

A G R E E M E N T

THIS AGREEMENT, made this 2nd day of September, 1965, between the YUBA COUNTY WATER AGENCY, hereinafter called "AGENCY" and the STATE OF CALIFORNIA, represented by the CALIFORNIA DEPARTMENT OF FISH AND GAME, hereinafter called "STATE", supersedes and replaces the preliminary agreement dated December 28, 1961, and the agreement dated November 26, 1962, between the parties hereto.

W I T N E S S E T H :

WHEREAS, the Yuba River and its tributaries comprise a natural river system frequented by king salmon, steelhead trout, brown trout, rainbow trout, shad, and other fish; and

WHEREAS, the Water Rights Board of the State of California has issued its Decision No. DLL59 adopted December 19, 1963, and amended February 17, 1964, wherein Applications Nos. 5631, 5632, 15204, 15205, 15563, and 15574 of the AGENCY were approved under the terms and conditions of said decision, and permits were ordered to be issued to the AGENCY for the diversion and use of certain quantities of water from the Yuba River System for irrigation and municipal purposes and for the generation of electrical power; and

WHEREAS, the AGENCY has obtained a license from the FEDERAL POWER COMMISSION for the construction of the Yuba River Development designated in the Federal Power Commission proceedings as Project No. 2246; and

WHEREAS, since the issuance of said Decision No. DLL59 and said Federal Power Commission license, the AGENCY has revised the Yuba River Development and intends to construct Hour House Diversion Dam on the Middle Yuba River, Log Cabin Diversion Dam on Oregon Creek, New Bullards Bar Dam and Reservoir and New Colgate Tunnel Intake on the North Yuba River, New Narrows Power Plant, and Irrigation Diversion Works on the mainstem of the Yuba River in order to divert and store the water and apply the same to beneficial uses under permits to be issued to the AGENCY and under license from the Federal Power Commission; and

WHEREAS, the construction of the New Narrows Power Plant and Irrigation Diversion Works may affect the spawning area presently utilized by king salmon and steelhead trout runs of the Yuba River and will require the release of water from

Englebright Reservoir and Hour House Dam, Log Cabin Dam, and the existing Colgate Dam for the preservation and enhancement of the fisheries of said river system below said dams;

NOW, THEREFORE, in consideration of the mutual covenants herein contained, IT IS AGREED between the parties hereto as follows:

Section 1.1 - The following minimum flows shall be released into the Middle Yuba River immediately below Hour House Diversion Dam for the maintenance of fishlife:

50 cubic feet per second or the natural flow, whichever is less, from April 15 through June 15

30 cubic feet per second or the natural flow, whichever is less, from June 16 through April 14

The above releases shall be measured at a stream gaging station located approximately 500 feet downstream of said dam.

Section 1.2 - The following minimum flows shall be released into Oregon Creek from Log Cabin Diversion Dam for the maintenance of fishlife:

12 cubic feet per second or the natural flow, whichever is less, from April 15 through June 15

8 cubic feet per second or the natural flow, whichever is less, from June 16 through April 14

The above releases shall be measured at a stream gaging station located approximately 500 feet downstream of said dam.

Section 1.3 - The flows stipulated above in Sections 1.1 and 1.2 shall not fluctuate more than plus or minus 10 percent from the respective mean flows in any 24-hour period. The term "natural flow" in Sections 1.1 and 1.2 means the inflow to the respective reservoirs.

Section 1.4 - The following minimum flow shall be released for maintenance of fishlife from the existing Colgate Dam on the North Yuba River:

5 cubic feet per second year around

The flow shall be measured at a stream gaging station located approximately 500 feet downstream of said dam.

Section 1.5 - The AGENCY shall make releases of water from Englebright Reservoir to maintain in the Yuba River immediately below Laguerre Point Dam the following minimum flows for the maintenance of fishlife:

January 1 - June 30 245 cubic feet per second

July 1 - September 30 70 cubic feet per second

October 1 - December 31 400 cubic feet per second

These flow releases shall be in addition to releases made to satisfy existing downstream water rights and shall be measured over the crest of DeQuerre Point Dam and through the fishways at that dam.

Section 1.6 - Water releases for fishlife shall be subject to reduction in critical dry years.

A critical dry year, as used herein, is defined as a water year for which the April 1 forecast of the California Department of Water Resources predicts that streamflow in the Yuba River at Smartville will be 50 percent or less than 50 percent of normal. The critical dry year provisions herein shall be effective from the time the aforesaid forecast is available until the April 1 forecast of the following year.

The water release curtailment schedule for critical dry years will be as follows:

| <u>Yuba River at Smartville Streamflow Forecast Per Cent of Normal</u> | <u>Reduction in Water Releases for Fishlife, Per Cent</u> |
|--|---|
| 50 | 15 |
| 45 | 20 |
| 40 or less | 30 |

However, in no event shall water releases for fishlife below DeQuerre Point Dam be reduced to less than 70 cubic feet per second.

Section 1.7 - A minimum pool shall be maintained in New Bullards Bar Reservoir at elevation 1730 feet.

Section 1.8 - The AGENCY shall clear vegetation in New Bullards Bar Reservoir from 1700 foot elevation to the 1955 foot elevation.

Where borrow areas are proposed, the top soil shall be stripped first and stockpiled. When borrow operations are completed, the area shall be graded as practicable, and the top soil shall be replaced where the topography permits. Borrow areas on U. S. Government land shall be revegetated with browse species. This stipulation does not apply to those areas which will be inundated by the reservoirs.

Section 1.9 - AGENCY shall mitigate damages to wildlife resulting from project activities in accordance with recommendations of the Department of Fish and Game. The extent of AGENCY'S obligation under this Section will be determined through further investigation and negotiations.

Section 2.1 - During the period January 16 through October 15, flows released by the AGENCY from the Englebright Reservoir for start-up, shutdown and operation of New Narrows power plant shall not fluctuate at an hourly rate of more than 500 cubic feet per second and releases shall be changed as gradually as possible within this hourly period.

Section 2.2 - Except for flood flows, and uncontrolled flows of tributary streams (Deer Creek and French Dry Creek) the releases from Englebright Dam during the period October 16 - January 15 shall be continuous and uniform, but the scheduled release for the specified period shall be within the limits prescribed below and these releases shall be measured at the same gaging station as described in Section 2.4;

PERIOD

RELEASES - C.F.S.

| | |
|-------------------------|---------------|
| October 16 - October 31 | 600 - 1,050 |
| November | 600 - 700 |
| December | 600 - 1,400 |
| January 1 - January 15 | 1,000 - 1,850 |

The release during the specified period shall not vary more than 15 percent from the scheduled uniform release and this variance shall be further minimized whenever possible.

Except in case of emergencies, during years other than critical dry years as defined in Section 1.6, minimum continuous release by the AGENCY from Englebright Reservoir during the period January 16 through March 31, shall be 600 cubic feet per second, subject to the above 15 percent variance.

Section 2.3 - The allowable reduction in the average continuous flow during the operational period of October 15 - 31 shall be minimized and limited to not more than 35 percent of the average flow during the preceding seven day period. The reduction in the average continuous flow during November 1 - 30 shall be minimized and limited to not more than 15 percent of the average continuous flow during the preceding fifteen day period. The STATE shall be furnished with the proposed operation schedule five days before the scheduled release period with further notification of any subsequent change at or before the time it is made.

When the storage and runoff may allow a higher scheduled uniform flow during October and November without a reduction in flow in December, the uniform scheduled release in October and November may be increased.

Section 2.4 - Fluctuations in the streamflow are to be measured at the new Yuba River gaging station below Englebright Dam which will be constructed for the AGENCY by the U. S. Geological Survey at a location below the discharges of the two powerhouses.

Section 2.5 - The requirements of Sections 2.1 through 2.4 shall be subject to re-evaluation and revision at such time as Marysville or other downstream storage reservoir is constructed on the Yuba River.

Section 3.1 - In instances where the AGENCY or its contractors propose to remove vegetation from a reservoir site, strip earth from the shutments, remove sand or gravel from a stream, wash gravel near a stream or carry on any activity in or along a stream which might result in muddying, silting or allowing to enter the stream any substance, which might injure fish life or fish habitat, the AGENCY shall be responsible for providing and maintaining in effective condition check dams, settling ponds, and such other features as may be required to maintain the fishery values of the streams below such operations.

The AGENCY shall be responsible for its contractor's compliance with Sections 5650, 5948, 12015, 1601, and 1602 of the California Fish and Game Code and other applicable statutes relating to pollution prevention or abatement.

Section 3.2 - Free public access shall be allowed within the proposed project boundary, except in areas where public safety, security of AGENCY'S property, or interference with project operations are the controlling factors.

Section 3.3 - It is recognized by the AGENCY and the STATE that the temperature of water released from the New Bullards Bar Reservoir during the spawning seasons of king salmon in the fall and shad in the spring can have an effect upon mitigation and enhancement of the salmon and shad runs in the Yuba River. The AGENCY shall so locate and operate the power intake and outlet works at New Bullards Bar Dam so as to provide water temperatures of the releases from New Bullards Bar Dam comparable to or better than present values with regard to the fishery resources.

Section 3.4 - AGENCY shall bear the cost of constructing, operating and maintaining fish screening facilities at the Irrigation Diversion Works.

Section 3.5 - Design of facilities referred to in Section 3.4 above will be in accord with the criteria described in Exhibit "A", dated August 9, 1965, attached hereto, and which is made a part of this agreement. If said criteria are revised, whereby the cost of fish facilities is increased, such increase shall not be the responsibility of the AGENCY.

Section 4.1 - The AGENCY will file a copy of this agreement with the State Water Rights Board and with the Federal Power Commission and will request amendment of Decision D1159 and F.P.C. License for Project #2246 consistent with the provisions of this agreement. By the execution of this agreement, the STATE hereby consents to the amendment of Decision D1159 and F.P.C. License for Project #2246 consistent

with the provisions of this agreement.

CALIFORNIA DEPARTMENT OF FISH AND GAME

By 
Director

YUBA COUNTY WATER AGENCY

By 
Ben Rose, Chairman

By 
John S. Sanbrook, Secretary

YUBA COUNTY WATER AGENCY

EXHIBIT "A"

Design Criteria for Fish Facilities
August 9, 1965

Fish Screens

1. A vertical louver type screen shall be provided at the headworks of the South Yuba Canal and a cylindrical, rotating, perforated plate screen shall be provided at the headworks of the North Yuba Canal to divert the fingerling fish from the canals and headworks back into the Yuba River. The fish diversion basins and facilities may be located on the canals a suitable distance downstream of the canal intakes. Each canal or approach channel shall be widened into a basin with a rectangular cross section in which the screen shall be located. The design of the transitions to these basins shall be such as to assure a uniform velocity of approach to the screens. Trash racks capable of removing debris that may clog the screens shall be installed upstream of each screen.

2. The louver screen and structure shall be designed according to the following criteria:

Normal velocity of approach - 3.5 feet per second

Minimum velocity of approach - 1.0 feet per second

Angle of line of louvers to direction of flow - 15°

Angle of louver slats to direction of flow - 90°

Louver slats - 2.5 inches wide

Adequate flow straightness shall be provided

Clear spacing between louver slats - 1.5 inches to 2.0 inches

Velocity at bypass entrance - 1 to 1.4 times the approach velocity

Width of bypass opening, minimum - 8 inches

Minimum diameter of bypass pipe - 12 inches

The bypass structure shall be of a design which assures a uniform velocity distribution from top to bottom as well as a transition of uniform flow into bypass pipe.

Provisions shall be made for cleaning the louver screens under operating conditions.

3. The cylindrical, rotating screen shall be designed according to the following criteria:

3 square feet of perforated plate shall be necessary for each cubic foot per second of diversion.

The perforated plate shall have 5/32 inch holes at 7/32 inch centers, staggered.

The operating peripheral speed of the screen may range from 10 f.p.m. to 30 f.p.m.

Width of bypass opening, minimum - 8 inches

Diameter of bypass pipe, minimum - 12 inches

Velocity at bypass entrance - 1 to 1.4 times the approach velocity

Provisions shall be made for removing, maintaining and adjusting the cylindrical screen in a dewatered condition.

DECLARATION OF INTENTION BETWEEN THE CALIFORNIA
DEPARTMENT OF FISH AND GAME AND THE YUBA COUNTY
WATER AGENCY


THIS DOCUMENT constitutes a declaration of the intention of the parties with respect to the general conditions for the operation of Englebright Reservoir for the protection, maintenance, and enhancement of the fishery resources of the reach of the Yuba River between Englebright Reservoir and the confluence of the Yuba and Feather Rivers. These general conditions are intended to prevail until such time as the Marysville Reservoir, or similar downstream reservoir, is constructed at which time these conditions shall be re-evaluated and revised to permit year-round peaking of the New Narrows Power Plant of the Yuba River Development insofar as possible.

To assure maintenance of the existing fishery resource and the enhancement of the salmon run resulting from improved water releases and regulation of water temperatures and to permit maximum flexibility in the operation of the New Narrows Power Plant consistent with such assurance, the operation of Englebright Reservoir should be such that:

- 1) Releases from Englebright Reservoir during the salmon spawning season, October 16 - January 15, should be continuous and uniform insofar as practicably achievable from continuous power plant operation under normal water conditions.
- 2) Minimum continuous releases during the salmon incubation and emergence period, approximately October 16 through March 31, should be comparable to the minimum uniform release during the spawning season.
- 3) An attraction and transportation flow should be provided which will allow the salmon to move from the Feather River into the Yuba River spawning area. This flow should be of a satisfactory temperature and quantity and occurrence.
- 4) Fluctuation of releases during the salmon spawning period shall be minimized. Reductions in releases during the October 16 through January 15 spawning period and the October 16 through March 15 incubation period shall not expose previously spawned areas, except in a critically dry year and except following flood flows.

5) Peaking operation of the power plants between January 16 and October 15 would be permissible.

CALIFORNIA DEPARTMENT OF FISH AND GAME



(September 2 , 1965) Director

YUBA COUNTY WATER AGENCY

By 

Ben Rose, Chairman

By 

John S. Sanbrook, Secretary

EXHIBIT A

Design Criteria for Fish Facilities at
Irrigation Diversion Weir & Timbuctoo Afterbay Dam

IRRIGATION DIVERSION WEIR

A. Bypass

1. A bypass with a maximum discharge capacity of 800 c.f.s. shall be provided at the Irrigation Diversion Weir. Selection of the bank at which the bypass shall be located shall be made at the time of final project designs when the necessary information on channel conditions and flow characteristics is available.

2. The bypass outlet channel shall be aligned as close to the toe of the weir as permissible without affecting the safety of the weir. The outlet channel of the bypass combined with the discharge channel of the fishway, shall be so designed that during normal operation (that is, except during flood conditions), the velocity of flow shall not exceed 5.0 ft. per sec. and the minimum depth of water in the channel shall not be less than one foot.

B. Fishway

1. A fishway shall be provided adjacent to the bypass designed to operate under any flow condition up to 15,000 c.f.s. Flow from the fishway shall discharge into the outlet channel of the bypass. The fishway shall be of a type similar to that used at Ice Harbor Dam, Washington.

2. The fishway shall be designed according to the following criteria:

Minimum entrance velocity of flow - 4.0 ft.per sec.

Maximum entrance velocity of flow - 8.0 ft.per sec.

Size of pools - 10 ft. long and 8 ft. wide

Height of weirs - 6.0 ft.

Minimum depth of water over weir crest - 1.0 ft.

Minimum normal freeboard - 3.0 ft.

Floor slope - 1 in 10

3. The downstream end of the fishway shall be so located with reference to bypass stilling basin as to be readily accessible and attractive to fish.
4. Provision shall be made for an auxiliary flow of 100 c.f.s. near the lower end of the fishway.
5. Submerged orifice type flow control arrangement shall be provided at the inlet.
6. The following additional provisions shall be made in design of the fishway:
 - a. A counting facility located in 20 ft. long x 8 ft. wide pool.
 - b. Means of draining and cleaning the pools.
 - c. Orifices, 18-in. square, in the weirs.
 - d. A trashrack with 12-inch bar spacing.
 - e. Protective fence around the facility.

C. Fish screens

1. Vertical louver type screens shall be provided at headworks of the North Yuba and South Yuba canals to divert the fingerling fish from the canals back into the Yuba River downstream of the Irrigation Diversion Weir. The fish diversion basins and facilities may be located on the canals a suitable distance downstream of the canal intakes.
2. Each canal shall be widened into a basin with a rectangular cross-section in which the louver screen shall be located. The design of the transitions upstream and downstream of the louver structure shall be such as to assure a uniform velocity of approach at the louvers. Trashracks, capable of removing debris that may clog the screens, shall be installed upstream of the louver basin.
3. The louver screens and structure shall be designed according to the following criteria:

Normal velocity of approach - 3.5 ft. per sec.
Minimum velocity of approach - 1.0 ft. per sec.
Angle of line of louvers to direction of flow - 16°
Angle of louver slats to direction of flow - 90°
Louver slats - 2.5 in. wide
Adequate flow straighteners shall be provided
Clear spacing between louver slats - 1.5 in. to 2 in.
Velocity at bypass entrance - 1 to 1.4 x approach

velocity

Width of bypass opening - 8 in.

Minimum diameter of bypass pipes - 12 in.

4. The bypass structure shall be of a design which assures a uniform velocity distribution from top to bottom as well as a transition of uniform flow into the bypass pipe.

5. Provisions shall be made for cleaning the louver screens under operating conditions.

D. Trapping Facility at Timbuctoo Afterbay Dam

1. A facility consisting of a fish ladder, a holding tank, an anesthetic tank and the necessary accessories, shall be provided below the Timbuctoo Afterbay Dam to trap the fish that may be stranded at the outlet works. The exact location of the trapping facility shall be determined after the completion of the dam and trial operation of the outlet works through at least one spawning season, when it shall be possible to observe the stabilized channel characteristics as well as the probable areas where the fish may accumulate.

2. Normal minimum tunnel velocities shall be such as to exclude salmon during the period October 1 to December 31.

3. The fish ladder shall be capable of transporting the fish from elevation 245 to elevation 265. It shall be designed according to the following criteria:

Minimum flow - 40 cu. ft. per sec. at the lower end
of the ladder.

Minimum entrance velocity of flow - 4.0 ft. per sec.

Maximum entrance velocity of flow - 8.0 ft. per sec.

Size of pools - 5 ft. wide and 10 ft. long

Type of weir - Notched weir with no orifice;

provision for draining.

Height of weirs - 3 ft.

Minimum depth of water over weirs - 1.0 ft.

Floor slope - 1 in 10

Freeboard - 3.0 ft.

4. The holding tank at the upstream end of the ladder shall be 8 ft. wide, 20 ft. long and 4 ft. deep. It shall be equipped with a mechanical sweep.

5. The anesthetic tank shall be 8 ft. wide, 8 ft. long and 2 ft. deep. It shall be equipped with a suitable escalator capable of transferring the fish to a transfer truck.

APPENDIX E

EXHIBITS

Exhibit 1: Stream Flow Release Agreement with California Department of Fish and Game and Yuba County Water Agency, dated November 28, 1962.

This agreement is made this 28th day of November, 1962, between the Yuba County Water Agency, an agency of the State of California, hereinafter called "Agency," and the State of California, represented by the California Department of Fish and Game, hereinafter called "State."

W I T N E S S E T H

WHEREAS, the Yuba River and its tributaries comprise a natural river system frequented by king salmon, steelhead trout, brown trout, rainbow trout, shad, and other fish; and

WHEREAS, the Agency is seeking water rights and permits from the State of California for diversion and use of certain quantities of water from the Yuba River system for irrigation and municipal purposes and for the generation of electrical power; and Agency proposes to construct Hour House Diversion Dam on the Middle Yuba River, Log Cabin Diversion Dam on Oregon Creek, New Bullards Bar Dam and Reservoir and New Colgate Diversion Dam on North Yuba, Timbuctoo Afterbay Dam and an Irrigation Diversion Weir on the mainstem Yuba River in order to divert and store the water for beneficial uses pursuant to said permits applied for; and

WHEREAS, the future construction of an Irrigation Diversion Weir and Timbuctoo Dam will block free and natural access to a substantial portion of the spawning area presently utilized by king salmon and steelhead trout runs of the Yuba River, and will require the release of water from said weir and dam and Hour House Dam, Log Cabin Dam, and New Colgate Dam for the preservation and enhancement of the fisheries in said river system below said dams;

NOW THEREFORE, in consideration of the mutual covenants herein contained, it is agreed between the parties hereto as follows:

Section 1.1 - The following minimum flows shall be released into the Middle Yuba River immediately below Hour House Diversion Dam for the maintenance of fishlife:

50 cubic feet per second or the natural flow, whichever is less, from April 15 through June 15

30 cubic feet per second or the natural flow, whichever is less, from June 16 through April 14

The above releases shall be measured at a stream gaging station located not more than 500 feet downstream of the dam.

Section 1.2 - The following minimum flows shall be released into Oregon Creek from Log Cabin Diversion Dam for the maintenance of fishlife:

12 cubic feet per second or the natural flow, whichever is less, from April 15 to June 15

8 cubic feet per second or the natural flow, whichever is less, from June 16 to April 14

The above releases shall be measured at a stream gaging station located not more than 500 feet downstream of the dam.

Section 1.3 - The flows stipulated above in Sections 1.1 and 1.2 shall not fluctuate more than plus or minus 10 percent from the respective mean flows in any 24-hour period. The term "natural flow" in Sections 1.1 and 1.2 means the inflow to the respective reservoirs.

Section 1.4 - The following minimum flow shall be released for maintenance of fishlife from the New Colgate Dam on the North Yuba River:

5 cubic feet per second year around

The flow shall be measured at a stream gaging station located not more than 500 feet downstream of the dam.

Section 1.5 - The following minimum flows shall be released to the Yuba River immediately below Timbuctoo Afterbay Dam for the maintenance of fishlife:

January 1 - June 30 ----- 245 cubic feet per second

July 1 - September 30 ----- 70 cubic feet per second

October 1 - December 31 ----- 400 cubic feet per second

These flow releases shall be in addition to releases made to satisfy existing downstream water rights and shall be measured at a stream gaging station located not more than one-half mile downstream of the Irrigation Diversion Weir.

Section 1.6 - Water releases for fishlife shall be subject to reduction in critical dry years.

A critical dry year, as used herein, is defined as a water year for which the April 1 forecast of the California Department of Water Resources predicts that streamflow in the Yuba River at Smartville will be 50 per cent or less than 50 per cent of normal. The critical dry year provisions herein shall be effective from the time the aforesaid forecast is available until the April 1 forecast of the following year.

The water release curtailment schedule for critical dry years will be as follows:

| Yuba River at Smartville Streamflow Forecast Per Cent of Normal | Reduction in Water Releases for Fishlife, Per Cent |
|---|---|
| 50 | 15 |
| 45 | 20 |
| 40 or less | 30 |

However, in no event shall releases below Timbuctoo

Afterbay Dam be reduced to less than 70 cubic feet per second.

Section 1.7 - A minimum pool shall be maintained in New Bullards Bar Reservoir at elevation 1730 feet.

Section 1.8 - The Agency shall maintain as large a minimum pool behind Timbuctoo Dam as is possible under the power and irrigation demand schedule.

Section 1.9 - The Agency shall clear vegetation in New Bullards Bar Reservoir from 1700 foot elevation to the 1955 foot elevation.

Where borrow areas are proposed, the top soil shall be stripped first and stockpiled. When borrow operations are completed, the area shall be graded as practicable, and the top soil shall be replaced where the topography permits.

Borrow areas on U. S. Government land shall be revegetated

with browse species. This stipulation does not apply to those areas which will be inundated by the reservoirs.

Section 2.0 - Agency shall mitigate damages to wildlife resulting from project activities in accordance with recommendations of the Department of Fish and Game. The extent of Agency's obligation under this Section will be determined through further investigation and negotiation.

Section 2.1 - Flows released by the Agency from the Timbuctoo Afterbay Dam during normal operation, shall not fluctuate at an hourly rate of more than 300 cubic feet per second. Fluctuations in the stream flow are to be gaged within one-half mile below the Timbuctoo Afterbay Dam.

Section 2.2 - In instances where the Agency or its contractors propose to remove vegetation from a reservoir site, strip earth from the abutments, remove sand or gravel from a stream, wash gravel near a stream or carry on any activity in or along a stream which might result in muddying, silting or allowing to enter the stream any substance, such as oil, which might injure fish life or fish habitat, the Agency shall be responsible for providing and maintaining in effective condition check dams, settling ponds, and such other features as may be required to maintain the fishery values of the streams below such operations.

The Agency shall be responsible for its contractor's compliance with Sections 5650, 5948, 12015, 1601, and 1602 of the California Fish and Game Code and other applicable statutes relating to pollution prevention or abatement.

Section 2.3 - Free public access shall be allowed within the proposed project boundary, except in areas where public safety, security of Agency's property, or interference with project operations are the controlling factors.

Section 2.4 - It is recognized by the Agency and the State that the temperature of water released from the New Bullards Bar Reservoir during the spawning seasons of king

salmon in the fall and shad in the spring can have an effect upon mitigation and enhancement of the salmon and shad runs in the Yuba River. It is agreed that these problems shall be taken into consideration in finally locating the power intake and outlet works at the New Bullards Bar Dam and that the Agency shall so locate the outlets as to provide water temperatures at Colgate Diversion Dam comparable to present values with regard to the fisheries resource.

Outlet works at the Irrigation Diversion Weir shall be so constructed by the Agency to permit lowering of the water level behind the weir to provide, insofar as is practicable, maximum additional salmon spawning area.

Section 2.5 - Agency shall bear the cost of constructing, operating and maintaining a fishway and fish screening facilities at the Irrigation Diversion Weir.

Section 2.6 - Salmon and Steelhead trapping facilities shall be constructed and maintained by the Agency at Timbuctoo Afterbay Dam; however, the trapping of fish at, and their transfer from the facility at said dam shall be conducted by the State, at State expense.

Section 2.7 - Design of facilities referred to in Sections 2.5 and 2.6 above will be in accord with the criteria described in Exhibit A attached hereto, and which is made a part of this agreement. If said criteria are revised, whereby the cost of fish facilities is increased, such increase shall not be the responsibility of the Agency.

Section 2.8 - This agreement supersedes the preliminary agreement dated December 28, 1961, between the Agency and the State.

AGENCY:

Ben Rose
Chairman

CALIFORNIA DEPARTMENT OF FISH
AND GAME

W. J. Stannard
Director

E. L. Gray
Secretary

DEC 11 1962

On motion of Director Furneaux

duly seconded by Director Harvey

the following Resolution was adopted.

RESOLUTION NO: 64 - 1

WHEREAS, the Resources Agency, through the Department of Water Resources and the Department of Fish and Game, has indicated the need for the installation of multiple outlets to control the temperature of water releases from the Bullards Bar Dam; and

WHEREAS, such multiple outlets would enhance the fishery resources of the Yuba River; and

WHEREAS, such enhancement is consistent with the authority and powers vested in the Agency pursuant to the Act approved June 3, 1959, creating the Agency;

NOW, THEREFORE, BE IT RESOLVED:

1. The Yuba County Water Agency hereby approves the installation of multiple outlets in Bullards Bar Dam.
2. Authority is hereby granted to the Agency staff and International Engineering Company to prepare the design, specifications, and cost estimates for such installation in cooperation with the appropriate State and Federal Agencies having jurisdiction of such matters.
3. Authority is hereby delegated to the Agency staff to negotiate with the appropriate State Agencies to seek adequate contribution from the State to help defray the costs of such installation.

PASSED AND ADOPTED by the Board of Directors of the Yuba County Water Agency on January 13, 1964, by the following vote:

AYES: DIRECTORS Rose, Furneaux, Harvey, Lembke, Coupe

NOES: DIRECTORS

ABSENT: DIRECTORS none

ATTEST: John J. Furber

SECRETARY

Ben Rose
CHAIRMAN

AGREEMENT BETWEEN THE
CALIFORNIA DEPARTMENT OF FISH AND GAME
AND THE YUBA COUNTY WATER AGENCY

This agreement is made this 28th day of November, 1962, between the Yuba County Water Agency, an agency of the State of California, hereinafter called "Agency," and the State of California, represented by the California Department of Fish and Game, hereinafter called "State."

W I T N E S S E T H

WHEREAS, the Yuba River and its tributaries comprise a natural river system frequented by king salmon, steelhead trout, brown trout, rainbow trout, shad, and other fish; and

WHEREAS, the Agency is seeking water rights and permits from the State of California for diversion and use of certain quantities of water from the Yuba River system for irrigation and municipal purposes and for the generation of electrical power; and Agency proposes to construct Hour House Diversion Dam on the Middle Yuba River, Log Cabin Diversion Dam on Oregon Creek, New Bullards Bar Dam and Reservoir and New Colgate Diversion Dam on North Yuba, Timbuctoo Afterbay Dam and an Irrigation Diversion Weir on the mainstem Yuba River in order to divert and store the water for beneficial uses pursuant to said permits applied for; and

WHEREAS, the future construction of an Irrigation Diversion Weir and Timbuctoo Dam will block free and natural access to a substantial portion of the spawning area presently utilized by king salmon and steelhead trout runs of the Yuba River, and will require the release of water from said weir and dam and Hour House Dam, Log Cabin Dam, and New Colgate Dam for the preservation and enhancement of the fisheries in said river system below said dams;

NOW THEREFORE, in consideration of the mutual covenants herein contained, it is agreed between the parties hereto as follows:

Section 1.1 - The following minimum flows shall be released into the Middle Yuba River immediately below Hour House Diversion Dam for the maintenance of fishlife;

50 cubic feet per second or the natural flow, whichever is less, from April 15 through June 15

30 cubic feet per second or the natural flow, whichever is less, from June 16 through April 14

The above releases shall be measured at a stream gaging station located not more than 500 feet downstream of the dam.

Section 1.2 - The following minimum flows shall be released into Oregon Creek from Log Cabin Diversion Dam for the maintenance of fishlife:

12 cubic feet per second or the natural flow, whichever is less, from April 15 to June 15

8 cubic feet per second or the natural flow, whichever is less, from June 16 to April 14

The above releases shall be measured at a stream gaging station located not more than 500 feet downstream of the dam.

Section 1.3 - The flows stipulated above in Sections 1.1 and 1.2 shall not fluctuate more than plus or minus 10 percent from the respective mean flows in any 24-hour period. The term "natural flow" in Sections 1.1 and 1.2 means the inflow to the respective reservoirs.

Section 1.4 - The following minimum flow shall be released for maintenance of fishlife from the New Colgate Dam on the North Yuba River:

5 cubic feet per second year around

The flow shall be measured at a stream gaging station located not more than 500 feet downstream of the dam.

Section 1.5 - The following minimum flows shall be released to the Yuba River immediately below Timbuctoo Afterbay Dam for the maintenance of fishlife:

January 1 - June 30 ----- 245 cubic feet per second

July 1 - September 30 ----- 70 cubic feet per second

October 1 - December 31 ----- 400 cubic feet per second

These flow releases shall be in addition to releases made to satisfy existing downstream water rights and shall be measured at a stream gaging station located not more than one-half mile downstream of the Irrigation Diversion Weir.

Section 1.6 - Water releases for fishlife shall be subject to reduction in critical dry years.

A critical dry year, as used herein, is defined as a water year for which the April 1 forecast of the California Department of Water Resources predicts that streamflow in the Yuba River at Smartville will be 50 per cent or less than 50 per cent of normal. The critical dry year provisions herein shall be effective from the time the aforesaid forecast is available until the April 1 forecast of the following year.

The water release curtailment schedule for critical dry years will be as follows:

| <u>Yuba River at Smartville Streamflow Forecast Per Cent of Normal</u> | <u>Reduction in Water Releases for Fishlife, Per Cent</u> |
|--|---|
| 50 | 15 |
| 45 | 20 |
| 40 or less | 30 |

However, in no event shall releases below Timbuctoo Afterbay Dam be reduced to less than 70 cubic feet per second.

Section 1.7 - A minimum pool shall be maintained in New Bullards Bar Reservoir at elevation 1730 feet.

Section 1.8 - The Agency shall maintain as large a minimum pool behind Timbuctoo Dam as is possible under the power and irrigation demand schedule.

Section 1.9 - The Agency shall clear vegetation in New Bullards Bar Reservoir from 1700 foot elevation to the 1955 foot elevation.

Where borrow areas are proposed, the top soil shall be stripped first and stockpiled. When borrow operations are completed, the area shall be graded as practicable, and the top soil shall be replaced where the topography permits.

Borrow areas on U. S. Government land shall be revegetated

with browse species. This stipulation does not apply to those areas which will be inundated by the reservoirs.

Section 2.0 - Agency shall mitigate damages to wildlife resulting from project activities in accordance with recommendations of the Department of Fish and Game. The extent of Agency's obligation under this Section will be determined through further investigation and negotiation.

Section 2.1 - Flows released by the Agency from the Timbuctoo Afterbay Dam during normal operation, shall not fluctuate at an hourly rate of more than 300 cubic feet per second. Fluctuations in the stream flow are to be gaged within one-half mile below the Timbuctoo Afterbay Dam.

Section 2.2 - In instances where the Agency or its contractors propose to remove vegetation from a reservoir site, strip earth from the abutments, remove sand or gravel from a stream, wash gravel near a stream or carry on any activity in or along a stream which might result in muddying, silting or allowing to enter the stream any substance, such as oil, which might injure fish life or fish habitat, the Agency shall be responsible for providing and maintaining in effective condition check dams, settling ponds, and such other features as may be required to maintain the fishery values of the streams below such operations.

The Agency shall be responsible for its contractor's compliance with Sections 5650, 5948, 12015, 1601, and 1602 of the California Fish and Game Code and other applicable statutes relating to pollution prevention or abatement.

Section 2.3 - Free public access shall be allowed within the proposed project boundary, except in areas where public safety, security of Agency's property, or interference with project operations are the controlling factors.

Section 2.4 - It is recognized by the Agency and the State that the temperature of water released from the New Bullards Bar Reservoir during the spawning seasons of king

salmon in the fall and shad in the spring can have an effect upon mitigation and enhancement of the salmon and shad runs in the Yuba River. It is agreed that these problems shall be taken into consideration in finally locating the power intake and outlet works at the New Bullards Bar Dam and that the Agency shall so locate the outlets as to provide water temperatures at Colgate Diversion Dam comparable to present values with regard to the fisheries resource.

Outlet works at the Irrigation Diversion Weir shall be so constructed by the Agency to permit lowering of the water level behind the weir to provide, insofar as is practicable, maximum additional salmon spawning area.

Section 2.5 - Agency shall bear the cost of constructing, operating and maintaining a fishway and fish screening facilities at the Irrigation Diversion Weir.

Section 2.6 - Salmon and Steelhead trapping facilities shall be constructed and maintained by the Agency at Timbuctoo Afterbay Dam; however, the trapping of fish at, and their transfer from the facility at said dam shall be conducted by the State, at State expense.

Section 2.7 - Design of facilities referred to in Sections 2.5 and 2.6 above will be in accord with the criteria described in Exhibit A attached hereto, and which is made a part of this agreement. If said criteria are revised, whereby the cost of fish facilities is increased, such increase shall not be the responsibility of the Agency.

Section 2.8 - This agreement supersedes the preliminary agreement dated December 28, 1961, between the Agency and the State.

AGENCY:

Ben Rall
Chairman

CALIFORNIA DEPARTMENT OF FISH
AND GAME

E. J. Gray
Secretary

W. J. ...
Director

DEC 11 1962

EXHIBIT A

Design Criteria for Fish Facilities at
Irrigation Diversion Weir & Timbuctoo Afterbay Dam

IRRIGATION DIVERSION WEIR

A. Bypass

1. A bypass with a maximum discharge capacity of 800 c.f.s. shall be provided at the Irrigation Diversion Weir. Selection of the bank at which the bypass shall be located shall be made at the time of final project designs when the necessary information on channel conditions and flow characteristics is available.

2. The bypass outlet channel shall be aligned as close to the toe of the weir as permissible without affecting the safety of the weir. The outlet channel of the bypass combined with the discharge channel of the fishway, shall be so designed that during normal operation (that is, except during flood conditions), the velocity of flow shall not exceed 5.0 ft. per sec. and the minimum depth of water in the channel shall not be less than one foot.

B. Fishway

1. A fishway shall be provided adjacent to the bypass designed to operate under any flow condition up to 15,000 c.f.s. Flow from the fishway shall discharge into the outlet channel of the bypass. The fishway shall be of a type similar to that used at Ice Harbor Dam, Washington.

2. The fishway shall be designed according to the following criteria:

Minimum entrance velocity of flow - 4.0 ft.per sec.

Maximum entrance velocity of flow - 8.0 ft.per sec.

Size of pools - 10 ft. long and 8 ft. wide

Height of weirs - 6.0 ft.

Minimum depth of water over weir crest - 1.0 ft.

Minimum normal freeboard - 3.0 ft.

Floor slope - 1 in 10

3. The downstream end of the fishway shall be so located with reference to bypass stilling basin as to be readily accessible and attractive to fish.
4. Provision shall be made for an auxiliary flow of 100 c.f.s. near the lower end of the fishway.
5. Submerged orifice type flow control arrangement shall be provided at the inlet.
6. The following additional provisions shall be made in design of the fishway:
 - a. A counting facility located in 20 ft. long x 8 ft. wide pool.
 - b. Means of draining and cleaning the pools.
 - c. Orifices, 18-in. square, in the weirs.
 - d. A trashrack with 12-inch bar spacing.
 - e. Protective fence around the facility.

C. Fish screens

1. Vertical louver type screens shall be provided at headworks of the North Yuba and South Yuba canals to divert the fingerling fish from the canals back into the Yuba River downstream of the Irrigation Diversion Weir. The fish diversion basins and facilities may be located on the canals a suitable distance downstream of the canal intakes.
2. Each canal shall be widened into a basin with a rectangular cross-section in which the louver screen shall be located. The design of the transitions upstream and downstream of the louver structure shall be such as to assure a uniform velocity of approach at the louvers. Trashracks, capable of removing debris that may clog the screens, shall be installed upstream of the louver basin.
3. The louver screens and structure shall be designed according to the following criteria:

Normal velocity of approach - 3.5 ft. per sec.

Minimum velocity of approach - 1.0 ft. per sec.

Angle of line of louvers to direction of flow - 16°

Angle of louver slats to direction of flow - 90°

Louver slats - 2.5 in. wide

Adequate flow straighteners shall be provided

Clear spacing between louver slats - 1.5 in. to 2 in.

Velocity at bypass entrance - 1 to 1.4 x approach

velocity

Width of bypass opening - 8 in.

Minimum diameter of bypass pipes - 12 in.

4. The bypass structure shall be of a design which assures a uniform velocity distribution from top to bottom as well as a transition of uniform flow into the bypass pipe.

5. Provisions shall be made for cleaning the louver screens under operating conditions.

D. Trapping Facility at Timbuctoo Afterbay Dam

1. A facility consisting of a fish ladder, a holding tank, an anesthetic tank and the necessary accessories, shall be provided below the Timbuctoo Afterbay Dam to trap the fish that may be stranded at the outlet works. The exact location of the trapping facility shall be determined after the completion of the dam and trial operation of the outlet works through at least one spawning season, when it shall be possible to observe the stabilized channel characteristics as well as the probable areas where the fish may accumulate.

2. Normal minimum tunnel velocities shall be such as to exclude salmon during the period October 1 to December 31.

3. The fish ladder shall be capable of transporting the fish from elevation 245 to elevation 265. It shall be designed according to the following criteria:

Minimum flow - 40 cu. ft. per sec. at the lower end of the ladder.

Minimum entrance velocity of flow - 4.0 ft. per sec.

Maximum entrance velocity of flow - 8.0 ft. per sec.

Size of pools - 5 ft. wide and 10 ft. long

Type of weir - Notched weir with no orifice;

provision for draining.

Height of weirs - 3 ft.

Minimum depth of water over weirs - 1.0 ft.

Floor slope - 1 in 10

Freeboard - 3.0 ft.

4. The holding tank at the upstream end of the ladder shall be 8 ft. wide, 20 ft. long and 4 ft. deep. It shall be equipped with a mechanical sweep.

5. The anesthetic tank shall be 8 ft. wide, 8 ft. long and 2 ft. deep. It shall be equipped with a suitable escalator capable of transferring the fish to a transfer truck.