

CALIFORNIA COASTAL COMMISSION

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Th 16a

Th 16 b

September 3, 1999,

To: Commissioners and Interested Parties

From: Steven Scholl, Deputy Director
Robert Merrill, North Coast District Manager

Subject: Item Th 16a Application No. 1-92-69 (Caltrans, Humboldt Co.)
Item Th 16b Appeal No. A-1-HUM-98-88 (Caltrans, Humboldt Co.)

Items Th 16a and Th 16b are two separate agenda items related to the same project, authorization as a permanent development a revetment constructed along the bank of the mouth of the Mad River under emergency permits issued in 1992 and 1995.

Item Th 16a concerns the application made directly to the Commission for the portion of the project within the Commission's retained coastal development permit jurisdiction. Item Th 16b is an appeal of the decision of Humboldt County to deny a permit for the portion of the project within the County's coastal development permit jurisdiction.

For ease of reference, and to enable us to save paper by combining all report exhibits into one common set that only needs to be reproduced once, we have attached to this memo all the materials related to the project. In order, these materials include:

1. Staff Report for Item Th 16a Application No. 1-92-69 (Caltrans, Humboldt Co.)
2. Staff Report for Item Th 16b Appeal No. A-1-HUM-98-88 (Caltrans, Humboldt Co.)
3. Exhibits

For further information, contact Robert Merrill at the North Central Coast District Office (415) 904-5260. Correspondence should be sent to the District Office at the same address.

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Th16a

Date Filed: August 25, 1999
49th Day: October 13, 1999
180th Day: February 21, 2000
Staff: Robert Merrill - E
Staff Report: September 3, 1999
Hearing Date: September 16, 1999
Commission Action:

STAFF REPORT: REGULAR CALENDAR

APPLICATION NO.: 1-92-69

APPLICANT: CALIFORNIA DEPT. OF TRANSPORTATION
DISTRICT 1

PROJECT LOCATION: At the Mouth of the Mad River, just south of Clam Beach,
adjacent to Highway 101, McKinleyville area of Humboldt
County; APNs 511-351-01,05,07

PROJECT DESCRIPTION: Construction of a rock slope protection revetment (Phase I),
and placement of an additional 1,000 feet of rock slope
protection (approximately 12,000 cubic yards of two-ton
rocks) (Phase II) to protect Highway 101 and the coastal
vista point from wave damage. The work was completed in
March 1992 for Phase I and July 1995 for Phase II under
the authorization of Emergency Coastal Development
Permit Nos. E-1-92-03G, E-1-92-08G, and E-1-95-05G.

LOCAL REVIEW: Humboldt County CDP Application #02-95 denied
November, 1998

OTHER APPROVALS REQUIRED: U.S. Army Corps of Engineers.

SUBSTANTIVE FILE DOCUMENTS: Coastal Commission Appeal No. A-1-HUM-
98-088; Coastal Commission Emergency
Coastal Development Permit Nos. E-1-92-
03G, E-1-92-08G, and E-1-95-05G;
Humboldt County CDP Application #02-
95; and the Humboldt County LCP

SUMMARY OF STAFF RECOMMENDATION

The permit application seeks authorization to retain as a permanent development a revetment constructed along the bank of the mouth of the Mad River in 1992 and 1995. The major issue raised by the application is whether or not the revetment as constructed has caused an acceleration of erosion and bluff retreat upstream of the revetment. Property owners of bluff top parcels have produced geologic reports indicating that the revetment is directly responsible for the increased erosion they have been experiencing along their bluffs. Caltrans denies that the revetment has accelerated the rate of bluff erosion, pointing out that the estuary is a very dynamic system subject to a complicated array of natural forces that can affect the rate of erosion. Caltrans attributes the accelerated rate of erosion to the unusual river, current, and ocean conditions caused by El Nino. In response to the concerns raised over bluff erosion, Caltrans contracted with Professor Borgeld of Humboldt State University to study the effects of the revetment. Although Caltrans has provided Caltrans staff - prepared summations of the findings of the report, Caltrans has not released the actual reports themselves. The summations do not adequately respond to the specific points raised by the bluff top property owners' geologists. In the absence of adequate geologic information that adequately addresses these points, Staff believes the Commission cannot make the required findings under Section 30253 of the Coastal Act that the project will not contribute significantly to the erosion and destruction of the bluffs along the river and will not necessitate the future construction of shoreline protective devices that would substantially alter the natural landform along the bluff. In addition, the application does not include an analysis of the impacts of the revetment on local sand supply, precluding the Commission from making required findings under Section 30235 that the project will not adversely affect local sand supply. Finally, the alternatives analysis submitted by the applicants does not address the full range of alternatives that may be available to protect Highway 101 and the vista point with the least amount of environmental damage. Therefore, staff recommends DENIAL of the application because based on the information currently available to the Commission, the project is inconsistent with Coastal Act provisions regarding these issues.

STAFF NOTES:**1. Jurisdiction and Standard of Review.**

The project site is bisected by the boundary between the permit jurisdiction of the Commission and Humboldt County. This application seeks Coastal Commission authorization for the portions of the proposed project that are within the Commission's retained jurisdiction. The areas of the project site that are within the Coastal Commission's retained jurisdiction include submerged areas, tidelands, or areas subject to the public trust. The portions of the subject development within the Commission's retained jurisdiction include the lower and western-most portions of the

rock slope protection which are tidelands and approximately half of the staging area that was constructed with earthen fill behind the revetment. The standard of review that the Commission must apply to the development addressed in Coastal Development Permit Application No. 1-92-69 is the Coastal Act.

2. Related Agenda Item.

At the September 16, 1999 meeting, the Commission will also conduct a de novo hearing on related Coastal Commission Appeal No. A-1-HUM-98-088. That application seeks authorization for the portions of the proposed project that are within the coastal development permit jurisdiction of Humboldt County. The Commission may decide to hold a joint hearing on the two applications.

3.. Development Authorized Pursuant to Emergency Permits

The development currently before the Commission was constructed pursuant to Emergency Permit Nos. E-1-92-03G, E-1-92-08G, and E-1-95-05G. The first two emergency permits, issued on February 4, 1992 and March 18, 1992, respectively, authorized the construction of a rock slope protection revetment along approximately 2,300 lineal feet of shoreline (Phase 1 of the overall development). Emergency Permit No. 1-95-05G, issued on March 22, 1995, authorized the construction of an additional 1,000 lineal feet of rock slope protection revetment to the south of the previously placed revetment (Phase 2 of the overall development. Condition 4 of each emergency permit specifies that emergency work is temporary and that a regular coastal development permit must be obtained in order to permanently authorize the work. Coastal Development Permit Application No. 1-92-69 was submitted as the follow-up application to seek permanent authorization for entire development authorized on a temporary basis by the three emergency permits.

I. **MOTION, STAFF RECOMMENDATION AND RESOLUTION**

The staff recommends that the Commission adopt the following resolution:

Motion.

I move that the Commission approve Coastal Development Permit No. 1-92-69 subject to conditions.

Staff Recommendation of Denial.

Staff recommends a **NO** vote and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Resolution to Deny Permit:

The Commission hereby denies a coastal development permit for the proposed project on the grounds that the project, located between the sea and the first public road nearest the shoreline, is not in conformance with the provisions of Chapter 3 of the California Coastal Act of 1976. Granting of the permit would not comply with the California Environmental Quality Act because there are feasible mitigation measures or alternatives that would substantially lessen the significant adverse impacts of the development on the environment.

II. FINDINGS AND DECLARATIONS.

The Commission hereby finds and declares as follows:

A. Project and Site Description.

The proposed development consists of the construction of a 2,300-foot-long rock slope protection revetment (Phase I), and placement of an additional 1,000 feet of rock slope protection (approximately 12,000 cubic yards of two-ton rocks) (Phase II) to protect Highway 101 and an adjacent coastal vista point from wave damage (See Exhibits 3 and 4).

The work was completed in March 1992 for Phase I and July 1995 for Phase II under the authorization of Emergency Coastal Development Permit Nos. E-1-92-03G, E-1-92-08G, and E-1-95-05G. The current application seeks permanent approval of the development authorized under the three emergency permits.

The subject site is located at the mouth of the Mad River, just south of Clam Beach, adjacent to Highway 101, in the McKinleyville area of Humboldt County. The highway and vista point are on a bluff top that fronts along Clam beach.

For many years prior to the winter of 1992, the mouth of the Mad River existed further south. However, the river mouth had been known to oscillate along the coast for most of this century. For several decades prior to 1992 when the revetment was installed, the mouth migrated northward, cutting through the beach in a northerly direction near the base of the bluff. The causes for the northward migration are not well understood and are likely the result of several interacting factors. According to an alternatives analysis prepared by Caltrans for the Army Corps of Engineers dated January 15, 1999,

“the stretch of coastline where the river mouth migration is occurring is complex: large ocean tidal range; high ground water table; a complex interaction of ocean waves and fluvial dynamics; a narrow sand spit separating the river and the ocean; river bluffs composed primarily of sand; and the river current can carry large fallen trees which can strike the river bluffs. Upstream, the overall Mad River watershed has been substantially altered since the late 19th century. The Mad

River has been channelized in some locations and is currently dammed at Ruth Lake. Another Mad River dam, the Sweazy Dam was removed releasing a substantial load of accumulated sediment. Extensive logging and gravel mining operations in the Mad River watershed may also be contributing factors to the Mad River mouth migration. Finally, plate tectonics and resulting seismic activity may also influence the river mouth movement."

As the river moved northward, a sand spit formed between the river and the ocean. In some years the river migrated northward several hundred feet a year (see Exhibit 5). Eventually, the northward migration of the mouth of the river reached a point where it threatened the bluff that supports the highway and vista point. According to the Alternatives Analysis, Caltrans had known about the impending threat to the river since 1988. Caltrans approached Humboldt County and the Army Corps of Engineers, to determine whether either agency was willing to take a direct roll in stopping the northward migration, such as by breaching the sand spit at a more southerly location to establish a new mouth for the river. Neither the County, the Corps, or Caltrans pursued such an option. Instead, Caltrans pursued a strategy of armoring the bank of the river in the vicinity of the Vista Point to protect both the vista point and the Highway itself.

As Highway 101 is the major north south artery for the region, Caltrans applied for and received emergency permits from the County, the Executive Director of the Coastal Commission, and the U.S. Army Corps of Engineers to construct a 2,300-foot-long revetment to halt the erosion. The revetment as constructed, curves along the northerly edge of the then mouth of the river. The engineered revetment is constructed of quarry rock. To facilitate construction of the revetment, Caltrans also stripped of vegetation and leveled approximately 6.85 acres of dunes immediately north and east of the revetment to establish a construction staging area and platform from which to mechanically lift the quarry rock into position along the revetment. This Phase I of the project was completed in 1992.

By 1995, erosion of the bluff immediately adjacent to the south of the constructed revetment threatened the bluff below the vista point. Caltrans sought and obtained additional emergency permits from the agencies to extend the rock revetment another 1,000 feet to the south to protect this additional portion of the bluff. This portion of the overall project is considered to be Phase II.

At some point after construction of the revetment, the sand spit at the south side of the mouth began to erode back to the south. As a result, the mouth of the river grew to approximately 3,000 feet in width. In early 1999, the river breached naturally at a new location approximately two miles south of the Caltrans revetment. Since then, a considerable amount of sand has been deposited at the location of the former mouth where the revetment was installed. The revetment itself is currently largely buried in sand.

According to the applicant, the project resulted in the loss of approximately 0.76 acres of dune hollow wetlands. These wetlands were located within the 6.85-acre area that was graded for construction of the staging area. To offset the loss of this 0.76 acres of dune hollow wetlands, Caltrans has submitted a mitigation plan. The plan calls for the restoration of the impacted 0.76 acres of dune hollow wetland on-site at a 1:1 ratio by restoring the existing degraded wetlands. An additional 0.84 acres of dune hollow wetlands may be created on-site for a total of 1.6 acres of wetlands. The areas to be restored to wetlands would be graded to create hollows and ridges that correspond to the natural landscape. After grading, invasive non-native plants within the mitigation area would be removed by hand. Native plants will then be planted in the mitigation area. The site would be fenced to protect it from illegal OHV activity.

The project site is bisected by the boundary between the Commission's retained permit jurisdiction and the coastal development permit jurisdiction of the County. The portion of the development within the Commission's jurisdiction is the subject of Coastal Development Permit Application No. 1-92-69.

B. Geologic Hazards.

Coastal Act Section 30253 states in applicable 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 landforms along bluffs and cliffs."*

Property owners of bluff top parcels upstream of the revetment contend that the revetment Caltrans constructed has contributed significantly to the erosion of their properties. This contention raises serious concerns about the project's consistency with Section 30235.

As noted previously, several years after the rock slope protection device was first installed, the rate of erosion of bluffs along the east side of the Mad River upstream of the revetment dramatically increased. The affected private parcels extend from a point approximately 200 feet from the southern end of the constructed revetment to the mouth of Widow White Creek, approximately ½ mile upstream. On one parcel, the bluff edge has retreated more than 20 feet during this period, and other bluff top parcels in the area have been experiencing an increased bluff retreat. The property owners assert that the increased rate of erosion is directly related to the construction of the revetment. The

property owners assert the erosion was accelerated by the southward movement of the mouth of the river after the revetment was installed. The property owners also assert that the revetment halted the previously rapid northward migration of the river mouth and in so doing, caused the mouth to broaden and move south. Between late 1996 until early 1999, the river mouth was located directly opposite the bluffs on the neighbors' projects, exposing these bluffs to direct wave attack from the ocean. In addition, the property owners contend that the changes resulting from construction of the revetment caused river currents to form an eddy opposite their bluffs which increased scouring of the bluffs.

During the course of the County's review of the application made by Caltrans to authorize permanently the portion of the project within the County's coastal Development Permit jurisdiction, the property owners hired two local geologists to evaluate the cause of accelerated erosion to their bluffs. The two geologists are Roland S. Johnson, Jr, Principal Engineering Geologist with SHN Consulting Engineers & Geologists, and Dr. Robert E. Busch Jr., Principal Engineering Geologist and Owner of Busch Geotechnical Consultants.

In a letter dated December 7, 1995 to Mr. Harry Conner, one of the affected property owners (attached as Exhibit 8), Mr. Johnson concludes that the level of bluff erosion upstream of the revetment became worse subsequent to the placement of Phase 1 of the revetment. Excerpts of the letter follow below:

"...I have recently conducted field investigations and reviewed various documents and photographs relative to erosion and slope failure of the bluff along the east bank of the Mad River...The investigations I conducted were relatively limited and the conclusion s should be considered qualitative rather than quantitative...

"It is my opinion that the primary cause of the accelerated erosion is due to ocean waves that enter the river mouth, advance upstream, and expend their energy by loosening the unconsolidated soil at the river bank. The loosened soil is then washed into the river to be carried away by the river current...Erosion and bluff slope failure affecting you and your neighbors to the south is far more severe than along other segments of the Mad River Estuary. Without some form of stream bank stabilization major portions of your properties are likely to continue to erode and slide into the river...

"Now that the river mouth has been stabilized by installation of rock slope protection (RSP) and it is no longer able to continue migrating northward, river bank areas exposed to wave erosion are likely to be regularly impacted far into the foreseeable future. An additional problem resulting from the placement of (RSP) in the river mouth area is that a significant amount of the wave energy that was previously expended on the sandy banks and beaches adjacent to the mouth is

now reflected seaward, toward the landward side of the sand spit, and up the river to areas not protected by RSP..."

"If no stabilization measures are installed, you and your neighbors can expect to experience chronic large scale failures of the bluff slope. Eventually, the bluff top is likely to retreat significant distances eastward with the most rapid retreat occurring at the northern properties."

"When the Mad River migrated northward past you and your neighbors property, a substantial amount of bluff base erosion and subsequent bluff slope failure was destined to occur. But the RSP installation...only increased the magnitude (or the rate) of river bank erosion in adjacent unprotected upstream areas. It is my opinion that the level of bluff erosion in the unprotected upstream region became worse subsequent to the placement of the original RSP) structure in the selected configuration...."

Dr. Busch has prepared two written statements addressing the bluff retreat occurring upstream of the revetment along the east side of the river. He prepared a statement dated September 14, 1998 prior to a Humboldt County Planning Commission hearing on the local coastal development permit application for the portion of the project within the County's jurisdiction. He also prepared a statement dated July 9, 1999, prior to the Coastal Commission's hearing on the Substantial Issue portion of the appeal of the County's denial of the coastal development permit. Both statements are attached as Exhibit 9.

In the September 14, 1998 written statement, Dr. Busch concludes that a chief consequence of the installation of the revetment was the rapid-rate erosion of the coastal bluff east of and southeast of the mouth of the river. Excerpts of the written statement are listed below:

"The installation of the RSP (rock slope protection) caused predictable hydraulic effects and consequences....The chief hydraulic effect was a dramatic increase in marine energy in the mouth of the river. One chief consequence was the rapid-rate erosion of the coastal bluff east and southeast of the mouth. Erosion was so rapid and serious that in 1995 the RSP was extended about 1,200 feet to the south.

"The erosion of the coastal bluff occurred because marine waves and tidal currents removed the "toe support" of the erodible bluffs. This caused the upper part of the bluff to become unstable and begin to landslide...If the rate of erosion continues, which it is likely to, within a few years three of the homes on the bluff top will be destroyed or will have to be moved to the east."

"...A second chief consequence of the installation of the groin...was the erosion of the northern end of Mad River Beach and foredune field. This effectively widened the mouth and exposed more of the bluff south of the RSP to erosion.

"...At the time Caltrans elected to build the RSP and groin, it had other alternatives with fewer predictable harsh consequences. The best of the reasonable alternatives was to dig a channel through the Mad River Beach in the vicinity of School Road, and not build any ...hard structures.

In the July 9, 1999 written statement, Dr. Busch concludes that Caltrans could have immobilized the mouth of the river by installing a revetment along the south bank of the mouth of the river at the same time it installed the extension of the revetment in 1995. Caltrans failure to do so "was directly responsible for the progressive southward widening of the mouth, the destruction of the sand spit, and the catastrophic destabilization of the bluff east of the river south to Widow White Creek." Additional excerpts of the written statement are listed below:

"In 1992, a foredune-covered sand spit separated the Mad River from the ocean...When Caltrans installed the RSP in 1992, the spit immediately began to erode away in response to increased wave energy in the mouth of the river. The erosion rapidly progressed southward and now the spit no longer exists between the 1992 RSP and Widow White Creek, a distance of about 3500 feet. As a result of the destruction of the spit, catastrophic erosion began cutting away the exposed toe of the bluff...Today, the formerly vegetated bluff is mostly a bare faced sand cliff torn by active landslides, and the base of the bluff is exposed to direct attack by ocean waves at high tide..."

"The accelerated erosion of the reach of bluff south of the southern end of the 1995 RSP extension, which occurred after that extension was installed, was predictable with a high degree of certainty because accelerated erosion had occurred previously at the southern end of the long leg of the 1992 RSP.

"In conclusion, the accelerated erosion of the bluff between the southern end of the RSP and Widow White Creek would not have occurred as it did if Caltrans instead had installed RSP on both the north and south sides of the mouth of the river, or if Caltrans had placed RSP along the west edge of highway between the Vista Point overlook and Little River to the north. Although the chosen Caltrans RSP design effectively stopped the northward migration of the river and protected U.S. 101 and the Vista Point overlook, the design failure caused irreversible bluff instability and marine erosion of the east bank of the river south of the project."

"Unless the base of the bluff is protected from ocean waves south of the RSP to Widow White Creek, chronic bluff failures, erosion, and sandstorm effects-which are a direct consequence of the configuration of the RSP—will continue along

that stretch of coast into the foreseeable future. It is also likely that as a direct result of the bluff failures and erosion, one or more homes will have to be destroyed or moved back from the top-of-bluff area in the imminent future."

"Removal of the existing RSP will not stop the ongoing environmental damage initiated by the installation of the faulty RSP design. Only by extending RSP to Widow White Creek can Caltrans begin to compensate for the loss of the protective sand spit..."

In summary, the geologists hired by the property owners contend that the installation of the revetment significantly increased erosion of the bluffs upstream by directing wave energy that was previously expended on the sandy banks and beaches adjacent to the mouth up the river to areas not protected by RSP. In addition, as this wave energy progressively eroded away the end of the sand spit, more and more of the bluffs became exposed to direct wave attack from the open ocean, increasing the erosion and bluff retreat. Dr. Busch also contends that at least two alternatives to the constructed revetment would have avoided increasing erosion along the upstream bluffs, including (1) digging a channel through the Mad River Beach more than a mile south of the constructed revetment in the vicinity of School Road, and (2) fixing the mouth of the river in place by placing matching revetment on the other side of the mouth of the river. Both geologists predict the bluff slope upstream of the revetment will experience continued severe erosion unless additional bank stabilization is installed along the base of this bluff area.

The affected property owners have submitted written comments raising concerns about the increased erosion of the bluffs that their geologists attribute to the revetment to various agencies reviewing permit applications for permanent authorization of the revetment, including Humboldt County, the U.S. Army Corps of Engineers, and the Commission. In a September 30, 1998 Letter of Modification of the Army Corps permits granted for the project, the Corps added special conditions directing Caltrans to provide additional information. Among other things, this additional information was to include (a) responses to the comments submitted by the property owners and (b) a report that investigates the causes of beach bluff erosion that has occurred south of the 1995 RSP.

Caltrans prepared a response to this directive dated January 15, 1999. In addition to providing comments responding to the letters of the property owners, Caltrans provided a discussion of the results of a study prepared for Caltrans by Jeffry Borgeld, Ph.D. of the Department of Oceanography at Humboldt State University. Dr. Borgeld's report was not released, only a summation of some of the findings of the report prepared by Caltrans staff. In early 1999 Dr. Borgeld prepared an addendum to his report and in May of 1999, Caltrans submitted to the Commission a summary of information excerpted from both the 1999 addendum and the original 1998 report. A copy of this summary is attached as Exhibit 10. Commission staff has asked that Caltrans provide copies of the Borgeld reports. However, as of the date of this report, Caltrans has not provided to the

Commission or otherwise released either the actual 1998 Borgeld report or the 1999 addendum. Only the Caltrans staff prepared summaries have been made available.

As summarized by Caltrans staff, the Borgeld report concludes that because of complex coastal dynamics where the river inlet migration is occurring, predicting the future rate of erosion is very difficult. River mouth migration and erosion are influenced by river flow, tidal currents, ocean wave power and direction, the rate of sediment supply to the inlet, and other factors. Even past gravel extraction activities within the Mad River watershed may have been a major factor due to sediment reduction. The summaries highlight how during the 1997-1998 El Nino event, ocean wave heights, river discharges, and sea level elevations increased and affected the morphology of the lower Mad River spit and estuary. The summaries suggest that these factors were what caused the mouth of the river to erode and widen. The summaries indicate that the mouth widened to 1,000 meters (3,300 feet). This increased width in turn caused the bluffs along the east side of the river to erode more rapidly as was observed by the property owners' geologists.

Without the actual text of the Borgeld reports, it is difficult for the Commission to evaluate the information contained in the reports and to draw conclusions. In addition, without the reports, it is unknown whether the Borgeld reports provide responses to some of the specific points raised in the statements prepared by the property owners geologists, Dr. Busch and Mr. Johnson. For example, the Busch and Johnson statements indicate that the mouth of the river began widening soon after installation of the initial revetment in 1992 and accelerated after installation of the revetment extension in 1995. The El Nino event occurred during 1997-1998. How does the Borgeld report address the alleged widening of the mouth that began prior to the El Nino event? In addition, does the Borgeld report address the comment by Dr. Busch that installing additional revetment on the opposite side of the mouth along the sand spit would have stabilized the mouth and prevented the mouth from widening to the south where it exposed more of the bluffs to wave attack?

Section 30253 of the Coastal Act requires that new development 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 geologic information provided by the upstream bluff top property owners indicates that the revetment has contributed significantly to the erosion and destruction of the bluffs along the river and will necessitate the future construction of shoreline protective devices to protect the homes atop the bluffs from the effects of bluff retreat. Without the Borgeld reports or other geotechnical information from the applicant that responds adequately to the specific points raised in the geotechnical information provided by the property owners' consulting geologists, the Commission cannot find that the project will not contribute significantly to the erosion and destruction of the bluffs along the river and will not necessitate the future construction of shoreline protective devices that would substantially alter the natural landform along the bluff. Therefore, based on the information available for its

review, the Commission finds that the project does not meet the requirements of Coastal Act Section 30253.

D. Fill in Coastal Waters and Wetlands.

The Coastal Act defines fill as including "earth or any other substance or material ... placed in a submerged area." The proposed project includes the placement of fill in open coastal waters or wetlands in the form of the previously placed shoreline revetment along the banks of the Mad River, as well as the placement of earthen fill over dune hollow wetlands to create a portion of the construction staging area for the project

Section 30233 of the Coastal Act addresses the placement of fill within open coastal waters and wetlands. Section 30233(a) provides as follows, in applicable part:

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

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

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource dependent activities.

Section 30235 of the Coastal Act provides, in applicable part:

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 erosion, and when designed to eliminate or mitigate adverse impacts on local sand supply.

The above policies set forth a number of different limitations on what fill projects may be allowed in coastal waters or wetlands. For analysis purposes, the limitations can be grouped into four general categories or tests. These tests are:

a. that the purpose of the fill is for one of the eight uses allowed under Section 30233, to serve coastal-dependent uses, or to protect existing structures or public beaches in danger from erosion; and

b. that the project is designed to eliminate or mitigate adverse impacts on local sand supply; and

c. that the project has no feasible less environmentally damaging alternative; and

d. that adequate mitigation measures to minimize the adverse impacts of the proposed project on habitat values have been provided.

a. **Allowable Use**

As noted above, the first test for a proposed fill to be approved under Chapter 3 of the Coastal Act is whether the fill is for one of the eight uses allowed under Section 30233, to serve coastal-dependent uses, or to protect existing structures or public beaches in danger from erosion. The revetment was installed on an emergency basis specifically to protect Highway 101, the major arterial along this part of the coast, and a vista point along the highway from bluff retreat. As these structures were threatened by the erosion caused by the extraordinary northward migration of the mouth of the Mad River, the Commission finds that the fill associated with the revetment is for an allowable purpose under Section 30235 of the Coastal Act.

b. Protection of Sand Supply

In addition to the limitations on the use of the revetment fill discussed above, Section 30235 mandates that revetment and similar fill shall only be approved if it is designed to eliminate or mitigate adverse impacts on local sand supply. Similarly, where fill is for an allowable purpose, Section 30233(a) requires that only the least environmentally damaging feasible alternative be approved, and provide feasible mitigation measures to minimize adverse environmental effects, including effects on sand supply.

There are a number of adverse impacts to public resources associated with the construction of shoreline structures. The natural shoreline processes referenced in Section 30235 of the Coastal Act, such as the formation and retention of sandy beaches, may be altered by construction of a revetment, since bluff retreat is one of several ways that beach area and beach quality sand is added to the shoreline. This retreat is a natural process resulting from many different factors such as erosion by wave action causing cave formation, enlargement and eventual collapse, saturation to the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration. When a revetment development is constructed on the beach at the toe of the bluff, it directly impedes these natural processes.

Many of the effects of development on a beach are temporary or difficult to distinguish from all the other actions which modify the shoreline. Nevertheless, some of the effects which shoreline development may have on natural shoreline processes can be quantified. Three of the effects from such development which can be quantified are: 1) loss of the beach area on which the fill is located; 2) the long-term loss of beach which will result when the back beach location is fixed on an eroding shoreline; and 3) the loss of material which would have been supplied to the beach if the shoreline continued to erode naturally.

The applicant was asked orally to provide information on the effects of the project on shoreline processes. However, none of the information provided to date, including the summations of the Borgeld reports provides an analysis of the impacts of the project on local sand supply.

Thus, there is no substantive evidence before the Commission that the proposed project is designed to eliminate or mitigate adverse impacts on local sand supply. Therefore, the Commission finds that the project does not meet the requirement of the Coastal Act Section 30235 with regard to impacts on sand supply. Therefore, the proposed fill need not be approved under Section 30235. The Commission also finds that the proposed project does not meet the requirement of the Coastal Act Section 30233 because it fails to provide feasible mitigation measures to minimize adverse environmental effects on sand supply.

c. Alternatives.

Coastal Act Section 30233 does not allow fill of coastal waters or other wetlands if there is a feasible, less environmentally damaging alternative to the project. Alternatives to the project as proposed must be considered before a finding can be made that a project satisfies this provision of Section 30233.

The applicant has submitted an analysis of alternatives to the project which was originally prepared for the Army Corps of Engineers pursuant to U.S. Environmental Protection Agency Section 404(b)(1) Guidelines for Discharge of Fill or Dredged Material. The analysis was not prepared as a comprehensive environmental analysis, but rather meant to provide a basis for comparing the relative environmental effects of the alternatives and construction feasibility. The alternatives considered in the evaluation include (1) maintaining the existing rock slope protection project at the Mad River mouth, (2) placing rock slope protection along the base of the Mad River bluff beginning at the south end of the existing RSP revetment and extending upriver; (3) constructing small debris dams and wing dams along the Mad River bluff to deflect the river current and prevent bluff undercutting, (4) constructing a revetment along the base of the Mad River bluff using woody debris as an alternative to placement of quarried rock slope protection, (5) placing a palisades netting system designed to reduce the river velocity and erosion, (6) artificially breaching the spit between the ocean and the Mad River to re-establish the river mouth near its historic, oscillating range approximately between School Road and the Mad River Slough area, and confining the mouth with structures, (7) breaching the historic mouth of the Mad River on an emergency basis without confining structures, and (8) relocating Highway 101 by constructing a bypass.

The analysis of alternatives concludes that Alternative 1, maintaining the existing rock slope protection project at the Mad River mouth "was determined to be the most practicable alternative and to be the least environmentally harmful," as it would require no further filling of wetlands and would provide for the continued protection of the Route 101 roadway. Alternatives 2 through 8 were found to either not be feasible or would have greater adverse environmental effect.

Alternative 2, armoring the entire base of the Mad River bluff beginning at the south end of the existing RSP revetment and extending upriver was determined to have substantial impact to the estuary that would be difficult to fully mitigate. In addition, the alternatives analysis indicates the hydrological effects of the alternative are largely unknown and would require a detailed study to address changes in river/estuary velocity, turbidity, flooding risks, sedimentation, and erosion. The alternatives analysis indicates the hydrology study results would be critical for the environmental evaluation of potential effects to anadromous fish habitat at this location.

Alternatives 3-5, which include two proposals to protect the Mad River bluff with revetment designs utilizing natural woody materials and the alternative of installing a

palisades netting system to reduce river velocity and erosion were determined by Caltrans to either be infeasible to construct or unlikely to succeed.

Alternative 6, reopening the historic mouth and installing structures to stabilize the mouth in place could result in increased erosion of the bluff near the new mouth and could result in the loss of two miles of estuarine habitat as the existing mouth seals off and the stretch of river downstream of the historic mouth fills in with sand. Thus, this alternative was rejected as creating greater environmental effect. The analysis also indicates Caltrans would be concerned about assuming the liability for maintaining the river mouth in this location and for any erosion effects the alternative would have on property owners located along the bluffs above this location.

Alternative 7, breaching the historic mouth on an emergency basis without structures to contain the mouth and prevent its migration was rejected because of questionable effectiveness. There is a high potential that the breach may immediately close upon breaching, and if the breach did not close, the alternative would have unacceptable environmental effects similar to Alternative 6.

Alternative 8, relocating Highway 101 was dismissed because constructing a four-lane freeway bypass would have a high construction cost and would have substantial environmental impacts.

An alternative that was not considered in the Alternatives Analysis submitted by the applicants was a variant of the alternative suggested by Dr. Busch of fixing the mouth of the Mad River at the location of the constructed revetment by installing an additional revetment on the south sides of the mouth of the river. Had such a southern revetment been constructed at the same time as the existing revetment, Dr. Busch opined that the mouth would have been fixed in place, the sand spit would not have eroded southward, and most of the bluffs south of the mouth would not have been exposed to wave attack and the resulting accelerated erosion and bluff retreat. As noted earlier, the river has recently created its own new breach through the sand spit about a mile south of the revetment. Recent aerial photographs show that the area south of the revetment is filling in with sand. However, given the historic oscillation of the river mouth, there is a good chance the breach will begin migrating northward again. It may be feasible to construct a new revetment opposite the existing revetment in the desired configuration to trap and fix the mouth of the river should it migrate north again. If the alternative is feasible and could fix the mouth of the river, the alternative would conceivably have the benefit of stopping the accelerated bluff erosion attributed to the revetment as constructed, while requiring much less placement of fill and resulting environmental impact than armoring the entire bluff between the existing revetment and Widow White Creek discussed under Alternative 2 and as proposed by the bluff top property owners concerned about bluff retreat.

The Commission has found above that the project cannot be approved because of the project's inconsistency with Coastal Act Section 30235. The Commission cannot make the required finding that the project will not contribute significantly to erosion and will not necessitate the future construction of shoreline protective devices that would substantially alter the natural landform along the bluff. However, even if it was determined the project would not contribute to erosion and would otherwise be consistent with Section 30253, the project could only be permitted if there is no feasible less environmentally damaging alternative. Given that the alternative described above of constructing a new revetment opposite the existing revetment in the desired configuration to trap and fix the mouth of the river should it migrate north again has not been evaluated, the Commission could not make the required finding under Section 30233 of the Coastal Act that the project as proposed is the least environmentally damaging feasible alternative.

d. Mitigation Measures.

As noted above, the fourth test for a proposed fill to be approved under Chapter 3 of the Coastal Act is whether feasible mitigation measures have been provided to minimize adverse environmental effects

The applicants have submitted a wetlands mitigation plan as part of the application. The mitigation plan is attached as Exhibit 7. However, the Commission has found above that the project cannot be approved because of the project's inconsistency with Coastal Act Section 30235. The Commission cannot make the required finding that the project will not contribute significantly to erosion impacts. Thus, until the erosion impacts of the revetment are fully addressed, the full extent of the adverse environmental effects of the project will remain unknown. Therefore, the Commission cannot evaluate the submitted mitigation plan for consistency under Section 30233 at this time.

EXHIBITS:

1. Regional Location Map
2. Vicinity Map
3. Phase I Site Plan
4. Phase II Site Plan
5. Historical Migration of River Mouth
6. Humboldt County Notice of Final Action
7. Mitigation Plan
8. Johnson Geologic Report
9. Busch Geologic Report
10. Caltrans Response to Erosion Concerns
11. Correspondence

CALIFORNIA COASTAL COMMISSION

45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200
FAX (415) 904-5400



Th16b

Filed: October 23, 1998
Hearing Opened: July 16, 1999
Staff: Robert Merrill
Staff Report: September 3, 1999
Hearing Date: September 16, 1999
Commission Action:

STAFF REPORT: APPEAL

DE NOVO ACTION ON APPEAL

LOCAL GOVERNMENT: County of Humboldt

DECISION: Denial

APPEAL NO.: A-1-HUM-98-88

APPLICANT: CALIFORNIA DEPT. OF TRANSPORTATION
DISTRICT 1

PROJECT LOCATION: At the Mouth of the Mad River, just south of Clam
Beach, adjacent to Highway 101, McKinleyville
area of Humboldt County; APNs 511-351-01,05,07

PROJECT DESCRIPTION: Construction of a rock slope protection revetment
(Phase I), and placement of an additional 1,000 feet
of rock slope protection (approximately 12,000
cubic yards of two-ton rocks) (Phase II) to protect
Highway 101 and the coastal vista point from wave
damage. The work was completed in March 1992
for Phase I and July 1995 for Phase II under the
authorization of Emergency Coastal Development
Permit Nos. CDP-42-912 and E-CDP-47-94.

APPELLANTS: CALIFORNIA DEPT. OF TRANSPORTATION
DISTRICT 1

SUBSTANTIVE FILE
DOCUMENTS:

Coastal Development Permit Application No.
1-92-69; Humboldt County CDP Application #02-
95; and the Humboldt County LCP

SUMMARY OF STAFF RECOMMENDATION

The permit application seeks authorization to retain as a permanent development a revetment constructed along the bank of the mouth of the Mad River in 1992 and 1995. The major issue raised by the application is whether or not the revetment as constructed has caused an acceleration of erosion and bluff retreat upstream of the revetment. Property owners of bluff top parcels have produced geologic reports indicating that the revetment is directly responsible for the increased erosion they have been experiencing along their bluffs. Caltrans denies that the revetment has accelerated the rate of bluff erosion, pointing out that the estuary is a very dynamic system subject to a complicated array of natural forces that can affect the rate of erosion. Caltrans attributes the accelerated rate of erosion to the unusual river, current, and ocean conditions caused by El Nino. In response to the concerns raised over bluff erosion, Caltrans contracted with Professor Borgeld of Humboldt State University to study the effects of the revetment. Although Caltrans has provided Caltrans staff - prepared summations of the findings of the report, Caltrans has not released the actual reports themselves. The summations do not adequately respond to the specific points raised by the bluff top property owners' geologists. In the absence of adequate geologic information that adequately addresses these points, Staff believes the Commission cannot make the required findings under Section A315-16 of the Coastal Zoning Ordinance and Section 30235 of the Coastal Act, that the project will not contribute significantly to the erosion and destruction of the bluffs along the river. In addition, the application does not include an analysis of the impacts of the revetment on local sand supply, precluding the Commission from making required findings under Policy 3.28F of the McKinleyville Area Plan that the adverse impacts on shoreline sand supply of new shoreline protection devices have been ~~eliminated or minimized~~ by the project's design. Finally, the alternatives analysis submitted by the applicants does not address the full range of alternatives that may be available to protect Highway 101 and the vista point with the least amount of environmental damage. Therefore, staff recommends DENIAL of the application because based on the information currently available to the Commission, the project is inconsistent with LCP provisions regarding these issues.

STAFF NOTES:

1. Procedure.

At the Commission meeting of July 16, 1999, the Commission determined that a substantial issue existed with respect to the grounds on which the appeal had been filed, pursuant to Section 13115 of the California Code of Regulations. As the project as

denied by the County has been found to raise a Substantial Issue with respect to the policies of the LCP, the County's denial is no longer effective, and the Commission must consider the consistency of the project with the certified LCP de novo. A continued public hearing and vote on the project has been scheduled for the meeting of September 16, 1999. Testimony may be taken from all interested persons at the de novo hearing. The Commission may approve, approve with conditions, or deny the application.

2. Incorporation of Substantial Issue Findings.

The Commission hereby incorporates by reference the Substantial Issue Findings adopted at the July 16, 1999 hearing and contained in the staff report dated July 7, 1999.

3. Related Agenda Item.

At the September 16, 1999 meeting, the Commission will also conduct a hearing on related Coastal Development Permit Application No. 1-92-69. That application seeks authorization for the portions of the proposed project that are within the Commission's retained coastal development permit jurisdiction. The Commission may decide to hold a joint hearing on the two applications.

I. MOTION, STAFF RECOMMENDATION DE NOVO, AND RESOLUTION:

1. Motion:

I move that the Commission approve Coastal Development Permit No. A-1-DNC-97-019 subject to conditions.

2. Staff Recommendation of Approval:

Staff recommends a **NO** vote on the motion and adoption of the following resolution and findings.
~~The motion passes only by affirmative vote of a majority of the Commissioners present.~~

3. Resolution to Deny Permit:

The Commission hereby denies a coastal development permit for the proposed project on the grounds that the project, located between the sea and the first public road nearest the shoreline, is not in conformance with the Del Norte County certified Local Coastal Program. Granting of the permit would not comply with the California Environmental Quality Act because there are feasible mitigation measures or alternatives that would substantially lessen the significant adverse impacts of the development on the environment.

IV. FINDINGS AND DECLARATIONS.

The Commission hereby finds and declares as follows:

A. **Incorporation of Findings by Reference.**

The Substantial Issue Findings for Commission Appeal A-1-HUM-98-88 are hereby incorporated by reference.

B. **Project and Site Description.**

The project site is bisected by the boundary between the Commission's retained permit jurisdiction and the coastal development permit jurisdiction of the County. The portion of the development within the County's jurisdiction is the subject of Coastal Commission Appeal No. A-1-HUM-98-088. The current application seeks permanent approval of the development authorized under Humboldt County Emergency Coastal Development Permit Nos. CDP-42-912 and E-CDP-47-94.

The entirety of Finding A of the Findings for Coastal Development Permit Application No. 1-92-69 is hereby incorporated by reference as the remainder of Finding B of this report. The text to be incorporated begins on page 4 of the first staff report contained in this document.

C. **Project History.**

The Humboldt County Planning Commission considered the proposed project during numerous Commission meetings between March 20, 1997 and September 17, 1998. On September 17, 1998, the Planning Commission denied the project. County staff had recommended approval, but the Planning Commission denied the project making the following motion for denial:

"Deny the project based upon the fact that sufficient evidence does not exist to make required finding #4: The proposed development and conditions under which it may be operated or maintained will not be detrimental to the public health, safety, or welfare."

Based on an examination of the minutes of the Planning Commission's hearing when action was taken, the Planning Commission was concerned that the revetment may be causing increased erosion of the bluffs upstream of the project and did not have sufficient evidence from Caltrans or others that such erosion was not resulting from the Caltrans project. A suggestion was made by one Commissioner that "the permit be denied and have it resubmitted with real attention to the specific items the Commission has requested." A copy of the Planning Commission minutes are attached in Exhibit 5.

The project was not appealed to the Board of Supervisors in a timely manner. An appeal of the denial was submitted by Caltrans a day after the appeal period closed and the County determined that the appeal could not be filed. The Board of Supervisors affirmed the decision to not accept the appeal at a Board meeting in March of 1999.

The County's Notice of Final Action on the permit was received by Commission staff on September 28, 1998 and became complete on October 8, 1998, the day the local appeal period closed (Exhibit No. 6).

On November 17, 1999, Commission staff received from Caltrans a signed waiver waiving Caltrans' right to a hearing within 49 days after the appeal was filed.

At the Commission meeting of July 16, 1999, the Commission opened the public hearing on the appeal and determined that a substantial issue existed with respect to the grounds on which the appeal had been filed, pursuant to Section 13115 of the California Code of Regulations. The Commission continued the public hearing on the de novo portion of the appeal to the September Commission meeting in Eureka. As the project as denied by the County has been found to raise a Substantial Issue with respect to the policies of the LCP, the County's denial is no longer effective, and the Commission must consider the consistency of the project with the certified LCP de novo.

D. Geologic Hazards

Section A315-16 of the Coastal Zoning Ordinance states:

"In addition to the required findings of Sections A315-14 through A315-15, as applicable, the Hearing Officer may approve.... an application for a use permit, coastal development permit....only if the following findings (can be made)

H. Public Safety Impact Findings

.....

(2) Coastal Geologic Hazard (CZ).

- (a) ~~The development will be sited and designed to assure stability and structural integrity~~ for the expected economic lifespan while minimizing alteration of natural landforms;
- (b) Development on bluffs and cliffs (including related storm runoff, foot traffic, site preparation, construction activity, irrigation, wastewater disposal and other activities and facilities accompanying such development) will not create or contribute significantly to problems of erosion or geologic instability on the site or on surrounding areas; and
- (c) Alteration of cliffs and bluff tops, faces, or bases by excavation or other means will be minimized. Cliff retaining walls shall be allowed only to stabilize slopes.

...

Section 30253 of the Coastal Act has been adopted as a policy of the McKinleyville Area Plan, the LUP segment covering the project site.

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 areas or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

Property owners of bluff top parcels upstream of the revetment contend that the revetment Caltrans constructed has contributed significantly to the erosion of their properties. This contention raises serious concerns about the project's consistency with Section A315-16 of the Coastal Zoning Ordinance and Section 30235 of the Coastal Act, which, as noted above, has been adopted as a policy of the LUP.

The portion of Finding B (Geologic Hazards) of the Findings for Coastal Development Permit Application No. 1-92-69 beginning with the second full paragraph of the finding and continuing through the end of the finding is hereby incorporated by reference and inserted here as part of Finding D of this report. The text to be incorporated begins on page 6 of the first staff report contained in this document.

For the same reasons, the Commission finds that the project does not meet the requirements of Section A315-16(H)(2)(b) of the Coastal Zoning Ordinance which are virtually the same as the requirements of the applicable portion of Section 30235 of the Coastal Act.

E. Required Findings for All Discretionary Permits.

~~Section A315-14 of the Coastal Zoning Ordinance states:~~

Section A315-14. Required Findings for All Discretionary Permits. The Hearing Officer may approve or conditionally approve an application for a special permit, use permit, coastal development permit, or planned unit development permit only if all of the following findings, in addition to those findings that are applicable in Sections A315-15 through A315-18, inclusive, are made.

- A. The proposed development is in conformance with the County General Plan;
- B. The proposed development is consistent with the purposes of the existing zone in which the site is located, or when processed in conjunction with a zone reclassification, is consistent with the purposes of the proposed zone;

- C. The proposed development conforms with all applicable standards and requirements of these regulations; and
- D. The proposed development and conditions under which it may be operated or maintained will not be detrimental to the public health, safety, or welfare.

In the case where no findings are required by State Law, the above findings shall not be required.

As discussed in Finding D (Geologic Hazards) above, the geologic information provided by the upstream bluff top property owners indicates that the revetment has contributed significantly to the erosion and destruction of the bluffs along the river and threatens to undermine existing homes on the bluff. Without geotechnical information from the applicant that responds adequately to the specific points raised in the geotechnical information provided by the property owners' consulting geologists, the Commission cannot find that the project will not contribute significantly to the erosion and destruction of the bluffs along the river. As the revetment may be contributing significantly to the erosion and destruction of the bluffs along the river that is threatening to undermine bluff top homes, the Commission cannot make the finding that the proposed development and conditions under which it may be operated or maintained will not be detrimental to the public health, safety, or welfare as required by Section A315-14(D) of the Coastal Zoning Ordinance.

F. Shoreline Protective Devices.

Section A315-16 of the Coastal Zoning Ordinance states in applicable part, the following:

- ...
 - (3) Coastal Shoreline Protection (CZ).
 - (1) The structure is the least environmentally damaging feasible alternative; and
 - (2) (If applicable), Beach nourishment and vegetative protection is not feasible.

Policy 3.28F of the McKinleyville Area Plan states:

New shoreline protection structures, including revetments, breakwaters, groins, seawalls, and other such construction, that alter natural shoreline processes may be permitted to protect existing principal structures or public facilities in areas subject to damage from wave action where relocation of the structures is not feasible and when:

- (1) It is least environmentally damaging feasible alternative.

- (2) Adverse impacts on shoreline sand supply have been eliminated or minimized by the project's design.
- (3) The project has been designed by a registered civil engineer with expertise in shoreline processes. Permanent shoreline structures shall be permitted only when based on a comprehensive study of areawide shoreline processes, which assesses long-term effects of the structures on sand transport, downdrift beaches, circulation patterns and flow rates, including effects such as erosion, shoaling, or reflection of wave energy on adjacent shorelines. It is the policy of the County to prefer beach nourishment and vegetative protection where feasible, to permanent structural shoreline stabilization. Temporary shoreline structures to protect individual lots may be permitted in emergencies provided that any temporary structure is removed upon construction of a permanent structure.
- (4) The County shall request the Department of Boating and Waterways to review plans for construction of shoreline protective structures. The Department may recommend measures to mitigate adverse effects on shoreline processes.
- (5) The County encourages study of shoreline erosion in McKinleyville to develop long term solutions to existing erosion hazards between School Road and Miller Road.

Sections A315-16 of the Coastal Zoning Code and Policy 3.28F of the McKinleyville Area Plan both require proposed new shoreline protection devices be the least environmentally damaging feasible alternative to be approved.

The portion of Finding D(c) (Fill in Coastal Waters and Wetlands, Alternatives) of the Findings for Coastal Development Permit Application No. 1-92-69 beginning with the second full paragraph of the finding and continuing through the next to last full paragraph of the finding is hereby incorporated by reference and inserted here as part of Finding F of this report. The text to be incorporated begins on page 15 of the first staff report contained in this document.

Given that the alternative of constructing a new revetment opposite the existing revetment in the desired configuration to trap and fix the mouth of the river should it migrate north again has not been evaluated, the Commission cannot make the required finding under Sections A315-16 of the Coastal Zoning Code and Policy 3.28F of the McKinleyville Area Plan that the project as proposed is the least environmentally damaging feasible alternative.

Policy 3.28F of the McKinleyville Area Plan requires that the adverse impacts on shoreline sand supply of new shoreline protection devices have been eliminated or minimized by the project's design.

The applicant was asked orally to provide information on the effects of the project on shoreline processes. However, none of the information provided to date provides an analysis of the impacts of the project on local sand supply.

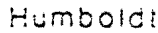
Thus, there is no substantive evidence before the Commission that the proposed project is designed to eliminate or mitigate adverse impacts on local sand supply. Therefore, the Commission finds that the project does not meet the requirement of Policy 3.28F of the McKinleyville Area Plan with regard to impacts on sand supply.

Policy 3.28F(3) of the McKinleyville Area Plan states that permanent shoreline structures shall be permitted only when based on a comprehensive study of area-wide shoreline processes, which assesses long-term effects of the structures on sand transport, downdrift beaches, circulation patterns and flow rates, including effects such as erosion, shoaling, or reflection of wave energy on adjacent shorelines. As discussed above under Finding D, Geologic Hazards, and the paragraphs immediately above, the application lacks sufficient information to assess the long term effects of the structures on erosion and sand transport. With this information lacking, the project does not conform to the requirements of Policy 3.28F that a comprehensive study of area-wide shoreline processes be performed before a project is approved. Therefore, the Commission finds that the proposed project is inconsistent with Policy 3.28F(3).

EXHIBITS:

1. Regional Location Map
2. Vicinity Map
3. Phase I Site Plan
4. Phase II Site Plan
5. Historical Migration of River Mouth
6. Humboldt County Notice of Final Action
7. Mitigation Plan
8. Johnson Geologic Report
9. Busch Geologic Report
10. Caldrons Response to Erosion Concerns
11. Correspondence





APPLICATION NO.
A-1-HUM-98-088
and 1-92-69
REGIONAL LOCATION

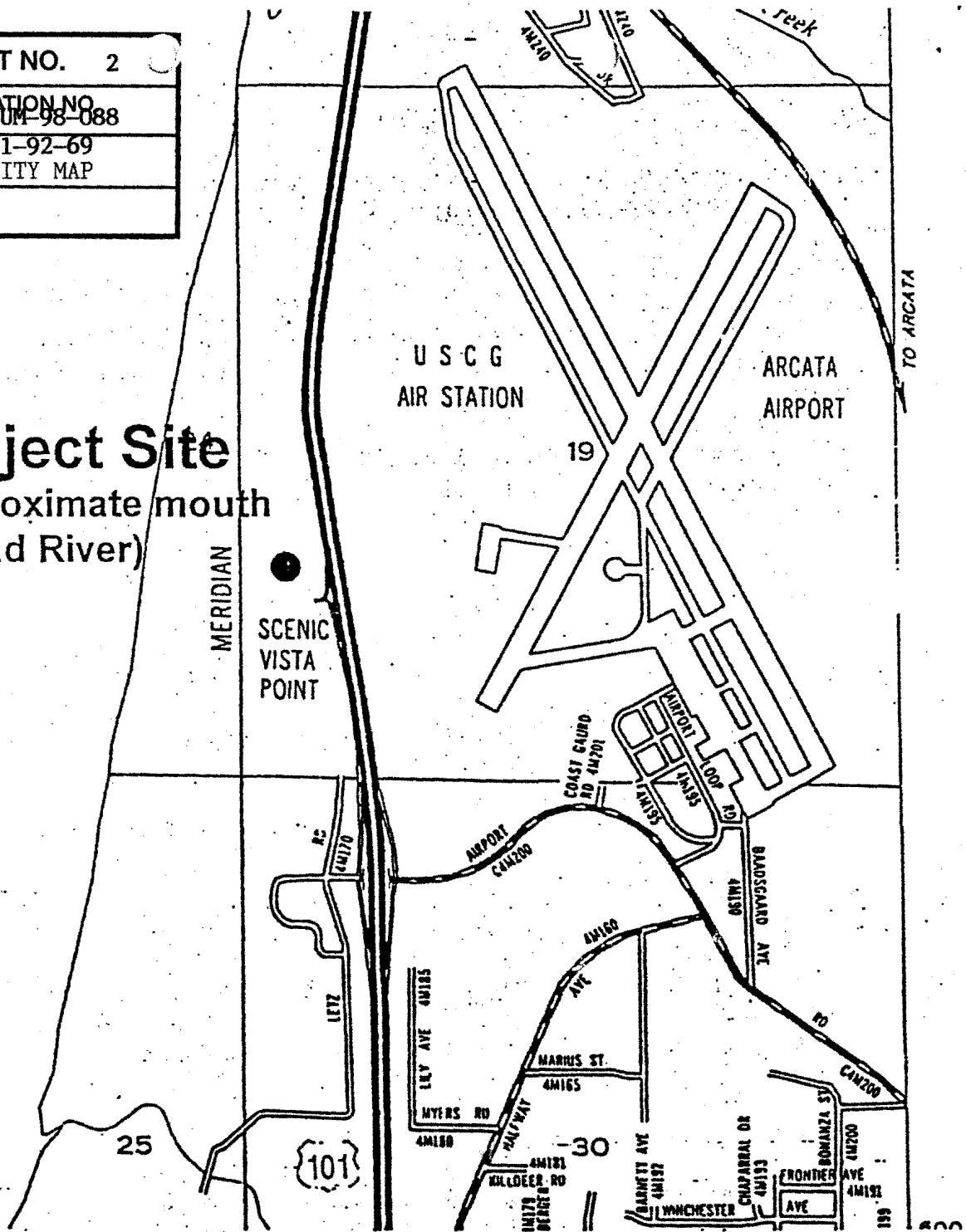


EXHIBIT NO. 2

APPLICATION NO.
A-1-HUM-98-088

and 1-92-69
VICINITY MAP

Project Site
(approximate mouth
of Mad River)



Proposed Caltrans Coastal Development/Special Permits
McKinleyville Area CDP-02-95/SP-16-95
APN: 511-351-01 and -05 Section 19 T7N R1E H.B.&M.

Location Map



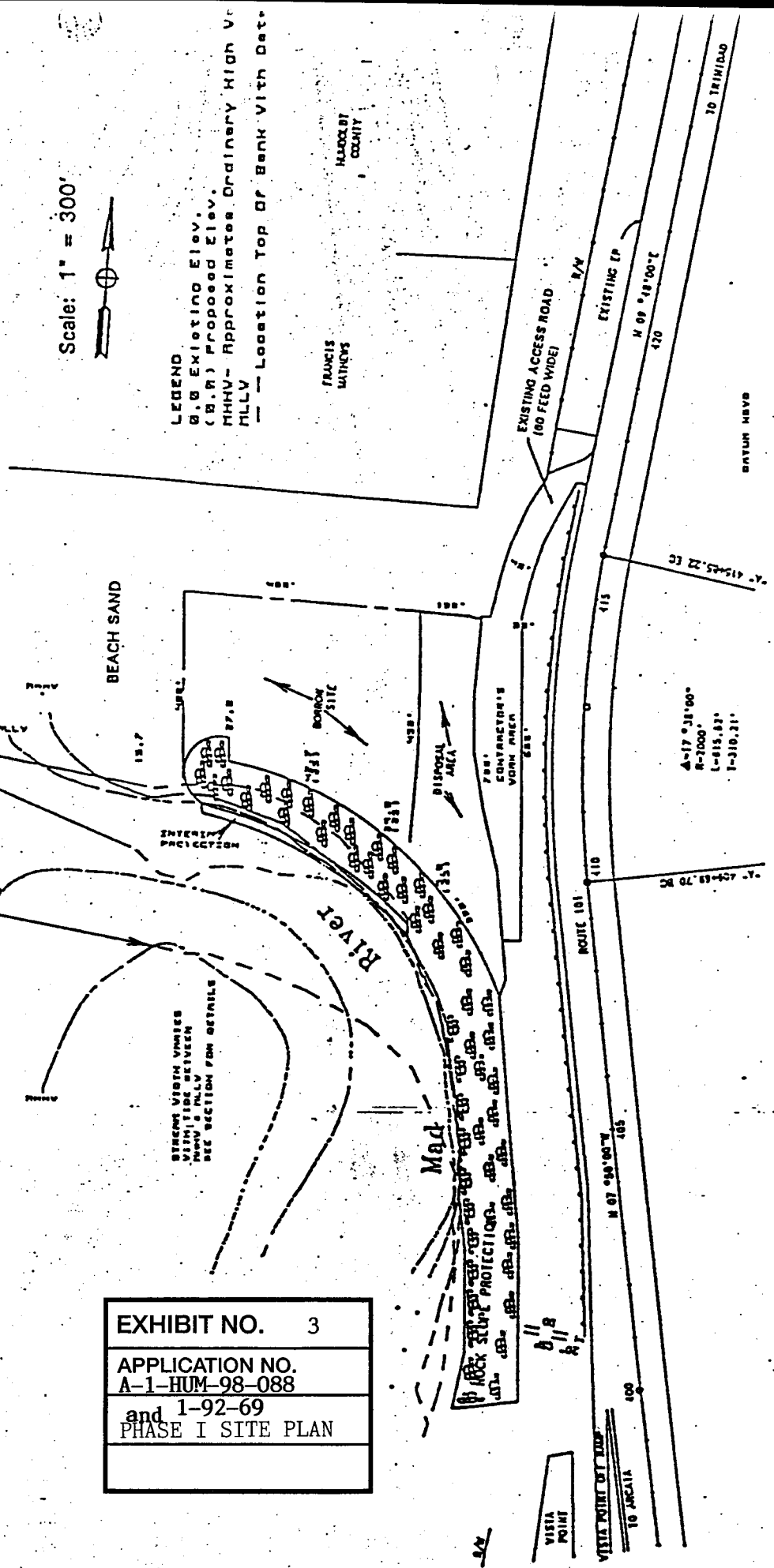
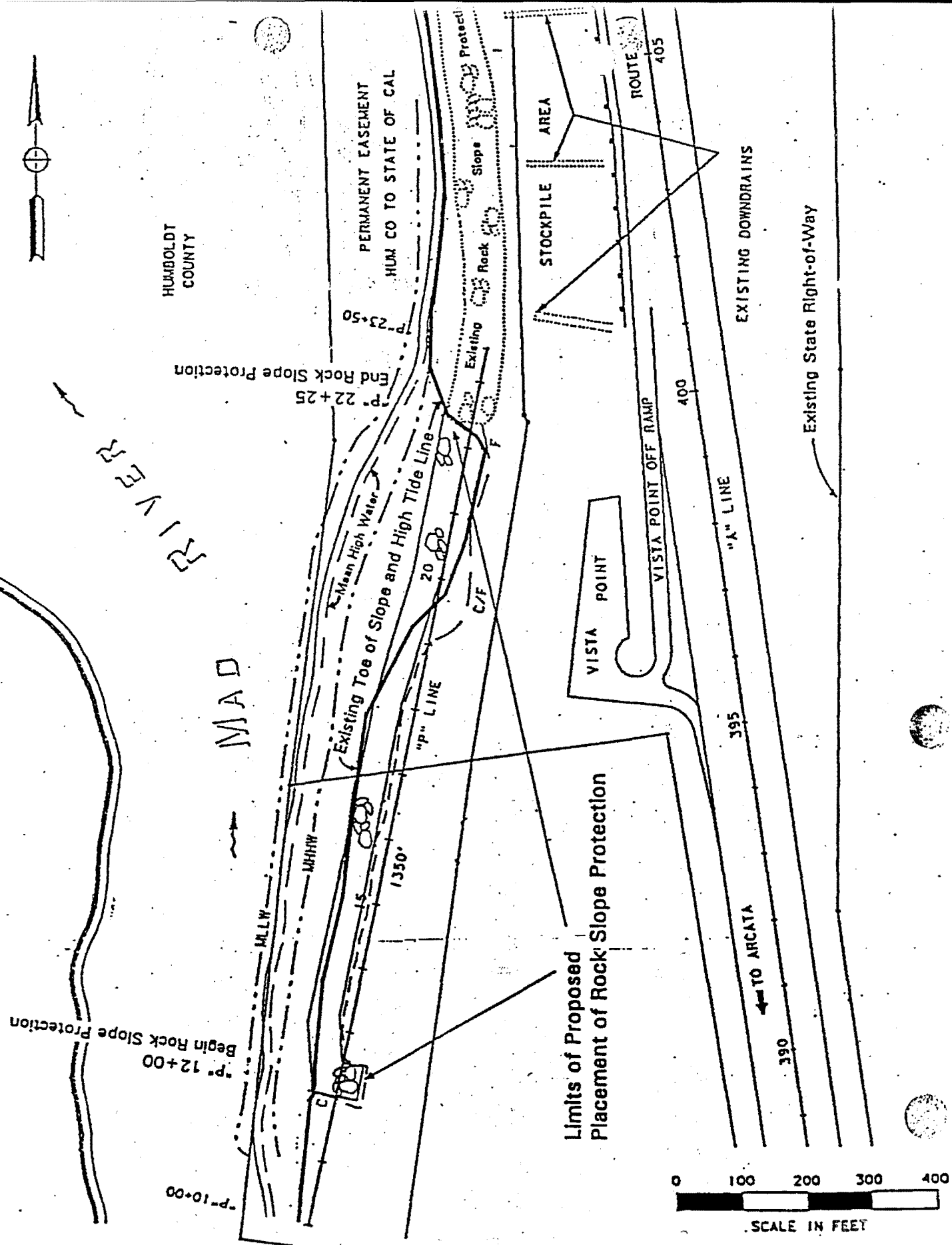


EXHIBIT NO.	3
APPLICATION NO.	A-1-HUM-98-088
and 1-92-69	
PHASE I SITE PLAN	

Phase I - Place Rock Slope Protection Revetment

7



PURPOSE: PROTECTION OF
HIGHWAY 101

VERTICAL DATUM: NGVD 1929

ADJACENT PROPERTY OWNERS:
COUNTY OF HUMBOLDT

PLAN VIEW

CALTRANS DISTRICT 01
PO BOX 3700
EUREKA, CA

Phase II

Extend Rock Slope Protection Revetment

MAD RIVER
MCKINLEYVILLE
COUNTY OF HUMBOLDT

6

A-1

SEP 91
MAY 91
89-90



PACIFIC OCEAN

VISTA
POINT

HISTORICAL MA RIVER COURSE

SCALE 1"=2000'

Murray Road

White

Morris Sea

Trailer Park

McKinleyville

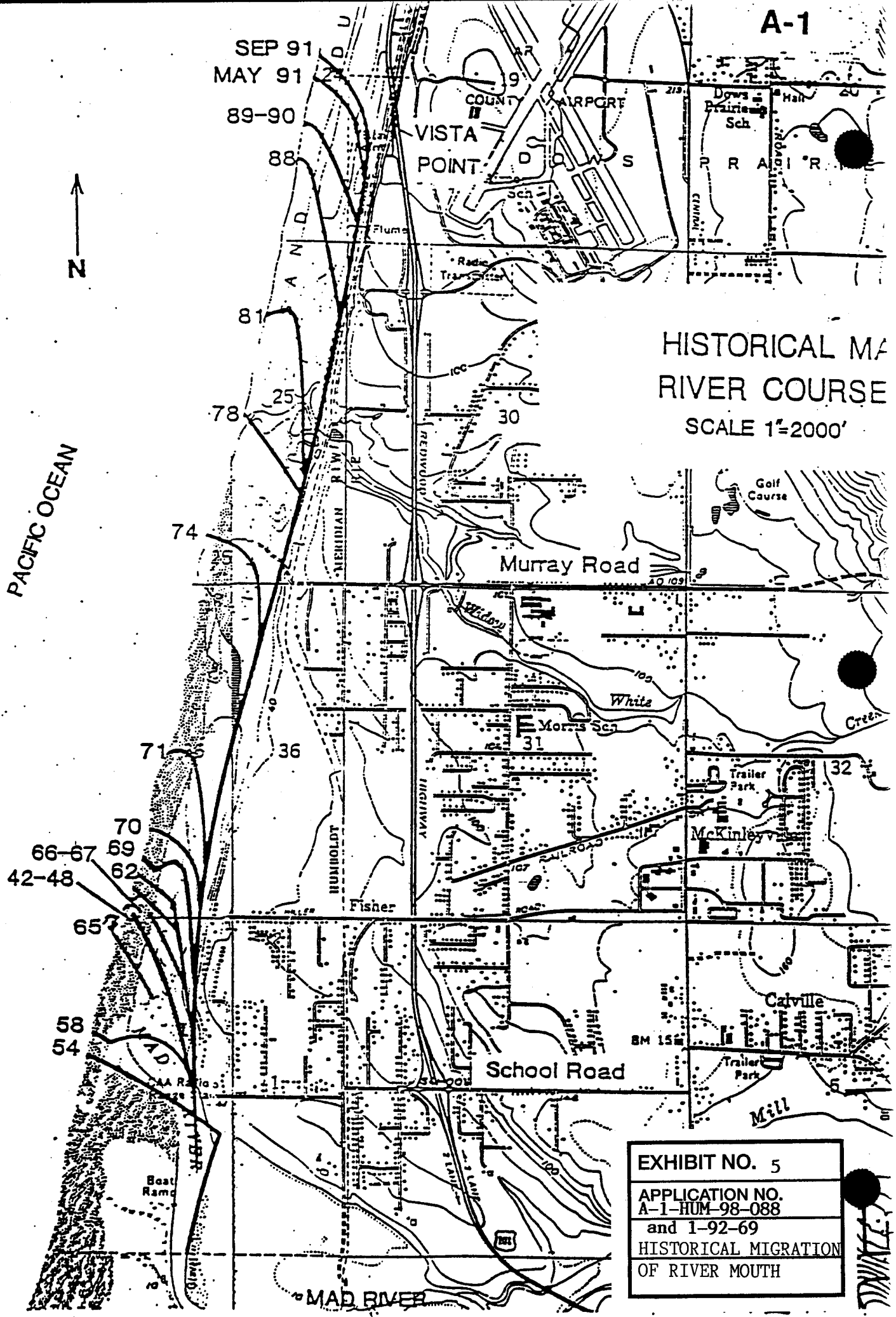
Calville

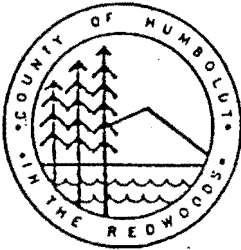
School Road

Mill

EXHIBIT NO. 5
APPLICATION NO.
A-1-HUM-98-088
and 1-92-69
HISTORICAL MIGRATION
OF RIVER MOUTH

MAD RIVER





PLANNING DIVISION
OF THE PLANNING AND BUILDING DEPARTMENT
COUNTY OF HUMBOLDT
3015 H STREET
EUREKA, CALIF. 95501-4484 PHONE (707) 445-7541

DATE: September 22, 1998

SEP 28 1998

APPEAL STATUS: Appealable

CALIFORNIA COASTAL COMMISSION
North Coast District
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

SUBJECT: Coastal Development Permit
NOTICE OF ACTION TAKEN

CONTACT: Michael Wheeler, Planner I

Applicant: Caltrans
Address: P.O. Box 3700
Eureka, CA 95502

Case No. CDP- 02-95

File No. APN 511-351-01

Following a noticed public hearing, the Humboldt County Planning Commission ~~approved~~ the referenced application on September 17, 1998
denied

Sincerely,

HUMBOLDT COUNTY PLANNING DIVISION
HUMBOLDT COUNTY PLANNING AND BUILDING DEPARTMENT

Handwritten signature: Michael Wheeler for...
Michael Wheeler, Planner I
Attachments: Agenda Item Transmittal
Staff Report
Exhibit A
Plot Plan
Location Map

/ak

EXHIBIT NO.	6
APPLICATION NO.	A-1-HUM-98-088
	and 1-92-69
	NOTICE OF FINAL
	ACTION
	(Page 1 of 7)

**PLANNING COMMISSION
COUNTY OF HUMBOLDT, STATE OF CALIFORNIA**

Certified Copy of Portion of Proceedings, Meeting of SEPTEMBER 17, 1998

SUBJECT: CALTRANS, MCKINLEYVILLE AREA, Case No. CDP-02-95 & SP-16-95,
File No. APN 511-351-01.

ACTION: 1. Opened the Continued Public Hearing.
2. Received staff report.
3. Received Public Testimony (See attached Minutes).
4. Closed the Public Hearing.
5. Deny the project.

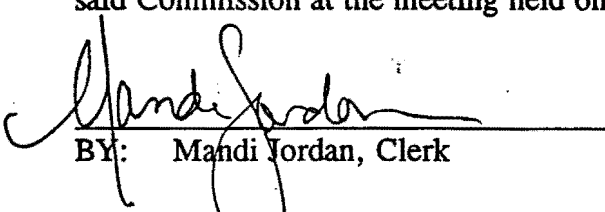
MOTION: Deny the project based upon the fact that sufficient evidence does not exist to make required finding #4: The proposed development and conditions under which it may be operated or maintained will not be detrimental to the public health, safety, or welfare.

Adopted on motion by COMMISSIONER WHITCHURCH, second by COMMISSIONER GARRETT SMITH, and the following vote:

AYES: FLESCHNER, GEARHEART, GARRETT SMITH, & WHITCHURCH
NAYS: NONE
ABSTAIN: BLYTHER
ABSENT: EMAD & JEFF SMITH

STATE OF CALIFORNIA)
)
COUNTY OF HUMBOLDT)

I, KIRK A. GIRARD, Secretary to the Planning Commission of the County of Humboldt, do hereby certify the foregoing to be a true and correct record of the action taken on the above entitled matter by said Commission at the meeting held on the Date noted above.


BY: Mandi Jordan, Clerk

DATE: September 22, 1998

Last Day to appeal to the Board of Supervisors: October 2, 1998 by 5 p.m. (file with Planning).

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CONTINUED PUBLIC HEARINGS

1. **CALTRANS, MCKINLEYVILLE AREA;** a Coastal Development Permit and Special Permit application for the construction and design review of: 1) Phase I- a rock slope protection revetments at the Mad River mouth, just south of Clam Beach; and 2) Phase II- placement of an additional 1,000 feet of rock slope protection (approximately 12,000 cubic yards of two ton rocks) to protect Highway 101 and the coastal vista point from wave damage. The work was completed in March of 1992 for Phase I and July 1995 for Phase II under the authorization of Emergency Coastal Development Permit No(s). CDP-42-912 and E-CDP-47-94. CASE NO(S). CDP-02-95 (filed on 8/7/95) and SP-16-95; FILE NO. APN 511-351-01. (MEW)

ISSUES: Bluffs have experienced increase erosion due to the placement of the Rock Slope Protection, duration of the permit process for the project

STAFF REPORT AND RECOMMENDATION: Caltrans, the Mouth of the Mad River Project, was first heard in December 1995. At that meeting a motion was made to continue the project for further review of the supporting studies and to analyze how the categorical exemption from CEQA was made. After study the item was agendized on March 20, 1997. County Counsel reviewed the exemption from CEQA and concluded that the determination was correctly made. Conditions were revised for the March 20, 1997 meeting to include further monitoring, a re-opener provision if further repairs were needed, and a hold harmless clause (based on a similar provision that was in the parallel CCC permit).

March 20, 1997, Caltrans' counsel expressed an interest in working with County Counsel in regards to the language of the hold harmless clause. The project was continued to May 1, 1997. May 1, 1997 two versions of the conditions were submitted to the Commission. Exhibit A-1 was staff's conditions, which included greater detail in the geological monitoring requirement (condition #4). Exhibit A-2 contained Caltrans preferred language in limiting monitoring to visual inspection only, the monitoring not to include the bluff area further up river from the RSP, and the removal of the hold harmless clause. After public comments and discussion the item was continued to June 5, 1997.

On June 5, 1997, the project was continued to July 10, 1997.

At the July meeting the item was continued to August 7, 1997 because of no significant developments in the project.

August 7, 1998 the item was moved to be rescheduled and renoticed pending information provided by the USACE on their assessment of the environmental document (Caltrans estimated the Corp. issues to be resolved no sooner than November 1997). The item came up again at the May 7, 1998 Planning Commission under old business as an update of the project. At that time, Caltrans noted it was close to completing the third annual river mouth monitoring report.

Estimated completion was June 1998. The report was made available to the County in August 1998. August 20, 1998, the project was continued due to time constraints of the agenda. The project was rescheduled for a public hearing on September 17, 1998.

Open the public hearing; receive staff report and public testimony; close public hearing and on the basis of the submitted evidence find either 1) that evidence exists to make the required findings and approve the project subject to the recommended conditions of approval, including the requirement for submittal of 5-year post approval monitoring reports and indemnification and hold harmless agreement between Caltrans and the County; or 2) to find that sufficient evidence does not exist to make the required findings, and continue the project until the completion of the Environmental Assessment required by the USACE for the Section 404 Permit or deny the project, with or without prejudice. Note: This project has been found to be exempt from CEQA by Caltrans as the Lead Agency.

Commissioner Garrett Smith asked if the USACE's environmental assessment had been released yet? Michael Wheeler contacted the USACE on September 11, 1998. The update memorandum on the status was submitted in the supplemental packet for the Commission's review. The USACE is considering a letter of modification to the 404 permit, which was issued under an emergency status, that would require additional monitoring and impose special conditions. A draft environmental report has been completed by the Eureka Army Corp, and is being reviewed by the S.F. division. Final determination has not been made. Further studies and monitoring would be the responsibility of Caltrans, as the USACE has no budget for the work. Caltrans has continued to work with the USACE and the City of Eureka on a joint agreement for a mitigation site (located off-site) to offset the wetland impacts.

Chairman Fleschner asked if there is a new project taking place in this area?

Steve Werner said Caltrans is currently performing some bank stabilization and storm work. This project is not associated with the RSP per say.

Chairman Fleschner asked why does the RSP need a CDP and the new project not?

Steve Werner stated the current work is associated with the storm activity of last winter, and is qualified for an exemption from the Coastal Act under the Firestone exemption. The current work is within the right of way of the highway. The project heard tonight is prior to the Firestone exemption.

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SPEAKERS AGAINST:

John White, 3412 Letz Ave., McKinleyville.

- Submitted a written letter of testimony included in the cumulative packet submitted at the meeting.
- He stressed his testimony is based upon facts and not opinions of possible future effects.
- Two local geologists support the bluff property owners contention that the Caltrans RSP is responsible for the accelerated erosion of the bluff.
- Pointed out photos displayed for the Commission's review. Mr. White described the historical erosion of the bluff area.
- The one side installation of the RSP has had a predictable effect on the erosion of the sand spit and bluff area.
- Built his house in 1995 with retirement funds. He and his wife followed the advice of geologists as to the placement of their house on the bluff, based on the historical erosion of the bluff area.
- At least twenty feet of his property has been lost to the erosion of the bluff, caused by the dynamic whirlpool effect.
- The vegetative slope of the bluff is now bare.
- 39 facts show that Caltrans did not need to block the northern migration of the Mad River in the way they did.
- Property owners are currently losing land. The Commission should make a decision now. Delaying a decision equates to damage to bluff property owners.

Harry Conner, 3578 Letz Ave, McKinleyville.

- Submitted a letter of testimony for the Commission's review.
- Corrections to the 1998 Caltrans' Monitoring Report include the low priority by the USACE on the cover letter to the report, the Arcata Business Park mentioned should be the Airport Business Park (noted in Section: Other Studies), and Caltrans' implications in the study are incorrect.
- Historically, the changes in Widow White Creek were directly caused by the northern migration of the Mad River. The reversal of the historical pattern and the accelerated erosion on the banks of the Mad River occurred only after the RSP was installed in 1992.
- The erosion noted in the study only refers to that of the Widow White Creek and not the Mad River.
- The RSP was expected to and did cause accelerated erosion to the banks of the Mad River.
- He encouraged the Commission to make their decision tonight.

George Owens, P.O. Box 2039, McKinleyville.

- Described the photos displayed before the Commission.
- Submitted cumulative material packets for Commission review, which includes photos, fact sheets, reports, and references.

-This project should not have been considered an emergency. Western Municipal court case referenced. Foreseen events can not be allowed to become an emergency and then be acted on as an emergency.

-The Shore Protection Manual says both sides of a river should be rocked. Engineering reports state without rocking both sides of the river, there will be migration of the mouth back to the opposite direction.

-The RSP is the cause of the accelerated erosion to the bluff area.

-Time is of the essence in this project due to the damage of property. The Caltrans proposed dates are not a satisfactory time line of events.

-Permit Streamline Act (California G.C. Articles 6592-6598) only allows for 270 days. This project has been going on for 6 years.

-He requests the Commission make their decision tonight and let the project go onto the Board of Supervisors.

SPEAKERS FOR:

Charlie Fielder, Caltrans Hydrologic Engineer, 1556 Union Street, Eureka.

-The last monitoring report was the last report required by the USACE.

-There has been more localized erosion at the terminal end of the RSP.

-There is a sand spit forming on the north end of the RSP. The dune structure is lower due to the lack of replenishment, the northerly winds, and sediment settling upstream.

-Caltrans did what was necessary to allow the river the opportunity to move back to the historical mouth at School Road.

-The forecasted migration did not take place. But the RSP kept the river from migrating further to the north.

COMMISSION DISCUSSION:

Commissioner Garrett Smith asked if the damage to the north would have included Clam Beach? Charlie Fielder answered it is purely speculative how far to the north it would have effected. It could have transected with the Highway.

Commissioner Gearheart asked which dune removal was he referring to? North or south? Charlie Fielder said he was referring to the dunes to the south.

Chairman Fleschner asked if Caltrans believed the river would not have effected the highway? Charlie Fielder said the rock would have to be placed, because the erosion was already affecting the highway prism. Chairman Fleschner asked Mr. Fielder, as a hydrologist, if he believed the placement of the RSP contributed to the accelerated erosion that is currently taking place?

Charlie Fielder stated in his opinion, the RSP has not contributing to the accelerated erosion upstream. Erosion was already taking place upstream before the installation of the RSP.

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Commissioner Gearheart asked what was included in the revised Exhibit A-2? Michael Wheeler said Exhibit A-2 contained Caltrans' preferred wording for the monitoring and the deletion of the hold harmless clause.

Chairman Fleschner was disturbed by the time, energy, and materials spent on a project that really has not changed significantly over the past 2 years of hearings. The Commission has a responsibility to review all projects with a careful eye. The Commission has let Caltrans know that specific details of the project are needed and need to be addressed. He believes Caltrans knew that the project as proposed would most likely cause erosion to the south.

He has personally seen the erosion caused by the RSP. Chairman Fleschner believes Caltrans has been directly asking the Commission, because of the overwhelming need to keep Hwy 101 open, not to give this project the same kind of review the Commission is required to give all projects.

He is not comfortable with the hold harmless clause in the conditions. He does not think the Commission should approve a project when evidence is presented and the foreseeable is obvious.

He believes the Commission has an obligation to make a decision and let the project go to the next level. He suggested the permit be denied and have it resubmitted with real attention to the specific items the Commission has requested.

Commissioner Whitchurch agreed the Commission can not make the finding with regards to the project not causing detriment to the public health, safety and welfare as it stands currently. The facts show the RSP is accelerating erosion.

Commissioner Garrett Smith said Caltrans did what was best for the Vista Point. But the finding can not be made for #4. He supports a motion for denial to stop the current erosion of land. Commissioner Whitchurch believes Caltrans did believe the highway facility was being threatened. But under the permit, the Commission must make all required findings; and he does not believe finding #4 can be made.

THE MOTION WAS MADE (Whitchurch/Garrett Smith) to deny the project, based upon the fact that sufficient evidence does not exist to make required finding #4: The proposed development and conditions under which it may be operated or maintained will not be detrimental to the public health, safety, or welfare.

THE MOTION PASSED 4-0-1. Commissioner Blyther abstained from the project.

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CALIFORNIA
COASTAL COMMISSION

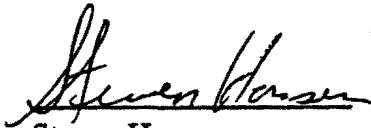
MITIGATION AND MONITORING PROPOSAL

FOR WETLAND IMPACTS
FROM THE RIPRAP PLACEMENT
AT THE MAD RIVER MOUTH, HUMBOLDT COUNTY,
ROUTE 101 POST MILE R94.5

01-HUM-101-R94.5
EA 30320K

June 1999

Prepared by:



Steven Hansen
Associate Environmental Planner (Biologist)
Environmental Management Office
Caltrans, District 1

EXHIBIT NO. 7
APPLICATION NO. A-1-HUM-98-088 and 1-92-69
DRAFT MITIGATION PLAN
(Page 1 of 15)

L. PROJECT DESCRIPTION

Project Location

This project is located near Highway 101 and the community of McKinleyville, at post mile 94.5 in Humboldt County (figure 1).

Project History (Appendix 1)

In November 1991, Caltrans started an emergency repair project to prevent the loss of Highway 101 as a result of bank erosion from exposure to wave and tidal action at the mouth of the Mad River. Construction on this project started in January 1992.

The original project proposal on November 26, 1991 was for a linear strip of riprap along the base of the slope parallel with Highway 101 for 2300 feet to protect the highway from the Mad River. This preliminary proposal estimated wetland impacts of up to 5 acres by filling dune hollow wetlands. As the project progressed, it was scaled back to a linear strip of riprap 1300 feet long on December 5, 1991 which was estimated to impact 1.3 acres of dune hollow wetlands.

On February 5, 1992, after construction had started, the project was re-designed to place a curving strip of RSP along the natural bank of the Mad River that directed the flow seaward and prevented continued northward migration of the river mouth.

Permit History (Appendix 2)

The original U.S. Army Corps of Engineers permit identified both 1.3 acres of wetland impact (page 1), and 3.5 acres of wetland impact (Special Conditions to Permit No. 19454N66). The 12/20/91 wetland delineation prepared by Caltrans showed the 19-acre study area contained 3.0 acres of wetlands. The Caltrans project (December 5, 1991 proposal) would impact 1.3 acres of wetlands (Appendix 3).

On February 5, 1992, Caltrans requested an amendment to the Corps Permit (19454N66). This provided for a design change that would allow for construction of a curving strip of RSP along the natural bank of the Mad River that directed the flow seaward and prevented continued northward migration of the river mouth. This was what was constructed. A re-evaluation of impacts to jurisdictional wetlands was not included in the permit amendment request.

In 1995, Caltrans completed an extension of the riprap that extended upstream from the existing riprap for approximately 1050 feet. This project was permitted under a separate Corps permit (No. 020748-ON-66) and did not involve any impacts to jurisdictional wetlands.

Responsible Parties

The project proponent is the California Department of Transportation (Caltrans) in cooperation with the Federal Highway Administration (FHWA). The local contact person at Caltrans is

Deborah Harmon, Chief, Environmental Management Office, P.O. Box 3700, Eureka, CA 95502-3700, (707) 445-6416.

Project Impacts

Based on the analysis of aerial photographs taken June 2, 1992 and the wetland delineation map prepared December 20, 1991 we were able to determine the actual extent of impacts to jurisdictional wetlands from the construction of this project. Analysis of these photographs indicates the disturbance by construction activities of 0.76 acres of dune hollow wetlands and 6.09 acres of dune uplands.

An additional 11.1 acres of vegetated dunes containing 0.32 acres of dune hollow wetlands were washed away by the river before the bank stabilization project was initiated. The riprap used to protect the bank was placed within an excavation in the area that had already been eroded by the Mad River and covers approximately 2.25 acres. This does not include the 1995 riprap extension project.

The project, as constructed, resulted in disturbance of 6.85 acres of vegetated dunes containing 0.76 acres of interdunal swale wetlands, referred to as dune hollow wetlands (figure 2). These wetlands are fresh water wetlands within hollows between sand dunes. The hydrology for the wetland is related to the ground water table, and is influenced by seasonal precipitation, roadway drainage, and tidal fluctuations in the ground water table. Infrequently, the tidal surge may result in an influx of brackish water into the wetland.

Wetland Type, Function, and Value

This wetland functions as a specialized microhabitat for endemic plants and associated wildlife. Dune hollow wetlands may provide habitat for special status plant species, wildlife, and provide aesthetic and recreational opportunities for people. This wetland is within the view shed of the highway vista point at the Mad River Mouth, and is adjacent to the Clam Beach County Park. It does not provide habitat for any known rare or listed plant or animal species.

II. GOAL OF MITIGATION

The goal of the mitigation is to offset the loss of wetlands with dune hollow wetlands of a similar habitat function and value. Two mitigation sites were considered to compensate for the rip rap project impacts.

Mitigation Proposal

This mitigation and monitoring proposal provides Caltrans' plan of action for project related impacts to the 0.76 acres of dune hollow wetlands located adjacent to the riprap at the Mad River mouth.



Figure 2

AERIAL PHOTOGRAPH

HUM-101-94.5
09-30-91

SCALE 1:2400

RIPRAP (2.25 acres)

DISTURBED WETLANDS (0.76 acres)



NORTH

RIPRAP

NOT DISTURBED

TOP OF BANK

The on-site mitigation alternative consists of the restoration of the impacted 0.76 acres of dune hollow wetland on-site at a 1:1 ratio by restoring the existing degraded wetlands. An additional 0.84 acres of dune hollow wetlands may be created on-site for a total of 1.6 acres of wetlands. These wetlands have the potential to have the same function and value as the wetlands degraded or destroyed. They will also improve the aesthetic qualities of the construction site, and increase the overall area of dune hollow wetland in this vicinity.

The off-site mitigation alternative was to create approximately 5 acres of dune hollow wetland/upland which included 3.0 acres of dune hollow wetlands on City of Eureka property near the Eureka Municipal Airport on the Samoa Peninsula. This alternative is no longer being considered because this area has an abundance of known and suspected Native American archeological sites (Barry Douglas, pers. com.) which would be disturbed or destroyed by a wetland creation project. In addition, there is opposition from the county planners for the use of this site, and this site would be highly impacted by vandalism and illegal off-highway vehicle use.

Wetland Type, Function, and Value

The proposed mitigation will eventually provide the same quality wetlands on-site and contiguous with dune hollow wetlands in Clam Beach County Park. The Hammond Trail, a recreational hike/bike trail, is proposed for construction adjacent to these wetlands along the inland side. After restoration, the site will again provide habitat for a variety of wildlife species, and will provide non-consumptive recreational use opportunities such as natural scenic views of the dunes, bird watching and wildflower displays. The hydrology for the proposed wetland is related to the ground water table, and is influenced by seasonal precipitation and tidal fluctuations in the ground water table. Other than interflow through the sand, evaporation and transpiration by plant life, there is no outflow from the dune hollow.

Time Lapse

Since the completion of the riprap construction in April 1992, there has been very little revegetation of the extant disturbed wetland by native plant species within the project area. Limited willow, Baccharis, and Juncus recruitment has occurred, and there has been extensive invasion by European beach grass, bush lupine, and pampas grass. Based on this observed slow natural recovery rate, the long-term goal habitat is proposed to evaluate an early to mid seral stage of the vegetative community rather than the late seral stage found within the adjacent control plot. The time lapse for proposed monitoring and evaluation is five years from planting.

The wetland mitigation design and construction will occur upon approval of this mitigation and monitoring plan by the U.S. Army Corps of Engineers, County and State Coastal Commission, and other regulatory agencies. Mitigation design will include detailed soil treatment, planting, grading and fencing details. A one-year plant establishment monitoring will be a requirement of the construction contract. Subsequent monitoring and evaluation will be completed by Caltrans biologists. Remediation will be accomplished through separate contracts if found to be needed.

Estimated Cost

The funds available for wetland impact mitigation as a result of the Mad River riprap project are \$350,000 for planning, design, construction, and monitoring. Right-of-Way costs are not included since this parcel was acquired for construction staging and access related to the riprap placement. Contingency, maintenance, and supplemental planting costs are not estimated.

Special Aquatic Habitats

The interdunal swale wetland is a component of the dune / dune hollow complex formed along the windward beaches by wind-driven sand and the presence of surface water. The ratio between upland and wetland probably has a significant ecological value for indigenous plants and animals.

Also, the location of the dune hollows within the dune structure is probably an important component of the microclimate. In this location, we are fortunate enough to have adjacent dune / dune hollow habitats, which we will be using as a model to determine configuration, size, and location of the proposed dune hollow mitigation. The adjacent habitat will also be used as a control to provide the planting palette and to evaluate project success criteria.

III. FINAL SUCCESS CRITERIA

Target Function and Values

The proposed wetland mitigation target function is to provide similar and contiguous wildlife and plant habitat as is found within the control plot to the north. Site restoration will provide aesthetically pleasing views and opportunity for wildlife viewing.

The plant establishment objective is to have a first year survival rate of greater than 50% by stem count. Wetland revegetation will be considered successful if herbaceous plus woody cover is greater than 50% by the end of the five-year monitoring period, regardless of whether the plants were transplanted or volunteer. If cover is less than 50% at the end of the monitoring period, remedial planting will be done during the final monitoring year, and monitoring will continue until the success criteria is met or modified by consensus of the regulatory agencies.

Species diversity and evidence of natural reproduction will be evaluated in comparison to the control plot keeping in-mind the difference in seral stages. The objective for species diversity and natural reproduction will be met when plantings plus natural colonization diversity of dominant plant species approximates the control, and there is evidence that invasive non-native plants are being excluded naturally within the habitat.

Vegetation will consist of both persistent perennial species and non-persistent herbaceous annual species. Evaluation should be done in the late spring when the relative cover component of each group is present.

The target hydrologic regime is to have ponding up to 2 cm deep in 50% or more of the wetland from January to May (winter and spring) with soil saturation in the root zone (upper 30-cm) in 75 % or more of the wetland from January through July. This is to be compared with the control hydrology to meet or exceed the soil saturation and duration within the control plot.

Jurisdictional Acreage to be Created/Enhanced

The target acreage of wetlands to be restored (enhanced) is 0.76 acres with an additional 0.84 acres to be created for a total acreage of 1.6 acres within the 6.85-acre dune complex.

IV. PROPOSED MITIGATION SITE

Location and Size of Mitigation Area

The proposed mitigation site consists of graded sand dunes and degraded dune hollow wetlands adjacent to the riprap placed to divert the Mad River mouth. Grading disturbance, clearing and grubbing, and stockpiling rock for construction of the riprap degraded the wetlands. The disturbed areas have partially revegetated with a mix of beach strawberry, sand verbena, European beach grass, coyote brush, willow, wiregrass, yellow bush lupine, and pampas grass. The proposed mitigation will restore the 0.76 acre degraded wetland and expand the dune hollow wetlands to 1.6 acres by increasing the net wetland area within the disturbed construction zone (figure 3). The total disturbed area is 6.85 acres including uplands.

Ownership Status

The mitigation area is within a parcel of land owned by Caltrans. The purpose of this Right-of-Way parcel was to provide for a construction staging area. Since it is no longer required for construction staging, on-site restoration for wetland impacts is now being proposed. No other uses for this parcel are being considered. After the mitigation is complete, the parcel will remain in Caltrans ownership to allow for maintenance access to the riprap.

Existing Function and Values of Mitigation Area

To gain access onto the beach the public currently walks through the mitigation area. It provides a disturbed sand dune and dune hollow wetland habitat for colonization by plants that favor disturbed conditions. It is used by various wildlife species for foraging habitat. It detracts from the aesthetic value of the surrounding area.

Jurisdictional Delineation

A jurisdictional delineation map prepared in June 1999 shows that the site contains approximately 0.76 acres of wetlands with atypical soils and atypical vegetation (figure 4). The presence of ponding and wetland hydrology within this area during a substantial portion of the growing season, and colonization by native wetland vegetation leads to the conclusion that, if left undisturbed, this portion of the site would eventually recover into a functional dune hollow

Figure 3

PROPOSED MITIGATION AREA
WETLAND MITIGATION SITE
June 16, 1999

Project Boundary.....

Wetland Boundary.....

Aerial Photograph 4/1/99
Scale 1:2400

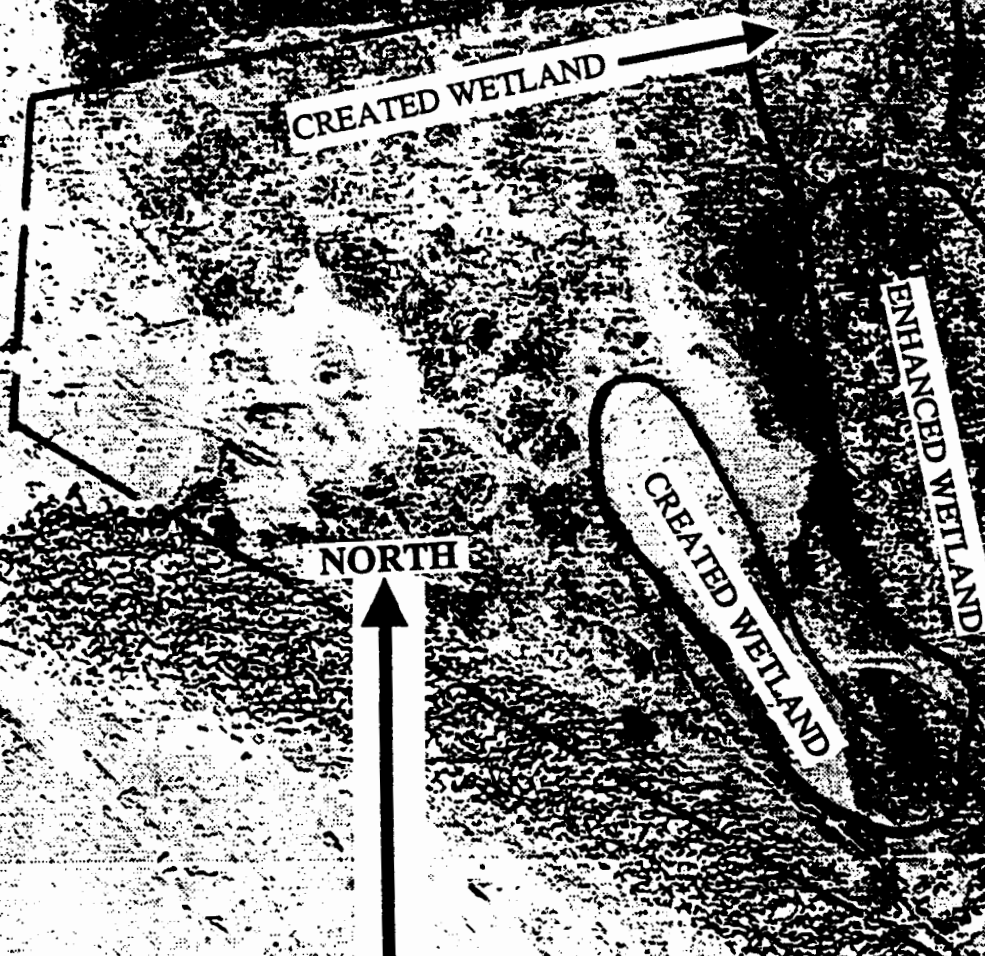


Figure 4

**WETLAND DELINEATION
WETLAND MITIGATION SITE**

April 7, 1999

Study Area.....

Wetland Boundary...

Aerial Photograph 4/1/99
Scale 1:2400



wetland. The remainder of the site (6.09 acres) would continue to provide dune upland habitat with the dominant vegetation consisting of European beach grass.

Present and Proposed Uses of Adjacent Areas

The adjacent areas both north and south are zoned recreational and part of Clam Beach County Park. The area to the east is Highway 101 and to the west is the ocean. No change in use is expected to occur in the future.

Zoning

The county zoning of this area is "Public Recreation (PR)" with a defined purpose: to protect publicly owned lands suitable for recreational development or resource protection. The zoning to the north is also PR, with areas of "Natural Resources (NR)" within the parcels at Clam Beach County Park. The area south of the river mouth is zoned PR with lands further south zoned NR.

The defined purpose of NR zoning is to protect and enhance valuable fish and wildlife habitats and provide for public and private use of their resources, including hunting, fishing, and other forms of recreation. The site is within County Coastal Zone jurisdiction.

V. IMPLEMENTATION PLAN

Rationale for Expecting Implementation Success

The site currently consists of 0.76 acres of degraded dune hollow wetlands, which will be enhanced through grading and revegetation. The likelihood of success in this effort is excellent, based on the extant colonization of wetland vegetation and the naturally occurring hydrology. Success of the creation of an additional 0.84 acres of dune hollow wetlands is dependent on the occurrence of natural fresh-water hydrology at a shallow depth and sufficient duration to support a dune hollow wetland. If the natural hydrology is not present, then the attempted wetland creation will progressively revert to upland vegetation over time.

Responsible Parties

The mitigation proposal has not yet been assigned to a Project Manager. Until that happens, the local contact person at Caltrans is Deborah Harmon, Chief, Environmental Management Office, P.O. Box 3700, Eureka, CA 95502-3700, (707) 445-6416.

Schedule

The preliminary schedule for this monitoring plan is as follows:

Draft Mitigation Plan, Review	June 1999
Final Mitigation Plan, Review and Adopt	August 1999
Draft Construction Plans, Permits	June 2000
Final Plans, Specifications and Estimates	December 2000
Construction: Grading	September 2001

Construction: Planting
 Monitoring
 Remedial Planting (As required)

December 2001
 June 2002 - 2007
 February 2003 - 2007

Site Preparation

A site grading plan and quantity estimate will be prepared using a survey of the existing topographic condition. Depth of the grading will be determined by the placement of groundwater monitoring wells within the proposed dune hollow wetland. This will result in hollows and ridges (artificial dunes) similar in topography to the adjacent natural dune hollow wetlands/uplands to the north. Ridge and hollow elevations and orientation will correspond to the natural landscape. The site will be graded to an elevation that will sustain a dune hollow wetland through groundwater interflow hydrology. Graded soil will be used to create the ridges within the dune hollow complex. If there is a surplus of sand to be removed to establish the proper elevations for dune hollow wetlands, this material will be placed on the riprap. Volumes and grading plans

Subsequent to grading, invasive non-native plants remaining within the wetland mitigation area will be removed by hand. The plant material will be disposed of by burning or by off-site disposal. The site will be signed, and fenced with wire field fence to protect it from illegal OHV activity. The fence will be maintained through the monitoring period.

Planting Plan

Species	Spacing	Quantity	Type
<i>Juncus leseurii</i> Salt rush	18 in.	15,488	plug
<i>Carex obnupta</i> Slough sedge	18 in.	15,488	plug
<i>Rubus ursinus</i> California blackberry	4 ft.	2,178	container
<i>Potentilla anserina</i> Pacific silverweed	4 ft.	2,178	stolons
<i>Salix hookeriana</i> Coast willow	6 ft.	968	cutting
<i>Myrica californica</i> Wax myrtle	10 ft.	348	container
<i>Lonicera involucrata</i> Twinberry	10 ft.	348	container
<i>Picea sitchensis</i> Sitka spruce	15 ft.	154	container
<i>Baccharis pilularis</i> Covote brush	3 ft.	3,872	cutting

Figure 5 Planting Table
 (50% Cover Density)

mitigation.

Invasive pest plants will be removed from the wetland areas by hand on an annual basis. Depending on the magnitude of the problem, this will be done by Caltrans staff during periodic maintenance and monitoring, or by supplemental contract

Responsible Parties

The maintenance of the mitigation site will be assigned to a Maintenance Manager upon completion of the construction contract. Until that happens, the local contact person at Caltrans is Deborah Harmon, Chief, Environmental Management Office, P.O. Box 3700, Eureka, CA 95502-3700, (707) 445-6416.

Maintenance Schedule

The proposed periodic maintenance schedule is for one site visit in the late spring (May or June) and one site visit in the late fall (October). This will provide the opportunity for the removal of exotic pest plants before they complete the reproductive cycle, but after they have reached maturity and are easily recognized. Unscheduled visits to maintain the fencing will be done on an as-needed basis.

VII. MONITORING PLAN

Performance Criteria

Plant establishment will be monitored for one year by the contractor with an objective of having a plant survival rate of 50%. At the end of the first year, supplemental planting to replace missing and dead plants will be done to achieve the 50% survival criteria. A second year of monitoring would then be required from the contractor to achieve the 50% plant establishment criteria.

The objective at five years is a 50% canopy cover within the dune hollow wetland consisting of both annual and perennial species. Canopy cover will be evaluated at three randomly selected locations within the wetland which encompass a large enough area to be representative of the habitat type. Plant species diversity and evidence of natural reproduction will be evaluated in comparison to the control plot keeping in-mind the difference in seral stages. The objective for species diversity and natural reproduction will be met when plantings plus natural colonization diversity of dominant plant species approximates the control, and there is evidence that invasive non-native plants are being excluded naturally within the habitat.

Monitoring Methods

Monitoring will be done in the late spring to account for the presence of both herbaceous annuals and perennial plant groups in the mitigation area. Evaluation techniques may use aerial photographs, remote sensing, quadrats, visual observations, photo stations and other qualitative

evaluation techniques for determining plant cover and density. Measurements within the control plots will be done concurrently. The results of the mitigation monitoring will be compared with measurements taken in the control plots and evaluated for progress, success, or failure. If the mitigation objectives are not reached, the site plan will be reevaluated to determine why, and if appropriate, additional planting will be done the following winter to meet the project plant establishment objectives.

Caltrans will provide biologists for site monitoring and reporting; and will initiate supplemental planting or exotic pest plant removal if they are required for the site objectives to be met.

Annual Reports

A report on the progress of the mitigation site will be prepared for the first year evaluation by January 2003. Subsequent reports shall be prepared annually in January. The final report on the five-year objectives will be prepared by January 2008. Copies of the report will be provided to the Corps.

The annual reports shall include:

- a. A list of names of all persons who prepared the report and participated in the monitoring activities
- b. A copy of the Corps Permit, any attached Special Conditions, and any subsequent letters of modification, as an Appendix
- c. Analysis of all qualitative monitoring data (success, failure, and remedial action). Graph and table format is preferred.
- d. Prints of all monitoring photographs (colored copies are acceptable).
- e. Maps identifying monitoring areas, transects, planting zones, etc. as appropriate.

Copies of all field data sheets shall be available for Corps review upon request.

VIII. COMPLETION OF MITIGATION

The completion of the initial site development will be reported to the Corps in an "As Built" report for the mitigation project. Completion of the mitigation plan and level of attainment will be reported in the final mitigation report, which should be completed in January 2008. If remedial planting and additional monitoring is necessary, the final report will be provided after the project meets the success criteria.

IX. CONTINGENCY MEASURES

Initiating Procedures

If additional plantings are required, Caltrans may do them through contracting. Generally, these contracts utilize the California Conservation Corps for planting crews, but they may be awarded to private contractors, as needed. With the concurrence of the Corps, initiation of the supplemental planting contracts will result when Caltrans monitoring reports indicate a lack of success in meeting stated plan objectives, and the supplemental planting is determined to be desirable.

Alternative Locations for Contingency Mitigation

No other locations are currently being considered as alternative mitigation sites. If the proposed site does not meet the necessary mitigation for a 1:1 ratio of wetland impacts, discussions with the Corps and other regulatory agencies will be initiated to determine if off-site mitigation is necessary or desirable.

Funding Mechanism

If contingency procedures are determined to be necessary to achieve the mitigation goals, Caltrans, with FHWA participation, will make funding available.

Responsible Parties

Caltrans will implement the mitigation monitoring and contingency procedures. The local contact person at Caltrans is Deborah Harmon, Chief, Environmental Management Office, P.O. Box 3700, Eureka, CA 95502-3700, (707) 445-6416.

X. REGULATORY REQUIREMENTS

The construction of the mitigation site will satisfy regulatory permits issued by the Corps of Engineers for the placement of the riprap. For Section 404 permitting, it is expected that the site construction will meet the requirements of Nationwide Permit 27 "Wetland and Riparian Restoration and Creation Activities". A coastal development permit from Humboldt County will be required. A 401 Certification/Waiver from the Regional Water Quality Control board is required. Since the restoration project does not involve jurisdictional waters of the state, nor state listed species, no permit from the California Department of Fish and Game is required. However, the California Department of Fish and Game will be provided the opportunity to review and comment on the mitigation proposal.

The project is not within coho salmon designated critical habitat and will have no affect on this species. Consultation with National Marine Fisheries Service is not required.



John R. Selvage, PE.
K. Jeff Nelson, PE.
Roland S. Johnson, Jr., C.E.G.

CONSULTING ENGINEERS
& GEOLOGISTS

812 W. Wabasn
Eureka, CA 95501-2138
(707) 441-8855
FAX (707) 441-8877

480 Hemsted Drive
Redding, CA 96002-0
(916) 221-5424
FAX (916) 221-0135

Reference: 095094

December 7, 1995

Mr. Harry W. Conner
P.O. Box 2358
McKinleyville, CA 95519

EXHIBIT NO.	8
APPLICATION NO.	A-1-HUM-98-088
	and 1-92-69
	JOHNSON GEOLOGIC
	REPORT
	(Page 1 of 3)

**SUBJECT: COMMENTS ON ACCELERATED EROSION AT THE TOE OF THE
COASTAL BLUFF BY THE MAD RIVER UPSTREAM OF THE
CALTRANS RSP STRUCTURE**

Dear Mr. Conner:

At your request, I have recently conducted field investigations and reviewed various documents and photographs relative to erosion and slope failure of the bluff along the east bank of the Mad River between Widow White Creek and the river mouth. The investigations I conducted were relatively limited and the conclusions should be considered qualitative rather than quantitative. As a result, I cannot concisely differentiate which of the various interrelated erosion processes is more significant than the others without more extensive study and analysis.

I have been observing the effects of the northward migration of the Mad River since the spring of 1981 when the river mouth was approximately 1500 feet north of its confluence with Widow White Creek. During this period I have conducted numerous bluff failure hazard and geologic hazard evaluations for bluff top property owners.

At this time there are approximately 8 private parcels (6 with residences) where the bluff toe has been eroded away and the bluff slope is beginning to slide down to the river bank. Bluff slope failure on the northerly 2 parcels is so extensive that portions of the gently sloping bluff top (the useable land) have broken off. A variety of erosional processes have, and will continue to adversely impact this coastal bluff.

It is my opinion that the primary cause of the accelerated erosion is due to ocean waves that enter the river mouth, advance upstream, and expend their energy by loosening the unconsolidated soil at the river bank. The loosened soil is then washed into the river to be carried away by the river current. In most places along the Mad River Estuary this erosion has removed sand dunes and has not encroached onto the base of the bluff. Erosion and bluff slope failure effecting you and your neighbors to the south is far more severe than along other segments of the Mad River Estuary. Without some form of stream bank stabilization major portions of your properties are likely to continue to erode and slide into the river.



Mr. Harry W. Conner

December 7, 1995

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Erosion of the bluff base began a relatively short time after the river mouth moved passed each of your properties. The highest erosion rates occurred when the river mouth was opposite and within a few hundred yards north of each property, and primarily during stormy winter periods. As the mouth migrated further, and wave energy focused on new areas in the immediate vicinity of the river mouth, erosion rates declined. At some distance, the erosive effects of waves originating in the ocean became negligible when compared to river bank erosion processes. I do not know what the maximum distance is, but I have observed wave erosion occurring more than 1/2 mile upstream of the river mouth during high tide when a large surf was running.

Now that the river mouth has been stabilized by installation of rock slope protection (RSP) and it is no longer able to continue migrating northward, river bank areas exposed to wave erosion are likely to be regularly impacted far into the foreseeable future. An additional problem resulting from placement of (RSP) in the river mouth area is that a significant amount of the wave energy that was previously expended on the sandy banks and beaches adjacent to the mouth is now reflected seaward, toward the landward side of the sand spit, and up the river to areas not protected by RSP. Another issue of concern is that with the north bank of the river mouth "stabilized", occasional southward shifting of the mouth or marked widening of the mouth will exposed unprotected areas of the east bank of the river to additional accelerated erosion. One or a combination of these events occurred after the first phase of RSP installation (in 1992) when a relatively large area of unprotected river bank immediately south of the RSP structure experienced accelerated erosion severe enough to warrant installation of an additional 1000 feet of RSP in 1995.

The latest installation of RSP extends upstream of the south edge of the present river mouth a few hundred feet. It is probable that accelerated river bank erosion and bluff slope failure is now going to occur upstream of the newly placed RSP. It is less than 600 feet from the south end of the new RSP structure to your northern property line and only a few thousand feet more to each of your neighbor's parcels. Since you and your neighbors have already experienced serious failures of the bluff slope and portions of the bluff top, any amount of accelerated erosion is going to aggravate the damage. I must also point out that whatever river channel or bluff base changes occur in the near future, you should expect substantial continued bluff slope failure due to the highly unstable character of the bluff face in its current oversteepened condition. If no stabilization measures are installed, you and your neighbors can expect to experience chronic large scale failure of the bluff slope. Eventually, the bluff top is likely to retreat significant distances eastward with the most rapid retreat occurring at the northern properties.



Mr. Harry W. Conner

December 7, 1995

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When the Mad River migrated northward past you and your neighbors property, a substantial amount of bluff base erosion and subsequent bluff slope failure was destined to occur. But the RSP installation which was installed to protect the highway and the scenic overlook can only increase the magnitude (or the rate) of river bank erosion in adjacent unprotected upstream areas. It is my opinion that the level of bluff erosion in the unprotected upstream region became worse subsequent to the placement of the original RSP structure in the selected configuration. To make matters worse, installation of the new 1000 foot RSP segment is likely to reflect more wave erosion energy toward you and your neighbors than if it had not been installed.

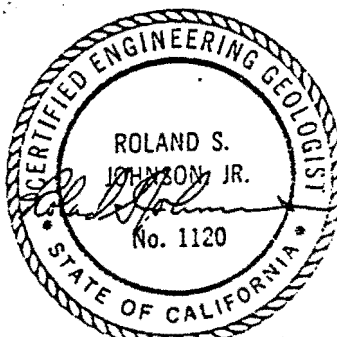
Effective river bank stabilization measures for your property and your southerly neighbors will be expensive and subject to a complex permitting process. If you want to discuss ways to proceed from here, let me know.

Sincerely,

SHN CONSULTING ENGINEERS
& GEOLOGISTS, INC.

Roland S. Johnson, Jr.
Principal Engineering Geologist

RSJ:ls





turn the Mad River seaward. This was done to prevent the river from continuing its northward migration and threatening U.S. 101 north of the RSP. This leg was constructed along the north bank of the mouth of the River.

4. In 1995, in response to serious erosion of the bluff that had occurred south of the 1992 RSP, Caltrans extended the long leg about an additional 1000 feet south.
5. The erosion of the bluff on property owned by Humboldt County, which is just south of the southern end of the 1992 RSP, which began after the installation of the RSP in 1992 and continues today, was predicted in the 1993 report prepared for Caltrans by independent consultants.
6. In 1992, a foredune-covered sand spit separated the Mad River from the ocean. The northern end of this spit was the south bank of the mouth of the Mad River at the time. When Caltrans installed the RSP in 1992, the spit immediately began to erode away in response to increased wave energy in the mouth of the river. The erosion rapidly progressed southward and now the spit no longer exists between the 1992 RSP and Widow White Creek, a distance of about 3500 feet. As a result of the destruction of the spit, catastrophic erosion began cutting away the exposed toe of the bluff between the south end of the RSP and Widow White Creek. Today, the formerly vegetated bluff is mostly a bare-faced sand cliff torn by active landslides, and the base of the bluff is exposed to direct attack by ocean waves at high tide. The top-of-bluff is actively failing and will continue to until the bluff reaches a stable configuration. In addition, strong onshore winds pick up exposed loose sand on the bluff face and carry it inland a short distance before depositing it on homes, vehicles, and landscaping. Today the formerly verdant bluff-top area is becoming a sand deposit.
7. The bluff between the southern end of the 1995 RSP extension and Widow White Creek, where the north end of the sand spit is now located, now is very unstable. It has suffered serious, irreversible landsliding and erosion. What in 1992 was a vegetated slope now is mostly barren, unstable cliffs.

STATEMENTS OF OPINION

1. The long leg of the 1992 RSP and its 1995 extension have performed their intended purpose of protecting the portion of the directly bluff east of the structure from accelerated instability and erosion.



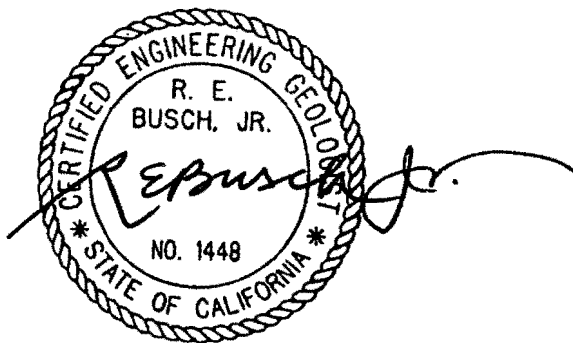
2. The accelerated erosion of the reach of bluff south of the southern end of the 1995 RSP extension, which occurred after that extension was installed, was predictable with a high degree of certainty because accelerated erosion had occurred previously at the southern end of the long leg of the 1992 RSP.
3. The failure of Caltrans to immobilize the mouth of the Mad River by also installing RSP along the south bank of the mouth of the river at the same time it installed the short leg of the RSP along the north bank of the mouth was—from an engineering perspective—a flawed decision that ultimately was directly responsible for the progressive southward widening of the mouth, the destruction of the sand spit, and the catastrophic destabilization of the bluff east of the river south to Widow White Creek.
4. To diminish the environmental devastation that predictably would occur in response to the new, high-energy regime created by the RSP, Caltrans could have installed RSP farther south along the east bank of the river, to Widow White Creek, for example. Other feasible engineering options also existed and have been documented.
5. The loss of the sand spit between the 1992 mouth of the river and Widow White Creek, with the resultant exposure of the base of the bluff to ocean waves and scour by river currents, dramatically accelerated the erosion of the unprotected bluff between the 1992 RSP and Widow White Creek.
6. In conclusion, the accelerated erosion of the bluff between the southern end of the RSP and Widow White Creek would not have occurred as it did if Caltrans instead had installed RSP on both the north and south sides of the mouth of the river, or if Caltrans had placed RSP along the west edge of the highway between the Vista Point overlook and Little River to the north. Although the chosen Caltrans RSP design effectively stopped the northward migration of the river and protected U.S. 101 and the Vista Point overlook, the design failure caused irreversible bluff instability and marine erosion of the east bank of the river south of the project.
7. Unless the base of the bluff is protected from ocean waves south of the RSP to Widow White Creek, chronic bluff failures, erosion, and sandstorm effects—which are a direct consequence of the configuration of the RSP--will continue along that stretch of coast into the foreseeable future. It is also likely that as a direct result of the bluff failures and erosion, one or more homes will have to be destroyed or moved back from the top-of-bluff area in the imminent future.



8. Removal of the existing RSP will not stop the ongoing environmental damage initiated by the installation of the faulty RSP design. Only by extending RSP to Widow White Creek can Caltrans begin to compensate for the loss of the protective sand spit. Installing additional RSP will protect the base of the bluff from marine erosion, stabilize the upper portion of the bluff, allow native plant species to recolonize the bare slopes, and put an end to the sand storm effects impacting the homes along the bluff.

CERTIFICATION

The information and facts stated herein are correct to the best of my knowledge.



R. E. Busch, Jr., Ph.D.

C.E.G. #1448

Date: July 9, 1999

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September 14, 1998

BUSCH GEOTECHNICAL CONSULTANTS

**IN THE COUNTY OF HUMBOLDT
BEFORE THE HUMBOLDT COUNTY PLANNING COMMISSION**

**RE: Public Hearing on Caltrans Case No. CDP-02-95 and SP 19-95
Coastal Development Permit File No. APN 511-351-01**

STATEMENT OF R. E. BUSCH, JR., PH.D.

My name is R. E. (Bob) Busch, Jr. I am Registered Geologist #3862 and Certified Engineering Geologist #1448. Attached to this statement is a summary of my educational and professional background. My business address is Busch Geotechnical Consultants, 905 Sixth Street, Arcata, CA 95521. I have been a resident of Arcata, and have practiced geology in Humboldt County, since 1975. I make the following statements of opinion regarding the causes and consequences of the recent erosion of the bluff east of the mouth of the Mad River.

I am personally and professionally familiar with Mad River Beach, Clam Beach near Vista Point, the terminal reach of the Mad River between School Road and the mouth, and the coastal bluffs in these areas. Mad River Beach is a sand and gravel spit that protects the bluffs on the east side of the river from marine erosion. I have walked along sections of the east bank many times between School Road and the mouth, have taught Humboldt State University geology classes that took field trips to this area, and, as a consultant, have conducted engineering geologic studies of both private and public properties in the area. I am personally and professionally aware of the dramatically decreased stability and increased erosion rate of the coastal bluff near the mouth of the Mad River, which has occurred since 1992.



Beginning a few years ago, marine undercutting triggered widespread landsliding of the coastal bluffs along the terminal reach of the river. The bluffs are composed not of the regional bedrock but of easily erodible, poorly consolidated, Ice-age sediments. Landsliding is continuing unabated today. In 1996, in my professional capacity as an engineering geologist, and again within the last two months, I inspected the bluffs and shoreline of the river between about Widow White Creek and the Caltrans rock slope protection (RSP) at Vista Point.

Based on my general and specific knowledge I maintain the following:

1. The RSP at Vista Point was installed by Caltrans in 1992 to protect U.S. 101 along Clam Beach from erosion by the Mad River. The north end of the RSP turns westward, functionally becoming a groin rather than a RSP along a shoreline. The groin deflects the mouth of the Mad River westward, thus "freezing" the mouth of the river at its present location. The mouth will remain at this location until a low-probability event such as a great earthquake, marine storm, great flood, or combination of these events causes the river to breach the Mad River Beach south of the present mouth. There is no way to predict when such an event might occur.

2. Caltrans' decision to install a groin at Vista Point reduced the risk that additional RSP will have to be installed to protect U.S. 101 north of Vista Point, along Clam Beach. Presumably this decision saved the State millions of highway dollars.

3. The installation of the RSP caused predictable hydraulic effects and consequences. These were discussed in the 1993 Environmental Impact Statement (EIS) prepared by experts for CalTrans. The chief hydraulic effect was a dramatic increase in marine energy in the mouth of the river. One chief consequence was the rapid-rate erosion of the coastal bluff east and southeast of the mouth. Erosion was so rapid and serious that in 1995 the RSP was extended about 1200 feet to the south.

The erosion of the coastal bluff occurred because marine waves and tidal currents removed the "toe support" of the erodible bluffs. This caused the upper part of the bluff to become unstable and begin to landslide. Because the river mouth is now fixed in place and the landslide debris is swept away almost as soon as it reaches the river, erosion is now "biting" (backwasting) ever deeper into the bluff. To date, some property owners have lost up to about 20 feet of bluff-top land, and other land is at risk.

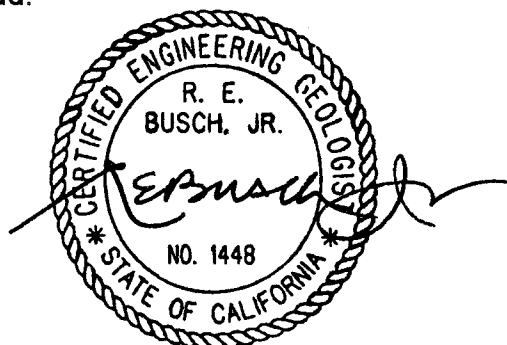


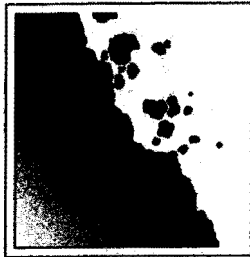
If this rate of erosion continues, which it is likely to, within a few years three of the homes on the bluff top will be destroyed or will have to be moved to the east. Previously, over a time-frame of many decades, the river mouth migrated steadily northward. This steady migration exposed the bluff to marine erosion for a comparatively short length of time. As the mouth moved progressively northward, the Mad River Beach (spit) and a foredune field grew corresponding northward, thereby protecting the bluff from marine erosion.

3. A second chief consequence of the installation of the groin at Vista Point was the erosion of the northern end of Mad River Beach and foredune field. This effectively widened the mouth and exposed more of the bluff south of the RSP to erosion.

4. Before 1992, when the RSP was installed, most of the bluff face between Widow White Creek and Vista Point sloped moderately and was covered by vegetation. Erosion rates were low. Now most of the bluff face is barren and is exposed to erosion by raindrop impact and sheet wash. In addition, the once uniform slopes have become steep slopes marred by landslide scarps.

5. At the time Caltrans elected to build the RSP and groin, it had other alternatives with fewer predictable harsh consequences. The best of the reasonable alternatives was to dig a channel through the Mad River Beach in the vicinity of School Road, and not build any groins or similar "hard structures" at this new mouth. Taking this approach temporarily would have re-established the river mouth at a southerly location, where it immediately would have resumed its natural northward migration. A much lower erosion rate over the length of the coast between School Road and Vista Point would have been the result. In view of the worsening damage to the residential properties between Widow White Creek and Vista Point, and of the additional repairs that are likely to be necessary to the RSP in the Vista Point area, it still is a reasonable alternative for Caltrans to relocate the mouth of the Mad River to the south, near School Road.





BUSCH GEOTECHNICAL CONSULTANTS

ABBREVIATED SUMMARY OF EXPERIENCE OF PRINCIPAL

Robert Edward Busch, Jr.

Education

Ph.D., Geology, University of California, Davis, 1983

M.S., Geology, University of California, Davis, 1983

B.S., University of Missouri, Columbia, 1967

Registry

California Registered Geologist #3268

California Certified Engineering Geologist #1448

Oregon Registered Geologist #G989

Oregon Certified Engineering Geologist #E989

Recent Pertinent Work Experience

**Present - 1985 Principal Engineering Geologist and Owner,
Busch Geotechnical Consultants**
Assumed full responsibility for the operation of an engineering
geology consulting business.

pre1985 - 1980 Staff Geologist
Part- to full-time with three northern California firms:
Griffith & Associates (Eureka), Huffman & Associates (Healdsburg),
and Northern Geotechnical Inc. (now a wing of SHN, Eureka).
Routinely assumed full responsibility for field investigations and
co-responsibility for reports.

1979 - 1975 Professor, Department of Geology, Humboldt State

D:92-CS1:Resume1.BGC

P.O. BOX 222 • ARCATA, CA 95518-0222 • 707-822-7300 • FAX 707-822-9011

Geotechnical and Geologic Studies for Land Development and Resource Management

DEPARTMENT OF TRANSPORTATION

NORTH REGION, EUREKA OFFICE, P. O. BOX 3700
EUREKA, CA 95502-3700
D Phone 707/445-6463
(707) 445-6416



January 15, 1999

FILE: 01-Hum-101-PM R94.1/R94.6
01-30320K
Place RSP at Mad River Mouth
USACOE File no. 20748N66

Mr. David Ammerman
U. S. Army Corps of Engineers
Eureka Field Office
P. O. Box 4863
Eureka, CA 95502

EXHIBIT NO.	10
APPLICATION NO.	A-1HUM-98-088
	and 1-92-69
	CALTRANS RESPONSE
	TO EROSION CONCERNS
	(Page 1 of 12)

Dear Mr. Ammerman:

In response to the September 30, 1998 Corps letter of modification and your letter dated December 11, 1998, we have prepared the attached comments to the letters responding to the U. S. Army Corps of Engineers Public Notice 20748N66, bluff erosion initial report, and alternatives analysis. A wetland impact study was prepared and discusses the discrepancy between the three acres of jurisdictional wetland that were reported to be impacted in 1991 and 0.76 acre we believe were actually filled after further review. This study is incorporated within the wetland mitigation plan that will be submitted to you under separate cover. We will consult with the Federal Highways Administration regarding the preparation of an Environmental Impact Statement to comprehensively address environmental issues of the two RSP projects. If you have any questions please contact Mitchell Higa of my staff at (707) 441-5855.

Very Truly Yours,

Deborah L. Harmon, Chief
Environmental Management Office

Attachments

c: Steve Werner, Cnty. of Humboldt
Robert Merrill - Calif. Coastal Comm.

MMH:mmh

bc: GMBanducci
KAjise
RSKnapp

CCFielder
SJHansen
JHoole, FHWA

MMHiga ✓ FAWythe
DLHarmon AAnziano

Mad River Bluff Erosion - Initial Report

Caltrans requested Jeffry C. Borgeld, Ph. D., Department of Oceanography, Humboldt State University to study the effects of the Caltrans rock slope protection project at the Mad River mouth. According to Dr. Borgeld, there have been recent environmental factors affecting the morphology of the lower Mad River. Some of these factors include ocean wave heights, Mad River discharge, and sea level elevations. Dr. Borgeld studied the area of concern and noted that the factors affecting the morphology of the river are accentuated during El Niño-Southern oscillation (ENSO); a phenomena which has caused winter sea levels to rise an average of 200-300 mm (0.7 - 1.0 ft) higher than normal. The winter of 1997-98 saw the largest discharge of the river caused by the greatest ENSO events on record. The ENSO event brought with it rainfall above normal considerably altering the morphology of the spit and estuary. Consequently, coastal sea levels were elevated above average and wave heights were significantly higher.

Dr. Borgeld also observed that during 1998 the Mad River was characterized by higher discharge and larger ocean waves which caused the inlet to erode to an unusual width of 1,000 m (3,300 ft). The elevated coastal sea levels and large waves flushed the sediment that embodies the lower spit resulting in a widened river inlet. This allowed ocean waves to enter the inlet during periods of higher water level and strike the eastern bank causing erosion and bluff retreat. Although the spit has rebuilt in the past it is difficult to speculate if the spit will do so once again. Past history of the river suggests that the spit will rebuild given the time and sediment load to do so. Past gravel extraction activities within the Mad River watershed may have been a major factor which prevented the rebuilding of the spit due to removal of mass sediment transport. In order to minimize/decrease the rate of erosion it is essential that the spit rebuild. In addition, the highly unstable character of the bluff should be considered. During a recent field review it was noted that subsurface water was emitting from the bluff, adding to the bluff instability. The origin of the subsurface water is likely perched ground water.

Dr. Borgeld concluded that because of the complexity/dynamics of the coastal line where the river mouth migration is occurring, predicting the future rate of erosion in the area of concern is difficult. Furthermore, the rate of retreat is highly dependent on the magnitude and the timing of the incoming wave power. The continuing combination of rainfall, sea levels and high waves resulted in the evident bluff erosion.

Permanently breaching the historic Mad River mouth near School Road would likely provide the most cost effective but controversial means of slowing the bluff erosion. One possible solution to slow or halt bluff erosion may entail implementing stricter watershed practices and regulations on activities such as gravel mining in order to help rebuild the sand spit separating the Mad River and the bluff. Another solution may be a combination of installing a drainage system and reducing the surface permeability of the bluff in order to minimize the effects of the possible perched ground water. The viability of such a drainage system is unknown at this time without further studies.

County jurisdiction and river flooding and erosion issues are generally under Corps jurisdiction. Caltrans became involved because of the Mad River at the coast threatened to undermine the Route 101 roadway; however Caltrans is primarily a transportation agency responsible for maintaining safe traveling conditions of Route 101 at this location. Caltrans could serve as a cooperating or responsible agency for an Environmental Impact Report/Statement.

5. **August 28, 1997 and April 10, 1998 letters from John White, George Owen, Harry Conner.** It is evident that a substantial amount of erosion at the bluffs south of the RSP project has recently occurred from the 1994-8 winter storm events. However it is unclear that the RSP project was the primary cause of the accelerated bluff erosion south of the RSP project. Aerial photographs of the bluffs taken before the RSP was placed indicate that erosion historically occurred at the bluffs. The amount of precipitation during 1994-8 was among the highest in recent recorded history for the area. Since the wet winter had followed several years of local drought, the amount of bank erosion resulting from the 1994-5 winter storms was unfortunate for both Caltrans and adjacent property owners, but not anomalous in the context of an extremely dynamic lower estuarine/upland/ocean interface. Coastal bluff retreat is a normal geologic process that is accelerated by El Niño weather events. The rapid coastal bluff erosion that occurred along the California coast during the 1982-3 El Niño event was similar to the coastal bluff erosion during the 1997-8 El Niño event.

During 1998, the Mad River was characterized by higher discharge and larger ocean waves which caused the inlet to erode to an unusual width of 1,000 m (3,300 ft). The elevated coastal sea levels and large waves flushed the sediment that embodies the lower spit resulting in a widened river inlet. This allowed ocean waves to enter the inlet during periods of higher water level and strike the eastern bank causing erosion and bluff retreat. Although the spit has rebuilt in the past it is difficult to speculate if the spit will do so once again. Past history of the river suggests that the spit will rebuild given the time and sediment load to do so. Past gravel extraction activities within the Mad River watershed may have been a major factor which prevented the rebuilding of the spit due to removal of mass sediment transport. In order to minimize/decrease the rate of erosion it is essential that the spit rebuild. For more information, refer to the Bluff Erosion Initial Report prepared by Caltrans staff; also refer to the response to the Sierra Club letter regarding a comprehensive upstream erosion study.

Caltrans staff attended the Humboldt County Planning Commissioners meetings when the revetment project at the Mad River mouth was on the agenda. We received copies of the information from County staff at these meetings. Caltrans staff also met with Humboldt County staff to discuss the appropriate environmental documentation for the two revetment projects. County staff concurred that Caltrans as lead agency was responsible for determination of the appropriate level of environmental documentation for the two projects.

Mad River flooding and erosion problems have historically occurred and will continue to occur in the future. Working with other public agencies and notifying the

public in advance, Caltrans constructed a RSP revetment as an emergency measure on one relatively short segment of the River for the sole purpose of protecting the Route 101 roadway. The project became an emergency requiring immediate action not only because of the sudden, rapid northward progression of the river, but that other agencies responsible for flood control were not taking any immediate action to prevent flooding and erosion damage. This project was not intended to be the only flood control strategy management solution.

6. **Michael Scalici Letter.** Since this letter was written, the Mad River mouth has shifted to the south and widened considerably. The river is also less linear, the channel less deep, and river has, at times, branched at the ocean outlet. Consequently the ebb tide velocities have substantially dropped and presumably sand deposition to the north of the RSP structure has resumed.

Placing a gravel-cobble base with large logs tied together to form a raft was suggested in order to preserve existing sand dunes and enhance future dune formation. The disadvantage of this approach may be the lack of availability of the right size of woody materials and cobble-gravel mix as well as the life expectancy. The natural voids in such a structure would not likely prevent erosion of dunes and would have a high likelihood of eroding during high river flow and high ocean wave conditions. There is also a high probability of the logs shifting and actually concentrating wave and current forces upstream towards the bluffs resulting in accelerated erosion. Logs with protruding 1.5" diameter reinforced bars may be perceived as a safety hazard at this public recreation area. In addition if the raft were to dislodge from the cobble-gravel mix, it could pose a boating navigational hazard.

DEPARTMENT OF TRANSPORTATION
NORTH REGION, EUREKA OFFICE, P.O. BOX 3700
EUREKA, CA 95502-3700



Mad River Inlet Rock Slope Protection Project Summary - May 4, 1999

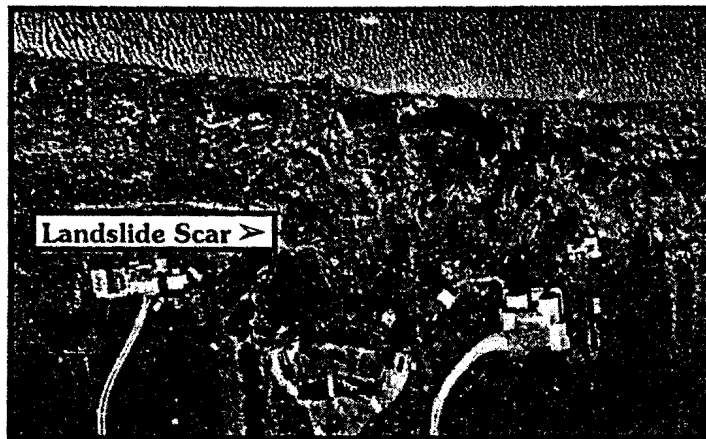
Most of the following information is excerpted from a 1998 report and a 1999 addendum by Jeffry Borgeld, Oceanography Department, Humboldt State University. Dr. Borgeld's study was based on aerial photography, wave height data from buoys, and sea level data recorded in Crescent City as well as other studies.

- **Bluff Erosion – Figure 19.** Bluffs east of Mad River composed of uplifted coastal terrace deposits and are subject to slope failure and land sliding; prior to RSP construction, most of the bluff area was vegetated, but areas of exposed cliffs are evident in aerial photographs; since 1993, the river inlet has either widened, migrated south, or sand spit separating the ocean and river has retreated to the south; as a result, portions of the bluffs above the Mad River have been periodically exposed to direct ocean waves; high, sustained river discharge eroded the sand spit; overland runoff erosion of bluff also a factor; past gravel extraction activities within the Mad River watershed may have been major factor that prevented rebuilding of spit due to sediment reduction.
- **El Niño-Southern Oscillation – Figures 12, 13.** During the 1997-98 El Niño-Southern Oscillation (ENSO), ocean wave heights, river discharge, and sea level elevations increased and affected morphology of lower Mad River spit and estuary; the elevated coastal sea levels and large waves flushed the sediment that embodies the lower spit resulting in widened river inlet; similar conditions occurred during 1982-83 ENSO; both 1982-83 and 1997-98 ENSO events resulted in unusually wide Mad River inlet: approximately 3,500 feet in length.
- **The Breach of 1999 – Figure 1.** In March 1999, river breached at new location approximately two miles south of Caltrans RSP revetment; river inlet had last been at this location during late 1960's; as of April 1999, previous river inlet near RSP has nearly sealed and lagoon has formed between new and old river inlets; aerial photograph documentation suggests that river inlet would gradually migrate north, with periodic breaching that repositions inlet further south; this is normal river inlet oscillation; rate of inlet migration would be most influenced by ocean wave power and direction, river flow, tidal currents, and rate of sediment supply to inlet.
- **Future Erosion - Figure 14.** Because of complex coastal dynamics where the river inlet migration is occurring, predicting the future rate of erosion in the area of concern is difficult; rate of retreat is highly dependent on magnitude and timing of incoming wave power; erosion north and south of Caltrans RSP revetment has occurred ever since it was constructed, and it is expected to continue in future; revetment is virtually only erosion resistant feature along the coast between the Mad River Road to the south and Clam Beach parking lot to the north. Coastal bluff erosion on the Pacific west coast is a normal geologic process.

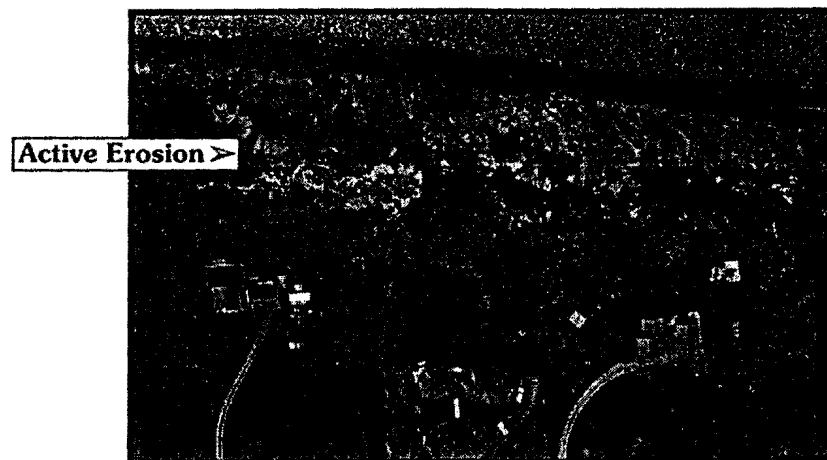


Oct. 1994

Changes to McKinleyville Bluff 1997-1998



April 24, 1997



June 17, 1998

Figure 19. Aerial photographs of a section of the McKinleyville bluff between the Mad River Rock Slope Protection and Widow White Creek (*see Figure 1*). The upper photograph was taken in April 1997 and shows little active bluff erosion and indications of a scar left by an older landslide that had revegetated. The lower photograph shows the same area in June 1998 when new areas of active erosion are evident.

WINTER 1997-98 • April 1997 - June 1998

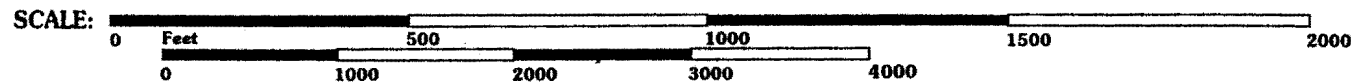
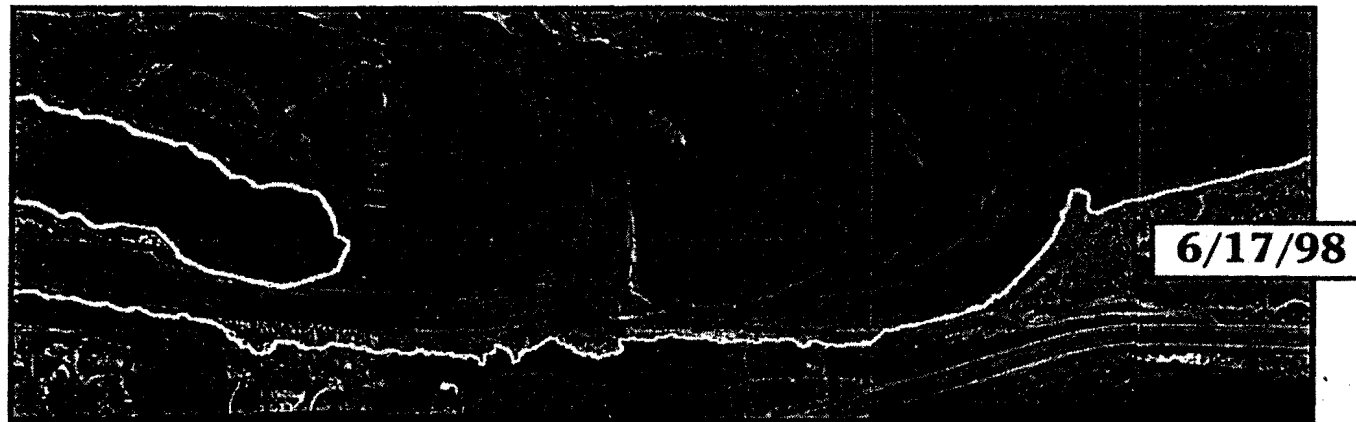
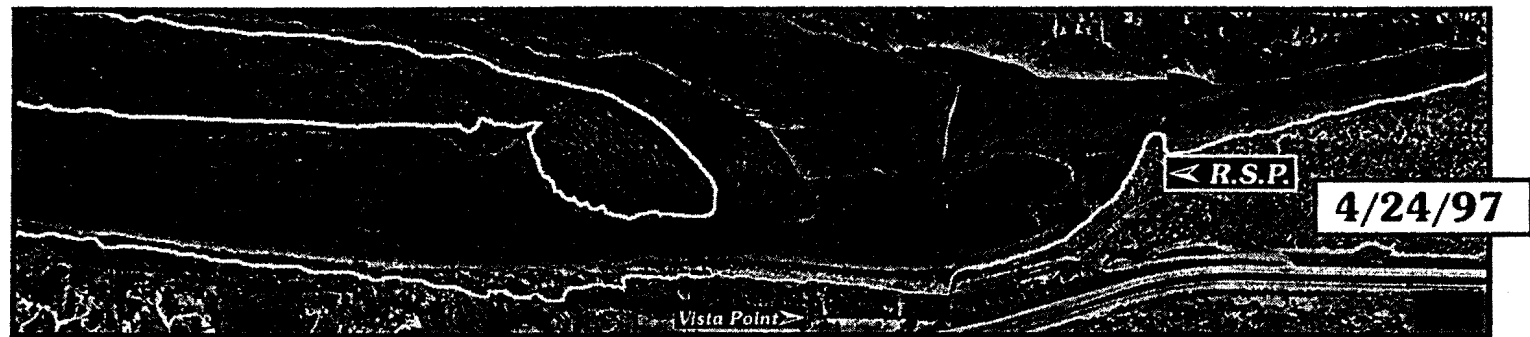
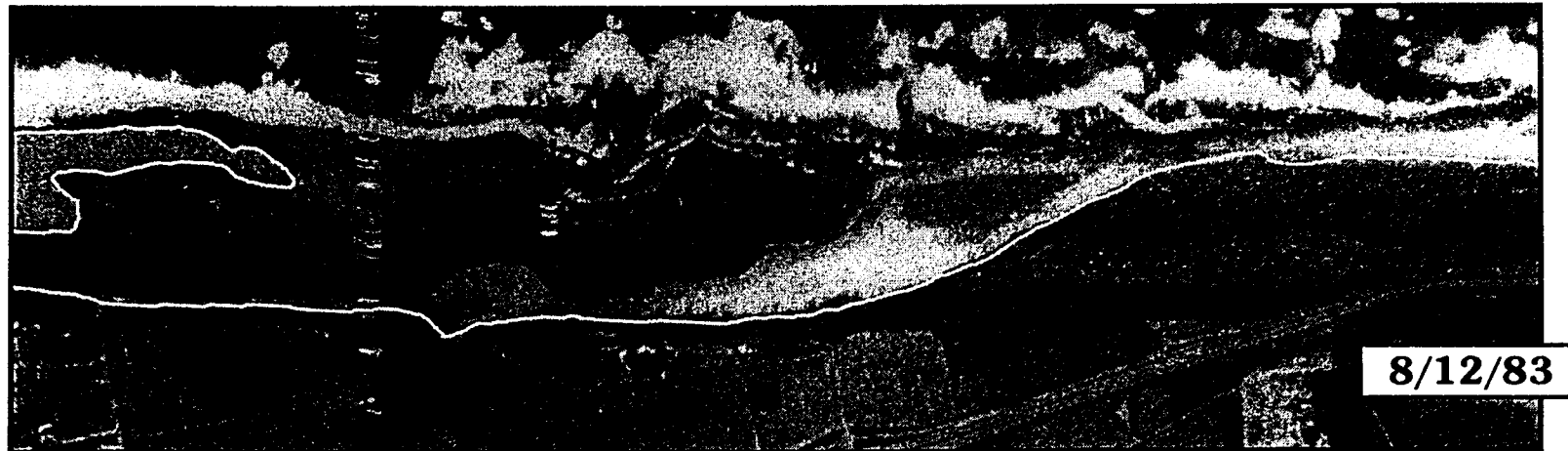


Figure 12. Mad River inlet in the winter of 1997-98. The white line indicates the upper limit of the active beach and the location of the western edge of the McKinleyville bluff. Aerial photographs taken on April 24, 1997 and June 17, 1998 show the morphologic changes that occurred during the winter of 1997-98. The spit moved landward approximately 50 meters (160 feet) and showed evidence of washover by waves. The inlet widened and the primary inlet channel moved south. Erosion progressed along the McKinleyville bluff, as much as 30-35 meters (100-115 ft.)

1982-83 El Niño - Southern Oscillation



1997-98 El Niño - Southern Oscillation

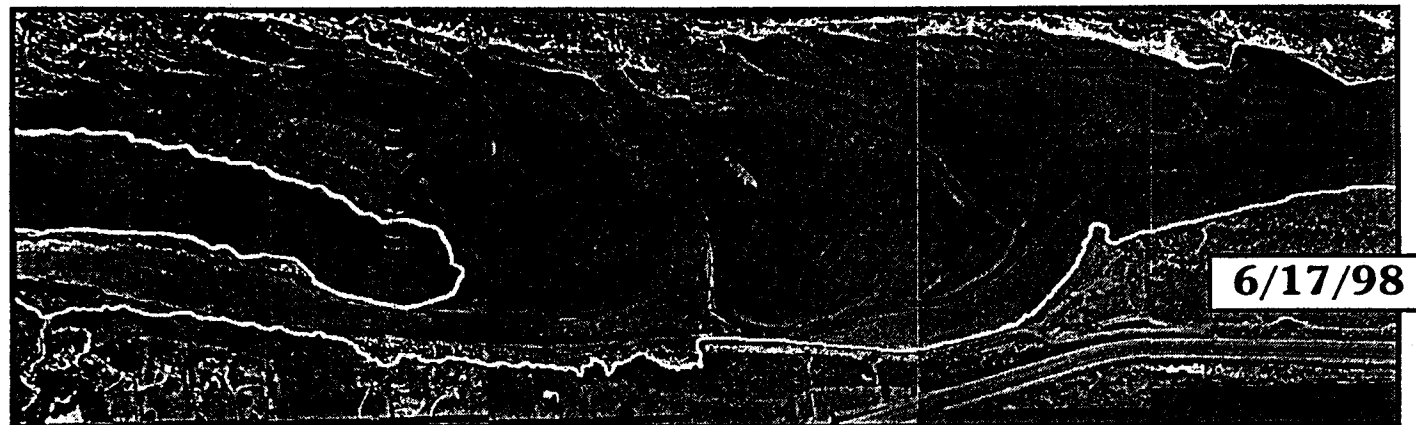
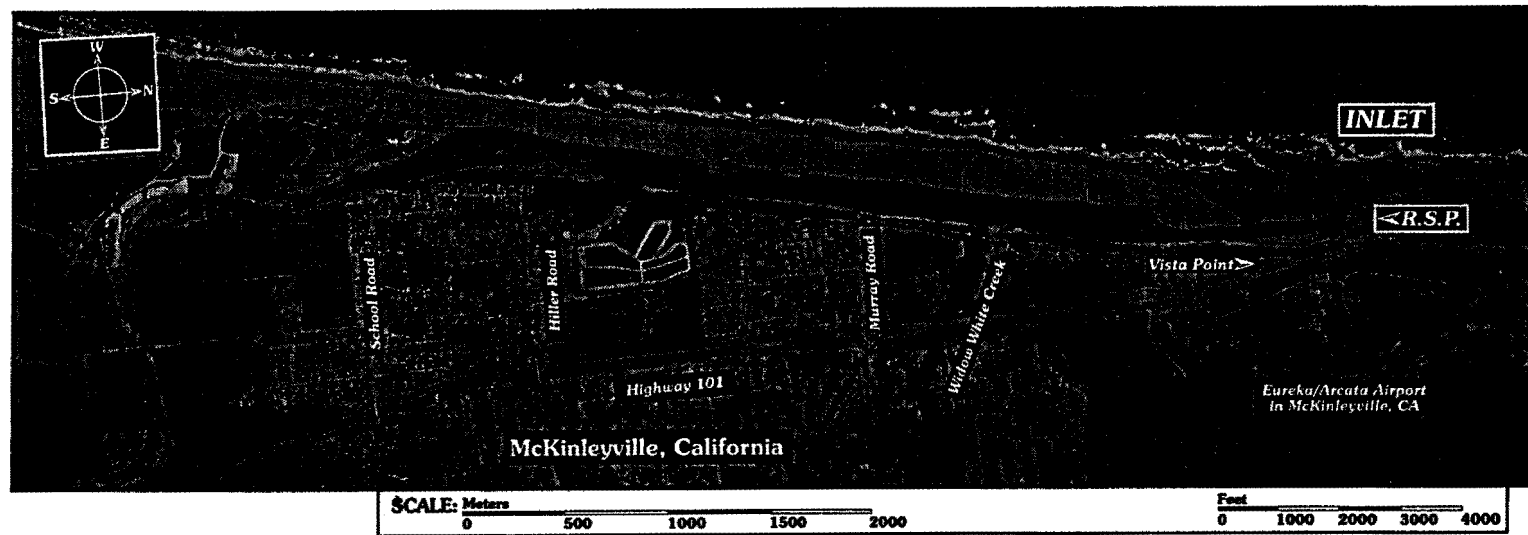


Figure 13. Mad River inlet morphology following the last two major El Niño - Southern Oscillation (ENSO) events: 8/12/83 and 6/17/98. The inlet opened to a width of 1,100 meters (3,600 ft.) in 1983 and 1,000 meters (3,300 ft.) in 1998. The primary inlet channel moved southward toward the middle of the inlet on both occasions.

Mad River Estuary and Inlet

September 1996



April 1999

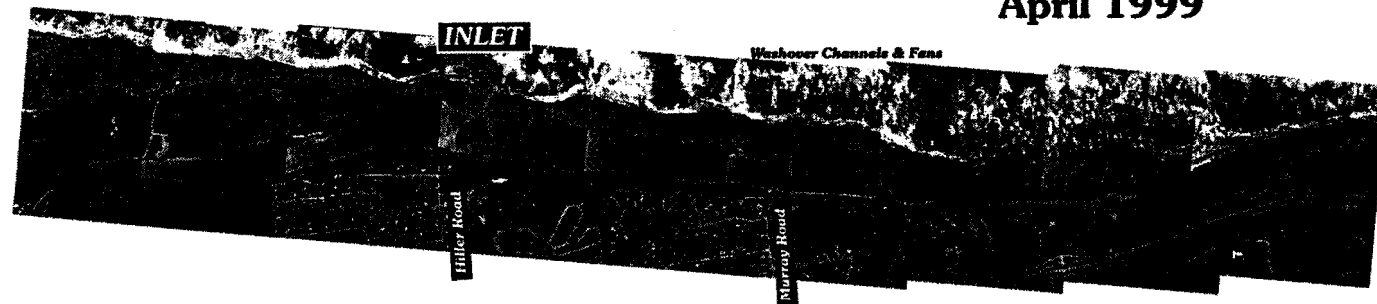


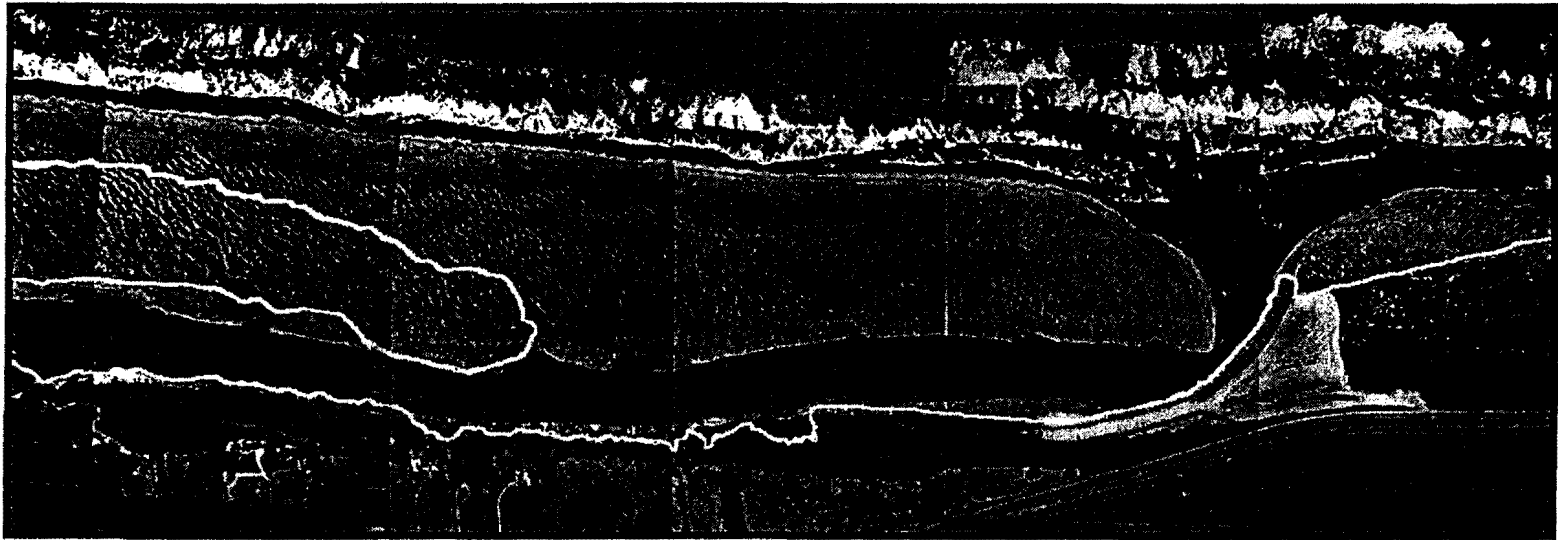
Figure 1. The lower Mad River in September 1996 and April 1999. During March 1999 the spit breached and a new inlet was established. The new inlet is located approximately 4 km south of the Rock Slope Protection (RSP) that marked the north side of the prior inlet. Note the numerous washover channels and fans in the April 1999 photographs.

Mad River Inlet, November 1941



Figure 2. Mad River Inlet, November 23, 1941. The inlet was situated near School Road; Mad River Lagoon was located north of Hiller Road and was connected to the river. The coastal section bounded by an older deltaic island to the south and mature dunes to the north represented the inlet oscillation zone prior to 1970.

Mad River Inlet • September 1992 to June 1998



Aerial Photograph 9/16/92 • White Line: 6/17/98 Coastline

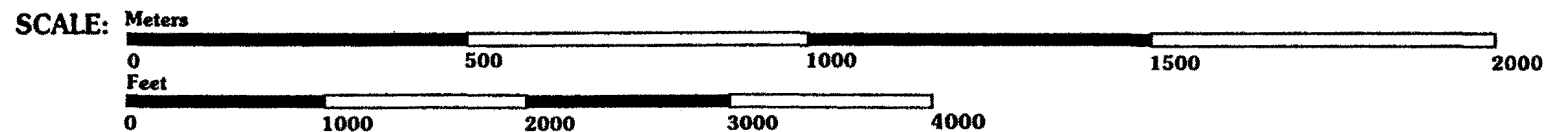


Figure 14. Aerial photographs of the Mad River inlet taken after the Rock Slope Protection was placed at the river mouth (September 16, 1992). Superimposed as a white line is the upper limit of the active beach and the location of the western edge of the McKinleyville bluff on June 17, 1998. Areas of major geomorphic change during the six-year period are evident. By June 1998: the inlet had widened to 1,000 meters (3,000 ft.), the beach and foredunes north of the RSP had experienced about 59 meters (140 ft.) of erosion, and the McKinleyville bluff had eroded up to 30-35 meters (100-110 ft.) in some locations.

RECEIVED
AUG 20 1999

CALIFORNIA
COASTAL COMMISSION

Robert Merrill
California Coastal Commission
Fremont Street
San Francisco, California

John L. White
3412 Letz Avenue
McKinleyville, CA
95519-9101

August 14, 1999.
(By Facsimile: 415-904-5400)

Confirmation
COPY

EXHIBIT NO.	11
APPLICATION NO.	A-1-HUM-98-088 and 1-92-69
Correspondence	

Re: Appeal No. A-1-HUM-088;
Caltrans appeal from Humboldt County
Decision Denying Emergency Permits

Dear Mr. Merrill:

The following is a summary of the position that all of the bluff property owners north of Widow White Creek in McKinleyville, as represented by Mssrs. Owen and Conner and I, took before the Humboldt County Planning Commission below and will take in this appeal. To facilitate your incorporating it into the Staff Report, I am mailing you a copy of this letter on a floppy disc, in both Word 6.0/98 and Word Perfect formats. You will note that the statement does not include arguments on the merits of our position but instead merely states what that position is and identifies generally the factual basis upon which we rely in support thereof. Our arguments on the merits of that position will be contained in the documentation we file in support of our position and our oral statements at the Coastal Commission's September hearing.

SUMMARY OF PROPERTY OWNERS' POSITION

Caltrans installed RSP in a manner it knew would cause environmental damage in the form of erosion of the bluff south of the south end thereof and erosion of the north end of the protective sand spit which ran parallel to that portion of the bluff and which protected it from erosion by ocean wave action. With that portion of the sand spit now gone, only by extending the RSP south to Widow White Creek can Caltrans mediate and decelerate the ongoing marine erosion of the base of that portion of the bluff and resultant destabilization and collapse of the upper portion thereof; ecologically rectify the damage to the bluff which at the very least was accelerated by the RSP; enable native plant species to recolonize its now barren slopes; again permit native bird life to live in and native animal life to travel along the bluff face between widow white creek and vista point; and save homes now threatened by its ongoing erosion.

PROPERTY OWNERS' CONTENTIONS

The property owners contend that:

1. Caltrans did not qualify under the Emergency Statute to install either the RSP in 1992 or the extension thereof in 1995, without prior public hearings and submission of an EIS, because Caltrans knew long before such emergency action was required that Highway 101 was at risk by the migration north of the mouth of the Mad River;
2. in order to meet the "no negative environmental impact" requirement of the Emergency Statute, Caltrans knowingly falsely alleged both in 1992 and in 1995 that the installation of the RSP would have no such negative impact;
3. in addition to protecting Highway 101 by installing in 1992 RSP

parallel to it, Caltrans decided to also block the northerly migration of the Mad River with additional RSP installed along the north side only of the terminal portion of the river which in 1992 exited westward into the ocean at Vista Point through the sand spit, for pragmatic reasons rather than because that was the least environmentally harmful way of protecting Highway 101 in the future or even the most economical or most expedient way of doing so.

4. by blocking the northerly migration of the Mad River with RSP, Caltrans thus defined the portion of the bluff south of RSP along the eastern bank of the Mad River which would be most adversely affected by the tidal currents in the Mad River and whose erosion would thus be accelerated;

5. by failing to concurrently install RSP along the south side of that terminal portion of the river which was defined by the north end of the sand spit which protected the bluff from direct ocean wave action, Caltrans also knowingly facilitated the destruction of the sand spit which began at its north end and continued until by November 1997 the mouth had widened to about 3,000 feet and thus exposed a corresponding length of the bluff to direct wave action and, during a storm in March, 1999, was destroyed further south to Widow White Creek, at which time the mouth repositioned itself even further south, thus creating a lagoon extending north to Widow White Creek;

6. the accelerated erosion of that portion of the bluff which initially was the result by tidal currents at the mouth of the Mad River, continues at an accelerated pace as a result of the base of the bluff now being exposed to ocean wave action during storms and high tides, due to the elimination of the sand spit west of it;

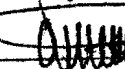
7. the blockage by Caltrans of the migration north of the Mad River has produced an ecological disaster which has converted several thousand linear feet of bluff from a vegetated hill which had been used by a variety of birds, including quail and pheasants, as cover and by native animals, including deer, fox and raccoon, as the only unobstructed and safe way to travel between Widow White Creek and Vista Point, into a vertical bare and unstable bluff which, because its base continues to be eroded by ocean wave action at high tide and during storms, continues to subside and now threatens homes which were remote from the bluff edge in 1995;

8. written reports of two local hydrologists, scientific publications, an Army Corps of Engineers' report and Caltrans own engineering reports support their contentions and to date Caltrans has submitted no scientific evidence rebutting the property owners' contentions; and

9. the only remedial action that can now be taken to save the bluff from further catastrophic erosion is to extend the RSP south to the mouth of Widow White Creek and the north end of the sand spit, which now ends at that point.

The property owners urge the Commission to require that Caltrans take this remedial action in order to obtain State approval of its RSP installation.

Very truly yours,



John L. White
Tel. 707-839-9527; -9528
Fax. 707-839-9528

co: Harry Conner
George Owen
Email: otterblf@northcoast.com
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RECEIVED
SEP 01 1999**BEFORE THE CALIFORNIA COASTAL COMMISSION****RE: APPLICATION NO. 1-92-69 : (Caltrans, Humboldt County)****REQUEST BY RESIDENT-PROPERTY OWNERS OF HUMBOLDT COUNTY FOR CONSOLIDATION OF THE PUBLIC HEARINGS ON THIS APPLICATION AND CALTRANS APPEAL NO. A-1-HUM-98-088 AND ACCEPTANCE OF THEIR WRITTEN RECORD FILED THEREIN AS THEIR WRITTEN RECORD IN THIS APPLICATION**

This request is submitted by the members of the interested public named below (Requestors), who have appeared in Appeal No. A-1-HUM-98-088 (Caltrans, Humboldt County), on their own behalf and on behalf of other adversely affected ocean front property owners on Letz Avenue in the McKinleyville area of Humboldt County, whose properties abut the ocean bluff upstream of Rock Slope Protection (RSP) installed by CALTRANS in 1992 and extended in 1995.

ACTION SOUGHT BY THE COASTAL COMMISSION

The Commission is requested to:

- (a) consolidate the Public Hearing on this agenda item with the Public Hearing on Appeal No. A-1-Hum-98-088 (CALTRANS, Humboldt County), which is presently scheduled to immediately follow;
- (b) hear CALTRANS' arguments and the comments from interested members of the public on both agenda items simultaneously;
- (c) INCLUDE THE WRITTEN RECORD FILED BY REQUESTORS IN APPEAL NO. A-1-HUM-98-088 AS PART OF REQUESTORS' WRITTEN RECORD IN THIS APPLICATION; and
- (d) render its decision on both agenda items based on those arguments and comments and the written record before it in both agenda items.

The granting of this request is appropriate for the following reasons:

1. Appeal No. A-1-HUM-98-088 is an appeal from the decision of Humboldt County Planning Commission denying CALTRANS' Request for a Finding of "No Negative Environmental Impact" from the RSP installed by CALTRANS in 1992 and 1995 under State emergency statute, without prior review and Public Hearing for possible adverse environmental impact, which RSP installation is the subject matter of instant application, which is scheduled to be heard on September 16, 1999 as Agenda Item No. 16a, immediately prior to Appeal No. A-1-HUM-98-088 (Item 16b).

2. The substantive issue which the Humboldt County Planning Commission considered in rendering its decision in Appeal No. A-1-Hum-98-088 is substantially identical to that which this Commission must consider in the instant application.

3. One of the reasons stated by Commission Staff for the long delay in setting a Hearing Date for Appeal No. A-1-Hum-98-088 was that staff wanted the two items to be heard together, if possible.

Request re Public Hearing
Application No. 1-92-99
September 1, 1999 Page 2

4. Extensive documentary evidence and comments were filed by the above-identified interested members of the public in the hearing of the Humboldt County Planning Commission and which will be part of the record before this Commission in that appeal, which are highly relevant to the substantive issue in the instant application.

5. Conducting separate hearings, reviewing separate written statements of CALTRANS and interested members of the public and rendering separate and independent would increase substantially and unnecessarily the amount of time collectively that the members of this Commission must devote to consider and render decisions on the two agenda items.

6. Consolidating the public hearings on these two intimately related agenda items will eliminate the necessity of both CALTRANS and interested members of the public filing substantially duplicate written statements in both the instant application and the appeal and repeat substantially identical oral arguments at each public hearing and will thus avoid an unnecessary and increased burden on the Commission's Staff, Caltrans and the interested members of the public.

7. Hearing the two agenda items sequentially rather than concurrently could, theoretically at least, result in inconsistent or incompatible decisions.

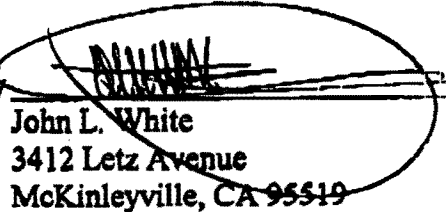
The written record filed by the Requestors in Appeal No. A-1-Hum-98-088 on or before September 16, 1999 is hereby incorporated by reference into the written record of this appeal.

Respectfully submitted,

HARRY CONNER, GEORGE OWEN AND
JOHN L. WHITE, Requestors

Date: September 1, 1999

By


John L. White
3412 Letz Avenue
McKinleyville, CA 95519

C:\W51\VLW\CostlCommReq090199

Tel. 707-839-9527; -9528

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BEFORE THE CALIFORNIA COASTAL COMMISSION

APPEAL NO. A-1-Hum-98-088 : STATEMENT OF JOHN L. WHITE,
: RESIDENT-PROPERTY OWNER

My name is JOHN L. WHITE. My wife and I reside at 3412 Letz Ave. McKinleyville, CA 95519-9191, on property just south of Arcata Airport Road on the west side of Highway 101, whose western end extends to the bluff at the east bank of the Mad River. The following statement is submitted by me as an affected property owner and on behalf of other property owners along Letz Avenue, a county road less than a half-mile long which runs parallel to and between the bluff and Highway 101 and between the County Airport Commission property which abuts Vista Point to the north and Widow White Creek to the south.

I urge the Commissioners to review the attached "STATEMENT FACTS", which establish that the massive erosion of the bluff which has recently occurred and will continue to occur south of the south end of the Caltrans RSP installed at Vista Point, unless the hydraulic effects created by that RSP are mitigated.

1. In the fall of 1992 my wife and I bought a five acre lot on Letz Avenue whose west side ends at the bluff whose base then formed the east bank of the Mad River. At that time the bluff was a sloped vegetated hill. Although serious erosion of the bluff had not yet occurred at that time, we retained the services of a geologist to determine what would be a conservative set back from the edge of the bluff to build our home and we followed his professional recommendation. However, since we built our retirement home on the lot, we have lost amounts of the bluff end of our property of up to 50' along the 200' of its bluff-side, which has caused large trees at the edge of the bluff to topple over from the erosion that has already occurred at the base of the bluff. EROSION OF THE BLUFF IS CONTINUING TO OCCUR YEAR ROUND BECAUSE IT HAS LOST THE PROTECTION OF THE SAND SPIT AND TWICE A DAY THE OCEAN SCOURS THE BASE OF THE BLUFF AT HIGH TIDE. In as short a time as one or two more winters we will face the imminent destruction of our home or moving it 100 or more feet eastward at an enormous cost.

Statements of two skilled geologist filed with the Commission confirms these facts. If the Commission considers the facts set forth in the attached "Statement of, the following will become unarguably clear to them:

1. Caltrans did not have to block the northward migration of the Mad River, which accelerated the erosion of the bluff from Vista Point to Widow White Creek, in order to protect Highway 101.
2. It could have reopened the historic mouth of the river at School Road, which is what its own engineers originally recommended as the cheapest and quickest way to protect the highway. It did not do so solely because **it did not want to assume the liability for any negative environmental impact that option might have.**
3. Or it could have done what it originally planned to, viz., build 1,300 feet of RSP parallel

- to Highway 101 and add additional north end sections to it if the river continued its migration north. **It did not do so because that option might be much more expensive.**
4. Neither of these options would have had the adverse environmental impact on the bluff which the option it selected has had.
 5. **Caltrans engineers knew that blocking the northward migration of the Mad River would accelerate erosion of the bluff at the south end of the RSP.** Such erosion was predicted by Caltrans' academic geologists in 1993 and by 1995 it had occurred to such an extent that Caltrans was obliged in 1995 to add an additional 1,000 feet of RSP at the south end of the 1992 RSP. This extension of the RSP promoted further erosion of the bluff south of its southern end.
 6. **Caltrans knew that installing RSP on one side only of the mouth of a river is not the conventional or proper way to create an artificial mouth of a river.** An experienced hydraulic geologist has personally verified this fact and Caltrans' staff engineer admitted in a public hearing that Caltrans did so because they did not want prevent the mouth from migrating south again. It is not conventional because installing RSP on one side only of a river at its mouth promotes erosion of the unprotected side, which in this case was the north end of the sand spit which, prior to the RSP installation protected the bluff from the wave and tidal energies of the ocean. The predicted destruction of the sand spit has occurred and by March of 1999 the mouth of the river, which before the 1992 RSP was installed was a narrow well defined channel, had become several thousand feet wide at high tide and twice daily exposed the unprotected base of the bluff east of the open mouth and south of the end of the 1995 RSP to the hydraulic energy created by the river flow meeting the wave and tidal energies of the ocean along the open mouth.

The public has lost an important segment of the Hammond Trail and several acres of ocean front county property, some by erosion and some by transfer of ownership to the state. Unless something is done some of us face the enormous expense in the near future of moving their homes to a new location to prevent them from being lost over the bluff. The Coastal Commission can do something now. It is urged to:

- (a) decide that the southerly pointing portion of 1992 RSP has had a negative environmental impact on the bluff upstream of the south end of the RSP;
- (b) decide that the westerly pointing portion of 1992 RSP has had a negative environmental impact on and destroyed the north end of the sand spit forming the upstream side of the permanent mouth of the Mad River and which protected the adjacent portion of the bluff against the eroding effects of the Pacific Ocean;
- (c) decide that the 1995 extension of the RSP has had a negative environmental impact and a similar eroding effect on the bluff south of the southern end of the 1995 extension, which includes both Humboldt County and private property, including mine.
- (d) require CALTRANS to promptly take the mitigating required to protect the above-described portion of the bluff from the further predictable damage resulting from the adverse environmental impact of the RSP which it took to protect Highway 101, viz.,

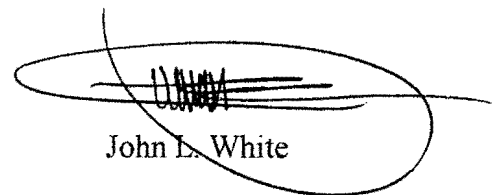
extend the RSP further south to the mouth of Widow White Creek.

(e) Require Caltrans to institute damage-limiting measures without delay. Caltrans benefits by and the coast line of Humboldt county continues to suffer as a result of Caltrans's failure to take any mitigation action.

CERTIFICATION STATEMENT

I certify that the information and facts stated herein are correct to the best of my knowledge.

Date: July 14, 1999



John L. White

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BEFORE THE CALIFORNIA COASTAL COMMISSION

RE APPEAL NO. A-1-Hum-98-088: APPENDIX TO STATEMENT OF
: JOHN L. WHITE,
: RESIDENT-PROPERTY OWNER

RELEVANT FACTS

FACT No. 1:

In his written statements filed with this Commission, Bob Busch, PhD, a qualified and certified geologist, states that in his professional opinion Caltran's RSP at Vista Point was primarily responsible for the accelerated erosion of the bluff which occurred upstream of the RSP beginning immediately after its installation.

Source: Written Statements of R.E. Busch, Jr., PhD, Busch Geotechnical Consultants, Aracata, CA., dated September 14, 1998 and July 13, 1999.

FACT No. 2:

Roland Johnson, a local engineering geologist, stated in a 1995 written statement filed with this Commission, that in his professional opinion the primary cause of the accelerated erosion of the bluff south of Caltrans RSP is due to ocean waves that enter the river mouth, advance upstream, and expend their energy by loosening the unconsolidated soil at the river bank. Erosion and bluff slope failure affecting property owners on Letz Avenue is far more severe than along other segments of the Mad River Estuary. If no stabilization measures are installed, those property owners can expect to experience chronic large scale failure of the bluff slope and the bluff top is likely to retreat significant distances eastward with the most rapid retreat occurring at the northern properties closest to the RSP. The rate of bluff erosion in the unprotected upstream region became worse subsequent to the placement of the original RSP structure in the configuration selected by Caltrans.

Source: December 7, 1995 letter of Roland S. Johnson, Jr., Principal Engineering Geologist, SHN Consulting Engineers & Geologists, Inc., Eureka, CA.

FACT No. 3:

In his 1995 statement, Roland Johnson correctly predicted that an additional problem resulting from the placement of (RSP) at the river mouth is that, "...a significant amount of the wave action that was previously expended on the sand banks and beaches adjacent to the mouth is now reflected seaward, toward the landward (bluff) side of the sand spit, and up the rivers not protected by RSP." He also stated that, "...with the north bank of the river mouth "stabilized", occasional southward

shifting of the mouth or marked widening of the mouth will expose unprotected areas of the east bank of the river to additional accelerated erosion." (Emphasis added.)

Source: December 7, 1995 letter of Roland S. Johnson, Jr., Principal Engineering Geologist, SHN Consulting Engineers & Geologists, Inc., Eureka, CA.

FACT No. 4:

In 1995 the Corps of Engineers issued a permit to Caltrans to install RSP along 1,000 lineal feet of the east bank of the Mad River approximately 2,500 feet south of the river mouth, immediately adjacent to and south of the 1992 RSP. Caltrans stated in its permit request that the January 1995 and March 1995 combination of storm events and high river flows resulted in the exposure of the embankment below the Vista Point to direct ocean wave action which was greatly accelerating erosion.

Source: "Public Notice", page 1.

FACT No. 5:

The Army Corps of Engineers concluded in 1995 that, "The RSP projects may have unin-ionally redirected erosion impacts to other portions of the coastline and adjacent public or private property. The level of these future impacts is unknown. Since it appears that physical changes have been made to the Mad River inlet, the sand spit between the ocean and the river and perhaps other areas immediately adjacent to the existing RSP's, there may be attendant significant impacts on the Mad river estuary as a whole."

Source: "Public Notice", page 10.

FACT No. 6

Caltrans Engineers acknowledged that the 1992 RSP plan was "*a band-aid*" fix, an emergency measure to keep the river at bay while other options were considered. Jim Martin, Caltrans' project manager for the 1992 RSP, stated that the rock emplacement was, "...an interim solution to the migration of the Mad River until we can complete studies for a long-term solution." Mr. Martin said that, "Those studies are expected to take two or three years." Jim McManus, Caltrans Deputy Chief Engineer stated that Caltrans project to keep Highway 101 intact was a **temporary fix and would not substitute for a longer term solution.** (Emphasis added.)

Source: Caltran's publication "Going Places", March/April 1992, page 6.

FACT No. 7

The Coastal Zoning Ordinance, Section A315-14 of the Humboldt County Code (Required Findings for All Discretionary Permits) specifies, *inter alia*, that the proposed development, in this case the Caltrans RSP, conform with all applicable standards and requirements of the Humboldt County Code, which includes for the county property which was affected by the RSP, the Dunes and Beach Areas (B) Combining Zone. The purpose of (B) Combining Zone is to ensure that the development permitted in coastal beach and dunes areas will not detract from their natural resource value or their potential for providing recreational opportunity. **The B Combining Zone restricts the siting of public roadway projects consistent with the Coastal Land Use Plans to cases where there is no less environmentally damaging alternative, and environmental damage is minimized** (A314-58(E)(7)(f). The required mitigation of impacts required by Humboldt County Code section A314-58(H) includes, minimizing disturbance of vegetated dunes, which in the case of the Caltrans RSP would include the Last Chance Dune, which has now been completely lost.

Source: County Staff Report re Case No. CDP=02-95/SP-16-95, Document F:\Planning\current\SRCASTR4.DOC 2/25/97, pages 8 and 10.

Fact No. 8

Early in 1991 both Caltrans and Humboldt County officials were sufficiently concerned about the migration north of the Mad River that a series of 5 public hearings relating to "Mad River Slope Protection Projects" were scheduled by the Board of Supervisors and by Caltrans between June 21, 1991 and November, 1991.

Source: Records of Humboldt County Counsel

FACT No. 9

In the fall of 1991, Caltrans announced their willingness to spend \$5 million to stop the migration north of the Mad River and offered to use the money to move the mouth of the Mad River back to its historic location at School Road, **but only if someone else would accept the liability for doing so.** The county declined to do so and therefore Caltrans elected to begin work at the current location of the mouth.

Source: "The Union" Tuesday, January 9, 1992

FACT No. 10:

In September of 1991, Humboldt County Director informed the Board of Supervisors Caltrans had proposed that the county take the \$4 - \$5 million that Caltrans intended to spend protecting Highway 101 from the migration north of the Mad River **and move the project to the School Road area, which would allow the project to protect the entire**

bluff area on the west side of McKinleyville. The director believed that the proposal has merit but it would increase the County's liability exposure to liability because of the erosion to the bluff adjacent the new mouth which might occur.

Source: September 6, 1991 memorandum of Guy C. Kulstad, Director, to the Board of Supervisors.

FACT No. 11: Because of the lack of a majority of community support at the public meeting on October 23, 1991 for the Caltrans proposal that the county become involved in moving the mouth of the Mad River back to School Road at Caltrans expense, John Murray, deputy public works director for Humboldt County recommended to the Humboldt county Board of Supervisors that the county not get involved.

Source: Times-Standard, October 25, 1991, pp. A1 and A8.

FACT No. 12:

In a report dated November 6, 1991, Caltrans' Bank and Shore Committee presented findings and recommendations of its investigation in regard to the rapid encroachment of the Mad River toward Route 101. It concluded that the rapid movement since 1971 of the inlet of the Mad River from its historic site to a point approximately 300 feet from Highway (as of October, 1991) was the abrupt removal of Sweesey Dam upstream.

Source: November 14, 1991 memprandum from E.L. Wahl, Caltrans District Director, to James W. Van Loben Sels, Caltrans Director (Hereinafter called the "Wahl Memo"), page 1 and Appendix F.

FACT No. 13:

In its November 6, 1991 report, Caltrans' Bank and Shore Committee recommended "Working at the historic mouth" of the Mad River as its choice for permanently protecting Highway 101 from rapid encroachment of the Mad River toward it, and stated that compared, to the alternative of placing RSP at the current mouth of the Mad River (which it regarded as an emergency solution which might last as long as 5 years, if maintained), it was "...the best engineering choice as it has a much higher chance for long term success and will be the least costly for CALTRANS and the natural environment in the long term." (Emphasis added.)

Source: The "Wahl Memo", Appendix F.

FACT No. 14:

In a November, 1991 memorandum, E. L. Wahl, Caltrans District Director, recommended

to the director of Caltrans that permanently re-establishing the historic mouth of the Mad River would be preferred and probability of success for this alternative was the greatest of all options considered, except for the long lead time required. He stated that, "The Bank and Shore Committee believes this is the best 'Engineering Solution' but the time needed to obtain approval from regulatory agencies was too long to make it implementable."

Source: The "Wahl Memo", page 4.

FACT No. 15:

In his November, 1991 memorandum, Mr. Wahl also stated that the estimated cost of breaching the spit with a 14' deep channel at the historic mouth on an emergency basis to ease the threat to Highway 101 would cost only \$50,000 and would be by far the quickest and initially the cheapest action that could be taken and could be achieved within three days. However because of the uncertainty of the success of this alternative and being by far the most controversial and because, if the mouth re-established itself at the breach and it became impossible to close the breach, the Department could be faced with the responsibility of providing bank protection for the residents opposite the breach. (Underlining added.) Therefore, it was recommended as a solution only if conditions precluded implementation of the RSP alternative which was thereafter elected by Caltrans in 1992.

Source: The "Wahl Memo", page 5.

FACT No. 16:

Before the 1992 rock emplacement was installed, other alternatives ranging from reopening the historic river mouth to halting the forward movement of the Mad at its present location were considered. Each potential solution required study and collaboration and permits from a variety of agencies - a process that consumed time as deliberately as the river consumed real estate. Caltrans engineers acknowledged the plan was a **band-aid fix, an emergency measure** to keep the river at bay while other options were considered.

Source: Caltran's publication "Going Places", March/April 1992, pages 5 and 6.

FACT No. 17:

In his November 1991 memorandum, Mr. Wahl recommended as an alternative solution to solving the threat to Highway 101 was to place RSP along the Highway 101 prism as the river migrated north. Although Mr. Wahl stated that the probability of success for this alternative was satisfactory, its initial cost was high and would include future costs.

Source: The "Wahl Memo", page 3.

FACT No. 18

Caltrans originally planned to build a 1300 foot RSP barrier running parallel to the freeway but later decided to run the barrier along the freeway for only 800 feet and then turn west along the northern bank of the river to the ocean to prevent the river from migrating further north.

Source: "The Times Standard", March 5, 1992; Caltran's publication "Going Places", March/April 1992, page 5.

FACT No. 19:

Despite the above facts, In 1991 Caltrans represented to Humboldt County in a written statement in support of its request for County emergency approval of its 1992 Mad River RSP project (which statement has not been amended to date) that:

- 1. The project would NOT involve substantial controversy on environmental grounds;**
- 2. There was NOT a reasonable possibility that the project would have a significant effect on the environment;**
- 3. There would NOT be a significant cumulative impact by the project and successive projects of the same type in the same place, over time; and**
- 4 The project would NOT result in significant damage to or removal of a scenic resource.**

Source: Caltrans "Catagorical Exemption/Exclusion Determination" 1992 statement.

FACT No. 20:

Rather than extending further the rock slope protection (RSP) along the toe of the Highway 101 embankment, Caltrans engineers designed a similar protective barrier, but turned it westward, following the natural arc already carved by the river out to the sea.

Source: Caltran's publication "Going Places", March/April 1992, page 6.

FACT No. 21:

In his November 1991 memorandum, Mr. Wahl gave as two of the reasons for recommending, as the solution to solving the threat to Highway 101 by the Mad River, placing RSP at the mouth of the Mad River existing in 1991, in addition to the probability of success of this option being good, were that it would be far less expensive that "chasing the river" north and it would restore the public's faith in Caltrans doing the "right thing" by saving Clam Beach Park. Mr. Wahl acknowledged that

any alternative that involves controlling the river is very controversial and future liability is likely. (Emphasis added.)

Source: The "Wahl Memo", page 4.

FACT No. 22

Jim McManus, Caltrans Deputy Chief Engineer, stated in 1992 that, "...we pursued both interim and permanent courses of action." and in December 1991, Caltrans initiated its project to keep Highway 101 intact, but it was a temporary fix and would not substitute for a longer term solution.

Source: Caltran's publication "Going Places", March/April 1992, page 5.

Fact No. 23:

The California Coastal Commission Code require that temporary shoreline structures may be permitted in emergencies, *provided that any such temporary structure is either removed; incorporated into a permanent structure, or removed upon construction of a permanent structure.*

Source: Paragraph H of Section A314-32 of the California Coastal Commission Code for Humboldt County, entitled "SHORELINE PROTECTION STRUCTURE", "Temporary Shoreline Structures."

FACT No. 24:

The Jeffry Borgeld, et al., 1993 Final Project Evaluation Report prepared for Caltrans stated that Last Chance Dune, the dune immediately south of the 1992 RSP, "... saw different amounts of erosion along its north and south ends from May, 1992 to April 1993..., being greatest in proximity to the RSP....The erosion experienced along the south end of the dune was about 1 to 2 meters....It is likely that erosion will continue and an additional 25 m (82 ft) of erosion would expose the base of the bluff below the Vista Point." (Emphasis added.)

Source: Jeffry C. Borgeld, et al. "Final Project Evaluation Report: Mad River Mouth Migration", July 1993, prepared for Caltrans (The "Borgeld Report"), page 68.

FACT No. 25:

Although the 1995 RSP was installed under an emergency permit, Caltrans scientists had stated in 1993 that, **"The coast to both the north and south of the structure has experienced erosion that will likely continue into the future", and "... result in a renewed threat to State Route 101, the Vista Point, or other property. It is probable that additional measures will be required to reduce the threat."** (Emphasis added.)

Source: The Borgeld Report", page 68.

FACT No. 26:

The degradation of quality of the Mad River mouth vicinity as a result of the 1992 RSP project was a major, long-term, adverse impact. (Emphasis added.)

Source: "Public Notice", page 7.

FACT No. 27:

After placement of the 1992 RSP, the sand spit between the Pacific Ocean and the Mad River retreated southward. By 1995 erosion continued into unprotected coastal dunes/bluffs both north of and immediately south of the 1992 RSP. The last portion of Last Chance Dune experienced continued retreat during the 1992-1993 monitoring period.

The north end of the dune, near the south end of the RSP, is more open to waves entering the inlet and experienced much greater retreat during the same period.

Source: "Public Notice", page 3.

FACT No. 28:

After the 1992 RSP was placed, the sand spit between the Pacific Ocean and the Mad River retreated southward. **By April of 1995, the erosion of the bluff south of the Caltrans 1992 RSP predicted** in the May, 1993 Mad River Migration Mouth Monitoring Report by Borgeld, Scalici and Lorang, **had occurred** and the north end of Last Chance Dune, near the south end of the RSP was open to waves entering the inlet and experienced much greater retreat, with the western scarp experiencing 82 feet eastward retreat, about half of which had occurred by April 10, 1993.

Source: "Public Notice", page 4.

FACT No. 29:

Since construction of the 1992 RSP, approximately 2,000 feet of the shoreline to the south of the RSP eroded eastward and, as a result, between April and August, 1995 another 1,200 cubic yards of RSP was placed along that eroded shoreline. Caltrans stated in its permit request to the Army Corps of Engineers that further erosion south of the 1995 RSP would be less.

Source: "Public Notice", page 8.

FACT No. 30:

The north end of the sand spit separating the Mad River from the Pacific Ocean has retreated south and the Mad River inlet has enlarged from 100-200' wide in 1991 to

approximately 1,000 feet or more in 1995. In 1995 the Army Corps of Engineers stated that, "If the sand spit continues to retreat further south, coastal bluffs and coastal dunes to the south of the RSP may become open and vulnerable to wave attack." and, "It is possible there could be renewed threats to erode the coastal bluffs towards State Route 101.

Source: "Public Notice", page 9.

FACT No. 31:

In its 1995 request for U. S. Army Corps of Engineers approval to extend the 1992 RSP, Caltrans acknowledged that approximately 3.0 acres of Dune Hollow wetlands had been altered/filled during construction of the 1992 RSP revetment and proposed off-site compensation for loss of dune hollow wetlands impacted by the 1992 RSP. **Caltrans stated that additional mitigation was not planned for the 1995 RSP extension.** The U. S. Army Corps of Engineers concluded that the 1992 RSP project resulted in the cumulative destruction of approximately 3.5 acres of dune wetlands.

Source: "Public Notice", page 4.

FACT No. 32:

Caltrans installed the 1995 extension to the RSP under an emergency statute which did not require prior public hearings or county review and approval, even though **Caltrans knew since 1993**, from the project evaluation report conducted for Caltrans under a consultant contract by a team of geomorphology specialists at Humboldt State University, **that erosion of the bluff at the south end of the RSP was likely to occur.**

Source: Caltrans District 1 EMO "Programmatic Section 4(f) Evaluation for Extend Rock Slope Protection Near Route 101 Vista Point.." Prepared by Mitchell Higa, March, 1995.

FACT No. 33:

In March, 1995 Caltrans represented to Humboldt County in a written statement (**which has not been amended**) in support of its request for County emergency approval of its 1995 extension of its Mad River RSP project that:

1. The project would **NOT** involve substantial controversy on environmental grounds;
2. There was **NOT** a reasonable possibility that the project would have a significant effect on the environment;
3. There would **NOT** be a significant cumulative impact by the project and successive projects of the same type in the same place, over time; and
4. The project would **NOT** result in significant damage to or removal of a scenic

resource.

Source: Caltrans "Catagorical Exemption/Exclusion Determination" statement dated March 9, 1995.

FACT No. 34:

A 1993 Caltrans Monitoring Report states that, **"Now that the location of the inlet [to the Mad River] has been fixed**, it is in a condition where the interplay between waves and tides generally control the dynamics of the inlet. Waves enter the inlet and erode exposed backshore areas during the spring tidal cycles.. Although the 1992 structure appears to be stable and acting as originally designed, ***the coast to the north and south of the structure has experienced erosion that will likely continue into the future.***" (Emphasis added.)

Source: Mad River Migration Mouth Monitoring Report by Borgeld, Scalici and Lorang, May, 1993, cited at page 6 of the "Public Notice".

FACT No. 35:

If the 1995 RSP project had not been constructed, the slopes and vegetation below Vista Point would have been eroded away by ocean wave action/high river flows over a more gradual period of time.

Source: U. S. Army Corps of Engineers (San Francisco District) Sept. 11, 1995 Public Notice No. 207BN66 (hereinafter called "Public Notice"), page 7.

FACT No. 36:

From June 1996 to May 1997, Upstream of the river mouth bank and bluff erosion continued to occur.

Source: Charles C. Fielder, District 1 Hydraulics Engineer May, 1997 Mad River Mouth Monitoring Report", Page 3.

FACT No. 37:

The 1992 and 1995 RSP projects have impacts on the interaction of the river mouth with tidal influences/currents, ocean wave action and storm effects and high Mad River flow versus the resistance of local geology to erosion. **The 1992 structure may have merely redirected wave and river flow energy to unprotected portions of the coastline.**

Source: "Public Notice", page 9.

FACT No. 38:

The Planning Staff of Humboldt County concluded in 1997 that stabilizing the Mad River channel by the Caltrans RSP could have long range and yet undetermined impacts to the County and nearby property owners.

Source: County Staff Report re Case No. CDP=02-95/SP-16-95, Document F:\Planning\current\SRCASTR4.DOC 2/25/97, page 13.

FACT No. 39:

"[T]he accelerated erosion of the bluff between the southern end of the RSP and Widow White Creek would not have occurred as it did if Caltrans instead had installed RSP on both the north and south sides of the mouth of the river....the design failure caused irreversible bluff instablithy and marine erosion on the east bank of the river south of the project.:

Source: Bob Bush "Statement of Fact" No. 6, July 13, 1999.