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STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

In the matter of:

Santa Ana River Water Right Applications 31165, 31174, 31369, 31370, 31371, and 31372 and Wastewater Change Petition No. WW-0045.

Hearing Officer: Arthur Baggett, Jr.

WRITTEN TESTIMONY OF JONATHAN BASKIN ON BEHALF OF THE CITY OF RIVERSIDE

Date: May 2, 2007
Time: 9:00 a.m.
Dept: 1001 I Street, Second Fl.
Costal Hearing Room
Sacramento, CA

Riverside Ex. 5-0

1. I am a biologist with over 20 years of experience with the Santa Ana sucker ("Sucker"), which, as described herein, is a fish that is native to the Santa Ana River. I am the Owner and Principal Senior Scientist of San Marino Environmental Associates ("SMEA"). Since 1971 I have been a professor at various education institutions. Currently, I am a Professor Emeritus at California State Polytechnic University, Pomona, teaching courses in Fishery Biology and various other biology courses. Additionally, I have given many presentations and drafted numerous publications regarding fishery biology. Attached as Riverside Ex. 5-1 is my curriculum vitae.

2. SMEA has been involved in numerous projects regarding Suckers in the Santa Ana River, Santa Clara River, San Gabriel River, and Los Angeles River. Some of these projects are: Retained by SAWPA Santa Ana Sucker Conservation team to provide biological research and analysis; Two surveys for Suckers in the vicinity of Imperial Highway; Analysis of potential native fish habitat in the Santa Ana River associated with the FERC relicensing of SCE powerhouses; Derivation of habitat suitability curves for use in habitat simulation modeling; Assistance to California Fish and Game and United States Fish and Wildlife Services on a survey for Suckers below Prado Dam; Santa Ana Sucker Conservation Plan for the Santa Ana River; Analysis of Sucker Habitat and fish recovery associated with a stream diversion; and, Planning and construction of Sucker habitat for the Santa Ana River. Attached as Riverside Ex. 5-2 is a list of SMEA Santa Ana Sucker Experience.

3. My testimony will cover the potential biological effects on the Sucker and/or Sucker habitat, if any, resulting from the City of Riverside's proposed uses of recycled water, as described in Application 31372 and Wastewater Change Petition WW-0045 (the "Project").

4. As detailed herein, I have concluded that the proposed flow changes from the Project will not cause any direct death or harm to any Suckers. While the proposed change in flow could potentially negatively impact Sucker habitat in one place, overall this impact is not

significant and is more than offset by impacts that improve Sucker habitat in other places in the Project area. These conclusions are based on the work I did on this matter, information on water volume and flow from Wagner and Bonsignore, published papers and reports by reputable workers, my own research, as well as my education, training and experience. Attached as Riverside Ex. 5-13 is the bibliography for my written testimony.

I. LIFE HISTORY OF THE SUCKER

5. The Sucker is a small member of the family Catostomidae that is native to the Santa Ana River. The Sucker was listed as a federally Threatened Species on April 12, 2000. In 2004, Critical Habitat was designated for the Sucker. Additionally, the Sucker is designated a "Species of Special Concern" by the State of California.

6. The Sucker produces adhesive eggs over clean medium gravel in water that is often approximately 1 to 2 feet in depth. Breeding may begin as early as late January, but typically the Sucker in the Santa Ana River breeds from about March through April. Spawning areas will contain a deeper more protected area adjacent to the spawning area, which adult fish utilize when not spawning. Fry and eggs can be eliminated by high flow events. Eggs spend a number of days in gravel where they hatch as yolk sack fry and stay in gravel until they reach at least 12mm S.L. Larval Suckers utilize shallow (2-4 inches) water in low flow areas often with a silt bottom at the edge of the flowing stream. Emergent riparian vegetation does not appear to be a requirement but is commonly present. Attached as Riverside Ex. 5-3 is a picture demonstrating typical larval location. Based on studies by Saiki (2000) and Haglund et. al. (2003, 2005, 2007), most Suckers do not survive past one plus years, which means that they have only one reproductive season. (Applicants' Joint Ex. 2-14.) Attached as Riverside Ex. 5-4 is a photograph showing larval habitat.

II. SUCKER HABITAT PREFERENCES

7. The Sucker obtains its food source from algae, diatoms, and detritus scraped from rocks and other course substrate in flowing water. This explains the Sucker's preference for habitat in which sand has been scoured away, exposing coarser substrates such as gravel and cobble. Attached as Riverside Ex. 5-5 is a schematic showing preferential Sucker habitat for different life cycle changes.

8. The Sucker tends to prefer small to medium streams with higher gradients, clear water, and coarse substrates. Flowing water is essential for the Sucker but flows can range from slight to swift. Attached as Riverside Ex. 5-6 are two pictures indicating good and bad Sucker habitat. Additionally, the Sucker can tolerate temporary seasonal turbidity, but a study conducted by Saiki in 2000 indicates that the Sucker's abundance is negatively correlated with turbidity. Attached as Riverside Ex. 5-7 is a graph demonstrating the adult Sucker's avoidance of high velocity in the Santa Ana River. Studies conducted by Haglund et. al. (2003, 2005, 2007) have shown that the juvenile Sucker utilizes habitat types roughly in proportion to their availability.

9. Suckers are uncommon in the mainstem from the MWD crossing to Prado Basin. (See, e.g., Joint Applicants' Ex 2-14.) In 2000 Swift (2001) found only 11 adult Suckers in this area by trapping 4 days per month for one year. Baskin and Haglund (2001) conducted a one-time intensive search more than 100 yards upstream and and 100 yards downstream of Van Buren Bridge and failed to locate any Sucker.

10. The Santa Ana River habitat in Reach 3 is poor because the substrate is more than 90 percent sand or silt, which means there is roughly 10 percent gravel and cobble substrate. Attached is Riverside Ex. 5-8, which illustrates the typical substrate in Reach 3. I believe that sand substrate is poor habitat because, as discussed above, Sucker is absent in the Santa Ana River in upstream areas where predominantly sand/silt substrate conditions prevail and common

in areas where coarse substrate (gravel/cobble) is predominant. Also, Sucker population levels have been shown by Haglund et al. (2007) to have gradually reduced over a period of years (2000-2006) in localities where sand/silt has replaced gravel/cobble substrates over the same period. (Haglund and Baskin reports, Riverside Ex. 5-10.) Also, Haglund et al. (2003, 2005) has conducted a field study of Sucker habitat preferences (Habitat Selectively Study), over two years in these same areas, and found that when a variety of habitat conditions are available to the Sucker, the adult Sucker occupies gravel/cobble and avoids sand and silt. Attached is Riverside Ex. 5-9 showing over utilization (i.e., selection) of gravel/cobble by Sucker.

III. PROJECT IMPACTS

11. The proposed Project will cause a reduction in the flow of Reach 3 by a maximum of 11,000 afy. On average there is approximately 334,588 afy flow from Reach 3 at Prado Basin. This is approximately a 3.3% reduction, on average. I do not believe this will have a significant impact on the Sucker habitat in the mainstem of Reach 3, or its capacity to be restored in the future. I believe that the low quality of Sucker habitat here is not due to the lack of water in Reach 3; rather, the low quality of Sucker habitat here is due to the predominance of sand/silt substrate and lack of coarse substrate such as gravel and cobble. Attached is Riverside Ex. 5-10, which shows a graphical representation of Sucker habitat from Prado Basin to upstream and the difference between the current habitat and the 1990 Swift survey. This is due not to lack of overall flow, but rather due to a lack of high peak flow velocity, which tends to scour out finer sediments, thus exposing gravel and cobble.

12. Sucker have not been documented at the channel or in the confluence of the City of Riverside's discharge channel and the Santa Ana River. However, Swift (2001) found Sucker in the mainstem in the vicinity of the confluence. Attached is Riverside Ex. 5-11, a photo showing the confluence of the City of Riverside Regional Water Quality Control Plant ("RWQCP") channel with the mainstem of Santa Ana River. As the release water exits the

channel and flows into the mainstem of the river there is a deep scour pool with a sand bottom forming an eddy under the overhanging *Arundo*. As the release water flows out of the pool there is an approximately 10 foot long and 5 foot wide area of gravel substrate. In the last two months, I have visited this particular site on four separate occasions.

13. I believe that the change in flow due to the Project may reduce the amount and quality of this small patch of good substrate forming habitat for the Sucker. This conclusion is based on the fact that the proposed change will reduce the flow at the confluence point from 28 cfs to 19cfs, a reduction of 32.1%, on average. This reduction of flow may reduce the scouring out of sand from the substrate, or the velocity may still be sufficient to continue scour. Thus, the reduction of flow may cause an impact of unknown magnitude. I would consider any such reduction of this substrate potentially negative because this is an island of good substrate in a sea of poor substrate for the Sucker, and it appears that the lack of good substrate is limiting the population of the Sucker in Reach 3 of the Santa Ana River. However, as stated above, if there is a potential negative impact to Sucker habitat, the impact is offset by Sucker habitat improvements elsewhere, as described in Paragraphs 16, 17 and 18. Thus, overall impacts on habitat are neutral or are improvements.

14. The channel which carries the treated effluent from the Plant outfall to the Santa Ana River has not had any documented presence of Sucker. The channel appears to be good Sucker habitat with regard to flow, substrate, and channel configuration. (See Riverside Ex. 1-4 [aerial photo showing the Plant Outfall and the City's discharge channel].) The photo attached as Riverside Ex. 5-12 shows the turbulent flow with eddies and pools, cobble, gravel and boulder substrate in the City's discharge channel.

15. The water at the outfall of the RWQCP is tertiary treated effluent, water which typically supports Sucker. For example, the RIX treatment plant outflow is at present one of the best Sucker habitats in the River. Although Sucker may be located in the upper portion of the

City's channel, this is not likely because this area is separated from the downstream habitat in the channel by a long segment of poor Sucker habitat.

16. The segment of the channel approximately 80 feet above the first splitter box is a solid gunite lined channel. The substrate is solid gunite with gravel and cobble imbedded in its surface. The estimated flow over this substrate is too rapid for the Sucker to use this portion of the channel as habitat. The reduction in flow volume here caused by the Project will probably reduce the velocity of flow and thus could make this segment of the channel more suitable Sucker habitat. Any reduction in depth here could promote algal growth on the gunite surface due to better light penetration for this plant to grow.

17. The segment of the channel from the first splitter box structure to the confluence with the Santa Ana River is wider and deeper than the rest of the channel, with overhanging *Arundo* and steep undercut banks providing good cover for the Sucker. The first approximately 35 feet of this segment is solid gunite. The rest of the substrate is largely sand but with some large boulder-sized rocks. The flow is strong, with some deep eddies along the edges and deep pools where the channel bends sharply before entering the mainstem. The depth is as much as 5 to 6 feet in some places. All of these features except the sand and the deepest places are good habitat attributes for the Sucker. The reduction in flow volume here of about 32 percent due to the proposed changes, although substantial, will only reduce the depth of the channel by a proportionately lesser amount. (See written expert testimony of Nick Bonsignore, Section 20.) Thus, the depth under future conditions will be greater than 68 percent of the current depth conditions. (See id.) This decrease in depth will not cause damage to the habitat in the channel, and may improve it due to the greater light penetration for algal growth. Any reduction in scouring effect here will not significantly change the substrate because there is no gravel exposed here at present.

IV. CONCLUSION

18. I believe that the overall flow reduction will improve Sucker habitat in the Channel, and that this will offset any potential negative impacts on Sucker habitat in the mainstem at the point of confluence, as discussed above. Unlike the confluence, the channel habitat is potentially better Sucker habitat because it is protected from the impact of a major pollution or other negative water quality impact potentially coming from any place upstream. This enhances its value as compared to the confluence area.