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10
11 **BEFORE THE STATE WATER RESOURCES
12 CONTROL BOARD**

13 HEARING IN THE MATTER OF
14 CALIFORNIA DEPARTMENT OF WATER
15 RESOURCES AND UNITED STATES
16 BUREAU OF RECLAMATION REQUEST
17 FOR A CHANGE IN POINT OF DIVERSION
18 FOR CALIFORNIA WATER FIX

19 **TESTIMONY OF DR. SUSAN
20 PAULSEN IN SUPPORT OF THE
21 CITY OF ANTIOCH'S REBUTTAL
22 TO THE CASE-IN-CHIEF OF DWR
23 and FEDERAL PETITIONERS.**

24 **(Exhibit: Antioch-300)**

25
26 **Qualifications**

27 My name is Susan Paulsen and I am a Registered Professional Civil Engineer in
28 the State of California (License # 66554). My educational background includes a
Bachelor of Science in Civil Engineering with Honors from Stanford University (1991), a
Master of Science in Civil Engineering from the California Institute of Technology
("Caltech") (1993), and a Doctor of Philosophy (Ph.D.) in Environmental Engineering
Science, also from Caltech (1997). My education included coursework at both
undergraduate and graduate levels on fluid mechanics, aquatic chemistry, surface and
groundwater flows, and hydrology, and I served as a teaching assistant for courses in
fluid mechanics and hydrologic transport processes.

I currently am a Principal and Director of the Environmental and Earth Sciences

1 practice of Exponent, Inc. (“Exponent”). Prior to that, I was employed by Flow Science
2 Incorporated, in Pasadena, California, where I worked for 20 years, first as a consultant
3 (1994-1997), and then as an employee in various positions, including President (1997-
4 2014). I have 25 years of experience with projects involving hydrology, hydrogeology,
5 hydrodynamics, aquatic chemistry, and the environmental fate of a range of constituents.
6 My Ph.D. thesis was entitled, “A Study of the Mixing of Natural Flows Using ICP-MS and
7 the Elemental Composition of Waters,” and the major part of my Ph.D. research involved
8 a study of the mixing of waters in the Sacramento-San Joaquin Bay-Delta (the Delta)
9 using source water fingerprints. I also directed model studies to use chemical source
10 fingerprinting to validate volumetric fingerprinting simulations using Delta models
11 (including the Fischer Delta Model (FDM) and the Delta Simulation Model (DSM)). I have
12 designed and directed numerous field studies within the Delta using both elemental and
13 dye tracers, and I have designed and directed numerous surface water modeling studies
14 within the Delta.

15 For my testimony in this matter, I am familiar with Antioch’s water rights, water
16 operations, and water diversion. I am familiar with Antioch’s 1968 Agreement with the
17 Department of Water Resources (“DWR”), as I have reviewed and analyzed the
18 Agreement for Antioch and participated in meetings with DWR regarding the Agreement
19 and the extension of the Agreement (DWR 304, 310). As before, I incorporate my prior
20 Report and exhibits I submitted in support of Antioch’s case in chief into this rebuttal
21 testimony as a part of my testimony.

22 A copy of my curriculum *vitae* is included as Exhibit Antioch-201.
23

24 **Summary of Testimony**

25 I was retained by the City of Antioch to assist the City in its evaluation of the
26 California WaterFix Project (WaterFix). I provided testimony to the State Board during
27 Phase 1 of the WaterFix hearings as detailed in Exhibits Antioch-200 through Antioch-
28 202, including Antioch-202 Errata, with supporting testimony included as Exhibits

- 1 Antioch-203 through Antioch-234. I also provided testimony at the State Board
2 proceedings on December 14, 2016. The testimony presented here is not intended to be
3 duplicative of information previously provided to the State Board, but is intended to
4 address five Rebuttal Opinions:
- 5 • Rebuttal Opinion 1: The CCWD-DWR 2016 Agreement may have adverse impacts
6 on water quality at Antioch’s intake, but DWR’s analysis is not sufficient to determine
7 the magnitude or frequency of these impacts.
 - 8 • Rebuttal Opinion 2: DWR did not demonstrate that the WaterFix Project will comply
9 with D-1641 water quality standards, or that complying with D-1641 will avoid “harm”
10 to water users in the Delta, and superior alternative methods exist to determine
11 adverse impacts.
 - 12 • Rebuttal Opinion 3: DWR states that the WaterFix Project will not cause harm to
13 Antioch, but our analysis shows that water quality impacts will be greater than
14 described in DWR’s case in chief.
 - 15 • Rebuttal Opinion 4: Despite DWR’s assertions to the contrary, the water quality
16 degradation that will occur at Antioch’s intake as a result of the proposed WaterFix
17 project will not be mitigated by the 1968 Agreement.
 - 18 • Rebuttal Opinion 5: DWR continues to use an inappropriate baseline condition in its
19 evaluation of the proposed WaterFix Project.

20 These opinions are discussed in more detail in this testimony.

21

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Testimony

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Rebuttal Opinion 1: The CCWD-DWR 2016 Agreement may have adverse impacts on water quality at Antioch’s intake, but DWR’s analysis is not sufficient to determine the magnitude or frequency of these impacts.

On March 24, 2016, DWR and CCWD entered into an “Agreement for mitigation of impacts to Contra Costa Water District from construction and operation of Bay Delta Conservation Plan/ California WaterFix” (Exhibit DWR-334). In Exhibit DWR-512, DWR

1 presented a four-page analysis that relied upon two model runs to evaluate the impacts
2 of the DWR-CCWD 2016 Agreement on water quality within the Delta. DWR asserted
3 that “These [two model] scenarios illustrate two possible worst case operations
4 representing two extreme implementations of the CCWD agreement. The actual changes
5 in water quality are expected to be lower than those shown in tables below and it is
6 expected it would not affect the ability to meet D-1641 objectives” (DWR-512 at p. 2). Dr.
7 Nader-Tehrani stated in his written testimony that “I have had my staff review the CCWD
8 agreement for potential water quality changes in the Delta and based on this it is my
9 opinion there would be minimal changes in water quality” (DWR-66, p. 7, lines 22-24).
10 Appendix 31B, Mitigation Measure WQ-73 of the Final Environmental Impact
11 Report/Environmental Impact Statement (FEIR/EIS) for the WaterFix Project provides
12 additional analyses of the effect of the DWR-CCWD 2016 Agreement on water quality
13 [note that all pages from the FEIR/EIS that are cited in this testimony are provided in
14 Exhibit Antioch-301]. DWR presents changes in salinity due to the delivery of water to
15 CCWD through the Freeport intakes, and through the WaterFix intakes for Alternatives
16 4A, 2D, and 5A. Similar to DWR-512, results are presented as long term-averages, and
17 results are not provided at Antioch’s intake.

18 DWR’s analysis of the impacts of the CCWD-DWR 2016 Agreement as presented
19 in their Part 1 Case-in-Chief focused on two DSM2 scenarios, Scenarios A and B (DWR-
20 512 at p. 1). In both scenarios, it was assumed that 150 cfs of water was transferred from
21 the Freeport facility between November 1 and March 31, resulting in an annual transfer of
22 45 TAF to CCWD in all year types. DWR’s analysis relied upon “the existing CalSim II
23 scenarios to develop the Delta inflows and project diversions. Both DSM2 studies
24 included in this memo used results from CWF operational scenario H3 as input” (DWR-
25 512 at p. 1).

26 DWR’s Scenario A assumed CCWD Delta diversions would be reduced by “about
27 150 cfs” starting from November 1, while Scenario B assumed CCWD Delta diversions
28 would be reduced for three summer months starting from July 1. DWR noted that “The

1 results of scenario B are consistent with the assumptions for this operational scenario
2 leading to a reduction in Delta outflow for the months of November through March,
3 however depending on the operational scenario, *a slight modification in operations* may
4 need to be made in order to avoid this reduction. During these times the modeling shows
5 a corresponding increase in net Delta outflow for the months of July through September.
6 These changes do not occur at times when D-1641 water quality is controlling
7 operations.” (DWR-512 at p. 2, emphasis added).

8 DSM2 model output was summarized by DWR for two locations within the western
9 Delta: Emmaton and Jersey Point (but not at Antioch) (DWR-512 at p. 3 and p. 4). DWR’s
10 model results indicated an increase in salinity under Scenario B at Emmaton of 2-4% for
11 all water years (1976-1991) during November through March, and 2-5% for drought years
12 (defined in FEIR/EIS Appendix 8G as 1987-1991) during November through March.

13 I have several concerns about DWR’s analysis of the impacts of the CCWD-DWR
14 2016 Agreement, including the following:

- 15 • DWR did not provide model output or analysis of water quality impacts at Antioch.
- 16 • DWR provided the results of its analysis in the form of long-term averages (either
17 16-year averages by month or 5-year averages by month for the “drought” period).
18 As shown in Antioch-200 and Antioch-202, the use of long-term averages obscures
19 impacts that occur on shorter timescales, such that it is not possible to assess the
20 impacts of the CCWD-DWR 2016 Agreement on Antioch.
- 21 • DWR did not conduct new CalSim II model runs to evaluate the impact of the
22 CCWD-DWR 2016 Agreement on project operations, and DWR did not make the
23 “slight modification in operations that may need to be made” to the model runs to
24 avoid reducing net Delta outflow. As detailed in Antioch-202 Section 3, reductions in
25 outflow, or shifts of exports/diversions from within the Delta to the north Delta
26 diversion locations, cause increases in salinity at Antioch.
- 27 • DWR did not, to my knowledge, provide the DSM2 model runs upon which its
28 conclusions were based, so it was not possible from the information provided by

1 DWR to determine impacts at Antioch. DWR should have provided an analysis for
2 Antioch’s intake location, and should have provided model output at Antioch so that
3 impacts to Antioch could be assessed on an hourly or sub-hourly basis.

- 4 • DWR utilized the H3 model scenario to evaluate the impacts of the CCWD-DWR
5 2016 Agreement in the western Delta. As detailed in Antioch-200 and Antioch-202,
6 the Boundary 1 model scenario was found to have greater impacts at Antioch than
7 Scenario H3. DWR should have evaluated the impacts of the CCWD-DWR 2016
8 Agreement using all the potential operating scenarios, including the Boundary 1
9 scenario.
- 10 • DWR-512 concluded that the CCWD agreement and the associated increase in
11 salinity “would not affect the ability to meet D-1641 objectives.” However, there is
12 not sufficient information to draw this conclusion because only one operational
13 scenario was evaluated, and water quality results were not presented at locations
14 used to assess D-1641 criteria (e.g., Contra Costa Pumping Plant #1). In addition,
15 DWR did not present an analysis in a format (daily or hourly values) that would allow
16 an evaluation of D-1641 criteria, which apply on a daily basis. See Antioch-202 for
17 additional detail.
- 18 • DWR did not identify the thresholds or metrics that it used to determine that there
19 would be “minimal changes in water quality.” In my opinion, DWR did not establish
20 that implementing the CCWD-DWR 2016 Agreement would have “minimal changes”
21 on the ability of Antioch to use water at its intake. Rather, DWR should have
22 provided a quantitative assessment of water quality at Antioch’s intake, and should
23 have compared model results to salinity thresholds used by the City to determine if
24 water at its intake is useable (i.e., 250 mg/L as chloride; see Antioch-202).

25 In summary, DWR’s analysis of the impacts of the CCWD-DWR 2016 Agreement
26 did not present an analysis of impacts to Antioch, and DWR did not provide model results
27 or other information that would allow us to complete such analysis independently. In
28 addition, DWR’s analysis was deficient in several key respects, but did show that long-

1 term averages of model output indicated that salinity would increase in the western Delta.
2 As previously noted by Antioch in Antioch-202, long-term averages have a tendency to
3 “mask” the water quality impacts that are seen on shorter timescales or from year-to-
4 year. For these reasons, it appears that the CCWD-DWR 2016 Agreement may result in
5 adverse water quality impacts at Antioch, but available information is insufficient to
6 assess the frequency and magnitude of these potential impacts.

7
8 **Antioch’s Rebuttal Opinion No. 2:** DWR did not demonstrate that the WaterFix
9 Project will comply with existing D-1641 standards, or that complying with D-1641 will
10 avoid “harm” to water users in the Delta. DWR’s model results show that significant water
11 quality degradation at Antioch’s intake will occur as a result of the proposed WaterFix
12 Project.

13 DWR’s primary testimony stated that if the WaterFix Project is operated to meet D-
14 1641 criteria, water users within the Delta will not be harmed: “A reduction in water
15 quality that is within the objectives contained in D-1641 would not interfere with the ability
16 of other legal users to put water to beneficial use.” (DWR-53, p. 13, lines 18-20).
17 However, not all the proposed operations scenarios will be operated to meet D-1641
18 criteria. The Boundary 1 scenario, for example, “represents an operational scenario with
19 most of the existing regulatory constraints... but does not include additional spring Delta
20 outflow, additional OMR flows, existing I/E ratio, and the existing Fall X2 flow requirement
21 imposed in the existing BiOp for Delta Smelt” (DWR-51, p. 13 lines 18-22). Further, D-
22 1641 water quality objectives to protect municipal and industrial (M&I) beneficial uses are
23 not evaluated at Antioch, and DWR has stated that they “don’t attempt to meet it because
24 it’s – for one, it’s not required to meet it per D-1641. The requirement is at either location
25 [CCPP#1 or Antioch]. And typically, it would be much less costly in terms of water – water
26 supply for the entire system if we meet it at Rock Slough.” (Part 1A, Testimony Volume
27 11, p. 94, lines 19-24).

28 Exponent’s prior analysis demonstrated why long-term averages cannot and

1 should not be used to evaluate water quality impacts or D-1641 compliance at drinking
2 water intakes (see Antioch-202 and Brentwood-102, showing that long-term averages at
3 times substantially underestimate salinity within the Delta, including at D-1641
4 compliance locations, for significant periods of time). In addition, water quality standards
5 defined in D-1641 are expressed in terms of *daily* average chloride concentrations;
6 clearly, model results averaged both by month and over a 16-year period cannot be used
7 to evaluate compliance. Antioch also provided information in Antioch-200 and Antioch-
8 202 demonstrating that even when D-1641 objectives are met, water quality at Antioch
9 degrades and Antioch loses the ability to divert water at its intake (see Antioch-200 and
10 Antioch-202, which show, for example, that D-1641 objectives are met in WY 1984, a wet
11 year, but Antioch loses 49 days of useable water in the Boundary 1 scenario as
12 compared to the existing conditions EBC2 scenario).

13 In spite of information introduced into the record by Antioch and by others, DWR
14 did not provide information to the State Board or to Protestants sufficient to establish
15 whether or not the proposed WaterFix project will comply with D-1641 objectives, or
16 whether water quality will be impacted at Antioch as a result of the proposed WaterFix
17 Project. I respectfully offer to the State Board that more accurate methodologies exist to
18 assess D-1641 compliance and evaluate water quality impacts within the Delta and at
19 Antioch. One such methodology would include:

- 20 • DWR could use existing DSM2 model runs and model output to average model
21 output for salinity on an hourly basis to evaluate the change in salinity that would
22 occur as a result of the proposed WaterFix Project.
- 23 • DWR could use established thresholds (e.g., the 250 mg/L chloride threshold that
24 applies at slack current after higher high tide, as described in the 1968 Antioch
25 Agreement) to evaluate water quality impacts.
- 26 • DWR could evaluate salinity at municipal drinking water intakes (including Antioch)
27 in addition to evaluating D-1641 objectives at select locations.
- 28 • DWR could use a more accurate baseline scenario.

1 The use of these readily available approaches to evaluate injury would provide
2 useful information to the State Board in its decision making role on the Petition. Without
3 this information, it is my opinion that insufficient information has been provided to
4 demonstrate a reasonable likelihood that the proposed change will not injure any other
5 legal user of water.

6 **Antioch’s Rebuttal Opinion No. 3:** DWR has stated that the WaterFix Project will
7 not cause harm to Antioch. My analysis shows that water quality impacts will be greater
8 than described in DWR’s Case-in-Chief.

9 DWR has stated that the WaterFix Project will not cause harm to the City of
10 Antioch: “Based on operation of WaterFix, it [modeling] showed a very slight increase in
11 the number of days when water of that quality would be available at Antioch. And,
12 therefore, based on the modeling, it didn’t show – it didn’t indicate that there would be an
13 impact associated with the operation of this facility. In addition, we have an agreement
14 that does provide for compensation when water of that quality is not available. So I don’t
15 see anything in what I reviewed in the information available that would indicate there
16 would be an impact to Antioch associated with these facilities.” (Part 1A Testimony,
17 Volume 18, p. 174, lines 4-17)

18 Antioch-200 and Antioch-202 demonstrated that DWR’s approach in the WaterFix
19 Petition to evaluating water quality impacts at Antioch was insufficient (e.g., used long-
20 term averages, did not evaluate “useable” water as defined in the 1968 Agreement).
21 DWR released the FEIR/EIS for the proposed WaterFix Project on December 22, 2016,
22 *after* Antioch submitted its case in chief and *after* Antioch provided testimony to the State
23 Board in the WaterFix hearings.

24 The FEIR/EIS released by DWR presented voluminous quantities of information,
25 including analyses of additional model scenarios. [Indeed, the FEIR/EIS presented
26 information for more than 18 different Project alternatives (Alternatives 1A, 1B, 1C, 2A,
27 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9, 4A, 2D, and 5A) within the body of the FEIR/EIS;
28 Alternative 4 was also evaluated as Alternatives H1 through H4.] However, the Boundary

1 1 and Boundary 2 scenarios, to our knowledge, were not discussed in any detail in the
2 body of the FEIR/EIS, and do not appear to have been used in DWR’s determination that
3 the proposed WaterFix project would have “less than significant/not adverse” impacts on
4 chloride at Antioch (FEIR/EIS p.8-932). In contrast, the other proposed project
5 alternatives—including Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9,
6 4A, 2D, and 5A—were discussed explicitly in the FEIR/EIS.

7 The FEIR/EIS preferred alternative, Alternative 4A (which was not modeled for or
8 presented in the WaterFix proceedings), is the basis for the FEIR/EIS’s determination
9 that the impacts of the Project will be “less than significant/not adverse” at Antioch.
10 However, DWR has disclosed substantial water quality impacts associated with the other
11 proposed alternatives, including impacts that are “significant and unavoidable (any
12 mitigation not sufficient to render impact less than significant).” (FEIR/EIS Figure 8-0a [1],
13 [2]) DWR has also disclosed in the FEIR/EIS (and in the WaterFix proceedings before
14 the State Water Board) that the Project may operate to the Boundary 1 and Boundary 2
15 scenarios as the project evolves and the AMMP is implemented. For example, DWR
16 stated in the FEIR/EIS that, “As shown in Appendix 5E, the operation of the future
17 conveyance facility under a possible adaptive management range represented by
18 Boundary 1 and Boundary 2 will be consistent with the impacts discussed for the range of
19 alternatives considered in this document” and that “Boundary 1 and Boundary 2 also
20 encompass the full range of impacts found in the analysis prepared for H1 and H2 (as
21 well as H3 and H4).” (FEIR/EIS p. 3-288) Because of this, the impacts associated with
22 the Boundary scenarios should be considered potential impacts of the WaterFix Project.

23 FEIR/EIS Appendix 5E contains an arguably more specific reference to the
24 impacts associated with the boundary scenarios:

25 *“Consistent with the goals of this analysis, the nature and severity of the*
26 *impacts generally fall within the range of impacts disclosed under*
27 *Alternatives 1A and 3 for Boundary 1, Alternative 4H3, Alternative 4H3+,*
28 *and Alternative 8 for Boundary 2, and Alternative 4H4 and Alternative 8 for*

1 *Scenario 2.*” (FEIR/EIS Appendix 5E, p. 5E-170.)

2 Based on this assertion, I reviewed the CEQA and NEPA impact conclusions of
3 Alternative 1A and Alternative 3, which DWR asserts would demonstrate similar impacts
4 to the Boundary 1 scenario. DWR discloses that Alternative 1A “would result in increased
5 water quality degradation and frequency of exceedance of the 150 mg/L objective at
6 Contra Costa Pumping Plant #1 and Antioch, the 250 mg/L municipal and industrial
7 objective at interior and western Delta locations on a monthly average chloride basis...
8 Additionally, the predicted changes relative to the No Action Alternative indicate that
9 implementation of CM1 and CM4 under Alternative 1A would contribute substantially to
10 the adverse water quality effects (i.e., impacts are not wholly attributable to the effects of
11 climate change/sea level rise).” (FEIR/EIS p. 8-288) In addition, “Relative to Existing
12 Conditions, Alternative 1A would result in substantially increased chloride concentrations
13 in the Delta such that frequency of exceedances of the 150 mg/L Bay-Delta WQCP
14 objective would approximately double... Additionally, further long-term degradation would
15 occur at Antioch, Mallard Slough, and Contra Costa Canal at Pumping Plant #1 locations
16 when chloride concentrations would be near, or exceed, the objectives, thus increasing
17 the risk of exceeding objectives.” (FEIR/EIS p. 8-288/289) The NEPA effects and CEQA
18 conclusions reached for Alternative 4 (H1-H4) are similar, as the FEIR/EIS notes that “All
19 of the Alternative 4 H1-H4 Scenarios would result in increased water quality degradation
20 with respect to the 250 mg/L municipal and industrial objective at western Delta locations
21 on a monthly basis” and that “The predicted chloride increases constitute an adverse
22 effect on water quality.” (FEIR/EIS p. 8-504)

23 Thus, although DWR concludes that impacts to water quality as a result of the
24 preferred alternative (Alternative 4A) will be “less than significant/not adverse,” DWR has
25 disclosed within the FEIR/EIS that it may operate to scenarios that will produce
26 “substantially increased chloride” and “long-term degradation” at the City’s intake
27 location, and that “predicted chloride increases constitute an adverse effect on water
28 quality.” In fact, DWR has characterized these impacts as “significant and unavoidable

1 (any mitigation not sufficient to render impact less than significant).” (FEIR/EIS p. 8-
2 288/289, p. 8-504)

3 DWR seeks flexibility through the AMMP to operate to the boundary scenarios as
4 well as within the range of the eighteen (18) scenarios for which DWR discloses salinity
5 impacts in the Delta that are “significant and unavoidable (any mitigation not sufficient to
6 render impact less than significant).” Exponent’s analysis of DWR’s model results
7 confirms DWR’s conclusions that its own modeling indicates that the project will cause
8 significant adverse impacts to water quality at the City’s intake location. Exponent’s
9 analysis demonstrates that the Boundary 1 operations will result in the loss of the City’s
10 ability to use water at its intake for significant periods of time (see also Antioch-202).

11 In sum, DWR’s conclusion that the water quality impacts of the project will be “less
12 than significant/not adverse” is not credible and is contradicted by its own analyses,
13 which have found “significant and unavoidable” impacts that cannot be mitigated and that
14 DWR expects to occur within its planned operating range. The significant water quality
15 impacts of the project are not disclosed adequately in the FEIR/EIS.

16
17 **Rebuttal Opinion No. 4:** Despite DWR’s assertions to the contrary, the water
18 quality degradation that we expect to occur at Antioch will not be mitigated by the 1968
19 Agreement.

20 The City of Antioch and the State of California entered into an Agreement in 1968
21 (the “1968 Agreement”) that reimburses Antioch for one-third of the water that Antioch
22 must purchase (as specified in a formula contained in the 1968 Agreement) when water
23 at Antioch’s intake becomes too saline for use as a result of the operation of the State
24 Water Project (see DWR-304 and DWR-310). DWR has asserted on multiple occasions
25 that the 1968 Agreement will protect Antioch from any water quality degradation that may
26 occur by means of compensation for water purchases. For example, Maureen Sergent
27 stated “...we have an agreement that does provide for compensation when water of that
28 quality is not available. So I don’t see anything in what I reviewed in the information

1 available that would indicate there would be an impact to Antioch associated with these
2 facilities ” (Part 1A Transcript, Volume 18, p. 174, lines 4-17). Similarly, John Leahigh
3 stated during cross-examination that “...we [DWR] have a contractual agreement with
4 Antioch, where we compensate them depending on what the actual water quality
5 conditions turn out to be” (Part 1A Transcript, Volume 11, p. 94 lines 10-13).

6 DWR’s assertions that the 1968 Agreement protects Antioch from the impacts that
7 could be caused by the proposed WaterFix project are, in my opinion, unfounded. I am
8 unaware of any analysis by DWR of how many days Antioch would need to be
9 reimbursed under the Agreement for each operational scenario. In addition, the fixed
10 term of the 1968 Agreement expires in 2028, and the agreement can be cancelled
11 thereafter with 12 months’ notice by DWR (or by the City) (see DWR-310). As I
12 understand it, DWR has indicated that the WaterFix Project would not be operational
13 prior to the expiration of the fixed term of the 1968 Agreement, such that the 1968
14 Agreement could be cancelled by DWR prior to the start of operations.

15 Further, the Agreement reimburses the City for only one-third the cost of water the
16 City must purchase as a result of the increased salinity caused by the operations of the
17 State Water Project. As detailed in Antioch-202, DWR’s model results show a significant
18 increase in the number of days when water at Antioch’s intake will be above the 250
19 mg/L threshold specified in the 1968 Agreement (i.e., the threshold above which water is
20 not “useable,” per the 1968 Agreement), particularly for the Boundary 1 scenario.
21 Antioch-202 also demonstrates that some of the increase in salinity is due to the
22 WaterFix Project and not to sea level rise or climate change. Thus, Antioch anticipates
23 needing to purchase more water as a result of the WaterFix Project than it would need to
24 purchase if the WaterFix Project were not constructed. Because only one-third of the
25 City’s expenditures would be reimbursed by the State, the City’s costs to provide water
26 service to its residents will increase as a result of the WaterFix project.

27 Finally, Antioch and the State of California are the only parties to the 1968
28 Agreement, and to my knowledge DWR has proposed no amendments to the 1968

1 Agreement, or no additional reimbursement from other parties, that would reimburse the
2 City for the additional expenditures anticipated to occur in the future as a result of the
3 WaterFix Project.

4 For these reasons, I conclude that the 1968 Agreement will not mitigate Antioch
5 for the adverse water quality impacts that will occur as a result of the WaterFix Project as
6 contended by DWR in its Case-in-Chief.

7 **Rebuttal Opinion No. 5:** DWR continues to use an inappropriate baseline
8 condition in its evaluation of the WaterFix Project.

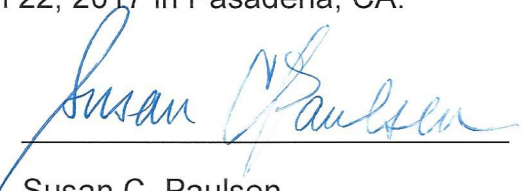
9 DWR used a future no-action alternative (NAA) scenario as the “baseline” in its
10 testimony to the State Water Board during Phase 1 of the WaterFix petition proceedings;
11 DWR did not present analysis of the “existing condition” in their presentation to the State
12 Board. Antioch’s prior testimony describes how DWR’s use of the future no-action
13 alternative (NAA) scenario as a baseline scenario in the WaterFix Phase 1 opening case-
14 in-chief masks the true impacts of the WaterFix Project on the City (specifically, Antioch-
15 202 describes at Section 6.1 how the use of the NAA makes the water quality impacts of
16 the proposed WaterFix project appear to be less significant than they actually are, and
17 describes why the existing condition is the appropriate baseline for evaluating impacts to
18 a drinking water purveyor such as Antioch).

19 DWR’s FEIR/EIS, issued on December 22, 2016, used both an existing condition
20 (EBC1) and future no-action alternative (NAA) as baseline conditions against which
21 alternative project operations were compared. However, the existing condition scenario
22 (EBC1) used by DWR in the FEIR/EIS did not include the Fall X2 requirement, even
23 though the 2008 USFWS biological opinion (BiOp) requires it. The FEIR/EIS cited
24 litigation filed in 2011 by various water users threatening the Fall X2 standard as the
25 reason for excluding Fall X2 requirements from the existing conditions model run
26 (FEIR/EIS at p. 4-6). However, the litigation was settled in 2014, thus solidifying the Fall
27 X2 requirement, and the Fall X2 requirement continues to be implemented currently.
28 Despite multiple comments highlighting this issue, DWR continues to use baseline

1 scenarios that are not representative of existing conditions.

2 DWR's use of an inappropriate baseline conditions means that DWR's analysis
3 underestimates the impacts of the WaterFix Project on Antioch. (See Antioch-202 Section
4 6.1 and Antioch-218, PDF p. 18 for a description of the various baseline model
5 alternatives and quantitative analysis of the impacts of DWR's choice to use the EBC1
6 scenario, even though the EBC2 model scenario had been generated by and was
7 available to DWR.)

8 Executed on March 22, 2017 in Pasadena, CA.

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11 Susan C. Paulsen

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14 [1] FEIR/EIS Figure 8-0a, Comparison of Impacts on Water Quality. This figure notes
15 that "substantial / adverse" impacts are associated with Alternatives 1A, 1B, 1C, 2A, 2B,
16 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9. The FEIR/EIS does not include a similar treatment for the
17 Boundary 1 and Boundary 2 scenarios.

18 [2] FEIR/EIS at Table ES.4.2 finds that chloride impacts for scenarios 1A, 1B, 1C, 2A,
19 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9 are both "significant and unavoidable (any mitigation
20 not sufficient to render impact less than significant)" and "adverse.") Again, the Boundary
21 1 and Boundary 2 scenarios are not included or described in this table summarizing
22 project impacts.

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