CCMP Revision

WATER SUBCOMMITTEE: SUGGESTED ACTIONS

January 26, 2015

Overall suggestions:

1. *Suggestion that the CCMP recommendations be those that can be reasonably accomplished within the resources and authority of the SFEP – which to me means all the agencies that signed on to the SFEP. This subject may be worth a brief discussion because we certainly would not want to recommend projects that are not achievable. (Leo W. John A.)*

2. *The Governor's staff and executives refer/default to the California Water Action Plan more than anything else. So, whatever actions we do adopt should have a tight nexus with that document. (John A.)*

3. *Suggestion to include an action on sea level rise and land use planning (Note from SFEP staff: this may already be covered through other members' suggestions below).*

BIN1: ESTUARINE FUNCTION (to improve habitat values and water quality)

Action	**Climate Change Resiliency (Carol M.)** **Move to habitats? Overarching?** 1. Increase or preserve open space at Bay edge by _____ acres (% shoreline?) by 2020.To achieve this, create a draft municipal/county ordinance that creates an "amenity" credit for developments that provide a buffer from development at the Bay/Delta edge and penalizes through fees developments that extend to the edge. Then fees can be used to purchase land for buffers elsewhere or maintain buffers that exist. 2. Initiate a regional Benefit Assessment District or similar (like LMD – Risk Reduction District?) for those areas within the potential sea-level rise impact zone by 2020 to offset the costs of projects and on-going maintenance for shoreline and infrastructure protection.
Output/Outcome	# of local districts formed?
Owner/Administrator	1. Local city/county, ABAG, Open Space Council, BCDC 2. ABAG, SFBRA, or new JPA
Why	1) If needed, encourage the Governor's office or legislators to provide support for "sea-level rise" buffer requirements. The benefits of these buffers is that sediment and aquatic plants are necessary for the health of the Bay/Delta complex and may also support filtering species like mussels and clams that help to entrain toxins. 2) A benefit assessment

	type funding source could help offset the costs of large-scale shoreline improvements that benefit the urban zone closest to the Bay/Delta, including critical infrastructure. The benefits to water quality could include reduced shoreline erosion, increased trash management, and reduced risk of accidental wastewater releases.

Action	**Integrated Flood Protection and Habitat Restoration (Carl M.)** 1. Continue to work with resources and regulatory agencies to beneficially reuse sediment dredged from the Bay and removed from flood protection channels so capacity is maintained to build up baylands in order to protect ecosystem resources as well as provide a greater buffer resulting from sea level rise and increased adverse impacts of wave attenuation. (I can confer with Andy Gunther later to give some numbers on how much is needed. This action, BTW, is front and center in the BEHGU update~~d~~.) *- Permit realignment, linked to BCDC SLR committee work. What is action?* 2. Continue work with the U.S. Army Corps of Engineers (where they manage reservoirs), various NOAA weather-related entities, Scripp's Center for Western Weather and Water Extremes, the Department of Water Resources and others in developing advanced precipitation forecasting to better manage reservoirs not only for water supply purposes (including for ecosystem protection and enhancement) but also for flood protection purposes. This effort would include seeking partial funding for the project through Propositions 84 and 1. *High feasibility, achievable w/in 5 years* 3. Assist and support the statewide effort by flood protection and stormwater agencies in seeking a ballot measure that would amend Proposition 218 to provide such agencies the same exemption now afforded water and wastewater agencies when raising rates. This will enable flood protection and stormwater agencies to construct multipurpose facilities that will also protect and benefit ecosystem resources. *– funding issue*
Output/Outcome	1. Increased volume of sediment beneficially reused 2. Central weather forecasting tools developed 3. Amended 218
Owner/Administrator	1. Individual flood protection agencies and baylands stewards, coordinated by BAFPAA., BCDC, Waterboard, Corps, FW (state and fed) 2. SFEP, IRWMP 3. BAFPAA
Why	1. Priority in BEHGU

Action	**Improve Freshwater In/Outflow (Harry S.)** ***– merge with Barry's suggested action*** Urban state and federal agencies will agree on a plan developed by 2018 to restore freshwater flow index to at least a "fair" condition by 2030. *Federal/state cooperation/coordination* *Barry – Create program to make sure agencies are aggressively reducing demand on Delta – phase 2 standards*

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	Tom – what can we do to support what we think State Board can do? Based on current make up of Board - feasibility
Output/Outcome	actual improvement in freshwater flow index and output is the plan
Owner/Administrator	SWRCB, DWR, DFW, BOR, US FWS, EPA
Why	This shows up in three places in State of the Bay report: Water (Freshwater inflow-index), Habitat (Estuarine open water), and Ecological processes (Flood events). This has been recent major effort by Friends and of course is a controversial part of the Delta Plan.

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Action	**Delta Restoration (Campbell I.)** ***merge with #1? (think about differences between bay and delta – funding, institutional, etc. But strive for consistency)*** ***Move to Habitats?*** Delta restoration *Comprehensive "IRWMP" for Delta? Integrate flood and habitat*
Output/Outcome	Implementation of the biological opinion~~BO~~ objectives and early implementation of restoration projects that incorporate adaptive learning and restore high priority ecosystem function. *Acreages of habitat – different type of habitats than measured in Bay*
Owner/Administrator	DWR, DFW, Delta Conservancy
Why	This is a tough one with BDCP still in play, the Delta Plan finalized, the Biological Opinions being implemented (8,000 acres of tidal habitat and 19,000 of seasonally floodplain habitat) and now Prop. 1. Need to restore the Delta is recognized in at least a dozen plans (BDCP, Delta Plan, ERP Stage 2 Strategy, Delta Conservancy Strategic Plan, State Water Action Plan, etc.....) *Existing legal requirement – as baseline?*

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BIN 2: PREVENT, REDUCE, AND CONTROL POLLUTION

Actions	**Control Emerging Contaminant Discharges to the Bay to Prevent Future Water Quality Problems (Mike C.)** ***(focus on Urban)*** 1. Modify the state's pesticide regulation program to ensure that the use of these pesticides by urban consumers ensures that regular use of these products will not contaminate Bay watershed streams or the Bay itself. 2. Develop an enforcement strategy, evaluate its effectiveness, and develop an evaluation process for alternatives to implement the new TB 117-2013 to ensure that the new flame retardant regulations are working effectively in SF Bay and not causing new problems with product substitutes. 3. Expand the Alameda County Safe Drug Disposal Ordinance that requires pharmaceutical take-back programs to other counties in the Bay Area and evaluate its effectiveness. ~~3.~~4. Overarching management strategy for CECs with associated monitoring strategy – nonregulatory (Tom)
Output/Outcome	For all of these actions, measure number of participants, presence of new rules or regulations, and trends in important Bay markers.
Owner/Administrator	1. DPR, the State Water Board, and the California Association of Sanitary Agencies (CASA) have begun a partnership to address this issue. Hold them accountable to a schedule. Have the Regional Monitoring Program (RMP) assess the status of these chemicals in the Bay and its watershed and representative stormwater and wastewater discharges, particularly fipronil and pyrethroids. 2. State fire officials should account for how the labeling legislation is progressing. Friends of the Estuary could organize a citizen's photo campaign to see how many department stores are complying and advertise the good and bad players. The RMP could measure changing concentrations in Bay biota. The SF Water Board and the RMP could develop a protocol for prioritizing flame retardant alternatives. 3. ABAG and the SFEP could educate its local agencies about the Alameda County approach. BACWA's Pollution Prevention Group can monitor and coordinate pharmacy's progress. The RMP can assess levels in the Bay.
Why	Priority Pollutant Problems affecting the Bay (e.g. DDT, Diazinon, Chlorpyrifos, Mercury, PCBs) have been dramatically improved by banning or severely restricting their use. Recovery from historical problems, though, can take decades. The highest priority needs to be Pollution Prevention—preventing the next generation of issues. An interesting study of contaminants in the blood of a "green" household by the Oakland tribune found that the parents' blood had high levels of these banned priority pollutants, but the highest levels of contaminants in children's' blood was the emerging contaminants. Most of the toxicity found in stormwater and wastewater has been found to be associated with emerging contaminants. The San Francisco Bay Water Board has developed a prioritization ranking for these contaminants. Among the highest ranked are new pesticides (e.g. fipronil and pyrethroids), flame retardants (PBDEs), and pharmaceutical and personal care products.

Actions	**Prevent Raw Sewage Discharges to the Bay by Speeding the Repair of Broken Sewer Laterals (Mike C.)**

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	Require every locality in the Bay Area with a ratio of sewage wet weather flow to dry weather flow exceeding 3-fold to develop a local ordinance requiring sewer system inspection as part of house sale. Require wastewater agencies to develop sewer lateral financing strategies (similar to solar property tax initiatives) to allow residents to fix their broken laterals and pay them back through sewer bill increases. *Various ways to achieve? Action could be focused on developing strategy for replacements*
Output/Outcome	Number of sewer laterals replaced. Reduction in SSOs. Reduction in wastewater flows to the Bay as a function of precipitation. *Or local ordinances passed?*
Owner/Administrator	Municipalities and wastewater agencies with guidance from the SF Water Board.
Why	One of the top priorities of NGO lawsuits and Water Board enforcement actions has been to reduce the number of Sanitary Sewer Overflows (SSOs) into the Bay and eliminate the instances of wastewater receiving less than secondary treatment. While wastewater agencies are required to have Sewer System Master Plans that inspect and replace aging sewers, it has been estimated that a primary cause of the problem is failure of the pipe between the household and the road where the sewer system begins. These pipes are owned and controlled by the homeowner who simply calls RotoRooter whenever the pipe become blocked with debris, but these breaks also become a prime route for rainwater runoff entry into the system. Repairs can cost several thousand dollars so most homeowners never repair their sewer laterals. This issue has become a primary focus for the EBMUD settlement with the SF Water Board. Local legislation to require sewer system inspection as part of regular real estate transactions (as occurs in many other states) has been opposed by the real estate community.

Action	**Anthropomorphic Impacts (Carol M.)*Could move to ~~habitats~~ stewardship– or subset under improving stormwater quality*** 1. Reduce homeless encampments in stream-side areas to less than 1% of the total watersheds by 2020. How? Likely not attainable. 2. Create a program to employ homeless to help monitor and clean the streams of trash and debris. (Similar to CHEER) 3. Lobby for and help create a framework for a State education mandate that requires schools to implement a program of watershed science in the classroom at the high school level *(nexus with trash problem in creeks adjacent to high schools)*, and if necessary seek funding on the 2020 ballot. *How? Merge with Barry's? Nexus with Board's trash work?* 4. Support a constitutional amendment to the definitions in Prop 218 regarding stormwater to allow stormwater and flood agencies to levy fees to maintain infrastructure that reduces these anthropomorphic impacts. *Merge with Carl's*
Output/Outcome	Homeless encampments in stream-side areas constitute less than 1% of total watersheds.
Owner/Administrator	1. Local city/county, Flood Control Districts, RWQCB 2. CHEER, NGOs, Flood Control Districts 3. School districts, STRAW, local agencies, NGOs, Flood Districts

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	4. ABAG, RWQCB, others?
Why	1) Homeless encampments often produce a large amount of trash, debris, and fecal waste that have significant negative impacts on the water quality of streams that lead to the Bay/Delta. 2) It is estimated that the Bay Area has the one of the highest homeless per capita rates in the nation. Engaging these individuals in caring about their condition can improve overall ability to escape the cycle. 3) Currently, the requirement is only for 4th Grade students, but we see that the most negative effects on streams and the Bay/Delta of **trash** and graffiti occur in high school aged students. Engaging these students in watershed sciences and in citizen science programs could have a huge impact on helping the communities invest in and embrace the outcomes on the health of the Bay/Delta. 4) Current definitions only allow water and wastewater to raise rates when needed to provide a service to the public. Improvements in water quality through stormwater clean-up is underfunded.

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Actions	**Reduction in Toxicity (Carol M.)** 1. Establish a "Citizen Science"- "Adopt-A-WQ-Spot" or a "Be the Bay" program to engage local citizens in taking ownership of what goes on in the Bay/Delta. This could be run through a local agency, school, or NGO. Output is to provide this opportunity in 70% of the major watersheds that drain to the Bay/Delta by 2020. Provides citizens with the means to help monitor basic WQ parameters such as Temperature, pH, DO, Spec Cond, and TDS. Advanced groups may be able to monitor more. Citizens can also collect and/or categorize trash at these sites to help determine if the plastic bag ban and similar efforts are having an impact. *Maybe too specific and tangential? Could broaden to citizen monitoring in general – how to expand* 2. Within two years, create a "Citizen Science" web portal or app that will allow crowd sourcing of environmental data, similar to e-bird, Project Noah, and Marine Debris Tracker for reporting on the health of the Bay. Get all of our local activities reported on the SciStarter website. 3. Reduce fine particulate matter ($PM_{2.5}$) emissions from local sources below 12 µg/m^3 by 2020 in accordance with NAAQS 2012 requirements and goal of a combined 24-hour concentration not exceeding 30 µg/m^3 for all Bay/Delta Counties. Reduction of GHG is already underway per AB32 and Executive Order S-3-05 by 2020. *Nexus between greenhouse gas reduction requirements, set higher goal for just Bay Area – stewardship, use of social media, engage public - DROP*
Output/Outcome	1. People relate their everyday choices to the health of the overall Bay/Delta and themselves. 2. Measure of toxicity/safety should be based on both aquatic AND human populations since both the Bay and Delta are drinking water supplies. The Bay/Delta should be treated like a groundwater basin.
Owner/Administrator	1. NGO (like STRAW), school-based organization, or regional organization like ABAG or RWQCB. Funding needed to run the program and provide testing supplies. Could be a regional IRWMP project. *Would need a champion, Save the Bay?* 2. See above. 3. EPA (NAAQS) or BAAQMB.

Why	1) Citizen monitoring of temperatures in the Bay/Delta will be a good way to help people connect with impacts of climate change. Other indicators can help people connect the Bay/Delta with drinking water quality and increase their interest in maintaining safe levels for all organisms. Collection and categorization of trash by local citizen groups also helps people relate their everyday choices to the health of the overall Bay/Delta and themselves. 2) Social media is increasingly the way to reach out and connect with people. The Bay/Delta needs to develop its own profile to connect with this new digital paradigm so that people will want to participate in its overall health. Using our resources and "connections" in Silicon Valley should be a priority in monitoring health. Crowd sourcing reaches a large audience and provides more "eyes and ears" to assess issues before they become problems. 3) $PM_{2.5}$ can combine with mercury in the atmosphere and increase concentrations in the Bay/Delta due to rainfall accumulations which impact local aquatic habitat, birds and humans that ingest creatures that feed in the Bay/Delta. Particles in the atmosphere and water also increase temperatures and lead to further problems. Reductions of $PM_{2.5}$ in conjunction with reduced GHG per AB32 and EO S-3-05 by 2020 will help the Bay/Delta region move closer to reducing the effects of climate change. Reducing $PM_{2.5}$ also has the added benefit of reductions in other human health issues resulting from air pollution and can be a strong "viable" indicator to spur support from communities.

BIN 3: IMPROVE MANAGEMENT OF WATER (DEMAND)

Action	**Maintain Aquatic Equilibrium (Carol M.)** ***– how to pull together data from a lot of different sources to tell comprehensive story*** 1. Measure Bay turbidity, algae growth, and monitor clam/mussel populations to establish trends. Use trends in outflow at USGS gages to estimate sediment and/or use SWAMP data for other indicators. *acheivable* 2. Decrease unfiltered wastewater effluent discharges by 10% by 2020 possibly through the use of treatment wetlands or increase use of recycled water inland. *Pushing envelope, building on Ora Loma with larger pilot program?, combine with beneficial reuse of water?* 3. Monitor nitrogen/phosphorus trends to confirm the benefits of a reduction in wastewater effluent nutrient input. 4. Monitor salinity in the surrounding groundwater of the Bay/Delta to determine the long-term impacts of rising sea-levels and tides. (CASGEM *doesn't monitor quality – some monitoring at municipal level) - salt water intrusion/SLR, need to figure out what added value can be with a groundwater-related action. Groundwater as indicator of SLR, change in salinity…*
Output/Outcome	
Owner/Administrator	1. USGS, RWQCB, BCDC 2. BACWA, Waste Water Dischargers 3. USGS, RWQCB, EPA 4. DWR, RWQCB, SFEI
Why	Reduction in sediment supply to Bay increased clarity and algal blooms. Controlling nutrients through increased water recycling could lead to reduction in effluent nutrients to Bay and offset potable water supplies inland. Addresses changes in climate and sea level rise through increasing potable reliability through offset, reduction in nutrient input from effluent, and confirms benefits. Monitoring of mussel/clam populations can be "canary in the coal mine" for climate change and low populations can indicate that an algal bloom may be starting. Benefits to local communities would be reduction in "dead zones" that have low DO and cause fish kills and foul odors. Again, citizen science could help.

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Action	**Improve management of water demand (through increased use of recycled water) (Harry S. , example)** ***Could combine with Carol's, above*** Wastewater and water agencies will collaborate and increase Bay Area recycling to 63 thousand acre feet (or 160 thousand acre feet) by 2021 and develop a long term strategy to reach 270 TAF by 2035. *#s need to be refined (BACWA, Pacific Institute) but should be more aggressive than what was established last time around*
Output/Outcome	Desired outcome is an increase in recycled water by 2021 at least equal to increase from 2001-2010 (target could be higher based on analysis of progress since 2010) and a firm commitment (output) to reaching potential of 270 TAF already identified by 2035.

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Owner/Administrator	Bay Area Clean Water Agencies (BACWA) and Bay Area Water Agencies Coalition (BAWAC)
Why	This element of managing water demand is included in State of the Bay Report (page 60), highlighted in California's Water Action Plan and included as a new funding category in Prop 1.

Action	**Landscape Conservation (Barry N)** ***review against IRWMP plan*** Establish a ~~state~~ regional goal for the reduction of urban landscape irrigation water use. *Expand to all irrigation use? Caltrans? (would need to think about goal if expand)* This could, for example, be a goal of a 40% reduction in urban landscape water use by 2040 or a 50% reduction by 2050. This should be an "aspirational" goal, similar to the State Board's goals for water recycling and stormwater capture. Those two goals demonstrate the large potential new supply to be gained from recycling and stormwater programs. Neither of those goals, however, is a formal regulatory requirement.
Output/Outcome	The initial establishment of a state goal could lead to multiple outcomes, including: - A suggested strategy by the current landscape independent technical panel. - Voluntary inclusion of programs to achieve this goal in urban agency Urban Water Management Plans. - Adoption of "lawn to garden" rebate programs and standardized landscape training programs by all BAWAC agencies. - Local government programs to replace non-functional turf and retrofit city and county-owned landscaping. - Universal adoption and enforcement of an updated landscape model ordinance.
Owner/Administrator	State Water Board should adopt the goal. DWR and BAWAC agencies should design programs to help achieve the goal. Stopwaste.org, SFEP (public outreach)
Why	Turf is the largest single crop in the United States - larger than corn. In California, approximately 50% of urban water use is used to irrigate landscapes. A small fraction of that landscape water use is "functional" turf. Therefore, a tremendous amount of water can be saved by increasing irrigation efficiency and transitioning to "California friendly" landscaping that captures rainwater and focuses on drought tolerant plant materials.

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Action	**State Water Board Standards for Delta Outflow (Barry N.)** ***Will rewrite to make more ambitious*** The State Board should adopt new Bay-Delta standards that will adequately protect all beneficial uses in the estuary, including listed fish species and commercially important species (e.g. Chinook salmon).
Output/Outcome	New State Board standards and a water rights/implementation phase to allocate responsibility for meeting these new standards.

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Owner/Administrator	SWRCB
Why	The State of the Bay report confirms that the Bay is suffering from near-permanent drought conditions. Recent monitoring reveals that resident fish have reached record or near-record lows. The State Board's flow criteria confirm that current standards are inadequate to protect public trust values. State of the Bay Report 2011

Action	**Planning for Extended Droughts (Barry N.)** ***Talk to S Ritchie/BAWAC, challenge is DWR guidelines for retailers coming out in spring – would need to affect guidelines. Could focus on making sure guidelines are implemented. UWM-compliance requirements for funding?*** DWR and urban water agencies should plan for a decade-long drought and implement investments that will help the Bay Area - and the Bay - respond to likely extended droughts in the future.
Output/Outcome	- Revised UWMPs by BAWAC agencies. - Water rate adjustments needed to support investments in more drought resilient water sources (e.g. water recycling). - Adoption of indirect and direct potable reuse regulations by the State Board. - Improved "real time" reporting to the State Board of water diversions and discharge/return flow volumes. - A BAWAC road map to identify key obstacles and opportunities to maximize regional reuse.
Owner/Administrator	BAWAC agencies. SWRCB regarding reuse regulations.
Why	At the moment, many water agencies plan for a repeat of the 1976-1977 drought, with or without an additional drought year. That no longer represents the most credible worst-case analysis. Given the clear evidence of a warming climate, the current drought and Australia's Millennium Drought, DWR and water agencies should plan for a possible (perhaps inevitable) decade-long drought. Water recycling and water use efficiency are among the most drought-resilient and cost-effective new water supplies. UC Davis has shown that the Bay watershed is dramatically over allocated and that the SWRCB has inadequate reporting requirements to facilitate adequate management during droughts.

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Action	**Manage or Improve Water Demand through Increased Conservation/Efficiency (Harry S.)** 1. Urban Water Use-Bay Area: Water agencies will collaborate on conservation programs to reduce gallons per capita per day (gpcd) to 124 by 2021 and commit to reduce to 110 gpcd by 2035. 2. Agriculture: State and federal agencies providing water to agriculture dependent on Delta diversions will develop a strategy by 2018 to reduce agricultural use by 6 million

	acre feet by 2035. *Needs further conversation about what's achievable/how, could focus on Bay ag communities*
Output/Outcome	1. Desired outcome is a reduction in per capita use by 2021 consistent with statewide targets and a commitment (output) to further reduction by 2035. 2. Desired outcome is an actual reduction in agricultural water use dependent on Delta diversions. Output is a 2018 strategy to meet this target by 2035.
Owner/Administrator	1. Bay Area water agencies 2. DWR, BOR, and major water districts diverting Delta water
Why	1. This element of managing water demand is included in State of the Bay Report (page 58), highlighted in California's Water Action Plan and included as a new funding category in Prop 1. 2. Ag is 80 % of water use in CA. Broadly identified in California's Water Action Plan.

BIN 4: REALIGN WATER ETHIC (Education and Cultural Change)

Action	**Behavior Change Regarding Water Use (Barry N.)** Develop a state strategy to encourage behavior change, particularly with regarding to landscape water use.
Output/Outcome	- Create a state-wide public education and messaging program, with a focus on creating social pressure to encourage efficient water use - particularly regarding landscaping. The existing state anti-smoking campaign and the Denver Water "don't be that guy" campaign are possible models. - Encourage urban agencies to adopt Behavioral Water Efficiency programs (as described in the State Water Plan update) to allow customers to evaluate their water use in the context of that of similar households.
Owner/Administrator	- The State Water Board should direct the creation of a state-wide education and messaging program. - BAWAC agencies should implement education programs consistent with the state-wide messaging guidance. - Urban water agencies should adopt BWE programs.
Why	Messaging around the drought should not suggest that water use will return to "normal" after the drought ends. Rather, the drought can be the catalyst to begin a much more ambitious effort across the state to change the way people think about their water use and to think of that water use in a social context. Behavior change is central to our ability to achieve significantly higher levels of water use efficiency, particularly regarding landscaping. (See recommendation on Landscape Conservation)

Action	**Explicit recognition of the connectivity of the upper watershed, Delta and Bay.(Campbell I.**– hoping you all can build specifics onto the concept)

Output/Outcome	
Owner/Administrator	
Why	

BIN: TO BE DETERMINED

Action	**Salmon Fishery Rebuilding Program (Barry N.)** ***May move to living resources*** Establish a comprehensive state program in the Bay-Delta to restore and maintain a thriving commercial and recreational salmon fishery.
Output/Outcome	CDWF actions including: - Resolving temperature problems in key Fall run spawning rivers. - Dam reoperation to reduce "stranding" of salmon redds. - Dam reoperation to provide pulse flows to help young salmon survive their migration down rivers and through the Delta. - Implementation of the San Joaqauin River restoration agreement. - Accelerated spawning and rearing habitat restoration efforts, particularly in the Yolo Bypass and the Sacramento River.
Owner/Administrator	CDFW
Why	The Bay-Delta is the most important source of salmon for the commercial and recreational fisheries in California and Southern Oregon. The state currently has a salmon doubling policy, but has no comprehensive program to achieve this goal. In practice, management focused on protecting only listed species has led to many actions that, unintentionally, harm the fall run. It is likely that we have two choices regarding fall run salmon - launch a comprehensive salmon restoration program or wait until the fall run is listed, leading to more restrictions for the fishing industry and water users.

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Action	**Updated and Integrated Data Management and Analysis (Campbell I.)** **Could move to integrated?** Incorporation of 21 century technology (big data analytics, data visualization and decision support tools), coupled with a workflow that allows for the simultaneous examination of multiple data sets and real-time vetting of alternatives with subject matter experts, agency staff and locally affected communities. This combination of technology and workflow process helps ensure best available science, adaptive management and local input are cornerstones of water and resource management, and greatly enhances decision making power and transparency.
Output/Outcome	Development of the pilot Delta Restoration Hub, and a Hub for the Bay system within 2 years.
Owner/Administrator	Delta Conservancy and Delta Science Program for the Delta, SFEI and others (?) for the Bay system
Why	Better tools needed for resource management are highlighted in the Delta Plan and the Delta Science Plan and the Delta Conservancy Strategic Plan.

Action	**Coordinated Funding (Campbell I.)** Coordination of Proposition 1 habitat restoration and levee funding for the Delta, and restoration funding for the Bay system.
Output/Outcome	The 4 funding agencies (Delta and Coastal Conservancies, DFW and DWR- maybe more for the bay??) work in close coordination to fund projects that fit into a landscape context, meet multiple objectives and have local support. In the Delta this should be supported by locally developed high level visions for the recognized Delta regions, and lists of near-term projects that support the vision.
Owner/Administrator	Those agencies listed above
Why	Better regionalized planning and the need for coordinated expenditures of Prop. 1 funds will ensure higher value projects that fit in a landscape context and provide better support for future funding requests.

Action	**Manage Wetlands and Reverse Delta Subsidence for Multiple Benefits (?) (Campbell I.)** **Could move to climate change/integrated?** Carbon emission reduction, carbon sequestration and subsidence reversal in the deeply subsided western and central Delta.
Output/Outcome	Continue to build managed wetlands for emission reduction, carbon sequestration and subsidence reversal, building on the 2,000 + acres that DWR on has developed on state owned lands and working with private land owner producers to achieve acres on private lands. 2,000 additional acres on DWR owned lands, 1,000 acres on private lands. Complete CA Wetland Protocol (includes managed wetlands and rice in the Delta, and coastal wetlands) and submit to American Carbon Registry and subsequently to ARB for consideration in the compliance market.
Owner/Administrator	DWR, Delta Conservancy and partners.
Why	Emission reduction is recognized in AB 32, subsidence reversal and carbon wetlands are recognized in the Delta Plan, and the Conservancy Strategic Plan.

Action	TMDL Implementation (Tom). Grants? (need to think about what else to do beyond what we are doing now). Or prevention of 303d listings? Could emphasize BMPs, restoration in support of TMDL implementation. Improving water quality through XX actions (TMDL implementation)
Output/Outcome	
Owner/Administrator	SFEP, ?
Why	Implementation beyond WaterBoard's capacity. Need coalition of partners to implement.

Action	Green infrastructure. (Tom) Promotion of activities, projects, programs…, model ordinances
Output/Outcome	How many communities apply for and achieve $ from Sustainable communities grant. Or how many municipalities have plans, ordinances.
Owner/Administrator	
Why	

Action	Stream protection (Tom). ? – are we dropping this?
Output/Outcome	
Owner/Administrator	
Why	

Action	Climate change (Barry). Adaptation Planning. Regional adaptation plan? (with subregional plans)? Overlapping series of plans . Create a framework to make sure we have buy-in to write subregional adaptation plans. *(Talk with BCDC, JPC) . Link to BEHGU*

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Output/Outcome	
Owner/Administrator	
Why	

Action	Nutrients?? Separate action or under another action? What could be value-added?
Output/Outcome	
Owner/Administrator	
Why	