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9 **STATE OF CALIFORNIA**
 10 **STATE WATER RESOURCES CONTROL BOARD**

11 In the Matter of:)
 12) TESTIMONY OF ROBERT G.
 13 CACHUMA PROJECT HEARING, PHASE 2) TITUS, STAFF ENVIRONMENTAL
 14 UNITED STATES BUREAU OF) SCIENTIST
 15 RECLAMATION APPLICATIONS 11331 AND)
 16 11332)
 17)

18 **TESTIMONY OF ROBERT G. TITUS**

19 I, Robert G. Titus, provide the following written testimony under penalty of perjury in
 20 relation to the State Water Resources Control Board's Cachuma Project Hearing, Phase 2, United
 21 States Bureau of Reclamation Applications 11331 and 11332.

22 **Q1: Please state your name, your position, and outline your educational and professional
 23 qualifications and background.**

24 1. My name is Robert G. Titus. I am a Staff Environmental Scientist with the
 25 California Department of Fish and Game ("DFG"), Native Anadromous Fish and Watershed
 Branch ("NAFWB"). For the past ten years, I have worked in NAFWB's Stream Evaluation
 Program based in our agency's headquarters in Sacramento. The primary focus of this program
 has been the assessment of salmonid-habitat relationships, including stream flow, water

1 temperature, and other manageable stream habitat attributes and their influences on production
2 and life histories of salmon and steelhead.

3 2. I hold Bachelor of Arts and Master of Science degrees in Biological Sciences
4 from California State University, Sacramento ("CSUS"), and a PhD in limnology¹ from Uppsala
5 University in Sweden. Both my Master's and PhD work focused on the study of trout.

6 3. I have worked on anadromous salmonid research and management issues for
7 about twenty years, in both academic and government settings, in both California and in
8 Scandinavia. My academic experience includes work as both a lecturer and adjunct professor in
9 the Department of Biological Sciences at CSUS. I have lectured on and taught coursework in
10 fishery biology, conservation policy and administration, and natural resource conservation. In my
11 work with DFG, I have published numerous research articles, manuscripts, and technical reports
12 related to both anadromous and freshwater fish.

13 4. My curriculum vitae is attached as **DFG Exhibit 5**.

14 **Q2: During your employment with DFG, have you worked on public trust issues in relation**
15 **to the Santa Ynez River that are relevant to these proceedings? Please describe.**

16 5. Yes. I was actively involved with fishery issues on the Santa Ynez River on a
17 long-term basis from 1993 until 1999.

18 6. Specifically, my involvement began at the inception of the Santa Ynez River
19 Technical Advisory Committee ("SYRTAC") in 1993 through the early development of a study
20 plan to develop fish habitat management alternatives for the lower river, culminating in the
21 public review draft of the Lower Santa Ynez River Fish Management Plan ("FMP"), issued in
22 April, 1999. I have also authored a report charting the history and status of steelhead in coastal
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25 ¹ Limnology is the study of inland waters -- lakes, ponds, rivers and streams -- examining physical, chemical and biological variables that influence living organisms in such ecosystems.

1 streams south of San Francisco, including a review of factors affecting steelhead production in
2 the Santa Ynez River system and elsewhere along the southern California coast.

3 **Q3: You mentioned that you participated on behalf of DFG in the development of the FMP.**
4 **Please describe your role and the duties you performed.**

5 7. As I mentioned earlier, I am assigned to DFG's Stream Evaluation Program. That
6 program played a technical role in the FMP process, providing support to DFG's statewide water
7 rights coordination function in our agency's former Environmental Services Division. On behalf
8 of the SYRTAC Biology Subcommittee, I was one of the primary authors of the original long-
9 term study plan for investigations to determine fish management alternatives for the lower Santa
10 Ynez River. That study plan was issued in final form by the Santa Ynez River Consensus
11 Committee ("Consensus Committee") on March 4, 1996.

12 8. The objectives and goals stated in the study plan provided the basis for eventual
13 development of management alternatives in the FMP. It essentially described the work necessary
14 to determine what public trust fishery resources existed in the lower Santa Ynez River and to
15 provide a basic assessment of the environmental conditions that prevail in the lower river and
16 serve as habitat for those resources. In addition, it established a process to systematically identify
17 reasonable flow and non-flow actions to improve habitat conditions for public trust fishery
18 resources, including steelhead. Identification of these actions in the study plan provided the
19 linkage for presentation and assessment of the management alternatives that constituted the basis
20 for the FMP.

21 9. The study plan was an attachment to the 1996 *Memorandum of Understanding for*
22 *Cooperation in Research and Fish Maintenance -- Santa Ynez River* ("MOU") to which DFG
23 was a signatory. I participated on behalf of DFG's Stream Evaluation Program in the initial
24 technical oversight of the data collection and analysis by US Fish and Wildlife Service ("FWS")
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1 and project biologists, as stipulated in the MOU for the Biology Subcommittee. Ultimately, the
2 study plan was included in Appendix I of the FMP, in an updated version from June 1997.

3 10. Following completion of the study plan, my role continued as a participant on the
4 SYRTAC Biology Subcommittee and the Hilton Creek Subcommittee. I provided review and
5 input on technical information being developed on flow-related habitat issues on the lower river,
6 and through review and ranking of Santa Ynez River management alternatives as coordinated by
7 biologists with ENTRIX, Inc.

8 11. By 1999, DFG's South Coast Region staff had assumed the lead for our agency in
9 the Santa Ynez River MOU process. My involvement in the development of the FMP thus
10 concluded with providing input on DFG's comments on the Draft FMP during the period from
11 March through June, 1999.

12 **Q4: Are you familiar with the final FMP, released October 2, 2000?**

13 12. Yes.

14 **Q5: In your opinion, what are the flow recommendations in the final FMP designed to**
15 **accomplish?**

16 13. In my opinion, the flow recommendations are designed to contribute to the
17 maintenance of existing fishery resources and to provide some measure of improvement in
18 mainstem habitat conditions below Bradbury Dam. All the actions proposed in the FMP, and
19 those implemented since 1993, may contribute to meeting the state's responsibility of protecting
20 steelhead as a public trust resource.

21 14. However, it is important to keep in mind that the actual effectiveness of the
22 FMP's recommended actions can only be determined conclusively following their full
23 implementation. At that time, responses can be monitored and reviewed not only in the steelhead
24 population but also in the aquatic ecosystem that supports steelhead. Currently, the FMP lacks
25 identifiable benchmarks and metrics to determine the success of the restoration actions contained

1 therein. Such success criteria will be necessary for sound implementation and evaluation of plan
2 actions.

3 **Q6: What benchmark may serve as an indicator of success in implementation of FMP**
4 **actions as related to the restoration of steelhead in the Santa Ynez River system?**

5 15. In my opinion, a clear shift back toward anadromy would be the indicator of
6 having achieved a threshold level of success in the restoration of steelhead. The Santa Ynez
7 River system has historically provided habitat for a large enough steelhead population to support
8 a highly visible and popular sport fishery of adults returning from the Pacific Ocean on their
9 spawning migration. While information in the FMP and data collected by SYRTAC in recent
10 years document spawning migrations of trout in the lower system (including some steelhead-
11 sized fish) and production of smolts, there appears to be a continued lack of anadromy as the
12 dominant life-history strategy in the population.

13 16. In addition, although DFG recognizes and has participated in the scoping and
14 implementation of restoration activities to date, it seems clear that the implementation of
15 remaining FMP actions, both flow and non-flow related, will be necessary to help restore the
16 Santa Ynez River system to where anadromy is a favored life history for steelhead.

17 **Q7: In your opinion, what should be the general framework for ultimately defining future**
18 **steelhead restoration goals and actions?**

19 17. DFG has not yet established a specific, numerical management goal for
20 restoration of steelhead in the Santa Ynez River. However, various documents produced by our
21 agency – including the *Steelhead Restoration and Management Plan for California* (“Steelhead
22 Plan”) – recognize the degraded condition of the Santa Ynez River as a steelhead production
23 system and give a general blueprint for short and long-term habitat restoration goals that are
24 intended to ultimately restore the species. A centerpiece of this plan is the goal of investigating
25 the feasibility of providing steelhead passage around Bradbury Dam.

1 18. I believe the process of developing a conceptual framework for the state's
2 steelhead restoration goal below Bradbury Dam should be guided by Fish and Game Code
3 section 5937 in regards to flow releases. This section, paraphrased, states that the owner of a dam
4 shall release sufficient water below that dam to keep fish in "good condition." Although DFG
5 has previously formulated a more explicit definition of "good condition" for resident brown trout
6 in Mono Lake tributaries during prior SWRCB proceedings, it is perhaps the tiered, ecosystem-
7 based approach of Professor Peter Moyle² that would be most applicable for achieving
8 sustainable production of steelhead in the Santa Ynez River system. **DFG Exhibit 6.** Namely,
9 that restoring conditions to favor an anadromous life cycle in steelhead will be enhanced by
10 continuing to make improvements in the system that benefit the native, cool-water fish
11 community, including steelhead (as opposed to introduced warm-water species such as black
12 bass). The MOU process and implementation of FMP actions provide an important nucleus for
13 continued facilitation of such improvements.

14 **Q8: In your expert opinion, will the recommended actions contained in the FMP achieve**
15 **recovery of the steelhead run?**

16 19. No. It is important to note that development of the FMP and development of a
17 formal Recovery Plan under the federal Endangered Species Act ("ESA") for steelhead in the
18 Southern California Evolutionary Significant Unit ("ESU") are two entirely distinct processes.

19 20. The FMP process represents just the first level of restoration actions to result from
20 the initial assessments of existing fishery resources and supporting conditions in the lower river.
21 In contrast, the scale of the ESA recovery planning process, which will be led by NOAA
22 Fisheries, will include all historic steelhead streams in the Southern California ESU, and will
23 produce a blueprint for steelhead conservation throughout the region, a task that could include
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25 ² Moyle's definition of "good condition" was accepted in the Putah Creek Council v. Solano County Water Agency trial in 1996. Moyle's definition was based on an approach which takes into account three levels of fish health: individual level, population level, and community level.

1 the Santa Ynez River FMP and associated stakeholder-based consensus process to facilitate
2 public support and implementation of actions for that system.

3 21. Within the context of the future ESA recovery planning process, I believe it is
4 also important to note that the management actions described in the FMP, including those
5 implemented already, may contribute toward restoring the lower Santa Ynez River to a more
6 functional steelhead production system. The actions given highest priority in the FMP are
7 designed to address immediate impediments to steelhead production in the lower Santa Ynez
8 basin, and while these actions will likely contribute to the ultimate recovery of steelhead per as-
9 of-yet unspecified goals by NOAA Fisheries, they are not the ultimate solution. Full recovery
10 within the entire Santa Ynez River drainage cannot be achieved without restoring steelhead
11 access to the historical spawning and rearing habitat in the upper watershed beyond Bradbury
12 Dam.

13 22. As I understand, NOAA Fisheries is proposing a suite of investigations for the
14 upper Santa Ynez River system above Lake Cachuma that will produce baseline information
15 with regard to steelhead restoration potential in that part of the river system. While full recovery
16 must include restoration of access to the upper watershed, it is also important to keep in mind the
17 significance of the lower system, including the tributaries and lagoon, from the standpoint of
18 maintaining the biodiversity of steelhead and other public trust fish and wildlife resources not
19 only within the Santa Ynez River drainage, but throughout the southern California coastal
20 bioregion.

21 I, Robert G. Titus, declare under penalty of perjury under the laws of the State of
22 California that I have read the foregoing "Testimony of Robert G. Titus, Staff Environmental
23 Scientist" and know its contents. The matters stated in it are true of my own knowledge except as
24 to those matters which are stated based on information and belief, and as to those matters as I
25 believe them to be true.

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Executed on October 14, 2003 at Sacramento, California.



By: ROBERT G. TITUS
Staff Environmental Scientist