

CASE STUDY REPORT #81
THELMA ADAIR KEYES RESERVOIR
BUTANO CREEK

I. Project Description

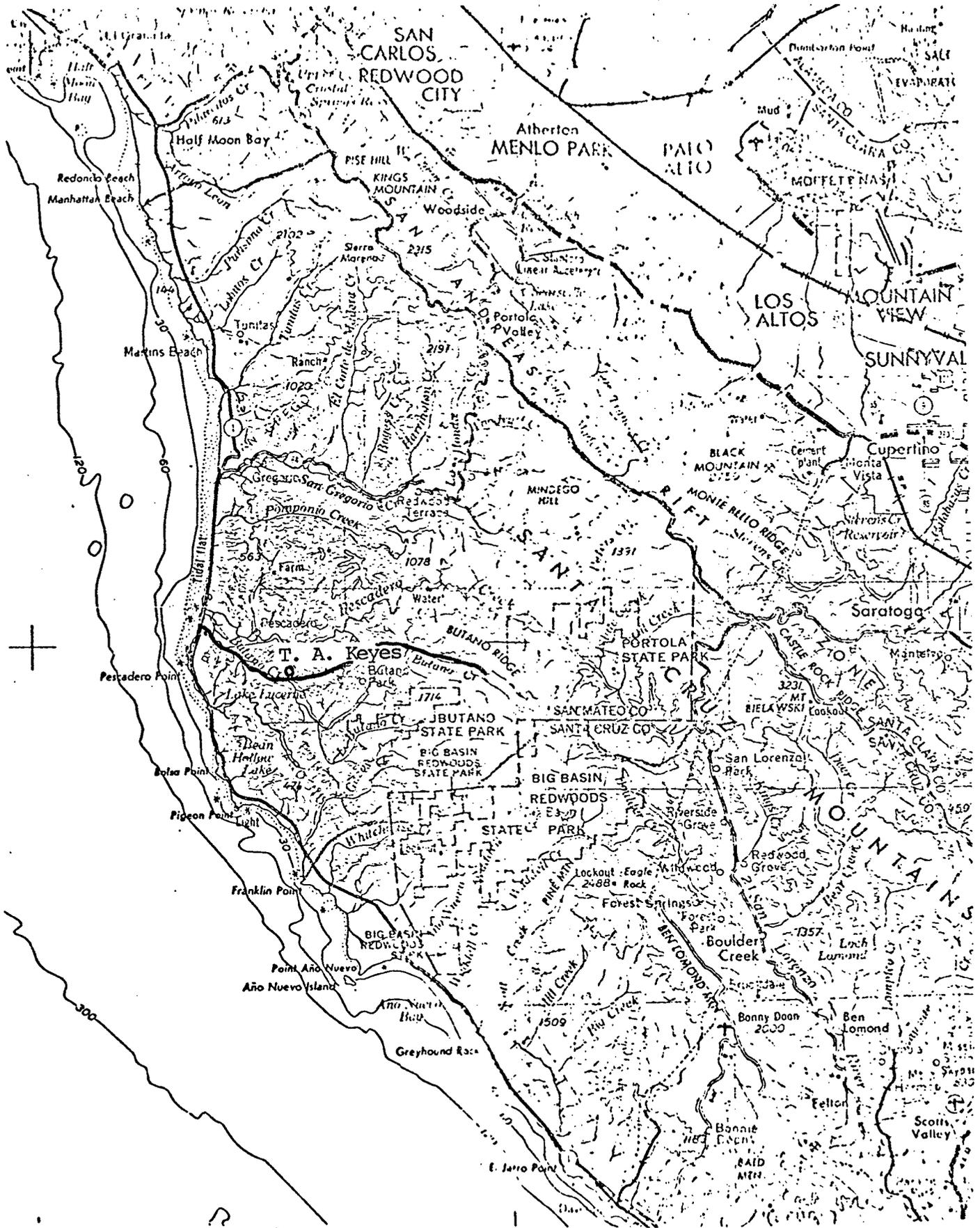
The Butano Creek is located in San Mateo County in the coastal watershed south of San Francisco. The main stem of the creek drains from east to west for approximately 8 miles into Pescadero Creek Lagoon (see Figure 1). The headwater section of the stream flows through steep canyons containing second growth redwood owned by lumber companies. There are numerous waterfalls and log jams present along this upper reach of Butano Creek and its tributaries. The intermediate drainage is in flat land under cultivation. The lower reach of Butano Creek runs between rolling hillsides to the lagoon.

Adjacent to the intermediate drainage section of Butano Creek is Thelma Adair Keyes Reservoir. Water is pumped from Butano Creek a short distance to the 40 acre-feet storage reservoir. During the irrigation season, water is released from the reservoir to serve the furrow flooding of croplands.

II. Pre-Project Condition

Except for some spot measurements made by the USGS, significant records of streamflow in Butano Creek were not discovered in the data reviewed. The following data represents spot readings made during each month, roughly representing the 1960 water year.

Figure 1
LOCATION MAP



Source: U. S. Geological Survey, 1969.
386

August	1959	.1 cfs
September	1959	.96
October	1959	.63
December	1959	1.73
January	1960	8.45
February	1960	64.2
March	1960	7.12
April	1960	10.7
May	1960	1.77
November	1960	1.05

Some early Department of Fish and Game surveys indicate that these flows are adequate to support resident rainbow trout and anadromous steelhead trout.

A 1958 Department of Fish and Game stream survey on Butano Creek described rainbow trout (steelhead) ranging from 2 to 4 inches as "common below the Butano Falls; a permanent barrier to upstream migration" located a short distance upstream of the Thelma Adair Keyes diversion site. Above the barrier falls a "small population" of resident rainbow trout was observed.

The abundance of juvenile salmonids below the Butano Falls represents the results of successful steelhead and silver salmon spawning. Estimates of the number of steelhead and silver salmon using Butano Creek during winter spawning runs were not discovered.

Samples of fish taken above the falls in 1958 represent a resident rainbow trout population introduced to Butano Creek in the early 1950's.

At the time of the 1958 survey it was noted that poor logging practices had caused an excessive amount of siltation

in pools and gravel beds along with log jams occurring in the stream. The stream survey recommended that Butano Creek be managed as a steelhead-silver salmon stream and that the logging operations in the headwaters of the stream be investigated.

III. Project Development

A water rights application to divert unappropriated water on Butano Creek was filed in May of 1962 by Mrs. Thelma Adair Keyes. The application was protested by the Department of Fish and Game in June of 1962. The Department withdrew the protest when Mrs. Keyes agreed to include the following minimum flows for the protection of fishlife in the terms of the water rights permit:

December 1-May 31	3 cfs or the natural flow, whichever is less
June 1-November 30	2.5 cfs or the natural flow, whichever is less.

The methodology used to determine these minimum instream flow requirements was not apparent from the data reviewed. It must be assumed that the department designed winter flows to provide spawning habitat along with providing flows for the attraction and passage for upstream migrant steelhead and silver salmon. Summer flows may have been designed to help maintain temperatures along the stream suitable for rainbow trout and juvenile salmon and steelhead. Maintenance of lower summer water temperature regimes would also be assisted by a few

contributing springs along the creek and an abundance of overhanging vegetation that were both observed during Department of Fish and Game surveys on Butano Creek.

IV. Post-Project

Data describing any change in stream flow after the operation of the Thelma Adair Keyes diversion was not discovered.

Department of Fish and Game surveys conducted after the Thelma Adair Keyes diversion began, indicated that steelhead trout and resident rainbow trout fisheries were still being maintained by stream flows on Butano Creek.

The minimum stream flow in Butano Creek, based on observations during the July of 1964 Department of Fish and Game stream survey, was 0.5 cfs. This flow, based on visual observations during the summer, agreed with the minimum flow required by the water rights permit.

It appeared from the 1964 stream survey that the major limiting factor to fish production in 1964 was sedimentation and logging debris resulting from poor watershed management in the headwater sections of the creek. Estimates or counts for steelhead or salmon populations using the creek for spawning were not discovered.

V. Conclusion

An analysis of the extent of alteration by the T. A. Keyes diversion in the natural flow of Butano Creek is not possible due to the lack of instream flow data. However, the Department of Fish and Game stream surveys seem to indicate that the instream flow reservation has maintained the resident and anadromous fish populations. The exact method used to determine instream flow needs was not discovered. Any attempt to assess the effect of instream flow is confused with other problems associated with watershed management.

BIBLIOGRAPHY

Personal Communications

Baker, Phillip. 1976. California Department of Fish and Game.

References

California. Department of Fish and Game. 1958. Stream survey on Butano Creek. 3 pp.

----- . 1964. Stream survey on Butano Creek. 3 pp.