14 April 2017

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Ms. Jeanne Chilcott, Environmental Program Manager
Ms. Anne Littlejohn, Sr. Environmental Scientist
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VIA: Electronic Submission
Hardcopy if Requested

RE: Amendment to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins to Adopt Salinity Water Quality Objectives for the Lower San Joaquin River

Dear Messrs. Laputz, Brownell and Mesdames Chilcott and Littlejohn;

The California Sportfishing Protection Alliance (CSPA), California Water Impact Network (CWIN), AquAlliance, Pacific Coast Federation of Fisherman's Associations (PCFFA), Institute for Fisheries Resources and the Environmental Water Caucus (EWC) have reviewed the Central Valley Regional Water Quality Control Board's (Regional Board) proposed Amendment to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins to Adopt Salinity Water Quality Objectives for the Lower San Joaquin River and respectfully submit the following comments.

Introduction

Water from the Lower San Joaquin River (LSJR) flows into the Bay-Delta Estuary, which provides drinking water to over 22 million people in California. The average annual salt concentrations have significantly increased and water quality monitoring data reveals that water quality objectives for salinity and boron are frequently exceeded at Vernalis degrading the designated beneficial uses of the river.

The salinity and boron water quality impairment is due to water development and associated agricultural land use. Dams and diversions have significantly reduced diluting river flows upstream.[1] The imported water from the water development project that is used for crop irrigation has relatively high salinity. Agricultural discharges are the largest sources of salt and boron loading to the river. River water quality is heavily influenced by irrigation return flows. To some degree water quality improves downstream from tributary flows that provide dilution for pollutants.

"In addition to agriculture, the San Joaquin Valley is known for its high natural resource values. It is estimated that the San Joaquin Valley once contained about 1.1 million acres of permanent and seasonal wetlands, with approximately 731 thousand acres occurring within the SJR Basin and 360 thousand acres occurring within the Tulare Lake Basin. Prior to major water developments, the SJR watershed supported a superlative Chinook Salmon fishery and tens of thousands of salmon probably spawned in its headwaters (SWRCB, 1987), however, steady declines in fish and wildlife habitat have occurred in connection with large-scale agricultural and urban water development. Approximately 85 percent of the historic seasonal and permanent wetlands in the San Joaquin Valley have been drained and/or reclaimed for agricultural purposes (SJVDP, 1990a). The San Joaquin Valley, however, remains a critical habitat for fish and wildlife; as many as twenty-four state or federally listed threatened and endangered species (plant and animal) are now found in the valley." (July 2004, Regional Board Staff Report, page 1-10, Basin Plan Amendment for Salt and Nitrate)

In 1998, the San Joaquin River was listed on the federal Clean Water Act (CWA) section 303(d) list as impaired by electrical conductivity (EC) and boron (State Board Resolution 1998-055). In 2000, the State Water Resource Control Board (State Board) directed the Regional Board to develop and adopt salinity water quality objectives and a program of implementation for the San Joaquin River upstream of Vernalis. (*Revised Water Right Decision 1641*).

CWA Section 303(d)(1)(C) requires a State to establish a Total Maximum Daily Load (TMDL) for any pollutant causing an impairment of a beneficial use and/or non-attainment of an adopted water quality objective. Presently identified beneficial uses include: Municipal and Domestic Supply, Agriculture Irrigation and Stock Watering, Industrial Process Supply, Contact Recreation, Non-contact Recreation, Warm Freshwater Habitat, Warm and Cold Water Species Migration, Warm Water Spawning, and Wildlife Habitat.

Adoption of a TMDL for salt and boron under State Law meant that the Regional Board needed to develop a program of implementation to reduce salt and boron loading to levels sufficient to achieve the water quality objectives identified for the Bay-Delta at Vernalis and incorporate these requirements in a revision to its Basin Plan.

The Present Water Quality Objectives at Vernalis are:

Salinity (EC):

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[1] Friant Dam on the Upper San Joaquin was completed in 1942, New Exchequer Dam on the Merced River was completed in 1967, New Don Pedro Dam on the Tuolumne River was completed in 1971 and New Melones Dam on the Stanislaus River was completed in 1979.

Irrigation Season, (Apr1-Aug31), 700 uS/cm (30 day running average)
Non-Irrigation Season, (Sep1 –Mar 31), 1000 uS/cm, (30-day running avg.)

Boron' Merced River to Vernalis:
Irrigation Season, (Mar 15-Sep15), 2.0 mg/L (max.), 0.8 mg/L (monthly mean)
Non-Irrigation Season, (Sep16-Mar14), 2.6 mg/L (max.), 1.0 mg/L (monthly mean)
1.3 mg/L (monthly mean, critical year)

The purpose of the TMDL for salinity and boron was: 1) to identify and quantify the sources of salt and boron loading to the river; 2) to determine the load reductions necessary to achieve attainment of applicable water quality objectives in order to protect the beneficial uses of water; and 3) to allocate salt and boron loads to the various sources and source areas within the watershed which, once implemented, will result in attainment of applicable water quality objectives.

In 2004, thirteen years ago and six years after the river was listed as impaired, the Central Valley Regional Water Board adopted the TMDL to address EC in the LSJR and meet the water quality objectives in the Bay-Delta Plan at Vernalis. The TMDL is implemented through waivers of waste discharge requirements (WDRs) or WDRs that apportion load allocations to different geographic subareas in the valley. As an alternative to the load allocations, the TMDL allows discharger participation in a real-time management program approved by Central Valley Water Board approved as a means to attain salinity water quality objective.

"Approximately 66 percent of the LSJR's total salt load and 86 percent of the boron load originates from the west side of the San Joaquin River (Grasslands and Northwest Side Subareas). Agricultural drainage, discharge from managed wetlands, and groundwater accretions are the principle sources of salt and boron loading to the river. Additionally, large-scale out-of-basin water transfers have reduced the assimilative capacity of the river, thereby exacerbating the salt and boron water quality problems. At the same time, imported irrigation water from the Delta has increased salt loading to the basin. Salts in supply water from the Delta account for almost half of the LSJR.s mean annual salt load. This TMDL uses a phased approach because it involves both point and non-point sources (NPSs) and the point source WLA is based on a LA for which NPS controls need to be implemented. A phased approach is also necessary because new or revised water quality objectives for salinity and boron may be established as part of the ongoing basin plan amendment. The WLAs and LAs presented in this TMDL are designed to meet salinity and boron water quality objectives in the LSJR at the Airport Way Bridge near Vernalis." (July 2004, RWQCB Staff Report, page 1-2, Basin Plan Amendment for Salt and Nitrate)

Nineteen years after the LSQR was listed as impaired for salts and boron, and thirteen years after the Regional Board adopted a TMDL to address the impairment, the Regional Board's documents show little or no significant progress in the improvement of water quality or the achievement of compliance with water quality objectives.

Seventeen years after the State Board ordered the Regional Board to establish a salinity compliance point upstream of Vernalis, the Regional Board is only now proposing to adopt a salinity water quality objective in the San Joaquin for the river reach between the Merced River and Vernalis (River Reach 83).

The Regional Board assigned the development of water quality objectives to the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS), a stakeholder driven and managed program, which in turn established another stakeholder group, the Lower San Joaquin River Committee (LSJR Committee), to review and recommend changes to the Basin Plan that would enable the Regional Board to protect beneficial uses and manage salt in the basin. The LSJR Committee is largely composed of diverters, water agencies and contractors, growers and irrigators and drainage authorities. There has been no significant participation or review by environmental, environmental justice or fishing organizations or, for that matter, by state or federal fishery agencies, in the development of the proposed salinity amendment to the Basin Plan.

It is not surprising that the proposed salinity water quality standards are considerably less stringent than those presently applicable at Vernalis: 700 uS/cm (April-August) and 1000 uS/cm (September-March), as a 30-day running average, as opposed to the proposed 1,550 uS/cm, as a 30-day running average, and 2,470 uS/cm as a 30-day running average during extended dry periods (2,200 uS/cm annual average using the previous four consecutive quarterly samples). Indeed, compliance with the proposed new less stringent standards is already virtually assured.

As we discuss below, the Regional Board and proponents of the new water quality standards egregiously failed to adequately analyze a number of identified beneficial uses, propose water quality standards fully protective of those uses and conduct a defensible antidegradation analysis. Consequently, the proposed water quality standards fail to comply with Porter-Cologne and the federal CWA and the CEQA equivalent analysis is grossly deficient. The Regional Board must prepare an EIR or an equivalent Substitute Environmental Document.

The Regional Board Must Specifically Address Clean Water Act Mandates to Fully Protect Present and Anticipated Beneficial Uses

The Draft Staff Report observes that the LSJR Committee's work plan set a goal of "reasonable protection of beneficial uses." (Page 4) It cites to Water Code § 13050, subdivision (h), which calls for "…the limits or levels of water quality constituents of characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." (Page 13)

The Draft Staff Report's analysis avoids direct comparison with the federal Clean Water Act (CWA), choosing instead to rely on Porter-Cologne provisions such as Sections 13000 and 13241, which call only for the highest water quality that is "reasonable" in light of competing uses and other factors. However, as noted by the state Supreme Court, Porter-Cologne "cannot authorize what federal law forbids."[2] Under the federal Constitution's Supremacy Clause (Art. VI), a state law that conflicts with federal law, as the weaker Porter-Cologne provisions clash

[2] *City of Burbank v. State Water Resources Control Bd.,* 35 Cal.4th 613, 626, 108 P.3d 862 (2005).

with CWA requirements, is "without effect."[3]

The CWA was established to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[4] To ensure that water quality improves, rather than degrades, the CWA requires state adoption of water quality standards that "shall consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses."[5] The use of waterways for the "protection and propagation of fish, shellfish, and wildlife" was given special attention through the "fishable/swimmable" provision in CWA 101(a)(2). This provision effectively creates a rebuttable presumption that these uses are attainable unless a state or tribe "affirmatively demonstrates, with appropriate documentation, that such uses are not attainable"[6] (though "existing uses" cannot be eliminated).[7]

In setting criteria to protect the beneficial uses, U.S. EPA regulations[8] require states to "protect [not 'reasonably' protect] the designated use." The EPA regulations add that: "such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. **For waters with multiple use designations, the criteria shall support the most sensitive use.** (Emphasis added)

Moreover, as we discuss more fully below regarding the antidegradation analysis, the California's Third Appellate Court has ruled that beneficial uses include not only present uses but also anticipated beneficial uses[9] and that baseline water quality means the best quality of water existing in 1968.[10]

The regulations conclude that criteria may be based on U.S. EPA Guidance developed pursuant to CWA Section 304(a) or "other scientifically defensible methods," including biomonitoring. In other words, criteria must protect the most sensitive beneficial use and must be based on science. Other considerations (such as cost) do not factor into the development of criteria. Finally, in addition to the uses to be protected and the criteria to protect those uses, water quality standards include an antidegradation policy to ensure that the standards are "sufficient to maintain existing beneficial uses of navigable waters, preventing their further degradation."[11] EPA regulations

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3 *Id.*

4 *CWA § 101(a); PUD No. 1 of Jefferson County v. Washington Department of Ecology , 511 U.S. 700, 704 (1994) (PUD No. 1).* For most of the CWA's implementation history, regulatory attention has been primarily focused on the chemical integrity of waterways, even though the letter of the law demonstrates that it was also written to address other elements of waterway health. Regulatory agencies have significantly increased their attention on biological integrity over the last 5-10 years. Physical integrity is now starting to reach the regulatory docket, particularly since the PUD No. 1 Supreme Court decision, with more states adopting narrative flow criteria and taking other actions under the CWA to create more flows in waterways.

5 CWA § 303(c)(2)(A); PUD No. 1 at 704.

6 *See, e.g.,* U.S. EPA, "Water Quality Standards Academy, Key Concepts (Module 2.c)," available at: http://water.epa.gov/learn/training/standardsacademy/mod2/page4.cfm.

7 40 CFR §§ 131.10(g), (h)(1).

8 40 CFR § 131.11; *see also* 40 CFR § 131.6.

9 Asociacion de Gente Unida por el Agua, 210 Cal.App.4th at 1270.

10 *Id.* at 1255, 1270 (Nov. 6, 2012).

11 *PUD No. 1* at 705; CWA Sec. 303(d)(4)(B); 40 CFR § 131.6.

add, "Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."[12]

The Assessment of Fisheries and Impacts to Aquatic Life is Woefully Inadequate and the Proposed Standards are Indefensible

Reach 83 of the San Joaquin River is listed on the CWA 303(d) list of impaired waterbodies because of EC, boron, DDE, DDT, group A pesticides, chlorpyrifos, diazinon, diuron, alpha-BHC, toxaphene, E. coli, mercury, temperature and unknown toxicity. The State Board found, following an extensive public proceeding, that flows in the subject reach of the river are insufficient to support native fisheries and public trust resources. In other words, Reach 83 is a highly polluted aquatic ecosystem with inadequate flow that has created a highly stressed environment for aquatic life. Into this stress-cocktail, the Regional Board proposes to establish EC limits at Crows Landing for Reach 83 that will exceed the existing EC limits at Vernalis by 121% (April-August) and by 55% (September-March) in normal water years. It would increase the EC limits in the subject reach over the existing Vernalis limits by 252% (April-August) and by 147% (September-March) during dry sequences.

The Staff Report states:

> "Between May 2010 and the end of 2015, the LSJR Committee developed recommendations for EC WQOs that are protective of beneficial uses in the LSJR, EC Performance Goals that may be achievable, and recommendations for a program to implement the WQOs and Performance Goals for consideration by the Central Valley Water Board. The Committee began by conducting reviews of beneficial uses and water quality data for the LSJR, including white papers on Aquatic Life (Buchwalter, David, Ph.D., North Caroling State University, 2014) and Stock Watering sensitivity to salinity (Kennedy/Jenks Consultants, 2013), and concluded that the Agricultural Supply (AGR) beneficial use is the most sensitive to salinity, followed by the potential Municipal and Domestic Supply (MUN) beneficial use." (Staff Report, page vi)

Having concluded that AGR and MUN are the most sensitive beneficial uses, the LSJR Committee essentially ignored the aquatic communities in its assessments and deliberations. The Aquatic Life Report failed to identify fish species present in the subject reach of the river and failed to describe their life cycles and analyze potential impacts to them. The Staff Report mentions the existence of the Aquatic Life Report only once in passing and only briefly mentions the presence of some species of fish in its discussions of identified beneficial uses. It completely ignores splittail, threadfin shad, green sturgeon, largemouth bass and smallmouth bass. On this basis, the Staff Report's Environmental Checklist found no substantial adverse effects and therefore found that there were no impacts that would require development of an EIR or SED. The absence of any reasonable discussion of the fishery and likely impacts is indefensible and, as we discuss below, simply wrong!

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12 40 CFR § 131.12.

The Aquatic Life Report by David Buchwalter, a toxicologist specializing in aquatic insects at North Carolina State University, failed to describe or discuss the assemblages and life stages of fish present in the subject river reach (Reach 83). This report, which as of 14 April 2017 was not available on the Regional Board website,[13] completely ignored green and white sturgeon, splittail, threadfin shad, largemouth bass and smallmouth bass and mentioned striped bass only once in reference to a study that evaluated juvenile Chinook salmon and striped bass in concentrations of agricultural drain water. The report focused largely on aquatic insects and various toxicity databases, but admitted that "the predominant species found in freshwater ecosystems are usually insects, and these species are largely absent from most toxicity databases." (Page 4-1) It discussed a 1998 study by Leland and Fend titled *Benthic invertebrate distributions in the San Joaquin River, California* that found that "salinity was identified as a primary determinant of invertebrate species assemblages, and is dominated by sulfate/bicarbonate." (Page 3-2) Dr. Buchwalter identified three general regulatory approaches/options for generating salinity/TDS related WQOs for the protection of aquatic life in the Central Valley based on (a) toxicity, (b) chemistry and (c) biology. (Pages 4-2 to 4-4) He concluded by observing:

> "…there are considerable scientific/technical uncertainties that are highlighted throughout this report. In addition, there is a general lack of dissolved water chemistry data in much of the Central Valley floor. That said, there will always be scientific uncertainty, and this alone should not necessarily be a basis for inaction. Based on both field and toxicity studies outlined here, there is the potential for salinity to be causing ecological impairment in at least some stream segments in the Central Valley. In those situations, setting some regulatory limits on TDS/salinity components for the protection of aquatic life would make sense. However, there remains a surprisingly incomplete picture of TDS related chemistry on the ground in the Central Valley. Before any new regulatory tools are considered (e.g., other than the use of the narrative WQOs), there should be a strong understanding of both spatial and temporal chemistry dynamics in the Central Valley, such that the attainability of any future agreed upon numeric WQOs are well understood, as these could have regulatory and economic consequences." (Page 4-5)

There is no indication in the Staff Report that CV-Salts or the LSJR Committee or, for that matter, the Regional Board has any intention or interest in conducting the surveys and studies necessary to protect the lower tropic aquatic assemblages in the San Joaquin River. These studies should have been an integral part of any Basin Plan Amendment that proposes to legally justify a significant increase in the concentration of salt in Reach 83 of the river. Without them, the proposed Amendment is scientifically and legally inadequate.

Contrary to the Staff Report, both green and white sturgeon are found in Reach 83 of the San Joaquin River. The *2012 San Joaquin River Sturgeon Spawning Survey, Final Annual Report* by the U.S. Fish and Wildlife Service (USFWS) and University of California-Davis[14] reveals that green and white sturgeon were caught by anglers in River Reach 83 in 2009, 2010, 2011 and

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[13] The report can be found at: https://www.cvsalinity.org/docs/committee-document/technical-advisory-docs/water-quality-objective-reviews/2645-final-aquatic-life-study-report010614/file.html

[14] https://www.fws.gov/sfbaydelta/documents/2012%20San%20Joaquin%20River%20Sturgeon%20Spawning%20Survey.pdf

2012 and noted that "reports indicated anglers concentrate in two areas known locally as Sturgeon Bend (rkm 119) and Laird Park (rkm 143)." (Page 1) The report discussed white sturgeon spawning in the river during April and May in both wet and dry years. (Pages 4-6) A USFWS presentation at the State Water Board's 3 January 2017 Phase 1 Revised SED Review for the updated Water Quality Control Plan for the Bay/Delta noted that recent USFWS studies between 2011 and 2016 had identified the presence of sturgeon in the San Joaquin River and pointed out that a doubling of both green and white sturgeon are part of the Anadromous Fish Restoration Program mandated by the CVPIA.[15] Sturgeon migrate into freshwater to spawn and require low salinity levels during spawning and egg incubation. A report titled *Life History Conceptual Model for White Sturgeon (Acipenser transmontanus)*[16] by Marty Gingras, California Department of Fish and Wildlife, and Andreq Drauch, University of California Davis, identifies salinity requirement for sturgeon egg/embryo/larvae as essentially 0.0 ppt, citing McEnroe and Cech 1985. (Page 34, Table 1, Biological characteristics of white sturgeon) The bulk of the scientific literature identifies necessary salinity levels for sturgeon spawning as 0-0.5 ppt. These salinity levels, translated into EC, are significantly below those proposed in the Basin Plan Amendment. It is mystifying why Regional Board staff and the LSJR Committee are unaware of sturgeon spawning in the San Joaquin. A 30 July 2013 article in the Stockton Record, titled *Ginormous fish make Stockton their home,*[17] describes the catching sturgeon near Grayson on the River and quotes USFWS biologists on sturgeon spawning in 2011 and 2012. A 2015 peer-reviewed paper in San Francisco Estuary & Watershed Science titled *Sturgeon in the Sacramento-San Joaquin Watershed: New Insights to Support Conservation and Management*[18] by an array of authors from the University of California-Davis, U.S. Geological Survey, National Marine Fisheries Service and Department of Water Resources describes sturgeon spawning in the San Joaquin.

The Staff Report's discussion of striped bass is limited to the descriptions discussing beneficial uses and can best be characterized as inadequate and pejorative. It observes:

> Another species known to migrate to spawning sites is Striped Bass (*Morone saxatilis*). Striped bass, however, generally reside in estuaries and in seawater during a portion of their adult phase and migrate in the spring to large rivers to spawn. Striped bass have been identified in the San Joaquin River, including in Reach 83, however, it is unlikely that their presence was due to migration for spawning purposes. More likely, they were attracted for feeding purposes on other species.
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> Successful spawning of striped bass is dependent on the interaction of three factors: temperature, flow and salinity. Striped bass generally prefer to spawn in large rivers that have optimum spawning flows. Sufficient flow is required to maintain eggs and larvae suspended, but not too high that eggs are washed into quiet waters. It is also possible that the higher salinity levels in Reach 83 could impede striped bass spawning, but additional research would be needed to confirm this. Because of the narrow tolerance of striped bass

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15 http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2016_sed/docs/workshop_presentations/01032017_usfws.pdf

16 https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=29310

17 http://www.recordnet.com/article/20130730/A_NEWS/307300323

18 http://escholarship.org/uc/item/7892b2wp#page-1

> to these three factors, there are only two principal spawning areas and these are in the Bay-Delta. They are the Sacramento River from Isleton to Butte City and the San Joaquin River and its sloughs from Venice Island to Antioch (Moyle, 1976).
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> Modifying flows or lowering salinity levels to enhance striped bass spawning would need further study beyond the scope of this project and would likely meet with strong resistance. Striped bass are a non-native predator that may impact salmon and other California native anadromous fish." (Pages 23-24)

Contrary to the uncertainty in the Staff Report, higher salinity levels in Reach 83 do impede striped bass spawning. Salinity concentration in the San Joaquin River began to increase with the completion of Friant Dam in 1942 and diversion of low salt water from the headwaters of the river south and with construction of the Bill Jones Delta pumping facility in 1951 that diverted more saline Delta water south through the Delta Mendota Canal. San Luis Dam was completed in 1967 and delivered Delta water to the San Luis Unit and Westlands Water District. In 1968, the Bureau of Reclamation created the 134 km long San Luis Drain and Kesterson Reservoir, which was completed in 1971. The construction of the drain and reservoir was accompanied by a vigorous effort to construct an elaborate system of agricultural drainage tiles in an effort to maintain water tables and drain wastes. From 1971-78, Kesterson Reservoir received largely fresh water, but by 1981 all water flowing into the reservoir was saline drain water. The accumulated wastes created a wildlife disaster: the reservoir was subsequently sealed and the saline wastewaters largely redirected to the San Joaquin River.

Striped bass are present throughout Reach 83 and each of the three principle tributaries. The San Joaquin River upstream of Stockton was once one of the major spawning areas for striped bass. Studies by the California Department of Fish and Wildlife (CDFW) demonstrate that significant spawning occurred upstream of Stockton when total dissolved solids at Mossdale ranged between 61 and 250 ppm, which translates to lower EC than the current Vernalis standard. When total dissolved solids reached 661 ppm, as they did during the critical drought year of 1964, there was no striped bass spawning upstream of Stockton.[19]

Based upon that information USEPA promulgated federal salinity objectives for striped bass spawning and migration at 40 CFR 131.37.[20] These objectives establish a salinity standard of 0.44 micro-mhos between 1 April and 31 May for Vernalis, Mossdale, Brandt Bridge to Jersey Point when the San Joaquin River index is greater than 2.5 MAF. The objective applies up to Prisoners Point with the San Joaquin River Index is less than 2.5 MAF. The objectives are also protective of splittail. As USEPA explained in the Federal Register Notice for the Final Rule:

> "In California, striped bass spawn primarily in the warmer freshwater segments of the Sacramento and San Joaquin Rivers. Protection of spawning in both river systems is important to ensure the genetic diversity of the population as well as to increase the size

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[19] Jerry L. Turner and D.W. Kelley, *The Effect of Total Dissolved Solids on Spawning, Table 4,* California Department of Fish and Game*, Ecological Studies of the Sacramento-San Joaquin Delta, Part 2, Fishes of the Delta*, 1966, pp. 37-38. http://content.cdlib.org/view?docId=kt8h4nb2t8&brand=calisphere&chunk.id=meta

[20] https://www.gpo.gov/fdsys/pkg/CFR-2012-title40-vol23/pdf/CFR-2012-title40-vol23-sec131-37.pdf: see also the Final Rule published in the Federal Register at: https://www.gpo.gov/fdsys/pkg/FR-1995-01-24/pdf/95-817.pdf.

> of the overall striped bass population. The precise location and time of spawning appear to be controlled by temperature and salinity (Turner 1972a; Turner and Chadwick 1972). According to the California DFG, striped bass spawn successfully only in freshwater with electrical conductivities less than 0.44 millimhos 43 per centimeter electroconductivity (mmhos/ cm EC), and prefer to spawn in waters with conductivities below 0.33 mmhos/ cm. Conductivities greater than 0.55 mmhos/cm appear to block the upstream migration of adult spawners (Radtke and Turner 1967; SWRCB 1988; SWRCB 1991; CDFG 1990b, WQCP– DFG–4). As explained in more detail in the Preamble to the Proposed Rule, salinity does not appear to be a serious limitation on spawning on the Sacramento River. However, in the smaller and shallower San Joaquin River, migrating bass seeking the warmer waters encounter excessive upstream salinity caused primarily by runoff. This salinity can block migration up the San Joaquin River, thereby reducing spawning, and can also reduce survival of eggs (Farley 1966; Radtke 1966; Radtke and Turner 1967; Turner and Farley 1971; Turner 1972a, 1972b)."

Notwithstanding the fact that the State and Regional Water Board's have ignored the USEPA objectives over the last two decades, they remain legally promulgated regulations that are binding to this day. Moreover, the studies USEPA relied on in establishing salinity criteria protective of the migration and spawning beneficial uses of striped bass are still applicable today and must be considered in any amendment to the Basin Plan.[21]

The Staff Report several times observes that striped bass are a non-native predator that may impact salmon and other California native anadromous fish (pp. 24, 25). The agricultural community has waged a concerted effort to scapegoat and remove legal protection from striped bass for more than a decade. A coalition of agricultural districts sued CDFW in 2008, alleging that the Department's enforcement of striped bass fishing regulations violated the Endangered Species Act. When it became clear that there was insufficient evidence to prevail in the case, they quickly settled and, in 2010, took the issue to the California Fish and Game Commission, where they fared no better. Attached are the comments of Drs. Moyle and Bennett of the Center for Watershed Science on the issue.[22] They turned to the Legislature, with the same result. Attached is testimony by U.C. Davis' Dr. David Ostrach on AB1253.[23] Agricultural interests then persuaded DFW, USFWS and NOAA Fisheries to schedule a 2013 fish predator workshop at UC Davis before six recognized experts from around the nation. The workshop report, titled *Effects of Fish Predation on Salmonids in the Sacramento River-San Joaquin Delta and associated Ecosystems*, found that insufficient information existed in order to determine

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[21] Turner, J.L. 1972. *Striped Bass Spawning in the Sacramento and San Joaquin Rivers in Central California from 1963 to1972*. Calif. Fish and Game, 62(2):106-118: Turner, J.L. and Harold K Chadwick. 1972. *Distribution and Abundance of Young-of-the-Year Striped Bass, Morone saxatilis, in Relation to River Flow in the Sacramento-San Joaquin Estuary*. Anadromous Fisheries Branch, CDFG: Fraley, T.C. 1966. Striped bass, Roccus Saxatilis, *Spawning in the Sacramento-San Joaquin Rivers During 1963 and 1964*: Radtke, L.D. and Jerry L. Turner. 1967. *High Concentrations of Total Dissolved Solids Block Spawning Migration of Striped Bass, Roccus saxatilis, in the San Joaquin River, California*. Transactions of the American Fisheries Society. 96:4, 405-407: Radtke, L.D. 1966. *Distribution of Adult and Subadult Striped Bass, Roccus Saxatilis, in the Sacramento-San Joaquin Delta*: Turner J.L and Timothy C. Farley. 1971. *Effects of Temperature, Salinity, and Dissolved Oxygen on the Survival of Striped Bass Eggs and Larvae. Calif. Fish and Game*. 57(4):268-273. 1971.

[22] http://calsport.org/news/wp-content/uploads/2011/03/Moyle-and-Bennett-to-CFGC-20100826.pdf

[23] http://calsport.org/news/wp-content/uploads/2011/03/Ostrach-Striped-Bass-testimony-on-AB1253.pdf

population level effects of predation and pointed out that "…stress caused by harsh environmental conditions or toxicants will render fish more susceptible to all sources of mortality including predation, disease or physiological stress."[24] Turlock and Modesto Irrigation Districts submitted a predation report prepared by FISHBIO to the Federal Energy Commission as part of the relicensing of the Don Pedro Project. The study had numerous flaws, was predicated upon many assumptions and its estimate of loss was based on the recovery of only 46 juvenile salmon in the stomachs of predators. However, most of the bass capture during the study had no salmon in them at all and the study estimated that largemouth and smallmouth bass were responsible for 75% of the predation.[25]

Striped bass have prospered and coexisted with salmon in the estuary and tributary rivers for more than a hundred years. They, like salmon, steelhead, sturgeon and American shad, are part of the CVPIA's Anadromous Fish Restoration Program's fish doubling requirements and are protected by both state and federal law. The Regional Board must provide suitable water quality standards fully protective of striped bass migration and spawning.

Splittail, American shad, threadfin shad, striped bass, white and green sturgeon migrate upstream and spawn in the San Joaquin above and below Vernalis in the spring. All depend on freshwater (<500 uS/cm EC) for spawning and egg-embryo viability. Adult Chinook salmon and steelhead migrate upstream from fall through spring to spawning tributaries, while their young emigrate to the sea in winter and spring. The proposed objectives of 1550-2470 uS/cm EC will lower production and reduce survival of these important Central Valley fishes.

Another difficulty with salinity levels in the San Joaquin is that in a normal state of nature anadromous fish migrate from saltwater back to their natal freshwater streams to spawn. The salinity gradient is generally constant throughout that journey. However in the Delta, flow from the Sacramento River via the Delta cross-channel and the eastside tributaries freshens the eastern and central Delta with low salinity water. Consequently, as fish return to the San Joaquin River to spawn, they move from high salinity water to lower salinity water and then encounter the significantly higher salinity concentration in the San Joaquin River. This confuses, delays, blocks and generally stresses fish on a biological clock and has been offered as a reason for the low recruitment of fish back to the San Joaquin.

The Staff Report recommended that Reach 83 should not be considered COLD-water habitat because it doesn't support salmonid juvenile development and rearing and migration of smolts or young. (Staff Report, page 23) In reality, Reach 83 provides optimal conditions for emigrating and rearing salmonids from late fall to early spring with optimal water temperatures, flows, and abundant prey. At the 29 November 2016 State Board hearing on the Draft SED for Phase 1 of the revised Bay/Delta Plan, a joint presentation by NOAA Fisheries and UC Davis addressed salmon life history strategies and survival in the San Joaquin River, where they stressed the importance of juvenile rearing in Reach 83.[26] Cold-water habitat in Reach 83 also supports

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24 http://calsport.org/news/wp-content/uploads/2013/10/Fish_Predation_Final_Report_9_30_13.pdf

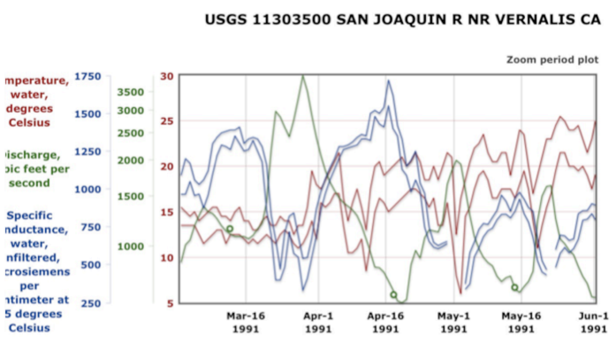
25 http://calsport.org/news/irrigation-districts-cant-see-past-killing-bass-to-save-salmon/

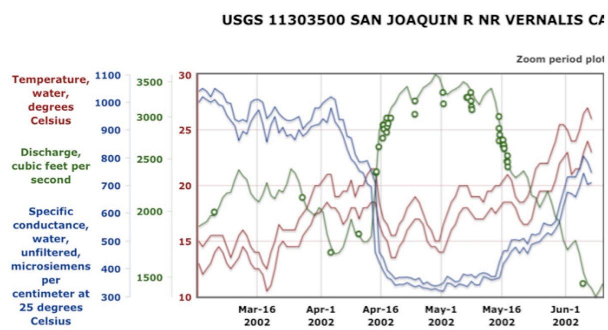
26 http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2016_sed/docs/noaa_ucd_112916.pdf

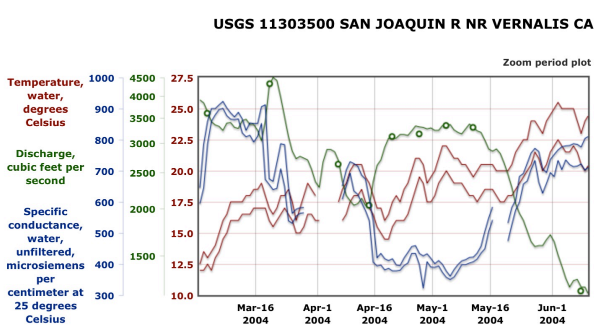
spring sturgeon spawning and rearing. Sturgeon spawning and egg incubation require cold-fresh water, which the river provides if freshwater inflow is sufficient.

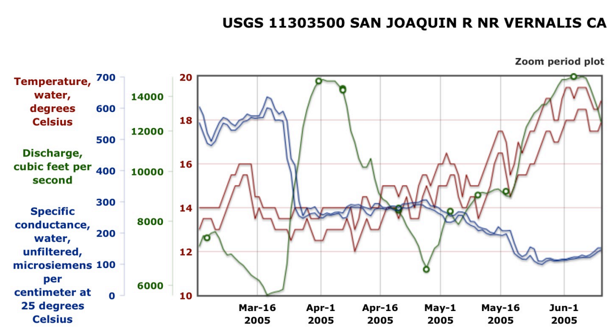
Salinity and water temperature are seasonally related to river flow (discharge). Lower flows often lead to higher salinity and water temperature. Temperatures above 18ºC (65ºF) are generally detrimental to all these fish in winter and spring. Sturgeon, salmon, and steelhead need water temperatures below 15ºC (60ºF) during their spawning migrations.

The following charts, from the USGS gage at Vernalis, depict the relationship between flow, salinity (EC) and water temperature in spring.[27] They include a critically dry year (1991), two dry years (2002, 2004) and a wet year (2005), as determined by the San Joaquin Valley Water Year Index. Flow has a significant direct impact on salinity and a moderating impact on temperature since the flow comes from the eastside tributaries that are cool and low in salinity. However, if the new compliance point is Crows Landing and the majority of dilution flow to ensure compliance with the Vernalis salinity objective comes primarily from New Melones on the Stanislaus, the majority of Reach 83 will experience significantly higher salinity and temperature and not be protective of aquatic life beneficial uses.









Fish and lower trophic organisms in Reach 83 of the San Joaquin River experience low flow, elevated temperature and exposure to an astonishing cocktail of toxic contaminates that can stress aquatic life even at low or chronic concentrations. Many of these constituents interact additively or synergistically with each other and the environment. Multiple stressors can combine to weaken the resistance of aquatic organisms. High salinity is suspected of affecting

[27] The USGS site is convenient because it graphs multiple parameters but unfortunately it eliminated EC after 2005.

the uptake and assimilation of various constituents by fish. There are a number of studies in the literature addressing impacts of TDS on aquatic life. For example, an Australian study titled *Potential impacts of salinity and turbidity in riverine ecosystems*[28] reported that organophosphate toxicity is altered in the presence of salinity, Atrazine toxicity increased synergistically with increasing concentrations of salinity and that endocrine disrupting compounds have been reported to display altered toxicity in the presence of salinity. Several other studies include: *Isolating Effects of Total Dissolved Solids on Aquatic Life in Central Appalachian Coalfield Streams,*[29] *Effects of Total Dissolved Solids On Aquatic Organisms*,[30] and *Effects of Total Dissolved Solids on Aquatic Organisms: A Review of Literature and Recommendation for Salmonid Species*.[31] These issues have not been but must be addressed in any proceeding that proposes to legalize high concentrations of salinity along an extended reach of the San Joaquin River.

In summary, the proposed Basin Plan Amendment fails to identify or describe the aquatic life of the LSJR and fails to analyze potential adverse impacts to these communities. The Environmental Checklist identified no impact to biological resources and is unsupportable. It violates base CEQA requirements and deprives the public of due process. An EIR or equivalent SED must be prepared for the Amendment.

The Proposed Water Quality Objective for Salinity Exposes the Consequences of Handing Over Development of Regulatory Objectives to Industry Groups

This proceeding is a poster-child of the pitfalls of special interests being tasked to develop water quality standards. The Staff Report states:

> "Between May 2010 and the end of 2015, the LSJR Committee developed recommendations for EC WQOs that are protective of beneficial uses in the LSJR, EC Performance Goals that may be achievable, and recommendations for a program to implement the WQOs and Performance Goals for consideration by the Central Valley Water Board. The Committee began by conducting reviews of beneficial uses and water quality data for the LSJR, including white papers on Aquatic Life (Buchwalter, David, Ph.D., North Caroling State University, 2014) and Stock Watering sensitivity to salinity (Kennedy/Jenks Consultants, 2013), and concluded that the Agricultural Supply (AGR) beneficial use is the most sensitive to salinity, followed by the potential Municipal and Domestic Supply (MUN) beneficial use." (Page VI)

It should be noted that the documents the LSJR Committee reviewed to determine the most sensitive beneficial uses have never been posted on the Regional Board's Basin Plan Amendment web site. These include: the Kennedy Jenks *Salt and Nutrient Water Quality Criteria Literature Review* and *Salt and Nutrients: Literature Review for Stock Drinking Water Final Report*, the Buchwalter *Aquatic Life Study Final Report*, the CDM Smith *Salinity Effects*

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28 https://www.ehp.qld.gov.au/water/pdf/potential-impacts-sal-tur.pdf

29 http://www.prp.cses.vt.edu/Reports_10/Timpano-IsolatingTDS-2010.pdf

30 https://www.adfg.alaska.gov/static/home/library/pdfs/habitat/01_06.pdf

31 http://pebblescience.org/pdfs/TDSAlaskaStudy.pdf

on MUN-Related Use of Water White Paper and *Salinity Effects on Agricultural Irrigation-Related Uses of Water White Paper*. We found several through an Internet search and others only by requesting them from staff. To characterize the studies as simply inadequate would be charitable. In an case, the general and interested public would not likely have had easy access to these important documents and this omission represents a fundamental violation of public disclosure and due process. For this reason alone, the public comment period should be reopened and extended.

The Staff Report observes, "irrigation has historically been considered the most sensitive beneficial use for salt and boron in Reach 83 of the LSJR." (Page 28) To ensure that irrigation remains the most sensitive beneficial use, the LSJR Committee avoided any serious effort to identify the life-cycle needs of aquatic life in Reach 83. Our critiques of the inadequacies of the Staff Report and Aquatic Life Study are discussed above but we did identify fish that are more sensitive to salt than irrigation.

The assessment of potential salinity impacts to agriculture is based on a seven-year old report prepared by Dr. Glenn Hoffman titled *Salt Tolerances of Crops in the Southern Sacramento-San Joaquin Delta*.[32] Dr. Hoffman used 30-year old laboratory data on the salt tolerance of bean varieties that are no longer relevant and that ignored effects on different stages of crop life. He also improperly assumed applied water and employed data from subsurface drains in developing leaching fractions, and rejected more conservative modeling results. He candidly observed, "With such an important decision as the water quality standard to protect all crops in the South Delta, it is unfortunate that a definitive answer cannot be based on a field trial with modern bean varieties."[33] And he recommended that field studies be conducted to determine: a) the salt tolerance of beans for local conditions and for new varieties grown today that may have different tolerances; b) the salt tolerance of beans at different growth stages; and c) actual leaching fractions.

The South Delta Water Agency arranged for a series of studies and field tests to better determine actual leaching fractions in the South Delta.[34] The results, reported by Michelle Leinfelder-Miles of the University of California Cooperative Extension, demonstrate that actual leaching fractions in the South Delta are significantly below the levels assumed by the Hoffman Report. Where the Hoffman Report assumed leaching fractions of 15-20% or higher, the new field studies reveal that actual leaching fractions in many areas are 5% or lower. The new information establishes that, in areas with low leaching fractions, salt is accumulating in the root zone at levels that can reduce crop yield.

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[32] Hoffman Report available at:
http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/final_study_report.pdf

[33] Id., p. 98.

[34] We incorporate by reference the comments on salinity of South Delta Water Agency, including the presentation at the December 16, 2016 hearing in Stockton by Michelle Leinfelder-Miles entitled *Leaching Fractions Achieved in South Delta Soils under Alfalfa Culture* which is available at:
http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2016_sed/docs/workshop_presentations/12162016_leinfelder-miles.pdf

Hoffman's original problem is that he assumed applied water EC for "salt in" and old tile drainage data for "salt out." The basic salt in and salt out is how one calculates leaching fractions. Unfortunately, tile drainage water contains highly polluted groundwater and he wrongly assumed that everyone was getting applied water at or below the standard of 700 uS/cm, when many were actually diverting water at 1000-1800 uS/cm. In other words, Hoffman underestimated applied EC (salt in) and overestimated salt out. Inexplicably, the LSJR Committee and the Regional Board staff ignore the new information and actual field data provided by South Delta Water Agency and are proceeding down the same path of unsupported assumptions and non-conservative decision-making.

The LSJR Committee and Regional Board staff conducted no site-specific field studies to determine actual leaching rates. The Staff Report observes that "during several LSJR Committee meetings, irrigation stakeholders representing major water agencies agree that 15% is a reasonable default assumption" for a leaching fraction. (Page 36) In other words, they relied upon recommendations of organizations and individuals that have a vested interest in ensuring that the results of any assessment of potential salinity impacts will not lead to more restrictive EC limits.

In selecting the crop that is most sensitive to salt, the LSJR Committee arbitrarily established a requirement that only crops comprising more than 5% of the acreage in the irrigation use area would be selected as "the most sensitive crop." (Staff Report, page 36) This eliminated the most sensitive crop: dry beans, which comprised 22.03% of acreage in the 1990s surveys, 11.64% in the 2000s surveys but only 3% in the 2013-14 survey. Almonds are not a sensitive as dry beans but their percentage of crop acreage has grown from 3.65% in the 1990s to 28.91% in the 2013-2014 survey. (Pages 36-39)

To determine the water input, the LSJR Committee arbitrarily rejected using the most sensitive (driest) rain year and decided that a "5th percentile of the driest historic annual precipitation measured in the 1952 through 2013 water years" was "sufficiently conservative for the LSJR Irrigation Use Area" (Page 36), even though 1976, 1977, and 2007 had less rainfall and this excluded the most recent extreme drought years. They further assumed that everyone irrigated with river water and made no attempt to identify those who may irrigate with groundwater containing a higher concentration of salt.

There were several different options on modeling crop water uptake: one based upon an exponential crop water uptake pattern and one based on the 40-30-20-10 crop water uptake distribution. In Hoffman's 2010 report for the south Delta, the exponential method based on a 15% leaching fraction supported a 1000 uS/cm objective while the 40-30-20-10 water uptake distribution based on a 15% leaching fraction only supported a 800 uS/cm objective.[35] Initially, Regional Board staff modeled both versions but the LSJR Committee requested that only the exponential approach be used.

The Hoffman modeling results for the LSJR area showed that using almonds with a 15% leaching fraction, 5th percentile precipitation, to protect 100% crop yield resulted in a crop

[35] Hoffman Report, page 100.

salinity threshold of 1200 uS/cm, whereas using dry beans, with a 15% leaching fraction to protect 100% of crop yield results in a crop salinity threshold of 800 uS/cm. However, even a water quality objective of 1200 uS/cm would have likely resulted in criteria violations. Consequently, the model was rerun to protect 95% of crop yield and this resulted in a crop salinity threshold of 1550 uS/cm. But even this higher water quality objective would potentially result in violations during dry years, so they ran the model again to protect 75% of crop yield which resulted in a crop salinity threshold of 2470 uS/cm. (Staff report, Table 5-7, LSJR Irrigation Use Area Hoffman Modeling Results, page 49)

To put things in perspective, the Staff Report proposes a water quality objective of 1550 uS/cm in normal years and 2470 uS/cm during drier periods. To accomplish these objectives, the LSJR Committee had to use less conservative water uptake distribution in their modeling, believe that 15% is an accurate leaching fraction, ignore rainfall in the driest 5% of years, assume no one irrigates with groundwater, sacrifice 5 or 25% of annual yield, eliminate the most sensitive crop (beans) and presume that the ballooning market for almonds continues to expand.

However, commodity markets are constantly changing. For example, during the three periods of acreage surveys (1990s. 2000s and 2013-14): corn acreage was mixed (9.7, 0.6 and 9.5 percent); celery acreage was mixed (0, 14.7 and 0 percent); tomato acreage was mixed (16.1, 0.95 and 15.2 percent); apricot acreage trended downward (8.3, 5.5 and 2.7 percent); dry bean acreage trended downward (22, 11.7 and 3 percent); but almond acreage trended upward (3.7, 8.6, and 28.9 percent); as did walnut acreage (3.3, 4.6 and 7.3 percent). What will happen when the rapidly expanding almond acreage bursts the commodity price bubble or if China decides it doesn't want to continue importing massive quantities of almonds from America? Or what if the actual leaching fraction is not 15% but 10%, which would have established an EC limit of 1010 uS/cm. What crops will be – or can be planted? Does arbitrarily establishing a water quality criterion at a level that prevents farmers from growing beans without risking permanent damage to their land represent an illegal "taking?"

This is what inevitably happens when a regulatory agency hands over the development of regulations to special interests. The LSJR Committee failed to develop boron objectives, although that was part of the task and was identified as technically achievable. They failed to describe, analyze and identify the fish and wildlife in the subject area or propose standards protective of those beneficial uses. They couldn't even propose water quality standards for salinity that are protective of farmers right to farm. Their sole mission seems to be avoiding having to effectively control the mass loading of highly saline agricultural wastewater into the San Joaquin River.

There is No Defensible Antidegradation Analysis that Comports with Regulatory Requirements

The Staff Report fails to conduct an antidegradation analysis sufficient to provide the public a meaningful opportunity to understand and comment on the potential impacts of the proposed project. This analysis is especially important in light of the recent decision of the Third Appellate Court in *Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Board*, 210 Cal.App.4th 1255 (Nov. 6, 2012). In this decision, the Court found that the state antidegradation policy "measures the baseline water quality as that existing in 1968 and defines high quality waters as the best quality achieved since that date,"[36] encompassing most waters of the state as high quality water to be protected. It further finds that any actions to lower water quality below that level will trigger the antidegradation policy,[37] which requires that such high quality "will be maintained until it has been demonstrated" that "any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies."[38]

The State and Regional Water Board's Antidegradation Policy (Resolution 68-16) requires that:

- Existing high quality water will be maintained until it has been demonstrated that any change will be with the maximum benefit to the people of the State.
- The change will not unreasonably affect present and anticipated beneficial uses.
- The change will not result in water quality less than prescribed in the policies.
- Any activity which produces a waste or increased volume or concentration will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that a pollution or nuisance will not occur and the highest water quality with maximum benefit to the people of the state will be maintained.

The proposed Basin Plan Amendment proposes to establish less restrictive site specific water quality objectives for electrical conductivity for the LSJR as:

- Shall not exceed 1550 micromhos/cm (as a 30-day running average), except during extended Dry Periods, when concentrations shall not exceed 2470 micromhos/cm (as a 30-day running average) and 2200 micromhos/cm (as an annual average using at a minimum the previous four quarterly samples)

Existing water quality objectives:

- By use of the tributary rule, the existing water quality objectives would be the objectives listed for the downstream waters at Vernalis.
- Existing water quality objectives can also be derived from the Basin Plan water quality objectives, chemical constituents. The Basin Plan states, on Page III-3.00 Chemical Constituents, that "Waters shall not contain constituents in concentrations that adversely affect beneficial uses." The Basin Plan's "Policy for Application of Water Quality Objectives" provides that in implementing narrative water quality objectives, the Regional Board will consider numerical criteria and guidelines developed by other agencies and organizations. This application of the Basin Plan is consistent with Federal

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[36] Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Board , 210 Cal.App.4th

[37] State Water Resources Control Board, "Resolution 68-16: Statement of Policy with Respect to Maintaining High Quality of Waters in California" (Oct. 28, 1968), available at: http://waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf .

[38] Asociacion de Gente Unida por el Agua, 210 Cal.App.4th at 1270.

Regulations, 40CFR 122.44(d).

- The Basin Plan, chemical constituents, include by direct reference, Table 64449-B in Title 22 of the California Code of Regulations contains consumer acceptance contaminant level ranges for a number of salinity constituents. For electrical conductivity, the table contains a recommended value of 900 µS/cm, an upper value of 1600 µS/cm and a short-term value of 2200 µS/cm.
- For EC, *Ayers R.S. and D.W. Westcott, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985),* levels above 700 µmhos/cm will reduce crop yield for sensitive plants. The University of California, Davis Campus, Agricultural Extension Service, published a paper, dated 7 January 1974, stating that there will not be problems to crops associated with salt if the EC remains below 750 µmhos/cm.

Adoption of the proposed Basin Plan Amendment will result in less restrictive water quality objectives and therefore degraded water quality. The proposed SNMP allows for continued water quality degradation and mixing zones. Therefore, an Antidegradation Analysis is required. CWC Sections 13146 and 13247 require that the Board in carrying out activities which affect water quality shall comply with state policy for water quality control unless otherwise directed by statute, in which case they shall indicate to the State Board in writing their authority for not complying with such policy. The State Board has adopted the Antidegradation Policy (Resolution 68-16), which the Regional Board has incorporated into its Basin Plan. The Regional Board is required by the CWC to comply with the Antidegradation Policy.

Section 101(a) of the Clean Water Act (CWA), the basis for the antidegradation policy, states that the objective of the Act is to "restore and maintain the chemical, biological and physical integrity of the nation's waters." Section 303(d)(4) of the CWA carries this further, referring explicitly to the need for states to satisfy the antidegradation regulations at 40 CFR § 131.12 before taking action to lower water quality. These regulations (40 CFR § 131.12(a)) describe the federal antidegradation policy and dictate that states must adopt both a policy at least as stringent as the federal policy as well as implementing procedures.

California's antidegradation policy is composed of both the federal antidegradation policy and the State Board's Resolution 68-16 (State Water Resources Control Board, Water Quality Order 86-17, p. 20 (1986) ("Order 86-17); Memorandum from Chief Counsel William Attwater, SWRCB to Regional Board Executive Officers, "federal Antidegradation Policy," pp. 2, 18 (Oct. 7, 1987) ("State Antidegradation Guidance")). As a state policy, with inclusion in the Water Quality Control Plan (Basin Plan), the antidegradation policy is binding on all of the Regional Boards (Water Quality Order 86-17, pp. 17-18).

Implementation of the state's antidegradation policy is guided by the State Antidegradation Guidance, SWRCB Administrative Procedures Update 90-004, 2 July 1990 ("APU 90-004") and USEPA Region IX, "Guidance on Implementing the Antidegradation Provisions of 40 CFR 131.12" (3 June 1987) ("Region IX Guidance"), as well as Water Quality Order 86-17.

The Regional Board must apply the antidegradation policy whenever it takes an action that will lower water quality (State Antidegradation Guidance, pp. 3, 5, 18, and Region IX Guidance, p. 1). Both the state and federal policies apply to point and nonpoint source pollution (State Antidegradation Guidance p. 6, Region IX Guidance, p. 4).

Tier 1 protections apply even to those waters already impacted by pollution and identified as impaired. In other words, already impaired waters cannot be further impaired.

Tier 2 waters are provided additional protections against unnecessary degradation in places where the levels of water quality are better than necessary to support existing uses. Tier 2 protections strictly prohibit degradation unless the state finds that a degrading activity is: 1) necessary to accommodate important economic or social development in the area, 2) water quality is adequate to protect and maintain existing beneficial uses and 3) the highest statutory and regulatory requirements and best management practices for pollution control are achieved (40 CFR § 131.12(a) (2)). Cost savings to a discharger alone, absent a demonstration by the project proponent as to how these savings are "necessary to accommodate important economic or social development in the area," are not adequate justification for allowing reductions in water quality (Water Quality Order 86-17, p. 22; State Antidegradation Guidance, p. 13).

The State Board's APU 90-004 specifies guidance to the Regional Boards for implementing the state and federal antidegradation policies and guidance. The guidance establishes a two-tiered process for addressing these policies and sets forth two levels of analysis: a simple analysis and a complete analysis. A simple analysis may be employed where a Regional Board determines that: 1) a reduction in water quality will be spatially localized or limited with respect to the waterbody, e.g. confined to the mixing zone; 2) a reduction in water quality is temporally limited; 3) a proposed action will produce minor effects which will not result in a significant reduction of water quality; and 4) a proposed activity has been approved in a General Plan and has been adequately subjected to the environmental and economic analysis required in an EIR. A complete antidegradation analysis is required if discharges would result in: 1) a substantial increase in mass emissions of a constituent; or 2) significant mortality, growth impairment, or reproductive impairment of resident species.

Even a minimal antidegradation analysis would require an examination of: 1) existing applicable water quality standards; 2) ambient conditions in receiving waters compared to standards; 3) incremental changes in constituent loading, both concentration and mass; 4) treatability; 5) best practicable treatment and control (BPTC); 6) comparison of the proposed increased loadings relative to other sources; and 7) an assessment of the significance of changes in ambient water quality. A minimal antidegradation analysis must also analyze whether: 1) such degradation is consistent with the maximum benefit to the people of the state; 2) the activity is necessary to accommodate important economic or social development in the area; 3) the highest statutory and regulatory requirements and best management practices for pollution control are achieved; and 4) resulting water quality is adequate to protect and maintain existing beneficial uses. A BPTC technology analysis must be done on an individual constituent basis.

The antidegradation review process is especially important in the context of waters protected by Tier 2. See EPA, Office of Water Quality Regulations and Standards, *Water Quality Standards*

Handbook, 2nd ed. Chapter 4 (2nd ed. Aug. 1994). Whenever a person proposes an activity that may degrade a water protected by Tier 2, the antidegradation regulation requires a state to: (1) determine whether the degradation is "necessary to accommodate important economic or social development in the area in which the waters are located"; (2) consider less-degrading alternatives; (3) ensure that the best available pollution control measures are used to limit degradation; and (4) guarantee that, if water quality is lowered, existing uses will be fully protected. 40 CFR § 131.12(a)(2); EPA, Office of Water Quality Regulations and Standards, Water Quality Standards Handbook, 2nd ed. 4-1, 4-7 (2nd ed. Aug. 1994). These activity-specific determinations necessarily require that each activity be considered individually.

For example, the APU 90-004 states:

> "Factors that should be considered when determining whether the discharge is necessary to accommodate social or economic development and is consistent with maximum public benefit include: a) past, present, and probably beneficial uses of the water, b) economic and social costs, tangible and intangible, of the proposed discharge compared to benefits. The economic impacts to be considered are those incurred in order to maintain existing water quality. The financial impact analysis should focus on the ability of the facility to pay for the necessary treatment. The ability to pay depends on the facility's source of funds. In addition to demonstrating a financial impact on the publicly – or privately – owned facility, the analysis must show a significant adverse impact on the community. The long-term and short-term socioeconomic impacts of maintaining existing water quality must be considered. Examples of social and economic parameters that could be affected are employment, housing, community services, income, tax revenues and land value. To accurately assess the impact of the proposed project, the projected baseline socioeconomic profile of the affected community without the project should be compared to the projected profile with the project…EPA's Water Quality Standards Handbook (Chapter 5) provides additional guidance in assessing financial and socioeconomic impacts"

The Antidegradation Analysis is virtually nonexistent and consists of a few unsupported and conclusory statements. There is no discussion of:

- The baseline water quality existing in 1968,
- The current applicable water quality standards or the level of compliance of those standards,
- The current concentration and mass loading rates,
- The treatability especially on a discharger-by-discharger basis,
- Best practicable treatment and control (BPTC) except to say it will be required of wastewater dischargers,
- What constitutes BPTC,
- An assessment of the changes to water quality of the past 19-years since the river was determined to be impaired,
- What impact the proposed Basin Plan Amendment will have on the requirement to achieve compliance with water quality standards at Vernalis,

- Why any such change in water quality standards is in the best interest of the people of California, and
- That the Basin Plan Amendment will result in water quality standards that are less than those prescribed in the policies.

The Staff Report states:

> "It is also unlikely that any of the water in Reach 83 of the LSJR, even if water rights were obtained, would be available for diversion for municipal or domestic uses because, in a letter to the Stanislaus County Department of Environmental Resources (California Department of Health Services, 1996), the California Department of Public Health's Drinking Water Division stated the following: "Our Department objects to possible consideration of the San Joaquin River as a domestic water supply source for new public water systems. Any and all available alternatives must be evaluated because we will not support issuance of a domestic water supply permit for the San Joaquin River." This department (now a division of the State Water Board) regulates all public municipal and domestic water supply systems. Stanislaus County encompasses almost 95 percent of the LSJR in Reach 83." (Staff Report, pages 21,22)

The comment and referenced letter do not specify what pollutants are in the receiving stream that render it unfit for consumption. The Antidegradation Analysis does not assess the ambient conditions in receiving waters compared to standards.

As is shown above, in our Hoffman Model comments, the model was not run using the most conservative salt sensitive crop and the leaching fraction is not the most conservative. The Staff Report, page 76, states in part that: "After discussions with the agricultural water users, it was determined that a 75% crop yield level of protection could be tolerated during extended dry periods. The LSJR Committee used the Hoffman model to determine that an EC of 2,470 µS/cm in the irrigation water would provide this protection level." It must be remembered that the cited level of protection was developed using almonds and a leaching fraction of 15% in the Hoffman Model. Dry beans, a significantly more salt sensitive crop would suffer a much greater yield reduction. The impacts of the proposed BPA are not fully assessed or discussed in the Antidegradation Analysis. The Antidegradation Analysis is incomplete and inadequate.

In a *Biological Significance* document, dated November 1st 2006, James M. Harrington, Staff Water Quality Biologist with the California Department of Fish and Game, citing McKee and Wolf (1971 Water Quality Criteria) wrote that: "Surveys of inland fresh waters indicates that good mixes of fish fauna are found where conductivity values range between 150 and 500 umhos/cm. Even in the most alkaline waters, the upper tolerance limit for aquatic life is approximately 2000 umhos/cm." The Antidegradation Analysis and the Staff Report do not discuss the levels of salinity that are necessary to protect the aquatic life beneficial uses of the receiving stream. The Staff report assesses that the LSJR does not support cold water fish species but does support cold water fish migration and that tributary streams do support cold water aquatic life. The Staff Report does cite that: *Prior to major water developments, the SJR watershed supported a superlative Chinook Salmon fishery and tens of thousands of salmon probably spawned in its headwaters (SWRCB, 1987).* A primary tenant of the Clean Water Act is that water of the state be fishable and swimmable. The Antidegradation Analysis fails to discuss the levels of salinity that are necessary to protect the beneficial uses of aquatic life and any impacts from the proposed salinity levels allowed by the proposed BPA.

Conclusion

For all of the reasons identified above, the proposed Amendment must be withdrawn and an EIR or SED prepared and a comprehensive antidegradation analysis conducted.

Thank you for considering these comments. If you have questions or require clarification, please don't hesitate to contact us.

Sincerely,

Bill Jennings, Executive Director
California Sportfishing Protection Alliance

Richard McHenry, Director of Permits & Compliance
California Sportfishing Protection Alliance

Carolee Kreiger, Executive Director
California Water Impact Network

Barbara Vlamis, Executive Director
AquAlliance

Connor Everts, Facilitator
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