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BEFORE THE

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

HEARING IN THE MATTER OF CALIFORNIA DEPARTMENT OF WATER RESOURCES AND UNITED STATES BUREAU OF RECLAMATION REQUEST FOR A CHANGE IN POINT OF DIVERSION FOR CALIFORNIA WATER FIX	**WRITTEN TESTIMONY OF SEAN WIRTH** **SAVE OUR SANDHILL CRANES** **(Part 2 Rebuttal)**

I. INTRODUCTION

I provided testimony in this Hearing for Save Our Sandhill Cranes' Part 2 Case in Chief. My Statement of Qualifications ("SOQ") is at SOSC-82. I previously testified as an expert witness in the case-in-chief portion of this hearing. (Hearing Transcript, April 10, 2018, pp. 64:12 – p. 66:24; pp. 112:6 – p. 118:4; SOSC-6, pp. 2:2 – p. 3:8.)

II. ADAPTIVE MANAGEMENT

Dr. Earle places a lot of confidence in adaptive management and the Adaptive Management and Monitoring Program for the Delta Tunnels/California WaterFix ("CWF") project, and feels the program "is likely to have beneficial outcomes for fish and wildlife species in the Delta. (DWR-1014, p. 4:4.)

Dr. Earle's confidence in the Adaptive Management Program ("AMP") providing "beneficial outcomes for fish and wildlife species in the Delta" assumes that management decisions will be reactive to new scientific evidence as studies are conducted into the outcomes of decisions. (DWR-1014, p. 5:9; SWRCB-107, Att. 5, p. 3.) The effectiveness of this science based approach to management and monitoring is predicated on science being the primary driver for management decisions. (SWRCB-107, Att. 5, p. 3.) When management decisions are driven by political forces, the benefits of adaptive management can easily be negated and the AMP will provide no appreciable benefit for the outcomes for fish and wildlife species in the Delta. (SOSC-84, p. 1069, 1077.) Given the politically charged nature of water politics in California, and the specter of climate change induced drought and the resultant water emergencies, this type of politically driven decision is a real concern when it comes to the operation of the Delta Tunnels, and even the most sophisticated and far reaching AMP will be unlikely to provide adequate environmental protections in the face of political pressures.

III. POWER LINES FROM THE PROJECT CONTINUE TO THREATEN WILDLIFE

A. The Project Will Lead to Impermissible Take

Dr. Earle asserts that: "CWF measures will reasonably protect birds and bats from collisions with power lines, relative to current conditions. (DWR-1014, p. 4:6.) But no consideration was given to the increased likelihood of birds being flushed by construction

activities and then impacting existing and new power lines. Nor was there any mitigation suggested for this "take" of Greater Sandhill Crane, which is a designated "no take" species by virtue of its California Fully Protected Species status. (SOSC-21, p. 1:19; SWRCB-107.) A mitigation for this "take" was the placement of flight diverters on all power lines within the crane wintering landscape within the project area. (SWRCB-111, p. 4-33:1.) Flight diverters were offered as a solution for both cranes striking new temporary lines used during construction, and cranes striking permanent power lines. (DWR-1014, p. 9:7.) The logic offered was a "no net increase" of cranes striking power lines because the cranes that hit the new lines would be compensated for by the number of cranes being saved from hitting existing lines (DWR-1014, p. 9:3.) This logic, however, is flawed because the Greater Sandhill Crane is a fully protected species under California Fish and Game Code section 3511. (FSL-21, p. 1:26; FSL-28, p. 1.) Since no ITP was issued for Greater Sandhill Cranes (SWRCB-107), "no net increase" of cranes striking power lines is not the applicable standard. (FSL-21, p. 1:26.) Even if the diverters prevent an increase in the number of cranes taken by the project, cranes would nonetheless be taken. Thus, the taking of the cranes due to power line strikes would be impermissible, even if mitigation measures are implemented that result in "no net increase." (FSL-21, p. 1:26.)

In addition to take under operational conditions, "take" of cranes from power line strikes may occur as a result of being flushed from construction activities. (Hearing Transcript, March 8, 2018, pp. 16:2–19:9; FSL-21, p. 9:6.) Dr. Earle fails to address this possibility. (Hearing Transcript, March 8, 2018, pp. 16:2–19:9.) Contrary to Dr. Earle's assertions that Delta Tunnels measures will avoid, minimize and mitigate power line effects (DWR-1014, p. 11:7), the Delta Tunnels avoidance and minimization measures do not reasonably protect Greater Sandhill Cranes from collisions with power lines. (SWRCB-111, p. 4-33:1.) They instead ignore one of the ways that the project increases the likelihood of power line strikes on both the existing and the new temporary and permanent lines as a result of increased flushing, both off of roosting and foraging habitats as a result of construction activities. (Hearing Transcript, March 8, 2018, pp. 16:2–19:9; FSL-21, p. 9:6.)

B. Flight Diverters Provide Limited Protection for Greater Sandhill Cranes

Dr. Earle asserts: "The primary mitigation measure, installing bird flight diverters on power lines to further diminish collision risks, is a widely implemented strategy with high effectiveness at averting collisions." (DWR-1014, p. 9:5.) Dr. Earl further states: "Based on the bird strike analysis (SWRCB-5, Att. 5J.C, p. 18), placement of bird strike diverters is expected to reduce mortality by approximately 60%." (DWR-1014, p. 12:4-6.) This assertion relies heavily on the 1995 Brown and Drewein study (SOSC-35) that was conducted in the San Luis Valley, near the town of Alamosa, in Colorado.

Exhibit SWRCB-5, Attachment 5J.C, page 18 (see also FSL-29, PDF p. 141) states:

> Using this approach, an average population size was determined for each line segment, which was then multiplied by 130 days (the mean number of days that greater sandhill crane spend in the Delta wintering area) and by four flights per day (birds going between foraging areas and roost sites twice a day, crossing the lines twice in the morning and twice in the evening). Based on the assumption that the probability of flying out of the roost in a given cardinal direction is 25%, this number was then divided by four, resulting in a crossing estimate for each segment and for the total line (Table 9 2.). The number of crossings was then multiplied by collision mortality rates that were calculated for greater sandhill crane in the Rocky Mountains of Colorado (Brown and Drewien 1995). These data were used because local or regional data are not available. Brown and Drewien (1995) estimated that annual collision mortality of greater sandhill crane at unmarked lines was between 2.5 x 10-5 (low estimate) and 30.4 x 10-5 13 collisions per crossing (high estimate). For the purposes of this analysis, the high estimate was used to ensure that all potential impacts were captured. Because lack of visibility is one of the most commonly implicated causes of collision mortality, live or ground wires can be marked to increase their visibility. While it has not been studied, the efficacy of bird flight diverters are likely diminished with reduced visibility associated with the new moon or fog. However, it is reasonable to assume that bird flight diverters still reduce mortality. Other markers also include dampers, hanging plates, and spheres. Marking lines has been shown to decrease collision risk substantially. Brown and Drewien (1995) estimated that annual collision mortality rates of birds at marked lines were reduced by 62 and 66% for two types of markers, and it is likely that birds found dead in these studies were also flying at night. Morkill and Anderson (1991) indicated a 54% reduction in crane mortality at marked lines. In addition to the risk map derived above, collision risk and mortality in the Plan Area were estimated relative to the proposed powerline locations. This was done for both marked and unmarked lines.

It is important to note several things in this statement. The first is that the calculation considered flights to and from roost sites in the morning and the evening, but not flights from birds flushed from roost or forage sites. (SWRCB-5, Att. 5J.C, p. 18:5-6.) And it is reasonable to assume that cranes that are flushed will fly off in more a stressed state (fight or flight) than

cranes who are embarking on their routine trips to foraging or roosting grounds. (SOSC-21, p. 4:9.) None of this was reflected in the way the bird strike numbers were calculated. (SWRCB-5, Att. 5J.C, p. 17:35.)

The FEIR/S assumption that flight diverters will reduce bird strikes by 60% means that the 40% of the cranes that would potentially collide with new power lines will still do so, as well as at least an equivalent percentage of flushed cranes for new and existing power lines. It is also within reason to assume that given the increased stress level for flushed birds, the bird strike incidence for flushed birds would be higher than for cranes taking routine flights. It is important to note here again that all of these transmission line strikes for cranes are "take" of a California Fully Protected Species with "no take" status (SOSC-21, p. 1:19; SWRCB-107, p. 1), except within the confines of a NCCP, which the Delta Tunnels project is not.

Further, relying on the 1995 Brown and Drewien (SOSC-35) study raises issues of its applicability to the Delta. The fog regimes between the Delta and the San Luis Valley vary dramatically. (SOSC-21, p. 3:1.) According to SOSC-58 (Western Regional Climate Center), fog is common in the Delta between November and February. On average 36 of 120 days between November and February have fog in the Delta. By contrast, in the San Luis Valley there is dramatically less fog with occurrences of only 4 days in 90 (SOSC-58 Western Regional Climate Center). (SOSC-21, p. 3:1.)

As described in SWRCB-5, Attachment 5J.C, page 18 (FSL-29, PDF p. 141:15.): "Because lack of visibility is one of the most commonly implicated causes of collision mortality, live or ground wires can be marked to increase their visibility. While it hasn't been studied, the efficacy of bird flight diverters are likely diminished with reduced visibility associated with the new moon or fog." Since flight diverters are designed to make power lines more visible, conditions that impair sight by DEFINITION would have a negative effect on cranes' ability to see the diverters. And, the more foggy days impairing vision, the greater the increase in bird strike incidence. What a study of bird strikes during new moon and/or in the fog would demonstrate is how much of an increase there is in occurrences of strikes. But CLEARY, relying on the 60% effective assumption for flight diverters from clear skies San Luis Valley,

Colorado is going to exaggerate their effectiveness in the often very foggy Delta. (SOSC-21, p. 3:1.)

A recent study by Murphy (SOSC-44) on crippling and nocturnal biases in a study of Sandhill Crane collision with transmission lines shows that historical studies of crane collisions with transmission lines have underestimated crane collision because prior studies relied on searching for carcasses instead of combining carcass searches with remote sensing with night vision optics. Anyone who has spent any time observing cranes in the Delta can recount the many times they have seen coyotes looking for feeding opportunities in close proximity to cranes. Given this, it is easy to understand why so few carcasses are in evidence under transmission line in the Delta, and why relying on carcass retrieval is likely a very ineffective way to assess the effectiveness of flight diverters, or the actual level of danger posed by transmission lines for cranes. The effectiveness of a flight diverter would be inflated, while the incidence of strikes would be under counted.

In SOSC-59, the Yee Study on the Effectiveness of Bird Diverters, Yee admits, on page 2 of the Executive summary (PDF page 16) that: “This study appears to be the first in California to assess bird collisions with distribution lines and to assess mitigation aimed at reducing collisions with distribution lines by installing diverters. It is also the first study to assess the value of using bird flight diverters in an area that experiences dense fog events during a high proportion of the winter months, when bird use is highest.”

Further, on page 27 of SOSC-59, (PDF page 41): “This study’s reported estimates of fatalities did not account for biases due to searcher efficiency, scavenger removal, habitat, and crippling. Therefore, it is likely that they are conservative and that the total number of collisions occurring with the power line is considerably higher than reported here. Based on combined searcher and scavenger removal trial and carcass decomposition and removal observations (Table 2), this study concludes that the number of birds that may have gone undetected as the result of searcher inefficiency or scavenger removal may be considerable, indicating that the study may be severely underestimating the total collision estimate. Rigorous bias studies are needed to determine, with greater accuracy, the total mortality due to collision with power lines.

Without them it will not be possible to accurately determine crane or other bird mortality due to collision with powerlines."

Barrientos' article (SOSC-30) regarding the "Meta-analysis of the effectiveness of marked wire in reducing avian collisions with power lines" further brings into question how one could confidently state that flight diverters are "a widely implemented strategy with high effectiveness at averting collisions." (DWR-1014, p. 9:6.) As well the study by the Avian Power Line Interaction Committee's 2012 report (SOSC-27), "Reducing Avian Collisions with Power Lines: The State of the Art in 2012" provides a far more recent assessment of flight diverter effectiveness compared to the Avian Power Line Interaction Committee's report that was relied upon for the Delta Tunnels FEIR/S.

The chart in SOSC-60 compares the various studies on flight diverter effectiveness and presents a range of effectiveness spanning from less than 10% to 81%. This extremely large range, the inherent problems in determining both flight diverter effectiveness and transmission line incidence, questions brought up about flight diverter effectiveness in recent publications, and the lack of applicability of the 1995 Brown and Drewien study to the conditions of the Delta, support a stance of skepticism at best as to whether the Delta Tunnels measures as pertains to transmission lines are protective of species. What is abundantly clear, though, is that Delta Tunnels will result in the "take" of Greater Sandhill Crane, a California Fully Protected Species. (SOSC-21, p. 1:19; SWRCB-107, p. 1.) This reality is not even thinly veiled as a "no net increase" rationale is given in Delta Tunnels measures for transmission line strikes (DWR-1014, p. 9:2), which is synonymous with "no net take" of a Fully Protected Species. But, the accuracy of the calculations for crane strikes and the efficacy of flight diverters are brought into question by more recent scientific studies. And, no consideration was given to an increase in crane strikes due to flushing from construction activities. "No take" is an absolute, and it is clear that Delta Tunnels measures did not achieve this standard.

C. Locating New Transmission Lines Along Existing Right-of-Ways ("ROWs") Will Be Ineffective in Preventing Take

Dr. Earle is incorrect that locating new transmission lines along existing ROWs will somehow prevent take. The idea of locating new transmission lines along existing ROWs might appear on initial consideration to be a way to help minimize the impact of new and/or temporary transmission lines because they would be added to an alignment that already had power distribution lines. (SWRCB-102, Ch. 3, App. 3C, p. 11.) This understanding does not consider the problematic physical reality inherent in introducing different, larger structures on existing ROWs.

The new lines to be added for the project would be of a larger physical size and capacity than those of the existing 12 kv power distribution lines. In order to provide 69 kv of power for the tunnel boring machines, existing 12 kv power distribution lines would be replaced by much larger dual circuit 69 kv transmission lines with a 12 kv underbuild for power distribution. (See FSL-48; Hearing Transcript, March 8, 2018, p. 13.) The three new higher capacity pairs of lines would be positioned at higher elevations than the existing lines. What this means is that rather than having one set of distribution lines that need to be avoided at a single height, a total of three bands of transmission lines and one band of distribution lines at multiple heights extending higher into the air would need to be avoided, creating an effect that is more net-like than the existing configuration. (FSL-48, p. 2.)

Cranes attempting to fly over the existing transmission lines now would, post-project, have to avoid multiple rows of lines that are higher than existing lines. (FSL-48, p. 2.) In configurations where high capacity lines are run alone (without distribution), cranes may have the ability to fly below them or above them. (FSL-48, p. 1.) Under a with-project scenario, only the birds able to fly above all of the new high capacity lines would avoid peril. (FSL-48, p. 2.) And, given the substantial height of the high capacity lines (SWRCB-102, Ch. 3, p. 3-152:29) there are obvious concerns about cranes having the ability to fly over them when taking off from a short distance away; that is a lot of altitude to gain in what might amount to a short distance. Placing larger power transmission and distribution structures on existing ROWs

introduces new possibilities for "take" of Greater Sandhill Cranes and these were not addressed in the environmental documents.

In the examination of John Bednarski and Chris Earle, Mr. Bednarski confirmed that the picture that he was shown, from FSL 48 of a mockup of what adding additional 69 kv lines to the existing Lambert Road distribution lines would potentially look like, was accurate. (Hearing Transcript, March 8, 2018, p. 14:7-9.) As to whether this new configuration of lines along existing ROWs would constitute an increased threat to cranes, over the current configuration, Dr. Earle responded that his review of the literature "did not indicate that this question had really been investigated." (Hearing Transcript, March 8, 2018, p. 14:23-2.). He went on to say that: "you could argue that . . . there's a greater risk of collision." But he further stated that: "you also could argue that this is considerably more visible from a distance than the existing 12 kilovolt line." (Hearing Transcript, March 8, 2018, p. 15:11-14.) Given that bird strikes on transmission lines are far more likely in poor visibility conditions like fog and during the nighttime, the argument that additional lines are "considerably more visible" makes little sense, whereas the counterargument that there is a "greater risk of collision" seems obvious as now there are more transmission lines at different heights to fly into when it is difficult to see if any transmission lines are present.

D. Undergrounding of All Transmission Lines Should Be Required

Dr. Earle stated that: "In this particular - - for instance Staten Island is an area where there's a high level of concern about potential power line effects on greater sandhill cranes. Power lines running to Staten Island will be underground." (Hearing Transcript, March 8, 2018, p. 38.) This statement indicates that it is feasible to underground all lines required for the project. Yet there has been no commitment (other than Dr. Earle's statement) to underground any power lines. Since any new or more disruptive power line (as described above) would potentially result in the "take" of a CA Fully Protected Species, which is not allowed outside the confines of a Natural Communities Conservation Plan ("NCCP"), undergrounding all new lines is mandatory to avoid "take." And as has already been discussed, flight diverters on existing lines constitutes a mandatory effort to avoid "take" of California Fully Protected Species that

are flushed off of their roosting or foraging habitats because of construction disturbances, and it is inappropriate to consider flight diverters on existing lines as a way to offset "take" of sandhill cranes from strikes on new transmission lines.

IV. HABITAT MITIGATION FOR CRANES IS INADEQUATE

Dr. Earle claims:

> Protective measures implemented during project construction would require that project effects on cranes in the Delta are avoided or minimized. Protection and restoration of greater sandhill crane habitat would improve the overall condition of greater sandhill crane habitat in the Delta, relative to current conditions. These measures together will reasonably protect the greater sandhill crane from effects of CWF.

(DWR-1014, p. 14:12-16.)

Further, Dr. Earle explains that:

> These habitat impacts would be offset and mitigated by restoration and protection of greater sandhill crane habitat as described in FEIR/S Chapter 12. (Exhibit SWRCB-102, pp. 12-3542 – 12-3548.) These actions include creating 595 acres of roosting habitat and mitigating the loss of foraging habitat at 1:1 by protecting high to very high value crane foraging habitat.

(DWR-1014, p. 15:12-16.) I agree that Sandhill Cranes are threatened in their wintering grounds by urbanization and by crop conversion to incompatible crop types such as vineyards and orchards. Though urbanization has not been as rampant as crop conversion, it is more permanent in its effect because suburban developments and malls are very unlikely to be ripped out to create more crane habitat. However, the Nature Conservancy and Elk Grove have both ripped out vineyards to make more species habitat. What is not so certain, however, is whether a 1:1 mitigation for foraging habitat would be more protective of cranes than their current situation.

Dr. Earle states that:

> Construction of water conveyance facilities and habitat restoration would result in the permanent and temporary loss of up to 92 acres of roosting-and-foraging habitat and up to another 4,848 acres of foraging habitat (2,017 acres of which would be from habitat restoration). (SWRCB-102, Chapter 12.)

(DWR-1014, p. 15:7-10.) It should be noted that the 2,017 acres of habitat restoration for other species is likely more akin to the urbanization scenario than it is to the crop conversion

scenario in that the likelihood of those 2,017 acres of very expensive habitat restoration being restored once again to viable crane forging habitat is more akin to ripping out a mall than it is a vineyard or orchard. So this habitat would be permanently lost, versus a vineyard or orchard, which would be a temporary loss. So cranes have permanently lost 2,017 acres of potential high quality foraging habitat to habitat restoration for other species out of the gate with the CWF measures (SWRCB-102, p. 12-3546:1), as well as another 2,831 acres from the construction of the Delta tunnels. And to be clear, this is a total of 4,848 acres of foraging habitat that is permanently lost. (SWRCB-102, p. 12-3547:1.)

Since Dr. Earle claims that: “Protection and restoration of greater sandhill crane habitat would improve the overall condition of greater sandhill crane habitat in the Delta, relative to current conditions,” (DWR 1014, p. 14:12-16), it would only be logical to contrast the current condition to that posed by the construction of the Delta Tunnels. With the Delta Tunnels we would permanently lose 4,848 acres of crane foraging habitat and an equivalent amount of conservation is done whereby “any habitat loss would be mitigated to attain habitat quality equivalent or superior to current conditions.” (DWR-1014, p. 14:7.) The idea would be that habitat conserved would make up for lost habitat values by virtue of being higher quality. Crop types were graded in the FEIR/S Chapter 12 analysis and the combined graded value for the land to be conserved was to be equivalent or greater to the current condition. (SWRCB-102, Append. 2.A, Species Accounts p. 2A.19-11, Table A.19-1.)

For purposes of contrasting scenarios, it is critical that the idea of current conditions is fully explicated. The Delta Tunnels avoidance and minimization measures and Chapter 12 consider current conditions as if they were a snapshot of agricultural crop types and habitat types. But the reality of the landscape is that crop types are constantly changing, and fixing them at one moment is an inaccurate view of their potential habitat benefit for a species through time. Whereas it may be possible to come up with a configuration of replacement habitat that exceeds the value of habitat that was destroyed or re-purposed, at one particular moment in time, it is not possible to divine what the crop type mosaic of a given agricultural landscape would be over time. Cropping decisions are based on many factors and ranging

from climate to economics to finances. It is simply not possible to know if future crop configurations would be more advantageous for a species when compared with mitigation efforts based on the snapshot of current conditions.

Even as conversion to vineyards and orchards accelerates, no evidence was presented that we are aware of conversion rates approaching 50%. But, the mitigation ratio for loss of crane foraging is 1:1, so 50% would be lost as part of the project and its measures. In weighing the respective attributes of the project versus no project for cranes, one must ask if it is worth it to lose 4,848 acres of crane foraging habitat in exchange for a mitigation ratio of 1:1, which will match or exceed the habitat values at one point in time, or have no loss of 4,848 acres and see what happens. (SWRCB-102, p. 12-3547:1.) It would be useful to examine the likely possibilities for what could happen. There are significant development restrictions in the Delta, so permanent loss of habitat due to urbanization is not much of a current threat. (Hearing Transcript, March 8, 2018, pp. 31–32.) These restrictions are imposed by the Delta Protection Commission, Delta Stewardship Council, and five county general plans, which are highly protective of a rural agricultural Delta and have regulatory authority that would limit significant urbanization. (Hearing Transcript, March 8, 2018, pp. 31–32).

So absent urbanization, the main threat is conversion to incompatible crops. And as has already been discussed, the project would result in the loss of 4,848 acres of compatible crops (SWRCB-102, p. 12-3547:1.) Is it better to have 9,698 acres (2 x 4,848 acres) of crane habitat available on the landscape for agricultural production and potentially being suitable for greater sandhill crane foraging use depending on the crop mosaic in effect at any given point? Or would it be better to lose half of that habitat permanently and manage the remaining half more intensively to make up for that loss? A confident opinion either way is more of a divination than a substantiated consideration.

V. CONCERNS REGARDING PROJECT CHANGES IN ADSEIR/S

The analysis provided in the ADSEIR/S is predicated on the premise that the FEIR/S provided a greater level of analysis than needed for the current iteration of the project. The idea that a reduced footprint for certain impacts is inherently less damaging and therefore

needs no additional analysis does not properly consider that the project area is not a homogeneous landscape and that moving structures and facilities to new locations, even though the overall number of those structures or facilities might be reduced, may result in increased impacts that merit analysis. As well, increasing the acreage of noise impacts merits an expanded analysis. And, even though the wetlands impacts are lessened considerably when looked at numerically, it is important to remember that this is almost entirely attributable to avoiding impacts to surface water at the Clifton forebay, which is arguably not the wetland resource of the highest value amongst those slated to be impacted.

A. Moving the Shaft Location/s on Staten Island Creates New Crane Impacts

Comparing the draft ADSEIR/S shaft location on Staten Island (SWRCB-113, Figure M-3: Sheet 5 and 6 of 12; see also SJC-329) with those from the FEIR (SWRCB-102, Figure M3-4: Sheet 6-7 of 15, Modified Pipeline/Tunnel Alignment [Alternative 4, 4A]) indicates that the southern shaft has been eliminated, the northern shaft has been moved further south, the northern safe haven work area has been moved north, the southern safe harbor work area has been moved to the west, and a proposed temporary surface impact area has been added a bit north of where the southern shaft location was originally located. Underground it appears that the tunnel swings to the west in the southern portion of the island. (SWRCB-113, Figure M-3: Sheet 5 and 6 of 12.) At first glance this might appear to be an improvement, but a closer inspection and consideration uncovers some potential impacts that are likely worse.

The most concerning of these potential impacts is the new location of the northern shaft. (SWRCB-113, Figure M-3: Sheet 5 and 6 of 12.) In its original geography it was placed fairly close to the eastern levee right where the island begins to widen. (SWRCB-102, Figure M3-4: Sheet 6-7 of 15.) To understand the concern, it is important to understand what the dimensions of the shaft will be. Using the design drawings from the Conceptual Engineering Report SWRCB-104, the NMFS BIOp, we see that shafts are supposed to be 25 to 35 feet above sea level. (LAND-65, sheets 69-73.) Staten Island is below sea level, so it will be taller still from the existing ground. (LAND-65, sheet 5.) Using the Bouldin Island shaft as a surrogate sample, the center area of the top of the shaft structure is 2(113’ + 85’) +121’ = 517’ by 517’ by 283’ and

then it slopes down at 3:1 or 5:1. (LAND-65, sheets 69–73.) Basically the shaft would be a huge structure plunked down in the middle of the crane preserve. The new placement puts it right on top of the northern temporary roost site on Staten Island. (SWRCB-113, Figure M-3: sheet 5 and 6 of 12.) Its sheer size is quite problematic when one remembers that greater sandhill cranes like to roost in areas that have long sight lines (SOSC-83, p. 2). The original placement of the northern shaft was significantly closer to the eastern levee. (SWRCB-102, Figure M3-4: Sheet 6-7 of 15.) The height of the levees on Staten Island reduces sight lines and it is rare to see greater sandhill cranes roosting close to them. The new placement of the shaft would have an impact on sight lines for any cranes that might roost to the north of it on the east of the road. Originally, this area to the north of the shaft was much smaller and since it was also close to the levee, the shaft location was not as desirable to begin with. The new placement puts the shaft right in a prime temporary roosting spot. (See SOSC-81, slide 18.) Cranes are not going to want to roost near it, so the much larger area to the north of the shaft is likely to be avoided for roosting, and the cranes will likely want to roost much further to the south as well to minimize sight line issues.

So, moving the northern shaft to the south appears to have unreasonable impacts to one of the most frequented roost sites on the Island, and the presence of the shaft has the potential to impact crane roosting near it such that a large area is no longer suitable for them, an area that is an order of magnitude larger than the shaft. An argument that since the roost site is just a flooded agricultural field and other fields farther away can be flooded to make up for this one being impacted does not address the fact that a significant area of temporary roosting on the most important single piece of land for Greater Sandhill cranes in the Delta would be rendered unusable for roosting.

The ADSEIR/S indicates that there will be an increase in losses of temporary roosting and forage habitat from the changes contemplated in this iteration of the project, a 640 acre increase in impacts, which is over a 9 times increase over the FEIR/S. (SWRCB-113, p. 12-26:29–33.) There is no indication that the permanent loss of temporary roosting and forage

from the new shaft location on Staten Island was even considered, nonetheless analyzed. It was not included in the additional 640 acres of impacts to temporary roost and forage habitat.

This is a significant impact and it is indicative of the unreasonable impacts on wildlife contemplated by the proponents of this project, and it would not be in the public interest from a crane conservation perspective.

B. Noise Impacts of Project Changes in ADEIS/R are Not Analyzed

The ADSEIR/S does not address any new or different noise impacts on wildlife from changes to the proposed project footprint. The ADEIS/R seems to rely solely on:

> The Noise Abatement Plan (see Appendix 3B, *Environmental Commitments, AMMs, and CM*s) would be in place during construction to avoid or minimize adverse effects. *Supplementary Information for the EIR/EIS: Bay Delta Conservation Plan* (California Department of Water Resources 2010) includes approaches to designing mitigation which are taken into account in the discussion of mitigation measures in this chapter and are incorporated into the Noise Abatement Plan as appropriate.

(SWRCB-113, p. 23.3.3.)

The ADSEIR/S includes significant changes in where muck will be disposed, and changes to noise impacts with the new forebay construction at Clifton Court Forebay. The ADSEIR/S, however, only discusses impacts to residences. (SWRCB-113, Chapter 23.) Moving the muck to different places on the landscape would result in impacts to wildlife from the noise of trucks rumbling through their habitats filled with muck, and the sounds of heavy equipment moving muck around in the storage sites as well as loading that muck up to go to other storage sites. There is no discussion in the noise chapter about the change in the nature of truck trips and what that might portend on specific geographies in the landscape. There were no calculations depicting the relationship between increased truck trips to muck disposal locations and the resultant noise impacts to specific different parts of the landscape, and what those new noise impacts might be to those specific areas with their specific biological resources.

As discussed above, when avian species like the Greater Sandhill Crane gets flushed off of their roost or forage sites, they risk hitting power lines, and even if they do not hit a power

line, they get to deal with the effects of increased stress on their system. (Hearing Transcript, March 8, 2018, pp. 16:2–19:9; FSL-21, p. 4:9.) Clearly this should be fully analyzed as it pertains to the changes in geography of the construction of the project and the resultant impacts on wildlife. It is an unreasonable impact on wildlife and contrary to the public interest.

C. Impacts to Wetlands are Still Huge and Unreasonable

The change in the ADSEIR/S of constructing a new forebay adjacent to Clifton Court Forebay as opposed to dredging out the existing Clifton Court forebay appears to result in a significant reduction of the total wetlands impacts. (SWRCB-113, Ch.1, p. 1-4:16.) Specifically, "[t]he proposed project would result in 2,208 fewer acres of impacts on tidal perennial aquatic than the approved project . . . [due] to [changes in] construction at Clifton Court Forebay." (SWRCB-113, p. 12-4:6.)

Wetland and other aquatics features provide many functions, such as providing habitat, storing and conveying water, and trapping sediment. (LAND-121, p. 23.) But it should be noted that not all wetland and other aquatics features have the same functional value. (LAND-121, p. 23.) For example, tidal channels, lakes, emergent, forest, scrub-shrub, depressions, alkaline wetlands and vernal pools that are relatively undisturbed have a high functional value. (LAND-121, p. 23.) On the other hand, agricultural ditches, seasonal and emergent wetlands within agricultural fields, and Clifton Court Forebay have a low functional value. (LAND-121, p. 23.) What this means in practical terms is that the forebay waters are not one of the high quality natural habitats that we are trying desperately to save in the Delta. (LAND-121, p. 23.) The existing Clifton Court forebay is essentially an artificial holding tank in the ground set up for the purpose of conveying water to another part of the state. The project changes in the ADSEIR/S do not include an appreciable reduction in the impacts to natural wetland habitats or habitats established to provide the ecological values of wetlands. (LAND-121, p. 23.)

D. Impacts to Sandhill Cranes in SDEIR/S Would be Greater Under the Revised Project

While temporary foraging impacts would be less, a 640-acre increase in impacts on temporary roosting habitat would occur under the revised project. (SWRCB-113, pp. 12-27 to

12-28) Table 12-20: Impact on Greater Sandhill Crane modeled habitat, (SWRCB-113, p. 12-27) does not include impacts of moving the northern shaft on Staten Island and the resultant permanent loss of temporary roosting habitat situated to the north of the new placement because of impacted sight lines for roosting cranes rendering that area unsuitable, as already discussed in this testimony on pages 13 and 14. This increase in impacts on crane roosting habitat is very concerning given the already large scale of impacts to this crane population.

Both the NEPA effects and CEQA conclusions starting on page 12-28 include this quote: “Construction activities would not be expected to result in greater sandhill crane take because foraging and roosting individuals would be expected to temporarily avoid the increased noise and activity associated with construction areas.” (SWRCB-113, p. 12-28.) Once again, cranes flushed by increased construction traffic and activity were not considered. This quote assumes that avoiding “construction areas” would result in avoidance of impacts. This is clearly not true given that large truck and heavy equipment trips could happen at any time for a myriad of reasons, including emergencies, and this means that “construction areas” potentially extend throughout the entire project area and are not limited to “construction areas.” Our concerns with the flushing of birds from construction activity, that they risk hitting power lines, is discussed above.

The treatment of the power line impacts and the NEPA effects and CEQA conclusions continue to claim that flight diverters reduce avian mortality by 60%. The inherent uncertainty of the reduction of avian mortality is addressed in this testimony on pages 12-5 to 12-7. The NEPA effects and CEQA conclusions for transmission lines (SWRCB-113, p. 12-29) suggest that activities, “such as placing new lines immediately adjacent to existing transmission lines when it would minimize effects on sandhill cranes,” will result in no take of cranes. The increased likelihood of cranes hitting co-located lines is addressed previously in this testimony.

The noise impacts are still severe (SWRCB-113, p. 12-30) and the NEPA effects and CEQA conclusions states that:

> Effects of noise and visual disturbance could alter the suitability of habitat for greater sandhill crane. This would be a significant impact. AMM20 Greater Sandhill Crane would include requirements to minimize the effects of noise and visual disturbance on greater sandhill cranes and to mitigate impacts on affected habitat.

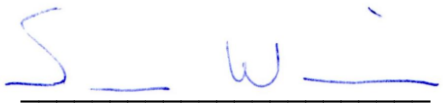
(SWRCB-113, p. 12-30 to 12-31.) Two of the available measures in AMM20, the creation of new temporary roost sites and enhanced foraging opportunities near the new temporary roost are experimental techniques that are not substantiated in the literature. (SWRCB-111, MMRP, pp. 4-34 and 4-36.) This was discussed in my original testimony (SOSC-6, pp. 9-11), and it continues to be a problem in the ASDEIR/S.

The concerns and issues just mentioned also apply equally to the impacts discussed in the SDEIR/S for Lesser Sandhill Crane.

VI. CONCLUSION

The project changes described in the ADSEIR/S increases my concerns for the welfare of wildlife in our region and will likely increase the unreasonable impacts on wildlife. The ADSEIR/S did not provide any specific analysis, however, of the project's different impacts in new parts of the landscape. I continue to find that the project as a whole would have unreasonable effects on wildlife and is not in the public interest.

Executed on the 13th day of July, 2018, at Sacramento, California.



Sean Wirth

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