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10 IN THE UNITED STATES DISTRICT COURT
11 FOR THE EASTERN DISTRICT OF CALIFORNIA

12 **NATURAL RESOURCES DEFENSE**
13 **COUNCIL, et al.,**

14 Plaintiffs,

15 v.

16 **DIRK KEMPTHORNE, in his official capacity**
as Secretary of the Interior, et al.,

17 Defendants,
18

19 **SAN LUIS & DELTA-MENDOTA WATER**
AUTHORITY and WESTLANDS WATER
20 **DISTRICT; CALIFORNIA FARM BUREAU**
FEDERATION; GLENN-COLUSA
21 **IRRIGATION DISTRICT, et al.;**
CALIFORNIA DEPARTMENT OF WATER
22 **RESOURCES, and STATE WATER**
CONTRACTORS,

23 Defendant-Intervenors.
24

05 CV 01207 OWW (LJO)

DECLARATION OF JOHN
LEAHIGH IN SUPPORT OF THE
CALIFORNIA DEPARTMENT OF
WATER RESOURCES'
PROPOSED INTERIM REMEDY

Hearing: August 21, 2007
Time: 9:00 a.m.
Courtroom: 3
Judge: Hon. Oliver W. Wanger

25 I, John Leahigh, declare as follows:

26 1. I am employed by the Department of Water Resources (DWR) as Chief of the Project
27 Operations Planning Branch (POPB) within the Division of Operations and Maintenance. I have
28 been in my current position since March 2005.

1 2. I am responsible for short-term planning of water operations for the State Water Project
2 (SWP). These planning responsibilities include the estimation of delivery capabilities of the SWP
3 and forecasted water export operations from the Sacramento/San Joaquin Delta (Delta) through the
4 Harvey O. Banks Delta Pumping Plant (Banks), Skinner Fish Protection Facility (Skinner), and
5 Clifton Court Forebay (CCF).

6 3. Prior to taking the position of Chief of the POPB, I worked within the branch in various
7 engineering classifications from November 1996 through February 2005. I have worked for DWR
8 since May 1992. I received a Bachelor's degree in Civil Engineering from the University of New
9 Mexico in 1989 and a Master's degree in Civil Engineering with emphasis on Water Resources
10 Engineering from California State University at Sacramento in 1999. I am a registered Civil
11 Engineer in the State of California.

12 4. One of my responsibilities as Chief of the POPB is to supervise the work of engineering
13 staff that develop and monitor studies, projections and delivery capabilities of the SWP. I coordinate
14 with a team of engineers to plan and schedule water export operations based on water availability,
15 water permit/quality restrictions, environmental needs, and projected hydrology.

16 5. I have personal knowledge of the facts stated herein, and, if called to do so, could and
17 would testify competently thereto.

18 6. I am familiar with and contributed to the development of the proposed remedy actions, set
19 forth in the Delta Smelt Action Matrix for Water Year 2008 (Action Matrix)^{1/}, proposed by the
20 United States Fish and Wildlife Service (USFWS), as supported by DWR. The Action Matrix has
21 been developed to minimize and prevent adverse impacts to delta smelt and its habitat from SWP
22 and CVP operations during the interim period pending completion of the consultation on the delta
23 smelt with USFWS. I am informed and believe that the USFWS will complete the consultation and
24 issue its biological opinion before August 2008.

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28 1. A copy of the Action Matrix is attached as Exhibit A to the Declaration of Jerry Johns in Support of the California Department of Water Resources' Proposed Interim Remedy, filed concurrently herewith.

1 7. I have worked with POPB staff to develop an estimate of the water costs associated with
2 implementation of the Action Matrix through July 2008.

3 8. For the purposes of the following analysis, "water costs" are defined as the estimated
4 export reductions and the estimated reductions in deliveries of water to CVP/SWP contractors
5 for 2008 as a result of implementing the actions described in the Action Matrix.

6 9. The term "baseline" is defined as the expected delivery of water without implementing the
7 Actions proposed in the USFWS remedy matrix. Baseline water deliveries often vary depending
8 on hydrology and the costs estimates are based on two different hydrology assumptions, as
9 described in detail below.

10 10. Water supply forecasting requires a projection of initial reservoir storages and forecasted
11 runoff as a foundation to delivery estimates. Reliable projections are available for the initial
12 reservoir storages going into 2008, but the forecasted runoff is largely dependent on the amount
13 of precipitation that will be experienced next year, which is unknown and could vary greatly.
14 Water supply costs were analyzed for 2008 with two different assumptions on the amount of
15 precipitation that may be experienced in 2008: dry and average.

16 11. A year with low precipitation or a "dry year" for the purposes of my analysis assumes the
17 amount of precipitation in 2008 will be equal to the amount of precipitation that was exceeded
18 90% of the time over the past 85 years.

19 12. A year with average precipitation or an "average year" for the purposes of my analysis
20 assumes the amount of precipitation in 2008 will be equal to the amount of precipitation that was
21 exceeded 50% of the time over the past 85 years.

22 13. Although many different assumptions could be made for the amount of precipitation that
23 could occur in any year, assumptions of precipitation at a 90% and 50% chance of exceedence
24 are the most widely used water supply forecasting assumptions. These two hydrologic
25 assumptions generally give a good analytical range for project operations.

26 **EXISTING RESTRICTIONS ON WATER DELIVERIES**

27 14. DWR provides water to twenty-nine (29) contractors throughout California under water
28 right permits issued by the State Water Resources Control Board (SWRCB). These permits

1 include restrictions on water exports. The DWR permit most recently issued by the SWRCB
2 resulted in a SWRCB decision, known as Water Rights Decision 1641 (D-1641). Details of the
3 decision can be found at 14. DWR provides water to twenty-nine (29) contractors throughout
4 California under water right permits issued by the State Water Resources Control Board
5 (SWRCB). These permits include restrictions on water exports. The DWR permit most recently
6 issued by the SWRCB resulted in a SWRCB decision, known as Water Rights Decision 1641
7 (D-1641). Details of the decision can be found at
8 <http://www.waterrights.ca.gov/baydelta/d1641.htm>.

9 15. The water costs associated with the Action Matrix are measured against allowable
10 deliveries under baseline operations, considering all flow and water quality objectives required
11 by D-1641. Through D-1641, the SWRCB assigns responsibility for meeting water quality
12 objectives adopted in the Water Quality Control Plan ("WQCP") for the San Francisco
13 Bay/Sacramento-San Joaquin Delta Estuary. These WQCP objectives protect fish and wildlife,
14 and the agricultural, municipal and industrial uses of water.

15 16. The WQCP was updated in 2006. The new plan did not result in any changes in the
16 requirements of D-1641. The new WQCP can be found at
17 <http://www.waterrights.ca.gov/baydelta/docs/rev2006wqcp.pdf>.

18 17. A team of engineers and I took into account the restrictions imposed by meeting the
19 objectives of the WQCP when developing the estimates for water costs associated with the
20 implementation of the Action Matrix.

21 **ASSUMPTIONS FOR THE IMPLEMENTATION OF ACTIONS**

22 18. I assumed in the analysis that Action 1 would be triggered and implemented as of
23 December 25, 2007 and continue through January 3, 2008. December 25 is described as the first
24 possible day to trigger this 10-day Action in the Action Matrix.

25 19. I assumed in the analysis that delta smelt spawning will occur on February 20, 2008.
26 February 20 is the date on which DWR biologists have estimated that spawning has begun
27 historically. This assumption establishes the durations of Actions 2 and 3, which could vary
28 significantly. The end of Action 2 and the trigger for the start of Action 3 is the onset spawning

1 as described in the Action Matrix.

2 20. In the Action Matrix, Actions 3 and 4 assume a range of flow objectives. A range of Old
3 and Middle River upstream flows between 0 and 4000 cubic feet per second (cfs) is explicitly
4 described and assumed for analyzing Action 3.

5 21. Action 4 does not have targeted flow but allows a range similar to Action 3 (from zero to
6 approximately 4000 cfs).

7 22. Because the Action Matrix describes Actions 3 and 4 flow objectives as a range I
8 assumed a range for water costs as well. The high end of this range assumes that the Old and
9 Middle River objective is 0 cfs for both Actions 3 and 4. For determining the lower costs in the
10 range I assumed that Action 3 is implemented at the 4000 cfs flow objective and Action 4 is not
11 triggered, resulting is no water costs.

12 23. This range of cost was necessary as part of the analysis because of the uncertainty
13 related to the real-time distribution of delta smelt and the susceptibility of this distribution to the
14 exports as noted in footnotes of the Action Matrix.

15 **ESTIMATED EXPORT REDUCTIONS**
16 **ASSOCIATED WITH THE USFWS'S REMEDY PROPOSAL**

17 24. Implementation of flow objectives in the Action Matrix will require reductions in export
18 operations by the SWP and CVP. My team of engineers and I estimated ranges of export
19 reductions associated with each Action in the Action Matrix. The ranges are based on 2008
20 being dry or having average precipitation as defined earlier. In addition, Actions 3 and 4 have
21 sub-ranges due to their adaptive nature.

22 25. Action 1 - Winter Pulse Flow to Benefit Adult Spawning: CVP and SWP target upstream
23 Old and Middle River flow not to exceed 2,000 cfs for a 10-day period during late December or
24 early January. This action is estimated to reduce combined project exports by 100 thousand
25 acre-feet (taf) in a dry year and 160 taf in an average year.

26 26. Action 2 - Adult Salvage Minimized: CVP and SWP target upstream Old and Middle
27 River flow not to exceed 4,500 cfs from early January to late February. This action is estimated
28 to reduce combined project exports by 150 taf in a dry year and 500 taf in an average year.

1 27. Action 3 – Larval and Juvenile Protection: CVP and SWP target upstream Old and
2 Middle River flow between 4,000 cfs to 0 cfs from late February through the end of May. This
3 action is estimated to reduce combined project exports by 60 taf to 500 taf in a dry year and 640
4 taf to 1.3 million-acre feet (maf) in an average year.

5 28. Action 4 – Juvenile Protection: If triggered, the CVP and SWP may target upstream Old
6 and Middle River flow of up to 0 cfs in June. This action is estimated to reduce combined
7 project exports up to 130 taf in a dry year and up to 350 taf in an average year.

8 29. Action 5 - Barrier Operations: There were no additional export reductions associated
9 with this action.

10 **COMBINED SWP/CVP ESTIMATED DELIVERY REDUCTIONS**

11 30. I assumed in my analysis that both the SWP and CVP are equally responsible for meeting
12 the objectives in the Action Matrix. The estimated delivery reductions provided below represent
13 combined CVP/SWP delivery reductions.

14 31. Export reductions do not result in a one-for-one impact on deliveries because of a
15 multitude of complicating factors including system constraints, runoff patterns, annual delivery
16 patterns, and operational flexibility.

17 32. The export reductions for each action were entered into an operational spreadsheet
18 model developed by DWR staff that estimates the delivery capabilities of the SWP and CVP.
19 We modeled the remedy period with the implementation of the Action Matrix and without
20 implementation of the Action Matrix. A comparison of model output indicates what annual
21 delivery reduction could occur in 2008 if all proposed actions are implemented.

22 33. The resulting delivery reductions are expressed as a range for each hydrologic
23 assumption for the same reason that the export reductions were expressed as a range. Actions 3
24 and 4 of the Action Matrix have an adaptive management process that will vary the flow
25 objective.

26 34. The conclusion of the analysis is that the sum of all these export reductions in a dry year
27 is expected to decrease combined 2008 deliveries of the SWP and CVP by 6% (183 taf) to 25%
28 (814 taf) from a baseline delivery of 3.2 maf.

1 35. In an average year, the delivery reductions are expected to be between 14% (820 taf) to
2 37% (2.17 maf) from a baseline delivery of 5.9 maf.

3 **SWP SHARE OF ESTIMATED DELIVERY REDUCTIONS**

4 36. The analysis showed that the SWP 2008 annual deliveries would be reduced 8% (91 taf)
5 to 27% (305 taf) from a baseline delivery of 1.15 maf in a dry year.

6 37. In an average year, SWP 2008 annual deliveries would be reduced 8% (252 taf) to 31%
7 (940 taf) from a baseline delivery of 3 maf.

8 I declare under penalty of perjury under the laws of the State of California that the
9 foregoing is true and correct.

10 Executed this 9th day of July, 2007 at Sacramento, California

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13 JOHN LEAHIGH, Declarant.

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