

IN THE MATTER OF THE CONSIDERATION OF A CEASE AND DESIST ORDER
AGAINST CALIFORNIA AMERICAN WATER (CAL AM) FOR UNAUTHORIZED
DIVERSION OF WATER FROM THE CARMEL RIVER IN MONTEREY COUNTY

DIVISION OF WATER RIGHTS PROSECUTION TEAM EXHIBIT 39 (PT – 39)

WRITTEN TESTIMONY OF JOYCE AMBROSIUS, FISHERY BIOLOGIST

I, Joyce Ambrosius, declare as follows:

1. Statement of Qualifications.

I am the Central California Coast Team Coordinator, Fishery Biologist in the Protected Resources Division of the United States Department of Commerce, NOAA's National Marine Fisheries Service (NMFS). My primary responsibility is to protect and restore habitats for species of salmonids listed as threatened or endangered under the Endangered Species Act (ESA). I have worked as a fishery biologist for over 17 years, and during the past ten years, have focused on the protection and recovery of steelhead populations in coastal streams of San Mateo, Santa Cruz, and Monterey counties. A true and correct copy of my Statement of Qualifications is attached. I have personal knowledge of the information contained herein and, if called as a witness, I could and would testify competently thereto.

2. NMFS Interests in this Proceeding.

NMFS is responsible for protecting and recovering Pacific salmonid species and their habitats that have been listed under the ESA. Under its federally mandated responsibilities, if a marine or anadromous species may need protection under the ESA, NMFS first determines whether the species qualifies for listing as either endangered or threatened. NMFS must also determine the extent of critical habitat necessary to sustain the survival of each species and to provide for its recovery.

**3. Status of Listing Actions and Critical Habitat Designation
in the Carmel River.**

NMFS designated the South-Central California Coast (SCCC) steelhead Distinct Population

Segment (DPS) as a federally listed threatened species on August 18, 1997, and it reasserted that listing on January 5, 2006 (71 Federal Register [FR] 834). A DPS is defined as a population that is: 1) markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, and behavioral factors; and 2) significant to its taxon (71 FR 834). NMFS designated the entire Carmel River as SCCC steelhead Critical Habitat on September 2, 2005 (70 FR 52488).

In designating critical habitat, NMFS considers the following requirements of the species: 1) space for individual and population growth, and for normal behavior, 2) food, water, air, light, minerals, or other nutritional or physiological requirements, 3) cover or shelter, 4) sites for breeding, reproduction, or rearing offspring, and, generally, 5) habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of this species (50 CFR §424.12(b)). In addition to these factors, NMFS also focuses on known physical and biological features (primary constituent elements) within the designated area that are essential to the conservation of the species and that may require special management considerations or protection. These essential features may include, but are not limited to, spawning sites, food resources, water quality and quantity, and riparian vegetation.

4. Protective Regulations.

Protective regulations prohibiting a take of steelhead by all persons, including Federal agencies and private entities, were published on July 10, 2000 (65 FR 42422). These regulations, which went into effect on September 8, 2000, extend the legal prohibitions of section 9 of the ESA to SCCC steelhead, making their take unlawful. A “take” as defined in the ESA, includes, in part, to kill, injure, harm, or harass the species. The protective regulations describe certain activities that are very likely to injure or kill salmonids, or that may injure or kill salmonids, resulting in a violation of the ESA (64 FR 73479). These activities include, in part:

...Physical disturbance or blockage of the streambed where spawners or redds are present concurrent with the disturbance, Blocking fish passage through fills, dams, or impassable culverts, Water withdrawals that impact spawning or rearing habitat....

5. NMFS SCCC Steelhead Recovery Plan.

The Carmel River population of SCCC steelhead is one of the core populations identified by NMFS' Technical Recovery Team (TRT) as important for recovery of the SCCC steelhead DPS. It is the only watershed which has been singled out and placed in its own biogeographic region because of a unique set of physical and biological characteristics (PT – 40). The basic strategy for recovery of SCCC steelhead is to recover a minimum number of rivers in each biogeographic region. Since the Carmel River is the only watershed in the Carmel Biogeographic region, the recovery of the SCCC steelhead population in the Carmel River is essential to the recovery of the SCCC steelhead DPS - not just because of its unique status but also because it is historically one of the largest and, therefore, potentially more viable steelhead populations within the SCCC steelhead DPS.

NMFS' SCCC Steelhead Recovery Plan is not completed at present and definitive population numbers needed to delist the SCCC population are not established as yet. NMFS' goal is to protect and conserve Carmel River steelhead and their habitat to the greatest extent possible in order to maximize the Carmel River watershed's substantial contribution toward recovering the SCCC steelhead DPS.

6. Status of Steelhead and its Critical Habitat in the Carmel River.

NMFS' most recent review of the status of west coast salmon and steelhead (71 FR 834) found the SCCC steelhead DPS is "likely to become endangered within the foreseeable future." Blocked access to historic spawning and rearing areas upstream of dams, and extensive water diversions have contributed to the decline in this population (PT – 40). Of all the streams in this DPS, the Carmel River presently maintains the largest adult run compared to any other single stream. Historically, over 90% of the rivers production occurred upstream of the San Clemente Dam (SCD) (PT – 41). The California Advisory Committee on Salmon and Steelhead cited an estimate of 20,000 steelhead in the Carmel River in 1928. Total run sizes have been estimated in the low thousands as recently as the mid 1960's to mid 1970's using a combination of ladder counts, spawning redd surveys and angler surveys. It is estimated about one-half (55%) of the

adults that enter the Carmel River move upstream of SCD (PT – 42) and the other half spawn below the dam. Though the steelhead population showed signs of recovery from the effects of the 1987-1991 drought with the 1997 and 1998 totals being the highest counts at SCD since 1975 (775 and 856, respectively); the population has been decreasing since a high of 804 adults were counted in 2001. In 2004, 2005, and 2006, the adult steelhead returns to the dam totaled only in the mid-300's (388, 328, 368 fish, respectively) (PT – 43). In 2007, the total count at the dam was only 222 adults, while this year's (2008) total is 412 adults (PT – 44). The steelhead population in the Carmel River has seen a 49% to 72% decline in numbers from 2001 to 2008.

Although all the numerous diverters in the Carmel River are contributing to the decline of the steelhead population in the river to some degree, California American Water (CAW) is responsible for approximately 85% of the total water diversions from the Carmel River system and its associated subterranean flow (PT – 45). As a result of direct diversions of water by CAW and others, the Carmel River goes dry downstream from the Narrows (River Mile 9.5) usually by July of each year. From July until the winter rains begin, the only water remaining in the lower river is in isolated pools that gradually dry up as the groundwater table declines in response to pumping. Surface flow into the Carmel River Lagoon normally recedes after the rainy season in late spring, and ceases in summer as rates of water extraction from the river and alluvial aquifer exceed the flow in the river. To keep as much stream channel wetted below SCD as possible during the low flow season, summer flow releases from SCD are negotiated annually under a Memorandum of Agreement between MPWMD, CAW, and California Department of Fish and Game (CDFG), but generally remain around 5 cubic feet per second (cfs) during late summer.

Adult steelhead migrate into the Carmel River to spawn in the winter months and then either die or return to the ocean, whereas juvenile steelhead are present and rear in the river year-round. The decrease in flows has a significant adverse effect on SCCC steelhead and critical habitat in the Carmel River by 1) decreasing the amount of habitat available for juvenile rearing, resulting in overcrowding in the areas where streamflow is still present, increased competition for food, and a decrease in food production; 2) stranding and killing steelhead as the stream channel dries

back; and 3) increasing predation (birds, raccoons) due to fish being trapped in isolated pools.

While large numbers of steelhead spawn below the SCD, the actual production of juveniles is low because survival depends upon streamflow remaining in the river throughout the entire summer, fall, and following winter. MPWMD annually rescues steelhead that are stranded due to dewatering between the Narrows and the Lagoon. From 1995 through 2005, a total of 208,015 juvenile steelhead were rescued. The number of juvenile steelhead rescued per year ranged from a low of 3,198 fish in 1998 to a high of 39,748 fish in 2003 (PT – 43). Rescued steelhead are either released to permanently flowing upstream reaches of stream, the Lagoon, or reared at the Sleepy Hollow Steelhead Rearing Facility. The rescue activities likely save some steelhead that would otherwise die from stranding; however, the rescue effort only accounts for a portion of the steelhead potentially lost in the lower river. A percentage of those fish that are subject to rescue, (ranging from 1-5%, and potentially higher depending on the skill of the rescuers and environmental conditions) are killed during capture. Those that are rescued may experience adverse conditions from competition and overcrowding in upper river segments or in the facility; and many that are not captured are left to die in the drying pools. Fish mortality rates have been high (over 50%) at the facility for a variety of reasons ranging from high water temperatures and disease to predation. Those fish that survive through the summer and fall are released back into the river once winter flows have connected the lower river to the Lagoon. Rescuing juvenile steelhead and rearing them over the summer period allows some fish to survive from the dewatering of the river; it is not an acceptable long term solution nor will it provide for recovery of the SCCC steelhead DPS.

After completion of SCD in 1921, the dam blocked the natural transport of sediment downstream. Lack of sediment transport below a dam causes channel incision, bed armoring, a decrease in channel complexity, overly steep banks, diminished riparian vegetation, and a lack of spawning gravels downstream. As a result of the SCD, a portion of the Carmel River downstream from the dam adjusted to the loss of bedload material by deepening its channel. In the river reach immediately downstream from the dam, fine riverbed materials were washed out, leaving only coarse materials, which prevented further erosion of the riverbed except during the

largest floods. This phenomenon, which commonly occurs downstream from dams, is called armoring. Through the process of armoring many habitat functions necessary to sustain salmonids are lost. These functions include recruitment of spawning gravels, maintenance of pool/riffle complexes and production and subsequent drift of invertebrates. Because gravels preferred by steelhead are transported downstream without being replaced, fewer riffles and pools are formed. The result is decreased spawning habitat and decreased juvenile steelhead rearing habitat. Changes in sediment load can also reduce the diversity of habitat for benthic invertebrates (a food source for steelhead). Without the scouring that occurs with mobilization of the bedload, there is a shift in the macroinvertebrate fauna to predator-resistant forms such as case-building caddisfly larvae that are less available as prey items for rearing fish (PT – 46).

Due to the lowered ground water levels from excessive water withdrawal, the riparian vegetation along the Carmel River has incurred stress and die-offs. This loss of riparian vegetation has contributed to bank erosion and destabilization of the river channel. This has endangered riverside properties which were developed after the river channel deepened. The increased development of the flood plain has created a much greater emphasis on flood protection and prevention of bank erosion, resulting in the placement of hard structures such as bare riprap, concrete rubble, cement walls, and cars, *etc.*, along about 40 percent of the lower river. The use of these hard structures has significantly degraded the habitat value of much of the lower 18 miles of river.

Hardening of the banks limits vegetation growth along the channel which decreases the amount of shade and insulation from ambient temperatures, thereby increasing water temperature, decreasing recruitment of large woody debris into the channel, and decreasing sources of prey items for steelhead from riparian vegetation. Hardening also limits sediment recruitment from the channel banks resulting in greater incision of the channel.

7. Restoring Flow-Related Habitat in the Carmel River through Modifications of Water Diversion Practices.

State Water Resources Control Board (SWRCB) Order 95-10 concluded that CAW's

diversions are having an adverse effect on the riparian corridor along the river below SCD and upon steelhead which spawn in the river. Order 95-10 ordered CAW to diligently implement one or more of the following actions to terminate its unlawful diversions from the Carmel River: 1) obtain appropriate permits for water being unlawfully diverted from the Carmel River, 2) obtain water from other sources of supply and make one-for-one reductions in unlawful diversions from the Carmel, and/or 3) contract with another agency having appropriate rights to divert and use water from the Carmel River. A complete solution to the problem of excessive diversions from the Carmel River cannot be reached until CAW finds new water sources. There are currently several active plans for addressing CAW's need to obtain a new water supply. There are alternative plans for constructing a desalination facility to produce potable water that would offset direct diversions from the Carmel River. Complementing or supplementing a desalination facility is a plan to develop an Aquifer Storage and Recovery (ASR) project that would divert flows from the Carmel River during the winter and store them in an aquifer from which water could then be withdrawn during the period of seasonal low flows. The ASR project would likewise provide a water supply that would help offset unauthorized diversions from the Carmel River and help conserve natural flows during summer and fall.

In 2001, CAW and NMFS signed an agreement titled "Conservation Agreement Between California-American Water Company and National Marine Fisheries Service Dealing with Steelhead in the Carmel River, California" (PT - 47) in which CAW agreed to implement measures to reduce the effect of direct diversions on steelhead resources until CAW acquires a legal water supply and/or water rights. In part, this Conservation Agreement required CAW to modify their pumping operations to pump from the most downstream wells to maintain continuous surface stream flow in the Carmel River as far downstream as possible in the low flow season.

On March 21, 2002, the SWRCB adopted Order WRO 2002-002, modifying Condition 6 of WRO 95-10. This Order adopted a modified version of Phase I of the Conservation

Agreement, in which CAW could quickly implement and would effectively reduce CAW diversions upstream from the Narrows to a total of 0.5 cfs during low flow periods, except during emergencies (as defined in the Conservation Agreement) and for very limited well maintenance activities.

CAW was able to comply with Tier I Phase I of the Conservation Agreement; however, they were not able to comply with Tier I Phase II which required CAW to increase well capacity in the lower aquifer. Studies showed that any new well in the lower Carmel Valley would likely require surface water treatment and construction of a surface water treatment plant, which was estimated to cost approximately \$5.5 million. In light of CAW's need to focus its financial and personnel resources on a long-term water supply project, *i.e.*, the Coastal Water Project, rather than those interim measures in the Carmel River, CAW and NMFS agreed that proceeding with the measures set forth in Phase II of Tier I would not be financially prudent. Therefore, in June, 2006, CAW signed a Settlement Agreement with NMFS (PT- 48) to provide funding, in the sum of approximately \$11 million over the next 7 years, for projects to improve habitat conditions for, and production of, SCCC steelhead and/or otherwise aid in the recovery of SCCC steelhead in the Carmel River watershed in lieu of completing Phase II of Tier I. It was assumed that by the seventh year, CAW's Coastal Water Project would be on line and the illegal pumping from the river would have ceased.

In June, 2002, NMFS prepared bypass flow recommendations for the Carmel River for new water right permits titled "*Instream Flow Needs for Steelhead in the Carmel River, Bypass flow recommendations for water supply projects using Carmel River waters*" (PT - 45). This report identifies key seasons and steelhead life stages needing different levels of flow: winter (December 15-April 14) when flows are generally high and adult steelhead migrate and spawn; spring (April 15-May 31), the primary period of smolt outmigration following the winter spawning season; and the summer-fall low flow season (June 1-December 14). These flow requirements were used to determine the potential volume of water available for diversion. The report concluded there is substantial water

(>10,000 acre-feet) available for diversion during average water years and even more would be available during above-normal and wet years. However, the results also demonstrate that during relatively dry years representing roughly 20% of the years, relatively little “surplus” flow (<1000 acre-feet) is available for withdrawal without potentially adversely affecting steelhead. If implemented, these bypass flow recommendations would ensure that any exercise of new water rights was not further reducing flows needed to protect aquatic resources in the Carmel River.

In September 2003, MPWMD filed a petition with SWRCB to add points of diversion (32 CAW wells and SCD) and place of storage (Seaside Groundwater Basin) under water right permits 7130B and 20808. This permit would authorize the appropriation of water for MPWMD’s Phase I ASR Project. NMFS protested this water right because 1) the status of bypass flow terms was unclear, and 2) NMFS believed MPWMD’s ASR project should not result in increased volumes of water being diverted from the Carmel River, but rather the ASR project should offset the deleterious unauthorized diversions of CAW during August and September, during the period of low flow in the river.

In December 2007, the SWRCB issued Order WR 2007-0042-DWR, which authorized the appropriation of water for the ASR project, to be held jointly by CAW and MPWMD. This permit allows diversion of up to 2,426 acre-feet per year of Carmel River water to offstream storage in the Seaside Groundwater Basin. CAW and MPWMD have agreed to operate the diversions consistent with NMFS’ (2002) bypass flow recommendations. In addition, MPWMD and CAW have agreed to sign a Memorandum of Understanding (MOU) between CAW, MPWMD, NMFS, and CDFG, to implement the ASR project in such a way that water produced from the ASR wells will be used to offset CAW’s diversions from the Carmel River that would otherwise occur during the low flow season. The MOU stipulates the actual amount of ASR water that is recovered each year will be subtracted from CAW’s total annual diversion allowance from its Carmel River sources for that year.

While all these modifications help to some degree to sustain flows in the river for steelhead and other aquatic resources, the biggest step toward recovery of the steelhead population in the Carmel River will not happen until CAW eliminates their unlawful diversions from the river.

8. NMFS' Position on SWRCB's Draft Cease and Desist Order.

The SWRCB issued a draft Cease and Desist Order (CDO) requiring CAW to make substantial reductions in its unauthorized diversions of water from the Carmel River.

NMFS supports action by the SWRCB to adopt the draft CDO, subject to certain modifications, as described below, that NMFS expects will help to ensure the water diversion reductions required under the CDO are implemented in a manner that will be most beneficial to ESA-listed SCCC steelhead. In addition, NMFS finds the draft CDO is not in conflict or inconsistent with the agreements between NMFS and CAW.

NMFS strongly recommends the SWRCB implement the reduction of unauthorized diversions such that the reductions respond to the biological needs of listed steelhead. To meet the needs of steelhead, the majority of the reductions should occur in the spring, summer and fall seasons in order to allow for the outmigration of steelhead smolts in the spring and limit the amount of river dewatering and dryback in the summer that occurs annually due to CAW's excessive water withdrawals. More specifically, NMFS recommends the CDO be amended to provide that the annual reduction in water diversion be implemented by reducing the daily mean diversions during the period of April through October by the same percentage as the annual diversion reduction percentage specified in the order. As an example, under the proposed CDO, in the first year, 2008-09, CAW must reduce its annual diversions by a total of 15%. Under the revision proposed by NMFS, the CDO would further specify that during the months of April through October, CAW must reduce their mean daily diversion amount by at least 15%, and implement the remainder of the required annual percentage reduction during the remainder of the year. NMFS believes that shaping the annual diversion reductions in this manner will help ensure that most of the water diversion reduction occurs during times of the year when flows in the Carmel

River are low and SCCC steelhead are most likely to be adversely affected by excessive water diversions.