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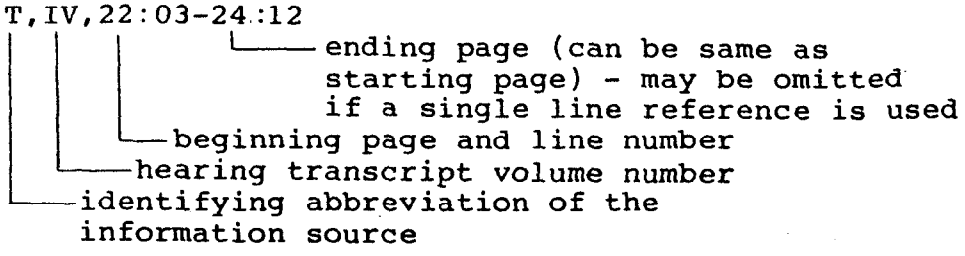
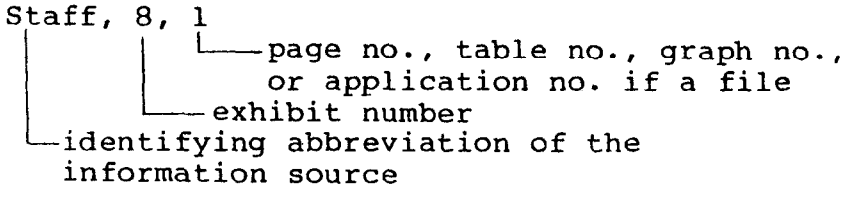
CITING THE RECORD

When citing evidence in the hearing record, the following convention has been adopted:

Information derived from the hearing transcript:



Information derived from an exhibit:



Abbreviation of the information sources are:

EH	Enviro Hydro, Inc., Applicant
SOS	California Save our Streams Council, Protestant
STAFF	State Water Resources Control Board Staff
T	Hearing Transcript

Abbreviations used in this analysis:

CEQA	California Environmental Quality Act (Section 21000 et seq. of the Public Resources Code)
CFS	Coordinated Financial Services Financial Corporation
cfs	cubic feet per second
DFG	California Department of Fish and Game
FERC	Federal Energy Regulatory Commission
KWh	Kilowatt-hours
MWh	Megawatt-hours
MDB&M	Mount Diablo Base and Meridian
PG&E	Pacific Gas and Electric Company
SOS	California Save Our Streams Council

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of Application 27868, ENVIRO HYDRO, INCORPORATED, Applicant, CALIFORNIA SAVE OUR STREAMS COUNCIL, Protestant.	DECISION SOURCE: Big Mosquito Creek Tributary to Middle Fork American River COUNTY: Placer

BOARD'S MEMORANDUM OF DECISION AND ORDER
APPROVING APPLICATION 27868

BY BOARD MEMBER RUIZ:

1.0 INTRODUCTION

Enviro Hydro, Incorporated, having filed Application 27868 for a permit to appropriate unappropriated water from Big Mosquito Creek; protests having been received; a hearing having been held by the State Water Resources Control Board (Board) on October 24 and 25, 1984; applicant, protestant and interested party having appeared and presented evidence; the evidence having been duly considered, the Board finds as follows:

2.0 SUBSTANCE OF APPLICATION

Application 27868 is for a permit to appropriate 15 cubic feet per second (cfs) of water from Big Mosquito Creek in Placer County by direct diversion from January 1 through December 31 for the purpose of

producing hydroelectric power. Appropriated water will be diverted within the SE1/4 of SW1/4, Section 23, T14N, R12E, MDB&M for use at the powerhouse within the NE1/4 of the SW1/4, Section 26, T14N, R12E, MDB&M. Said water will be returned to an unnamed stream at a point immediately below the powerhouse, 500 feet upstream from the confluence of the unnamed stream with the Middle Fork American River within NE1/4 of SW1/4, Section 26, T14N, R12E, MDB&M.

3.0 PROJECT DESCRIPTION

3.1 General Description

Water will be diverted from Big Mosquito Creek at a location approximately 1.5 miles upstream from its confluence with the Middle Fork American River. The water will then be routed through a penstock approximately 6,600 feet in length to the powerhouse adjacent to an unnamed stream at a point located about 500 feet upstream from the confluence of that unnamed stream with the Middle Fork American River. The confluence of the unnamed stream with the Middle Fork American River is approximately 1.5 miles upstream from the mouth of Big Mosquito Creek. The project site is approximately 30 miles east of Foresthill in Placer County, California. (See attached project map.)

3.2 Physical Works

Water will be diverted from Big Mosquito Creek via a small dam diversion structure approximately three feet high. (T,I,265:17-18) The dam will raise the water level sufficiently to route it into a drop inlet structure at the left side of the dam. This drop inlet

structure will contain a self-cleaning fish screen, a fish bypass channel, and a bypass weir. Flows bypassed for maintenance of fishery resources will be made in two ways: (1) through an outlet at the base of the dam; and (2) through the outlet channel which will be part of the drop inlet structure. (T,II,268:1-6) Flow bypass amounts will be regulated by adjusting the dimensions of a weir located at the head of the outlet channel. (T,II,290:7-25) Water diverted for power generation will then enter a steel penstock and travel approximately 6,600 feet to the powerhouse. (T,I,163:6-7) The gross head is 1,540 feet; the net head (considering only pipe losses) is estimated at 1,515 feet. (T,I,165:14-26)

The penstock will be buried at least 60 percent of its length. The remaining 40 percent will be located on steeper portions of the terrain. Revegetation will be done over the length of buried pipe.

Although a formal geologic study of the area was not made, the applicant's engineer was of the opinion that the area would be stable. In addition, he testified that the cut slope resulting from the former construction of the Forest Service road, which in some cases is 30 feet high and nearly vertical, did not show any signs of stress. On that basis, he was confident that the project would not encounter any geologic problems. (T,I,203:3-16)

The applicant has not yet decided on the construction material for the powerhouse and testified at the hearing that the decision on the material to be used will be determined by the Forest Service. (T,II,293:19-26) The powerhouse will contain one impulse pelton-type

turbine (T,I,195:15-16) with an installed capacity of 2,000 KW (T,I,169:18-19). The turbine can accommodate a range of flow from 2 cfs to 15 cfs. (T,I,155:8-157:6) Efficiency of the unit for that flow range is estimated at 80 to 87 percent. (T,I,167:17-168:8) Total annual energy production is estimated at 3,780 MWh. (T,II,338:3-7) Approximately one mile of transmission line will connect the powerhouse to a nearby PG&E powerline. (T,I,159:5-6)

4.0 PROTESTS

California Save Our Streams Council (SOS), California Department of Fish and Game (DFG), U. S. Tahoe National Forest, Environmental Advocates, and California Sport Fishing Protection Alliance (formerly Northern California Council of Fly Fishing Clubs) protested the application. All the protests were based on the same grounds:

1. The proposed appropriation will not best conserve the public interest; and

2. The proposed appropriation will have an adverse environmental impact.

4.1 Department of Fish and Game

DFG alleged in its protest that Big Mosquito Creek is the source of valuable habitat for numerous species of wildlife and supports riparian vegetation. Further, the Creek sustains resident trout and native nongame fish populations and provides a source of trout recruitment for the Middle Fork American River. (STAFF, 1, File A-27868) The statutory authority (basis) for DFG's protest is Water Code Sections 1243 and 1257 and Fish and Game Code Section 5937.

The Department of Fish and Game withdrew its protest on the condition that certain terms for the protection of fish and wildlife be included in any permit issued on Application 27868. The applicant agreed to the terms recommended by DFG and its protest was dismissed March 27, 1984. The terms are summarized as follows:

1. Bypass of 3.0 cfs or the natural streamflow, whichever is less, from February 1 to June 30; and 1.0 cfs or the natural streamflow, whichever is less from July 1 to January 31.

2. The minimum bypass amount shall be augmented, up to the entire natural flow, when stream temperature at the mouth of Big Mosquito Creek exceeds 20° C.

3. Installation of a continuous recording stream gage to record streamflow releases.

4. Gradual increase in the amount of water diverted to prevent fish stranding.

5. Installation and maintenance of a fish screen.

6. The applicant must enter into a Streambed Alteration Agreement with DFG as required by Fish and Game Code Section 1603. (STAFF, 1, File A-27868)

The Board concludes, on the basis of findings hereinafter set forth, that the protest dismissal terms agreed to by DFG and the applicant are in the public interest and should be included, substantially as set forth above, in the permit issued on this project.

4.2 Other Protestants

U. S. Tahoe National Forest, Environmental Advocates, and California Sport Fishing Protection Alliance set forth allegations very similar or identical to those of DFG in their respective protests. These protests were dismissed based on the terms agreed to by the applicant and DFG.

4.3 Protest of California Save Our Streams Council

SOS did not withdraw its protest. In summary, this protest alleged the following:

1. The project would cause unmitigable adverse impacts on numerous species of birds and wildlife that inhabit the area;

2. The aesthetic impact of the equipment and diversion structure should be considered;

3. A survey of rare and endangered plant and animal species should be conducted;

4. A study of erosion control should be conducted; and

5. A study of public recreation impacts on the area should be conducted.

4.3.1 Procedural Matters

4.3.2 Applicant's Motion to Dismiss Protest of California Save Our Streams Council

The hearing in this matter was held to resolve the remaining protest. The allegations set forth in the protest, which were accepted as valid, are as follows:

1. The proposed appropriation will not best conserve the public interest; and

2. The proposed appropriation will have an adverse impact on numerous species of birds and wildlife that inhabit the area.

California Administrative Code, Title 23, Section 719(e) states the following:

> "An allegation that the proposed project would not be within the Board's jurisdiction, would not best conserve the public interest, would have an adverse environmental impact, or would be contrary to law shall be accompanied by a statement of facts in support of the allegation."

Pursuant to this rule, SOS had the burden and responsibility to provide the Board with facts that would support the allegations set forth in the protest.

In support of its protest, SOS called Mr. Jerry Bishop as a witness at the hearing. Bishop testified that he provided the information set forth in the protest submitted on behalf of SOS. (T,II,400:7) He conceded that his protest was based on "general facts that would be the impact on any stream by a small hydro project unless proper measures were taken." (T,II,402:8-10) In addition, the representative for SOS conceded that the protestant did not find this particular project objectionable. (T,I,28:12-18)

Arguably the applicant is on sound ground regarding its motion for a dismissal of SOS's protest. However, there is no question that the

Board is authorized to hold a hearing on an application whether or not it is protested. (See Water Code Sections 183, 1250, 1251, 1342.) In this matter, the hearing disclosed questions of fact and law resolution of which required that the hearing proceed even if the application were to be deemed unprotested. Further, the Board may recognize "interested parties" persons appearing at a hearing in addition to protestants of record. (Cal. Admin. Code, Title 23, Section 733.) Persons so recognized may participate in the proceedings, so long as prejudice to the parties is avoided. (Id.) While the participation of SOS turned out to be short on presentation of helpful factual evidence, we find that such participation did not prejudice applicant. Accordingly, we deem as moot applicant's motion to dismiss the protest and the motion will be denied.

4.3.3 Failure of SOS to Comply With Section 733.5, Title 23 of the California Administrative Code

Section 733.5, Title 23 of the California Administrative Code authorizes the Board to require that exhibits, including a list of witnesses who are to appear at the hearing, be submitted in advance of the hearing. The relevant portion of the above-referenced regulation reads as follows:

> "(a) It is the policy of the board that the introduction of surprise testimony and exhibits at hearings be discouraged. Therefore, the requirements of this section shall be strictly enforced.
>
> "(b) (1) Not later than 10 days prior to the hearing, or such other time as specified by the board, the name of each witness who will appear, together with a statement of the subject of the proposed testimony, the

estimated time required by the witness to present his direct testimony, and the qualifications of each expert witness, if any.

Protestant failed to comply with the deadline for submission of exhibits and the witness list. The exhibits and witness list were originally due on October 16, 1984. With the concurrence of the applicant, an extension of time was granted. Protestant was to submit all the required documents by October 19, 1984. Although the applicant received the pre-hearing submittals by October 19, 1984, the Board did not receive them until October 23, 1984. (T,I,3:15-19)

5.0 NEED FOR THE PROJECT

The project will have an installed capacity of 2,000 KW and will generate approximately 3,780 MWh in an average hydrologic year. The applicant expects to sell the project's power to Pacific Gas and Electric Co. (PG&E) pursuant to the federal Public Utilities Regulatory Policies Act of 1978 (16 U.S.C. §824a-3). The applicant has negotiated a contract with PG&E for the sale of power generated by this project. This project will meet approximately 0.1 percent of the capacity need and 0.03 percent of the energy needed for the PG&E area.

The Energy Commission has adopted preferential ranking among technologies for meeting future electricity needs. The ranking places small hydroelectric projects, including this project, in the third of six priority ranks. No evidence was received that sufficient projects will be available to meet all the projected needs of the PG&E service

area in 1994 with alternatives listed in the first three priority ranks. Therefore, a need will exist for the capacity and energy to be provided by the project.

6.0 AVAILABILITY OF UNAPPROPRIATED WATER

Big Mosquito Creek is tributary to the Middle Fork American River. The watershed above the proposed point of diversion consists of approximately three square miles, ranging in elevation from 4,120 feet at the point of diversion to approximately 5,400 feet at the headwaters of Big Mosquito Creek. (STAFF 2) The watershed is covered with timber and brush; precipitation in the area is approximately 60 inches per year. (T,I,177:4) Springs contribute to the flows of the watershed.

6.1 Comparison of Basins for Synthesizing Hydrologic Data

There have been no continuous streamflow records maintained on Big Mosquito Creek. Therefore the applicant selected Duncan Creek in Placer County for comparison and to synthesize flow data for Big Mosquito Creek.

The confluence of Duncan Canyon Creek and the Middle Fork American River is located approximately six miles upstream from the mouth of Big Mosquito Creek. A USGS gaging station is located on Duncan Canyon Creek at approximately the 5,200 foot elevation. (See STAFF 2 and 9.)

The drainage area used for comparison is approximately 10 square miles. The applicant's engineer selected Duncan Canyon Creek because of its proximity to the project and slope aspect. The protestant

stipulated to the engineer's qualifications as an expert witness. (T,I,153:14-154:3) The engineer made a visual inspection of the characteristics of both watersheds and found them to be comparable. The engineer reviewed 22 years of data compiled on Duncan Canyon Creek by the USGS. He adjusted the mean monthly flows to reflect the difference in size of drainage areas between Duncan Canyon Creek and Big Mosquito Creek to synthesize flows for the latter creek.

The soils and vegetation coverage of the two drainage areas were found to be similar.

Despite the 1,000 foot elevation difference between the two creeks, the engineer testified that his synthesized flows are reasonably representative of the project area. (T,I,176:3-180:5)

6.2 Analysis of Hydrologic Data

The hydrograph submitted by the applicant, which contains the data synthesized from Duncan Canyon Creek for Big Mosquito Creek, indicates that the applicant will be able to generate power for six to eight months of the year. The maximum capacity of 15 cfs can be attained 18 percent of the time. The minimum flow for operation of the turbine is 2 cfs. The applicant is required to bypass 3 cfs from February through June; therefore, the flow would have to reach 5 cfs before a diversion could be made. According to applicant's flow duration curve, flows of 5 cfs occur 40 percent of the time during this period. During the remaining part of the year the required fish bypass flow is 1 cfs. The data from the hydrograph indicates that the 3 cfs needed to meet the bypass requirements and operate the turbine is available in the stream an additional 10 percent of the time.

7.0 ECONOMIC FEASIBILITY OF THE PROJECT

7.1 The Interrelationship of Applicant Enviro Hydro, Incorporated, and CFS Financial Corporation (CFS)

In July 1983 applicant Enviro Hydro, Incorporated, entered into a joint venture with CFS Financial Corporation, forming CFS Hydroelectric Associates, to develop 12 hydroelectric projects in Northern California. The Big Mosquito Creek Hydroelectric Project is one of these projects.

CFS structures and syndicates limited partnership investments for high-income investors. Between December 1983 and March 1984, CFS syndicated a pension fund offering under CFS Hydroelectric Associates and thus raised $1,100,000 to cover the initial costs of studies and development for the 12 aforementioned projects. CFS provides financial and legal expertise; Enviro Hydro is responsible for project selection, feasibility, engineering and environmental work.

In January 1985 CFS intends to syndicate the Big Mosquito Creek project in a separate limited partnership under the name Mosquito Creek Hydroelectric Partners Limited. This syndication will raise $1,975,000 to cover all the project costs. CFS will serve as the General Partner.

Individual investors and/or professional corporations will be sought to provide a sum of $575,000, or about 29 percent of the total cost. This funding will provide the equity to acquire the balance of $1,400,000 needed to finance the project. (Financing details

discussed in more detail below.) The joint venture -- CFS Hydroelectric Associates -- will be responsible for operation of the hydropower project and management of the partnership.

7.2 Project Financing

A bank loan for $1,400,000 is currently being negotiated by CFS Financial Corporation with the Bay Bank of Boston. The applicant presented evidence that the Bay Bank has recently provided both long-term and construction financing for other hydroelectric projects. (EH, 1) The bank loan will be secured by the project, the general partner and the limited partners. The limited partners will be personally liable for their pro rata share of the loan should the project not prove to be economically feasible. (T,I,17:22-18:6)

The terms being discussed between CFS Financial Corporation and the Bay Bank include an interest rate of 1.5 percent above the prime rate with a ceiling at about 16 percent to be adjusted at the fifth year to the current rates. The loan will be amortized over 15 years but be callable after ten years. (EH, 1)

The loan amount was based on initial cost projections. No evidence was offered to indicate whether this amount would be reduced because of the new cost projections, discussed next, that were provided during the hearing.

7.3 Project Costs

7.3.1 Construction Costs

Applicant's evidence showed that, according to the most recent estimates, the total cost of the project for equipment, construction,

and a PG&E intertie would be $1,167,898. (EH, 8a) This figure was developed by the applicant's engineer/contractor who possesses extensive experience in the construction field. (T,II,249:8-250:20)

Pre-hearing submittals contained an estimate of project cost of $1,500,000. However, during the second day of the hearing the applicant submitted reduced project costs figures. (T,II,272:7-15)

The evidence shows that the items accounting for the greatest share of the costs are the turbine/generator unit, switchgear and transformer, and the pipeline. The original cost of the turbine/generator unit was estimated at $500,000. The applicant now plans to purchase a pelton-type turbine which will reduce the cost to $300,000. With respect to the pipeline, the cost was originally estimated at $490,000. That cost has been reduced to $460,000, which is the result of a design change in the thickness of the pipeline. (T,II,274:13-275:25; 298:13-300:4) Both costs include placing, welding, burying, and freight for the pipeline.

The Board finds that these reductions are valid at this stage of the project design and that the project costs range between the original estimate of $1,500,000 and the updated estimate of $1,170,000.

7.3.2 Operation and Maintenance Costs

The applicant's estimated total operation and maintenance cost is $8,500 per year, escalating at the rate of five percent annually. The project is designed to be essentially free of maintenance. (T,II,257:13-258:2)

7.3.3 Additional Costs

Additional costs involved in the project include the Forest Service lease, management fees, taxes, insurance, legal fees, organizational costs, and development costs.

With respect to the Forest Service lease, the applicant assumes that a proposed rule will be adopted by the Forest Service that would require five percent of the gross revenue as a yearly lease payment for projects built on Forest Service land. (EH, 1)

Management fees are estimated at $75,000 during construction and $15,000 for each subsequent year to escalate at a rate of five percent annually. The assumption built into these costs is that several proposed projects will share a fixed overhead. The applicant plans to have three additional projects in the general area of the Big Mosquito Creek Project, which would share annually approximately $60,000 in management costs.

The applicant stated that property taxes may be minimal since the project is on federal land, but use tax, franchise tax and property tax on the equipment, as well as California income tax on the partnership, are anticipated. The California sales tax is included in the initial cost of the equipment. (EH, 1)

Insurance premiums for low-water, accidental damage, vandalism and failure to perform are figured at two percent of the debt service based on carrier quotations. (EH, 1)

The Big Mosquito Creek project will contribute $150,000 to the repayment of the CFS Hydroelectric Associates initial costs of

$1,100,000 for studies and development relating to several proposed hydroelectric projects. (EH, 1)

Finally, the applicant has designated a category for "Reserve" funds which consists of income generated by the project in the last part of 1985, plus a $30,000 contingency fund which, if not used, will be distributed equally in 1986 and 1987.

7.4 Project Revenues

The applicant accepted PG&E's Standard Offer No. 4, a flat rate contract for 30 years beginning in 1986. The annual rate of payment is $.0761 per KWh for the first ten years. In 1996 the rate will be estimated from the PG&E official forecast and then escalated at five percent annually thereafter. (EH, 1)

Based on the applicant's estimate of 3,780 MWh annual energy production, approximately $287,658 would be earned each year for the first ten years. Revenues would thereafter increase in the manner discussed previously. The applicant, without the production of supportive evidence, estimated that the rate will be $.1224 in 1996. While the recent history of electricity costs suggests an increased rate, an estimate of a 60-percent rate increase at the end of the 10-year period may be high. Further, as discussed above, the annual energy production is based on a synthesized flow duration curve; it is possible that average kilowatt hours generated will be different from these estimates. Therefore, these revenue estimates are viewed only as an approximation of actual revenues.

7.5 Project Feasibility

The applicant submitted two computer printouts entitled "Sources and Uses" and "Tax Analysis".

7.5.1 "Sources and Uses" Printout

The "Sources and Uses" printout consists of a 20-year projection. The "Sources" include income derived from the project, investor contributions and the bank loan. The income from the project is computed by multiplying the estimated mean annual energy output by the rate paid per KWh as provided in the PG&E purchase contract. As discussed above, due to the synthesized data used to construct the flow-duration curve, the resultant mean annual energy output can only be viewed as an approximate figure. In addition, the PG&E contract rate is fixed for ten years at $.0761 and after that time will be adjusted to the PG&E official forecast and escalated at five percent each year thereafter. The applicant has estimated a rate increase to $.1224 per KWh in 1996. No testimony was offered at the hearing to explain the method used to arrive at this estimated rate.

The "Uses" are identified as follows:

- o CFS fees
- o Salesmen
- o Forest Lease
- o Repairs and Maintenance
- o Consultants
- o Management
- o Tax/Insurance/Miscellaneous

- o Development Cost
- o Bank Loan Pay-back
- o Turnkey Construction
- o Legal Fees and Organizational Costs

With respect to the "Management" and "Development Costs", the applicant has assumed that these costs would be shared by other projects that it plans to bring on line. The Board concludes that should this assumption prove to be invalid, the above-described project costs will increase.

As provided in the partnership agreement, the limited partner investors will receive 97 percent of the net cash income until they have received the total amount of their $575,000 investment, then 80 percent until they receive a second return of their funds, and 67 percent thereafter. The general partner receives the remainder of the net cash income. (EH, 1)

Based on the "Sources and Uses" table, the applicant derived a benefit-cost ratio of 4:1. Due to errors in the computation, however, it was determined at the hearing that the benefit-cost ratio was incorrect. (T,1,49:3-50:22) Although new cost projections were presented, no new benefit cost ratio was submitted. Staff analysis of the applicant's data produces a benefit-cost ratio greater than one.

7.5.2 The Applicant's Tax Analysis

The second table entitled "Tax Analysis" is a 20-year projection for the 50-percent tax bracket, the target group for investors. (EH, 1) The table includes project revenue, expenses and tax benefits. The expenses consist of the following:

- o CFS fees
- o General Partner salary
- o Land Lease
- o Repair/Maintenance
- o Consultants
- o Management
- o Tax/Insurance/Miscellaneous
- o Bank Loan Interest
- o Legal Fees/Organizational Costs
- o Depreciation (five-year accelerated)
- o Amortized Develoment Cost (capitalized and amortized over five years)

Taxable income was found by subtracting the total expenses from the revenue. A one-time investment tax credit of 10 percent and an energy credit of 11 percent were applied to determine the net taxes paid or saved the first year. (EH, 1) The applicant has assumed that: (1) the effects of tax benefits are delayed one year, and (2) the current tax structure and credits will continue in the future.

The applicant then calculated the internal rate of return (IRR) to the investors from the computer analysis. According to the applicant, the IRR to the investors, without consideration of the tax benefits, is estimated at 20.4 percent. The applicant stated that "even if the project offered no tax benefits, the project would be economically sound at this rate of return". (T,II,343:24-26 & 344:1) If the

combined tax credits currently available to the investors are applied, the applicant estimates the IRR to the investor at 50.9 percent. (T,II,342:26-343:1)

7.5.3 Sensitivity Analysis of Internal Rate of Return

The applicant has stated that before an investment of this type is offered to investors, CFS requires an internal rate of return, prior to tax credits, of about 20 percent. (T,I,40:26-42:17) If the rate drops much lower than that, the project would be marginal and not attractive to the investors because of the high risk associated with this type of project. (T,I,59:4-61:4)

The applicant supplied the following regarding the sensitivity of the internal rate of return to a percent change in the streamflow rate.

% Change	MWh	IRR to Investors Cash-on-Cash (Percent)	IRR to Investors After Tax (Percent)
+20%	4,536	31.8	65.1
+10%	4,158	25.4	50.9 [sic]
Base	3,780	20.4	50.9
-10%	3,402	15.3	43.5
-20%	3,024	10.5	35.5

Based on the information in the table it is evident by CFS' own standard that a small percentage drop in the mean annual energy output would reduce the IRR below an acceptable level, provided the tax credits are not considered. Although there might be little project revenue during dry years, the project may still produce tax benefits to its investors. In addition, the lending institution with whom the applicant is pursuing financing will require low-water insurance.

Said insurance will guarantee payment on the loan in the event of a dry year with lower energy production. The premium is estimated at two percent of the debt service per year. The premium payments will likely cover blocks of years.

According to the applicant's projection the project appears to produce an attractive IRR during wet years. The calculated mean annual energy output, however, was computed by analyzing 22 years of data which includes dry, normal and wet years. Given the data analyzed, the applicant believes that on the average the project will yield an acceptable IRR and therefore is a viable project.

7.6 Conclusions

Despite the applicant's assertions that the project is economically and financially feasible, the information provided to the Board clouds that conclusion in light of certain of the assumptions used in formulating the analysis. If these assumptions prove incorrect, the financial and economic outlook could change significantly. In addition, the sensitivity information provided by the applicant indicates that if the mean annual energy output is overstated by even a small percentage, the project would no longer be considered a good offering to potential investors. The Board, therefore, concludes that the following conditions should be included in the permit to insure that the water sought to be appropriated will be placed to beneficial use:

"Applicant shall, prior to beginning construction, submit:

"(1) the final economic and financial analysis based on the final engineering design,

"(2) a copy of the executed PG&E purchase agreement; and

"(3) written evidence, satisfactory to the Chief, Division of Water Rights, that financing for the project has been secured and all necessary funds are available for expenditures.

"Above submittals shall be made by December 1, 1985, to the Chief, Division of Water Rights, for approval to proceed with construction."

8.0 TIME SCHEDULE FOR CONSTRUCTION AND USE OF WATER

To allow maximum use of water for licensing purposes, permittee should be given sufficient time to build the project and operate it through an entire hydrologic cycle of wet, dry and average years. The Board therefore concludes that the permit should contain terms requiring that (1) construction shall begin within two years from the date the permit is issued; (2) construction shall be completed by December 1, 1988; and (3) use of water be completed by December 1, 1994.

9.0 INSTREAM BENEFICIAL USE ASSESSMENT

This project is subject to Water Code Section 1250.5. This section requires an applicant to file an instream beneficial use assessment (IBUA) with an application for a permit to appropriate water which proposes, as a primary purpose of the application, the development of a small hydroelectric facility with a generating capacity of five megawatts or less.

The IBUA for this application was prepared and submitted by the applicant. On February 1, 1984, the Division of Water Rights determined that the IBUA was adequate in accordance with

Section 670.6, Title 23, California Administrative Code. The IBUA was circulated and no comments were received.

10.0 ENVIRONMENTAL AND PUBLIC INTEREST ISSUES

The environmental and public interest issues to be addressed are as follows:

1. the potential impacts of the project on the fishery resources of Big Mosquito Creek;

2. the potential impacts of the project on wildlife in the project area;

3. the potential impacts of the project on botanical resources, including riparian vegetation and rare species;

4. the potential cumulative impact of this project on the Middle Fork American River watershed.

10.1 Effects of Project on Fishery Resources

Big Mosquito Creek has a self-sustaining population of rainbow trout. (T,I,70:7) Due to the steep gradient, it is not possible for any rainbow trout that might be found in the Middle Fork American River to migrate up the creek. (T,I,97:26-98:2) The amount of downstream migration is unknown. (T,I,97:9-99:22)

The project was reviewed by the Department of Fish and Game (DFG) in 1983. The review consisted of a field investigation on August 31, 1983 by DFG's biologist and an analysis of the project description and hydrologic data supplied to DFG by the applicant. (T,I,69:15-18) DFG

determined that the stream was too steep to perform an IFG-4 study (U. S. Fish and Wildlife Service's Instream Flow Incremental Methodology modeling technique).

Furthermore, DFG determined that Big Mosquito Creek was not a highly productive trout stream since populations of trout and aquatic invertebrates were low. (T,I,70:17-19) Based on the hydrologic data, field review and U. S. Forest Service Stream survey data, DFG made a bypass flow recommendation of 3.0 cfs from February 1 through June 30 and 1.0 cfs from July 1 through January 31. (T,I,70:13-23)

The protestant asserted that the bypass flow should be 10 or 11 cfs and that aquatic invertebrates should have been considered in determining the bypass flows. However, the protestant failed to substantiate the aforementioned claims.

The Board concludes that the bypass flows recommended by DFG will protect the rainbow trout found in the stream. The bypass flow recommendations were made by a biologist with the Department of Fish and Game who has more than 15 years experience. (T,I,92:21-93:22) Further, another DFG biologist, who conducted the field review for this project, concurred with the bypass flow recommendations. (T,I,85:7-11)

Further to insure that the project does not adversely impact the fishery, the Board concludes that the protest dismissal term submitted by DFG and agreed to by the applicant to prevent deterious water temperatures should also be included in the permit. It shall read substantially as follows:

"Permittee shall release at the point of diversion the streamflows required by this permit at all times except when the water temperature, as measured 100 feet upstream from the mouth of Big Mosquito Creek exceeds 20° C. At such time, permittee shall release additional water, up to the entire natural flow, as is necessary to prevent the water temperature from exceeding 20° C." (STAFF, 1, DFG Protest 2-29-84)

The Board is aware of the difficulty of gaining access to the mouth of the creek. (T,I,124:11-17) However, the Board finds that studies can be made that will allow the applicant to obtain the necessary information regarding the temperature at the mouth of Big Mosquito Creek. (See Staff Analysis §9.1.2.) Therefore, the Board concludes that the following term should also be included in the permit.

"Within 60 days from the date the permit is issued, permittee shall submit to the Board a study plan for determining water temperatures at the mouth of Big Mosquito Creek, as required to comply with this permit. The study plan shall be developed in consultation with the Department of Fish and Game. Before any water may be diverted, the permittee shall submit the final study report to the Chief, Division of the Division of Water Rights, for approval."

10.2 Effects of Project on Wildlife Resources

Wildlife concerns raised consist of possible effects of the project on deer, goshawks, eagles, spotted owls, willow flycatcher, and Traill's flycatcher. The entire project lies within winter range for mule deer. (EH, 4, 2) An important food item for the deer is acorn mast produced by oaks in the area. (EH, 4, 7)

The possible presence of goshawks or spotted owls was a preliminary concern of the U. S. Forest Service. (STAFF, 11) A determination was made, after the applicant conducted studies, that the habitat for

these birds in the area of project impact was poor, and that none of these birds were found in the field surveys. (EH, 4, 6)

A U. S. Forest Service stream surveyor reported a possible sighting of an eagle on Big Mosquito Creek. (STAFF, 10) However, a DFG expert testified that DFG had no knowledge of any eagle nesting areas in the project area, and that eagles are transient, cover a large range and feed in many different areas. (T,I,79:9-15)

SOS asserted that willow flycatcher and Traill's flycatcher should have been included in a sensitive species list. (STAFF, 1; SOS letter 7-3-84) However, there is no supporting evidence for this concern.

Despite the fact that project construction could result in local short-term impacts, the Board concludes that there is insufficient information in the record to justify the inclusion of specific measures in the permit to mitigate construction impacts. Further, the U. S. Forest Service will determine specific measures to mitigate the impacts of construction as a part of their Use Permit process.

The Board finds no substantial evidence in the record that the project will have a significant effect on wildlife.

10.3 Effects of Project on the Botanical Resources

Two issues are presented with respect to the botanical resources:

1. project impacts on the riparian vegetation along Big Mosquito Creek, and

2. project impacts on rare plant species occurring along the creek.

10.3.1 Riparian Vegetation

Riparian vegetation exists as a thin band along Big Mosquito Creek. (T,I,70:2-4) A DFG biologist with training in riparian vegetation reviewed the project. (T,I,82:14-16) It is DFG's opinion that the bypass flows recommended to protect fisheries will also protect riparian vegetation. (T,I,70:24-26) The 3.0 cfs recommended winter flow release allows for flooding of the riparian zone adjacent to the stream. (T,I,87:23-88:2) The applicant's botanical study did not reveal any potential significant impacts to riparian vegetation as a result of water to be diverted by this project. (EH, 3, 22) SOS asserted that the bypass flows are insufficient to protect the riparian habitat and recommended that flows of 10 to 11 cfs be studied. (T,I,119:21-23) SOS failed to substantiate its recommended bypass flows. Therefore the Board concludes that the bypass flows established by DFG, based on the studies and opinion of its experts and that of the applicant, are sufficient to protect the riparian habitat.

10.3.2 Rare Plants

The rare plants that were the focus of concern in this project area are Phacelia stebbinsii and Lewisia serrata. No Lewisia were found in the surveyed portion of Big Mosquito Creek. (T,I,19:24-25) The lower one-third of the creek was not surveyed due to the hazardous nature of the extremely steep terrain. (T,I, 119:21-23) However, the presence of Lewisia serrata in the unsurveyed portion of Big Mosquito Creek appears unlikely.

There are about 15 to 40 known Phacelia stebbinsii populations in the world. Three populations of Phacelia were found in the field survey. (EH, 3, Fig. 2) The three Phacelia populations in the project area were all located between 8 and 20 feet away and up from the water's edge, at about a 45-degree angle.

There is no scientific data on the plant's response to flow reduction. (T,I,137:15-21) However, the physical configuration of the stream channel and the distance of the Phacelia and their root structures away from and above the streambed indicates that the plants do not derive moisture directly from the stream, at least during late spring through early winter. Very high flows during winter and early spring may inundate these locations and stimulate seed germination. However, the proposed diversion rate of 15 cfs is small compared to the magnitude of the flows necessary to inundate the locations where the Phacelia were found. The Board therefore finds that this project will not reduce the Phacelia population located in Big Mosquito Creek drainage.

The Board concludes that given the steep terrain of the unsurveyed portion of Big Mosquito Creek the applicant's survey of Phacelia stebbinsii and Lewisia serrata was adequate.

However, the transmission line route was not surveyed for rare plants. Therefore, the Board concludes that the following term should be placed in the permit:

> "Permittee shall conduct a survey of the final transmission line alignment for rare plant species. The transmission line shall fully avoid any rare plants found. Before any water may be diverted, the

survey report, including avoidance measures, shall be submitted to the Chief of the Division of Water Rights for approval."

10.4 Cumulative Impacts

California Administrative Code, Title 14, Section 15355 sets forth the following:

> "Cumulative impacts refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.
>
> "(a) The individual effects may be changes resulting from a single project or a number of separate projects.
>
> "(b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individuall minor but collectively significant projects taking place over a period of time."

Public Resources Code Section 21083[1] mandates the Board (and other public agencies) when evaluating projects to determine whether an environmental impact report or negative declaration should be prepared to make a finding that a project may have a significant effect on the environment, and therefore require an environmental impact report, or a mitigated negative declaration, if the following condition, among others, exist:

> "(b) The possible effects of a project are individually limited but cumulatively considerable. As used in this subdivision

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[1] Public Resources Code §21083 authorizes the guidelines set forth in 14 CAC §15023.5 for compliance with said Code section.

> 'cumulatively considerable' means that the incremental effects on an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future project."

SOS requested that the cumulative environmental impacts of this project be considered, based on allegations that:

1. the project area has been heavily impacted by past projects;

2. the applicant will use proceeds from this project to build other projects; and

3. approval of this project may set a precedent for other small hydroelectric project applications. (STAFF, 1, SOS letter 7-3-84)

There are presently about 20 major dams or diversions in the Middle Fork American River drainage. The Big Mosquito Creek project is one of five additional projects proposed by the applicant. (STAFF, 10, Fig. 4) The remaining four projects are at various stages of the application process and are not currently before the Board. Bishop testified that 10 new hydro-power projects are pending in the drainage area. (T,II,354:20-22)

The Board maintains an ongoing program for assessing cumulative impacts of hydroelectric projects using a basinwide approach. The Middle Fork American River Basin is not one of the four basins presently included in the program. The Board periodically conducts statewide surveys to determine if additional basins should be included in the program. The Initial Study made no finding that the Big

Mosquito Creek project could cause a considerable or significant cumulative effect on the environment. SOS did not present any substantial evidence that this project could cause a considerable cumulative effect on the environment.

The Board finds that there is no substantial evidence in the record to support the protestant's allegation that proceeds from the Big Mosquito Creek project will be used to build other projects.

Finally, the Board finds that there is no substantial evidence in the record to support the protestant's third allegation that approval of the Big Mosquito Creek project would set a precedent for approval of other small hydroelectric projects. The Board considers and acts upon each water right application on an individual basis.

10.5 Water Quality

The project was reviewed by the Central Valley Regional Water Quality Control Board. The Regional Board concluded that significant water quality problems resulting from project construction and operations are not likely to occur. The Regional Board reserved the right to issue waste discharge requirements should a water quality problem arise.

The Board finds that, due to the steep slopes and potential for slope erosion as a result of construction activities, a term should be included in the permit that would require the permittee to file a Report of Waste Discharge with the Regional Board and comply with Regional Board guidelines for construction and operation of small hydroelectric projects.

11.0 COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The State Water Resources Control Board is lead agency for this project. As lead agency, the Board has the "responsibility for considering the effects, both individual and collective of activities involved in a project." Public Resources Code Section 21002.1(d). As a part of executing its responsibilities as lead agency, the Board conducted an Initial Study for Application 27868 which was completed on May 29, 1984. The purpose of the Initial Study was "to determine if the project may have a significant effect upon the environment". California Administrative Code, Title 14, Section 15063.

Based on available information, the Initial Study did not produce any substantial evidence that the Big Mosquito Creek project could cause significant environmental impact. (See STAFF, 1, File A-27868.) Therefore a Negative Declaration was prepared for this project. (See California Administrative Code, Title 14, Section 15083(a).)

Pursuant to California Administrative Code, Title 14, Section 15083(e), the Initial Study/Negative Declaration was circulated to the State Clearinghouse and other interested parties for review on May 31, 1984. Protestant SOS was the only party to submit comments. Its comments were as follow:

1. The Initial Study/Negative Declaration gave insufficient consideration to riparian habitat, cumulative impacts, threatened and endangered species, aquatic invertebrates, irreversible commitment of resources, and alternatives to the project. (STAFF, 1, SOS letter 7-3-84);

In addition to receiving approval from FERC and the Forest Service, on whose property the project is located, the applicant must acquire the necessary approvals from various other local, state and federal governmental agencies prior to commencing construction of its project. The Board therefore finds that the following terms shall be included in the permit:

> "This permit shall not be construed as conferring upon the permittee right of access to the point of diversion.
>
> "No construction shall be commenced and no water shall be used under this permit until all necessary federal, state and local approvals have been obtained, including compliance with any applicable Federal Energy Regulatory Commission and Forest Service requirements."

13.0 BOARD'S AUTHORITY FOR PROJECT FEASIBILITY INQUIRIES

Section 1253 of the Water Code authorizes the Board to impose conditions that "will best develop, conserve, and utilize in the public interest the water sought" for appropriation. The Board is also directed to consider the relative benefit to be derived from all beneficial uses of water including uses for preservation of fish, recreational and power purposes. (See Water Code Section 1257.)

The Board requires information regarding project feasibility to decide the amount of water that may be diverted and the amount of water that should remain in the stream. More specifically, California Administrative Code, Title 23, Section 729 compels the Board to evaluate project feasibility when considering conditions for a proposed appropriation of water.

"729. Benefits and Detriments; Alternative Projects.

"In exercising its discretionary authority in the public interest respecting applications to appropriate water, including prescribing or modifying conditions of permits, the Board shall at the request of any party to the proceeding or by its own motion, to the extent practicable, identify and evaluate the benefits and detriments, including but not limited to, economic and environmental factors, of the various present and prospective beneficial uses of waters involved and alternative means of satisfying or protecting such uses, and make findings with respect thereto. The applicant may be required, other parties may be requested, to provide such information as is determined necessary by the board to accomplish the foregoing."

Clearly, as was indicated by the sensitivity analysis provided by the applicant for this project, economic feasibility is a very criticial factor to be considered. The slightest alteration in the water available for appropriation may result in an infeasible project or project that is not marketable to investors. The means by which the Board becomes informed and knowledgeable about the line between a feasible and infeasible project is based on information provided to it related to financial and economic matters. Without this type of inquiry and information, conditions could be placed in a permit that would terminate an otherwise desirable project. The Board concludes that the law, regulations and logic require an inquiry into the economic feasibility of a project.[2]

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[2] The Board has been making inquiries regarding the economic feasibility of projects for 25 years or more.

14.0 CONCLUSION

The Board finds that there is water available at the proposed diversion point to operate the power plant for six to eight months of the year within the requested range of diversion rates and bypass flows.

At the present time there are no competing diversions between the proposed point of diversion and the mouth of Big Mosquito Creek. Also, there are no records of any appropriation upstream from the point of diversion. No testimony was presented at the hearing about future development in the area. However, due to the fairly large amount of water proposed for diversion in this application as compared to the streamflow of Big Mosquito Creek during the low flow periods, the Board finds that jurisdiction should be reserved to approve future projects of higher use in the area. Therefore, the following term shall be included in the permit:

> "All rights and privileges to appropriate water for power purposes under this permit and any subsequently issued license are subject to depletions resulting from future upstream appropriation for domestic and stockwater uses within the watershed. Such rights and privileges may also be subject to future upstream appropriations for uses within the watershed other than domestic and stockwatering if and to the extent that the Board determines, pursuant to Water Code Sections 100 and 275, that the continued exercise of the appropriation for power purposes is unreasonable in light of such proposed uses. Any such determination shall be made only after notice to permittee or licensee of an application for any such future upstream appropriation and the opportunity to be heard; provided, that a hearing, if requested, may be consolidated with the hearing on such application."

15.0 ORDER

IT IS HEREBY ORDERED:

1. Application 27868 is approved for power purposes and a permit shall be issued to Enviro Hydro, Incorporated, subject to prior rights. The permit shall contain standard permit terms 6, 10, 11, 12, and 13 (the Board maintains a list of standard permit terms, copies of which may be obtained upon request) and the following terms specific to the project.

2. The water appropriated shall be limited to the quantity which can be beneficially used and shall not exceed 15 cubic feet per second to be diverted from January 1 to December 31 of each year.

3. Construction work shall begin within two years of the date of this permit and shall thereafter be prosecuted with diligence, and if not so commenced and prosecuted, this permit may be revoked.

4. Construction work shall be completed by December 1, 1988.

5. Complete application of water to the authorized use shall be made by December 1, 1994.

6. Permittee shall, prior to beginning construction, submit: (1) the final economic and financial analysis based on the final engineering design, (2) a copy of the executed PG&E purchase agreement, and (3) written evidence, satisfactory to the Chief, Division of Waters Rights, that financing for the project has been

secured and all necessary funds are available for expenditure. Above submittals shall be made by December 1, 1985, to the Chief, Division of Water Rights, for approval to proceed with construction.

7. All rights and privileges to appropriate water for power purposes under this permit and any subsequently issued license are subject to depletions resulting from future upstream appropriation for domestic and stockwatering uses within the watershed. Such rights and privileges may also be subject to future upstream appropriations for uses within the watershed other than domestic and stockwatering if and to the extent that the Board determines, pursuant to Water Code Sections 100 and 275, that the continued exercise of the appropriation for power purposes is unreasonable in light of such proposed uses. Any such determination shall be made only after notice to permittee or licensee of an application for any such future upstream appropriation and the opportunity to be heard; provided, that hearing, if requested, may be consolidated with the hearing on such application.

8. This permit shall not be construed as conferring upon the permittee right of access to the point of diversion.

9. No construction shall be commenced and no water shall be used under this permit until all necessary federal, state and local approvals have been obtained, including compliance with any applicable Federal Energy Regulatory Commission requirements.

10. Permittee shall, for the maintenance of aquatic resources, release into Big Mosquito Creek the following streamflows from the diversion structure:

- o February 1 through June 30 -- 3.0 cfs or the natural flow, whichever is less.
- o July 1 through January 31 -- 1.0 cfs or the natural flow, whichever is less.
- o The diversion structure shall be constructed in such a manner that the required streamflow releases are automatically and continually bypassed.

Permittee shall release the required streamflows mentioned in Term 10 at all times from the diversion structure except when the water temperature, as measured 100 feet upstream from the mouth of Big Mosquito Creek, exceeds 20° C. At such time, permittee shall release additional water, up to the entire natural flow, as is necessary to prevent the water temperature from exceeding 20° C.

11. All diversion, streamflow releases, and daily power generation shall be monitored by continuous recording devices and this data shall be submitted to the Division of Water Rights with the annual Progress Report by Permittee. Said recording devices shall be properly maintained by permittee.

12. The daily record of minimum and maximum flows and daily power generation rates shall be provided to the Department of Fish and Game annually by December 31 of each year for the proceeding October 1 through September 30 water year.

13. To prevent fish stranding, increases in the amount of water diverted shall be gradual and shall occur at a rate not to exceed 30 percent of the total streamflow per hour.

14. A fish screen acceptable to the Department of Fish and Game shall be installed on the intake structure and shall be properly operated and maintained by permittee.

15. In accordance with Section 1603 of the Fish and Game Code, no work shall be started on the diversion works and no water shall be diverted until permittee has entered into a Streambed Alteration Agreement with the Department of Fish and Game and/or the Department has determined that measures to protect fishlife have been incorporated into the plans for construction of such diversion works. Construction, operation, and maintenance costs of any required facility are the responsibility of permittee.

16. Within 60 days from the date the permit is issued, permittee shall submit to the Board a study plan for determining water temperatures at the mouth of Big Mosquito Creek, as required to comply with this permit. The study plan shall be developed in consultation with the Department of Fish and Game. Before any water may be diverted, the permittee shall submit the final study report to the Chief, Division of Water Rights for approval.

17. Permittee shall conduct a survey of the final transmission line alignment for rare plant species. The transmission line shall fully avoid any rare plants found. Before any water may be diverted, the survey report, including avoidance measures, shall be submitted to the Chief, Division of Water Rights, for approval.

18. Transmission lines shall be designed in consultation with the Department of Fish and Game and constructed such that they are not a hazard to raptors.

19. Permittee shall, prior to construction, file a Report of Waste Discharge pursuant to Water Code Section 13260 with the California Regional Water Quality Control Board, Central Valley Region (Regional Board), and shall comply with all Waste Discharge Requirements issued by the Regional Board. If the Regional Board waives issuance of Waste Discharge Requirements, the permittee shall comply with Parts I and II of the "Guidelines for Protection of Water Quality During Construction and Operation of Small Hydro Projects" (Guidelines) as contained in the Water Quality Control Plans of the Central Valley Basin.

Specific requirements set forth in the permit shall prevail over any specific or general requirements in the referenced Guidelines in the event of conflict.

When complying with the Guidelines, pursuant to this condition, the permittee shall not commence construction until the Erosion Control Plan and any baseline data required by the Guidelines have been submitted to and approved in writing by the Regional Board; and before commencing sluicing operations, the permittee shall submit and receive written approval from the Regional Board of the Sluicing Operation Plan.

20. If any previously unrecorded archeological or historical sites are discovered during the course of construction or development of any

project works or other facilities at the project, construction activity in the vicinity shall be halted, a qualified archeologist shall be consulted to determine the significance of the sites, and the permittee shall consult with the State Historic Preservation Office (SHPO) to develop a mitigation plan for the protection of significant archeological or historical resources.

CERTIFICATION

The undersigned, Executive Director of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true, and correct copy of a Decision duly and regularly adopted at a meeting of the State Water Resources Control Board held on January 17, 1985.

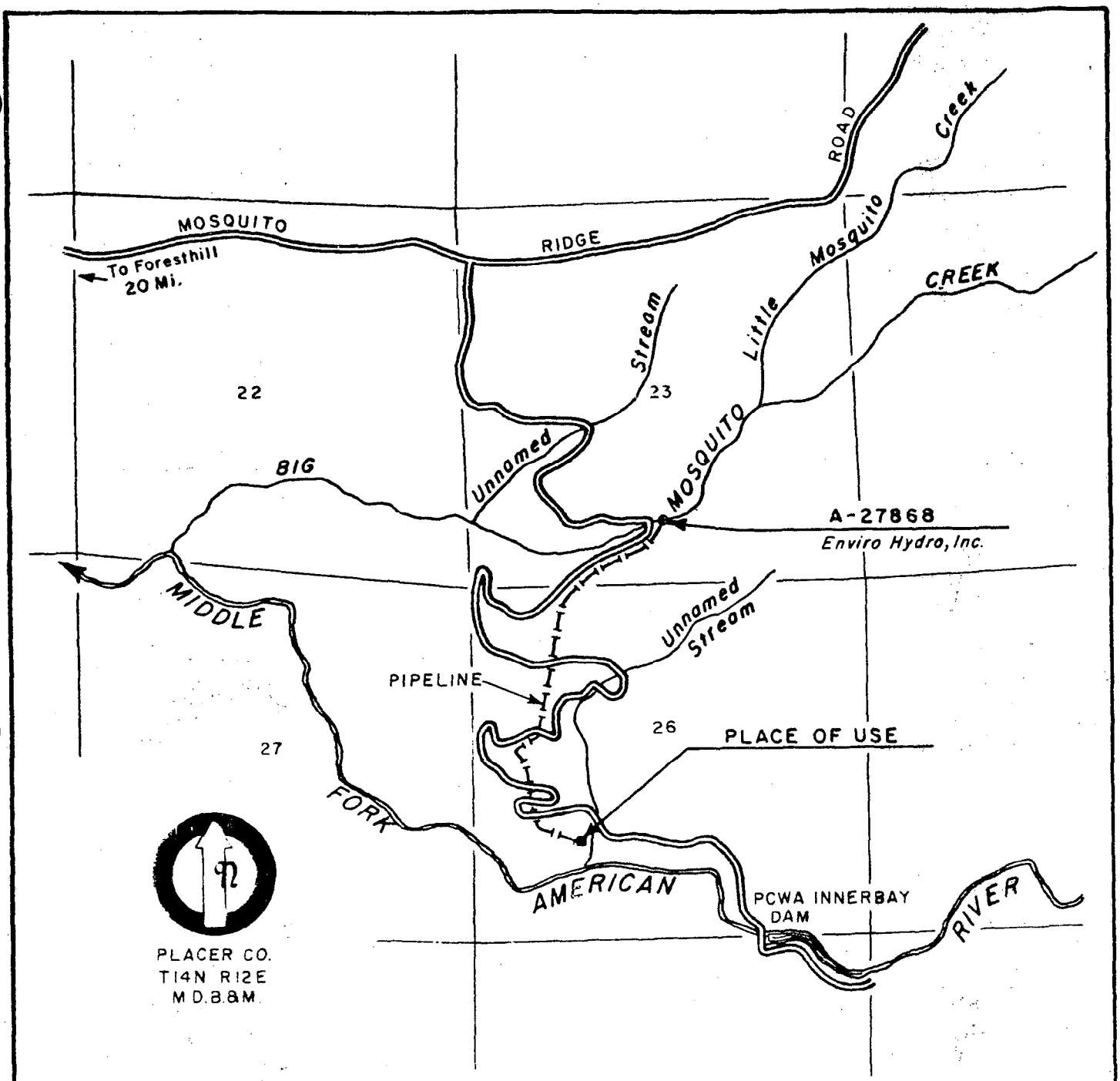
AYE: Carole A. Onorato
Warren D. Noteware
Kenneth W. Willis
Darlene E. Ruiz
Edwin H. "Ted" Finster

NO:

ABSENT:

ABSTAIN:

Michael A. Campos
Executive Director



PROTESTANT

SAVE OUR STREAMS

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

APPLICATION

27868

SCALE

0 1/2 1 MI.

DATE: 9-24-84	DRAWN: D.L.O.	CHECKED: L.L.E.	DWG: 3320

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