

**EXHIBIT** CT 28-E

#4

**Progress Report**

Prepared by the Upper Basin Working Group  
For the Santa Ynez River Technical Advisory Committee

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**Objectives:** The upper basin group was convened to evaluate opportunities to address issues addressing anadromous steelhead in the area upstream of Bradbury Dam. Several actions may provide opportunities to protect or enhance their populations.

- 1) **Genetic Protection** - The rainbow trout planted to support the put and take fishery in Lake Cachuma and below Gibraltar Dam are derived from non-native stocks. These stocks evolved under different environmental conditions than those present in southern California, and thus are likely less adapted to survive the extreme environment. While most of these fish are likely caught by fishermen, some fish may survive and be washed over the dam in spill years. These fish may then interbreed with native stocks and thereby reduce the fitness of the resulting progeny in the Santa Ynez River. The working group is evaluating the feasibility of replacing the current put and take stocks with stocks derived from southern California steelhead, so that if such interbreeding does occur it will have less detrimental impact to the native steelhead population.
- 2) **Increase Habitat Availability** - prior to the construction of Bradbury Dam, the tributaries upstream of Bradbury Dam provided the majority of the quality spawning and rearing habitat for steelhead. The working group is evaluating opportunities to provide steelhead access to the area above the dam.
- 3) **Increased Smolt Production** - historically steelhead and resident rainbow trout were part of the same population which exhibited two life history patterns. Some juvenile fish (steelhead) would migrate to the ocean, rear there to adulthood, and then return to their natal stream to spawn. Other juveniles (rainbow trout) would spend their entire life in freshwater. Adults exhibiting either life history pattern produced offspring exhibiting both life history patterns. Due to the extreme environmental cycles of southern California, it was common for one life history pattern or the other to have poor reproductive success or be extirpated periodically. This life history pattern would then be restored from the progeny of the other life history pattern. The working group is evaluating the feasibility of trapping juveniles migrating downstream above the dam and transporting those juveniles by truck downstream of the dam to increase the number of smolt reaching the ocean.

The working group has held two conference calls to discuss these issues. The first call was held on December 17, the second was held on February 16. During these calls the

group discussed the options available to meet the objectives outlined above and identified the technical and institutional challenges of meeting each objective. The results of this discussion are described briefly below.

**Genetic Protection** - this program would involve replacing the rainbow trout currently planted to support the put and take fishery upstream of Lake Cachuma with an equal amount of rainbow trout derived from southern California steelhead stock. This program may be technically and institutionally feasible, but several challenges must be addressed. 1) a facility must be located capable of spawning and rearing the fish to be planted. The facility must have an assured water supply of the correct temperature and quality to support spawning and rearing fish. 2) a suitable brood stock must be developed. Genetic analysis indicates that a large proportion of rainbow trout above Juncal Dam and Gibraltar Dam have the desired southern steelhead genotype. Hatchery personnel consulted estimate that approximately 1,000 adult rainbow trout and steelhead would be required to develop a broodstock. It appears that these fish may be available in the areas identified, but a more complete population census would need to be conducted to verify this. Development of a suitable brood stock would likely take 10 to 15 years. 3) Additional items to be addressed would reliable funding and manpower, and the quality of hatchery discharge water if a new facility were built in the Santa Ynez basin. There are no apparent institutional barriers to this program, as the rainbow trout above Bradbury Dam are not considered part of the southern steelhead ESU and are not protected and all stocking of fish would take place above Bradbury.

**Increased Habitat Availability** would be provided if adult steelhead could access the area above Lake Cachuma. The group consensus is that providing this access is likely infeasible. Two actions were evaluated that would allow this to occur: laddering the dam or trapping and trucking fish around the dam. Laddering the dam is technically infeasible due to the height of the dam, the variable level of the water surface elevation of the lake, and warm water surface temperatures in the lake. Trapping and trucking adults around the dam may be technically feasible, if good trapping sites could be located and adequate facilities could be built that allowed fish to be trapped under a wide variety of flow conditions. However it is institutionally unacceptable because it would result in the direct take of steelhead. Any fish captured would not spawn below the dam and therefore their production in this area would be removed. Additionally, because adult steelhead may spawn more than once, fish transported upstream of the dam would have no way to return to the ocean.

Two other options that have been discussed with respect to getting adult steelhead above Lake Cachuma are using Hilton Creek as the lower portion of the access route and then building a passage facility from the upper portion of Hilton Creek into the reservoir and building a canal by which steelhead would bypass Lake Cachuma entirely. Using Hilton Creek as the bottom portion of the ladder would result in a reduction in the height of the fish ladder necessary, but the ladder would still need to be higher than any functional fish ladder in existence and warm lake surface water temperatures and the variable lake water

surface elevations would still need to be addressed. The canal option would likely be extremely expensive to construct and would require access to private property.

An additional consideration in passing adult steelhead over Bradbury Dam would be the ability of the smolt produced above the dam to reach the ocean. Passage over the face of the dam would only be possible in spill years and would likely result in very high mortalities during those years. Smolt would likely be unable to find their way through the reservoir to the entrance to a fish ladder or other upstream passage facility if one were built. The remaining option of trapping and trucking smolts around the dam would be problematic because of poor road conditions in the areas where fish traps would need to be set and possible impacts on other listed species. These problems are discussed in more detail below:

*Increased Smolt Production* might be obtained by trapping juvenile steelhead migrating downstream above Gibraltar and releasing them downstream of the dam. Some proportion of these juveniles would likely undergo smoltification and migrate out to sea thereby boosting the production of steelhead in the system. Although genetically similar, the juvenile fish to be trapped are not within the southern steelhead ESU and therefore are not institutionally protected, but several other challenges are present. These challenges include: 1) suitable trapping locations on the tributaries above Gibraltar may be hard to find and difficult to access. The roads in the upper basin are extremely wet, muddy and slippery during the steelhead migration period, which would make accessing trapping sites difficult. In addition, during this time of year red-legged frogs and arroyo toads (both listed species) are also active and may be impacted by increased vehicular traffic during this time. 2) the transported juveniles may compete with juveniles produced below the dam and thereby diminish the growth and long-term fitness of these fish. 3) juvenile steelhead populations below Bradbury Dam may not need supplementation in good years. In 1998, over 1,000 juvenile rainbow trout/steelhead were produced in Hilton Creek, production was also good in Quiota Creek and the mainstem, indicating that in good years, production may be adequate. In Salsipuedes and El Jaro Creek, however, production was reduced by late season storms that are thought to have washed out or buried redds (Engblom pers. comm.). The working group recommends that habitat enhancement measures to the tributaries below Bradbury Dam be evaluated to determine how they might increase production prior to implementing the trap and truck operation described. In addition, fish monitoring studies on the tributaries currently carried out by the SYRTAC should be evaluated to determine the relative need for supplementation in any given year.

