

CALIFORNIA COASTAL COMMISSION

NORTH COAST DISTRICT OFFICE
710 E STREET • SUITE 200
EUREKA, CA 95501-1865
VOICE (707) 445-7833
FACSIMILE (707) 445-7877

MAILING ADDRESS:
P. O. BOX 4908
EUREKA, CA 95502-4908

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Staff:	Tiffany S. Tauber
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Commission Action:	

STAFF REPORT: REGULAR CALENDAR

APPLICATION NO.:	1-01-067
APPLICANT:	CALIFORNIA DEPARTMENT OF TRANSPORTATION
PROJECT LOCATION:	At the southbound Van Duzen River bridge, State Route 101, approximately five miles south of Fortuna, Mile Post 56.3/57.4, Humboldt County
PROJECT DESCRIPTION:	Drill 5 test borings adjacent to the existing southbound Highway 101 Van Duzen River Bridge to obtain geotechnical information for the design of a replacement bridge. The project does not include approval of any phase of the replacement bridge.
LOCAL APPROVALS RECEIVED:	None Required
OTHER APPROVALS RECEIVED:	National Marine Fisheries Service Section 7 Consultation under the Endangered Species Act

OTHER APPROVALS REQUIRED:

(1) Army Corps of Engineers; (2) Regional Water Quality Control Board Certification

SUBSTANTIVE FILE DOCUMENTS:

CDP File No. 1-93-05 (Caltrans); National Marine Fisheries Service Endangered Species Act Section 7 Consultation Biological Opinion (March 11, 2002)

SUMMARY OF STAFF RECOMMENDATION:

Staff recommends approval with special conditions for the coastal development permit application submitted by the California Department of Transportation for conducting five geotechnical borings adjacent to the existing State Route 101 southbound bridge over the Van Duzen River to evaluate soil and bedrock conditions to gather geotechnical information needed to design a replacement bridge. The existing bridge requires replacement because it has required extensive repairs in recent years, scouring is occurring at the piers, and it is considered to be at the end of its useful life.

The proposed borings would be drilled in the two abutments and adjacent to three piers of the existing bridge. All drilling equipment would be staged on the bridge deck and two bores would be drilled through the bridge deck into the streambed (Pier #2 & #3), one bore would be drilled through the bridge deck into an area above the ordinary high water mark outside of the streambed (Pier #4), and two borings would be drilled into the solid earth abutments (Pier #1 & #5). None of the boring locations contain wetland vegetation or other sensitive vegetation, as they are either beneath the paved roadway in the bridge abutments or within alluvial deposits of unvegetated sand and gravel.

To address impacts to wetlands, environmentally sensitive habitat, and water quality, and to ensure consistency with Sections 30231, 30233 and 30240 of the Coastal Act, staff is recommending several special conditions that would avoid significant adverse impacts to sensitive habitat areas and minimize the chances of drilling mud and fuels/lubricants/fluids entering and impacting either the groundwater or surface water and associated aquatic habitats of the Van Duzen River. Caltrans has incorporated numerous measures into the project to protect environmental resources that have been included as recommended project conditions.

Caltrans proposes to avoid drilling in the active, low flow channel if possible, either by waiting until the channel is dry, or by making slight adjustments to the boring locations on the order of 30 feet or so if by adjusting the boring location a bore hole could be drilled out of the water. To further minimize potential impacts to anadromous fish and water quality, and to ensure that the project is the least environmentally damaging feasible alternative as required by Section 30233(a), Special Condition No. 1 requires that no geotechnical drilling within the river channel of the Van Duzen River, excluding the two boring locations within the abutments of the existing bridge, occur before June 1 or after October 15 consistent with timing conditions imposed by NMFS. Additionally, to minimize the likelihood of drilling in water as much as possible, Special

Condition No. 1 requires that no geotechnical borings occur within the live waters of the river on or after June 1 and prior to September 15 unless the boring locations can be moved no more than 30 feet from the planned location of the boring to achieve a dry boring location. The condition further requires that on or after September 15 and prior to October 16, geotechnical drilling at the planned boring locations shall not occur within the live waters of the river unless a dry boring location within 30 feet of the planned boring location cannot be utilized.

To minimize impacts to the water quality of the Van Duzen River, staff recommends Special Condition Nos. 2, 3, & 4. Special Condition No. 2 requires that the geotechnical drilling mud to be used be bentonite without additives and that initial drilling through gravels be accomplished using clean water as a lubricant until bedrock or consolidated material is reached, at which point drilling mud (bentonite clay) may be used. Special Condition No. 3 requires Best Management Practices designed to protect the water quality of the Van Duzen River be implemented during construction consistent with the Caltrans project description. Special Condition No. 4 requires Caltrans to adhere to construction related responsibilities requiring that (a) all project equipment be staged and operated from the existing bridge deck or roadway, (b) no construction debris or waste be placed or stored where it may be subject to entering river waters; and (c) any cylindrical, concrete pieces of bridge decking that fall from the drill casing into the river bed be immediately retrieved. Subsection (c) of Special Condition No. 4 will also assure that public access to and along the river is not impeded.

To ensure that physical, chemical, and biological processes of the riverine wetland are not eliminated or significantly impacted, the Commission attaches Special Condition No. 5 that requires that excavated soils from the bore holes be replaced with bentonite chips up to approximately two feet below the surface and that the top approximately two feet of the bore holes be filled with native streambed material in a manner consistent with the recommendations of the RWQCB and NMFS.

Finally, Special Condition No.6 requires Caltrans to provide a copy of any required approval of the U.S. Army Corps of Engineers to the Executive Director or evidence that no permit is required. Any changes to the project required by the Army Corps of Engineers must be reported to the Executive Director and such changes shall not be incorporated into the project until any required coastal development permit amendment is obtained.

As conditioned, staff believes that the project is fully consistent with the Chapter 3 policies of the Coastal Act.

STAFF NOTES:

1. Standard of Review

The proposed project is located within the Commission's area of retained permit jurisdiction. Therefore, the standard of review that the Commission must apply to the project is the Chapter 3 policies of the Coastal Act.

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. 1-01-067 pursuant to the staff recommendation.

STAFF RECOMMENDATION OF APPROVAL:

Staff recommends a YES vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

RESOLUTION TO APPROVE THE PERMIT:

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment.

II. STANDARD CONDITIONS: See Attachment A.

III. SPECIAL CONDITIONS:

1. Timing of Construction and Protection of Water Quality and Anadromous Fish

Geotechnical borings within the river channel of the Van Duzen River, excluding the two boring locations within the abutments of the existing bridge, as generally depicted on Exhibit No. 3, shall be limited as follows:

A. Before June 1 and After October 15

No geotechnical borings shall occur.

B. On or after June 1 and Prior to September 15

Geotechnical borings at the planned boring locations shall not occur within the live waters of the river including drilling located at Piers #2 and #3 as generally depicted on Exhibit No. 3. However, during this time period, the geotechnical borings may occur if the boring location can be moved no more than 30 feet from the planned location of the borings to achieve a dry boring location.

C. On or after September 15 and Prior to October 16

Geotechnical borings at the planned boring locations shall not occur within the live waters of the river, including drilling located at Piers #2 and #3 as generally depicted on Exhibit No. 3, unless a dry boring location within 30 feet of the planned boring location cannot be utilized.

2. Drilling Materials

Geotechnical drilling mud shall be bentonite without additives. Initial drilling through gravels shall be accomplished using clean water as a lubricant. Once bedrock or consolidated material is reached, drilling mud (bentonite clay) may be used.

3. Water Quality Best Management Practices

Best Management Practices designed to protect the water quality of the Van Duzen River shall be implemented during construction consistent with Caltrans project description and shall include the following measures:

- (a) Plastic sheeting and straw wattle containment booms shall be placed around the (1) perimeter of the drilling area on the bridge deck; (2) casing collar where the drill casing intercepts the gravel bar channel, except for those borings that must be drilled

within the active river channel when water is flowing over the drill site; and (3) scuppers on the bridge deck.

- (b) In the event that a release of drilling mud is detected, all work shall stop immediately and the release shall be contained and cleaned up as soon as possible thereafter. Straw wattles, plastic sheeting, and absorbent pads shall be available on site for quick response in the event of a spill.

4. Construction Related Responsibilities

The permittee shall comply with the following construction-related requirements:

- (a) All project equipment shall be staged and operated from the existing bridge deck or roadway. No drilling equipment or machinery shall be allowed at any time within the channel of the Van Duzen River or within adjacent environmentally sensitive riparian habitat areas;
- (b) No construction debris or waste shall be placed or stored where it may be subject to entering river waters;
- (c) Any cylindrical, concrete pieces of bridge decking that fall from the drill casing into the river bed shall be immediately retrieved.

5. Geotechnical Drilling Completion

The drilled holes shall be filled with bentonite chips to seal the holes and prevent the potential mixing of aquifers to a level approximately two feet below the surface of the streambed. The upper approximately two feet of the holes shall be backfilled with native streambed material.

6. U.S. Army Corps of Engineers Approval

PRIOR TO COMMENCEMENT OF CONSTRUCTION, the permittee shall provide to the Executive Director a copy of a permit issued by the U.S. Army Corps of Engineers, or letter of permission, or evidence that no permit or permission is required. The applicant shall inform the Executive Director of any changes to the project required by the U.S. Army Corps of Engineers. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is required.

IV. FINDINGS AND DECLARATIONS

1. Site & Project Description

The Highway 101 Van Duzen River bridge is located approximately five miles south of Fortuna and approximately one-half mile upstream, or east, of the confluence of the Van Duzen and Eel Rivers in Humboldt County. The rural area surrounding the site is mainly flat agricultural land used for grazing and open space. (Exhibit No. 1 & 2)

Caltrans proposes to conduct geotechnical drilling at five locations beneath the southbound Van Duzen bridge to evaluate soil and bedrock conditions to gather geotechnical information needed to design a replacement bridge. The existing bridge requires replacement because it has required extensive repairs in recent years, scouring is occurring at the piers, and it is considered to be at the end of its useful life.

The bridge consists of two separate bridges located side by side, one carrying northbound traffic and the other southbound traffic. An historic railroad bridge carrying the main line of the North Coast Railroad also crosses the Van Duzen in this location, in an alignment parallel to and less than 50 feet east of the northbound highway bridge. From bank to bank, the bridges are both approximately 800 feet long. However, the width of the river channel in this location is only about 400 feet at ordinary high water and less than 50 feet during low flow conditions in the summer. The bridge is supported by four piers, five bents, and two abutments. The northbound bridge was replaced in 1993 under CDP No. 1-93-05. Caltrans plans to replace the southbound bridge after foundation investigations revealed that the Van Duzen River channel had degraded and scour is occurring at the piers, thereby threatening the structural integrity of the bridge.

The proposed project is located in an area commonly known as the Van Duzen River 'gravel extraction reach.' This reach is composed of broad, flat aggraded alluvial deposits with a stream gradient of 1% or less. Extensive riparian woodlands exist along the north bank of the river, extending several hundred feet back from the shoreline and a much narrower band of riparian woodland, approximately 50 feet wide, flanks the south bank of the river. Federally listed anadromous salmonid species within the Van Duzen River watershed include Chinook salmon, Coho salmon, and steelhead trout.

Proposed Project Details

The proposed borings would be drilled in the two abutments and adjacent to three piers of the existing bridge. All drilling equipment would be staged on the bridge deck. Two bores would be drilled through the bridge deck into the streambed, one bore would be drilled through the bridge deck into an area above the ordinary high water mark outside of the streambed, and two borings would be drilled into the solid earth abutments. None of the boring locations contain wetland vegetation or other sensitive vegetation, as they are either beneath the paved roadway in the bridge abutments or within alluvial deposits of unvegetated sand and gravel. Three of the five drilling locations would be located outside of wetland areas in areas adjacent to environmentally sensitive habitat areas, including the Van Duzen River channel and the riparian

woodlands along the north and south banks of the river. Two of these borings would occur through the existing abutments adjacent to the stream bed (Pier #1 and #5). Pier #4 is located west of the exiting pier on the northbound structure and at an elevation of about 25 feet higher than the river level. Thus, proposed drilling locations #1, #5, and #4 are located in areas adjacent to environmentally sensitive habitat and Pier #2 & #3 are within wetlands. (Exhibit No. 3)

Each bore hole would be approximately 150-200 feet below the elevation of the streambed, yielding up to four cubic yards of material each. The total anticipated time for drilling one test bore is up to two weeks due to the depth of drilling, and the project may take eight to ten weeks to complete.

The geotechnical drilling would be performed using a circular drill bit to drill five, six-inch-diameter holes through the existing southbound bridge decking along the bridge's centerline and parallel with the northbound bridge piers. Five-inch-diameter casings would be driven through the bottom of the channel to a depth that allows sealing followed by a four-inch inner casing that would be inserted to a greater depth to obtain the core samples. Initial drilling through gravels would be accomplished using clean water as a lubricant. Once bedrock or consolidated material is reached, drilling mud (bentonite clay) would be used to lubricate the bit inside the casing. No other additives would be used in the bentonite drilling mud when drilling within the active river channel, including the dry gravel beds and bars away from flowing water.

After drilling is completed, the four-inch-diameter inner casing and core samples would be removed and the five-inch-diameter outer casings would be flushed until the water runs clear and removed from the river channel. The 5-inch-diameter casing would remain in place while fresh water is pumped from the Water Tender/Drill Rig into the boring through the drill rod. This procedure would force the drill fluids up the borehole, into the casing and ultimately into the mud tank on the deck of the bridge. As the fresh water displaces the drill fluids in the boring, the drill rod would be withdrawn but the casing would remain in place until the fluid returning to the surface tank become relatively clear. The water remaining in the casing and above the ground line would be pumped/bailed into the mud tank on the bridge deck and the casing is then retracted from the boring. Thus, the drill muds would be contained in a closed system where drill fluids and water used to flush the boring are recycled back to the surface mud tank for processing and reuse. When the borehole has been satisfactorily flushed, fluids in the mud tank would be transferred (pumped/bailed) into 55-gallon drums for transport offsite initially to the Caltrans Fortuna Maintenance Station and later transferred to an appropriate disposal facility.

Caltrans proposes to implement Best Management Practices (BMPs) to provide secondary containment around the drilling activities and boring locations. The proposed BMPs include placing plastic sheeting with straw wattle containment booms around the perimeter of the drilling area on the bridge deck and roadway and around the casing collar where the drill casing intercepts the gravel bar channel for those borings to be drilled underneath the bridge out of the water. The scuppers on the bridge deck will also be seal-covered with plastic sheeting and surrounded with straw wattle. Caltrans further proposes that if a release of drilling mud is detected, drilling/circulation would stop as quickly as possible and the release would be contained and cleaned up as soon as possible thereafter. Equipment to be made available on site

to prevent or stop releases would include: straw wattles, plastic sheeting, straw and absorbent pads.

2. Filling and Dredging in Coastal Waters and Wetlands

Section 30106 of the Coastal Act defines development, in part, as the “*removing, dredging, mining, or extraction of any materials.*” Section 30108.2 defines fill as the placement of earth or other substance or material in a submerged area. Although the project would not involve the placement of fill on top of existing soils and aquatic substrate, it would involve the subsurface removal of soil and rock and replacement of that native material partially with bentonite mud. Therefore, the proposed project constitutes dredging and filling in wetlands.

Section 30233 of the Coastal Act 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:*

...

- (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.*

Section 30231 of the Coastal Act address the protection of coastal water quality and marine resources in conjunction with development and other land use activities. Section 30231 states:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of wastewater discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantially interference with the surface water flow, encouraging, wastewater reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams. (emphasis added)

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

- a. that the purpose of the filling, diking, or dredging is for one of the eight uses allowed under Section 30233;

- b. that the project has no feasible less environmentally damaging alternative;
- c. that feasible mitigation measures have been provided to minimize adverse environmental effects; and
- d. that the biological productivity and functional capacity of the habitat shall be maintained and enhanced where feasible.

a. **Permissible Use for Fill**

The first test for a proposed wetland fill/dredging project is whether the fill/dredging is for one of the eight allowable uses under Section 30233(a). The relevant category of use listed under Section 30233(a) that relates to the proposed geotechnical drilling is subcategory (5), stated as follows:

(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.

To determine if the proposed fill/dredging is for an incidental public service purpose, the Commission must first determine that the proposed fill/dredging is for a public service purpose. The drilling is required to obtain geotechnical information needed to design and construct a replacement bridge for increased public safety. Since the project would be conducted by a public agency to improve public safety on an existing public highway bridge, the Commission finds that the fill/dredging is expressly serves a public service purpose consistent with Section 30233(a)(5).

The Commission must next determine if the fill/dredging is for an "incidental" public service purpose. The Commission has in the past determined that certain fill/dredging for bridge repair projects is for an "incidental" public service purpose under Section 30233(a)(5). For example, in CDP No. 1-96-71 (Caltrans' seismic retrofit of the Pudding Creek Bridge in Fort Bragg) and CDP No. 1-00-032 (Caltrans' geotechnical drilling for the retrofit of the Ten Mile River Bridge in Mendocino), the Commission found that these public service projects were for an incidental public service purpose because the fill/dredging associated with these projects was incidental to the highway they affected as the repairs and geotechnical boring projects were not the primary part of the highways themselves and the impacts were of temporary duration. In the present case, the Commission finds that the proposed geotechnical drillings, as conditioned in this permit, will also have impacts of a temporary duration and are also for an incidental public service purpose, i.e. to provide information for the design and planning of the replacement of an existing public transportation facility to increase public safety.

Therefore, the Commission finds that for the reasons discussed above, the dredging (excavation) and filling for the proposed project is for an incidental public service purpose, and thus, is an allowable use pursuant to Section 30233(a)(5) of the Coastal Act.

b. Alternative Analysis

The second test of Section 30233(a) is whether there are feasible less environmentally damaging alternatives to the proposed project. Coastal Act Section 30108 defines "feasible" as follows:

'Feasible' means capable of being accomplished in a successful manner within a reasonable time, taking into account economic, environmental, social, and technological factors.'

Drilling within the river channel can result in potential significant adverse impacts to anadromous fish, water quality, and wetland functions. The proposed geotechnical drilling could adversely impact water quality through increased water turbidity from the release of drilling mud or disturbed sediments, which in turn can adversely affect sensitive anadromous fish species. According to NMFS, suspended sediments can make salmonid prey and predator detection difficult, reduce feeding opportunities, and induce behavioral modifications. Suspended sediments may also cause respiratory problems for fish, smother incubating eggs or juvenile fish, and reduce habitat by reducing the volume of interstitial spaces within substrate. Additionally, direct impact and/or vibrations resulting from driving the casing could be injurious to eggs and alevins in the gravel.

NMFS has determined that the proposed project, which would avoid drilling in flowing water between June 15 and October 15 to avoid the peak period of fish migration, would not result in an incidental take pursuant to standards of the Endangered Species Act. The standard set forth in Coastal Act Section 30233(a) that the Commission must apply is that the project be the least environmentally damaging feasible alternative. Alternatives to the project as proposed are discussed below. The Commission finds, as discussed below, that a less environmentally damaging feasible alternative to the proposed project exists and must be required to find the project consistent with Section 30233(a).

Avoid Drilling in the River Channel

The purpose of the geotechnical investigation is to gather information to plan for the design, siting, and construction specifications of a replacement southbound bridge across the Van Duzen River including pile capacity and foundation recommendations. The information from the drillings will allow Caltrans to design a replacement bridge as part of a separate permit application to the Commission. The soil and bedrock information must be obtained as close as possible to the existing piers to obtain accurate information about the geologic composition of the site. Because the bridge crosses aquatic habitat and bridge piers are located within the river channel, both above and below the level of ordinary high water, it is not feasible to avoid drilling in the river channel.

Use of Existing Geotechnical Data

Caltrans considered using the original data from borings taken when the original bridge was constructed and when the northbound bridge was constructed. However, due to the unknown

geotechnical makeup of the soil at each location and due to current seismic codes that Caltrans must adhere to for safety, deeper borings are required to determine to what depth future bridge pilings should be placed. Failure to do so at each pier location could potentially increase the exposure of the bridge to a catastrophic seismic event. The future piers will be constructed to a depth that is below the scour line and the results of the borings will help to determine the material of the piling and the construction method to be used for the future bridge. Because the existing data does not reflect the conditions at the required depth or precise location of the southbound bridge, using the existing data is not a less environmentally damaging feasible alternative. However, as discussed above, none of the boring locations contain wetland vegetation or other sensitive vegetation as they are either beneath the paved roadway or within alluvial deposits of unvegetated sand and gravel.

Avoid Drilling in the Wet Channel

As discussed previously, three of the five borings would occur within the banks of the river, two of which would occur in or adjacent to the low flow channel. One project alternative is to limit drilling to dry streambed areas only. Drilling in the dry streambed would avoid the potential for disturbed sediments and drilling muds from becoming suspended in the water column, which in turn would avoid such increased turbidity from adversely impacting anadromous fish. Additionally, drilling in the dry streambed would avoid the potential for direct impact to fish from the drilling equipment and avoid disturbance from the vibration caused during drilling.

Caltrans proposes to avoid drilling in the active, low flow channel if possible, either by waiting until the channel is dry, or by making slight adjustments to the boring locations of as much as 30 feet from the planned boring location to move bore holes out of the water. However, Caltrans is unable to guarantee that all drilling would be performed in dry streambed areas because two drilling locations (Pier #2 & #3) are very close to the low flow channel and river conditions are variable and unpredictable. There is no way to know with certainty how much unseasonable rain may fall and how high the river will be running at the time of project commencement. If water levels are high during the period of construction, it may be that even by moving the bore hole locations 30 feet from the proposed location, they may still be located within an area of flowing water. Therefore, limiting drilling to dry streambed areas only is not a feasible less environmentally damaging alternative.

Use of Cofferdams

Additionally, Caltrans considered a construction method alternative that would involve drilling within a coffer dam if drilling takes place in the water. A coffer dam could help contain disturbed sediment and any spill of bentonite drilling mud or drill spoils. However, coffer dam installation could potentially trap fish, perturb fish through vibrations during installation and removal, and disturb fine sediments and gravels. According to the Biological Opinion prepared for the proposed project, the National Marine Fisheries Service (NMFS) concluded that given the small amount of material within the casing at any one time, including approximately five gallons of bentonite slurry, and the relatively minor disturbance caused by drilling within the casing, the proposed drilling method would likely be less environmentally damaging than drilling within

coffer dams even if drilling had to be performed within the active channel. Thus, this construction alternative is not a less environmentally damaging feasible alternative.

No Project Alternative

The Commission also finds that a "no project alternative" is not a less feasible environmentally damaging alternative to the proposed project because the no project alternative would not meet the project objective of replacing a bridge that has reached the end of its design life and ensuring the safety of the traveling public using the bridge. Therefore, the Commission finds that the proposed geotechnical drilling location and method has no less feasible environmentally damaging alternative.

Minimizing Drilling in the Wet Channel

Caltrans proposes to drill within the river channel between June 1 and October 15 if the channel is dry at the boring locations. If the channel is wet at the boring locations, Caltrans proposes to limit drilling between June 15 and October 15 to avoid the peak period of fish migration. NMFS has included these construction timing limitations into the Terms and Conditions of the Biological Opinion prepared for the project.

The Commission finds however, that the least environmentally damaging feasible alternative to the proposed timing of construction is to avoid drilling in the water to the maximum extent possible. If borings cannot be moved out of the water sooner, waiting to drill in the water between September 15 and October 15 minimizes the need to drill in the water as much as possible. Limiting drilling in the river channel toward the end of the construction window established by NMFS (June 15-October 15) when flows would likely be at the lowest level would increase the likelihood that drilling could occur within the dry streambed and avoid the need to drill in the flowing channel. As discussed above, drilling when the channel is dry would avoid the potential for disturbed sediments and drilling muds from becoming suspended in the water column, which in turn would avoid such increased turbidity from adversely impacting anadromous fish. Additionally, drilling in the dry streambed would avoid the potential for direct impact to fish from the drilling equipment and avoid disturbance from the vibration caused during drilling.

Caltrans has indicated that it takes approximately two weeks to drill each hole. As two borings are located along the low flow channel, a total of approximately one month could be needed to perform the drilling in the wet channel. Therefore, if the borings cannot be drilled in a dry area of the channel before September 15, beginning on September 15 would allow enough time to drill the two holes most likely to be located in the water (Pier #2 & Pier #3). Caltrans has further indicated that the boring locations could be moved up to 30 feet away from the planned boring locations and still obtain the geotechnical information needed to meet project objectives. Moving the borings 30 feet from the bore holes located in the river channel (Piers #2 & #3) would not place them in other environmentally sensitive habitat area, or otherwise cause other impacts to coastal resources in these areas.

The Commission finds that to minimize the impacts of drilling in the water, and for the project to be consistent with requirements of Section 30233(a) of the Coastal Act that the project be the least environmentally damaging feasible alternative, no geotechnical borings should occur within the live waters of the river on or after June 1 and prior to September 15 unless the boring locations can be moved no more than 30 feet from the planned location of the boring to achieve a dry boring location. On or after September 15 and prior to October 16, geotechnical drilling at the planned boring locations shall not occur within the live waters of the river unless a dry boring location within 30 feet of the planned boring location cannot be utilized. To ensure that the timing requirements of this alternative are followed, the Commission attaches Special Condition No. 1.

Therefore, the Commission finds that limiting the timing of drilling in the river channel to avoid the need to drill in the wet channel as much as possible is the least environmentally damaging feasible alternative. As conditioned, the proposed project is the least environmentally damaging feasible alternative consistent with Section 30233(a).

c. Feasible Mitigation Measures

The third test set forth by Section 30233 is whether feasible mitigation measures have been provided to minimize adverse environmental impacts. Depending on the manner in which the geotechnical drilling is conducted, the portions of the proposed project to be conducted below the ordinary high water mark could have potential significant adverse effects to (1) wetland (riverine) habitat, (2) anadromous fish, and (3) water quality of the Van Duzen River. The potential impacts and their mitigation are discussed in the following three sections:

(1) Wetland Habitat

The proposed drilling locations adjacent to piers #2 and #3 are located in areas below the ordinary high water mark (OHW) and are located within a riverine wetland. Riverine wetlands play an important role in a river ecosystem and provide, among other things, areas of lower velocity during flooding periods, which is critical to the survival of fish species, especially juvenile salmon. Because riverine wetlands serve as migratory corridors, connecting upland with coastal and other aquatic habitat, species richness tends to be higher than that of other terrestrial habitat.

Geotechnical drilling activities within a riverine wetland can potentially damage wetland habitat through a number of mechanisms which affect wetland hydrology and/or hydric soils and/or hydrophytic vegetation. Wetland hydrology can be adversely impacted through soil compaction, such as that resulting from operating heavy equipment in wetland areas, which can alter the physical functions of the wetlands. Additionally, direct impact to wetlands from heavy equipment can adversely impact wetland vegetation, particularly during the wet season.

To prevent these impacts from occurring, Caltrans proposes to perform the geotechnical drilling by operating all drilling equipment from the bridge deck, rather than from within the streambed or river banks. This will avoid the need to access the site through wetlands and the need to

remove or impact any wetland vegetation. To ensure that this proposed construction methodology is implemented as proposed, the Commission attaches Special Condition No. 4(a) which requires that all project equipment be staged and operated from the bridge deck.

Caltrans proposes to drill each of the holes to a depth of approximately 150-200 feet below the elevation of the streambed surface. The depth to which the holes must be drilled raises the potential for the borings to result in a mixing of underground aquifers. If the excavated holes were not replaced with solid material, the physical and chemical composition of the wetlands and underground aquifers could be altered. Caltrans has indicated that the holes could be filled with bentonite chips that swell and create a water tight seal, or with sand. Staff consulted with the Regional Water Quality Control Board (RWQCB) and the National Marine Fisheries Service (NMFS) regarding filling the holes upon project completion to ensure that the physical and biological functions of the wetlands are maintained. The RWQCB recommended that bentonite be used in all but the upper few feet of the holes to seal them and prevent the potential for the mixing of aquifers. NMFS recommended that the surface soils excavated by the borings be replaced with native material. Therefore, to ensure that physical, chemical, and biological processes are not eliminated or significantly impacted, the Commission attaches Special Condition No. 5 that requires that excavated soils from the bore holes be replaced with bentonite chips up to approximately two feet below the surface and that the top approximately two feet of the bore holes be filled with native streambed material in a manner consistent with the recommendations of the RWQCB and NMFS.

Therefore, the Commission finds that the proposed project, as conditioned, would not have significant adverse impacts to riverine wetland habitat. Furthermore, the mitigation measures required to minimize impacts to anadromous fish and water quality discussed in sections (2) and (3) below would further minimize adverse impacts to the functional capacity of the wetland habitat.

(2) Anadromous Fish Habitat

According to the National Marine Fisheries Service, the Van Duzen River estuary functions primarily as a migratory corridor and as juvenile rearing habitat (with limited function as spawning habitat) for Chinook salmon, Coho salmon, and steelhead trout, which are federally listed threatened species.

The proposed geotechnical drilling could adversely impact sensitive fish species by increased water turbidity through the release of drilling mud or disturbed sediments. According to NMFS, suspended sediments can make salmonid prey and predator detection difficult, reduce feeding opportunities, and induce behavioral modifications. Suspended sediments may also cause respiratory problems for fish, smother incubating eggs or juvenile fish, and reduce habitat by reducing the volume of interstitial spaces within substrate. Additionally, direct impact and/or vibrations resulting from driving the casing could be injurious to eggs and alevins in the gravel.

Caltrans proposes to avoid drilling in the active, low flow channel if possible, either by waiting until the channel is dry, or by making slight adjustments to the boring locations on the order of

several feet or so if by adjusting the boring location a bore hole could be drilled out of the water. According to the Biological Opinion prepared for the project, even if one or two of the borings must be drilled in the water, NMFS expects that any turbidity generated from the drilling would be minor, given that all drilling is accomplished inside of a casing and all spoils are recovered in a container on the bridge deck or roadway. Additionally, Caltrans proposes to perform the work in the low flow channel between June and October to avoid the period during which eggs and alevins are likely to be present, to avoid the period of peak salmonid migration, and to minimize the need to drill any of the bores in the wet active channel. Therefore, even if one or two of the drillings were conducted in the wet active channel, NMFS determined that such drilling would not result in an incidental take because the potential for increased turbidity is minimal and the timing of the project would minimize the likelihood that the fish would be present at the drilling locations.

The Biological Opinion prepared by NMFS concludes, *"Based on the location, scale, duration, and timing of the proposed geotechnical drilling, as well as Caltrans' management practices intended to minimize the chance of spills and other disturbance, we do not expect incidental take due to [the proposed geotechnical drilling]."* Therefore, to ensure that the project occurs outside the peak migration period as proposed, Special Condition No. 1 requires that no geotechnical drilling within the river channel of the Van Duzen River, excluding the two boring locations within the abutments of the existing bridge, occur before June 1 or after October 15 consistent with timing condition imposed by NMFS. Additionally, to minimize the likelihood of drilling in water as much as possible, Special Condition No. 1 requires that no geotechnical borings occur within the live waters of the river on or after June 1 and prior to September 15 unless the boring locations can be moved no more than 30 feet from the planned location of the boring to achieve a dry boring location. The condition further requires that on or after September 15 and prior to October 16, geotechnical drilling at the planned boring locations shall not occur within the live waters of the river unless a dry boring location within 30 feet of the planned boring location cannot be utilized.

Therefore, the Commission finds that the proposed project, as conditioned, would minimize disturbance to sensitive anadromous fish by restricting the timing of the in-stream work. Furthermore, the water quality mitigation measures discussed below will also ensure that adverse impacts to sensitive fish species are minimized.

(3) Water Quality

Due to the project's location adjacent to and within the Van Duzen River, the proposed project has the potential to adversely impact water quality within the riverine environment. Water quality could be impacted in two general ways: (1) release of sediments and/or drilling fluids from the drilling activities, and (2) release of hydrocarbons based compounds (fuels, solvents, lubricants, other fluids) from motorized/mechanical equipment associated with any aspect of the drilling.

The proposed project involves drilling approximately 150-200 feet below the surface of the streambed. Once bedrock or consolidated material is reached, drilling mud (bentonite clay)

would be used to lubricate the bit inside the casing. Bentonite is a clay mineral with a very small particle size and although it is generally considered to be non-toxic, it can potentially have an adverse effect on water quality and sensitive fish species. The Biological Opinion prepared for the project cites a study by Patin (1999) that concludes that effects of offshore drilling using water-based drilling muds (including bentonite), while preferred over oil-based muds or synthetic-based muds (including polymers) for environmental reasons, can still damage marine life if released into the environment. Additionally, various additives such as surfactants and oils are sometimes included in bentonite drilling mud. To minimize potential water quality impacts from the drilling muds, Caltrans proposes, and NMFS has required, that no additives be used with the bentonite when drilling occurs within the river channel.

The use of additives in the bentonite mud such as oils or synthetics could result in greater adverse impacts to water quality and surrounding habitat areas than bentonite alone if it were released into the environment. As discussed in Finding No. 3 below, the proposed drilling locations in the two abutments (Pier # 1 & #5) are located outside of the river channel, but adjacent to environmentally sensitive riparian habitat. Therefore, to minimize adverse impacts to water quality, the Commission attaches Special Condition No. 2 prohibiting the use of additives in the bentonite drilling mud. Additionally, the condition requires that initial drilling through gravels be accomplished using clean water as a lubricant and once bedrock or consolidated material is reached, drilling mud (bentonite clay) may be used.

As discussed in the Project Description in Finding No. 1 above, the drilling process is essentially a closed system, as drilling is confined to within the drill casing and all drilling muds are contained on the bridge deck. To further prevent the release of the bentonite drilling mud and the potential for increased turbidity within the riverine environment, Caltrans proposes several Best Management Practices to provide secondary containment around the drilling activities and boring locations during the project. Caltrans proposes to place plastic sheeting and straw wattle containment booms around the (1) perimeter of the drilling area on the bridge deck; (2) casing collar where the drill casing intercepts the gravel bar channel for those borings to be drilled underneath the bridge out of the water, and (3) scuppers on the bridge deck. If a release of drilling mud is detected, Caltrans proposes to stop work as quickly as possible and contain and clean the release as soon as possible thereafter. Equipment proposed to be kept on site to prevent or stop releases include straw wattles, plastic sheeting, straw, and absorbent pads. The Commission attaches Special Condition No. 3 to ensure that the Best Management Practices designed to protect the water quality of the Van Duzen River are implemented during project construction as proposed by Caltrans.

Special Condition No. 4 requires construction related responsibilities to further ensure that impacts to water quality are minimized. Special Condition No. 4(a) requires that all drilling equipment be staged and operated from the bridge deck or roadway to avoid fuel, oil, and other hydrocarbon products associated with heavy equipment from entering the waters of the Van Duzen River. Additionally, Special Condition No. 4(b) requires that no construction debris or waste be placed or stored where it may be subject to entering river waters.

Caltrans indicates that while drilling through the bridge deck, the cored material (concrete bridge decking) will usually remain in the drilling core barrel and can be retrieved by the drill operator. However, if the cylindrical concrete bridge decking is not retained in the core barrel, it may fall within the river channel. Caltrans proposes that the cored pieces of bridge decking can be retrieved later in the summer as the water level of the river recedes if it cannot be retrieved at the time of drilling. However, to ensure that this concrete debris does not remain in the river and does not impede access to or along the river, Special Condition No. 4(c) requires that all cored pieces of bridge decking that fall into the streambed be immediately retrieved.

Section 30412 prevents the Commission from modifying, adopting conditions, or taking any action in conflict with any determination by the State Water Resources Control Board or any California Regional Water Quality Control Board in matters relating to water quality. Staff consulted with the Regional Water Quality Control Board (RWQCB) about permitting requirements and potential impacts resulting from the proposed project. The proposed project requires a Section 401 Water Quality Certification from the RWQCB. The RWQCB has not yet acted on this required approval at the time of the writing of this staff report, and therefore, conditions and/or BMPs required by the Commission to minimize adverse impacts to water quality from the proposed geotechnical drilling activities would not conflict with actions of the RWQCB pursuant to the requirements of Coastal Act Section 30412.

Therefore, as conditioned, the Commission finds that the biological productivity and quality of coastal waters will be maintained and the project, as conditioned, is consistent with Sections 30230 and 30231 of the Coastal Act.

d. Maintenance and Enhancement of Marine Habitat Values

The fourth general limitation set by Section 30233 and 30231 is that any proposed dredging or filling in coastal wetlands must maintain and enhance the biological productivity and functional capacity of the habitat, where feasible.

As discussed above in the section of this finding on mitigation, the conditions of the permit will ensure that the project will not have significant adverse impacts on the riverine wetland or on the water quality of the Van Duzen River. The mitigation measures incorporated into the project and required by the Special Conditions discussed above will ensure that the geotechnical drilling would not adversely affect the biological productivity and functional capacity of the wetland environment. Therefore, the Commission finds that the project, as conditioned, will maintain the biological productivity and functional capacity of the habitat consistent with the requirements of Section 30233 and 30231 of the Coastal Act.

e. Conclusion

The Commission thus finds that the project is an allowable use, that there is no feasible less environmentally damaging alternative, that feasible mitigation is required for potential impacts associated with the dredging and filling of coastal wetlands, and that wetland habitat values will

be maintained or enhanced. Therefore, the Commission finds that the proposed development, as conditioned, is consistent with Sections 30233 and 30231 of the Coastal Act.

3. Protection of Adjacent Environmentally Sensitive Habitat Area (ESHA)

Section 30240(b) of the Coastal Act states:

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Three of the five drilling locations would be located outside of wetland areas in areas adjacent to environmentally sensitive habitat areas, including the Van Duzen River channel and the riparian woodlands along the north and south banks of the river. Two of these borings would occur through the existing abutments adjacent to the stream bed (Pier #1 and #5). Pier #4 is located west of the exiting pier on the northbound structure and at an elevation of about 25 feet higher than the river level. Thus, proposed drilling locations #1, #5, and #4 are located in areas adjacent to environmentally sensitive habitat and are therefore subject to the standards of Section 30240(b) above.

Section 30240(b) requires that environmentally sensitive habitat areas be protected against any significant disruption of habitat values potentially resulting from adjacent development. Caltrans has proposed a number of mitigation measures as part of the proposed project to minimize impacts to water quality and the aquatic habitat of the Van Duzen River. Mitigation measures proposed and required to protect wetland habitat, anadromous fish species, and water quality are discussed in Finding #2 above. These mitigation measures will also ensure that the riparian woodland environmentally sensitive habitat area above the level of ordinary high water line along both banks of the river is protected from significant disruption. Included among these measures is the proposed mitigation measure required by Special Condition No. 4 to stage and operate all drilling equipment from the bridge deck or roadway. This measure will avoid the need for heavy equipment to access the site through any environmentally sensitive habitat areas and avoid the removal of or impact to any riparian vegetation adjacent to the river channel.

With the mitigation measures that are proposed and required, which are designed to minimize any potential impacts to the aquatic habitat and water quality of the Van Duzen River as well as to the riparian woodland habitat along the north and south banks of the river during the drilling, the project as conditioned will not significantly degrade adjacent ESHA and will be compatible with the continuance of the use habitat areas. Therefore, the Commission finds that the project as conditioned is consistent with Section 30240(b) of the Coastal Act.

4. Public Access

Section 30210 of the Coastal Act requires that maximum public access shall be provided consistent with public safety needs and the need to protect natural resource areas from overuse.

Section 30212 of the Coastal Act requires that access from the nearest public roadway to the shoreline be provided in new development projects except where it is inconsistent with public safety, military security, or protection of fragile coastal resources, or adequate access exists nearby. Section 30211 requires that development not interfere with the public's right to access gained by use or legislative authorization. Section 30214 of the Coastal Act provides that the public access policies of the Coastal Act shall be implemented in a manner that takes into account the capacity of the site and the fragility of natural resources in the area. In applying Sections 30210, 30211, 30212, and 30214, the Commission is also limited by the need to show that any denial of a permit application based on these sections, or any decision to grant a permit subject to special conditions requiring public access, is necessary to avoid or offset a project's adverse impact on existing or potential access.

Recreational use of the river in this particular section of the river is very limited, largely because there are very few access points to the river. The principal public access use of the project site that does occur is by fishermen who use the river channel for recreational fishing. Other public access and recreational uses of this stretch of the river include canoeing and recreational boating. The prime fishing season occurs in the spring before the geotechnical drilling within the channel would begin. Additionally, the proposed project would not involve placing any type of obstruction within or across the river in a manner that would interfere with the passage of boaters. All drilling equipment would be staged from the bridge deck and would not impede public access to or along the river. During the duration of the drilling, one of the two southbound lanes of traffic would be temporarily closed which may cause some minor traffic delay, but would not affect access to the coast or river. The geotechnical drilling is expected to take between eight and ten weeks to complete and any delays would be temporary.

Caltrans indicates that while drilling through the bridge deck, the cored material (concrete bridge decking) will usually remain in the drilling core barrel and can be retrieved by the drill operator. However, if the cylindrical concrete bridge decking is not retained in the core barrel, it may fall within the river channel. Caltrans proposes that the cored pieces of bridge decking can be retrieved later in the summer as the water level of the river recedes if it cannot be retrieved at the time of drilling. However, to ensure that this concrete debris does not remain in the river and does not impede access to or along the river, Special Condition No. 4(c) requires that all cored pieces of bridge decking that fall into the streambed be immediately retrieved.

Thus, the project will not significantly affect the fishermen, canoeists or other recreational boaters. The proposed drilling will not create any additional burdens on public access and will not create any new demands for fishing access or other public access use.

Therefore, the Commission finds that the proposed project does not have any significant adverse effect on public access, and that the project as proposed without new public access is consistent with the requirements of Coastal Act Sections 30210, 30211, 30212, and 30214.

5. State Lands Commission

The State Lands Commission has granted right-of-way to the California Department of Transportation for purposes of establishing rights-of-way for highways and for use in protecting highways from damage or destruction by natural forces. Such a grant of right of way covers the streambed of the Van Duzen River up to the mean high water mark. The geotechnical drilling is necessary to protect the highway from damage and destruction by natural forces because the data will be used to design a replacement bridge to withstand river scour and maximum credible earthquakes. Therefore, no additional approval is required from the State Lands Commission for the proposed geotechnical drilling.

6. U.S. Army Corps of Engineers Review

The project is within and adjacent to a navigable waterway and is subject to review by the U.S. Army Corps of Engineers (USACE). Pursuant to the Federal Coastal Management Act, any permit issued by a federal agency for activities that affect the coastal zone must be consistent with the coastal zone management program for that state. Under agreements between the Coastal Commission and the USACE, the Corps will not issue a permit until the Coastal Commission approves a federal consistency certification for the project or approves a permit. To ensure that the project ultimately approved by the Corps is the same as the project authorized herein, the Commission attaches Special Condition No. 6 that requires the applicant, prior to the commencement of construction, to demonstrate that all necessary approvals from the USACE for the proposed project have been obtained.

7. California Environmental Quality Act

Section 13096 of the Commission's administrative regulations requires Commission approval of a coastal development permit application to be supported by findings showing that the application, as modified by any conditions of approval, is consistent with any applicable requirement of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect the proposed development may have on the environment.

The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. As discussed above, the proposed project has been conditioned to be found consistent with the policies of the Coastal Act. These findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report. Mitigation measures that will minimize or avoid all significant adverse environmental impact have been required. As conditioned, there are no feasible alternatives or feasible mitigation measures available, beyond those required, which would substantially lessen any significant adverse impact that the activity would have on the environment. Therefore, the Commission finds that the proposed project, as conditioned to

mitigate the identified impacts, can be found consistent with the requirements of the Coastal Act and to conform to CEQA.

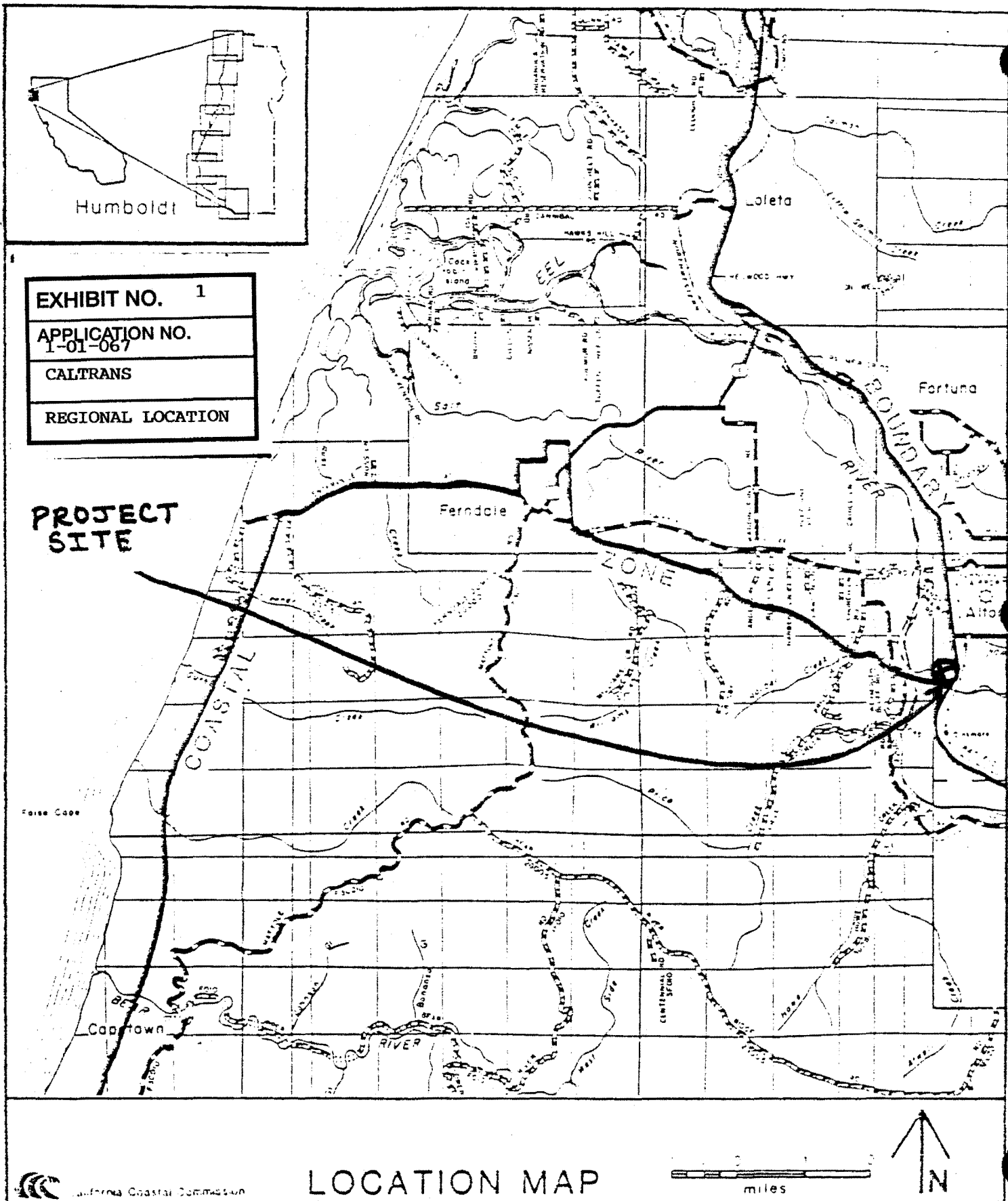
EXHIBITS:

1. Regional Location Map
2. Vicinity Map
3. Site Plan

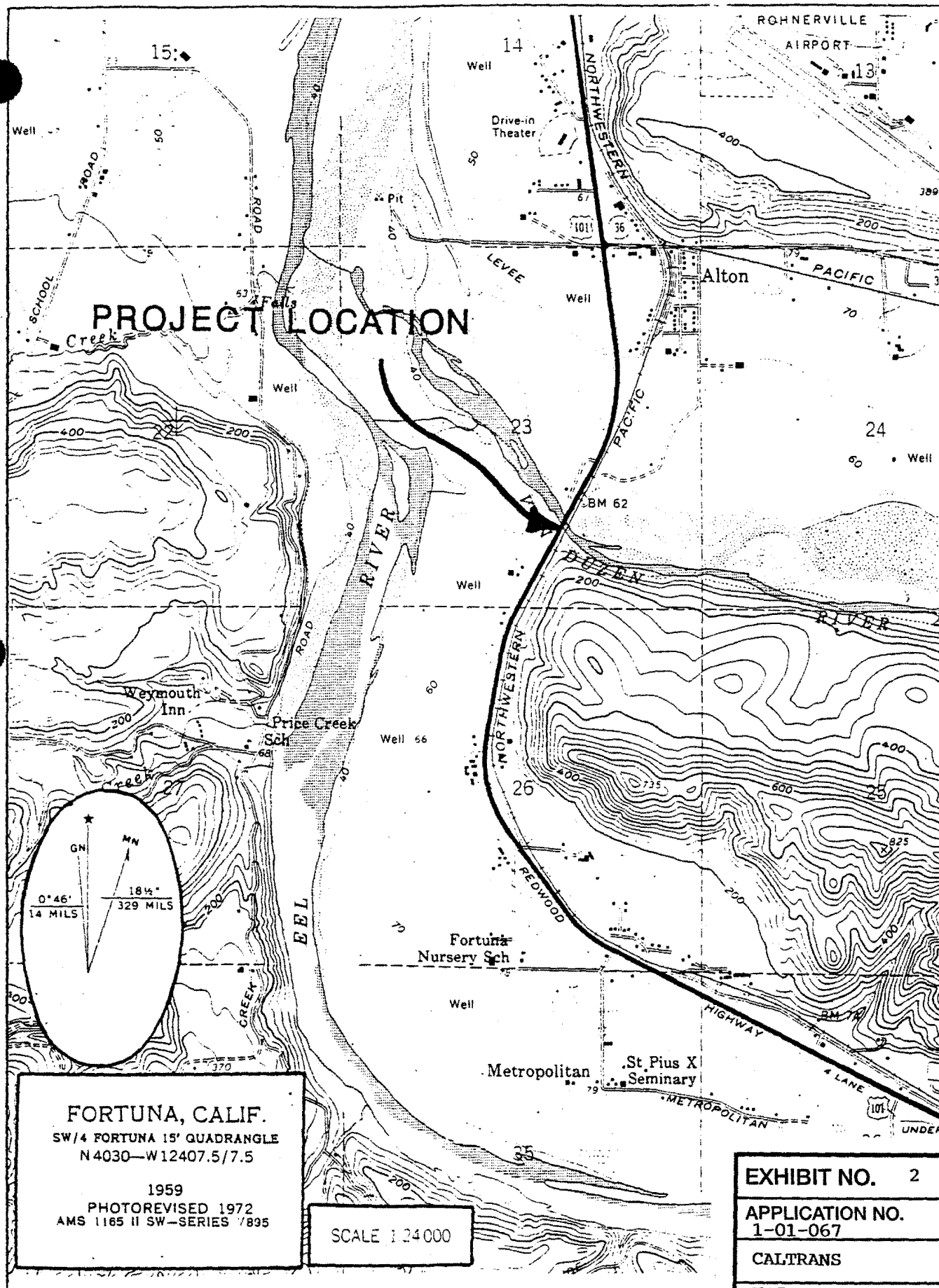
ATTACHMENT A

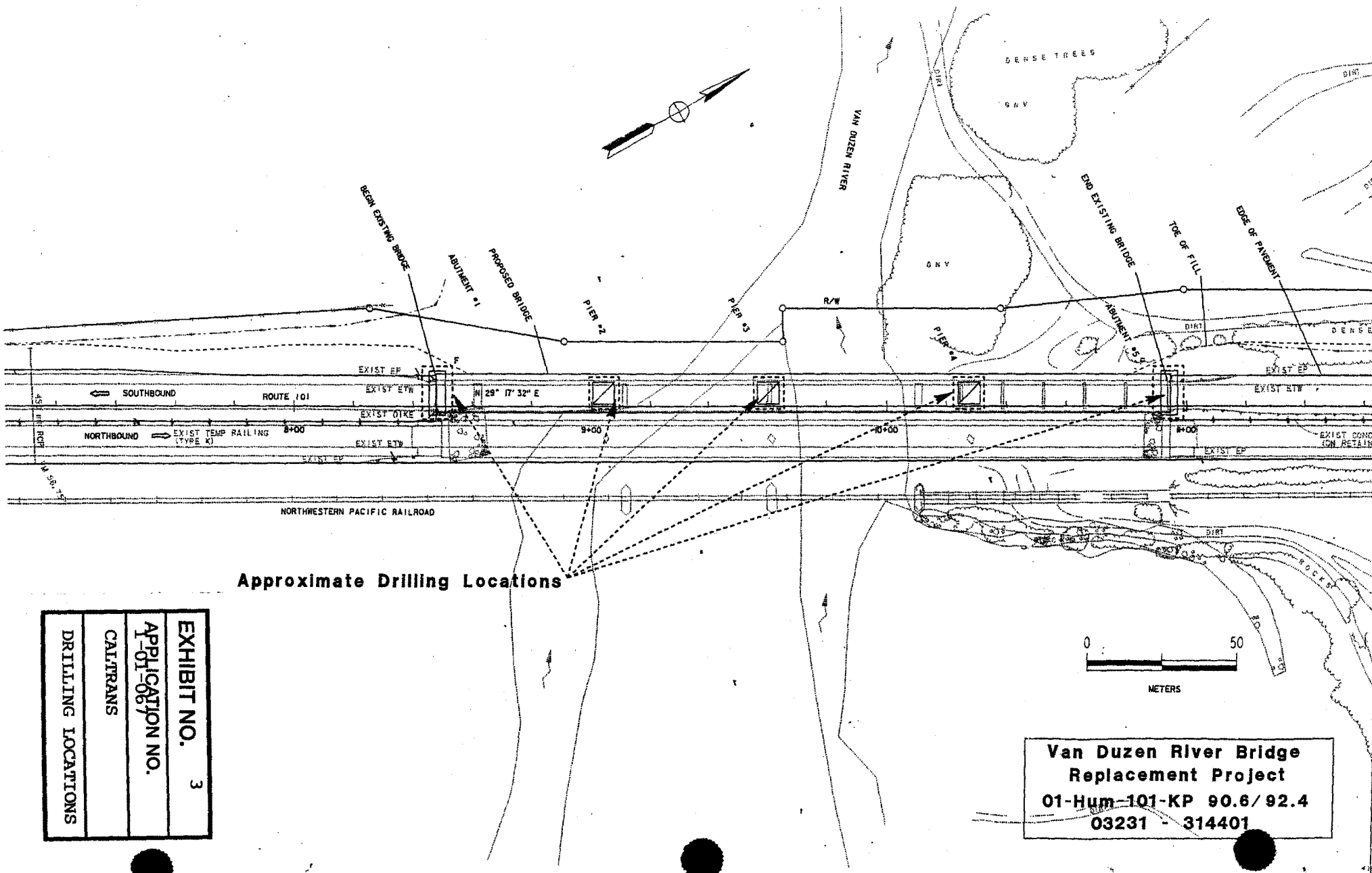
STANDARD CONDITIONS

1. Notice of Receipt and Acknowledgement. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable amount of time. Application for extension of the permit must be made prior to the expiration date.
3. Interpretation. Any questions of intent of interpretation of any condition will be resolved by the Executive Director of the Commission.
4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.



MAP





Approximate Drilling Locations

EXHIBIT NO.	3
APPLICATION NO.	01-68
CALTRANS	
DRILLING LOCATIONS	

Van Duzen River Bridge
Replacement Project
01-Hum-101-KP 90.6/92.4
03231 - 314401