansen which is contained in the proceedings of Coastal Sediments '77 (November 1977). It states (page 1047):

Observations at some of the investigated beaches have shown that an optimal profile becomes unstable, if structures, such as rocks, groins, revetments, piles, stairs etc., are placed within the wave action zone of a beach. Steady erosions, caused by complex high turbulent surf currents, lead to heavy sand losses.

317.20

3107

In contrast to the perspective of coastal geologists, a number of coastal engineers argue that seawalls are symptoms of coastal erosion rather than causes. At least in part, the perspective of coastal engineers reflects their perspective of a time scale that involves the life of a structure. This viewpoint is perhaps best expressed by the renowned expert in beach processes R. G. Dean, who attributes changes in beach profiles to erosion rather than structures, in this discussion from "Coastal Sediment Processes: Toward Engineering Solutions" in Coastal Sediments '87 (page 22):

Placed along a shoreline with an erosional trend, armoring can perform the intended function of upland stabilization while the adjacent shoreline segments continue to erode. The resulting offset between stabilized and unstabilized segments may be interpreted incorrectly that the armoring has caused the adjacent erosion.

Dean's article goes on to acknowledge potential adverse effects and the responsibility for mitigation of those effects (page 23):

...Armoring can cause localized additional storm scour, both in front of and at the ends of the armoring...Under normal wave and tide conditions, armoring can contribute to the downdrift deficit of sediment through decreasing the supply on an eroding coast and interruption of supply if the armoring projects into the active littoral zone.

If armoring is deemed warranted to protect a threatened structure and if rational assessment concludes that installation of the armoring would adversely affect the shoreline, mitigation in the form of periodic additions of beach quality sediment should be considered.

Research on the effects of seawalls continues, and many of the results are not yet available. Much of the research is anecdotal, with diminished beach width evident, but the major causes not clearly identified. The potential role of seawalls remains disturbing, as noted in the conclusion to "Coastal Erosion on the Barrier Islands of Pinellas County, West-central Florida", by William O. Sayre, also in Coastal Sediments '87 (page 1049):

In two years of surveying, beach erosion and recovery on the barrier islands of Pinellas County has been measured. An undeveloped island's beach recovered quickly after winter-time and hurricane-caused erosion. A highly developed beach without a seawall and near a jetty fared almost as well, recovering more slowly, but showing no net erosion over the two year period. The two other sites, on highly developed barriers and backed by seawalls, have suffered greatly. One narrow beach was completely destroyed by a hurricane and only partially recovered. The other was reduced by at least a quarter and was artificially nourished

The Commission notes the continuing debate over the effects of seawalls, the lack of convergence in the literature, and the strong identification of viewpoints with the disciplines of coastal engineering and marine geology. The Commission does not believe that it is entirely accidental that this debate has arisen between disciplines with such fundamentally different perspectives on the time scale involved in analyzing physical processes. The Commission believes that more information can be shed on this subject through explicit consideration of long term and short term processes active on a beach.

B. The effects of a protective device on an eroding shoreline. The location of a proposed shoreline structure on the seasonal profiles of a beach (that is, the proximity of the structure to the waves), and the overall erosion pattern of a beach, are two key factors that determine the impact of seawalls. Although debate persists as to whether a shoreline structure is the cause or merely a symptom, it is generally agreed that where a beach is eroding, a seawall will come to define the boundary between the sea and the upland. H.V. McDonald and D.C. Patterson state, in "Beach Response to Coastal Works Gold Coast, Australia" in Coastal Engineering 1984 (page 1537):

On the persistently eroding beaches at North Kirra and Palm Beach, the receding beachline has effectively placed the seawall progressively further and further seaward on the beach profile until no beach exists at all in front of the wall. Clearly, the establishment of fixed seawall alignments on persistently eroding sections of beach will lead eventually to loss of the beach as a useful recreational amenity.

Whether or not the seawall or erosion leads to the loss of the beach continues to be debated in the literature, but the distinction does not alter the result: when the beach in front of the structure disappears over time the natural shoreward migration of the beach is blocked by the structure. The net effect is documented in a recent National Academy of Sciences Study "Responding to Changes in Sea Level, Engineering Implications" (1987), which provides (page 74):

A common result of sea wall and bulkhead placement along the open coastline is the loss of the beach fronting the structure. This phenomenon, however, is not well understood. It appears that during a storm the volume of sand eroded at the base of a sea wall is nearly equivalent to the volume of upland erosion prevented by the sea wall. Thus, the offshore profile has a certain "demand" for sand and this is "satisfied" by erosion of the upland on a natural beach or as close as possible to the natural area of erosion on an armored shoreline...

1987.22

3109

While the experts continue to discuss the exact manner in which seawalls affect shoreline processes, the Commission must make decisions about specific projects. The Commission notes that the debate focuses on the cause of erosion rather than the loss of the beach, and begs the critical factual question of whether or not the beach disappears.

On an eroding shoreline fronted by a beach, a beach will be present as long as some sand is supplied to the shoreline. As erosion proceeds, from sea level rise or from other causes, the entire profile of the beach also retreats. However, this process stops when the retreating shoreline comes to a seawall. While the shoreline on either side of the seawall continues to retreat, shoreline retreat in front of the seawall stops. Eventually, the shoreline protected by the seawall protrudes into the water, with the winter MHT fixed at the base of the structure. The Commission is led inexorably to the conclusion that if the seawall works effectively on a retreating shoreline, it results in the loss of the beach, at least seasonally. If the shoreline continues to retreat, however slowly, the seawall will be where the beach was, and where the beach would be absent the presence of the seawall. This represents the loss of a beach as a direct result of the seawall. The Commission has observed this phenomena up and down California's coast, where a seawall has successfully halted the retreat of the shoreline, but only at the cost of usurping the beach. Although this may occur only slowly, the Commission concludes that it is the inevitable effect of constructing a seawall on an eroding shoreline. For such areas, even as erosion proceeds, beach would be present in the absence of a seawall.

The Commission's previous observations about the effects of seawalls on access have been upheld in previous decisions. In the case of Whalers' Village Club v. Cal. Coastal Commission (1985) 173 Cal.App.3d 240, 259-261 [220 CR 2], Cert. Denied 105 S.Ct. 1962 (1986), the Court of Appeal analyzed in the following terms the legal sufficiency of the adverse impacts discussed in these findings to justify a lateral access dedication:

Respondent challenges the nexus between the Commission's finding that the revetment imposes a burden on the public which justifies imposition of the access condition and the evidence in the record. [Citation omitted.] In point, respondent argues that the Commission found a public "burden" because seawalls in general tend to cause additional sand scour on any historically eroding beach but did not find that this particular revetment cause such damage. [Emphasis in original.]

There is substantial evidence in the administrative record to support the staff's conclusion that seawalls and revetments tend to cause sand loss from beach areas in front of and adjacent to them even if they protect immediate structures.

227.23

3110

Studies cited in staff reports...confirm the staff's finding that "by artificially building up the slope of the shore area, seawalls and revetments of this type tend to cause a landward retreat of the mean high tide line,...."

...  
Staff reports...referred to surveys of the Army Corps of Engineers and other experts concerning shoreline erosion along the California coast and, in particular, beach erosion in Ventura County. The Commission [thus] had sufficient information before it to conclude that, due to construction of this revetment and others up and down the coast, the erosive nature of the beaches in Ventura County coupled with the tendency of seawalls and revetments to increase the sand loss on beaches with a tendency to recede constitutes a cumulative adverse impact and places a burden on public access to and along State tide and submerged lands for which corresponding compensation by means of public access is reasonable. [Emphasis in original; citations omitted.]

C. The effects of shoreline structures on an "equilibrium" shoreline. The term equilibrium cannot accurately be applied to a feature that varies as much as a shoreline. Almost all California beaches vary dramatically in profile between winter and summer; the variation in the width of beach that can accompany that seasonal change can be over 200 feet. The persistent analytical problem in dealing with shore processes in California is to try to discern long-term trends in shoreline change from the normal, seasonal variation. The term "dynamic equilibrium" has come into use and has been applied to beaches that vary seasonally in width, but are approximately the same when summer (or winter) profiles are compared over a number of years. Essentially, a beach in dynamic equilibrium is one where the supply and loss of sand are in approximate balance (See Griggs and Jones, 1984). This term must be used with some caution, as there will be some variation in width even seasonally, shown graphically by J. W. Johnson in "Seasonal Bottom Changes, Bolinas Bay, California", Proceedings of the Twelfth Coastal Engineering Conference, September 13-18, 1970. That variability can mask long term changes (either erosion or accretion) unless sufficient data is available to detect a clear direction. This discussion will be equally applicable to shorelines that are in truly in "dynamic equilibrium", that is, not eroding on the long term, and to shorelines that are eroding at a relatively slow rate so that seasonal changes are approximately the same when viewed in the time frame of a few years.

The question of the effects of seawalls on shorelines that are in 'dynamic equilibrium' is more complicated, and research on the effects is even more anecdotal. At the same time, because the short-term effects may be of great importance, much more rigorous data collection is required in order to establish any clear effects. The Corps of Engineers has begun funding

research efforts into the effects of seawalls through their Coastal Engineering Research Center (CERC). One of the research efforts funded by CERC is that of Professor Gary Griggs of UC Santa Cruz. Professor Griggs is monitoring the profiles of beaches in Monterey Bay over the course of several years, and comparing the profiles of beaches with seawalls to control beaches without seawalls. Professor Griggs has completed work during the relatively storm-free winter of 1985-86, and presented his results on October 30, 1987 before the 1987 Conference of the California Shore and Beach Preservation Association. Professor Griggs is the author of various popular and technical works on beach processes and recently chaired a technical discussion of the effects of seawalls on beaches at "Coastal Sediments '87", a specialty engineering conference in coastal sediment processes. Griggs' work appears to establish two distinct effects of seawalls. First, beach profiles in front of seawalls differ from profiles along the control beaches selected during the process of beach erosion. Although the beach profiles are similar at their most accreted (summer profile) stage and at their most eroded (winter profile) stage, the beaches monitored were narrower and steeper in front of seawalls during the period when the beach was eroding from the summer profile to the winter profile. This difference represents a temporal loss in beach width in the short term, even where the time series is of too short a duration to detect erosion patterns on the beach. Second, beach profiles at the end of a seawall are further landward than natural profiles. This effect appears to extend for a distance of about 6/10 the length of the seawall. This effect represents both a spacial and temporal loss of beach width directly attributable to seawall construction. Dr. Griggs' own conclusion about the effects of seawalls, in a manuscript submitted to the Journal of Coastal Restoration titled "The Impacts of Seawalls on Beaches" is:

Based on 12 months of surveying at 4 locations in northern Monterey Bay (including a winter of only mild or moderate wave conditions) where seawalls or revetments abut unprotected beaches, some consistent seasonal beach changes have been documented. These changes or differences in beach profiles are a result of greater wave reflection from the protective structures than from the adjacent control beaches. All of these changes observed in this study appear to be temporary or seasonal in nature and are best developed in the fall and winter months during the transition from summer swell to winter storm conditions.

The seasonal effects documented include:

- 1) Loss of the summer berm sooner in front of all seawalls relative to adjacent unprotected control beaches.
- 2) Erosion of the berm in front of a vertical impermeable seawall (due to greater wave reflection) before berm loss on an adjacent beach backed by a permeable sloping revetment.
- 3) A lack of significant difference in winter beach profiles seaward of seawalls or revetments and adjacent control beaches.

- 4) Loss of beach up to 150 m downcoast from seawalls due to reflection from end of structure.
- 5) Late spring/summer berm rebuilding takes place independently of any protective structure leaving a uniform alongshore berm crest.

The Commission concludes from this information that seawalls have serious adverse effects on the width of the beach, even when examined over a relatively short period on a beach that might not be eroding. Although the beach profile at its widest and narrowest may not differ significantly, the beach width and utility will differ markedly during the period when the beach is changing from summer to winter profile. These effects have been observed by the Commission's staff over the years, and can lead to a situation where there is a narrow but usable beach on an unprotected portion of the beach, while the adjacent, protected beach is not passable.

The 1981 statement signed by 94 respected coastal geologists indicates that important public interests in shoreline resources can be harmed through the introduction of shoreline defense structures. Thus, in evaluating an individual project, the Commission must assume that the principles reflected in that statement are applicable. To do otherwise would be inconsistent with the Commission's responsibilities under the Coastal Act to protect the public's interest in shoreline resources.

#### D. Mechanisms of Impact.

##### 1. Concerns involving specific seawall designs

###### a. vertical seawalls:

Concerns about adverse impacts on sand supply particularly apply to vertical seawalls such as the one proposed because they reflect most wave energy. This is a well-known impact of vertical seawalls. For example, the generally accepted "standard" for designing shoreline structures, the U.S. Army Corps of Engineers' Shore Protection Manual (1983) has several references to the proficiency of vertical seawalls to reflect wave energy and as a result scour the beach it fronts (see pages 1-16, 2-113, 5-4, 6-15). This impact can be lessened somewhat by the placement of rock (or rubble) at the base of the wall, but nevertheless, the wall will still cause scour and steepening of the beach profile.

###### b. rock revetments (rip-rap)

Although they do not have as great an impact as smooth, vertical seawalls, rock revetments, such as currently exists on the site, have impacts on the beach sand in front of and around the structure. A rock seawall operates on the principal that the wave's energy is dissipated within the voids of the wall, therefore producing less reflected wave energy. However, the rock seawall will still reflect enough energy to change the beach profile, steepen

227.26

3113

the beach, and cause accelerated erosion of the downcoast area. One mechanism that accounts for rock walls' impact on beaches is stated in "The Role of Wave Reflection in Coastal Processes" in Coastal Sediments '77 by Richard Silvester (page 653):

Rubble-mound structures can reflect long period wave components with little dissipation and hence short-crested phenomena [waves] in front of and downcoast from them should be considered in design and maintenance.

Moreover, the literature on coastal engineering repeatedly warns that unprotected properties adjacent to the seawall may experience increased erosion. A rock wall very often protrudes seaward from development and exacerbates this situation. Field observations have verified this concern, see for example the paper by Gerald G. Kuhn of the Scripps Institution of Oceanography entitled "Coastal Erosion along Oceanside Littoral Cell, San Diego County, California" (1981). In this paper, it is written and pictorially illustrated that erosion on properties adjacent to rock seawall is intensified when wave run-up is high. This subject is presently being researched by scientists at Oregon State University. The preliminary results of that work was reported in "Laboratory and Field Investigations of the Impact of Shoreline Stabilization Structures on Adjacent Properties" by W.G. McDougal, H.A. Sturtevant, and P.D. Komar in Coastal Sediments '87. These researchers are investigating the length of shoreline affected by heightened erosion adjacent to seawalls. Their conclusion is (page 972):

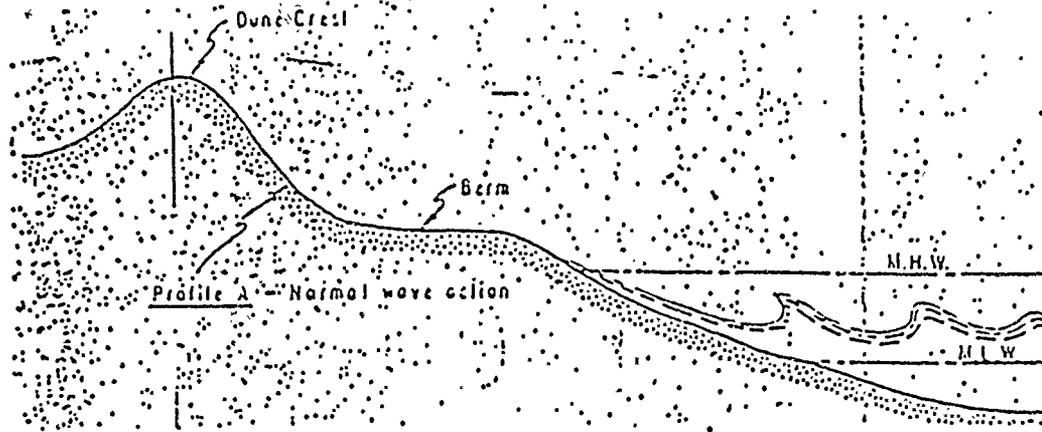
Results to date indicate that erosion at the ends of seawalls increases as the structure length increases. It was observed in both the experimental results and the field data of Walton and Sensabaugh (1978) that the depth of excess erosion is approximately 10% of the seawall length. The laboratory data also revealed that the along-coast length of excess erosion at each end of the structure is approximately 70% of the structure length.

## 2. Concerns involving both types of seawalls

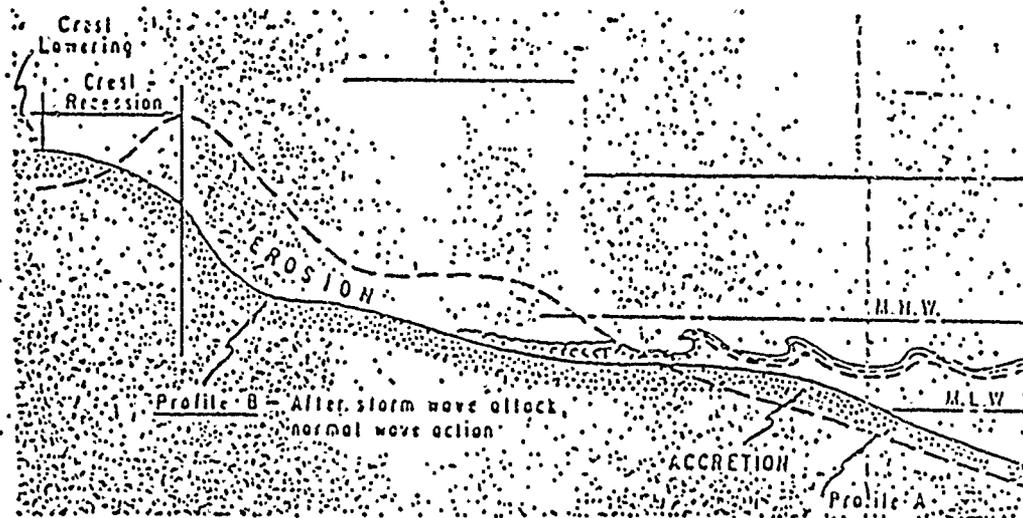
A discussion of the physical processes of wave run-up on a natural shore will help establish the effects of seawalls on shoreline processes. Sandy beaches are dynamic systems, the individual grains of sand adjust quickly to reflect both the overall supply of sediment and the ongoing forces of waves. A typical non-storm profile of the beach looks like this: (from "Shore Protection in California, DHD, 1976)

317.27

3114



At this profile, the shore has adjusted to a low-energy wave environment, reflecting the short period, low energy waves that strike the beach. The next diagram shows how a beach adjusts to longer period, higher energy waves:



This cross section illustrates several important things about the beaches' adjustment to the higher energy of striking waves. First, the wave energy has eroded material from the foreshore and deposited the material off-shore in a bar. Second, the shoreline profile flattens to absorb the greater amount of wave energy, even with waves breaking on the bar. These adjustments are fundamental to the shore's adjustment to high wave energy. The migration of the material to an off-shore bar causes waves to break in deeper water, and begins the process of energy dissipation far from the inland extent of the beach. The dynamic process of eroding material from the foreshore enables the shoreline to absorb wave energy. This process goes on continuously. If a given shore profile is not sufficient to absorb wave energy without further erosion, additional material is moved from the shore to the bar to increase the

beach that rests either temporarily or permanently at a steeper angle than under natural conditions will have less horizontal distance between the lines of mean low water and mean high water. This reduces the actual area in which the public can pass on property over which it has rights of access, and therefore adversely affects public access. The recent work by Cary Griggs demonstrates that a beach in front of a seawall is narrower than a beach not affected by a seawall along the same stretch of coastline. The effect of that narrowness is to reduce the area located seaward of the ordinary high water mark (or mean high water mark) that would otherwise be available for public use. This effect can occur even where the maximum summer width of the beach is essentially unchanged, and represents a temporal loss of access due to seawall construction. The second effect on access is through a progressive loss of sand as shore material is not available to nourish the bar. The lack of an effective bar can allow such high-wave energy on the shoreline that materials may be lost far offshore where it is no longer available to nourish the beach. The effects of this on the public are again a loss of useable tidelands area where the public has use rights. Third, seawalls cumulatively affect public access by causing greater erosion on adjacent public beaches. This effect may not become clear until seawalls are constructed individually along a shoreline until they reach a public beach. The recent work at Oregon State University demonstrates the magnitude of this impact, which is of greater concern as more of California is armored. Fourth, seawalls, by their occupation of beach area which may be seasonally either subject to wave action or actually below the most landward locations of the mean high tide line, interfere directly with areas of the beach in which the public has ownership interest or public trust related rights. Finally, materials attached to the seawall fall off and roll onto the sandy beach where they may also present physical hazards and obstacles to access. This is an inevitable result of flexible structures such as revetments under wave attack, and even with the most conscientious maintenance efforts, such material rolls down onto the public portions of the shore where it interferes at least temporarily with public access. Finally, the Commission finds that because it will formalize the public's right to use for recreational purposes an area of the beach where permission for use could otherwise be withdrawn, a dedication of an easement in favor of the people of the State of California over [the area as described in the conditions of approval involving recording of an offer to dedicate] will operate directly to compensate the public for, and thus alleviate, the burdens described above.

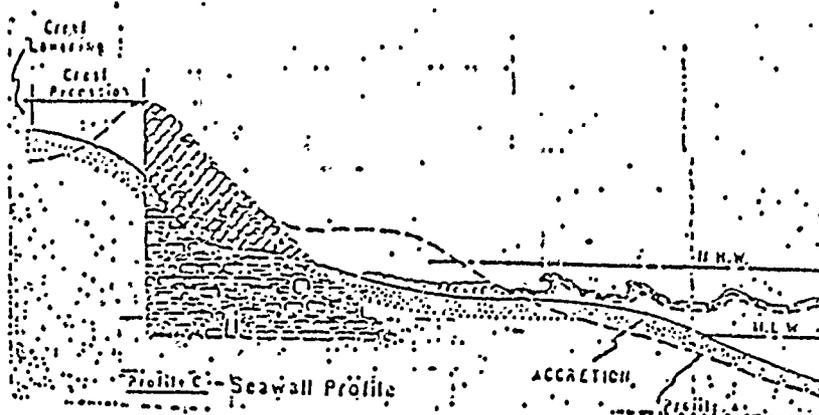
The Commission finds that the probable negative impacts of this seawall must be weighed against the property owner's need to protect the structure behind it. The Commission recognizes that the seawall will probably change the beach profile by steepening it and increasing beach erosion around it; this in turn will interfere with and decrease the amount of sandy beach available for public access. As stated elsewhere in these findings, Section 30235 allows for the use of such a device where it is required to protect an existing structure and where it has been designed to mitigate adverse impacts upon local shoreline sand supply. Although the seawall has been required to be located and designed to minimize encroachment onto the beach and impact on adjacent

Cary 29

3116

distance between the bar and the inland extent of the wave uprush. The value of the bar cannot be over-emphasized, it is on the bar that winter waves break, and the dynamic processes of the actual shoreline are affected by wave uprush, not actual breaking waves.

The next diagram was made by superimposing a revetment on the shoreline profiles that we saw in the last diagram:



This diagram illustrates dramatically the effect of a seawall on the shoreline. The material shown in cross-hatching is the material formerly available to nourish the bar. This material is now unavailable because it is either behind the seawall, or has been replaced by the seawall. As a result, the bar receives less nourishment. This makes the bar less effective in causing waves to break offshore, and results in greater wave energy reaching the shoreline. That energy is then dissipated by uprush and reflection against the face of the revetment. However, since more energy comes on-shore, more energy is reflected and sand is scoured from the base of the revetment. The Commission concludes from the opinion of experts and from an analysis of the process of shoreline dynamics that placement of a seawall within the areas of a shore affected by those processes adversely affects shoreline processes in front of the seawall, as well as property on either side of the seawall. Obviously the impact of a seawall is greater the more often it is exposed to wave attack, and seawalls located far up the beach have less impact than seawalls lower on the beach. For Site Specific Analysis refer to Specific Finding in attached staff report.

3. Public Access. Given the adverse effects of seawalls on shoreline processes, the Commission must now turn its attention to the overall impact that these changed shoreline processes will have on public access. As noted in the Commission's findings on the public trust, the public has ownership and use rights in the lands of the State seaward of the ordinary high-water mark. Seawalls affect the public's ownership and use rights by tending to eventually fix the line of mean high tide at or near the seawall. This interference with a dynamic system then has a number of effects on the public's ownership interests. First, changes in the shoreline profile, particularly changes in the slope of the profile, alter the useable area under public ownership. A

217 .30  
3117

properties, the Commission finds these measures insufficient to fully mitigate the effects of the seawall on shoreline sand supply. Thus, only as conditioned to require the dedication of a public access easement can the Commission find the project consistent with Sections 30235, 30210 and 30212 of the Coastal Act.

This finding only covers the shore processes for aspects of the impacts on public access. For analyses of any historic public use, refer to attached staff report's access findings.

0005P

DATE	11.7.31
PAGE	3115

CALIFORNIA COASTAL COMMISSION  
SHORELINE PROTECTION APPLICATION  
INCLUDING COPIES OF APPLICATION AND  
MATERIALS SUBMITTED TO THE CITY OF DEL MAR  
FOR THE SHORELINE PROTECTION PERMIT AND  
THE CITY'S RESOLUTION APPROVING IT

DATE	1973
PAGE	319

Walter F. Crampton  
Barry R. Bevier  
Phillip C. Birkhahn  
Braven R. Smillie

GROUP DELTA CONSULTANTS, INC.

Engineers and Geologists  
4455 Murphy Canyon Road, Suite 100  
San Diego, CA 92123  
Tel (619) 573-1777 Fax (619) 573-0069

Project No. 1254-EC02  
May 22, 1991

Ms. Ellen Lirley  
CALIFORNIA COASTAL COMMISSION  
3111 Camino Del Rio North  
San Diego, California 92108

SHORELINE PROTECTION APPLICATION FOR THE  
CONSTRUCTION OF A VERTICAL SEAWALL  
BETWEEN 1924 - 2102 OCEAN FRONT  
DEL MAR, CALIFORNIA

Dear Ms. Lirley:

Please find enclosed the Application for Coastal Development Permit, along with all of the required items listed in Section 5 (Additional Attachments) for a 727±-foot-long seawall to be constructed as a single continuous structure fronting sixteen (16) private residences and two city street-ends between 1924 and 2102 Ocean Front within the City of Del Mar, California.

As we have previously discussed, considerable information has previously been provided to the City of Del Mar memorializing our basic approach to design. Those documents form the basis for the project now submitted to the California Coastal Commission. In this regard, we have also included, in two bound volumes, all of the correspondence and reports prepared for the subject seawall. Please note that two formal reports have been submitted, along with considerable correspondence and, ultimately, a lot-by-lot analysis describing the relationship of the various private improvements to the proposed seawall, along with an overview of the geotechnical conditions as they relate to construction-period damage potential, and additional text describing the protective screen wall element.

We believe that you will find all of the enclosed reports and correspondence to be of use in your evaluation of this application, and we believe this information represents a very thorough and comprehensive assessment of the coastal, geotechnical, and design conditions associated with this application. We wish to point out,

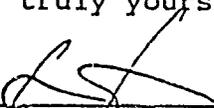
227.33  
3120

however, that the lot-by-lot analysis, Appendix A of the April 9, 1991, Supplement Report packet to the City Council Members, was compiled at a City Council Member's request within a very short time frame. Unfortunately, due to the time limitation, it was not possible to provide a truly comprehensive lot-by-lot analysis of the needs for, and impacts associated with, the construction of the proposed seawall. We have submitted it as it was submitted to the City Council for your review. However, we wish to point out that the lot-by-lot analysis was not prepared with the same care and attention to detail as the remainder of the documentation submitted for this project.

Lastly, please find enclosed the application fee in the amount of \$500.00 for the standard permit application.

If you have any questions or require additional information, please give us a call.

Very truly yours,

  
Walter F. Crampton, Principal Engineer  
for GROUP DELTA CONSULTANTS, INC.

WFC/jc  
Enclosures

cc: Mr. Earle W. Frey  
Mr. Bob Wilson  
Mr. & Mrs. Joseph Sullivan  
Mr. John Mackel, Sullivan, Workman & Dee