Snug Harbor Resorts, LLC Testimony and Case in Chief

Part 2, California WaterFix Hearing before the California Waterboard

On June 23, 2017 during the California WaterFix hearing at 10:20 a.m. a USBR attorney said "It is critical that data for specific sites be available to understand …" At 10:23 a.m. DWR attorney Mr. Mizel said "Locations are important". I found those statement interesting, given the testimony and evidence provided so far by DWR and USBR in the California WaterFix hearings are based on general areas and averages over time, and have not analyzed impacts to specific sites, like along lower Steamboat Slough.

My testimony will focus on the Biological Assessment, Chapter 3, p. 3-24, http://cms.capitoltechsolutions.com/ClientData/CaliforniaWaterFix/uploads/Ch_3_Proposed_Action_BA.pdf, which describes actions as follows: Clearing: Between dawn and sunset; Site work: At any time of the day or night; Ground improvement: At any time of the day or night; Borrow fill: At any time of the day or night; Fill to flood height: At any time of the day or night; Dispose spoils: At any time of the day or night; Dewatering: At any time of the day or night; Dredging and Riprap Placement: Between dawn and sunset when performed adjacent to or in water bodies. At any time of the day or night when performed in dry areas or in a previously-cleared area; Barge operations: At any time of the day or night; Landscaping: Between dawn and sunset; Pile Driving: Between dawn and sunset.

I ~~am also incorporating by reference SHR-2-17, which is a summary of the~~ focus on impacts to the North Delta from the ~~BDCP~~ proposed actions, including the continued and increased diversion of fresh water flows from the Sacramento River Watershed into other watersheds of the state. My emphasis will be impacts to my business and property as well as area recreation, residents and businesses that are affected by the low and inconsistent flows in the Delta, as managed by DWR and USBR over the last seven or more years. My position is that too much water is already being diverted from the Sacramento River and Delta, and changing the diversion points will only make the situation worse for a greater number of businesses, residents, farmers, legacy towns and the aquatic environment.

In addition to the background experience listed in my testimony for North Delta Cares, I feel it is prudent to point out that I have independently been studying water conveyance and storage methods for several years. I have viewed several college courses on the historical methods of water conveyance and storage, and have visited various countries that have natural year long drought conditions, or have access to fresh water but still have issues with drinking water quality. I have physically gone to and studied how drinking water and storage is handled in Israel, Greece, Turkey, Haiti, Honduras, Costa Rica, Mexico, and several other Western European countries like Italy, Germany, United Kingdom and Belgium. I have come away with a broader understanding of the value of fresh water in and to California, and also a realization that there does not seem to be publicly reported full disclosure of how much flow is diverted from the Sacramento River watershed to other areas of the state. In the last few years, I have visited California water source and water use areas, from above Lake Shasta down to the Salton Sea, stopping at various reservoirs along the way. I have inspected new style fish screens and intake structures along the Sacramento River and San Joaquin River, by boat and by land. I have taken the time to try to understand the bigger picture. Yet what I have found is a pattern of negligence, deceit and disrespect by government agencies (DWR in particular) and their consultants when concerned citizens like myself ask simple questions and ask for full disclosure and correction of materially false data published that might result in negative impacts to the Delta in general, and my property and business on Steamboat Slough specifically.

My long term experience in the Delta running a marina and RV park with rental cottages affords me an understanding of day to day impacts to business and recreation, and I firmly believe the drafters of the EIR/EIS for WaterFix and BDCP do not understand the flow of land and water traffic in the Delta, and what hinders that flow. It appears that, if approved, WaterFix construction and operation would create such dangerous heavy truck traffic in the North Delta that it may discourage use of the roads for recreation visitors, which would impact my business and every other North Delta business that relies upon vacation visitors.

~~Topic: **North Delta Water Conveyance Facilities Components**~~
~~***EIR/EIS, Description of Alternatives Chap 3, page 3-53.***~~
~~Three north Delta intakes with fish screens along the east bank of the Sacramento River(Intakes 2, 3, and 5).~~
~~Pipelines conveying water from intakes to intake pumping plants.~~
~~Sedimentation basins and solids handling facilities.~~
~~Intake pumping plants at each intake location: associated facilities include and accessroad; electrical substation; communication devices; and transformers.~~
~~Discharge pipelines conveying water from intake pumping plants to an initial tunnel(Tunnel 1) or a transition structure.~~
~~A surge tower at the pumping plant for Intake 2.~~

Topic: River Barges

~~At least six river barge unloading facilities/docks for the delivery of construction materials (e.g., tunnel segments, batched concrete, major equipment) will be constructed located at: 1) State Route 160 west of Walnut Grove; 2) Tyler Island; 3) Bacon Island; 4) Woodward Island; 5) Victoria Island; and 6) Venice Island. Docks will be about 50 by 300 feet and supported by about 32 two-foot diameter steel piles. Will be removed following construction (no restoration of site mentioned). ***Chap 4, page 4-11.***~~

I have personally observed large barges full of rock going up Steamboat Slough and Sacramento River and Sacramento Deep Ship Channel. What I have observed is that a loaded barge displaces a huge amount of water, even if traveling at one knot or mile per hour, if traveling against the tide. At low tide, the surface and subsurface wave that can be caused by the volume of water displaced can create a quick and strong force when the water reaches the levee, which pushed either docks or boats up the levee rocks. I observed a small fishing boat on the Sacramento Ship Channel, with what appeared to be a father and son occupants, attempt to avoid a waive from a traveling large barge going upriver. The boat hugged the shore and then ended up on the rocks when the wave hit. Thankfully both the persons and boat were OK but it was a lesson learned. I was in a ski boat and stayed away from the banks and faced the waive head on, so that we would not also end up on the rocks. I have also observed that the wave caused by loaded barges or very large boats can be more damaging at low tides, since DWR-USBR divert so much flow away from the North Delta in summer months. A barge wake that hits boats and docks sitting on the mud will do even more permanent damage to boats in docks. Note that many of the docks of the North Delta were built years ago, and were designed to always be floating, not sitting in the mud at low tide each day. It is only since DWR-USBR has started suspending the North Delta into drought-flow operations that the days of docks on mud has increased, staring approximately 2010 that I noticed. To mitigate for this problem, there should be some sort of plan to assure there will be sufficient flows on the North Delta waterways during the construction phase such that the docks would not sit on mud even at low tides. There should also be a fund established to pay for repairs of damaged docks and boats from the barge travel.

I am also concerned for the safety of recreation boaters in the areas of the proposed intakes. It may become necessary to block off all recreation traffic across the entire ~~the~~ Sacramento River at each intake location, which would cause an obvious hinderance to recreation navigation, and loss of income for the marinas within the no-boat area. In the alternative, during the intake construction period, it may be necessary to make the entire length of the Sacramento River, and any other river or slough used for barge travel, to be designated as a no wake zone, which would also negatively impact recreation boating, and the businesses and residents of that designated area.

Focus: Sutter/Steamboat Sloughs

~~The median diversions into Sutter and Steamboat Sloughs are lower under the evaluated starting ops because of the Fremont Weir notch increases the diversions to the Yolo Bypass and because north Delta intakes reduce the Sacramento River flow at these two sloughs. In addition, tidal restoration in the Cache Slough Complex was simulated to shift the tidal elevations and reduce the Sutter/Steamboat diversion fractions. The BDCP median diversion flows were reduced by about 1,000 cfs in January, about 5,000 cfs in February, and about 3,500 cfs in March compared to the existing conditions. The reductions in the Sutter/Steamboat Slough diversions were about 40% of the simulated north Delta intake diversions. *Chap 5, page 5.3-10. Meaning the water exported directly reduces Steamboat and Sutter Slough diversions by 40%*~~

~~BDCP and~~ CalFed and other actions have already fundamentally changed the hydrodynamics on Steamboat Slough. I believe operation of WaterFix Tunnels, if approved, will simply spread the same damages we've experienced further upriver, and affect my neighbors north, east and west in the same way or even worse. We have already been experiencing impacts from ~~BDCP and~~ EcoRestore actions that have resulted in either too high or too low flows on Steamboat Slough, depending on the time of year and time of day. Steamboat Slough has been serving as an experimental waterway. Projects labeled as "restoration", "flood control" or "salmon migration" have functioned to cause substantial negative impacts to owners of properties along Steamboat and Sutter Sloughs. Projects under the labels of ~~BDCP,~~ North Delta Improvement Project, Liberty Island Restoration, EcoRestore and flood control and salinity control have made the observed changes to fresh water flows and water levels on Steamboat Slough at Snug Harbor.

I am providing the evidence of what we have experienced here at Snug Harbor as an example of how residents and business owners of the North Delta have been treated, as a warning of what one might expect in the future if the WaterFix project is approved. ~~SHR-2-13~~ (SHR -2-13 not uploaded in time) SHR-2-21F through SHR-2-261 are offered and will be referred to as necessary to help the hearing officers understand the real life circumstances in the North Delta as compared to computer programming and fancy graphics which convey false sense of wellbeing from the low flows, high flows and proposed construction activities. I will specifically show how excessively low flows damage docks, hinder vacation use, impact business income, damage landscape, and more. SHR-2-251 will be a slide set used in this testimony.

I will also show how the methods used by DWR-USBR to manage high flows damage businesses like Snug Harbor, focusing on the January and February 2017 flood incidents as portrayed in SHR-2-253, SHR-2-255, SHR-256, SHR-2-257, SHR-2-258. Basically, DWR and USBR solve the high flow risk incidents of events like the Oroville Dam spillway failure by dumping the damage and risk onto the Delta. While places like Snug Harbor have historically flooded approximately once every ten years, or during record rain years, since the increased exports from the Delta and revisions to Delta hydraulics caused by the Cache Slough Complex restoration actions, Snug Harbor has experienced flooding approximately once every 2.8 years between 1999 and 2017. Records of flood levels and length of flood water remaining on the land has been kept since the early 1940's at Snug Harbor, so I can show that the 2017 flooding as a result of DWR

management of Oroville Dam, and the restoration actions of BDCP-EcoResort-Calfed on lower Steamboat Slough are the most likely cause of the increase of incidents of floods at Snug Harbor. Of course, that means increase of maintenance costs to clean up after floods, decrease of income since customers can't vacation onsite during floods, increase in infrastructure costs due to changing groundwater levels, increase in grounds maintenance and utility costs, due to impacts to large trees and public drinking water system, and more. I may refer to the following evidence in this testimony: SHR-2- 22F, 20, 24, 25, ~~105~~, 109, 114, 211, 212, 219 series of maps, ~~221,~~ SHR 2-222, ~~230, 236,~~ ~~245~~, 247, 251, 253, 255, 256, ~~257,~~ 258, ~~259,~~ 261.

Focus: Roads/Transportation

~~My testimony is based upon the summary provided in SHR-2-17 which notes~~Concerns include the following:

- Detour roads needed for all intakes, temporary access roads constructed from each intake pumping plant to Sacramento River levee, and permanent roads build for intake site perimeter access road. ~~***EIR/EIS, page 3C-60.***~~
- Indirect effects on existing land uses may also arise from changes in access to parcels of land. For example, the removal of access for agricultural vehicles and machinery could jeopardize the ability of that land to continue serving productive agricultural uses. The loss of~~s~~ access would not be considered an adverse effect under this impact. ~~***EIR/EIS, Land Use Chap, page 13-116.***~~
- ~~All construction related trucks are expected to generate eight trips per day. ***EIR/EIS, Transportation Chap 19, page 19-35.***~~
- ~~Level of Service (LOS) thresholds are exceeded on a total of 16 roadway segments for at least 1 hour during the 6:00 am to 7:00 pm analysis period. LOS is a qualitative measure of traffic operating conditions. See Table 19-3. ***EIR/EIS, Transportation Chap 19, page 19-7.***~~
- Potential construction site access routes do not currently have adequate engineered pavement sections to withstand construction traffic, particularly heavy vehicles. ~~***EIR/EIS, Transportation Chap 19, page 19-13.***~~

~~***EIR/EIS, Transportation Chap 19, page 19-13.***~~

- ~~Construction associated with Alt 4 would cause LOS thresholds to be exceeded for at least 1 hour during the 6:00 am to 7:00 pm analysis period on a total of 33 roadway segments, which is 10 more segments than have at least one hour exceeded under existing conditions. ***EIR/EIS, Transportation Chap 19, page 19-40.***~~
- ~~Figure 19-3 shows the study roadway segments that could experience substantial roadway effects. The highest concentration of roadway segments below applicable LOS threshold occurs on state roadways, including SR-12, I-80, SR-4, and I-205. Standards will also be exceeded on several local roadways, including all segments studied in West Sacramento. ***EIR/EIS, Transportation Chap 19, page 19-163.***~~
- ~~Mitigation Measures TRANS-1a thru 1c collectively include requirements to avoid or reduce circulation effects, notify the public of construction activities, provide alternate~~ ~~***EIR/EIS, Transportation Chap 19, page 19-163.***~~
- ~~Mitigation Measures TRANS-1a thru 1c collectively include requirements to avoid or reduce circulation effects, notify the public of construction activities, provide alternate access routes, require direct haulers to pull over in the event of an emergency, limit/prohibit the amount of construction activity on congested roadways, and enhance roadway conditions. However, the BDCP proponents are not solely responsible for the timing, nature, or complete funding of required improvements. ***EIR/EIS, Transportation Chap 19, page 19-163.***~~
- ~~***CEQA Conclusion:*** Mitigation Measure TRANS-1a thru 1c would reduce the severity of the impact of exceeding LOS, but not to less-than-significant levels. The BDCP proponents cannot ensure that the improvements will be fully funded or constructed prior to the project's contribution to the impact. If an improvement that is identified in any mitigation agreement(s) contemplated by TRANS-1c is not fully~~

~~funded and constructed before the project's contribution to the effect is made, an adverse effect in the form of unacceptable LOS would occur. Therefore, this effect would be adverse. If however, all improvements required to avoid significant impacts prove to be feasible and if necessary agreements are completed before the project's contribution to the effect is made, impacts would be less than significant.~~ ~~***EIR/EIS, Transportation Chap 19, page 19-164.***~~

~~ BDCP proponents will ensure development of site-specific construction traffic management plans (TMPs) that address the specific steps to be taken before, during, and after construction to minimize traffic impacts, including mitigation measures and environmental commitments identified in the EIR/EIS.~~ ~~***EIR/EIS, Transportation Chap 19, page 19-164.***~~

I have personally had to deal with many years of communications and frustrations with how CalTrans manages roads in the Delta. I watched as CalTrans systematically removed directional highway signs starting in 2005, to be replaced with small unreadable signs on Hwy 160 at junctions like Courtland Road. I have had to deal with CalTrans repeated unscheduled closure of state Route 84, the Rio Vista ferry, every since the new ferry was installed. I have had to deal with the very angry customers who arrive onsite who have spent extra hours traveling in the Delta due to the confusing and misleading detours of CalTrans. I make note that there are three different CalTr~~n~~ans offices responsible for the Delta roads, and five counties, and that may account for the lack of communication and continuity regarding road repairs and closures and appropriate and reasonable detours. Impacts from construction traffic may be the single most important negative impact from proposed WaterFix/ ~~BDCP/~~EcoRestore actions as proposed.

I will provide examples of ways CalTrans have put my vacation travel customers at risk on holiday week ends, how CalTrans has understated the daily, weekly and annual use of roads in the North Delta and will suggest ways some of the impact can be avoided. I may refer to SHR-2-~~ 104,~~ 103, 115, ~~246,~~ 249 errata.

Topic: Georgiana Slough/DCC and Delta Flows

~~ Predicted reduced monthly median diversion flows to DCC and Georgiana Slough for evaluated starting ops because the north Delta intakes reduced the Sacramento River flow. The average annual diversions into the DCC and Georgiana Slough were about 3,750 TAF (24% of the Sacramento River flow at Freeport) for the existing conditions and were reduced to about 3,50 TAF (21% of Sac River flow) for the BDCP ops.~~ ~~***Chap 5, page 5.3-10.***~~ ~~So, of the~~ If 5,000 cfs of flow was left after the pumps, DCC and Georgiana Slough receive about 1,000 cfs and Sutter, Steamboat and lower Sacramento "share" 4,000 cfs? Isn't this a reduction of flows by 75% for the Lower Sacramento and its natural or original tributaries?

~~ North Delta intakes combined with diversion of water into Yolo Bypass (CM2) inevitably would result in less Sacramento River flow below intakes with potential for greater incidences of Sac River flow reversals in the vicinity of Georgiana Slough and the DCC.~~ ~~***Chap 5, page 5C.4-78.***~~ ~~What about the effect on the lower Sacramento River down by Viera's? Those same pumps causing reverse flows in the Georgiana area would pull in the higher salinity water expected to encroach up to Rio Vista in some models. How does it affect the water quality at Oxbow Marina? Water levels at Oxbow?~~

~~ The analyses of reverse flows and flow entry into Georgiana Slough were based on 15-minute outputs form the DSM2- HYDRO simulations for each scenario. The results were computed for 16 years, starting from water year 1976 to water year 1991. Flow outputs for Sac River downstream of GS 9channel 423 at 1,000 feet or SAC_370, Sac River upstream GS (channel 433 at 1320 feet or SAC_36), GS (channel 366 at 0 feet or GEORG_SL), and the net DICU (Delta Island Consumptive Use) flow at node 343 were used.~~ ~~***Chap 5, 5C.4-80. How does this change when claimed in-delta use is reduced due to sale or transfer of water rights by farmers?***~~

Delta Flows

~~**BDCP will**~~The Sacramento River diversions would **fundamentally change the hydrodynamics of the Delta**. ~~***Chap 5, page 5.3-2.***~~

~~The Sacramento River diversions into the proposed north Delta intakes along the Sacramento River between Freeport and Hood are the primary cause of BDCP changes in Delta flows. ***Chap 5, page 5.3-7.***~~

~~The BDCP is expected to result in changes in flows primarily as a result of the change in export location (new north Delta intakes) and its associated specified changes in monthly Delta operational objectives, namely, required salinity objectives, outflow objectives, export/inflow objectives, OMR flow objectives, and maximum exports. ***Chap 5C.1-1.***~~

~~Reduces some Sacramento River flows. ***Chap 5, page 5.3-2.***~~

~~Overall, there would be minimal upstream changes but some substantial shifts in how water moves through the Delta. ***Chap 5, page 5C.0-1.***~~

~~Restoration of 65,000 acres of tidal marsh (CM4) could result in changes in turbity and tidal excursion in specific Delta locations and subregions. ***Chap 5, page 5C.0-2.***~~

~~In the North Delta, flow patters will be altered by the increased diversions to the Yolo Bypass (CM2) and operations of the new north Delta intake facilities (CM1). ***Chap 5, page, 5.3-2.***~~

~~The average modeled annual inflow at Freeport for the evaluated starting operations was reduced by about 650,000 af compared to existing conditions, primarily as a result of the increased Fremont Weir Spills (CM2). ***Chap 5, 5.3-3.***~~

I wish to point out that the waterways of the Delta are connected, and when flows in one area are modified or enhanced, it can affect flows in other areas. The Golden State Warriors NBA team has the motto "Strength in Numbers". One could apply the same concept to flow and water levels in the North Delta. If the computer modelers for the WaterFix ~~-BDCP~~-EcoRestore actions start with false flow numbers, there is no strength or trust in those numbers. SHR-2-105~~20~~ is a slide show I compiled for a group in 2014 that asked me to update them on the BDCP actions. I will use some of those slides to demonstrate why at least some of us in the Delta do not trust the strength or veracity of the baseline flow data used for WaterFix computer modeling for impacts. I will also discuss how the water levels on Steamboat Slough have changed which affects use of septics, water wells, roads and more, all due to changes in Delta hydraulics in our area

Topic: ~~BDCP~~ Levee Maintenance

~~Maintained to provide 100-yr flood protection. All levee maintenance activities must be under the jurisdiction of a federal or state agency, an agency created by the federal or state law, or an agency of a community participating in the NFIP that assumes ultimate responsibility for maintenance. At a minimum, levee maintenance plans shall specify the maintenance activities to be performed, the frequency of their performance, and the person, by name or by title, responsible for their performance. ***Chap 4, page 4-24.***~~
~~Maintaining the levees but ignoring the buildup of channel beds from the sediment captured along the banks growning growing "restoration" plants like tules will make it impossible to maintain the 100 year flood protection. Dredging of all North Delta sloughs must be included~~

Levee maintenance relates to traffic and transportation as well. Timing for levee maintenance and method of blocking through traffic could become a big issue if construction vehicle traffic causes damages requiring immediate repair. In addition, there needs to be a system wide warning procedure if one or more levees fail due to construction traffic or other reason. I suggest that the cell phone service in the Delta is not reliable enough, especially if a cell tower would happen to fall in a flood, so perhaps an area wide public speaker sound system would be necessary. Or at least create a public sound system for each of the populated areas. At Snug Harbor I have installed a loud speaker that can be heard by anyone along Snug Harbor Drive.

Speaker works with batteries and there is a backup generator for electric as needed as well. I do not believe emergency response due to construction traffic levee failure has been adequately addressed.

Topic: More on Flows: The general effect of each intake is the reduction of the downstream flow by about 3,000 cfs (when operated at capacity). ~~***Chap 5, page 5.3-6.***~~

~~The evaluated starting ops outflows were slightly less than existing outflows because the north Delta intakes allowed higher exports in some months when the reverse OMR flow restrictions were limiting south Delta exports. The monthly median outflows in Oct thru Dec were generally controlled by the required Delta outflow in most years; higher outlflows (more than 15,000 cfs) were simulated in only a few years. ***Chap 5, page 5.3-16.***~~

~~The highest monthly outflows were simulated in January thru March with many years having more than 50,000 cfs outflow in at least one month. Median outflow for the evaluated starting ops was about 15,500 cfs in April, 13,500 cfs in May, and 8,500 cfs in June. The simulated evaluated starting ops outflows in July, August, and September were generally controlled by the required Delta outflow. There were only a few years with July outflows of more than 10,000 cfs, August outflows of more than 5,000 cfs, or September outflows of more than 15,000 cfs (required for Fall X2). ***Chap 5, 5.3-16.***~~

~~These results reflect difference in the timing and duration of spills ≥3,000 cfs under existing and proposed Fremont Weir modifications. The median duration of floodplain over the 82-yr simulation period was 53-56 days per year under the evaluated starting ops scenarios and 13-16 days per year under existing conditions. Floodplain inundation periods of 30-days or more (representing one or more events during the annual flood season) would occur in 58 years under the evaluated starting ops (71% of the years) and 32-34 years under existing (39-41% of the years). In critical water years, median value of 4 days of floodplain (range: 0-34 days), inundation periods of 30-days or more would occur in 3 of the 12 critical years. In dry years, median duration would increase to 27 days (range: 0-56 days) compared to 0 days under existing, with 30-days or more of inundation in 6-7 of the 18 dry years. In below normal years evaluated starting ops would increase to 45 days (range: 0-100 days) compared to 0 days under existing, with 30-days or more inundation in 10-11 of the 14 dry water years. In above normal years median duration increase to 99-104 days (range: 32-133 days) compared to 38-52 days in existing conditions, with 30-days or more inundation occur in all above normal years (12 years) under evaluated starting ops and 7-9 of the 12 years under existing conditions. In wet years median duration in evaluated starting ops is 123-126 days (range: 67-175 days), with 30-days or more inundation occurring in all above normal years (26 years) under evaluated starting ops and 25 of 26 years under existing conditions. ***Chap 5, page 5C.5.4-18.***~~

~~Overall, proposed operation of Fremont notch extended the duration of spills from 78 days under the EBC2_LLT to 117 days under the ESO_LLT, and the duration of floodplain inundation from 85 to 124 days, respectively. ***Chap 5, page 5C.5.4-28.***~~

Based upon my personal experience related to flows from the Yolo Bypass, from visiting Liberty Island Reservoir since it was first flooded in 1998, from frequent visits to Prospect Island as well, I am concerned about the continued impacts to Snug Harbor since we have already been experiencing negative impacts from the Yolo Bypass Cache Slough projects. I will use descriptions and photos to show impacts here at Snug Harbor SHR-2--256, ~~257,~~ 258, 254, 253, 247. ~~I will also reference the below:~~

~~Topic: Water Surface~~

~~• Proposed tidal restoration will add substantial increment to the existing Delta surface area at high tide (+4 feet) and low tide (-2 feet). The mean higher water surface area upstream of Martinez will increase from about 90,000 acres to about 140,000 acres, an increase of more than 55%. The mean lower water surface area will increase from about 83,000 acres to 115,000 acres, an increase of more than 39%. Significant simulated~~

increases tidal flow at the mouth of Montezuma Slough (+100%). Chipps Island (West Delta ROA), the tidal flows were reduced by about 5% as a result of Suisun Marsh restoration. The Suisun tidal restoration also caused tidal muting (reduced tidal amplitude and reduced tidal flows) throughout the Delta. ***Chap 5, page 5.3-37.***

- Tidal flows in the lower Sac River (West Delta ROA) were reduced by the downstream restoration in Suisun Marsh and were increased by the upstream restoration in Cache Slough ROA. The net effect on tidal flows was an increase of about 3% in the lower Sac River flows. Tidal flows in the lower SJR (West Delta ROA) were reduced by about 10%. Simulated tidal elevations will be muted and tidal flows will be reduced in the Sac River. The tidal range (high tide to low tide elevation) was reduced from about 2 feet to about 1.5 feet. The flows were always positive, but the tidal variation was reduced from 6,000 cfs to about 5,000 cfs. ***Chap 5, page 5.3-37.***
- A decrease of 6,000 cfs in the Sacramento River could result in as much as a 3-foot reduction in river stage, although understanding of how notch flows would affect river stage is incomplete. ***Chap 5, page 5C.5.4-6.***

*** The tunnels call for 9000 cfs export, so would that result in a 4.5 foot reduction in river stage? If operated at capacity, or 15,000 cfs, doesn't that equate to -6.5 or worse reduction in tide?

Topic: Salinity

- There may be changes in salinity in some Delta locations caused by tidal flow missing effect from restoration actions and sea level rise. ***Chap 5, page 5.3-3.***
- Delta outflow is the primary driver of salinity in the Delta and of the X2 position. ***Chap 5, page 5.3-16.*** If there is no freshwater outflow in summer months on the lower Sacramento between Walnut Grove and Viera's, nor on Steamboat and Sutter Sloughs, how much salinity will encroach into these historically freshwater areas?
- In addition to flows from new north Delta intakes, BDCP habitat restoration may modify hydrodynamics in the Delta. These hydrodynamic changes in turn can change salinities, DO, turbidity, and flows. ***Chap 5, page 5C.1-1.***
- Because Delta outflow is the major factor determining salinity in the Delta channels, these salinity objectives are satisfied by increasing Delta outflow (normally by reducing exports). The D-1641 salinity objectives are assumed to apply to the EBC and the BDCP cases (ELT and LLT). ***Chap 5, page 5C.2-4.***

Salinity Impacts

- Salinity elicits direct responses from organisms depending on their ability to adapt to salinity gradients. ***Chap 5, page 5.3-19.***
- Increased tidal mixing associated with the addition of tidal marsh restoration areas under the BDCP may allow more salt into the western Delta. ***Chap 5, page 5.3-25.***
- Under BDCP scenarios outflows will be nearly the same during the low-flow months of July thru Oct in many years, so that X2 will remain unchanged. However, outflows under the low-outflow scenario would be lower than under evaluated starting ops or the high-outflow scenario in Sept thru Nov of wet and above-normal years (about 50% of the years). Under the low-outflow scenario outflow would be operated to meet the D-1641 objectives, so the salinity in the western Delta would be higher than the evaluated starting ops or high-outflow scenario. The X2 will move upstream to the historical positions under D-1641. The outflow salinity relationships may shift with sea level rise, so that the X2 position for an outflow of 3,000 cfs or 4,000 cfs may be more upstream than historically observed. ***Chap 5, page 5.3-26.***
- Relatively small changes in salinity were simulated for the ROAs. Changes in salinity form historical conditions depend on the assumed locations of the ROAs and their connections to the existing channels.

~~Tidal trapping on Grizzly Island increased the salinity at Chipps Island and upstream. Reductions in the net diversions from the Sacramento River to the SJR (through DCC, Georgiana Slough, and Threemile Slough) reduced the freshening effect from the Sac River and increased the salinity at the SJR stations. South Delta ROAs tended to increase the tidal mixing of seawater into the south Delta and to the south Delta pumps.~~ ***~~Chap 5, 5.3-26.~~***

During ~~Phase~~ Part 1 of the WaterFix hearing, DWR and USBR written documents and witness live testimony indicated that water will remain fresh all around Ryer Island, including Steamboat Slough, even during construction and operation of proposed WaterFix water diversion facilities. I have repeatedly stated that for those persons and businesses down river from major diversions, how the flow is diverted is not as important a how much flow is diverted. I am concerned that DWR and USBR are using incorrect computer modeling flow data which could result in increasing salinity at locations including Snug Harbor. Then I would be left with the same frustrations and hassles that was clearly expressed by the Womack's testimony of fifty years of asking DWR-USBR to cover damages caused by flows controlled by those agencies. I hope the DWR-USBR assumptions are correct, that water will remain fresh on Steamboat Slough. If it does not, I will have to deal with changing water quality for my public drinking water well, changes to water filtration system, changes to septic systems operations, degradation to onsite landscape and more.

Focus: **Pumping/Water Ops**

New North Delta Intakes

~~ Operations result in changes in flow and potentially changes in water quality, habitat, and predation.~~ ***~~Chap 4, page 4-20.~~***

~~ The general effect of each north Delta intake is the reduction of the downstream flow by about 3,000 cfs (when operated at capacity).~~ ***~~Chap 5, page 5.3-6.~~***

~~ Always a downstream "bypass flow" requirement (e.g. 5,000 cfs in July thru Sept; 7,000 cfs in October thru Nov; and 10,000 cfs December thru June).~~ ***~~Chap 5, page 5.3-7.~~***

~~ There~~ ***~~almost always~~*** ~~will be a net downstream tidal flow (sweeping velocity) below the operating north Delta intakes [*doesn't say when or how often or why there won't be downstream tidal flow below intakes*].~~ ***~~Chap 5, page 5.3-7.~~*** ~~Imagine that the lowest of the intakes on the Sacramento River is operated full blast which then has the effect of pulling the water down river, creating greater velocity at the upper pumps. This is one way all freshwater could be diverted from the Sacramento River north of Walnut Grove. Require that the intake pumps be surface pumps, not bottom pumps, to assure fresh water is left on the Sacramento River?~~

~~ Modeling of the intakes included a downstream sweeping velocity criteria of 0.4 foot per second.~~ ***~~Chap 5, page 5.3-7.~~*** ~~How many cfs is this and why the change to a different reporting method?~~

~~ Major north Delta diversions could not begin until the Sacramento River flow was greater than a threshold of about 10,000-15,000 cfs.~~ ***~~Chap 5, page 5C.2-5.~~***

~~• For example, with a Sacramento River flow of 10,000 cfs, the allowable north Delta diversion would be 5,000 cfs in July thru Sep and 3,000 cfs in Oct thru Nov. With a Sac River flow of 15,000 cfs, the allowable diversion would be 10,000 cfs in July thru Sept and 8,000 cfs in Oct thru Nov.~~ ***~~Chap 5, page 5C.2-6.~~*** ~~Leaves 5,000 cfs of flow for Steamboat, Sutter, Lower Sacramento, Georgiana…not enough!!!~~

~~ The north Delta diversions are often limited by the monthly inflow hydrology and the D-1641 outflow objectives and the operating rules include monthly minimum bypass flows for new intakes to reduce the effects of their diversions on migrating Sacramento River fish.~~ ***~~Chap 5, page 5.3-7.~~*** ~~Require water monitoring stations to be installed at lower Steamboat Slough and on the Sacramento River below Viera's. Monitors surface and bottom water quality and flow. Constant reporting of the conditions will be available to the public online. Independent water engineer/contractor to maintain and provide reports, or NDWA~~

designates a board member to oversee the work. Costs paid for by state water contractors. Salinity, water temperature must constantly be monitored along with water level. If water salinity violates 1641, pumps are shut off. If water level is to low, which raises the water temperature, which in turn kills the native fish like adult salmon, the pumps area shut off. If navigation of the waterways is impeded, DWR must dredge or else shut off pumps. If low freshwater flow results in increase of tules or water weeds which capture sediment which then raises the river bed, DWR must dredge, remove the sediment and snags, and shut off pumps until such time as the navigable waterways are restored to their pre-1990 depth.

- There will be some level of north Delta diversions in almost every month with 9,000 cfs in at least 10% of the years in the months of January thru June. ***Chap 5, page 5.3-7.***
- Full diversions of 9,000 cfs would be allowed in July-Sept with a Sac River flow of 20,000 cfs, would be allowed in Oct-Nov with river flow of 22,000 cfs, allowed Dec-April for level III diversions with flow of 40,000 cfs and allowed May-June with flow of 27,500 cfs. ***Chap 5, page 5C.2-6.*** WHERE is the location of the Sacramento River "starting point" for cfs flow which triggers
- The median diversions were about 2,000 cfs in October, 2,000 and cfs in November; 1,000 cfs in December, 3,000 cfs in January, 6,000 cfs in February, 6,250 cfs in March, 3,500 cfs in Aprio, 2,000 cfs in May, 4,500 cfs in June, 2,000 cfs in July, 3,000 cfs in August, and 2,500 cfs in September. ***Chap 5, page 5.3-7.***
- The model assumed that there would be some level of south Delta exports in all months. ***Chap 5, page 5.3-7.***

South Delta Pumps

- The south Delta pumping was reduced by about half with annual average exports of 2,662 TAF. The median exports for evaluated starting ops were about 2,500 in October; 4,250 in November; 7,000 cfs in December; 4,250 cfs in January; 2,500 cfs in February; and 2,000 cfs in March; 1,500 cfs in April; and 2,000 cfs in June. Median exports under the early lont-term were about 7,000 cfs in July; 5,000 cfs in August; and 4,000 cfs in September. ***Chap 5, page 5.3-11.***
- The high outflow scenario caused large reductions from the south Delta exports of about 50 to 1,500 cfs in March through July. The reduction in March thru May were required to provide additional outflow, and the reduction in June and July were caused by reduced upstream reservoir storage releases to maintain carryover similar to existing conditions. The low outflow scenario caused increases of south Delta pumping of about 1,000 to
4,000 cfs in Sept thru Nov of about half of the years. The increased south Delta exports in these months (following above normal and wet years) were caused by the reduced outflow requirements. ***Chap 5, page 5.3-12.***

In part 1 of the WaterFix hearing, DWR provided me with graphics showing the minim flows computed for the North Delta waterways once the intakes would be operational. Those charts are labeled SHR-350 and SHR-352, which represent minimum flows during dry and extremely dry summer months. I believe those flow numbers will suspend us in an annual drought status, and we will see and experience the same damages we've seen already. Low flows will result in historically low water levels, which will expose the Oak, Willow, Sycamore and Eucalyptus tree roots along the banks. Those trees will begin to die due to the root exposure at low tides. In winter, the pulse flows from fish migration projects or studies will create incidents of localized flooding, which will cause the sick and dyieing trees to fall, further damaging the dried out soils. Falling trees cause risk to humans and home and docks, and can rupture drinking water lines, irrigation lines and are very expensive to remove safely. All of this I describe from personal experience, as this is what has been happening at Snug Harbor during the ~~BDCP~~ EcoRestore and CalFed high and low flow water management by DWR and USBR.

Topic: New North Delta Intakes

- Three north Delta intakes with fish screens along the east bank of the Sacramento River (Intakes 2,3, and 5). ~~***EIR/EIS, Description of Alternatives Chap 3, page 3-53.***~~

~~- Three, 3,000 cfs, located between river mile 37, 40 and 41 with combined length of 6,360 feet (24,000; 1,560; 2,400=6,360) of levee embankment (more than one mile of facilities in four mile stretch). Permanently occupy between 1.1-2.1 acres of in-water habitat (5.1 acres total). Land surface area for each is 60 acres. Rise 55 feet from river bottom to top of structure, with intake rising above river's surface by 2-30 feet. Replacement of existing levees with new setback levees along with dredging and channel modification activities. ***Chap 4, page 4-6.***~~

~~- Three uncovered, concrete-lined solids lagoons at each intake, with footprint about 86 ft by 165 ft and 10 ft deep. ***EIR/EIS, page 3C-10.***~~

~~- Pumping plant's total height of the above ground structure is about equal to a 7-story building. ***EIR/EIS, page 3C-10.***~~

~~- Four 10-15 ft high surge shafts 16 ft diameter, requires excavate and export 263,895 cy; excavate, haul, stockpile, and compact 50,265 cy. ***EIR/EIS, page 3C-11.***~~

~~**Cofferdams**~~

~~- In the river to create a dewatered construction area, extending approximately 10-35 feet from the intake face, between 1,560-2,400 feet long, temporarily occupying between 1.6-3.1 acres of in water habitat (7.5 acres total), replace about 2.6 miles of low value steep-banked and riprapped shoreline habitat, and installed from upstream to downstream, with downstream end closed last. Cofferdam walls upstream and downstream of the intake will remain as transition walls. Upon removal of cofferdams, between 2.7-4.0 acres (12.1 acres total) of the riverbed in front of intakes will be dredged (total dredge volumes not yet determined). Between 4-6 years to construct. ***Chap 4, page 4-7***~~

~~**Forebay**~~

~~- A 925-acre intermediate forebay built near Hood with 5,250 af of storage and gravity flow through an outlet control structure. Another 350-acres for emergency spillway adjacent to forebay. About 6 million cubic yards of each will be excavated to construct the intermediate forebay. ***Chap 4, page 4-10.***~~

~~- South end of forebay an approach channel, approx 1,500-ft long and 1,300-ft wide would connect the forebay outlet to the new gravity bypass system. ***EIR/EIS, page 3C-23.***~~

~~- Approx 6 million cy earth be excavated from portions of the forebay. Approx 4 million cy of fill material would be required for the forebay embankments (required embankment~~

~~**Pumping Plants**~~

~~- About 20 acres next to each intake with a new setback levee (ring levee) with cutoff walls to avoid seepage, filled to the elevation of the top of the levee as a building pad, and transition levees built to connect existing levees to new setback levees. Facilities include six sedimentation basins that are about 120 feet long by 40 feet wide by 55 feet deep with interior concrete walls, six solids handling facilities about 10 feet deep and sloped sides with a top width of 86 feet and a top length of 165 feet lined with concrete to prevent seepage to the groundwater or adjacent riverbed, transition structures, surge shafts or towers, one or two electrical substations, an electrical transformer, a mechanical room, and access road, and other associated facilities and utilities. ***Chap 4, page 4-7.***~~

~~**Tunnel Muck Storage Areas**~~

~~- The boring process creates a plastic mix consisting of soil cutting and soil conditioning agents (water, air, bentonite, foaming agents, and/or polymers/biopolymers). Daily barge traffic to haul supplies to and from. Daily truck traffic.~~

Others will testify about impacts from the proposed intake locations, but I would like to point out that I have seen no study showing that such large screen intakes actually functions to protect migrating salmon. I

personally have visited several newer intakes by boat, and have tried to photograph under water to verify if the screens actually help or harm fish. I would request that a very extensive review of the impacts from the new intake structures at Red Bluff, Sacramento I Street, Woodland/Davis intake, Freeport Intake and the Stockton intake on Empire Tract be studies. Salmon populations have been declining and the logical reason would be the management of Delta flows in an almost constant drought condition in non-drought years. However, it is possible that the fish screens could actually be causing damage to fish fins as the fish tries to get away from the screen or the screen wiper, which may render the migrating salmon unable to continue the migration pathway. I have asked several fish experts about the impacts from screens, and also about the result of the Perry et al salmon migration pathway studies. No one seems to know of a published study on this issue.

Topics: ~~Yolo Bypass Floodplain Restoration (CM2) and Prospect Island~~ Restoration

~~ Frequent inundation (every 1-3 years) of YB by diverting between 3,000-6,000 cfs for 30-75 days for one or more periods between Nov-May, covering between 11,000-27,000 acres with shallow water. Vegetation maintenance with clearing done in stripes to open areas for water flow and avoid islands, including pruning trees with over 4 inches of trunk diameter up 6-feet from the ground. Sediment maintenance expected to remove about 1 million cubic yards within 1-mile of the weir about every 5-years, with an additional 1 million cubic yards every other year removed inside the new channel. Sediment may be disposed on properties in immediate vicinity of Fremont Weir or be used as source material for levee or restoration projects, or otherwise beneficially used. *Chap 4, page 4-17.*~~

~~Calhoun Cut/Lower Yolo Restoration~~

~~ Property owned by Westland's and project being developed by SFCWA as a tidal wetland mitigation requirement for the Operational Criteria and Plan (OCAP) Biological Opinions (BiOps). The projects entails breaching levees along the Stairstep Channel and channel excavation to return tidal action to approximately 50% of the 3,408-acre property known as Yolo Ranch in order to restore tidal marsh, open water habitat and upland and riparian habitats. **CEQA documentation is currently being prepared and construction is anticipated to begin in 2013.** *Chap 6, page 6-17.*~~

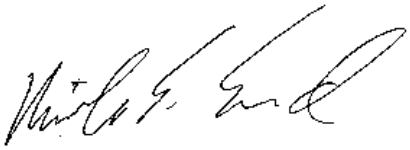
~~ DWR owns 1,306 acres of island and intends to breach the levees on all sides to restore between 460 to 1,300 acres of tidal marsh, open water habitat, and some upland/riparian habitat. **The projects is fully SWP-funded through the Fish Restoration Program Agreement to fulfill OCAP BiOp mitigation requirement and CEQA documents being prepared now.** *Chap 6, page 6-20.*~~

Steamboat Slough has been serving as an experimental waterway. Projects labeled as "restoration", "flood control" or "salmon migration" have functioned to cause substantial negative impacts to owners of properties along Steamboat and Sutter Sloughs. Projects under the labels of ~~BDCP,~~ North Delta Improvement Project, Liberty Island Restoration, EcoRestore and flood control and salinity control have made the observed changes to fresh water flows and water levels on Steamboat Slough at Snug Harbor. In addition the proposed and already occurring actions for the Yolo Bypass and Prospect Island area do not address impacts to transportation if those actions result in limiting road access to Ryer Island. I am requesting that more specific details be provided to assure that road access to Ryer Island will not be cut off entirely, and that a solution will be found to limit the frequent closure of State Route 84 ferry. State Route 84 will be-come an even more important local travel route if the intakes are built in the North Delta, and recreation travel will skit to a halt of more reliable travel routes can-not be devised. I also wish to note that CalTrans has a fo~~u~~rty-foot vehicle length limit, and various weight limits as well, and would like to know where DWR-USBR plan to put up truck~~s~~t weight-inspection stations to assure the vehicles do not violate the current CalTrans limits. Please see

SHR-2-249 errata as examples of the maps from CalTrans and other government agencies that have affected boating and road transportation in the Delta in the last ten years, or have influence outcomes of studies and reports related to proposed changes in the Delta.

Finally I wish to declare that I personally prepared the evidence to support my testimony, but that most of the evidence consists of screen prints or past maps and records which I collected and compiled over a number of years. I will not be using all of the evidence uploaded, but am taking precautions to have the resources to use when questioning of other witnesses in part two of the hearing.

I declare under penalty of perjury the above is true and correct to the best of my knowledge. Submitted by



Nicole S. Suard, Esq

Managing Member, Snug Harbor Resorts, LLC 4/25/2018