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28 January 2011

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RE: Notice of Preparation for the Completion of an EIR on the Delta Plan

The California Sportfishing Protection Alliance (CSPA) has reviewed the Notice of Preparation for the EIR on the Delta Plan and, on behalf of its thousands of members statewide, respectfully submits the following comments. We look forward to working with the Council over the coming months in analyzing various proposed components of the Delta Plan and developing an effective final Plan that will meaningfully address the collapse on the Sacramento-San Joaquin Delta estuary and California's water supply problems.

We incorporate by reference the comments by the Environmental Water Caucus and the joint letter by CSPA, the California Water Impact Network and Center for Biological Diversity previously submitted at the scoping meeting in Stockton on 25 January. These supplemental comments focus primarily on defined goals, alternatives, supply interruption, over appropriation of water, water quality and the use of CalSim II.

We offer a word of caution. The Delta is an incredibly complex estuarine ecosystem and only in our hubris do we believe we understand the intricacies of its hydrological and biological tapestry. Virtually every previous EIR prepared for hydro-modification projects have promised benign or beneficial results. All exacerbated existing conditions. Almost every physical change comes with unintended consequences. Adaptive management must be an integral component of any Delta Plan. But, adaptive management has a checkered history in this estuary. Managers have all too frequently rejected the "adaptive" recommendations made by scientists, biologists and technical review teams. For adaptive management to play a meaningful role, scientists must have the authority to "adapt."

Over mere decades, construction of the Central Valley and State Water Projects have deprived the Delta estuary of half its flow; turned the natural hydrograph on its head, reduced temporal and spatial variability; eliminated crucial habitat, complexity and diversity and deprived the estuary of dilution necessary to assimilate increased pollutant mass loading. It is not surprising that an ecosystem that developed and prospered under a

state of nature has been brought to the brink of destruction. No estuarine ecosystem in the world has survived this level of abuse.

The EIR will fail the mandate of fair disclosure if it does not comprehensively discuss the causes, extent and history of the decline of fisheries and water quality in the estuary.

The EIR Must Better Define "Coequal Goals"

The definition of the "coequal" goals of ecosystem protection and water supply reliability begs for further elaboration in the EIR and Delta Plan. These goals must be considered in the context of a degraded estuary, existing facilities, the California Water Code and how water is actually put to use in California. For example:

1. How do we prioritize water use in terms of coequal goals?
2. What does water supply reliability mean in an arid state where we have granted rights to far more water than actually exists?
3. Does water supply reliability apply to both public trust resource needs and consumptive uses (i.e., should fish have water rights)?
4. Are statutory requirements to protect water quality and listed species equivalent to water supply reliability for lawns or surplus and non-food crops?
5. Is the standard by which we measure water supply reliability the same for junior and senior appropriators?
6. Does efficient use of water have higher priority over waste and inefficient use?
7. Do we prioritize consumptive use on the basis of economic value?
8. Does health and safety take precedence over certain agricultural uses of water?
9. Are food crops more important than non-food commodities?
10. Is it reasonable that Kern County, representing a fraction of one percent of the state's population and economy should be accorded rights to water equal to the South coast, with almost half the state's population and economy?
11. Is protection of a "national treasure" and one of the world's great estuaries more valuable to society than irrigating impaired soils, that by the nature of being irrigated, discharge prodigious quantities of toxic wastes back to our waterways?
12. If an entity discharges pollutants that eliminate "assimilative capacity" and "beneficial use" of downstream waters, should the degraded water be deducted from the water supply provided that entity?
13. Should water supply reliability be conditioned upon specific requirements to maximize reclamation, reuse, conservation and development of alternative local sources of water?
14. Do uses of water that require vast public subsidies have the same priority to uses that don't require subsidy of public funds and are uses that internalize adverse impacts equal to uses that externalize them?

We believe answers to these questions are foundational to resolving California's water conundrum and must be addressed in the EIR.

The EIR Must Include a Full Range of Alternatives

The fundamental purpose of an EIR is to make fair disclosure and analyze potential impacts and alternatives to a proposed project to enable decision makers to make informed decisions on whether the project will be effective in meeting its stated goals, will comply with regulatory requirements and be in the best interests of society. In that vein, the EIR must evaluate a range of reasonable alternatives.

Given the present degraded condition of the Delta estuary, the over allocation of water rights and the statutory goal of reducing dependence on the Delta, CSPA believes the EIR must consider a no export and reduced export alternative, along with evaluation of a range of flows for any new Delta water conveyance facility. Evaluation must be at a common level of detail and include a broad socio-economic analysis of each alternative, as well as potential effects of each alternative on identified beneficial uses.

The California Legislature, in SB-1 (Seventh Extraordinary Session), tasked the State Water Resources Control Board (SWRCB) to gather the best available science and develop flow criteria for the Delta ecosystem necessary to protect public trust resources, including the volume, quality, and timing of water needed under different conditions. The Legislature also directed the California Department of Fish and Game (DFG) to identify quantifiable biological objectives and flow criteria for species of concern in the Delta. Together, those reports represent the best scientific information on minimum flows and objectives needed to protect the estuary's public trust resources. As such, the EIR should analyze and discuss the degree to which each alternative meets the flows and criteria identified by the SWRCB and DFG as necessary to protect the estuary.

The EIR Must Better Define "Doomsday"

The dire predictions of inevitable earthquake and sea rise have been repeated ad nausea. Earthquakes may occur, the sea will rise and levees are likely to fail. In fact, all levees have already failed and, at times, multiple levees have failed in the same event(s). However, with several small exceptions, islands have been reclaimed. We note that should we have a return of the 1860 storms, the Central Valley will become an inland sea and the issue at hand will be moot.

The doomsday chroniclers fail to discuss the duration of disaster. Should the prophesized failure of levees occur, how much time would transpire before the Delta returned to equilibrium and export pumping could be resumed? When Jones Tract failed, pumping resumed within a few days despite dire predictions of extended interruption. If a catastrophic event occurs in December, what would be the extent of the impact? If it happens in summer, how long would it take for increased tributary flows and reservoir releases to restore equilibrium? A relatively simple mass balance analysis should be able to answer these questions. The EIR must fully analyze and discuss the expected duration and costs of interrupted water delivery.

What are the potential economic and social costs arising from a limited interruption? Is sufficient south-of-Delta storage available to handle M & I needs in the interval? Would impacts to irrigated farmland be similar to or less than what would occur during an extended drought? Is it worth spending tens of billions of dollars to address an event that may or may not occur once in a lifetime? The EIR must address the economic and social impacts and costs of limited interruption in water delivery compared to the costs of massive new infrastructure for alternative conveyance.

There is a serious difference of opinion regarding the fragility of Delta levees between the engineers who work on Delta levees on an ongoing basis and the theoretical academics that predict disaster. Can levees be strengthened to reduce the potential impacts of earthquakes and raised to withstand sea level rises likely to occur within the next fifty years for a fraction of the cost of alternative conveyance? Again, the EIR must address the costs of improving levees as opposed to the costs and consequences of new export facilities and massive changes in the Delta's hydrology.

The EIR Must Address the Elephant in the Room

California's modern water code is the result of more than a hundred and fifty years of legislation and legal precedent. Riparian water rights are the most senior and superior rights, followed by pre-1914 appropriative rights and, lastly, post-1914 appropriative rights, as determined by the seniority requirements of first-in-time-and-use. Failure to follow the explicit mandates of the water code has led to a massive, long recognized over appropriation of water in the Central Valley.

The EIR must include a discussion of the water rights system in California, the protections accorded senior users and counties of origin, the extent to which water has been over appropriated and how these protections and over allocations relate to the coequal goals of ecosystem protection and water supply reliability.

In the 1930s and 1940s, staff within the Department of the Interior and the old State Water Rights Board advocated an adjudication of water rights prior to construction of the Central Valley Project. Both Governor Earl Warren and State Water Rights Board Chairman Henry Holsinger testified during the Clair Engle's Congressional hearings in 1951 that a complete adjudication of water rights on the Sacramento River should have occurred prior to the completion of the Central Valley Project. In fact, the Engle committee concluded that, "[t]hat for all practical purposes, the developed water supplies of the Sacramento River are overcommitted and oversubscribed." This was prior to approval and construction of the State Water Project. And, as DWR Bulletin No. 76 acknowledged, the State Water Project was predicated on obtaining some 5,000,000 acre-feet of water annually from north coastal streams. With the exception of some Trinity River flows, the anticipated water from the north coast never materialized.

Responding to a request from the Delta Vision Blue Ribbon Task Force, State Water Resource Control Board (SWRCB) staff submitted a document that briefly discussed

water rights and water use in the Delta watershed.[1] It stated"

1. The "total face value of the approximately 6,300 active water right permits and licenses within the Delta managed by the State Water Board, including the already assigned portion of state filings, is approximately 345 million AFA."
2. Face value "does not include pre-1914 and riparian water rights."
3. That "the total face value of the unassigned portion of state filings for consumptive use (excluding state filings for the beneficial use of power) within the Delta watershed is approximately 60 million AFA."

The SWRCB has no idea of how much water is actually being used. Even accounting for limits on usage because of availability, multiple rights covering the same water (i.e., consumptive vs. non-consumptive uses) or return flows where water is not consumed; it is indisputable that more rights to water have been issued than actual unimpaired runoff in the basin. This massive over appropriation exists without even addressing the fact that the SWRCB does not know the extent of senior riparian or pre-1914 water rights or the amount of consumptive water rights in permits that have not been exercised (for example, DWR and the Bureau's pending petitions for extensions of time to put many of their water rights to beneficial use).

Further exacerbating the issue is the fact that climate change is likely to alter the timing and reduce the volume of runoff. PG&E's Chief Hydrologist, Gary Freeman has documented the shift in runoff timing and the annual decrease of 264-279 TAF of water in the Feather River watershed. Add the increased coldwater pools necessary to maintain water temperatures below rim dams to the estimates by the SWRCB and Department of Fish and Game of the increased inflow and outflow necessary to protect rivers and the Delta public trust resources and it becomes clear that the coequal goal of water supply reliability cannot be defined as maintenance of existing levels of supply from the Delta.

The EIR must discuss the coequal goals and proposed alternatives in context of the vast over appropriation of water, legal requirements of the water code, public trust doctrine and legal precedent.

The EIR Must Address the Fact That Increased Diversions or Alternative Conveyance Will Exacerbate Delta Water Quality

Water quality and water quantity are flip sides of the same coin and increases or decreases in flow alter assimilative capacity and residence time and change the fate and transport of contaminates. Hydrologic changes modify constituent concentration and bioavailability, which in turn can adversely impact the aquatic ecosystem and other beneficial uses.

Water from the Sacramento River is significantly less polluted than water flowing into the estuary from other tributaries. Sacramento River water drawn across the Delta to the

[1] SWRCB. 2008. Water Rights Within The Bay/Delta Watershed. Letter to Delta Vision Blue Ribbon Task Force. 26 September 2008. 4 Pages.

export pumps is a major reason water quality in the South Delta is better than it would otherwise be. Diversion of this relatively good quality water around the Delta will increase the concentration of existing constituents. It will also increase the residence time of water in the Delta thereby enhancing the opportunity for bioaccumulation and oxygen depletion to occur. The EIR and Delta Plan must fully analyze and discuss the likelihood of degradation of Delta water quality caused by alternative conveyance or increased exports.

Previous efforts to evaluate potential water quality impacts from proposed projects in the Delta have either ignored water quality, with the exception of salt, or relied upon models that track "particles" to evaluate water quality. However, the majority of pollutants identified as impairing the estuary are non-conservative dissolved forms of pesticides, mercury, nutrients or oxygen demand constituents. Conservative constituents like salt are unacceptable surrogates for the universe of chemical constituents and pathogens impairing in the Delta. CalSim II and various particle-tracking models are unable to model potential impacts to water quality from non-conservative constituents. Other models and methods must be utilized in assessing the effects of project alternatives on water quality.

The SWRCB's 2010 Integrated Report, Clean Water Act Section 303(d) List/305(b) Report identifies the Delta as impaired and incapable of supporting identified beneficial uses.[2] For example, the Report documents the:

1. Northern portion of the Delta as impaired because of chlordane, chlorpyrifos, DDT, diazinon, dieldrin, Group A pesticides, invasive species, mercury, PCBs and unknown toxicity.
2. Northwestern portion as impaired by chlorpyrifos, DDT, diazinon, electrical conductivity Group A pesticides, invasive species, mercury and unknown toxicity.
3. Western portion as impaired by chlorpyrifos, DDT, diazinon, electrical conductivity, Group A pesticides, invasive species, mercury and unknown toxicity.
4. Central portion as impaired by chlorpyrifos, DDT, diazinon, Group A pesticides, invasive species, mercury and unknown toxicity.
5. Southern portion of the Delta as impaired by DDT, diazinon, electrical conductivity, Group A pesticides, invasive species, mercury and unknown toxicity. (Old River in the South Delta is further identified as impaired by salinity, low dissolved oxygen and chlorpyrifos)
6. Export area is impaired by chlorpyrifos, DDT, diazinon, electrical conductivity, Group A pesticides, invasive species, mercury and unknown toxicity.
7. Eastern portion as impaired by chlorpyrifos, DDT, diazinon, Group A pesticides, invasive species, mercury and unknown toxicity.

[2] SWRCB. 2010. 2010 Integrated Report, Clean Water Act Section 303(d) List/305(b) Report, "California 2010 303(d) combined list."
http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

8. Stockton Ship Channel as impaired by chlorpyrifos, DDT, diazinon, dioxin, furan compounds, Group A pesticides, invasive species, mercury, organic enrichment/low dissolved oxygen, PCBs, pathogens and unknown toxicity.

Tributaries connecting with the Delta are also listed. For example the:

1. Lower Sacramento River (Knights Landing to the Delta) is identified as impaired by chlordane, DDT, dieldrin, mercury, PCBs and unknown toxicity.
2. Suisun Bay is identified as impaired because of chlordane, DDT, dieldrin, dioxin compounds, furan compounds, invasive species, mercury, PCBs and selenium.
3. Lower San Joaquin River (Stanislaus River to the Delta) is identified as impaired by chlorpyrifos, DDE, DDT, diuron, electrical conductivity, pathogens, Group A pesticides, mercury, toxaphene and unknown toxicity. U.S.EPA has recently stated that it intends to add temperature to the list of identified impairments on the San Joaquin (as well as the Stanislaus, Tuolumne and Merced Rivers).
4. Lower Mokelumne River (eastern portion, Delta waterways) is identified as impaired by chlorpyrifos, copper, mercury, dissolved oxygen, unknown toxicity and zinc. The lower Calaveras River is identified as impaired by unknown toxicity, chlorpyrifos, diazinon, mercury, organic enrichment/low dissolved oxygen and pathogens.
5. Smaller tributaries; including Duck Creek, Five Mile Slough, French Camp Slough, Marsh Creek, Sand Creek, Mosher Slough, Mountain House Creek, Pixley Slough, Tom Paine Slough and Walker Slough are further listed as impaired.

As constituents respond differently to changes in flow and residence time, the EIR must evaluate the impacts of potential hydrologic modifications on a pollutant-by-pollutant basis.

The identified impairments on the 303(d) list are only the tip of the iceberg. There are impairments in the Delta that are "caused by total organic carbon, nutrients and other contaminates for which there are no federal or state water quality criteria. In addition to a lack of promulgated water quality criteria for many common water pollutants, there are situations in which the current water quality criteria/standards are well recognized as not being protective of aquatic life resources. For example, the water quality criterion for selenium in the SJR and Delta is not protective of some aquatic life.

Existing water criteria fails to address many issues that must be considered in considering impacts on aquatic life. For example:

1. Existing criteria fails to consider additive and synergistic properties of regulated chemicals that occur in concentration below criteria. For example, Delta water frequently contains a cocktail of as many as 15 pesticides, many of which interact additively or synergistically.
2. Adverse impacts to sensitive species, such as zooplankton, were not included in the development of many criteria.

3. There is limited information on chronic exposure to sublethal impacts of chemicals and mixtures of chemicals. Numerous studies in the scientific literature demonstrate adverse effects of chemical exposure well below water quality criterion.
4. Water quality criterion fails to address the chronic effects of multiple stressors acting on an already weakened aquatic ecosystem.
5. Chemical degradants, a product of chemical breakdown in the environment, are little understood but are frequently highly toxic.
6. Water quality criteria have been developed for only a small subset of the chemicals found in these waters. Of the approximately 100,000 chemicals registered for use in the United States, only about 200 are regulated with respect to water quality. The Priority Pollutant List is an artifact of a legal settlement several decades ago, has never been peer-reviewed and is an inadequate surrogate for the maelstrom of chemicals found in waterways today. These include pharmaceuticals and personal care products, industrial chemicals and other potentially hazardous constituents that have been identified as carcinogens, reproductive toxins, endocrine disruptors and immune suppressors, etc.
7. Criteria are frequently insufficiently protective for pollutants that bioconcentrate and/or bioaccumulate in tissue.
8. Many drinking water criteria are economically based and not health risk based.

As noted above, relocation of export facilities to the Sacramento River will increase residence time in the Delta. This increased residence time may encourage the growth of toxic blue-green algae, which has become a serious problem in recent years. Bioaccumulating constituents like selenium and methyl-mercury or pollutants like DDT and dioxin will have more opportunity to work their way up the food chain. Increases in the concentration of mercury in fish tissue would further threaten the health of the Delta's large subsidence fishing community. Longer residence times will increase the timeframe for oxygen demanding constituents to reduce oxygen levels in channels already identified as impaired because of low dissolved oxygen.

An alternative conveyance facility and reduction in Sacramento inflow will impact dissolved oxygen in the Mokelumne River and Stockton Deep-Water Ship Channel. Presently, flow from the Sacramento is drawn into the ship channel via reverse flows in the San Joaquin River. Further exacerbating the problem will be an increase in nutrient loading into the ship channel. Since the recent Biological Opinion required the removal of the head of Old River barrier, a significant percentage of the high nutrient load in the San Joaquin River that previously reached the ship channel has been drawn down Old and Middle Rivers and exported south.

Elimination or reduction of this "siphon" effect would also affect numerous other pollutants in the South Delta. Presently, some part of the pollutant load in the San Joaquin River is drawn to the pumps and exported south. Elimination of this siphon mechanism would likely increase the spatial distribution of water quality impacts into the

Central Delta. For example, selenium concentrations might increase to levels comparable to those found in wildlife in Suisun Bay.

An alternative conveyance facility and the elimination of dilution flows will increase the concentration of salt in the South Delta channels further impacting the yield of Delta agriculture. It will also reduce salinity variability and encourage the spread of certain undesirable invasive species.

To summarize, the Delta and its tributary streams are formally identified as impaired by a broad suite of pollutants. Water quality criteria have been developed for only a very small subset of the chemicals found in these waters. These criteria fail to adequately consider additive/synergistic, bioaccumulative and chronic/sublethal effects or multiple stressors acting on an already weakened aquatic ecosystem. Increased diversion or routing of good quality dilution flows around the estuary will result in increased concentration and residence time of pollutants. Increased residence time exacerbates the effects of toxic and bioaccumulative pollutants. Reduced diversion and increased Delta flow enhances flushing of pollutants and decreases pollutant concentration.

The EIR must comprehensively analyze and address potential impacts to fish, wildlife and human health from reduced water quality caused by loss of dilution and increased residence time. Since the federal Clean Water Act and California's Porter-Cologne Water Quality Control Act incorporate specific antidegradation policies, the EIR must include a comprehensive antidegradation analysis.

"All Models are Wrong, Some are Useful." Statistician E. P. Box

Models are complex simulations that, at their best, only represent an idealization of actual field conditions. They must be used with extreme caution to ensure that the underlying model assumptions hold for the site-specific situations being modeled. Subtle changes in coefficients, assumptions or input data can dramatically alter output. It is crucial that models be properly calibrated and verified. A critical problem arises when decision makers attribute more precision to modeling results than is warranted and where a model's output is misused to make definitive comparisons and predictions. While models can be employed to inform analysis, they cannot provide near-certain conclusions that significant environmental effects will or will not occur or will or will not be mitigated, especially where common sense and existing knowledge indicate otherwise.

The EIR, like virtually other environmental review document of the last decade, is likely to employ CalSim II modeling to evaluate proposed alternatives. We offer a cautionary tale that illustrates that CalSim II is like Aladdin's Lamp; it grants wishes to whoever rubs it.

In response to the SWRCB's Delta Flow Report, the State and Federal Contractors Water Agency submitted an analysis to the Board, using CalSim II and prepared by MBK Engineers, that purported to show that implementation of the recommended flow objectives would be "catastrophic" for water supply and result in a 5,500,000 acre foot

average annual reduction in water available for consumptive use. This amounts to a "69% reduction of water use from the Delta watershed." In a recent evidentiary water rights hearing before the SWRCB, applicants for a new 45,000 acre foot water right on the Sacramento River submitted an analysis to the Board, using CalSim II and also prepared by MBK Engineers, that demonstrated that additional water would be available for the cities of Woodland and Davis, even if recommendations in the Delta Flow Report were implemented. Implementation of the SWRCB's Delta Flow Report cannot result in a catastrophic reduction of 69% of the water supply from the Delta watershed and, at the same time, provide water for new diversions.

A problem with CalSim II is that it can be manipulated to produce desired results. Even properly operated it is only as accurate as the data and assumptions that are plugged into the model. It has previously been used to project a false certainty that impacts will be minor. For example, it has been used to show that salmonid mortality will increase by a specific percentage and discussion of possible error or of ranges of possible outcomes has been entirely absent. The model cannot possibly produce such certainty. At best it can predict, given a certain set of data and assumptions, a range of possible outcomes, with some outcomes potentially more probable than other, and with all predictions limited by both known and unknown sources of error.

CalSim II is a highly complex simulation model of a complex system that requires significant expertise to run and understand. Consequently, only a few individuals concentrated in the Department of Water Resources, U.S. Bureau of Reclamation and several consulting firms understand the details and capabilities of the model. SWRCB staff cannot run the model. To the extent CalSim II is relied upon, the EIR must be transparent and clearly explain and justify all assumptions made in model runs. It must explicitly state when findings are based on post processing and when findings are based on direct model results. And results must include error bars to account for uncertainty and margin of safety.

As an optimization model, CalSim II is hardwired to assume perfect supply and perfect demand. The notion of perfect supply is predicated on the erroneous assumption that groundwater can always be obtained to augment upstream supply. However, the state and federal projects have no right to groundwater in the unadjudicated Sacramento River basin. Operating under this assumption risks causing impacts to ecosystems dependent upon groundwater basins in the areas of origin. The notion of perfect demand is also problematic, as it cannot account for the myriad of flow, habitat and water quality requirements mandated by state and federal statutes. Perfect demand assumes water deliveries constrained only by environmental constraints included in the code. In other words, CalSim II never truly measures environmental harm beyond simply projecting how to maximize deliveries without violating the incorporated environmental constraints. It assumes foresight and compliance by project operators. However, this cannot satisfy CEQA's mandate to analyze and disclose the full spectrum of potential environmental impacts caused by a project vis-à-vis a no-project and other alternatives. A report produced by the National Heritage Institute summarizes this flaw by "call[ing] into question the use of CalSim II as a tool for environmental impact assessment, since it is

changes in the environment associated with specific projects and the satisfaction of arbitrary constraints which is the critical focus of environmental review."[3]

A formal peer-review of CalSim II was highly critical and detailed numerous inadequacies in the model. Among these was the opinion that CalSim II "has not yet been calibrated or validated for making absolute predictions values."[4]

The University of California at Davis conducted a comprehensive survey of members of California's technical and policy-oriented water management community regarding the use and development of CalSim II in California. Detailed interview were conducted with individuals from California's water community, including staff from both DWR and USBR (the agencies that created, own, and manage the model) and individuals affiliated with consulting firms, water districts, environmental groups, and universities.[5]

The results of the survey, which was funded by the CalFed Science Program and peer-reviewed, should serve as a cautionary note to those who make decisions based on CalSim II. Among numerous criticisms, the study found:

1. "Many interviewees feel that using CalSim II in absolute mode is risky and/or inappropriate…"
2. "…only a few individuals concentrated in DWR, USBR, and several consulting firms understand the details and capabilities of CalSim II."
3. "All users agree that CalSim II needs better documentation of the model, data, inputs, and results. CalSim II is data-driven, and so it requires numerous input files, many of which lack documentation."
4. "There is considerable debate about the current and desirable state of CalSim II's calibration and verification."
5. "Its representation of the SWP and CVP includes many simplifications that raise concerns regarding the accuracy of results."
6. "Many interviewees are concerned that CalSim II's monthly time step cannot capture hydrologic variability adequately and thus does not compute water exports and export capacity accurately, both of which are significant factors in system operations."
7. "The model's inability to capture within-month variations sometimes results in overestimates of the volume of water the projects can export from the Sacramento- San Joaquin Bay-Delta and makes it seem easier to meet environmental standards than it is in real operations."
8. "Interviewees cannot always determine the parameters to which CalSim II is highly sensitive or its overall stability and sensitivity. They feel that the linear

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[3] Payne, J. and Purkey, D. 2005. An Environmental Review of CalSim-II: Defining "Full Environmental Compliance" and "Environmentally Preferred" Formulations of the CalSim-II Model." Page 14.

[4] Close, A, et al. 2003. A Strategic Review of CALSIM II and its Use for Water Planning, Management, and Operations in Central California, Submitted to the California Bay Delta Authority Science Program, Association of Bay Governments, Oakland, California. 4 December 2003. Page 9.

[5] Ferreira, Ines C., et al. 2005. Musings on a Model: CalSim II in California's Water Community, published in San Francisco Estuary & Watershed Science. March 2005. 13 Pages.

programming formulation allows multiple solutions, which can differ considerably."

9. "Many interviewees indicate that CalSim II represents demands simplistically using out-of-date values and calculations."
10. "Small changes in CalSim II input can result in large changes in model results, causing difficulties in impact analyses and the defensibility of model results. In addition, some users note that the multiple layers of regulations and operational agreements included in CalSim II may obscure the effects of the change to the system being modeled."
11. "Many claim that CalSim II's hydrology uses data and methods that are decades out of date and rely on too coarse a geographic scale."
12. "Model users express general frustration with CalSim II's commercial linear programming (LP) solver. They contend that it provides little information on the location of infeasibilities, so that even a knowledgeable individual may need many days to debug a run. In addition, the solver sometimes produces non-unique solutions and running identical scenarios on different computers seems to generate different results."

The study concluded by observing, "CalSim II is being used, and will continue to be used, for many other types of analyses for which it may be ill-suited, including in absolute mode."

To the extent that the EIR relies upon modeling results, it must be transparent in revealing modeling assumptions, input data and uncertainty. It must recognize the limitations of models and not impugn to them an accuracy that does not exist in the real world. Modeling output should be regarded as but one of a broad suite of tools to inform the process and cannot be a substitute for empirical observation, hard data and common sense.

We appreciate the opportunity to submit scoping comments for the preparation of the EIR on the Delta Plan. If you have questions or require clarification, please don't hesitate to contact us.

Sincerely,

Bill Jennings, Executive Director
California Sportfishing Protection Alliance