

CALIFORNIA DEPARTMENT OF FISH AND GAME

Testimony of George C. Heise, Senior Hydraulic Engineer

I, George C. Heise, provide the following written testimony under penalty of perjury in relation to the State Water Resources Control Board Notice of Public Hearing to Determine whether to Adopt Draft Cease and Desist Order 262.31-XX and whether to Impose Administrative Civil Liability against the North San Joaquin Water Conservation District.

**Q1: Please state your name and your professional qualifications.**

1. I have a Bachelors of Science Degree from California State University at Sacramento with an emphasis in water resources and soil mechanics. I am a licensed professional civil engineer. I am licensed in California and Arizona. I have been licensed in California as a civil engineer since 1983. I am presently employed by the California Department of Fish and Game (CDFG) as a Senior Hydraulic Engineer. I have been employed with CDFG since 1989. As a Senior Hydraulic Engineer with CDFG, I provide state-wide consultation to DFG staff on technical and engineering aspects of projects that impact fish and wildlife. I provide design consultation and review of fish facilities such as fish ladders, fish screens, other structural fish facilities and stream restoration. I designed the fish screens at the Parrott Phelan diversion on Butte Creek and have been on numerous fish screen technical advisory teams including those for Pacific Gas and Electric's Potter Valley Project, the Glen Colusa Irrigation District screen on the Sacramento River, the Anderson Cottonwood Irrigation District fish screen on the Sacramento River, and the Shasta Water Association fish screens on the Shasta River.
2. Prior to joining CDFG, I worked in the private sector as a Senior Civil Engineer for approximately nine years. As a Senior Civil Engineer, I was the project engineer, design engineer and construction inspector for the development of water resources projects, primarily small hydropower and irrigation facilities.
3. A true and correct copy of my curricula vitae is attached as CDFG Exhibit 4.

**Q2: Have you ever visited the existing points of diversion of the North San Joaquin Water Conservation District (NSJWCD) on the Mokelumne River, if so, when?**

4. Yes. I visited the site on April 26, 2007. I was accompanied by Ian Drury, an aquatic biologist with CDFG and Ed Steffani, the General Manager of NSJWD.

**Q3: Have you ever told any member or employee of the NSJWCD that it was not necessary for the NSJWCD to put a permanent screen on its diversion in the Mokelumne River?**

5. No.

**Q4: In your professional opinion, is it possible to construct a permanent fish screen in the Mokelumne River at each of the NSJWCD diversion sites?**

6. Yes.

**Q5: In your professional opinion, is it possible to construct a permanent fish screen at the head of the diversion canal rather than at the end where the pumps are located?**

7. Yes.

**Q6: Is there a type of fish screen you would, in your professional opinion, recommend be constructed at this site?**

8. I prefer not to recommend a specific type or design of fish screen, but rather comment on the adequacy and merits of which ever type of screen is proposed by the diverter. In this case, it is my opinion that the ISI Cone Screens proposed by NSJWCD are appropriate for the subject diversion sites.

**Q7: In your experience, does a self cleaning fish screen perform better over the long run than a screen that must be manually cleaned whenever debris builds up in front of the screen?**

9. Yes. Fish screens perform better when they are clean. Both self cleaning screens and manually cleaned screens require timely maintenance to perform well over the long run.

**Q8: Does a self cleaning screen require an energy source to operate?**

10. Yes.

**Q9: Are energy sources potentially available to these diversion points? If so, what energy source?**

11. Based on discussions I had with Ed Steffani, the General Manager of NSJWCD on April 26, 2007, I believe that power is available to each diversion site to power a self cleaning screen. According to Mr. Steffani, power from the pump stations would be used to operate the screen cleaning system. Because of the distance from the pump station to the

proposed screen location at the South Pump Station, it may be desirable to use solar panels to energize the screen cleaning system.

**Q10: In your professional opinion, could a permanent fish screen be constructed at the entrance of the diversion canal, in the Mokelumne River, during the lower flow summer months of a single year?**

12. Yes. If all the permits are received in advance and a contractor is in place and ready to begin, a permanent fish screen could be constructed in a single summer. It would be best to construct during the lowest flow months as that would make installation of the screen easier.

**Q11: Have you read Draft Cease and Desist Order No. 262.31-XX?**


13. Yes.

**Q12: Do you have any recommended changes to Draft Cease and Desist Order No. 262.31-XX?**

14. Yes. I recommend that the second paragraph under Ordering Paragraph 1 in the Draft Cease and Desist Order 262.31-XX be changed to read: The NSJWCD shall construct a fish screen at each diversion authorized under Permit 10477. The NSJWCD fish screen plans for such fish screens shall be developed in consultation with the CDFG. The final fish screen plans shall be submitted to the CDFG prior to construction to determine if the plans comply with the CDFG Fish Screen Criteria and are acceptable to the CDFG. The District shall provide the Division a copy of such determination by DFG within thirty days of such determination.

I, George C. Heise, declare under penalty of perjury under the laws of the State of California that I have read the foregoing "Testimony of George C. Heise" and know its contents. The matters stated in are true of my own knowledge except as to those matters which are stated based on information and belief, and as to those matters, I believe them to be true.

Executed on May 22, 2007 at Sacramento, California.

  
George C. Heise