POTENTIAL BENEFITS AND CONSTRAINTS OF CALFED WATER QUALITY ACTIONS (As defined by the agricultural, ecosystem and urban sub-teams)

Action No.	Advantages	Constraints
1	- Better match releases to assimilative capacity of river and reduce constituents during holding period (load and concentration) - Improves short-term quality (Ag) - Take advantage of dilution/assimilative capacity (Ag) - Reduce above constituents during both holding and release periods (Ag) - May decrease concentrations of diazionon and chlorpyrifos with increased holding time, depending on seasonality (Eco) - No impact on the NBA because of distance involved (Ag) - Improves the TOC and bromide (Br) conditions (Ag) - Add Delta to high priority dischargers (Ag) - Improve short-term quality (Ag) - Improve Delta WQ (Ag) - Increased compliance with Vernalis standards (Ag) - May decrease concentrations of diazinon and chlorpyrifos with increased holding time, depending on seasonality (Eco) **Parameters Impacted** **Positive**: Chlorpyrifos, diazinon, salinity (Eco) *NOTE: Water should come from users (those with drainage, not others)*	- Periods of sufficient assimilative capacity may be infrequent. - Construction, maintenance, monitoring of holding ponds - Potential impacts to wildlife using ponds - Salinization due to recycling. - Detaining drain water may have negative effect when later discharges (Ag) - Reduces flows (Ag) - Could be negative impacts on stored water (Ag) - Sustainability of agriculture (Ag) - Management (Ag) - Expense of facilities and management. Wildlife concern - due to contact with facilities (Ag) - Only from those causing salt problems. This is unacceptable as written. The east side San Joaquin Tributaries accept no responsibility for increasing San Joaquin River flow to dilute salt input from others (Ag) - 40 to 50 percent (can't put numbers to without more information, timing, volume, etc) should be removed (Ag) - Ability to withhold amounts will depend on timing, etc. (Ag) - Detaining drainage water may have negative effect when later discharged (Ag) - Reduced flows (Ag) - Could be negative impact if water stored (Ag) - Willingness to participate (Ag) - Salinity buildup in ag soils (Ag) - Drought/flood uncertainty in year-to-year hydrology (Ag) - Highest priority for what? Small changes in the quality of applied water will not significantly change the quality of the subsurface drainage water (Ag)

Action No.	Advantages	Constraints
1	(Continued)	- Economic (Eco) - Unintended consequences (Movement to other media, groundwater contamination) (Eco) - Feasibility-pumping (Eco) - Creation of attractive nuisances for wildlife (Eco)j - Increased chemical usage for pond maintenance (Eco) - Concentration of pollutants in pond sediments (Eco) - Discharge of either tile drain or island drain water that impacts any of the water supply intakes is seen as a detriment to the extent that drainage water must be discharged, best done under the highest flow conditions possible, not low flow (Urban) **Parameters Impacted** **Negative:** Chlorpyrifos, diazinon (Eco)
2	- Dilution (Ag) - Less salt delivered to ag, less salt on river (Ag) - Reduced drainage load/flow (Ag) - Dilution (Ag) - Additional inflow to the Delta will decrease the salinity and reduce the Br (Ag) - No reason to believe that this action will do anything to reduce the TOC and source of water listed in Actions 2-5 do not appear to matter because this is the same water that is currently flowing into the Delta (Urban)	- Willing sellers may be difficult to find (Ag) - Need to regulate riparian users (so they don't take it back out) - Urbanization (Ag) - May get few sellers (Ag) - Community of water loss impacts, economy (Ag) - No reason to believe that this action will do anything to reduce the TOC and source of water listed in Actions 2-5 do not appear to matter because this is the same water that is currently flowing into the Delta (Urban) **Parameters Impacted** **Positive:** DO, salinity, temperature (Eco)

Action No.	Advantages	Constraints
3	- Incentive programs can be attractive (Ag) - Efficiency may cause less land to be fallowed - More water available, less drainage (Ag) - Dilution (AG - Water gained through efficiency may be used internally and not be available (Ag) - May not benefit water quality/subsurface WQ may decline (dilution possibilities limited) (Ag) - Reduced opportunities for drainage water reuse (downstream users) (Ag) - Efficiencies don't necessary result in more water (efficient use of land may require more water) (Ag) - Potential for increased efficiency limited (Ag) - High concentration of contaminants in drainage water (Ag) - Costs (Ag) - All must be voluntary (Ag) - May decrease turbidity depending on dam operation (Eco) - Additional inflow to the Delta will decrease the salinity, and reduce the Br. Would be advantageous to the supplies in the southern and central Delta (CCC, CAL, DMC)(Urban) **Parameters Impacted** **Positive:** Turbidity, DO, salinity (Eco)	- May increase turbidity depending on dam operation (Eco) - No reason to believe that this action will do anything to reduce the TOC and source of water listed in Actions 2-5 do not appear to matter because this is the same water that is currently flowing into the Delta (Urban) **Parameters Impacted** **Negative:** Turbidity (Eco)

Action No.	Advantages	Constraints
4	- Less stream runoff (Ag) - Reduced costs at treatment plants (Ag) - Dilution (Ag) - May decrease diazinon, chlorpyrifos, and ammonia (nitrogen products from lawn fertilizers) concentrations (Eco) - No reason to believe that this action will do anything to reduce the TOC and source of water listed in Actions 2-5 do not appear to matter because this is the same water that is currently flowing into the Delta (Urban) **Parameters Impacted** **Positive:** Ammonia, chlorpyrifos, diazinon (Eco)	- Administrative cost of urban conservation program (Ag) - Increasing urban use due to increasing population (Ag) - All must be voluntary (Ag) - Reduction of ammonia, chlorpyrifos, and diazinon dependent upon level of outdoor water conservation; increased water demand associated with growth of urban areas may constrain the effectiveness of this action (Eco) - No reason to believe that this action will do anything to reduce the TOC and source of water listed in Actions 2-5 do not appear to matter because this is the same water that is currently flowing into the Delta (Urban)
5	- Potential for reduced nutrient loading to tributary streams and thereby agriculture(Ag) - Cost savings for cities (Ag) - Reduced load on treatment plants (Ag) - Public awareness (Ag) - Dilution (Ag) - Unclear (Eco) - More information needed on this action (Urban) - Will reclaimed water be added to the Delta? If so, Delta Protection Act has to be changed because the addition of reclaimed water to the Delta is currently prohibited. If it is anticipated that Sacramento or Redding would develop reclamation, the flow question will be a wash because their treated wastewater is currently discharged to the Sacramento River and provides inflow to the Delta. It is a stated policy that reclaimed water is to be encouraged to provide more freshwater and to the extent that the reclamation takes place outside of the Delta. (Urban)	- Costs may be prohibitive ($2,000 acre-feet) (Ag) - Inferior quality, Bay issue (Ag) - Would need to replace existing demands (Ag) - Probably unacceptable to irrigators with existing contracts/water rights (Ag) - Salinity to groundwater (Ag) - Limitations on crops grown (no fresh market) (Ag) - Public acceptance (Ag) - Costs of infrastructure (Ag) - Crop type for water use (restrictions). Soil accumulation of metals and land devaluation (Ag) - All must be voluntary (Ag) - Economic (Eco)

Action No.	Advantages	Constraints
6	- Reduces load (Ag) - Cleans up drainage water (Ag) - Becomes new water supply (Ag) - Reduce contaminants (Ag) - Dilution (Ag) - Agricultural drainage from Sacramento and SJ Rivers and within the Delta provide inflow (Ag) - Decreased concentrations of listed parameters (Eco) - Agricultural drainage from Sacramento and SJR and within the Delta currently provide inflow (Urban) - Drainage could be treated from the Delta islands to reduce the TOC (Urban) - Potential water quality benefit to all supplies listed (Urban) **Parameters Impacted** **Positive:** Selenium, chlorpyrifos, ammonia, salinity (Eco)	- May not be economical ($1,500 acre-feet, minimum) (Ag) - Byproducts (sludge) (brine) (Ag) - May be consumed by local entities - Cost (Ag) - Disposal impacts (Ag) - High cost for desalinization of water (Ag) - Only marginal affect on trace elements like boron unless remove all salts (Ag) - Unproven technologies and cost effectiveness ((Ag)) - Expense (Ag) - Need to better define treating (Eco) - Economic (Eco) - Not a new supply (Urban)
7	- Defer to storage-conveyance linkage task (Ag) - Improves agricultural water quality (particularly in S. Delta) (Ag) - Cheaper than treatment (Ag) - Dilution (Ag) - Same as answer to Actions 2-5 (Urban) - If we were to develop groundwater in the Sacramento Valley and use it to supplant surface water, this would be a benefit (Urban)	- Greater salinites (groundwater supplies have higher TDS) (Ag) - Expensive to install wells, wells have finite life (pump and TDS on west side SJV)(Ag) - Degradation of groundwater aquifer further reducing water table levels in some areas (Ag) - Lack of available groundwater; groundwater quality may be worse than surface water quality (Eco)

Action No.	Advantages	Constraints
8	- Improves operating ability of existing pumps (Ag) - Better control over SJR component at export pumps (Ag) - Possible improved water quality in the rest of the Delta (Eco) - Without modeling info, it is difficult to predict an impact from this action (Urban) - To the extent that this would improve water quality on the southern and central Delta (Urban) **Parameters Impacted** **Positive:** DO, salinity, Turbidity (Eco)	- Changes distribution of salt in S & C Delta (may be benefit) (Ag) - Management of weirs, gates, control structures (Ag) - May affect stage and farmers ability to pump (Ag) - Applies to South Delta facilities; selenium that currently is exported south will not be captured in the Delta (Eco) - Problems with chlorpyrifos and carbofuran in Old River may be exascerbalted locally, but improved in the rest of the Delta (Eco) - Increased sedimentation and therefore DDT, toxaphene, chlordane, PCBs (Eco) - Increased export of organochlorines to the estuary because they are no longer transported south (Eco) - Questionable impacts (Eco) - If it serves to redirect more saline water to the CCC, CAL, and DMC (Urban) - It will have no impact on the NBA (Urban) **Parameters Impacted** **Negative:** Selenium, carbofuran, chlorpyrifos, DDT, PCBs, toxaphene, unknown toxicity (Eco)
9	- Protect Delta and export water quality - Reduced erosion (Ag) - Removal of pollutants; all noted parameters may be a benefit or a constraint (except salinity) (Eco) - Improvements to the Delta levee system serve to improve reliability of supply throughout the Delta (Urban) **Parameters Impacted** **Positive:** Cadmium, Copper, mercury, selenium, zinc, salinity (Eco)	- Defer to system vulnerability group (Ag) - Funding of long-term maintenance (Ag) - All noted parameters may be constraints; applies to within Delta dredgings only (Eco) - Resuspension of pollutants (Eco) - Location/Placement of levees (Eco) - Salinity content of dredgings (Eco) - Look at impact on the CCC when Andrus Island flooded following a levee break and the total dissolved solids dramatically increased in the CCC (Urban) **Parameters Impacted** **Negative:** Chlordane, DDT, PCBs, toxaphene, turbidity, unknown toxicity (Eco)

Action No.	Advantages	Constraints
10	- Less herbicide/pesticide in water (Ag) - Control of pesticide and other chemical applications in domestic water sources seen as a desirable goal (Urban) **Parameters Impacted** **Positive:** Carbofuran, chlorpyrifos, diazinon, unknown toxicity (Eco) *Note: Unsure who administers existing source control regs and what they are*	- Enforcement of spraying of chemicals provides no benefit to ag water quality (Ag) - May cause maintenance problems (weed control) (Ag) - May be minimal impact. Is there any impact by this action? (Ag) - Compliance by sprayer operators (Ag) - Spraying adjacent to waterways is unregulated (Eco)
11	- See Action 3 for water use efficiency (Ag) - Potential economic savings (less chemical use)(Ag) - Reduces water usage (Ag) - Reduces drainage (Ag) - Reduced drainage discharge (Ag) - Greater control over discharge (Ag) - Increased water efficiency may decrease selenium loading if agricultural acreage remains constant; reduced soil erosion and runoff (Eco) - Incentives for additional source control apply to agricultural drainage and viewed as a benefit to domestic water supplies (Urban) **Parameters Impacted** **Positive:** Copper, selenium, chlordane, chlorpyrifos, DDT, PCBs, toxaphene, ammonia, salinity, turbidity (Eco)	- Economic potential for ag chemical use limited (Ag) - Consumer expectations (Ag) - Salinity buildup on soils (Ag) - Cost of new technology (Ag) - Cost of incentives (Ag) - Increased concentrations of pollutants may enter waterways because a lower volume of water is being used (Eco)
12	- Can recycle more water (Ag) - Less salt to S.J. pumping less as a result of groundwater (Ag) - Better WQ to Delta users (Ag) - Quality water (Ag) - Minimal (AG) - May need less leaching, less drainage (Ag) - Potential salinity reduction (Eco) - High quality irrigation water supply will also lead to a high quality domestic water supply (Urban)	- Economics may enter into it (farmers will pump groundwater if surface water not competitive) (Ag) - Soil surface sealing if too low on Ca/Mg (Ag) - Depends on ionic character of water; water may be moved from one place in the Delta to another so perhaps no net (Eco) - Not enough detail as to what is meant by the action. Is high quality to be located in the Delta? (Urban)

Action No.	Advantages	Constraints
13	- Short term reduction in loads for lands discharging to river (Ag) - Less drainage volume, improve SJR water quality if water goes to other uses (Ag) - Increase (Ag) - Land retirement and fallowing will mean less drainage to impact the domestic supply (Urban) **Parameters Impacted** **Positive:** Selenium, chlordane, DDT, PCBs toxaphene, ammonia, salinity, turbidity (Eco) *NOTE: Land fallowing goes up during drought now because of insufficient water. Additional potential for fallowing limited*	- Possible increased loads when lands brought back on line (Ag) - Lands with drains may still have some drainage (Ag) - Upslope lands still contribute hydraulic loading to fallowed lands and consequently drainage (Ag) - Economic and social impacts (Ag) - Limited potential for additional land fallowing (over current) during droughts (Ag) - Impacts to private property (Ag) - Water saved may be property of owner to use as he seems fit (Ag) - Cost of program (Ag) - Resistance by water districts (Ag) - This is not to be used to acquire water (Ag) **Parameters Impacted** **Negative:** Chlorpyrifos, unknown toxicity (Eco)
14	- Reduction in drainage discharge to San Joaquin (Ag) - Reduces impacts to downstream water (Ag) - Salinity removal will reduce contaminant load in SJR (Ag) - Allow more reuse of water (Ag) - Option was studied during Bay-Delta Hearings and is subject of an existing DWR study involving Delta islands (Urban) - Suggested that island drains nearest to intakes at NBA, CCC, CAL, and DMC be controlled through treatment or diversion to see if this would make a positive impact (Urban) **Parameters Impacted** **Positive:** Chlorpyrifos, chlordane, diazinon, DDT, PCBs, toxaphene, salinity, unknown toxicity (Eco)	- Feasibility (Ag) - Requires about 20 percent of land for storage and disposal (Ag) - Wildlife impacts (Ag) - Disposal of solids (Ag) - Impacts of disposal (Ag) - Desalinization very expensive (disposal problem) ((AG)) - Ultimate disposal (Ag) - Se removal; unproven technology (Ag) - Disposal where? (Ag) - Wildlife impacts, attractive nuisances, disposal of byproducts, impacts to Pond Biota (Eco) - May not be possible to provide treatment without essentially closing out Delta agriculture (Urban) - Noted that drains directly adjacent to the NBA and CCC be shown to degrade water quality (Urban)

Action No.	Advantages	Constraints
15	- Potential for nutrient, turbidity, toxics removal (Ag) - Unknown (Ag) - Some small salt removal, high removal of nutrients and Se (Ag) - Improve turbidity, remove nitrogen and other plant nutrients (Ag) - Retention time may allow decomposition of pesticides and byproducts and settling of particulate metals; Plants may uptake dissolved metals; may improve offsite DO levels; may reduce salinity concentrations offsite (Eco) **Parameters Impacted** **Positive:** Metals? Chlordane, chlorpyrifos, DDT, PCBs, toxaphene, ammonia, DO, salinity, turbidity, unknown toxicity (Eco) (In-River): Cadmium, copper, mercury, selenium, zinc, DDT, PCBs, toxaphene, ammonia, turbidity, unknown toxicity (Eco)	- Potential toxics buildup (Ag) - Potential wildlife impacts (Ag) - Volume cited not significant (Ag) - Damage to wildlife if not well managed (Ag) - Pesticides may decompose into more toxic byproducts; selenium and mercury may concentrate in the wetlands; Volatile compounds (ammonia, pesticides) may cause nonpoint source emissions to the atmosphere; possible onsite problems with DO (Eco) - If conducted on Delta islands comprised primarily of peat material, will serve to further degrade the domestic supplies because the TOC will be increased (Urban) **Parameters Impacted** **Negative:** (In-Wetland) Cadmium, Copper, Mercury, Selenium, Zinc, DDT, PCBs, toxaphene, ammonia, turbidity, unknown turbidity (Eco)
16	- Recycling (Ag) - Improve WQ in SJR (Ag) - Greater potential compliance with WQ standards (Ag) - Point source control--would reduce all parameters of concern; may improve assimilative capacity of stream (Eco) - Discharge of agricultural drainage water can be kept on the islands and not discharged is seen as a benefit to domestic supplies (Urban) **Parameters Impacted** **Positive:** Cadmium, copper, mercury, selenium, chlordane, chlorpyrifos, DDT, PCBs, toxaphene, ammonia, DO, salinity, temperature, unknown toxicity (Eco)	- Boron only partially removed by R.O. (Ag) - Economically questionable (Ag) - Cost of treatment (Ag) - Disposal of salts (Ag) - Recycle and flow augmentation are two different things. Who's to pay? I don't think we should recommend reverse osmosis (Ag) - Cost of collection, storage, and disposal of drainage from multiple sources (brine solution with high concentrations of selenium); May decrease assimilative capacity of stream by removing water (Eco)

Action No.	Advantages	Constraints
17	- Reduces load (Ag) - Improve WQ downstream (Ag) - Improve conditions for wildlife (Ag) - Increased retention time may decrease concentrations of diazinon and chlorpyrifos; may serve as check for mercury in nonpoint urban runoff; would help to decrease ammonia inputs from Port of Sacramento (Eco) - Extent that treated water is low in TOC, constituent of concern, is seen as a benefit to domestic supplies (Urban) **Parameters Impacted** **Positive:** Cadmium, copper, zinc, chlorpyrifos, diazinon, ammonia, DO, unknown toxicity (Eco)	- Storage for runoff water (Ag) - Implementation costs (Ag) - This has little to do with agricultural water quality. These all sound nice, but the "devil's in the details" of how you do it (Ag) - Targeted to dry weather events only (Eco) **Parameters Impacted** **Negative:** Salinity (Eco)
18	- Cantua Creek (Ag) - Silver Creek (Ag) - Addressing upper watersheds will have long-term benefits (Ag) - Will help control sediment loadings (Ag) - Reduces turbidity in Delta and aqueduct (Ag) - Add water - Replace (Ag) - Small dense growth with large sparse growth, less water use and fire potential (Ag) - Reduced contaminant loading (Ag) - Questionable whether mercury will be reduced (Eco) - (Dickey version) All of these would be seen as of benefit to domestic suppliers to the extent that they reduce the loading of TOC and other constituents of concern to the Delta (Urban) **Parameters Impacted** **Positive:** Cadmium, copper, mercury, zinc, chlorpyrifos, diazinon, ammonia, DO, turbidity (Eco)	- Hard to move ahead and implement (Ag) - Must provide incentives outside Delta also (Ag)) - Cost of enforcement (Ag) - This has little to do with agricultural water quality. These all sound nice, but the "devil's in the details" of how you do it (Ag) - Need to clarify regulations (Eco) - Lack of enforceable mechanisms (Eco) **Parameters Impacted** **Negative:** Cadmium, copper, mercury, selenium, zinc (Eco)

Action No.	Advantages	Constraints
19	- Cantua Creek (Ag) - Silver Creek (Ag) - Addressing upper watersheds will have long-term benefits (Ag) - Will help control sediment loadings (Ag) - Reduces turbidity in Delta and aqueduct (Ag) - Add water - Replace (Ag) - Small dense growth with large sparse growth, less water use and fire potential (Ag) - Reduced contaminant loading (Ag) - May allow different source control approaches (Eco) - Wet basin vs dry basin (Eco) - (Dickey version) All of these would be seen as of benefit to domestic suppliers to the extent that they reduce the loading of TOC and other constituents of concern to the Delta (Urban) **Parameters Impacted** **Positive:** Chlorpyrifos, diazinon, unknown toxicity (Eco)	- Hard to move ahead and implement (Ag) - Must provide incentives outside Delta also (Ag)) - Cost of enforcement (Ag) - This has little to do with agricultural water quality. These all sound nice, but the "devil's in the details" of how you do it (Ag)

Action No.	Advantages	Constraints
20	- Cantua Creek (Ag) - Silver Creek (Ag) - Addressing upper watersheds will have long-term benefits (Ag) - Will help control sediment loadings (Ag) - Reduces turbidity in Delta and aqueduct (Ag) - Add water - Replace (Ag) - Small dense growth with large sparse growth, less water use and fire potential (Ag) - Less erosion, improved turbidity (Ag) - Less nutrients on runoff (Ag) - Long-term cost savings (i.e., less flooding problems) (Eco) - (Dickey version) All of these would be seen as of benefit to domestic suppliers to the extent that they reduce the loading of TOC and other constituents of concern to the Delta (Urban) **Parameters Impacted** **Positive:** Cadmium, copper, mercury, selenium, zinc, chlorpyrifos, diazinon, unknown toxicity (Eco)	- Hard to move ahead and implement (Ag) - Must provide incentives outside Delta also (Ag)) - Cost of program (Ag) - This has little to do with agricultural water quality. These all sound nice, but the "devil's in the details" of how you do it (Ag) - Cost (Eco) - Difficult to construct passive systems (green belts) in established communities (Eco) - County reluctance to maintain green belts (Eco) - Wetlands designed to treat and trap pollutants may allow percolation of pollutants to groundwater (Eco) **Parameters Impacted** **Positive:** Cadmium copper, mercury, selenium, zinc (Eco) *NOTE: Economic incentives needed to encourage consideration of green belts in early stages of development (Eco)*

Action No.	Advantages	Constraints
21	- Cantua Creek (Ag) - Silver Creek (Ag) - Addressing upper watersheds will have long-term benefits (Ag) - Will help control sediment loadings (Ag) - Reduces turbidity in Delta and aqueduct (Ag) - Add water - Replace (Ag) - Small dense growth with large sparse growth, less water use and fire potential (Ag) - Reduce source loading of river (Ag) - Reduced erosion and nutrient loading to Delta (Ag) - May reduce nutrient loading to Delta (Ag) - Improve aquatic life health (Ag) - Salinity associated with tidal marshes (Eco) - May decrease ammonia concentration by converting grazing lands (Eco) - Reclamation is seen as beneficial (Urban) - Upstream counties--sedimentation and existing water quality above existing reservoirs (Eco) - If new developments can be put into place without adversely impacting the discharge situation currently exists there would be no reason for restrictions (Urban) - Limit additional discharge (Urban) **Parameters Impacted** **Positive:** DO, salinity, turbidity (Eco), Needs further clarification (Eco)	- Hard to move ahead and implement (Ag) - Must provide incentives outside Delta also (Ag)) - Implementation cost (Ag) - This has little to do with agricultural water quality (Ag) - Must provide incentive outside Delta also (Ag) - Cooperation from landowners on watershed (Ag) - This has little to do with agricultural water quality (Ag) - Need to develop agricultural BMPs to limit pesticide impacts to water quality (Eco) - Coordination of landowners, users (Ag) - This has little to do with agricultural water quality (Ag) - All supplies derived from Delta are filtered. Two technologies that utilities are currently investigating are ozone for disinfection and enhanced coagulation for reduction of TOC. Both improve water quality at consumers tap at substantial cost. Next treatment step, installation of GAC is more than an order of magnitude increase in cost (Urban)

Action No.	Advantages	Constraints
22	- Cantua Creek (Ag) - Silver Creek (Ag) - Addressing upper watersheds will have long-term benefits (Ag) - Will help control sediment loadings (Ag) - Reduces turbidity in Delta and aqueduct (Ag) - Add water - Replace (Ag) - Small dense growth with large sparse growth, less water use and fire potential (Ag) - Improved conditions for aquatic life (Ag) - Reduced levels of containments (Ag) - Remove from Ag (Ag) - Net reduction in metals loading (mainly in the Sacramento River) (Eco) - Reductions nearer the sources will achieve load reductions where rivers have the least assimilative capacity (Eco) - Reduction in chemical sediments (Eco) - Watershed management efforts reduce amount of pollutants loading to Delta (Urban) **Parameters Impacted** **Positive:** Copper, cadmium, mercury, zinc, turbidity, unknown toxicity (Urban) *NOTE: Clarify pollution credit trading concept: should be "total load reduction credits". Clarify inactive versus abandoned mines (Eco)*	- Hard to move ahead and implement (Ag) - Must provide incentives outside Delta also (Ag)) - Costs of implementation (Ag) - This has little to do with agricultural water quality (Ag) - Short-term impacts (runoff from road construction, etc) associated with remediation efforts (Eco) - Liability concerns (Eco) - Difficulty to obtain resources and contracts (Eco) - Introduction of cyanide into ecosystem fro settling ponds which use cyanide to chelate metals (Eco)

Action No.	Advantages	Constraints
23	- Cantua Creek (Ag) - Silver Creek (Ag) - Addressing upper watersheds will have long-term benefits (Ag) - Will help control sediment loadings (Ag) - Reduces turbidity in Delta and aqueduct (Ag) - Add water - Replace (Ag) - Small dense growth with large sparse growth, less water use and fire potential (Ag) - Lower nutrient levels, less algae, aquatic plants (Ag) - Affect BOD and improve WQ for wildlife (Ag) - Remove from Ag (Ag) - Minimal benefits; primarily aesthetic (Eco) - Reduction of metals loading from ind rainage, regardless of source of funding will be seen as a benefit to domestic water suppliers (Urban) **Parameters Impacted** **Positive:** Ammonia, DO (Eco)	- Hard to move ahead and implement (Ag) - Must provide incentives outside Delta also (Ag)) - Enforcement costs (Ag) - This has little to do with agricultural water quality (Ag)

Action No.	Advantages	Constraints
24	- Cantua Creek (Ag) - Silver Creek (Ag) - Addressing upper watersheds will have long-term benefits (Ag) - Will help control sediment loadings (Ag) - Reduces turbidity in Delta and aqueduct (Ag) - Add water - Replace (Ag) - Small dense growth with large sparse growth, less water use and fire potential (Ag) - Reduce nitrogen loading, Se and some salts (Ag) - Increase water supply for alternate uses (Ag) - Possible creation of wildlife habitat (Eco) - Lower cost than conventional tertiary treatment (Eco) - Important in the immediate vicinity of intake structures at NBA, CCC, CAL, & DMC, and in the vicinity of marinas where there may be local water supplies (Urban) **Parameters Impacted** **Positive:** (In-stream) Cadmium, copper, mercury, zinc, chlorpyrifos, unknown toxicity (Eco)	- Hard to move ahead and implement (Ag) - Must provide incentives outside Delta also (Ag)) - Bird safety from conc. Ag drainage (Ag) - This has little to do with agricultural water quality (Ag) - Requires large amounts of land (may be unavailable in urban areas or costly) (Eco) - May create an attractive nuisance for wildlife by accumulating toxic substances (Eco) - Salinity and ammonia may accumulate--source to rivers (Eco) - Pollutant percolation to groundwater (Eco)
25	- Reduce contaminant load (Ag) - Only benefits system if net loads are reduced (Eco) - Items needs explanation; are we constructing wetlands to treat municipal wastewater in conjunction with agricultural drainage? If wetlands treatment results in higher TOC loading it will be seen as detriment; if results in lower TOC loading, it will be seen as benefit (Urban)	- Cost of implementation, enforcement (Ag) - This has little to do with agricultural water quality (Ag) - Overall net loads need to be reduced (Eco)

Action No.	Advantages	Constraints
26	- Lower trihalomethane production (Ag) - Reduced exposure to concirogenic precursors (Ag) - Use of carbon columns may reduce pesticide loads to streams; reduction in toxicity associated with residual chlorine levels (Eco) - Needs more explanation; what is a specific example of process. Any action that serves to reduce the TOC loading to domestic supplies will be seen as a benefit (Urban) **Parameters Impacted** **Positive:** Pesticides, unknown toxicity (Eco)	- Cost of alternate disinfection method (Ag) - This has little to do with agricultural water quality (Ag)
27	- Reduced contaminant loading (Ag) - Reduced DO and better environment for aquatic life (Ag) - Increase available water supply (Ag) - May increase assimilative capacity of receiving stream (Eco) - Unless we are able to limit the TOC loading to domestic supplies it will not be able to be detected in intake areas. (Urban) **Parameters Impacted** **Positive:** Chlorpyrifos, unknown toxicity (Eco)	- Costs of implementation (Ag) - This has little to do with agricultural water quality (Ag) - May decrease assimilative capacity of receiving stream by removing water and consequently increasing concentrations of pollutants (Eco) *NOTE: Replace reclamation with wastewater ; mention alternatives--ozonation*
28	- Possible decrease in turbidity on drinking water returned to river (Ag) - Not much impact (Eco) **Parameters Impacted** **Positive:** Unknown toxicity (Eco) *NOTE: Upstream turbidity issues* (Eco)	- Cost (Ag) - This has little to do with agricultural water quality (Ag) - Not much impact (Eco)

Action No.	Advantages	Constraints
29	- May reduce streambank erosion and improve turbidity (Ag) - All of these actions can be viewed as either benefit or neutral. If riparian habitat restoration on the tributaries to Delta prevents restoration pressure at the intakes, a benefit (Urban) **Parameters Impacted** **Positive:** Ammonia, DO, temperature (Eco)	- Cost (Ag) - This has little to do with agricultural water quality (Ag) **Parameters Impacted** **Negative:** Chlordane, DDT, PCBs, toxaphene, turbidity (Eco) *NOTE: Needs clarification, channel features . Is this the meandering vs. channelized nature of some streams?* (Eco)
30	- May reduce bank erosion and improve turbidity (Ag) **Parameters Impacted** **Positive:** Temperature (Eco) *NOTE: Needs clarification: channel features , is this the meandering vs. Channelized nature of some streams?* (Eco)	- This has little to do with agricultural water quality (Ag) - All of these actions can be viewed as either benefit or neutral. If riparian habitat restoration on the tributaries to Delta prevents restoration pressure at the intakes, a benefit (Urban) **Parameters Impacted** **Positive:** Chlordane, DDT, PCBs, toxaphene, turbidity (Eco)
31	- Research should focus on solving problems rather than just finding more (Ag) - This has little to do with agricultural water quality (Ag) - Identification of sources of parameters; data to allow prioritization of actions - Cost effective (Eco) - More research is always seen as a benefit to the extent that it does not divert funds from more immediate actions which will result in direct benefits (Urban) **Parameters Impacted** **Positive:** Unknown toxicity (Eco)	- Research should focus on solving problems rather than just finding more (Ag) - This has little to do with agricultural water quality (Ag) - Cost (Eco) - Length of time needed (Eco) *NOTE: Wording of action--insert ambient (Eco)*