

USBR / Stetson Memo
Re BO

NOV 16 1999

SCC-411
ENV-7.00

Jim Lecky, Chief
Endangered Species Division
National Marine Fisheries Service
510 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

Subject: Cachuma Biological Opinion

Dear Mr. Lecky:

We appreciate the opportunity we had to discuss the Cachuma Biological Opinion with you. Thank you for being sensitive to the time frame that Reclamation is following to meet the State Water Resource Control Board's (SWRCB) deadline. Our respective staffs have been working together during the consultation process and we will continue to help the National Marine Fisheries Service (NMFS) with our expertise. Your staff has informally requested an additional 60 days for the preparation of the Biological Opinion (BO). We agree to the 60 day extension; the new deadline for the final Biological Opinion is December 27, 1999. Reclamation's deadline to provide a draft Environmental Impact Report (EIR) to the SWRCB is June 2000. Your timely issuance of the BO will greatly assist us in complying with our SWRCB deadline. We look forward to receiving and reviewing the draft Biological Opinion and providing comments.

We want to recap for you some of the major points in the Biological Assessment.

- A Stakeholder Consensus Process through the Santa Ynez River Technical Advisory Committee (SYRTAC) was utilized in the evaluation of study methodologies, tools, data acquisition techniques, analysis, review of reports, and evaluation of hydrologic modeling. The Biological Assessment is the result of the best scientific input and review from the U. S. Fish and Wildlife Service, California Department of Fish and Game, Reclamation, member units and from the private sector in the fields of fish biology, water quality and hydrology.
- The proposed operations of Bradbury Dam and conservation measures are designed to protect and improve instream habitat within the mainstream Santa Ynez River and tributaries downstream of the dam. Reclamation and the member units have already initiated substantial changes in operations to improve habitat conditions. The consensus based SYRTAC has obtained agreements from private land owners for conservation

- easements, funded demonstration projects to control upland erosion, and started and completed habitat improvement projects. Moreover, improvements have been initiated on a broader scale and for more substantial benefits to steelhead than those available to Reclamation alone.
- An extensive body of scientific information was analyzed in the preparation of the Biological Assessment. Reaches of the mainstream river between the Highway 154 Bridge and Bradbury Dam were selected as priority for habitat protection and improvement because of: (1) seasonal and annual instream flow patterns, (2) water temperatures, (3) quality and suitability of existing habitat, and (4) opportunities for habitat improvement.
 - Equally important, analysis of hydrologic data indicates that the Alisal reach lacks suitable habitat due to: (1) warm water temperatures, (2) lack of cover and (3) poorly confined channel configuration. Warm water temperatures occur in this reach even at relatively high flow releases.

Reclamation is fortunate to have assembled a large body of scientific information since 1993 from professional experts in fish biology, hydrology, water quality and water law. These experts have represented state, federal, environmental and member units and have worked cooperatively to develop a broad-based consensus to modify existing operations of Bradbury Dam and implement conservation measures and described so well in the Biological Assessment.

As you will see in the enclosed responses to questions framed by your staff, experts familiar with the river continue to provide useful data that amplify the scientific basis of the Biological Assessment. Please note that releases from Bradbury Dam as described in the Biological Assessment as "baseline" will result in substantial shortages of river water to urban and agricultural water users in drier years.

Furthermore, the data and analysis indicates that an attempt to convert the Alisal reach of the Santa Ynez mainstream to steelhead habitat through greater or prolonged releases would result in limited or no biological benefit to steelhead while interfering with downstream water rights, and would create much larger shortages for which there is no replacement water.

We believe that the actions proposed in the Biological Assessment will result in significant opportunities for habitat improvement and will promote the recovery of steelhead in the Santa Ynez River. We believe that the actions in aggregate are more than would be required from Reclamation to mitigate the adverse effects of our operation. We also believe, that Reclamation can accomplish the actions proposed.

However, Reclamation does not believe we have additional water to commit over what has been included in the Biological Assessment. The project has dedicated a significant portion of its yield through the fish reserve account, conjunctive use of SWRCB Water Rights Order 89-18 and provision for the proposed ramping schedule. Implementation of the Biological Assessment will

result in the communities dependent on Lake Cachuma experiencing more frequent and more severe shortages during extended dry periods. The only way the project is able to support this level of flow enhancement is due to the availability of State Water through the Coastal Aqueduct.

We believe and hope that you will agree with the many scientists on the SYRTAC and with our own experts that Reclamation has gone the extra mile by proposing the actions in the Biological Assessment that will have real benefits for Southern Steelhead, and a level of impacts that are consistent and contained within our water rights responsibilities and project purposes.

If you have any questions, please call me at (559) 487-5118 or for the hearing impaired at (559) 487-5933 (TDD).

Sincerely,



Michael P. Jackson
Deputy Area Manager
South-Central California Area Office

Enclosure

cc: Eric Shott
National Marine Fisheries Service
510 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

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STETSON
ENGINEERS INC.

MEMORANDUM

2171 E. Francisco Blvd., Suite K • San Rafael, California • 94901
TEL: (415) 457-0701 FAX: (415) 457-1638 e-mail:
sr@stetsonengineers.com

TO: Michael Jackson
U.S. Bureau of Reclamation

DATE: November 12, 1999

FROM: Ali Shahroody and Curtis Lawler

RE: Additional NMFS Questions.

This memorandum provides information in response to the additional questions asked by the National Marine Fisheries Service.

1. *Can the BOR flatten out the water rights releases? For example, instead of 120 cfs for x days, could 30 cfs be released for 4x days? The approach would be to avoid the drying of portions of the mainstream after the winter/spring rains cease and then the large addition of water, which is then ramped down again to a point where some areas of the channel may lose surface flows.*

Water right releases are made to provide replenishment water to targeted areas. For example, water is released to replenish the ground water in the Buellton area, or it is released in a manner to deliver water to Lompoc Narrows (for the recharge of the ground water basin in the Lompoc Plain) while achieving ground water replenishment in the areas between the dam and the Narrows. The releases are initiated at a relatively high rate to overcome the slow frontal movement of water in the Santa Ynez River bed. Once the flow to the targeted areas is established, then releases are reduced and maintained at a steady state to the extent feasible.

Water right releases are made from the Above Narrows Account (ANA) for the above Narrows areas, and the point of ANA delivery is at Bradbury Dam. Water right releases are also made from both the Above and Below Narrows Accounts, combined, and the point of delivery for the Below Narrows Account (BNA) water

is the USGS gage at the Narrows (not Bradbury Dam). The delivered water flows from the Lompoc Narrows to "V" Street in Lompoc to recharge the Lompoc Plain.

Water deliveries to the Lompoc Plain require initial releases at relatively high flow rates (130-150 cfs) for a period of 10-12 days in order to convey the water to the Lompoc Narrows. During this period, there is no delivery of BNA water to the Lompoc Plain and the released water, to the extent it does not reach the Narrows, is debited from the ANA. Once the flow is established to the Lompoc area, the releases are reduced but maintained typically at about 50-70 cfs for a significant period to provide recharge in the Lompoc Plain. During this period, releases are varied in response to recharge rates and climatic conditions.

Flattening of the initial releases to a rate of 30 cfs will require a much longer period of time before any water is delivered to the Lompoc Narrows. Furthermore, the flattening of maintenance flows to 30 cfs will provide only a small amount of water for recharge in the Lompoc Plain.

For example, during 1996 (July 19 to October 31), water was initially released at the rate of about 135 cfs for 11 days before it reached Lompoc Narrows; after that, releases were maintained at an average rate of about 65 cfs for another 30 days. During this 30-day period, the flow at Lompoc Narrows averaged about 25 cfs. That means 40 cfs of the released water did not reach the Narrows during the 30-day period. If the releases had been made at the rate of 30 cfs instead of 135 cfs and continued at the 30-cfs rate, it may have taken 40 to 60 days before an appreciable amount of water had flowed at the Narrows. This would have reduced the recharge period in the Lompoc Plain by about 30 to 50 days.

In 1996, the total amount of water right releases was 10,778 acre-feet, of which 3,459 acre-feet of BNA water was delivered to the Lompoc Narrows and 7,319 acre-feet was debited from the ANA (see Table 2-20, Biological Assessment). Releases outside of the rampdown period extended for a period of 94 days, at a rate averaging about 55 cfs. The BNA water delivered to the Narrows averaged about 20 cfs. That means, it took about 35 cfs of carriage

water to deliver 20 cfs at Lompoc Narrows when averaged over the delivery period. If the water right releases are made at a rate of 30 cfs, the amount of BNA water delivered to the Lompoc Narrows would not be appreciable. This would cause an impairment of downstream water rights resulting from a deficit in water supply and deterioration of water quality in the Lompoc groundwater basin. Furthermore, flattening the release rates to 30 cfs would result in stranding the BNA water in Cachuma Reservoir and reducing the Cachuma yield.

In addition, flattening Cachuma release rates to 30 cfs would result in depleting the Above Narrows Account without providing an adequate water supply for the above Narrows area during other, perhaps dryer, periods. In years when water right releases are only made to meet the needs of the above Narrows areas (ANA releases), water released at the rate of 30 cfs may not reach the targeted areas in a timely fashion. Again, such releases would result in an impairment of water rights by depleting the ANA without providing a drought water supply to the water right holders.

In summary, water right releases can not be flattened and still fulfill their purpose of recharging targeted areas. Flattening the releases would not allow adequate recharge in the Below Narrows area because it would result in stranding the BNA water in Cachuma Reservoir, thus impairing the water rights of the Lompoc area. Flattening the releases would also deplete the ANA without protecting the water right holders in the above Narrows area. Specific releases made for the Above Narrows may not reach the targeted areas. This would result in depleting the ANA, thus impairing the water rights of ANA water users particularly in drought periods.

2. *Also, as stated previously, NMFS needs to know if winter flood operations such as (but not limited to) pre storm reservoir draw downs will affect the ability to achieve the 5,500 acre foot fish account in spill years and to carry over water non-spill years that follow.*

Winter flood operations as informally undertaken by USBR in 1998 would not affect the ability to achieve the 5,500 acre-foot fish account. Winter flood

operations are undertaken to attenuate the impact of peak flood events downstream of Bradbury Dam. During winter flood operations, runoff from tributaries downstream of Bradbury Dam contribute significantly to flood flows in the lower Santa Ynez River. The three types of winter flood operations described in Section 3.1.3 of the BA would be undertaken when the Santa Ynez River watershed above Cachuma Reservoir is practically supersaturated and the added runoff from the on-coming storm occurrences would create peak flood events in the downstream areas below Bradbury Dam. Typically, these operations are undertaken after the Dam has already spilled and downstream tributaries are contributing significant flow to the main stem. The winter operations at Bradbury Dam are undertaken to protect life and property in the downstream areas. These operations are used to modify the peak flood flow and they do not affect the volume of runoff passing through the Cachuma Reservoir. Once the peak flood event has passed, the reservoir would be brought back to its normal operation. There would still be a significant amount of watershed runoff (as a part of the recession hydrograph) to continue the spill while filling the reservoir up to the surcharge amount of 5,500 acre-feet for the Fish Reserve Account. In fact, any winter flood operation would be predicated on bringing the reservoir to its full level, which would include a surcharge of 5,500 acre-feet.

To the extent a portion of the established Fish Reserve Account of 5,500 acre-feet is not used for fish releases in the spill year, it will carry over to non-spill years that follow. The winter flood operation would not affect the amount of carry-over to non-spill years.

3. *Can the BOR estimate the magnitude (median release + largest reasonably expected), frequency, and duration of "precautionary releases" and pre-releases (Emergency Winter Operations)? Can these releases be ramped if they are done via the roller gates? If so, by what increments and durations?*

Estimates of magnitude, frequency, and duration of winter releases under the Emergency Winter Operations can not be determined without a detailed analysis of the historical flood events. The actual experience in connection with the

Emergency Winter Operations at Bradbury Dam has been limited to one year, 1998.

Winter flood operations are undertaken in conjunction with large flood events. There could be limited regulation (ramping) to the extent space is available in the reservoir to attenuate the peak flood discharge. With large flood events sustaining high discharge rates, the reservoir has to pass the flood runoff without the capability to ramp the flows. It is not feasible to ramp precautionary drawdowns (winter releases) because of the limited time of operation and the uncertain nature of flood events. Any ramping in conjunction with winter flood operations at Bradbury Dam could interfere with the protection of life and property in the downstream areas. However, at the end of storm periods, inflow, storage and release can be balanced in a coordinated manner to regulate the ramping of spills down to about 30 to 50 cfs.

4. What are the median monthly flows at the dam if the reservoir was not present? (This may already be in the info provided, if so, I'd appreciate more direction to it).

Santa Ynez River flows were measured by the U.S. Geological Survey (USGS Gage 11126000) at San Lucas Bridge, near the dam site, for the period January 1929 - October 1952. The table below (Table 1) lists the median flow for each month.

Table 1
Median Flow for Each Month
Santa Ynez River Flow at San Lucas Bridge (Hwy. 154)
January 1929 - October 1952
(cfs)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.0	0.0	0.0	16.0	62.0	70.0	37.0	9.0	2.0	0.0	0.0	0.0

Table 2 shows the median daily flow for each month for the same record of flow measurements prior to Cachuma Reservoir.

Table 2
Median Daily Flow for Each Month
Santa Ynez River Flow at San Lucas Bridge (Hwy. 154)
January 1929 - October 1952
(cfs)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0.0	0.0	0.0	7.4	38.0	43.0	35.0	7.0	1.7	0.3	0.0	0.0

5. What percent of years are downstream water rights releases expected to occur given the proposed project (with 5,500 acre foot fish account)?

Under the proposed project, water right releases are expected to occur in about 65 percent of the years. Generally, water right releases are not made in spill years. Statistically, Cachuma Reservoir spills one year out of three. However, spills could occur in several consecutive years or several years apart (historically, the longest time between spills has been 9 years (1985-1992); if seismic concerns had not limited Cachuma storage in 1995, it would have spilled four straight years between 1995 and 1998). If Cachuma Reservoir existed during the wet period from 1941 through 1946, there would have been six consecutive years of spill.

6. Were the exceedance curves on pages 3-12 and 3-13 of the EA derived from the daily flows calculated for the Santa Ynez Hydrology Model?

The exceedance curves on pages 3-12 and 3-13 of the EA represent monthly flows in cfs and are generated by the Santa Ynez River Hydrology Model for the

entire model period extending from 1918 through 1993 (76 years). They are not based on daily flows calculated for the Santa Ynez River Hydrology Mode

7. *Can the BOR predict the timing (during the year) of maintenance activities that shut off water releases to the Santa Ynez? Specifically water rights releases?*

Maintenance activities as set forth on page 3-5 of the BA are expected at regular intervals, so they would be predictable. However, maintenance work is performed during a broad window of time. As such the date(s) of work would be scheduled as to not interfere with water right releases.

8. *NMFS has asked previously for information regarding the amount of water needed to supply the following flow targets at the Alisal reach on a permanent basis (95% of years, excepting severe droughts): 2.5 cfs, 5 cfs, 10 cfs.*

Results based on the Santa Ynez River Hydrology Model indicate that annual allocations to the Fish Reserve Account, compared to the Proposed Project, would have to be increased significantly above what was proposed in the Biological Assessment(BA) to meet the target flows of 2.5 cfs, 5 cfs, or 10 cfs at Alisal Bridge on a permanent basis (95% of years, excepting severe droughts). The comparison of annual allocations (non-spill years) is shown below.

	Annual Allocation (acre-feet)
Proposed Operations(BA)	2,000
2.5 cfs at Alisal	3,100
5.0 cfs at Alisal	5,000
10.0 cfs at Alisal	8,200

The above allocations would be for non-spill years. The allocations in spill years would remain at the surcharge amount of 5,500 acre-feet, except in the

case of 10 cfs target flows at Alisal, which would require an allocation of 8,200 acre-feet instead of 5,500 acre-feet in spill years.

The proposed operations of 2.5/5/10 cfs rearing habitat flows at Highway 154 Bridge already will produce greater shortages in the Cachuma Project yield during the critically dry period of approximately 4,200 acre-feet in the worst year of the critical period. During the last three years of the critical period (1949-1951), a cumulative shortage of approximately 9,500 acre-feet occurs. It is important to note that the shortages just described are in addition to shortages in available water supplies already occurring under baseline conditions. The proposed flow targets at Alisal will also increase the frequency of shortages. The impacts to water supply for the scenarios of 2.5, 5.0 and 10.0 cfs at Alisal during the critical period are shown in Table 3.

Table 3
Impacts of Fish Releases on Project Water Supply
in Critical Drought Period, 1949 through 1951
(acre-feet)

	Shortage in Critical Drought Year (1951)	Shortage as Percentage of Annual Draft	Cumulative Shortage in Critical Drought Period (1949-1951)	Shortage as Percentage of Annual Draft for Three Years
Baseline	4,540	18%	9,940	12%
2.5/5.0/10 cfs at Hwy 154	8,730	34%	17,450	23%
2.5 cfs at Alisal	11,390	44%	23,600	31%
5.0 cfs at Alisal	13,060	51%	27,690	36%
10.0 cfs at Alisal	17,410	68%	38,540	50%

Note: Annual draft from Cachuma Project is 25,714 acre-feet.

The impacts to water supply from maintaining flow targets at Alisal are severe. Additionally, maintenance of flow targets at Alisal would require releases through the outlet works at Bradbury Dam in addition to releases made

through the Hilton Creek watering facility. This would conflict with the operation of outlet works for delivery of State Water Project (SWP) water. That means, Alisal flow targets would impact the SWP water deliveries to Cachuma Reservoir which would further compound the severity of shortages in water supply to the Cachuma Project water users.