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7 Attorneys for Protestant
 8 NORTH DELTA WATER AGENCY, BRANNAN
 9 ANDRUS LEVEE MAINTENANCE DISTRICT,
 10 RECLAMATION DISTRICT 999,
 11 RECLAMATION DISTRICT 2060,
 12 RECLAMATION DISTRICT 2068,
 13 RECLAMATION DISTRICT 407,
 14 RECLAMATION DISTRICT 317,
 15 RECLAMATION DISTRICT 551,
 16 RECLAMATION DISTRICT 105,
 17 RECLAMATION DISTRICT 563,
 18 RECLAMATION DISTRICT 2067, and
 19 RECLAMATION DISTRICT 2098.

20 BEFORE THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

21 In the matter of Hearing re California
 22 WaterFix Petition for Change

23 **SURREBUTTAL TESTIMONY OF**
 24 **GILBERT COSIO, MBK ENGINEERS**

25 **PROFESSIONAL BACKGROUND AND QUALIFICATIONS**

26 1. I am a registered civil engineer in the State of California. I specialize in the fields
 27 of flood control, hydrology, hydraulics, water resources planning, drainage, water supply,
 28 surveying, and levee maintenance. I am a principal at MBK Engineers, located at 455 University
 Avenue, Suite 100, Sacramento, CA 95825. MBK Engineers specializes in water resources
 engineering and performs these engineering services for local public agencies and private clients,
 principally in the Delta and the Sacramento Valley. Exhibit DFCG-2, which was previously
 admitted into testimony, is a true and correct copy of my professional qualifications.

1 2. Exhibit DFCG-1 is a true and correct copy of my written testimony in this
2 proceeding, which was previously admitted into evidence. On October 28, 2016 I provided oral
3 testimony in support of the case-in-chief of the Delta Flood Control Group (“DFCG”), which
4 includes Brannan-Andrus Levee Maintenance District, Reclamation District No. 999,
5 Reclamation District No. 2060, Reclamation District No. 2067, Reclamation District No. 2068,
6 Reclamation District No. 2068, Reclamation District No. 407, Reclamation District No. 317,
7 Reclamation District No. 551, Reclamation District No. 150, and Reclamation District No. 563.

8 3. I have reviewed the testimony submitted by Petitioners in support of the case-in-
9 chief in this proceeding and in the rebuttal phase of the proceeding, together with the supporting
10 exhibits.

11 4. DWR’s evaluation of the levees that will be affected directly or indirectly by the
12 WaterFix Project will be based on an evaluation of those levees’ current condition (April 25,
13 2017 Transcript, Vol. 36, p. 38, lines 1-8.). However, these levees were accepted into the flood
14 control system without the kind of geotechnical work that is now typically performed on new
15 levee structures. Our knowledge of these levees’ structure and condition is limited by that fact.
16 Mr. Bednarski admits that, to date, the necessary geotechnical work to evaluate the condition of
17 these levees has not been performed, beyond the conceptual design phase. (April 25, 2017
18 Transcript, Vol. 36, p. 30, lines 16-25.) Thus, it is not proper for Mr. Bednarski to draw any
19 conclusions about the stability or composition of the levees that could be affected by the
20 WaterFix project.

21 5. Mr. Bednarski testified that no damage to levees and related structures were
22 observed during pile driving at other Delta facilities, including the Alternative Intake at Victoria
23 Canal, the Freeport Intake, and the Sankey Diversion Facility on the Sacramento River. (DWR-
24 75, pp. 11-12, lines 27-4.) He went on to testify that “DWR will be implementing well-accepted
25 engineering practices, similar to the approaches taken in the successful engineering projects
26 identified above.” (DWR-75, p. 13, lines 3-4.)

27 6. DWR has taken the position that, if slope stability criteria are properly developed,
28 there would not be impacts in terms of slope stability or any other levee failures. (See April 25,

1 2017 Transcript, pp. 26-27).

2 7. DWR's witnesses have testified that levees will not be jeopardized by the
3 construction or operation of the project because all work will be performed using accepted
4 engineering practices. The conceptual design presented by the Project proponents provides no
5 further detail on these practices. However, Mr. Bednarski offered up examples of other pile-
6 driving projects in the Delta as evidence that the current proposal should not present concerns
7 (*see* April 25, 2017 Transcript, p. 14, lines 14-21: "My written testimony cites a number of
8 relevant examples of recent successful pile-driving projects in the delta. Taken collectively, these
9 projects have driven thousands of piles with a combination of vibratory and impact-driven piles
10 near levees without any negative impact. Consequently, DWR does not foresee any issues with
11 levee integrity due to pile-driving activities on the WaterFix."). Presumably, Mr. Bednarski
12 believes that the types of potential impacts of the Project on levee stability, which were detailed
13 in the Final EIR/S Appendix 6A at p. 6A-32 (copy attached as DFCG-21), will be fully addressed
14 by such "well-accepted engineering practices." (DWR 75, p. 13, lines 3-4.)

15 8. In my experience, the projects offered up by DWR as examples of successful Delta
16 projects included significant protections for flood control structures that are notably absent from
17 DWR's conceptual design. Specifically the Victoria Alternative Intake Project and other similar
18 projects incorporated a number of special features after consulting with engineers with extensive
19 experience in designing and overseeing the construction of flood control projects in the Delta.

- 20 a. One of these features involved building an entirely new setback levee within the
21 existing levee. As a result, much of the work, including pile driving, was
22 performed on the original levee alignment, and not the new levee which was
23 reconstructed landward of the original levee. The new levee functioned as a "fail-
24 safe" protection against the possibility that pile driving on the existing levee could
25 have resulted in failure of that levee.
- 26 b. In addition, the project incorporated peak particle velocity (motion) sensors in
27 both the main levee and the setback levee that were intended to provide advance
28 warning of any levee instability by detecting any acceleration of the materials in

- 1 the levee.
- 2 c. Further, the project incorporated inclinometers that were installed to measure
- 3 lateral deformation of the levees and piezometers that were installed to measure
- 4 “pore pressure” that could indicate the liquefaction of the sandy soils that exists in
- 5 many Delta levees.
- 6 d. The project incorporated ground monuments that enabled the contractor and
- 7 design engineers to determine whether there had been any lateral or vertical
- 8 movement of the levees during the course of construction.
- 9 e. Lastly, the project included extensive monitoring of neighboring levees to assure
- 10 stresses to the levees did not exceed predetermined safe levels.

11 9. Mr. Bednarski offered rebuttal testimony that the Clean Water Act section 408

12 permitting process that is administered by the United States Army Corps of Engineers (USACE)

13 would provide a backstop to protect area levees from WaterFix impacts. In particular, he testified

14 that “in addition to the USACE’s internal reviews, a safety assurance review by an independent

15 panel of experts will be performed as part of the permitting process,” and that to meet that

16 requirement, DWR “will have to show in the permit application that proposed alterations to the

17 levee sections and construction activities including encroachment into the river channel and pile

18 driving will not compromise the existing levees.” (DWR-75, p. 15, lines 14-19.)

19 10. The USACE section 408 permitting process does not provide for mandatory

20 review by an independent panel, but allows the applicant to request such a review. (*See USACE*

21 *Engineer Circular (EC) No. 1165-2-216, Policy and Procedural Guidance for Processing*

22 *Requests to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 U.S.C. 408,*

23 *at p. 12 (DFCG-22).*

24 11. In my opinion, based on my experience as a professional engineer working in the

25 Delta levee system, the imposition of an independent review panel is crucial in this case to

26 assuring that the proposed project adequately protects existing levees. In my experience, project

27 design, especially features to protect local structures, benefits by review of independent and local

28 engineers. USACE, through the Independent External Peer Review process referenced in EC

1 1165-2-216 and elaborated on in detail in USACE Engineer Circular (EC) No. 1165-2-214, *Civil*
2 *Works Review* (DFCG- 23), Appendix D, has established a exactly such a process. That process
3 is intended to ensure that the engineering used to design and construction major infrastructure
4 meets the highest standards of public safety and reliability. Similarly, DWR has, in its
5 investigations into the recent problems at the Oroville Dam spillway, convened an independent
6 board of commissioners that is comprised of national experts to comment upon and oversee the
7 design and reconstruction process. More generally, in the *Urban Flood Risk Reduction Program*
8 *Guidelines* that have been prepared by DWR (DFCG-24), there is a provision for independent
9 review of major projects. Independent reviewers “must be individuals who are distinguished
10 experts in engineering, hydrology and other appropriate disciplines” and must be “free from any
11 real or apparent conflict of interest.” (DFCG-24, p. 8-1.) Moreover, an independent review
12 “should also include review before, during, and after construction, and review on a regular
13 schedule sufficient to inform the State of the adequacy, appropriateness, and acceptability of the
14 design and construction activities for the purpose of ensuring public health, safety, and welfare.”
15 (DFCG-24, p. 8-2.) By requiring these standards through external oversight, the process of
16 independent external review for major projects is a well-established technique to ensure that such
17 projects are designed and constructed to the highest engineering standards.

18 12. DWR has acknowledged throughout these proceedings that the California
19 WaterFix project would be one of the most important elements of California’s water
20 infrastructure. Accordingly, it is entirely appropriate for DWR to use the Department to invoke
21 the Corps’ independent review process described in EC 1165-2-214 and in EC 1165-2-216 and
22 convene an independent core of commissioners to oversee the design and construction of the
23 California WaterFix Project. That process should, in addition, incorporate the provisions of the
24 Urban Flood Risk Reduction Program for independent review.

25 13. In requesting such an independent board of commissioners, DWR should insist not
26 only on academic experts, but also on engineers with extensive experience in the construction of
27 facilities in the Delta. *E.g.*, USACE Engineering Manual (EM) No. 1110-2-1913, *Design and*
28 *Construction of Levees* (DFCG- 25), at p. 2-3 (“Local people or organizations having knowledge

1 of foundation conditions in the area should be interviewed.”); Appendix p. F-2 (“Local
2 contractors and local officials are the best source of information on available borrow areas.”);
3 Appendix, p. F-4 (“In standard levee design the configuration of the levee is generally dictated by
4 the foundation soils and the materials available for construction. Therefore, even under
5 emergency conditions, an attempt should be made to make the embankment compatible with the
6 foundation. Information on foundation soils may be available from local officials or engineers,
7 and it should be utilized.”). Without such independent review and oversight that incorporates
8 local knowledge, it is simply not possible to ensure that the project will be designed and
9 constructed to the standards required for such a major project.

DOWNEY BRAND LLP

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