The March 14, 2013 meeting will be held at:

Carollo Engineers
2880 Gateway Oaks Drive, Suite 300
Sacramento, CA 95833
http://www.carollo.com
(916) 565-4888

9:30 a.m. – 12:30 p.m.

Next Meeting:
April 11, 2013
Conference Call

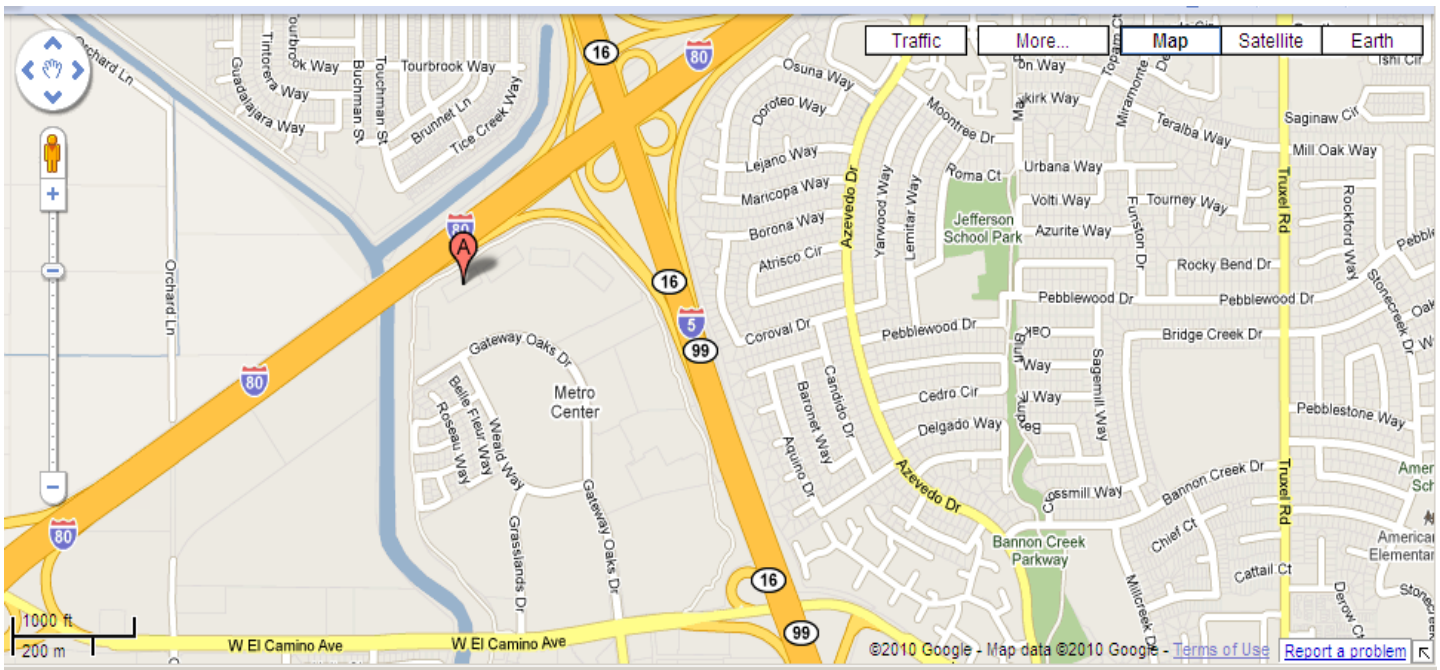
Carollo Engineers Sacramento Office
2880 Gateway Oaks Drive, Suite 300
Sacramento, CA 95833

From EAST BAY

Take I-80 East towards Sacramento
Right after the City of Davis be sure to stay on I-80 towards Reno (DO NOT TAKE I- 80 TOWARDS SOUTH LAKE TAHOE)
Take the West El Camino Exit – make a right.
Turn left at Gateway Oaks Drive.
Follow Gateway Oaks Drive until you reach 2880 Gateway Oaks Drive on your right hand side. We are in Suite 300.

From the AIRPORT

Take I-5 South towards Los Angeles
Exit right to I-80 West (towards San Francisco)
Take the West El Camino Exit, and turn left on West El Camino.
Turn left on Gateway Oaks Drive.
Follow Gateway Oaks Drive until you reach 2880 Gateway Oaks Drive on your right hand side. We are in Suite 300.



TRI-TAC MEETING

Carollo Engineers
2880 Gateway Oaks Drive, Suite 300
Sacramento, CA 95833
916-565-4888

THURSDAY, March 14, 2013

9:30 A.M. – 12:30 P.M.

9:30 A.M. – 10:00 A.M. – GENERAL MEETING

1. Introductions
2. Future Meeting Schedule and Locations, Committee Assignments and Sign-In Roster
3. Debrief from Summit Partners Meeting
4. Update on Hot Topic Issues In Water and Land Committees
5. Cross-Media Issues Update
    a. Green Chemistry
    b. Pesticide Steering Committee Update
6. Other Business and New Issues

10:00 A.M. – 12:30 P.M. – WATER & LAND COMMITTEE MEETINGS

1. Water Committee Agenda & Attachments (P. 6-19)
2. Land Committee Agenda & Attachments (P. 26)
3. Committee Issue Summaries (P. 20-25 & 27-29)

TRI-TAC SPONSOR REPRESENTATION 2013

League of California Cities (LOCC)	CASA	CWEA
Kyra Ross	Sharon Green Ben Horenstein Roberta Larson Terrie Mitchell, Tri-TAC Chair	James Clark Jim Colston Bob Gillette Tom Grovhoug Jon Hay Chandra Johannesson Jackie Kepke, Tri-TAC Vice Chair Hugh Logan Alec Mackie Monica Oakley

Tri-TAC Liaison Representation

BACWA: Dave Williams
CASA: Roberta Larson, Greg Kester
SCAP: John Pastore
CVCWA: Debbie Webster
CWEA: Hugh Logan, Alec Mackie
LOCC: Kyra Ross

COMMITTEES

AIR	LAND	WATER
Chair: Air Committee On Ad-hoc Basis only	Co-Chairs: Vince De Lange Tom Meregillano	Co-Chairs: Sharon Greene (Interim) & Shannon Bishop Jason Lofton Finance Subcommittee Chair: Dave Bruns
Interested Participants	**Interested Participants**	**Interested Participants**
Gregory Adams Terry Ahn Frank Caponi Stephanie Cheng James H. Clark Sarah Desalauriers Zeynep Erdal Kris Flaig Sharon Green Patrick Griffith Bobbi Gustafson Ron Hipkiss Kirk Howard Greg Kester Vlad Kogan John Pastore Amanda Roa Lisa Rothbart Jim Sandoval Randy Schmidt Jennifer Shepardson Kevin Steet Debbie Webster	Matt Bao Layne Baroldi Stephanie Cheng James Clark Bonnie Jones Diane Gilbert Jones Robert Gillette Eric Have Jon Hay Ron Hipkiss Al Javier Bonnie Jones Zachary Kay Greg Kester Matt Krup Derrick Lee Ajay Malik Mike Moore Octavio Navarrette Michelle Pla Tim Potter John Pugliarese Lisa Rothbart Kelly Sarber Mike Sullivan Caroline Quinn Sandy Warren Debbie Webster	Matt Bequette Rebecca Bjork Phil Bobel Barbara Buikema Amy Chastain Stephanie Cheng James Clark Paul Cobian Jim Colston Mike Connor Vicky Conway Linda Dorn Andy Eggleston Lorien Fono Rebecca Franklin Levi Fuller Dan Gallagher Preeti Ghuman Nicole Granquist Donald Gray (Gabb) Sharon Green Tom Grovhoug Bobbi Gustafson Tom Hall LeAnne Hamilton Lisa Haney Beverley Hann Ben Horenstein Al Javier Chandra Johannesson Jim Kelly Jackie Kepke, Tri-TAC Vice Chair Roberta Larson Melody LaBella Hugh Logan Phil Markle Patricia McGovern Tom Meregillano Terrie Mitchell, Tri-TAC Chair Kelly Moran Andy Morrison Mitchell Mysliwiec Karen North Monica Oakley Laura Pagano John Pastore Michelle Pla Tim Potter Paul Prange Amanda Roa Lisa Rothbart Jennifer Shepardson Christopher Stacklin Martin St. George Curt Swanson Bonnie Teaford Melissa Thorme David Tucker Lysa Voight Debbie Webster

TRI-TAC LOCATIONS & 2013 SCHEDULE

TRI-TAC MEETING DATE[1]	LOCATION/HOTEL	COMMENTS
JANUARY 10, 2013	Conference Call	CASA – January 16 - 18 Indian Wells, CA
FEBRUARY 14, 2013	Boy Scout Council 1001 Davis Street San Leandro, CA 94577	CASA D.C. Conference February 25 – 27
MARCH 14, 2013	Carollo Engineers 2880 Gateway Oaks Drive, Suite 300 Sacramento, CA 95833	
APRIL 11, 2013	Conference Call	CWEA – April 16-19 Palm Springs, CA CASA – April 24-26 Newport Beach, CA
MAY 9, 2013	Orange County Sanitation District 108 44 Ellis Avenue Fountain Valley, CA 92708	Shuttle bus offered from John Wayne Airport at about 8:40am.
JUNE 13, 2013	Carollo Engineers 2880 Gateway Oaks Drive, Suite 300 Sacramento, CA 95833	
JULY 11, 2013	Boy Scout Council 1001 Davis Street San Leandro, CA 94577	
AUGUST 8, 2013	No Meeting	CASA – August 21-24 San Diego, CA
SEPTEMBER 12, 2013	Boy Scout Council 1001 Davis Street San Leandro, CA 94577	
OCTOBER 10, 2013	Orange County Sanitation District 108 44 Ellis Avenue Fountain Valley, CA 92708	Shuttle bus offered from John Wayne Airport at about 8:40am. WEFTEC Oct. 5 – 9 Chicago, IL
NOVEMBER 14, 2013	Carollo Engineers 2880 Gateway Oaks Drive, Suite 300 Sacramento, CA 95833	
December meeting To Be Announced		

[1] If you would like to add an agenda item or schedule a presentation for an upcoming meeting, please contact one of the committee co-chairs at least 14 days before the designated meeting date

[2] If you would like an "after Tri-TAC" meeting noted in the agenda package, please contact Terrie Mitchell at least ten days before the designated meeting date.

✶ Air Committee is meeting on an Ad-Hoc Basis.

ITEM #	Topic	LEAD	Time (min)	Relevant material
Discussion Items:				
1.	SSS WDR MRP	Monica Oakley /Jason Lofton	20	http://www.tritac.org/documents/letters/2013_0122%20CASA-CWSP-Tri-TAC%20Comment%20MRP.pdf
2.	Statewide Nutrient Strategy	Tom Grovhoug Mitchell Mysliwiec	15	Handouts at meeting
3.	Delta Update – Potential Nutrient Research Plan	Tom Grovhoug	15	Attachment – CVRWQCB Potential Nutrient Research Plan for the Delta P.7
4.	State Water Board Resource Alignment	Adam link	15	http://www.waterboards.ca.gov/water_issues/programs/rap/docs/resc_algnmt_prop.pdf
5.	Biological Objectives – Causal Assessment Guidance	Phil Markle	10	http://www.waterboards.ca.gov/plans_policies/docs/biological_objective/causl_asmt_wkpln.pdf
6.	North Coast Region Board Update if Water Quality Objectives	Sharon Green	10	http://www.tritac.org/documents/letters/2012_0329%20CASA%20Tri-TAC%20Comments%20North%20Coast%20Basin%20Plan.pdf
Updates				
1.	Sewage Overflow Community Right-to-Know Act	Bobbi Larson	10	http://www.lautenberg.senate.gov/assets/SewageRTK.pdf
2.	Policy for Toxicity Assessment and Control	Debbie Webster	10	http://www.waterboards.ca.gov/water_issues/programs/state_implementation_policy/tx_ass_cntrl.shtml
3.	SWRCB Enforcement Policy & Implementation	Sharon Green	10	http://www.waterboards.ca.gov/board_info/agendas/2013/mar/031913_6.pdf

Items that are out there:

Biological Objectives	Tri-TAC Letter 02/25/2013	http://tritac.org/documents/letters/2013_0225%20Tri-TAC%20Bioobjective%20Comments%20Final1.pdf
Assessing Financial Capability for Clean Water Act Requirements	US EPA Memo	http://www.epa.gov/npdes/pubs/sw_regionalmemo.pdf
State Board Wetlands Policy		http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/wrapp/policy_draft.pdf

DRAFT Strategy for developing a nutrient research plan for the Delta[1]

The Sacramento and San Joaquin Rivers has been known for decades to have elevated concentrations of nitrogen and phosphorus. With one exception, the high nutrient loads were not thought to cause water quality problems in the Delta. The exception is that elevated nutrient concentrations from the San Joaquin Basin contribute to low dissolved oxygen levels in the Stockton Deepwater Ship Channel in fall coincident with high water temperature and large loads of algae from the upper basin[2]. The paradigm that the Delta is resilient to high nutrient concentrations is now being challenged. Elevated nutrient levels are hypothesized to cause, or at least contribute to, four water quality problems besides low oxygen levels in the Stockton Ship Channel (Table 1). These include increased macrophyte and blue-green algal production, shifts in algal species composition and decreased dissolved oxygen concentrations. Each is recognized as a significant water quality problem and to merit follow up. Research evaluating the role of nutrients in these impairments is at a beginning phase. The purpose of this write up is to lay out a strategy for developing a nutrient study plan to determine the relative significance of nutrients in these impairments.

Recommendation #6 of the Delta Stewardship Council's Delta Plan[3] is that the Regional Water Boards develop a research program to determine the role of nutrients in the Delta and to establish safe concentrations. The recommendation specifically states:

The State Water Resources Control Board and the San Francisco Bay and Central Valley Regional Water Quality Control Boards are currently engaged in regulatory processes, research, and monitoring essential to improving water quality in the Delta. In order to achieve the coequal goals, it is essential that these ongoing efforts be completed and, if possible accelerated, and that the legislature and Governor devote sufficient funding to make this possible. The Delta Stewardship Council specifically recommends that:

- *The State Water Resources Control Board and the San Francisco Bay and Central Valley Regional Water Quality Control Boards should adopt a study plan for the development of objectives for nutrients in the Delta and Suisun Marsh by January 1, 2014. Studies needed for development of Delta and Suisun Marsh nutrient objectives should be completed by January 1, 2016. The Water Boards should adopt and begin implementation of nutrient objectives, either narrative or numeric, where appropriate, for the Delta and Suisun Marsh by January 1, 2018.*

Briefly, I outline below some initial steps for carrying out the Council's recommendations. The emphasis is on the development of the research plan (Table 2).

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[1] Chris Foe, Ph.D. and Christine Joab
Central Valley Regional Water Quality Control Board, Sacramento CA.

[2] http://www.swrcb.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/san_joaquin_oxygen/low_do_report_6-2003/do_tmdl_rpt.pdf

[3] http://deltacouncil.ca.gov/delta-plan/current-draft-of-delta-plan

Conceptually, I plan on having the research plan reviewed by the Central Valley Water Board in December 2013 and transmitted to the Delta Stewardship Council by the beginning of 2014. I envision three key elements for developing the plan. These are (1) coordinating with the San Francisco Bay Water Regional Water Board (R2), (2) assembling a nutrient Technical Advisory Team (TAC) to guide development of the Central Valley Water Board (R5) nutrient plan, and (3) developing the tasks and schedule for the study plan. Each step is described in more detail below.

Coordinate with R2. The Delta Stewardship Council explicitly calls for the two Regional Boards to cooperate in developing the research plan (Table 2). This is farsighted as both Boards have a nexus in Suisun Bay. R5 provides some of the nutrients while R2 has regulatory authority. Topics of mutual interest to both regions include developing quantitative estimates of nutrient and blue-green algal toxin loads from the Central Valley to Suisun Bay, determining the biological importance of nitrogen to phosphorus ratios, having discussions on appropriate dissolved oxygen objectives for back sloughs in the delta and San Francisco Bay and developing a nutrient/phytoplankton model for the delta and Suisun Bay.

David Senn, San Francisco Estuary Institute (SFEI), is working with Karen Taberski and Naomi Feger from R2 to develop a Nutrient Science Study Plan for Suisun Bay. R2 has a Suisun Bay Workgroup which serves as a TAC. R5 staff will attend the Suisun Bay Workgroup/TAC meetings and provide comments on their study plan. Likewise, when R5 develops a Delta TAC we will invite R2 staff or their technical representatives to attend our meetings. Finally, I will investigate ways that R2 and R5 stakeholders can collaborate on topics of mutual interest. This may include holding periodic joint meetings.

Assemble Nutrient TAC R5 staff will form a Nutrient TAC to guide the development and implementation of the nutrient study plan. Ideally this group should be coordinated through the Delta RMP. If the Steering Committee for the Delta RMP decline, then R5 staff will form another group of interested stakeholders. The Nutrient TAC will need to hold at least three meetings in 2013. The first will be an organization meeting where the need for nutrient studies is explained and stakeholders are invited to participate in development of the study plan by sending technical experts to represent them. This meeting with the Delta RMP is scheduled for 27 February, 2013. The second meeting, or group of meetings, will be with technical nutrient experts to agree on (1) the suite of nutrient related impairments for study in the delta, (2) studies to determine whether nutrients contribute to causing the impairments and, if yes, (3) studies to determine a range of safe concentrations. R5 staff will write a draft study plan to help initiate these discussions. The technical experts will be asked whether they wish to form one or more subgroups to actively help prioritize, design and write each element of the study plan. The second group of meetings will occur between April and September. A final meeting with the larger Delta RMP TAC will be held to review the draft study plan elements, solicit comments and discuss funding. A tentative date for this meeting would be in late October or early November. R5 staff will consider all comments received and is

responsible for writing the final draft study plan. The draft study plan will be complete and available for review at the December Regional Water Board meeting.

Develop Study Plan There are four potential nutrient related impairments in the Delta (Table 1). These include an increased distribution and abundance of submerged and floating aquatic vegetation, increased frequency and geographic distribution of cyanobacterial blooms, changes in pelagic algal community composition, and low dissolved oxygen in back sloughs. The impairments are briefly described below along with some preliminary elements for inclusion in a Delta nutrient study plan.

Macrophyte Colonization A number of non native species of submerged aquatic vegetation (SAV) and floating aquatic vegetation (FAV) have become abundant and widespread in the Delta. Introduced SAV species are *Egeria densa* (brazilian elodea), *Myriophyllum spicatum* (eurasian watermilfoil), *Ludwigia* sp (water primrose) and *Potamogeton crispus* (curly-leaf pondweed). Introduced FAV species are *Eichhornia crassipes (*water hyacinth). Brazilian elodea and water hyacinth are the two most common invasive macrophytes. None of these introduced species have any natural local predators so the only control on their abundance and distribution are physical factors. Many of the SAV and FAV species occur in dense clumps. SAV colonies are often sufficiently prolific to restrict recreational boat traffic, reduce dissolved oxygen at night, harbor ambush fish predators that prey on native juvenile fish, elevate ambient water temperatures by decreasing flow, and cause diurnal pH shifts. Negative impacts of FAV are to block sunlight which suppresses the establishment of native SAV species and other emergent vegetation and to increase the sedimentation of organic matter that contributes to decreases in dissolved oxygen. The Department of Boating and Waterways has attempted to control the spread of non-native macrophytes with regular summer applications of aquatic herbicides.

Lars Anderson, USDA ARS, has produced a DRERIP model outlining the main factors that control macrophyte production in the Delta for the Ecosystem Restoration Program[4]. Factors responsible for SAV abundance include temperature, light and fine grained sediment needed for rooting. Dr. Anderson states that there is little to no nutrient limitation because species can acquire nutrients from both the water and sediment through their roots. Factors promoting the establishment and growth of FAV are light, temperature, and nutrients. Water hyacinths are sensitive to increased salinity. It is important to note that patchy, diverse canopies of SAV and FAV can be beneficial for native fish by providing a refuge from predation and structure that provide habitat for increased invertebrate prey.

The State Board has awarded $50K to the Southern California Coastal Water Research Project (SCCWRP) to provide a literature review to help R5 develop a nutrient study plan. The contract is executed and the money available for use. R5 staff tentatively intend to ask the contractor to use a portion of the funds to prepare a white paper on the primary factors controlling the establishment and growth of macrophytes. Emphasis

[4] Andersen, L. 2008. Draft Aquatic Vegetation Growth Conceptual Model. Sacramento CA: Delta Regional Ecosystem Restoration Implementation Plan.

would be on the efficacy of nutrients to control the abundance and distribution of brazilian elodea and water hyacinth in the delta. The white paper would also describe in general terms additional studies needed to confirm the importance of nutrients and, if necessary, determine safe concentration ranges. The white paper would be used to inform the nutrient study plan for macrophytes and focus development of research solicitation proposals in 2014 and beyond. A detailed white paper workplan will be prepared after discussion with the Contractor. The white paper should be completed by September 2013 for review by the nutrient TAC and for use in developing the macrophyte portion of the nutrient research strategy.

Harmful cyanobacterial algal blooms *Microcystis aeruginosa* and to a lesser extent *Aphanizomenon* spp. blooms have occurred periodically in the Delta since 1999[5]. The blooms appear to originate in the lower San Joaquin River (Central Delta) between June and September and to be tidally distributed across the system including to the confluence of the Sacramento and San Joaquin Rivers in the Western Delta. Water quality in the Central Delta is under the jurisdiction of R5 while the Western Delta is in R2 suggesting that any potential control action will need to be coordinated between the two Water Boards. Factors influencing the growth of *Microcystis* were reviewed by Mioni *et al*. (2012)[6]. These include water temperatures above 19^0C, longer water residence times because the species grow slowly, and high nutrient levels, particularly reduced forms of nitrogen which are preferentially taken up. Unpublished results for the summer of 2007 and 2008 support these observations (personal communication, Peggy Lehman). *Microcystis* blooms occurred in the Central Delta when it consisted mostly of Sacramento River water because of reverse flow from increased water use in the Southern Delta by agriculture and by the State and Federal pumps at Tracy. Sacramento River water contains a higher concentration of ammonia than does the San Joaquin River. Reverse flows also tend to increase water residence time in the warmer Central Delta. Finally, *Microcystis* biomass was found to increase as the proportion of ammonium to total dissolved nitrogen increased.

A decline in cyanobacterial biomass and the frequency of blooms has been documented in other aquatic systems after reductions in nutrient inputs[7]. However, the declines did not occur in a clear dose-response fashion to decreases in the form, concentration or ratio of nutrients. This suggests that nutrient control of cyanobacteria in the Delta should only be attempted after careful evaluation of all the factors likely to control its abundance and distribution, including nutrients.

[5] Lehman *et al*., 2005. Distribution and toxicity of a new colonial Microcystis aeruginosa bloom in the San Francisco Bay Estuary, Califonria. Hydrobiologia 541:87-90

[6] Mioni, *et al*. 2012. Harmful cyanobacterial blooms and their toxins in Clear Lake and the Delta (California). Report prepared for the Central Valley Regional Water Quality Control Board.

Lehman *et al.* 2008. The influence of environmental conditions on the seasonal variation in *Microcystis* abundance and microcystins concentrations in San Francisco Estuary. Hydrobiologia 600:187-204

[7] Heisler, J *et al*. 2008. Eutrophication and harmful algal blooms: A scientific consensus. 8:3-13.

Microcystis blooms are of concern because they release liver toxins that can cause cancer in people and wildlife[8]. In addition, ambient microcystin concentrations during bloom conditions may impact the growth and survival of zooplankton and fish in the estuary[9] and could contribute to the pelagic organism decline by reducing the amount of high quality food at the base of the food chain[10].

As mentioned previously, the State Board has awarded $50k to SCCWRP to help R5 develop a nutrient study plan. R5 staff tentatively intends to ask the contractor to use a portion of the funds to develop a white paper on cyanobacterial blooms. The paper should summarize the peer reviewed literature on the primary factors that contribute to the blooms with an emphasis on potentially controllable nutrient related factors. The white paper would also recommend additional studies needed to confirm the importance of nutrients and to determine safe levels. A detailed workplan will be prepared after discussion with the Contractor. The white paper should be complete by September 2013 for review by the Nutrient TAC and to inform development of the overall nutrient research program.

Shifts in Algal Species Composition The algal community in the Delta has changed over the last several decades from diatoms to a flagellate/blue-green algal dominated community[11]. Diatoms are assumed to be more nutritious to primary consumers like zooplankton than flagellates and bluegreen algae. There have also been decreases in the overall biomass of pelagic algae. Changes in algal food quality and quantity or "bottom up" effects are one of the four factors hypothesized to contribute to the pelagic organism decline[9].

The cause of the algal community shift is not known but hypothesized contributing factors are elevated ammonia concentrations, changes in the ratio of nitrogen to phosphorus, decreases in the amount of incoming San Joaquin River water and climate change. Ammonia concentrations greater than about 0.056 mg N/L have been shown to

[8] Chorus *et al* (1999). Toxic cyanobacteria in water. A guide to their public health consequences, monitoring and management. World Heath Organization. E &FN son, London.

[9] Ger *et al*., 2009. *Microcystin*-LR toxicity on dominant copepods *Eurytemora affinis* and *Pseudodiaptomus forbesi* of the upper San Francisco Estuary. Science of the total Enviroment 407:4852-4857.

Lehman *et al* 2010. Initial impacts of *Microcystis* on the aquatic food web in the San Francisco Estuary. Hydrobiologia 637:229-248.

[10] Sommer *et al* 2007. The collapse of pelagic fishes in the upper San Francisco Estuary. Fisheries 32:270-277.

[11] Lehman, P. 1998. Phytoplankton species composition, size structure, and biomass and their possible effect on copepod food availability in the low salinity zone of the San Francisco Bay/Delta and Suisun Bay. IEP technical report No 62. August 1998.

Lehman, P. 2000 The influence of climate on phytoplankton community biomass in San Francisco Bay estuary. Limn and Ocean 45(3):580-590

Lehman, P. 2000. Phtyoplankton biomass, cell diameter, and species composition in the low salinity zone of northern San Francisco Bay Estuary. Estuaries 23 (2):216-230.

Brown, T. 2010. Phytoplankton community comnposition: the rise of the flagellates. IEP Newsletter.

inhibit nitrate uptake by diatoms in Suisun Bay[12]. Ammonia induced suppression of nitrate uptake prevented spring algal blooms from developing in Suisun Bay[13]. Changes in nitrogen utilization and nitrogen to phosphorus ratios have been observed to change phytoplankton species composition elsewhere and may also do so in the Delta[14].

Nutrient concentrations and ratios will change in the Delta within the next ten years. In 2010 the Central Valley Regional Board adopted a revised permit for the Sacramento Regional Wastewater Treatment Plant (SRWTP). The plant is the largest discharger in the Central Valley and is responsible for over 90-percent of the ammonia entering the delta[15]. The new permit included average monthly ammonia limits of 1.5 mg N/L in winter and 2.4 mg N/L in summer. Average monthly ammonia effluent concentrations in the discharge are about 25 mg N/L. So, the new permit will decrease ammonia loads entering the delta by about 10-fold. The permit also includes nitrate limits of 10 mg N/L. This will require the SRWTP to denitrify about half of its nitrate to gaseous N_2. The result will be that total dissolved nitrogen concentrations entering the Delta from the Sacramento River will decrease by about 50% when the new plant is completed in 2020. SRWTP staff does not believe that phosphorus loads will change as most of the phosphorus in their effluent is now in a dissolved form (personal communication, Kurt Ohlinger). As a result, nitrogen to phosphorus ratios should increase because of the decline in nitrogen.

Longer term changes in the hydrology and water quality of the Delta may occur over the next half century that could further alter pelagic primary production rates and species composition. In the immediate future these include water rights decisions mandated by the Delta Stewardship Council to require new flow standards for the Sacramento and San Joaquin Rivers. Also, the Bay Delta Conservation Plan is planning a new water diversion facility in the north delta. The water diversion would replace pumping at the State and Federal facilities in the South Delta at Tracy for at least a portion of the year. A north delta facility would result in less Sacramento and more San Joaquin River water entering the Delta. This change will alter the major water sources and water residence time in the Delta. More San Joaquin River water may stimulate higher within delta phytoplankton concentrations because of the higher initial seed concentration and a longer within Delta water residence time. In the more distant future, global warming is likely to increase

[12] Dugdale, R. f. Wilkerson, V. Hogue, and A. Marchi. 2007. The role of ammonium and nitrate in spring bloom development in San Francisco Bay. Estuarine, Coastal and Shelf Science, 73:17-29.

[13] Wilkerson, F. R. Dugdale, V. Hogue, and A. Marchi, 2006. Phytoplankton blooms and nitrogen productivity in San Francisco Bay. Estuaries and Coasts 29(3):401-416.

[14] Anderson, D. P. Glibbert, and J. Burkholder. 2002. Harmful Algal blooms and eutrophication: Nutrient sources, composition, and consequences. Estuaries 25(4b): 704-726.

Sommer, U. 1993. Phytoplankton competition in PluBsee: A field test of the resource-ratio hypothesis. Limnol Oceanogr 38(4):838-845.

Glibert *et al* 2011. Ecological stoichiometry, biogeochemical cycling, invasive species znd aquatic food webs: San Francisco Estuary and comparative systems. Reviews of Fisheries Science: 19:358-417

[15] Jassby, A. 2008. Phytoplankton in the upper San Francisco Estuary: Recent biomass trends, their causes and their trophic significance. San Francisco Estuary and Watershed Science 6:1-24

water temperatures, raise sea level and increase salt water intrusion. Turbidity has declined in the Delta over the past 20 years and may continue to do so. The combination of changes in nutrient concentrations and ratios, higher temperature, increased salinity and clearer water are likely to continue to alter pelagic primary production rates and algal species composition. The net effect of these and other unanticipated changes make it impossible to predict pelagic primary production rates in the Delta without a phytoplankton model.

The nutrient research plan should include construction of a nutrient/pelagic primary production model for the delta. The goal of the work would be to produce a model that will accurately predict present and future nutrient and pigment concentrations in the estuary. The model should have the ability to predict primary production rates and standing chlorophyll levels of several key phytoplankton taxa. These should include diatoms and blue-green algae. The model may be a modification of DSM2, the proprietary delta HydroQual model, the salmon SELFE model or some new creation. Criteria for the model will be developed by R5 staff after consultation with the Nutrient TAC and local phytoplankton and modeling experts. Whatever model is selected will need to be in the public domain and be able to interface with watershed models such as WARMF and SPARROW. The latter watershed models are capable of predicting nutrient concentrations and transformations as nitrogen and phosphorus are transported into the estuary from the Central Valley. The new Delta model will also have to be able to interface with the R2 model for nutrients and phytoplankton in Suisun Bay. R5 staff will be responsible for writing the white paper justifying the need for a phytoplankton nutrient model and outlining important model attributes.

Nutrient Data Base Several elements of the nutrient plan may benefit from the compilation of nutrient and related water quality information for the Central Valley and Delta. R5 staff hired a student in 2012 to begin collating that information into an excel spreadsheet for a 10 year time period (2000-2010). However, the student was let go because of a budget shortfall before completing the project.

IEP recently funded David Senn and colleagues to, among other things, collate and synthesize the long term nutrient related monitoring data (1975-2011) for the Delta. Ultimately this data will be available for the nutrient research community. R5 staff will pursue funds to hire a student to complete the compilation of nutrient related data for the Central Valley. The goal being to produce an Excel data base for both the Central Valley and Delta. If all the data is available in time, then R5 staff will summarize key nutrient patterns to help inform development of research solicitation proposals by the fall of 2013.

Low Dissolved Oxygen Concentrations. Thirteen water bodies in the Delta have been placed on the 303(d) list because of periodic low dissolved oxygen levels (Table 3). Ten are creeks and back sloughs that discharge on the eastern and southern sides of the delta. Three are major river channels carrying water across the delta. Together the ten back sloughs constitute the majority of back slough type habitat on the south and east side of the delta. Periodic low oxygen concentrations in all these back sloughs may be ecologically important because it could restrict the use of these areas by aquatic

organisms requiring back sloughs to complete a portion of their lifecycle. The magnitude, duration and frequency of anoxic conditions in back sloughs have not been well characterized and it is possible that anoxic conditions are more common than previously recognized. The primary cause(s) of the low oxygen are not known but it is tempting to surmise that a similar set of factors contribute to the impairment in each back slough. These may include localized runoff of nutrients from agriculture and urban areas that subsequently stimulate algal blooms, runoff of terrestrial BOD that settles locally and decomposes, the presence of dense canopies of SAV and FAV that trap locally produced organic matter that subsequently settles and decomposes. Alternatively, it is possible that the primary source of nutrients fueling the algal blooms is derived from the San Joaquin River. Regardless, all these processes are likely aggravated by poor circulation and long water residence times.

R5 staff recommend that the Central Valley Water Board may want to consider developing a single TMDL for all the back sloughs because the impairments may be caused by the same set of physical factors. To my knowledge there has been no systematic investigation of the magnitude, duration and geographic extent of hypoxia in back sloughs. This needs to be undertaken first and once the temporal-spatial nature of the problem determined, then more detailed investigations of the cause(s) can commence. It is beyond the scope of the nutrient study plan to propose to conduct a backslough low dissolved oxygen TMDL. However, if nutrients are found to be a cause, then implementation of a nutrient control plan could be a key implementation action of the low dissolved oxygen TMDL.

The second set of low dissolved oxygen impairments are on Middle, Old and the lower Mokelumne Rivers. Again, the cause of these impairments will not be known until more detailed investigations are undertaken. However, it is again possible that nutrients are a contributory factor. Like with back sloughs, R5 staff assigned to the low dissolved oxygen TMDL and to the nutrient study plan should coordinate activities.

Workshops Two public workshops are planned to help inform the development of the nutrient study plan. The first is a two day conference on the response of aquatic ecosystems to nutrient reductions. Presentations are planned by internationally recognized nutrient and phytoplankton experts. The meeting is scheduled for the summer of 2013 as a Chapman Conference and could provide valuable insights for development of the nutrient study plan. The conference is being organized and funded by the SRWTP and by the State and Federal Contractors Water Agency (SFCWA). R5 staff plan on attending the workshop.

A workshop to discuss the results of ongoing local nutrient and phytoplankton related research would also be valuable. The purpose of this workshop would be to familiarize the Nutrient TAC and stakeholders on the conclusions of ongoing unpublished nutrient related research in the Bay Delta Ecosystem. Presentations may include the results of work by Drs Glibbert and Dugdale on N to P ratios and ammonia inhibition of diatom production, Dr Parker on the role of *Microcystis* blooms in the delta foodweb and Dr Lehman on the role of ammonia in stimulating cyanobacterial blooms. The workshop

will also include presentations by Contractors on their two white papers and by R5 staff on the attributes of a delta-wide phytoplankton nutrient model.

Table 1. List of potential water quality impairments that may be caused, at least in part, by elevated nutrient concentrations in the Delta.

Impairment	Location	Contributing Factors
Increased macrophyte colonization	Back sloughs and shallow open water habitat throughout delta	Invasive species with no predators, high nutrients, elevated temperatures, reduced flow
Blue green algae blooms	Central and Western Delta	Elevated temperature, increased water residence time, nutrient including ammonium
Shift in algal community composition	Suisun Bay and delta	Elevated ammonia levels, change in nitrogen to phosphorous ratios, reduced residence time, increased invasive clam feeding
Low dissolved oxygen	Ten back sloughs and three open channels in Delta	Nutrients, hydro modifications, terrestrial BOD, macrophytes

Table 2 Possible next steps for development of nutrient objectives and an implementation plan for the freshwater Delta using the schedule recommended by the Delta Stewardship Council in the final edition of the Delta Plan. The table emphasizes work products needed in 2013 to develop the study plan.

Action	Sub Action	Comments	Completion Date
Coordinate with R2		Recommendation #6 of the Delta Stewardship Council's Delta Plan states that Regions 2 and 5 will work cooperatively in developing a nutrient study plan for Suisun Bay and the Delta.	
	Inter-Regional Board coordination	Karen Taberski and Naomi Feger are the responsible staff at R2. R2 has engaged SCCWRP/SFEI to develop an Assessment Framework and to support implementation of the SF Bay Nutrient Strategy. R2 and R5 will confer regularly and update others at State Board and at the Delta Stewardship Council at the Delta Team meetings	ongoing
	Attend TAC Meetings of other Regional Boards	BACWA has a contract with David Senn, SFEI, to assist R2 in the development of a nutrient science plan for Suisun bay with input from local stakeholders. R5 staff will attend the Suisun Bay stakeholder meetings. Likewise R2 staff will be kept appraised of R5 technical meetings and invited to attend.	ongoing
Assemble Nutrient TAC		R5 staff is responsible for developing and implementing a nutrient study plan for the Delta. R5 staff will assemble a Nutrient TAC and solicit their input on prioritizing and designing study elements, selecting contractors, funding and stakeholder coordination. The Nutrient TAC may continue in later years, if they choose, to help implement study elements, evaluate results, and make recommendations on follow up studies.	2013
	Meetings	The TAC will hold at least three sets of meetings in 2013. The first will be an organizational meeting where the charge of the group is described and stakeholders are invited to send technical experts. The second group of meetings will be with technical experts to discuss the details of the study elements. TAC members will be asked whether they would like to form one or more subgroups to actively design and write study plan elements. A final meeting will be held with the entire TAC and other interested stakeholders to review study plan elements, solicit comments and discuss funding before the research plan is submitted to the Delta Stewardship Council.	2013
	Draft final plan	A draft final study plan incorporating public comments will be prepared and available for discussion at the December 2013 Board meeting before being transmitted to the Delta Stewardship Council	December 2013

Action	Sub Action	Comments	Completion Date
Develop Study Plan		Four potential nutrient related impacts have been identified in delta: increased macrophyte and cyanobacterial production, shift in algal community species composition, and decreased dissolved oxygen. Additional impairments may be identified by the TAC	
	Macrophytes	Study element will be developed after consultation with nutrient TAC and with input from a macrophyte white paper produced by an outside consultant.	2013
	Cyanobacteria	Study element will be developed after consultation with nutrient TAC and with input from a cyanobacteria white paper produced by an outside consultant.	2013
	Shift in algal community	A nutrient phytoplankton model is needed for the delta that will accurately predict the effect of short and longterm changes in temperature, turbidity, salinity, residence time and water sources on algal species composition and biomass. R5 staff will develop a white paper outlining the need and characteristics of a nutrient phytoplankton model for the delta. The white paper would be used as the basis to help focus the development of research solicitation proposals.	2013
	Assemble nutrient data	Assemble nutrient and related water quality data for the Central Valley and freshwater Delta for the past 20 years (1990-2010) for use in future nutrient and phytoplankton modeling.	2013
	Low dissolved oxygen	Nutrient study plan and TMDL staff should coordinate their activities to insure that any nutrient related low dissolved oxygen impacts are addressed by the nutrient basin plan objectives.	.
Conference and Workshop	Nutrient Reduction Conference	SFCWA and Bay Area Dischargers are organizing/sponsoring a two day conference on nutrients. The first day is to be a series of presentations by national experts on aquatic ecosystem responses to nutrient reductions. The second day is to be an invited only meeting between local and national experts on the likely response of the San Franisco Bay Delta to nutrient reductions. Information gained at the two day conference will be used to inform the Nutrient Study Plan	Summer 2013
	Workshop about Delta studies	R5 staff will encourage others to sponsor a workshop on the results of ongoing nutrient and phytoplankton related work in the Delta. Purpose of the workshop would be to inform development of the final nutrient study plan. The workshop may include presentations of ongoing work by Drs. Glibbert, Parker, Dugdale and Lehman. The workshop will also include presentations on key findings of the macrophyte and cyanobacteria white papers and by R5 staff on the attributes of a phytoplankton nutrient model.	Fall 2013

Table 3. List of impaired water bodies located in Delta because of the presence of periodic low dissolved oxygen concentrations. Data is from the 2008-2010 California 303(d) list.

Water Body Segment	Pollutant	Potential Source	Expected TMDL Completion Date
Bear Ck (Eastern Delta)	Low dissolved oxygen	Urban runoff	2021
Calaveras R. (Eastern Delta)	Organic enrichment/low dissolved oxygen	Urban runoff	2012
5-mile Sl (Eastern Delta)	Organic enrichment/low dissolved oxygen	Urban runoff	2019
French Camp Sl. (Eastern Delta)	Low dissolved oxygen	Urban runoff	2021
Kellogg Ck (Western Delta)	Low dissolved oxygen	unknown	2021
Mormon Sl. (Eastern Delta)	Organic enrichment/low dissolved oxygen	Urban runoff	2008
Smith Canal (Eastern Delta)	Organic enrichment/low dissolved oxygen	Urban runoff	2008
Pixley Sl. (Eastern Delta)	Low dissolved oxygen	Urban runoff	2021
Mosher Sl. (Eastern Delta)	Organic enrichment/low dissolved oxygen	Urban runoff	2008
Tom Paine Slough (South Delta)	Low dissolved oxygen	Agriculture	2021
Old River (South Delta)	Low dissolved oxygen	Hydromodification/unknown	2019
Middle River (South Delta)	Low dissolved oxygen	Hydromodification/unknown	2019
Mokelumne River (Eastern Delta)	Low dissolved oxygen	Source Unknown	2021

Tri-TAC Water Committee Key Issue Summary

(as of
March 07, 2012)

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Item No.	Description	Issues for POTWs	Meeting Notes/Updates	Links	Lead(s)	Next Steps	Due Date
1	**Whole Effluent Toxicity** • State is developing a new Toxicity Polity that will dictate how toxicity is reported and enforced.	• Draft State Toxicity Policy issued in 2011 would establish/ require: o numeric limits for chronic toxicity o use of Test of Significant Toxicity (TST) as statistical method to determine toxicity (concerns it will lead to more false positive results); o use of marine organisms in >1,000 mg/L salinity waters which affects current use of flow-though testing for acute-toxicity o single test failure triggers violation and accelerated monitoring o RWQCB discretion on inclusion of acute toxicity in permits and whether to allow for dilution	• State Board held a workshop late August. Stakeholders thought that the proposed policy would initiate too many changes at once. Instead, it might be easier to breakdown the changes into phases, thus reducing impacts on stakeholders. The phasing logistics still need to be discussed and other board members need to be introduced to the idea. • The initial ideas on phasing would focus on gathering a data set with the new TST without having penalties associated with the results. Stakeholders could use this data to determine the real effect of the TST in the regulatory setting. We should define the successful criteria needed to move from phase 1 to phase 2. • Running the "test" of phase 1 would be expensive for POTWs, and we may want to consider running phase 1 test on POTWs over a certain size. • We need to address the potential issue of anti-backsliding and the differences between acute testing versus chronic testing. • Tri-TAC voiced concern with uncertainty in the WET Policy and SB plans to address our concerns to a certain degree. • Storm Water representatives weren't interested in our proposed phasing approach.	State Board Page	Bobbi Larson, Phil Markle	• Work group is looking at numeric water quality standard impacts on discharges to erroneously (based on false positive tests) listed 303(d) water bodies. • We may have to write a proposal for phasing the policy and present it to the Board at the hearing. Jon recommended that our proposal be specific on the phasing—it may take a lot of work to create this document. • We should create a document that highlights the comments received in the comment letters and how the phased approach would address those comments (this would explain why the phasing approach is the best way to move forward.) • We need to reach out to POTWs to see if they are OK with our proposal.	
2	**Recycled Water Policy** • State Water Board is modifying the monitoring requirements for CECs in the policy to implement the Expert Panel's recommendations.	•	• State Board revised the water monitoring requirements for recycled water. Comments are due in July on the most recent draft. • State Water Board is amending the recycled water policy to address monitoring for CECs. An expert panel informed the Board and it seems that they will focus on ground water recharge and not irrigation uses of the recycled water. • It seems that the policy on CECs is getting close to closure and a majority of our concerns are being addressed.		Bobbi Larson	• Work on draft comment letter (possibly joint letter with other associations)	
3	**Nutrient Policy** • This effort is part of a statewide initiative, supported by the U.S. EPA Region IX and the SWRCB, to establish numeric water quality standards, expressed as NNEs, for State Waters	• Any POTW that discharges to inland surface water will be affected under the policy. • Adoption of a statewide approach to nutrient control will affect NPDES permitting, 303(d) listings, and TMDL development. • Possible outcomes associated with the policy include stringent numeric endpoints for total nitrogen and phosphorus.	• Small group of stakeholders met with the State Board to discuss possible approaches to the statewide nutrient policy. Stakeholders advocated for a policy that is based in science, doesn't have predetermined low limits, and an open process. • The QUAL-2 model will likely result in very low nutrient numbers that are very conservative and unlikely to be regularly attainable by POTWs. . • Restarting process for the SF Bay, led by R2. Will look at relationship between nutrient concentrations and harmful algal blooms. Will also look at DO, which is becoming increasingly important. • Nutrient conference is being proposed for SFBay		Tom Grouvhog	• Develop a strategy • Possibly investigate how the State of Utah (or other states) have addressed the nutrient standard changes.	

Tri-TAC Water Committee Key Issue Summary
(cont'd)

Item No.	Description	Issues for POTWs	Meeting Notes/Updates	Links	Lead(s)	Next Steps	Due Date
			estuary.				
4	**CECs** • Pharmaceuticals and other trace constituents of emerging concern (CECs) are ubiquitous in wastewater at low concentrations and have unknown effects on aquatic organism	• The State Board, along with Southern California Coastal Water Research Project (SCCWRP), has been working with the Ecosystems Advisory Panel to determine next regulatory steps. • The panel will recommend monitoring wastewater for CECs, and possibly bioanalytical assays to test for toxic effects	• The Water Board is trying to decide how to implement the Ecosystem Advisory Panel report on CECs. The panel created an initial list of CECs for monitoring. However, a study needs to be done to evaluate the different types of receiving water and treatment types. There are options to pay for this study: SWAMP surcharges could increase in NPDES permit fees, state board could direct certain POTWs to pay for the study, the state board could not do the study, or stakeholders could volunteer to participate and fund the study. • WERF may be a source of funding if stakeholders decide to manage the study. • Jon Bishop will likely recommend that the Board accept our recommendation that POTWs initiate studies on their own accord. • CECs may be an important topic for Board Member Felicia Marcus.	Draft Report	Chris Stacklin	• Wait for final report and await Determine our preference for how this study should be conducted and funded.	
5	**Statewide Mercury Policy** • Policy will likely incorporate methylmercury objectives being developed along with control plans for mercury impaired waterbodies • Mercury Control Program for Reservoirs will be developed first and will address all mercury impaired reservoirs included on the 2010 303(d) list • Future elements of the policy could include control programs for future impaired reservoirs, rivers/creeks/streams/enclosed bays/coastal bays/estuaries/lagoons impaired by mercury, NPDES permitted sources, and nonpoint sources	• Any wastewater that discharges to a mercury-impaired waterbody will eventually be included under the policy • The State Board is considering ways to harmonize efforts with existing TMDLs • If control program for NPDES permitted sources is developed implementation measures such as mercury-specific pollution prevention, installation of amalgam separators for dental offices, and improving wastewater treatment may be required.	• State Board will be holding CEQA Scoping Meetings: Sacramento- March 5, Oakland- March 6, Redding- March 8, and Riverside- March 12 • Tri-TAC provided comments urging them to harmonize with existing TMDLs and link implementation to impairment • Existing TMDLs will likely be grandfathered in	State Board Mercury Page	Tom Grovhoug	• Continue to provide input at public meetings and submit comments	
6	**Methylmercury Objectives** • State Board is developing methylmercury fish tissue objective • The scientific underpinnings for the criteria development are still under consideration	• If point source dischargers cannot comply with criteria, then an implementation strategy would be included in permits	• State Board is restarting this effort continuing from the alternatives developed in 2006. The project will move in parallel with the Statewide Mercury Policy • The objectives will likely be a part of the final Statewide Mercury Policy	State Board Mercury Page	Tom Grovhoug	• Working with State Water Board and to iron out issues	
7	**Biological Objectives** • The State Board is developing a framework to develop biological objectives	• If biological impairment is found to be caused by a pollutant, it could impact how NPDES permits are written and permit limits.	• The current evaluation will focus on invertebrates but they may add algae criteria in the future. • Tri-TAC sent a letter in February to State Board with	State Board Biological Objectives Page	Phil Markle	• Finalized BO documents were not available at the time of the	

Tri-TAC Water Committee Key Issue Summary
(cont'd)

Item No.	Description	Issues for POTWs	Meeting Notes/Updates	Links	Lead(s)	Next Steps	Due Date
	(biocriteria) that assign narrative or numeric benchmarks to protect aquatic life beneficial uses.		comments on the Scientific Basis for development of Biological Objectives. • John Bishop talked to CVCWA about focusing comments on the "no project" alternative as the way to proceed with this policy. If we can comment that there are no "reference" streams in certain regions, we might show that this idea won't work. • Based on conversations with the regulators, it seems that their intent is to protect high quality streams. If this is the objective, we should try to steer the BO towards that goal. • Central Valley ecoregion has almost no area that can be considered "reference" and south coast has very little, so they need way to deal with this. Highly modified channels are also a problem. • Science Advisory Panel believes they can apply a statistical method to develop biological objectives in these areas. • Everyone will have to prevent degradation of the stream that has no reference condition.			February comment letter, so Tri-TAC needs to monitor the BO process to see when formal documents are available for review. • Tri-TAC should form a workgroup – SRCSD will be involved, Dan Jackson from EBMUD.	
8	**SSS WDR** • The Monitoring and Reporting Program for the SSS WDR is being revised by the State Board	• State Water Board held a public workshop on January 24, 2012 to discuss the SSS WDR next steps. They have indicated that the next draft will contain the following revisions: o Removed some reporting requirements o Remove mandatory reporting of Private Lateral Spills, and require enrollees to keep internal records of them • State Board is proposing updates to the MRP in lieu of updating the entire WDR. • Require private collection systems that discharge to private treatment works to enroll, but do not require private collection systems tributary to other sanitary sewer systems to enroll	• A small group of stakeholders held meetings with the State Board to discuss the changes to the MRP. The group is making progress towards a finalized MRP. • The new MRP will likely have three categories of SSOs.State Board wants to have the updated MRP finalized by May 2013.	Draft SSS WDR	Bobbi Larson, Monica Oakley	• Stakeholder group submitted their latest MRP proposal to the State Board on March 6, 2013. We are waiting to hear back from their staff.	

Tri-TAC Water Committee Key Issue Summary
(cont'd)

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Item No.	Description	Issues for POTWs	Meeting Notes/Updates	Links	Lead(s)	Next Steps	Due Date
9	**Delta Issues** • Standing topic to discuss issues in the Delta that can have statewide impact. • Delta plan is moving forward, 6th draft should be out in next week. Key issues is that water quality authority should reside with State and Regional Board • Notice that longfin smelt is ESA smelt. Threat is low flow in SF Bay estuary and ammonia. • State Board is updating Bay Delta Plan	• Ammonia discharged from POTWs has been suggested to be disrupting the food-web, and ultimately contributing to the decline of pelagic fish populations in the Bay-Delta estuary • This rational was used by the Central Valley RWQCB to support requiring Sacramento Regional County Sanitation District to upgrade to nitrification, at an estimated cost of $800 million • Various studies to resolve uncertainties related to the impacts of ammonia are underway • SRSD has very tight pathogen limits that can't be met by disinfection that may be precedent setting for other POTWs	• Water Agencies submitted comments on draft permits for CCCSD and Vallejo, citing ammonia research and requesting nitrification • In permit adopted Feb 2012, Regional Board required CCCSD to perform nutrient studies • The Delta Stewardship Council released the final draft of the Delta Plan in September 2012. • State Water Board is holding a hearing on the potential changes to San Joaquin River flows and Southern Delta WQ on March 20 and 21.		Terrie Mitchell	• Continue to track issues as they emerge and act on those with state-wide significance	
10	**Ocean Plan Amendment** • A California Ocean Plan amendment is proposed to address designation of, and implementation provisions for, State Water Quality Protection Areas, including both ASBS and non-ASBS (called "General Protection") SWQPAs	• The Resolution specified that no new limiting conditions or prohibitions are to be imposed on wastewater outfalls as a result of a SWQCB-General Protection or as a result of non-ASBS SWQPAs themselves. • The Resolution stated that no conditions are to be included in permits that require the removal or relocation of municipal wastewater outfalls, in recognition of the public service and investment that these facilities provide.	• Comment letter submitted and Tri-TAC testified at State Water Board hearing • The State Board seems to recognize the importance of the existing sewer infrastructure and the potential impacts of Ocean Plan changes. • State Board may adopt the amendment at the second October board meeting. • California Ocean Plan amendment specifies that no new regulatory requirements will be imposed on existing POTW outfalls • The State Board indicated that they won't write NPDES permit requirements based only on the MPAs. Does this mean that they can find other reasons to write limits in the permit to address MPA issues?		Sharon Green	• Await for response to comments from State Water Board	
11	**EPA Ammonia Criteria** • EPA is in process of updating the current WQC for ammonia to incorporate new data and sensitive freshwater mussel ammonia toxicity data. This latest update is intended to eventually replace their current WQC for freshwater (marine criteria are unaffected by this update) and will result in much lower WQC than the previous update.	• In a 2009 update, EPA proposed a single national criterion for ammonia assuming freshwater mussels are present • The mussels present assumption results in extremely low objectives and is not appropriate for the majority of CA waters where freshwater mussels are not present	• EPA's request for Scientific Views "closed" in April 2010, final adoption of the criteria has not been proposed at this time.		Tom Grouvhog/ Phil Markle	• Track and provide comments when necessary	

12	**EPA Water Quality Criteria**
	• EPA is proposing changes to the water quality criteria regulations regarding administrator determinations, attainable uses, triennial reviews, compliance schedules, antidegradation, and variances.
		• Key elements likely to be included in the regulation:
		  • Antidegradation- States must adopt binding anti degradation requirements and minimum implementation methods
		  • Attainable uses- when use is not attainable, State must specify next highest attainable use
			• The regulation is being reviewed by the Office of Management and Budget and will be released in Spring 2012 for comment.		Shannon Bishop	• Track and provide comments when necessary
						• Work with NACWA on comments	

Tri-TAC Water Committee Key Issue Summary
(cont'd)

Item No.	Description	Issues for POTWs	Meeting Notes/Updates	Links	Lead(s)	Next Steps	Due Date
		• Triennial review- current criteria should be examined • Variance- requirements will be specified					
13	**EPA Integrated Permitting** • EPA effort to integrate municipal stormwater and wastewater plans in relation to the CWA. The integrated planning process will potentially identify efficiencies in implementing overlapping and competing requirements that arise from separate wastewater and stormwater projects, including capital investments and operation and maintenance requirements.	• The integrated permitting approach could be beneficial for POTWs because it is intended to help municipalities meet their CWA obligations by optimizing their infrastructure improvement investments through the appropriate sequencing of work. • Is there a way to harmonize with Porter Cologne in California? • EPA integrated permitting document came out as a draft. This is driven by urban mayors. There wasn't a lot of substance, although one issue raised was removing 5-yr permit cycle	• EPA held several listening session in January and February 2012 and is developing a draft framework document to describe the integrated planning concept, likely to be released in Spring 2012 • Had a call to set up work group to come up with list of issues that should be considered		Ben Horenstein/ Jackie Kepke	• Continue tracking this effort along with NACWA • Review draft framework document when released	
14	**Electronic Reporting** • Agencies are now required to electronically report compliance data to their regional boards via CIWQS • State Board is working on eSMR 2.5 that will allow for electronic submittal of EPA required self-monitoring data	• Errors are often propagated when the data are made public, and they are also often presented out of context (e.g. presenting exceedences as violations) • Errors are difficult to correct • Finalization of eSMR 2.5 will require a different data file type to be submitted electronically	• State Board is beta-testing eSMR 2.5 • Full implementation likely required by Summer 2012 Once released, State Board will provide training for the new program		Shannon Bishop	• Working with State Water Board to beta test system • Participate in State Board CIWQS User Group	
15	**EPA Dental Amalgam** • October 26, 2011 - EPA released its 2010 Effluent Guidelines Program Plan announcing its intent to adopt guidelines on the use of dental amalgam by dentists	• Agencies are concerned that dentists' offices will be regulated as part of POTWs' pretreatment program • EPA will likely create a new category so that dentists will not be categorized as SIUs • They may also grandfather in existing regional dental amalgam programs	• EPA had planned to propose a rule in 2011 and finalize in 2012, but they appear to be behind schedule. Expect to hear something in the fall. • EPA will likely create a new category so that dentists will not be categorized as SIUs • They may also grandfather in existing regional dental amalgam programs		Tim Potter	• Comment on draft guidelines when they are released	
16	**Pesticides** • Cross-media issue • Most pesticides, including pyrethroids, are currently unregulated in wastewater other than by narrative toxicity standards. Some pesticides are toxic to sensitive organisms at extremely low concentrations. • Nanoparticles and some biocides have potential to interfere with biological treatment processes • Some pesticides like triclosan, fipronil, and nanosilver are considered CECs	• In the future, POTWs could be regulated for pyrethroids, which they can't control and are toxic to sensitive organisms at very low levels. Engagement at this stage could steer regulators to adopt strategies favoring source control • Other pesticides may contribute to levels of regulated pollutants (e.g., copper, silver), cause or contribute to effluent toxicity, interfere with biosolids management options, challenge water recycling programs, or cause process interference. • POTWs are participating in a long-term joint program with stormwater and the water boards to work cooperatively with pesticide regulators to use their pesticide regulatory authorities prevent pesticide-related POTW compliance and operational problems.	• Pesticide Work Group is continuing to work with pyrethroid manufacturers and DPR toward conducting a statewide survey of pyrethroids in POTW influent, effluent, and biosolids.		Pesticide Work Group: Greg Kester, Linda Dorn, Preeti Ghuman, Phil Markle, Dave Snyder, Melody LaBella, Karin North, Kelly Moran	• Comment on upcoming EPA review work plans for two pyrethroids (Resmethrin, Prallethrin).	

Tri-TAC Water Committee Key Issue Summary
(cont'd)

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Item No.	Description	Issues for POTWs	Meeting Notes/Updates	Links	Lead(s)	Next Steps	Due Date
17	**DTSC Safer Consumer Products Regulation** • The Department of Toxic Substances control is developing new regulations that will allow chemicals to be controlled without recourse to the legislature.	• This could be an important tool for POTWs to prevent the discharge of toxic substances to their influent.	• BAPPG commented on DTSC's draft Green Chemistry regulations in December 30, 2011, and Tri-TAC and CASA issued letter of support for these comments • Green Chemistry workshop was held in early September and comments are due by October 11th.	Draft DTSC Regulations	Karin North, Melody LaBella, Kelly Moran	• Comment on Green Chemistry regulations due on October 11th. BACWA will write letter and Tri-TAC may sign on the letter if warranted.	

Tri-TAC BIOSOLIDS LAND COMMITTEE

AGENDA
March 14, 2013
Sacramento, CA

Item No.	Topics	Lead Person	Est. Time (minutes)	Attachments
1.	**Regulatory/Legislative/Legal Updates**			
	▪ Ordinances Update	G. Kester/L. Baroldi	20	
	- Imperial			
	- San Luis Obispo			
	- Solano (+Measure E)			
	▪ Kern (Measure E)	D. Gilbert		
	▪ Gilbert Case Resolution	G. Kester/L. Baroldi		
	▪ City of Menifee	L. Baroldi/T.Meregillano		
2.	**State and Regional Updates**			
	▪ CalRecycle FOG/Food Waste Digestion	G. Kester	5	
	▪ CalRecycle 75% Diversion Plan	G. Kester/V. De Lange	5	
	▪ CDFA Regulations on Rendering	G. Kester	5	
3.	**EPA and Nationwide Updates**			
	▪ EPA Disinvestment in Biosolids	G. Kester	5	
	▪ Biosolids Solid Waste Definition/EPA MACT Standards	G. Kester	5	
	▪ Arsenic Cancer Slope Factor	G. Kester	5	
	▪ New Proposed FDA	G. Kester	5	
4.	**Regional Facilities Updates**			
	▪ Bay Area Agencies	V. De Lange, B. Jones	5	
	▪ So. Cal. & C.V.	T. Meregillano/E. Have	5	
	▪ IERCF	M. Bao	5	
	▪ Westlake Farms	M. Bao	5	
	▪ TIRE	D. Gilbert	5	
5.	**Industry Association Updates**			
	▪ WEF	G. Kester/V. De Lange	5	
	▪ CASA	G. Kester	5	
	▪ CWEA	J. Hay	5	
	▪ SCAP	M. Bao	5	
	▪ BACWA	M. Krupp	5	
6.	**Emerging Contaminants**			
	▪ Pyrethroid Working Group	G. Kester	5	
	▪ Trace Organics Activities	G. Kester	5	
7.	**Biosolids Research**			
	▪ WEF Biogas Study	G. Kester	5	
	▪ Other	G. Kester	5	
8.	**Conferences/Webinars**	All	5	
	▪ BioGas Forum in Diamond Bar	G. Kester		
9.	**Climate Change Legislation**	G. Kester	5	
10.	**Information Sharing**	All	10	
	▪ SFPUC Market Assessment Survey	M. Pla	5	

Tri-TAC Land Committee Key Issue Summary

(as of March 8, 2013)

Item No.	Description	Issues for POTWs	Meeting Notes/Updates	Lead(s)	Next Steps	Due Date
Goal: Support Long-term Viability of Land Application Options						
1	**Local County Ordinances** ▪ Imperial	▪ Potential loss of existing and future land application practices. ▪ Increased biosolids management costs (e.g., longer hauling distances, more expensive alternative practices).	▪ Imperial: No updates.	G. Kester D. Gilbert L. Baroldi	▪ Imperial: No updates.	
	▪ San Luis Obispo: Ordinance placing restrictions on Class B Biosolids land application.		▪ San Luis Obispo: An interim ordinance is currently in effect in San Luis Obispo County. The County Health Department will be recommending three options to its Board: 1) Extend the current interim ordinance until March 2017, which allows for unrestricted compost use and production of compost in the County; however, there are still some limits on Class A/B use; 2) Make the interim ordinance permanent; or 3) Fund an EIR, in support of a new draft ordinance, which prohibits all biosolids use in the County including compost. This item was agendized for a Board of Supervisor meeting on 1/15/13; however, it has been delayed and a new date has not yet been set.	▪ San Luis Obispo: Attend Board of Supervisor meeting.	
	▪ Solano Ordinance: Ordinance requires agencies to divert a portion of biosolids to Class A or B2E facility by 2012; annual progress reporting. ▪ Solano Measure E (1984): This measure restricts waste imported from other counties and is currently in litigation. If upheld and enforced, 90% of imported waste (up to 820,000 tpy) would be banned.		▪ Solano: On 8/27/12, the Solano County Board of Supervisors adopted their revised biosolids ordinance by a unanimous 5-0 vote. The ordinance remains very reasonable and allows the continued land application of Class B biosolids as long as a portion of an agency's production also goes to either Class A or energy production. There is no sunset date in the new ordinance either.			
	▪ AB 845, Ma, Solid Waste Place of Origin – This bill prohibits an ordinance enacted by a city or county, including an ordinance enacted by initiative by the voters of a city or county, from otherwise restricting or limiting the importation of solid waste into a privately owned solid waste facility in that city or county based on place of origin.		▪ AB 845 (Ma), Solid Waste Place of Origin: Signed by Governor.			
	▪ Kern (Measure E): A voter-approved ordinance that would prevent land application of biosolids in unincorporated parts of the county. A legal challenge was brought in state court in Jan 2011 after dismissal of a federal appeal by the 9th Circuit, in Nov 2010. A Preliminary Injunction (PI) was granted by Tulare County Judge Hicks in Jun 2011.		▪ Kern (Measure E): On Jan 10, 2013, Kern County presented their oral arguments at the District Court of Appeals in Fresno. This appeal was made by Kern County on the issuance of the Preliminary Injunction by Judge Hicks (Tulare County). Ruling on the issue is within 90 days.		▪ Kern (Measure E): Continue to track appeal of PI.	
Goal: Sustain and Develop Biosolids Management Options with Focus on Sustainability						
2	**FOG/Food Waste Digestion Program Regulation** ▪ CalRecycle vs. State/Regional Board oversight	▪ Ensure that existing and future programs are regulated under NPDES permit framework by Water Boards rather than under SW regulations by CalRecycle. ▪ Review and comment on draft/proposed regulations that may impact existing and planned programs.	▪ CASA and Tri-TAC member agencies continue to work with CalRecycle and SWRCB to develop language to exempt POTWs from processing/storage permits. CalRecycle is reviewing the proposed draft exemption language and will be scheduling several informal workshops with interested parties to discuss issues.	G. Kester	▪ Continue to work with CalRecycle SWRCB staff to incorporate POTW exclusionary language. ▪ CalRecycle is expected to issue exclusionary language for public comment.	
3	**CalRecycle 75% Recycling, Composting or Source Reduction of Solid Waste By 2020**	▪ May prohibit agencies of claiming recycling credits for utilizing biosolids as an Alternative Daily Cover (ADC) for landfills.	▪ CASA/Tri-TAC members to work w/CalRecycle on ADC issue. ▪ Caroll Mortensen, Director of CalRecycle, spoke at the January CASA conference, specifically on how the 75% rule relates to ADC and the acceptance of organics into landfills. G. Kester will provide an update.	G. Kester	▪ Provide update of Caroll Mortensen's presentation at the CASA conference.	

Tri-TAC Land Committee Key Issue Summary
(cont'd)

Item No.	Description	Issues for POTWs	Meeting Notes/Updates	Lead(s)	Next Steps	Due Date
4	**Rendering Facility Regulations** ▪ California Department of Food & Agriculture (CDFA)	▪ Ensure that existing and planned FOG acceptance programs are not subject to rendering facility permitting requirements by CDFA.	▪ CDFA has been extremely responsive to POTW comments and have provided an exemption for POTWs for accepting FOG from rendering regulations. In addition, CDFA provided flexibility for POTWs with regard to how to specifically quantify FOG when received. Initially, CDFA required that FOG be weighed by using a certified scale or flowmeter; however, it accepted the industry practice of using the volume of the tanker as the amount received. ▪ This regulation has not yet been adopted but is anticipated soon.	G. Kester	▪ Support CDFA regulations.	
5	**Biosolids Solid Waste Definition**	▪ CISWI rules could have applied to POTWs utilizing methane in an internal combustion (IC) engine.	▪ EPA released a clarification letter that it did not intend to define methane transported in a pipe for combustion in an IC engine to be a solid waste.	G. Kester	▪ Ensure clarification letter is widely distributed.	
6	**FDA – Proposed Food Safety Rule**	▪ Proposed rule may spur potential controversy.	▪ On 1/16/13, FDA published in the Federal Register proposed rules for the handling, storage, and safety of produce in the U.S. The use of biosolids is mentioned in the proposed rule and that the use is permissible so long as it is in compliance with EPA regulations (CFR503). Bob Bastian and Bob Brobst (EPA staff) have offered their services to FDA review comments and to provide responses.		▪ Support proposed rule.	
7	**EPA Disinvestment in Biosolids**	▪ May reduce EPA's oversight on Biosolids Management Programs.	▪ EPA has softened somewhat on their decision to disinvest. They are proposing to hire two full-time personnel in Region 7 who will be handling all biosolids compliance issues and may oversee annual report review.		▪ Support EPA staffing in Region 7.	
8	**WEF – NBP Update**	▪ May impact EMS Certification Program.	▪ The NBP has been moved under the WEF Water Science & Engineering Center. WEF hired a new Biosolids Program Manager in February. Despite the reorganization, WEF intends to support the EMS certification program.	G.Kester/ V. De Lange	▪ Continue to track and monitor.	
9	**Legislation** **Congressman Serrano – Labeling Bill**	▪ May impact biosolids land application.	▪ Introduced on Jan 4, 2013, H.R. 213 Serrano - A bill to amend the Food, Drug, and Cosmetic Act and the egg, meat, and poultry inspection laws to ensure that consumers receive notification regarding food products produced from crops, livestock, or poultry raised on land on which sewage sludge was applied.	L. Baroldi	▪ Continue to track and monitor.	
10	**EPA Maximum Available Control Technology (MACT) Standards**	▪ Ability to comply with new regulations is currently uncertain. NACWA and NRDC filed a request for reconsideration and advance notice of possible litigation.	▪ There is no real change in the rule, but there is some easing of the standards as it relates to biosolids energy projects that want to classify biosolids as not a solid waste under the legitimacy criteria (>5000btu, considered a valuable commodity, and meet a certain contaminant level). Agencies can appeal to EPA that they have satisfied the criteria.	G. Kester/L. Baroldi	▪ Continue to track and monitor litigation if filed.	
11	**Arsenic Cancer Slope Factor** ▪ In Feb 2010, EPA proposed a 17-fold increase in the cancer slope factor for inorganic arsenic based on questionable interpretations of available data.	▪ If adopted, the new cancer slope factor would likely impact recycled water, effluent and biosolids limits.	▪ National Academy of Sciences is reviewing the process in which EPA used to develop the arsenic slope factors and the research that supported the slope factor.	G. Kester	▪ Continue to track, monitor, and comment as efforts proceed.	
12	**South Coast AQMD Rule 1110.2** ▪ Upon adoption in 2008, the rule included a requirement that a technology assessment (TA) be completed by 7/1/10 to demonstrate that commercially-available technologies exist to cost effectively allow compliance with NOx, VOC, and CO limits.	▪ Emission limits would jeopardize ability of IC engines to utilize methane,	▪ February 7, 2013 Meeting – SCAQMD – Biogas Impacts on Rule 1110.2	G. Kester	▪ CASA will continue, along with affected agencies, to participate in workshops and track and monitor this rule.	

Tri-TAC Land Committee Key Issue Summary
(cont'd)

Item No.	Description	Issues for POTWs	Meeting Notes/Updates	Lead(s)	Next Steps	Due Date
Goal: Share Information						
13	**Regional Facilities** ▪ Bay Area Agencies: A coalition of 18+ agencies is developing a regional biosolids management facility. ▪ Southern CA & Central Valley: Biosolids projects and facilities in Southern and Central Valley regions. ▪ Inland Empire Regional Composting Facility (IERCF): Indoor composting facility located in Rancho Cucamonga, CA jointly owned by LACSD and IEUA. ▪ Westlake Farms: Covered ASP composting facility located in Kings County, CA developed by LACSD. ▪ Terminal Island: The City of Los Angeles and its partners operate the Terminal Island Renewable Energy (TIRE) biosolids injection project, which is designed to reduce greenhouse gas emissions and create renewable energy.	▪ Maintain awareness of collaborative efforts to develop regional biosolids management facilities. ▪ Understand challenges and lessons learned from new facilities in startup or operation.	▪ Bay Area Agencies: Bay Area Biosolids to Energy: Anticipate RFP release by March 2013. A total of 19 agencies are participating. ▪ Southern CA & Central Valley: Encina Wastewater Authority has been working to secure sales to Kmart, a sod farmer (1000tons), and Farm Grade. ▪ IERCF: Facility continues to operate within its permitted capacity. Modifications to material conveyance are currently in design. Construction is anticipated for summer 2012 and completion in 2013. ▪ Westlake Farms: Facility is currently in construction with an anticipated startup date in 2013. ▪ Terminal Island: The City of Los Angeles approved a Subsequent Negative Declaration for the TIRE biosolids injection project, which addresses project changes. The current project is operating under an existing Underground Injection (UIC) permit, pending approval of a new UIC permit application that was submitted to EPA in Aug 2011.	V. De Lange B. Jones T. Meregillano M. Bao D. Gilbert	▪ Continue to provide regional biosolids management updates.	
14	**Regional Associations Report**	▪ Foster partnerships between regional associations by sharing information regarding new issues of concern, lessons learned, project updates, training and educational programs, and public outreach efforts.	▪ SCAP: Working with CASA on a statewide Biosolids Survey scheduled to be release sometime in 2013. ▪ BACWA: Joint meetings held w/Tri-TAC meetings in San Leandro. ▪ CVCWA: Joint meetings held w/Tri-TAC meetings in Sacramento. ▪ CWEA: 2013 Annual Conference (Palm Springs) April 2013	M. Bao V. De Lange B. Gillette G. Kester J. Hay		
15	**Conferences/Webinars**	▪ Stay abreast of upcoming conferences, local seminars, and webinars.		All		
Goal: Address Emerging Issues of Concern						
16	**Pyrethroids** ▪ Pyrethroid Working Group (PWG)	▪ Potential impacts (positive/negative) to existing programs, public perceptions. ▪ May provide opportunities for direct participation in research/studies to address local concerns/issues.	▪ Survey is progressing along, having all agreements and volunteers in place. Three phases of sampling scheduled in January, February, and March. The study includes a total of 31 volunteers.	G. Kester	▪ Continue to work with PWG, DPR, U.S. EPA, and others to make the survey possible. Will need to solicit voluntary survey participation from 20 to 30 POTWs.	
17	**Trace Organics Activities** ▪ Recognized need to fill data gaps to provide U.S. EPA data to conduct credible risk assessment on trace organics that may be present at low concentrations in biosolids.	▪ Potential impacts (positive/negative) to existing programs, public perceptions. ▪ May provide opportunities for direct participation in research/studies to address local concerns/issues.	▪ The Phase 2 report is complete and set for release by early summer. Phase 2 examined unpublished data (largely from manufacturers) to help fill data gaps for 62 constituents identified by U.S. EPA as high priority. Data was found for 29 of them.	G. Kester	▪ Phase 3 will be scoped with an RFP developed by this fall. Will need to solicit funding from across the country, because this phase will involve actual research.	
18	**Climate Change Legislation**	▪ Ensure development of strategic approach to climate change issues.	▪ CWCCG is focused on resolving the pricing structure approach to renewable feed-in-tariffs with the CPUC. An alternative proposal has been submitted (waiting for response from CPUC).	G. Kester Z. Erdal	▪ Meet with the CPUC to discuss the pricing structure approach to feed-in-tariffs.	
Goal: Maintain Awareness of Key Research Initiatives						
19	**Biosolids Research** WEF Biogas Study: Create a robust, consensus data set regarding the current and potential production of biogas from anaerobic digestion at WWTPs in the U.S.	▪ Potential impacts (positive/negative) to existing programs, public perceptions. ▪ May provide opportunities for direct participation in research/studies to address local concerns/issues.	▪ WEF Biogas Study: Project team has distributed a data survey and is currently incorporating this information into a database.	G. Kester		