

OBJECTIVES AND OPERATION OF THE NICASIO CREEK ADULT  
FISH TRAPPING FACILITY, MARIN COUNTY

The Department of Fish and Game and the Marin Municipal Water District entered into an agreement on July 21, 1960 wherein the District agrees to construct, operate and maintain fish trapping facilities below and above Nicasio Dam, Marin County. The purpose of said facilities is for trapping upstream and downstream migrating adult and juvenile silver salmon and steelhead, and transporting and releasing said fish to the stream above and below the dam for purposes of natural spawning and seaward migration.

This agreement also provides during the period from November 1st through March 31st, 800 acre feet of water per month from Nicasio Reservoir for the preservation of fish and wildlife. The stored water shall be released in increments to be specified by and at the discretion of the Department. However, if the run-off is 50 percent of normal of the preceding month the district shall provide 600 acre feet of water. Also, if the run-off is 25 percent of normal in the preceding month the release shall be subject to negotiation.

On October 31st, 1961 another agreement was made between the Department and District wherein the Department agrees to operate the fish trapping facilities on the basis of the District reimbursing the State's cost of operation. Such costs shall include the salary of a Fish and Game Assistant, cost of operating a fish planting truck computed at the rate of \$0.105 per mile for each and every mile actually operated in performance of contract work, the state's overhead costs (13%) and travel expenses of Fish and Game Assistant headquartered at Nicasio Dam.

For the purpose of charging the District the cost of the fish planting truck, only those miles that are traveled in actual performance of trap operations shall be charged and, therefore, an accurate account will be kept monthly of the mileage traveled.

There will be considerable time for allowance of other activities when full time is not required for operation of the fish facilities. The District is aware of this situation and is in accord that the Fish and Game assistant will be able will be able to undertake other projects. These projects will be discussed below.

The following is the plan of operation of the adult fish trapping facilities and secondary objectives that could be achieved beyond the time needed in operating the facilities:

It must be understood that this plan is of a general nature and does not take in any unforeseen situations that might arise during this trial and error period. Changes of operation will be made as required to meet the objectives.

PRIMARY OBJECTIVE  
TRAPPING OF ADULT SALMONIDS

REGULATION OF TRAP:

1. Regulation of water flow through the holding bay is accomplished by manipulation of two -16 inch water intake valves. The valve location furthest upstream furnishes water directly to the fish holding basket and therefore should be the last valve to be manipulated.
2. The two intake valves are equipped with removable screens. These, screens should be checked and cleaned, if necessary, at least twice a day to insure the desirable flow of water through the trap.
3. A series of dropboard slats are located along the main part of the trap. Dropboards should be installed to cut down the water turbulence as much as possible and also to create a head of water in the upstream end of the trap for the basket.
4. The removable fyke should be placed in the holding bay as close to the entrance as possible. The fyke is used to discourage fish from dropping back downstream once they have entered the trap.

5. The trap is equipped with a basket to lift the fish out of trap and into the planting truck. The basket should remain in the trap with the fish entrance door open except when transferring fish.

6. The trap should be checked for fish twice a day during the migrating period.

SILT PROBLEM:

During construction of Nicasio Dam, a large amount of silt has been deposited in the stream bed immediately upstream from the trap. At the onset of water releases for fish migration this silt will undoubtedly be carried downstream and into the trapping facility. This is going to be a big problem during the first year or two of operation. Two alternatives to be taken to minimize the silt deposition in the trap are as follows:

1. Close the intake valve, uncap the pipe running underneath the concrete apron so that silt will be carried downstream through the pipe and over the apron. This should be done preferable before the start of the migration season or during slack periods.

2. If number one above does not remedy situation, then both intake valves should be opened to capacity; all flashboards removed to try and flush the silt downstream through the trap.

WATER RELEASES:

For successful operation of the trap, water flow for attraction and transportation of adult salmonids is of prime importance. The important thing is to know when to release, how much to release and for how long.

WHEN TO RELEASE:

1. Do not release water until fish start migrating up Papermill Creek. The local warden should be able to furnish this information or at least aid in this determination.

2. Before fish are attracted, it must be determined that Halleck and Nicasio Creek water flows are suitable for spawning fish.

3. When fish start migrating, surge flows should be provided to attract fish. (See attached schedule)

4. After a run of fish is over, the water release can be decreased depending on storage behind the Dam. However, if fish are spawning in Nicasio Creek below the trap then a steady release should be made of at least 10 cfs. until spawning is over. After spawning, sufficient coverage of water over the redds is essential until the fry emerge. The amount of water needed to cover the redds will have to be determined by actual observation. It is essential that no redds are exposed.

5. Obtaining the desired water releases requires close cooperation and contact with the Water District personnel. When a release is required the Fish and Game assistant will contact a predetermined Water District representative directly. The release should then be made within the next 24 hours. If the Water District will not cooperate with the request, the Fish and Game assistant will then contact his supervisor.

6. During the upstream migration period, periodic surveys of Nicasio Creek below the trap should be made to determine the number of fish and spawning activity, if any, in the creek.

LOADING AND TRANSPORTING OF FISH:

1. The basket used to lift fish out of the trap is power-operated by a generator. The basket should remain in fishing position with the door open when not loading fish.

2. If fish are unwilling to swim into the basket, the attendant will crowd them in by means of a dip net or fish crowder.

3. In transferring fish from the trap to the truck, a funnel is placed in the truck tank opening. The trap is then swung over the funnel and the bottom of the basket is opened.

4. Not more than 20 adult salmonids should be carried in the 150 gallon tank at one time.

5. Once the fish are in the tank, proceed immediately to the planting site above the dam.

6. A minimum of handling and a minimum of time the fish are in the trap and in transport is essential.

#### PLANTING:

1. All fish will be released as close to below the confluence of Nicasio and Halleck Creeks as possible. The best site is on Nicasio Creek immediately downstream from the red schoolhouse near the town of Nicasio. Access is by a Water District road through a locked gate.

2. Releasing at the above planting site depends on three conditions:

(a) If the reservoir has filled up to the planting site, then fish should be released here in all cases.

(b) If the reservoir has not filled up to the planting site and the flow in the creeks is sufficient for spawning, and will remain sufficient, then release all fish at this site.

(c) If the reservoir has not filled up to the planting site and the flow in the creeks is not sufficient for spawning or will not remain sufficient, then release all fish into the reservoir as close to the inlet of Nicasio Creek as possible.

#### RECORDING:

1. All fish trapped and transported will be recorded as to number, species, sex, mortality and place of release on forms provided.

2. Record all pertinent observations, such as flow releases, duration of releases, operation of the trap and any unforeseen problems that might arise. These records are valuable and will help in correcting deficiencies in the operation.

The operation of the Nicasio upstream fish trapping facilities give us an excellent opportunity to gather data on salmon and steelhead spawning and migration requirements.

Silver Salmon And Steelhead Spawning Habitat:

To get a better idea of the physical habitat desired by silver salmon and steelhead will require the following:

1. Locating and observing spawning fish and then measuring the following -

- (a) Stream flow in cubic feet per second (Pigmy current meter)
- (b) Water velocity over spawning beds (measured 0.4 foot above stream bed)
- (c) Measurements of gravel size used for spawning (qualitative) sand, pea size, 1/2" to 3", 3" to 6", over 6".
- (d) Area used for one pair of spawning fish (square feet).
- (e) Water temperatures before during and after spawning.
- (f) Length of time to complete spawning (1 day 1 week, etc.)

To gather the above-mentioned data will require repeat observations on as many spawning fish as time permits. These data can be gathered either on Nicasio, Halleck or Papermill Creeks depending on available fish.

Observation of Habitat Deterioration:

All observations of habitat deterioration in the Nicasio Creek drainage should be recorded and reported to Headquarters. The following are some problems to look for.

1. Destructive road building practices.
2. Pollution from farms or other sources.
3. Equipment in the stream beds.
4. Excessive clearing of vegetation along stream banks.