This testimony is offered on behalf of the City of Stockton ("City" or "Stockton").

I. INTRODUCTION

I currently serve as the Assistant Director of Stockton’s Department of Municipal Utilities (MUD) and have done so since 2013. In addition to assisting the Director of MUD in the organizational direction of the department, I provide overall leadership and management for the Engineering Services, Wastewater Treatment Plant Operations, and Maintenance Divisions. Prior to this position, I served as Deputy Director of Water
Resources Planning, in which capacity I managed all aspects of water supply planning, water treatment, and water distribution. I hold a Bachelor of Science degree in Civil Engineering and am a California registered Professional Civil Engineer.

Exhibit STKN-011 is a true and correct copy of my resume, which accurately describes my education and work experience.

In my various roles with MUD, I have become familiar with the history of water issues in the Delta region as it relates to Stockton. Stockton derives its primary water supply from the Delta. As a result, there have been a variety of important water issues that I have handled on behalf of MUD. For example, from 2004 to 2012, I served as Project Manager delivering the City of Stockton Delta Water Supply Project, the largest capital improvement project in Stockton’s history and the first drinking water intake in the Sacramento-San Joaquin Delta in decades.

The City supplies potable water and also owns, operates, and maintains wastewater collection and treatment facilities which serve the entire Stockton Metropolitan Area population under a National Pollutant Discharge Elimination System (NPDES) permit issued by the Central Valley Regional Water Quality Control Board. Wastewater treatment and discharge to the San Joaquin River and with the provision of water for municipal and industrial (M&I) purposes are, and will continue to be, essential services that the City provides to its residents.

In response to the submission of Petitioners’ case in chief and in support of the City’s Protest to the change petition submitted on January 5, 2016, the following testimony will describe the history and operation of the City’s water use, the City’s rights as a legal user of water within the Delta, and the effects and potential unknown injury or harm from the proposed action as it relates to the City’s current and future water use, water supply, and water quality.

II. STOCKTON GENERAL DESCRIPTION

Founded in 1849 and incorporated in 1850, Stockton is one of the oldest incorporated cities in California. In 1922, Stockton city voters approved a City Charter
(municipal constitution) with a City Council-Manager form of government. City services are provided by sixteen (16) departments including the City Manager, City Attorney, City Clerk, and City Auditor positions appointed by the City Council. Of the remaining twelve (12) departments that serve under the City Manager, MUD provides wastewater collection and treatment, water supply and distribution, and stormwater collection and disposal through eleven divisions totaling 218 employees.

III. CITY OF STOCKTON'S WATER SERVICES

MUD provides potable water treatment and distribution for M&I purposes to approximately 58 percent (58%) of the Stockton Metropolitan Area. The Stockton Water Service Area consists of more than 48,000 metered connections with a service population of 182,000. This accounts for approximately 55 percent (55%) of the M&I demand of the Stockton Metropolitan Area. The remaining portion of the Stockton Metropolitan Area is served by the California Water Service Company (CalWater), an investor-owned utility, and the County of San Joaquin (County) under various maintenance district agreements.

IV. CITY OF STOCKTON WATER SUPPLY

Current water supplies to the Stockton Metropolitan Area provided by the City include surface water diverted at the City's Delta Water Supply Project Water Treatment Plant (DWSPWTP) and surface water provided by contracts with the Stockton East Water District (Stockton East), a wholesaler of treated water, the Woodbridge Irrigation District (WID), and groundwater supplied by the City, CalWater and the County.

A. Water Supply Background

Prior to 1977, the sole drinking water source for the Stockton Metropolitan Area was groundwater. In average years, almost 870,000 acre-feet of groundwater is pumped per year from the Eastern San Joaquin Basin serving the Eastern San Joaquin County for agricultural and M&I beneficial uses. In Bulletin 118-80, the State Department of Water Resources designated the Eastern San Joaquin Basin as "critically overdrafted."
In the late-1970's, Stockton East constructed a surface water treatment plant to treat raw water supply from the New Hogan Reservoir under a wholesale water supply contract with the City, CalWater, and two County maintenance districts. In 1983, Stockton East attempted to supplement that supply by entering into a Central Valley Project (CVP) contract with the Bureau of Reclamation for raw water supply from the New Melones Reservoir. The CVP contract did not materialize due to the implementation of the Central Valley Project Improvement Act. In order to mitigate for the lack of New Melones supply through Stockton East's CVP contract, the City, CalWater, and County entered into a ten (10) year water transfer agreement with the Oakdale Irrigation and South San Joaquin Irrigation Districts in 1999. That contract for 30,000 acre-feet, coupled with the New Hogan supply, enabled Stockton East to deliver nearly two-thirds of the entire Stockton Metropolitan Area M&I demand from 1999 to 2010.

Groundwater gradients in the vicinity of Stockton are about 0.15 percent (0.15%) eastward towards the central cone of depression. Degradation of water quality due to saline migration threatens the long-term sustainability of the underlying basin. Salt laden groundwater is unusable for either urban drinking water needs or for irrigating crops. The saline migration problem is not well understood. Studies and monitoring, such as those documented in the 2014 Eastern San Joaquin Integrated Regional Water Management Plan, have produced hypotheses as to the sources and extent of the saline front. Groundwater modeling, performed prior to significant pumping reductions enabled by Stockton's use of the Delta Water Supply Project, estimates that inflow from the west is estimated at 42,000 acre-feet per year (AFY) and is considered an undesirable source of lateral inflow due to elevated chloride levels.

Recognizing the need to solve its long-term water supply problem, the City applied to the State Water Resources Control Board (State Water Board) for a surface water right. Application 30531, filed on April 18, 1996, requested 125,900 AFY of supply from the San Joaquin River under Water Code sections 1210, 7075, 1215 et seq.,
11460 et seq., 1485, and 7075. That application, for M&I supply, identified a diversion on the San Joaquin River and a Place of Use coincident with the Stockton Metropolitan Area. Exhibit STKN-012 is a true and correct copy of the City's Application No. 30531. The State Water Board subsequently bifurcated Application 30531, resulting in Application 30531A and 30531B (both with a priority date of April 18, 1996). Exhibit STKN-013 is a true and correct copy of the State Water Board's June 29, 2005 letter bifurcating Application 30531. On March 8, 2006, the State Water Board issued Permit 21176 on Application 30531A. Exhibit STKN-014 is a true and correct copy of Permit 21176. Application 30531B, for the balance of 92,300 AFY applied for under Application 30531, remains pending and the City pays an annual fee to maintain this application.

B. Surface Water Supplies

1. The City DWSPWTP

One of the sources of water for treatment and delivery to City customers is the City's DWSPWTP. The DWSPWTP is located in North Stockton and was completed in May 2012. The $223 million project to construct Phase 1 of the DWSPWTP consists of an intake on the San Joaquin River at the southwest tip of Empire Tract, eighteen (18) miles of raw water pipeline, a 30 million gallons per day (mgd) water treatment plant, and six (6) miles of treated water pipeline. Exhibit STKN-001 is a map that accurately shows the location of the DWSPWTP.

The water treatment plant consists of pre-ozonation, flocculation/sedimentation, microfiltration membrane filtration, chlorine disinfection, treated water storage, and chloramine residual disinfection for distribution. Solids handling is achieved by the use of three large basins to consolidate solids for mechanical removal and disposal as landfill cover.

The City diverts water to the DWSPWTP consistent with Permit 21176. Permit 21176 provides for the diversion of up to 33,600 AFY at a rate of up to 317 cubic feet per second (cfs) for M&I purposes. Permit 21176 also contains Condition 15,
relating to compliance with Water Code section 1485, which specifically limits the
amount of water that Stockton may divert under the Permit 21176 to the amount of
wastewater discharged from the City’s Regional Wastewater Control Facility (RWCF).
Condition 15 specifies, “The 15-day running average of diversions from the Delta under
this permit shall be less than or equal to the 15-day running average of discharges of
properly treated effluent discharged from the [RWCF] into the San Joaquin River. The
term ‘properly treated effluent’ means effluent that meets the requirements of the Central
Valley Regional Water Quality Control Board (Regional Water Board).”

The City also has other current and future interests in the right of use of water,
including uses under Application 30531B, for up to 92,300 AFY year with the point of
diversion at the DWSPWTP. Application 30531B is based in part on Water Code
sections 1215-1222 and 11460-11465, which require protection of water availability and
use for areas or watersheds of origin and areas immediately adjacent thereto.

The City has been the subject of considerable scrutiny in its water rights pursuits
and NPDES permitting, both of which required extensive and significant investments in
water quality modeling and mitigation, the cost of which is borne entirely by the
businesses and residents of the City. In addition to the conditions contained in
Permit 21176, Stockton’s ability to divert from the San Joaquin River at the DWSPWTP
is subject to the following permits and biological opinions:

- Exhibit STKN-015 is a true and correct copy of the National Marine
  Fisheries Service Biological Opinion for the DWSPWTP.
- Exhibit STKN-016 is a true and correct copy of the United States Fish and
  Wildlife Service Biological Opinion for the DWSPWTP.
- Exhibit STKN-017 is a true and correct copy of the U.S. Army Corps of
  Engineers 404 Permit for the DWSPWTP.
- Exhibit STKN-018 is a true and correct copy of the California Department
  of Fish and Game Incidental Take Permit for the DWSPWTP.
Pursuant to the above permits and biological opinions, the City's ability to divert from the San Joaquin River is restricted in the months of February to June in order to protect Delta smelt and Longfin smelt, because these fish species, in the larval stage, are not able to be screened with the latest fish screen technology. Diversion restrictions contained in the City's permits limit the time and amount the City is able to divert from the river. Condition 6.2 of California Fish and Game Incidental Take Permit No. 2081-2009-005-03 is the most restrictive condition regarding intake operations for the protection of Delta and Longfin smelt larvae. From February 15th to March 15th and May 21st to June 15th, the City is limited to 50 percent (50%) of permitted diversion capacity, or 24 cfs. From March 15th to May 20th, the City must cease diversions entirely. To ensure water treatment plant operations for the entire year, as discussed below, the City entered into a 40-year agreement to purchase surface water from WID.

Water has been diverted and beneficially used under Permit 21176 in each month allowed since May 2012. To date, the maximum monthly diversion has been approximately 1,684 AF, and the highest diversion in a calendar year has been approximately 9,268 AF. The City's Delta water diversions are documented and submitted to the State Water Board annually through the progress reports. Since the initial startup of the DWSPWTP, four (4) years of progress reports (2012-2015) have been submitted. Exhibit STKN-019 is true and correct copy of each of the City's progress reports from 2012-2015.

2. Contract Supplies

In addition to diversion at the DWSPWTP under Permit 21176, the City derives a very important portion of its supply through a treated water purchase contract with Stockton East. In 2015, the City produced or purchased through Stockton East approximately 8.5 billion gallons of potable water. Recent surface water curtailments through Stockton East have placed additional reliance on the DWSPWTP to meet urban demand and further protection of groundwater resources. To ensure water treatment plant operations for the entire year, the City entered into a 40-year agreement to
purchase surface water from WID. The City's contract with WID is for diversion of up to 6,500 AFY. WID diverts from the Mokelumne River under pre-1914 water rights (Statement SO15557). WID water is then conveyed to the head of the DWSPWTP for treatment and delivery.

3. City's Combined Surface Water Use

The total amounts of surface water treated by month at the DWSPWTP based on diversion under Permit 21176 and the WID contract, and amounts diverted under Permit 21176, are accurately shown on Exhibit STKN-014.

C. Groundwater Supplies

Groundwater has and will continue to be an important water supply resource for the Stockton Metropolitan Area. The City's approach to groundwater use is to reduce reliance on groundwater to meet water demand by implementing a conjunctive use program to identify and develop in-lieu surface water sources. Since the late-1970's, Stockton has spent hundreds of millions of dollars developing new sources of supply that have resulted in an overall improvement in groundwater levels beneath the Stockton Metropolitan Area footprint. In 2008, the Stockton City Council, as part of the 2035 General Plan Update, adopted a groundwater maximum withdrawal target of 0.6 AFY, which is approximately two-thirds (2/3) of the sustainable groundwater withdrawal rate. As demonstrated in the San Joaquin County Groundwater Basin Authority Integrated Regional Water Management Plan, there has been significant groundwater level recovery in the central and western areas of the basin as a result of the City's development of surface water supply sources. Crucial to the continued groundwater management approach is the security of the developed surface water supplies that have allowed the continuing groundwater recovery program. Any loss of surface water supplies brought about by the potential negative impacts of the WaterFix Project is of great concern to the health and viability of the groundwater basin.

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STKN-010
V. STOCKTON REGIONAL WASTEWATER CONTROL FACILITY

The City's RWCF, located in southwest Stockton, is a wastewater treatment plant providing primary, secondary, and tertiary levels of treatment and consists of headworks, primary sedimentation, trickling filters (biotowers), secondary clarifiers, facultative ponds, treatment wetlands, nitrifying biotowers, dissolved air flotation, filtration, chlorine disinfection, and dechlorination prior to discharge to the San Joaquin River. The location of the RWCF is shown on Exhibit STKN-001. Solids handling consists of anaerobic digestion producing methane gas for cogeneration, solids dewatering, and disposal as soil amendment for non-food producing agricultural uses. Permitted discharge is 55 million gallons per day (MGD). Average dry weather discharge for July through September 2015 was 20.6 MGD.

The RWCF operates under a Central Valley Regional Water Board NPDES Permit (No. CA0079138) and consequently is subject to the strict water quality standards that are expected to be maintained in the Delta. Exhibit STKN-020 is a true and correct copy of NPDES No. CA0079138, exclusive of its attachments. The City has made considerable investments in its wastewater treatment processes to achieve the water quality standards set forth in its NPDES permits. In 2008, the City invested tens of millions of dollars in ammonia treatment and, with the 2014 NPDES permit renewal, is facing another major requirement to reduce total nitrogen in its discharge to the San Joaquin River.

VI. INJURY TO CITY AS A LEGAL USER OF WATER

The potential effects of the proposed action on surface water in the Delta is of great significance to the City as a municipal water supplier because alterations to the flows of the Sacramento and San Joaquin Rivers may negatively impact the quality of water the City diverts from the San Joaquin River. As communicated repeatedly to Petitioners, the City is concerned with decreased water quality at its drinking water intake that would impair that surface water source, and any degradation in San Joaquin River water quality at its point of treated wastewater discharge that would further burden
the City through more rigorous wastewater treatment standards applied through the NPDES permit process.

Since 2008, the City has consistently made its concerns about the impact of the Bay Delta Conservation Plan (BDCP)/WaterFix Project known to Petitioners. The City submitted comments identifying its concerns about water quality at its drinking water intake, none of which I find to have been addressed or answered in Petitioners’ case in chief or elsewhere. Exhibit STKN-002 is a true and correct copy of the City’s May 30, 2008 Comments on the Notice of Preparation of an EIR/S for the BDCP; Exhibit STKN-003 is a true and correct copy of the City’s July 29, 2014 comments on the BDCP DEIR/DEIS; Exhibit STKN-004 is a true and correct copy of the City’s October 29, 2015 comments on the BDCP/California WaterFix RDEIR/SDEIS.

Of great concern is that the proposed change would, or threatens to, degrade water quality by various means. Water quality at the DWSPWTP intake will be affected by changes in San Joaquin River flows and Sacramento River flows resulting from the added points of diversion, associated operational changes, or both, and the adverse changes in water quality could result in substantial injury to the City as a lawful user of water. Any increase in contaminants is of concern to the City’s water supply and can lead to, at a minimum, drinking water quality permit violations, increased operational costs, threats to public health, and other adverse effects on end users.

Specific water quality constituents (described in the City’s comments on the BDCP/WaterFix environmental documents) with the potential to result in injury to the City’s water supply include the following:

- Electrical Conductivity
- Cyanobacteria (e.g., Microcystis)
- Bromide
- Chloride
- Organic Carbon
- Nitrate/ Nitrite
• Pesticides
• Other toxins
• Water Temperature

Notable among the constituents that threaten M&I water supply is bromide. Bromide, when in contact with ozone, forms bromate which is a disinfection byproduct regulated by the federal Environmental Protection Agency. The limit for bromate is 10 parts per billion as an annual average.

Chloride is also a constituent that is regulated as a secondary contaminant by State and Federal drinking water regulations. Title 22 of the California Code of Regulations, section 64449, Secondary Maximum Contaminant Levels and Compliance Table B ("Consumer Acceptance Contaminant Level Ranges"), considers three level ranges for chloride, in milligrams per liter (mg/l), at a maximum recommended level of 250 mg/l, an upper level at 500 mg/l, and a short term level of 600 mg/l.

Petitioners have also identified that the proposed action will result in increased residence time for water in the Delta. Based on my knowledge and experience, any increase in residence time will likely increase the undesirable production of cyanotoxins (e.g., Microcystis), which has a direct adverse effect on municipal water treatment and supply.

Based on my knowledge of drinking water treatment plant and wastewater treatment plant operations, it is my opinion that even seemingly small increases (e.g., less than 5 percent (5%)) in the mass or concentration of various undesirable water quality constituents, such as bromide, chloride, electrical conductivity, or Microcystis, can have adverse impacts on facility operations that could result in a reduction in the amount or quality of water capable of being delivered to customers or otherwise injure the City as a user of water by forcing additional treatment. Drinking water and wastewater treatment plant operators must respond promptly to changing conditions, and substantial changes from day to day in the quality of diverted water or influent can have adverse consequences on the use and discharge of this water.
Alteration of Delta flow that results in water quality degradation at the City’s drinking water intake or point of treated wastewater discharge thus has the unfortunate potential to negatively impact the City's drinking water system and supply, and also the City's ability to comply with its NPDES permit.

For constituents such as bromide and cyanotoxins such as Microcystis, a 5 percent (5%) increase in raw water bromide, or increase in algal blooms driving an increase in Microcystis production will negatively impact water treatment operations and thus affect the reliability of the City’s drinking water supply. Increases in these constituents would require more chemical treatment, more frequent cleaning of filter membranes resulting in decreased membrane life, higher electrical demand and reduced treated water production. To the extent diversions from the North Delta reduce cold water flow into the Delta, and increase river temperatures, the Project also could increase algal production. Algal production cycles will affect river pH and Total Organic Carbon (TOC) levels, which translate to continual changes in water treatment processes (with accompanying additional costs) to control disinfection by-product production.

Saltwater intrusion into the interior Delta as a result of north Delta water diversions authorized by the proposed action could increase levels of chloride and EC at the City’s drinking water intake. Beginning in 2012, when Stockton began diverting Sacramento-San Joaquin River flows under its permitted water right, chloride levels have ranged from 0.8 mg/l to 110 mg/l and EC ranged from 57 to 702 micromhos per centimeter (µmhos/cm). Any increase in chloride levels or EC at the City’s drinking water intake would adversely affect the quality of the City’s drinking water supply. Increased chloride levels in drinking water at or near regulatory limits also has the potential to render that source unusable and only mitigatable through a replacement source, or a higher level of treatment such as reverse osmosis.

Increased salinity in Stockton’s drinking water system has a direct correlation to salinity in Stockton’s wastewater discharge. The City’s NPDES permit limits treated wastewater discharge EC calendar year average to 1,300 µmhos/cm. As reported in the...
in San Joaquin River EC at the City's drinking water intake and treated wastewater discharge EC. Exhibit STKN-021 is a true and correct copy of the City's most recent progress report on the annual salinity pollution prevention plan. Any increase in EC at the City's drinking water intake due to the Project will have a detrimental effect on the City's ability to comply with its NPDES permit, which in turn could limit Stockton's ability to divert under its water right Permit 21176, results in a change in drinking water sources or in the additional costly treatment measures, and also contribute to the economic impacts of turning away industrial development that may need capacity for discharge to the City's sewer system.

Any reduction in water quality at the DWSPWTP also implicates groundwater and groundwater management. Groundwater remains a crucial part of the City's overall water portfolio. However, a major purpose of the DWSPWTP was to protect regional groundwater from increasing overdraft. Groundwater is also high in total dissolved solids (TDS). Groundwater levels improved over the past few decades in the Stockton vicinity, but if groundwater must be relied upon more extensively as a result of the proposed change petition, groundwater levels will be expected to decline and TDS levels in potable supplies and wastewater discharges will increase. Any degradation of the quality of the City's water supply, including, but not limited to, increases in EC, bromide, TDS, or chloride from increased mass or concentration in the City's San Joaquin River supply, or groundwater, will injure the City in its use of water if it leads to the need for additional treatment, including prohibitively expensive upgrades to the City's wastewater treatment system such as reverse osmosis treatment.

Water supplies through the City's contract with Stockton East have been highly variable since the late-1970's, primarily due to the Bureau of Reclamation's inability to allocate CVP contract supply to Stockton East from the New Melones Reservoir. In the past two years, Stockton East received zero (0) allocation from that contract. Even in years that are not declared to be a drought year, the current conditions in the Delta still result in water shortages. Because the City has its permitted Delta water supply and
groundwater, it has been able to reduce its reliance on Stockton East supply. However, continued CVP supply restrictions to the Stockton East imparts an even greater reliance and pressure on the City's Delta water and groundwater supplies. This will likely continue to be the case even in wet years.

Any adverse impacts to Delta water quality caused by the proposed action that results in reduced Delta water supply would certainly need to be made up by groundwater supplies, which have restrictions on overuse and could not be relied upon for long periods of time. Moreover, any change in the quality of the City's surface water supply that requires increased pumping of groundwater and forces a return to reliance on an overdrafted groundwater basin would represent an unacceptable step backwards in the region's efforts to reduce reliance on groundwater and restore groundwater supplies, and would be inconsistent with the groundwater sustainability principles in the Sustainable Groundwater Management Act.

Adverse changes to San Joaquin River flows or quality due to the proposed action thus would cause a significant impact on the City's ability to meet its urban water demand.

VII. CONCLUSION

The City does not wish to delay the administrative hearing regarding the proposed action. However, the availability of good drinking water supply in the Delta is imperative to a municipal water supplier. It is the City's position that these major concerns of the City and the region as a whole, must be addressed before the change petition can be considered. The City requests that the Petitioners' requested change be denied until more information relevant to the City's concerns is provided for review and the appropriate assurances are provided (in the form of permit terms and conditions) that would avoid any harm to the quality or availability of the City's water supply. However, should the State Water Board approve the change petition, I recommend that the following considerations relative to the City be included:

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Require Petitioners to communicate with the City and address the City's concerns as a protestant. For example, would the Petitioners be willing to curtail North Delta diversions for the WaterFix project or provide compensation if relevant drinking water quality constituents in the City's source water exceed current or specified conditions, such as Petitioners have done in the past for other Delta diverters like the City of Antioch, or recently, for the Contra Costa Water District?

- Ensure that the environmental analysis satisfies the protestants and ensure measures are included to protect human uses of water and the environment, such as limiting diversion during certain periods of the year.

- Ensure that the City is aware of the time and details of construction of the WaterFix project and is provided with relevant progress reports as construction on the project progresses.

- Ensure the quality of the City's water source is and will continue to be of sufficient quality and quantity to satisfy our rights as a legal user of water.

Finally, any and all considerations or accommodations offered to the City should be incorporated into the Petitioners' permit as a permit term or condition.

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

Executed on this 30th day of August 2016 in Stockton, California.

Robert Granberg