

CASE STUDY REPORT #79
NACIMIENTO DAM
NACIMIENTO RIVER

I. Project Description

The Nacimiento River is located in the coastal mountains of San Luis Obispo County. It flows northeast to its confluence with the Salinas River in south central Monterey County (see Figure 1). Nacimiento Dam is approximately ten miles above the confluence with the Salinas River. Construction by the Monterey County Flood Control and Water Conservation District, operators of the project, was completed in 1957. The primary purpose of Nacimiento Reservoir is the replenishment of groundwater supplies in the heavily cultivated Salinas Valley Basin. Water released from the reservoir percolates into the Salinas River groundwater system. The reservoir also serves municipal, domestic and recreational uses.

The Nacimiento Reservoir has a capacity of 350,000 acre-feet (covering 5,370 acres) and stores runoff during the wet season. Releases generally commence between April and July, when natural flows in the Salinas River diminish.

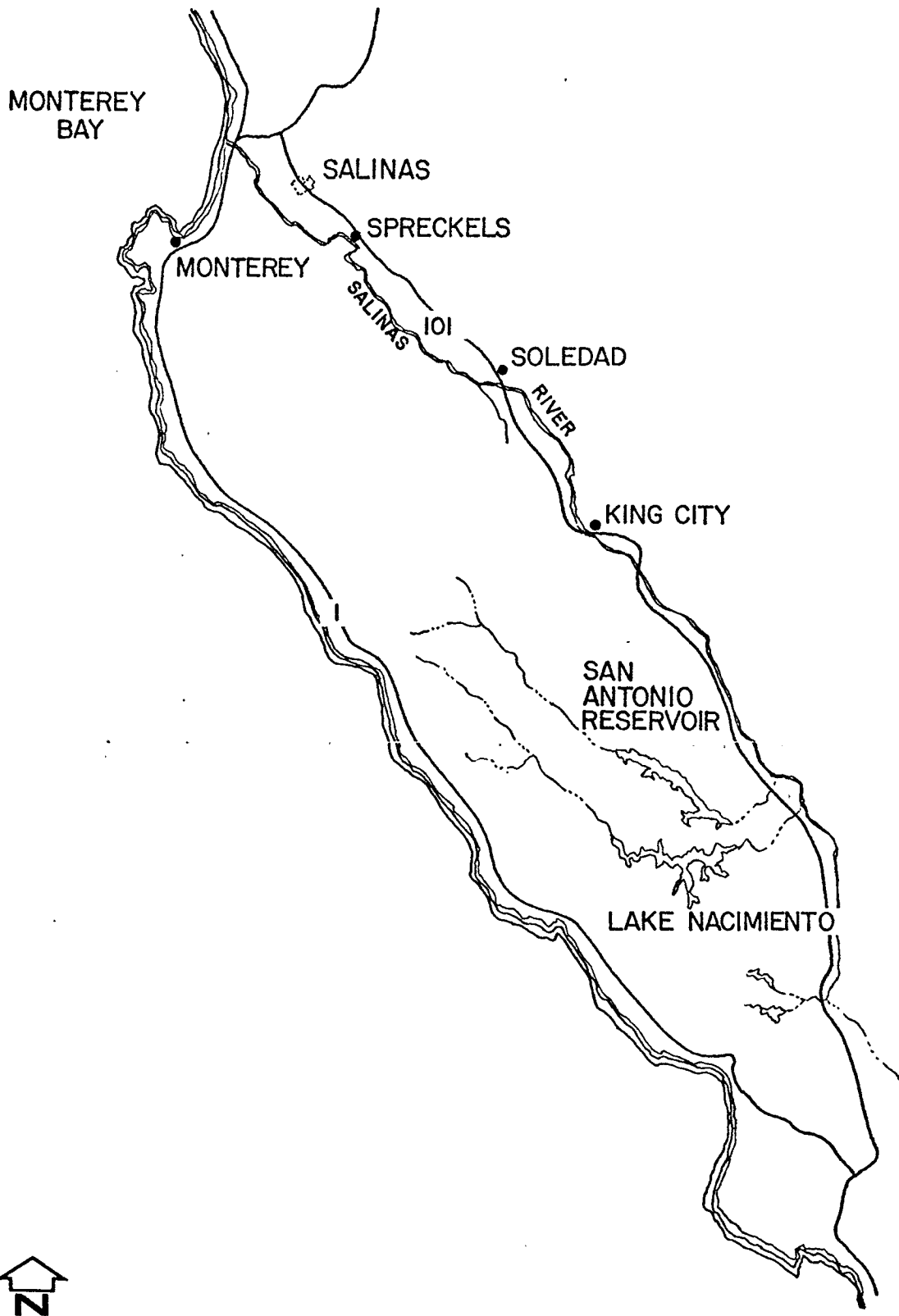


Figure 1
LOCATION MAP

II. Pre-Project Condition

The natural flow of the Nacimiento River reflects the seasonal nature of the runoff that occurs in its watershed. The great majority of the stream discharge occurs during the wet season from December to May (see Figure 2).

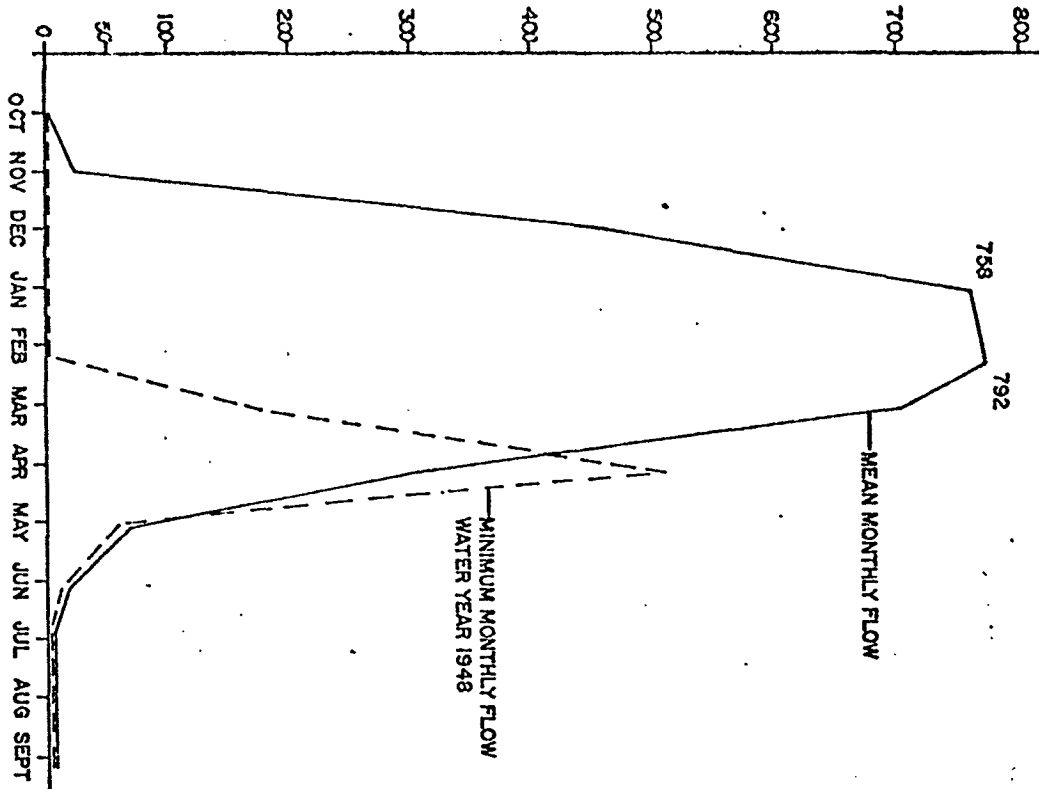
Historically, the Nacimiento River's winter flow regime supported spawning runs of steelhead trout. Prior to the Nacimiento project the runs declined to a small percentage of their former magnitude, which was due primarily to watershed changes in land and water use (Department of Fish and Game, 1965).

During the dry season (summer and early fall) the lower reach of the Nacimiento River was often intermittent resulting in long stretches of dry river bed between a few isolated pools. Minimum flow water years were characterized by no surface flow for long periods of time (see Figure 2).

The low summer streamflows and resulting high water temperatures along the lower section of the river favored the development of the resident warmwater species rather than trout. Most of these warmwater resident fish populations were non-game species.

Between November 1956 and January 1957 the lower Nacimiento River drainage in the vicinity of the damsite was chemically treated to remove undesirable non-game species prior to the construction of the dam.

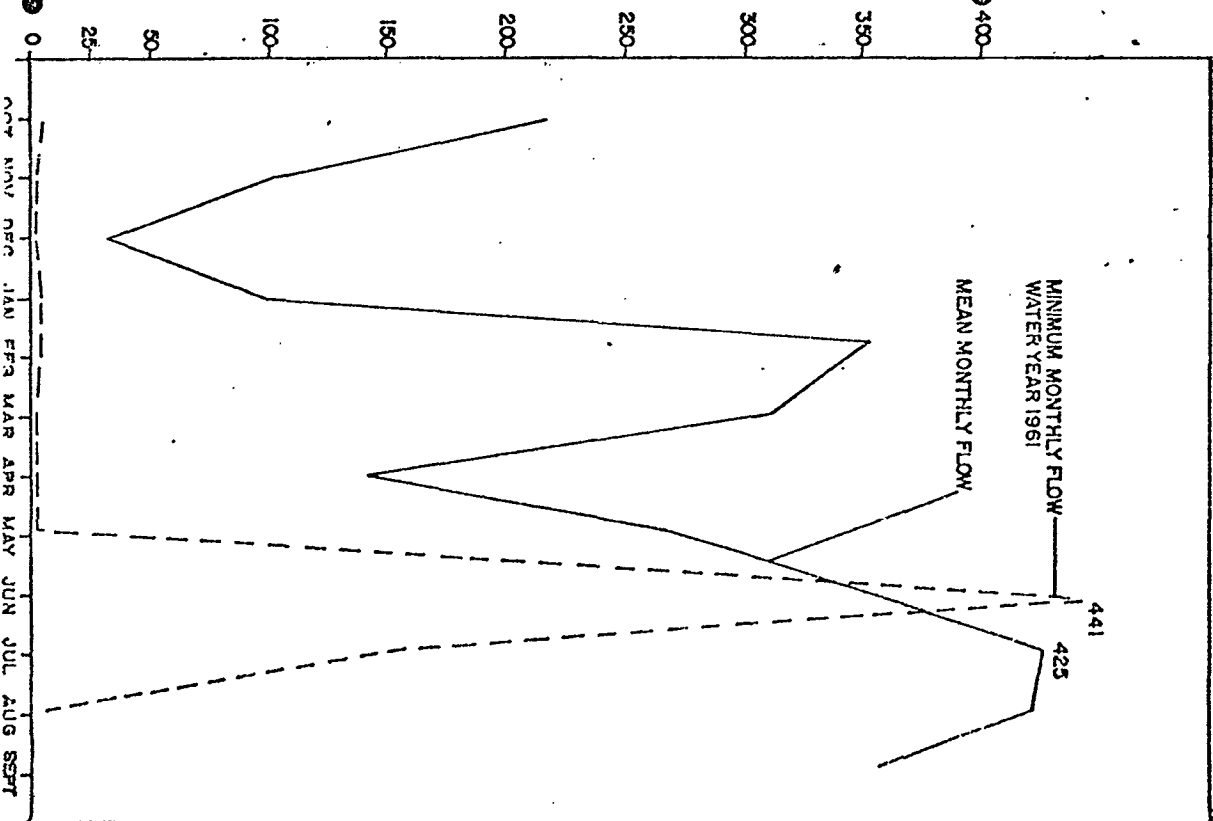
LLC STREAMFLOW (CFS)



PRE-PROJECT: OCTOBER 1939 - SEPTEMBER 1957
 GAUGE STATION NO. 233
 SOURCE: USGS WATER SUPPLY PAPER 1315-B

FIGURE 2
 STREAMFLOW CONDITIONS, NACIMIENTO RIVER
 NACIMIENTO RESERVOIR

STREAMFLOW (CFS)



POST-PROJECT: OCTOBER 1960 - SEPTEMBER 1973
 GAUGE STATION NO. 1149400
 SOURCE: SURFACE WATER RECORDS VOL I

Small-mouth bass, black bass and green sunfish were found during treatment along with rainbow trout in the vicinity of the present dam site.

A fish composition check of the treated section revealed that suckers and Sacramento squawfish were dominant, widespread and abundant through the lower section of the river.

III. Project Development

In 1955 the Monterey County Flood Control and Water Conservation District applied for appropriative water rights for storage in Nacimiento Reservoir. The application was protested by the Department of Fish and Game because of the loss of fish-life that would occur from dewatering of the river. The chance of dewatering would have been greatest during the winter runoff storage phase of the proposed reservoir operation.

The Department of Fish and Game protest recommended a year-round minimum streamflow release of 50 cfs in the lower Nacimiento River. Information describing the techniques used to design this fish flow recommendation were not discovered from the data reviewed.

A letter dated May 12, 1955 (Department of Fish and Game files) disclosed that the Nacimiento project engineers believed it would not be possible for the operators of the dam to meet the 50 cfs release and still maintain the minimum pool. The project's major purpose was to provide groundwater recharge as

far down the Salinas River as possible. According to the proposed operation plan, water would be stored only when the surface flow reached Spreckels near the mouth of the Salinas River. Minimum streamflows of 300 cfs at the confluence of the Salinas and Nacimiento Rivers are required to maintain flows that far downstream on the Salinas River. It was anticipated that releases from Nacimiento Dam would occur whenever the flow in the Salinas River dropped below 300 cfs.

As a result of negotiations between project engineers and Department of Fish and Game in the summer of 1955, the Department of Fish and Game withdrew the water rights protest. The water rights permit does not contain any terms for minimum fish flow releases, or any other mitigative features concerning the blockage of steelhead spawning runs or the inundation of spawning grounds.

By negotiation the Department of Fish and Game has managed to maintain a temporary minimum wintertime streamflow release of 10 cfs. This is accommodated by 17,500 acre-feet of water stored in Nacimiento Reservoir that is appropriated to the City of San Luis Obispo which is located on the other side of the ridge line. The city has not had adequate funds to construct the transbasin pipeline. During the initial post-project period, San Luis Obispo County Fish and Game Advisory Committee bought and installed a valve at the base of the dam with the cooperation of the Monterey County Flood Control District, and the Department of Fish and Game uses it to make a release of 10 cfs, which helps to maintain fish life below the dam.

When the pipeline to San Luis Obispo is installed the interim 10 cfs release may cease (Johnson, pers. comm.).

Presently releases made by the operators of the dam generally commence between April and July when the natural flow of the Salinas River begins to diminish. These flows then maintain some fish habitat.

IV. Post-Project

Following the completion of Nacimiento Dam the streamflow regime in the lower reach of the Nacimiento River changed drastically. Streamflows during the winter and spring wet season are greatly reduced in magnitude from the pre-project natural flow pattern. Releases during this natural runoff season are delayed or eliminated when winter and spring rains surface flows in the Salinas River are greater than 300 cfs. At these times there are no releases to augment flow in the Salinas River, thus seepage in addition to the 10 cfs released by Department of Fish and Game provides for a small streamflow from the dam to the river. During minimum flow water years, releases greater than the 10 cfs are eliminated until the dry season in order to conserve water for irrigation and to maintain a minimum pool in the reservoir.

The minimum streamflow pattern that normally occurs in the dry season is greatly increased in duration from pre-project times. Large amounts of cold water from the hypolimnion of the reservoir are usually released from April through November.

The combined features of increased and colder spring and summer flows favored the development of a trout sport fishery. The unstable nature of the streamflow pattern, however, precluded the possibility of developing a permanent self propagating trout population that would support a large fishery. The Department of Fish and Game concluded that the only way to provide a significant recreational trout fishery was the stocking of catchable sized trout, because the stocking of either fingerlings or subcatchables requires a longer than available stable streamflow to reach a catchable size.

The Department of Fish and Game initiated a catchable rainbow trout program on the lower section of the Nacimiento River by first obtaining access to the river for the fishing public. The first two miles of the river below the dam are in private ownership and the remaining eight miles are controlled by the U. S. Army at Camp Roberts (presently being controlled by the California State National Guard). Access on private land was later prohibited but Camp Roberts still allows access.

The first catchable trout were stocked in June of 1963. The reason the fish were not stocked earlier in the year was that the surface flows during March, April or May of 1963 averaged .05 cfs because late spring rains had provided adequate streamflows on the Salinas River. As a consequence, no releases were made from Nacimiento Dam until June when an average of 308 cfs was released. Fish were planted on a weekly basis through the summer at different sites along the river.

Daily water releases for the period of the fish stocking program ranged from 140 cfs to 505 cfs. During this interval of time water temperatures in the area immediately below the dam ranged from 49°F to 54°F and water temperatures in the lower areas near the confluence ranged from 53°F to 70°F (Department of Fish and Game, 1965).

Creel census data were collected by the Department of Fish and Game in 1963 and 1964. Returns to the anglers' creel ranged from 69 percent to 90 percent of the planted fish during the two years. A Department of Fish and Game administrative report published in 1965 concluded that the census data justified the continuation of the stocking program. The report recommended an annual allotment of 30,000 fish to be planted during a 10 to 15 week period, leaving sufficient time for anglers to catch most of the fish prior to the end of the season. Streamflow data analyzed by the department revealed that from 1957 to 1965 minimum flows have been present in the lower Nacimiento River for an average of approximately 20 of the 26 weeks that comprise the general trout season.

Some of the catches reported by anglers during the later portion of the 1963 and 1964 season indicated good growth and condition factors in trout over 16 inches. Since all stocked fish were catchable trout it was possible that some spawning may have occurred as indicated by angler observations of large numbers of juvenile salmonids. These juveniles could have been the result of fish planted in 1963 carried over until the

spring of 1964 and spawning in the river; or steelhead trout may have migrated from the Salinas River and spawned in the Nacimiento River.

The status of the winter and spring steelhead trout runs after the construction of the Nacimiento project was not revealed by the data reviewed. It must be assumed that the reduced or eliminated winter streamflow pattern adversely affected the steelhead spawning runs. Even if spawning fish could migrate upstream to the dam, the unstable flows would impair spawning nest construction and hatching success.

The increased summer time flows have promoted an increase in the amount of riparian vegetation on the lower section of the river. This has reduced the amounts of spawning area where the vegetation has encroached on spawning beds. The increased abundance of riparian vegetation has provided a greater amount of habitat for wildlife.

V. Conclusion

The operation of Nacimiento Dam, to satisfy downstream water demands for irrigation and provide groundwater recharge, altered the seasonal distribution of streamflow in the river by conserving all natural runoff during the wet season and making large releases during the dry season (see Figure 2). None of the storage in the reservoir is directly allocated for fish and wildlife preservation, although efforts were made by

the Department of Fish and Game during project development to acquire a 50 cfs instream flow reservation. They were unsuccessful in negotiating with the water developers. As a result, the pre-project fisheries, which consisted of steelhead, rainbow trout and a large warmwater fish population, were largely eliminated by dewatering of the lower river during the storage phase of operations. The extent of this streamflow alteration precludes the development of significant self-propagating fish populations in the Nacimiento River; consequently, the Department of Fish and Game manages the lower eight miles of the river (near Camp Roberts) as a catchable trout fishery. During the initial post-project period, 10 cfs of the storage allocated to the City of San Luis Obispo was made available for fish flow releases during times when no water is released for other purposes.

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Personal Communications

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Johnson, M. L. 1965. Catchable trout fishery of the lower Nacimiento River, San Luis Obispo County, California. Department of Fish and Game Inland Fisheries Administrative Report (rough draft). 14 pp.