

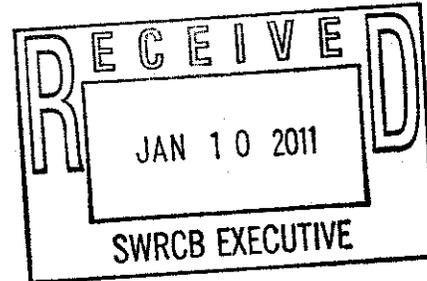
Golden State
Water Company
A Subsidiary of American States Water Company

Public Hearing (12/15/10)
CEC - Recycled Water
Deadline: 1/10/11 by 12 noon

January 4, 2011

Patrick Vowell, Water Quality Engineer
Golden State Water Company
1140 Los Olivos Avenue
Los Osos, CA 93401

Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
P.O. Box 100, Sacramento, CA 95812-2000



RE: Comment Letter – CEC Monitoring for Recycled Water

Dear Ms. Townsend,

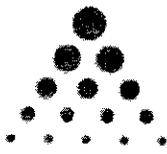
Thank you for the opportunity to provide comment on Constituents of Emerging Concern Monitoring for Recycled Water. With the necessarily increased use of recycled water in California, Golden State Water Company (GSWC), like all groundwater users, is very concerned with the protection of the quality of that resource which we use to provide drinking water to so many of our customers. GSWC is a subsidiary of American States Water Company, and provides water service to approximately 1 out of 36 Californians located within 75 communities throughout 10 counties in Northern, Coastal and Southern California. Many of these people are served potable water drawn from groundwater resources, making this issue an important one to them and to us.

Let me start by commending the State Water Board (SWB) for convening the CEC Advisory Panel. Their final report, *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water*, is very well done, and provides a wealth of clearly laid out information on the Panel's goals; their strategies and methodologies; and their results. It is an excellent example of what can be done when a State regulatory authority gathers experts in the field to help guide future regulations. I have no further comments to make on this report. I do, however, have several comments on the Staff Report, *Constituents of Emerging Concern Monitoring for Recycled Water*, dated November 8, 2010. My comments cover several sections of the staff report and I have grouped the comments accordingly below.

A. CECs and Treatment Performance Surrogates

Under the section labeled CECs and Treatment Performance Surrogates, paragraph 4 states:

"Additionally, based on consultation with the CDPH, additional CECs were selected for monitoring for surface spreading groundwater recharge/reuse projects using recycled water including bisphenyl A, boron, carbamazepine, chlorate, hexavalent chromium (CrVI), diazinon, 1,4-dioxane, naphthalene, n-nitrosodiethylamine (NDEA), n-nitrosodi-n-propylamine (NDPA), n-nitrosodiphenylamine, n-nitrosopyrrolidine (NPYR), 1,2,3-trichloropropane (1,2,3-TCP), tris(2-carboxyethyl)phosphate (TCEP), and vanadium. Table 1 presents a list of the CECs recommended for monitoring and analytical method reporting limits, as recommended by the Panel and CDPH."



Golden State Water Company

A Subsidiary of American States Water Company

While those compounds that are recommended for monitoring by the CEC Advisory Panel are justified by the extensive work done by that panel and documented in their final report, the California Department of Public Health (CDPH) has provided a list of compounds to monitor for without the justification as to why these compounds should be included in any monitoring plan. While I'm sure that this recommendation was not made speciously, it would be beneficial to the entire program if CDPH could provide the reasoning or justification for these compounds to be added to what the Panel has already recommended.

In that same section, paragraph 6 states:

"Analytical methods for analysis of CECs in recycled water samples should be selected to achieve the recommended method reporting limits listed in Table 1. Where a recommended method reporting limit may not be identified or achievable using currently available methodologies, an analytical method with a method reporting limit that is closest to the recommended method reporting limit with proven reliability should be selected. These analytical methods should be CDPH-approved."

CDPH has not necessarily identified or approved methods for all of the compounds being recommended for monitoring. However, they have provided guidelines for choosing analytical methods to use in this situation. These guidelines are available on the CDPH website at <http://www.cdph.ca.gov/certlic/drinkingwater/Pages/RechargeFAQ.aspx> under *FAQ for Draft Groundwater Recharge Reuse Regulations, FAQ2*. I would suggest that these or similar guidelines be incorporated into the Staff Report rather than referencing CDPH-approved methods. An alternative option would be for CDPH and the SWB to confer and positively identify one or more methods that are to be used for each of the compounds recommended for monitoring that meet all of the requirements of this program, and to make that list available as a part of the monitoring program.

B. Monitoring Frequency for Initial Assessment and Baseline Operations

Under the section labeled Monitoring Frequency for Initial Assessment and Baseline Operations, the bullet points after the first paragraph state:

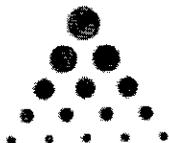
Initial Assessment:

- CECs - At a minimum, quarterly analysis for the first year.
- Surrogate parameters - Daily or Weekly⁹

Baseline Operations:

- CECs - Twice per year for a minimum of three years.
- Surrogate parameters - Daily or Weekly"

I would recommend that for quarterly analysis, the phrase "Samples to be taken as close as possible to 90 day intervals" be added; and for twice per year analysis, the phrase "Samples to be taken as close as possible to 180 day intervals". This would help to insure an even distribution of samples over the course of the calendar year.



C. Application of Performance-Based Indicator CECs and Surrogates

Under the section labeled Application of Performance-Based Indicator CECs and Surrogates, paragraph 3 states:

"Surrogate parameters and constituents should be measured for each unit process during the initial assessment monitoring phase. Surrogate parameters and constituents that demonstrate measurable removal percentages for a given unit process should be selected for use in the monitoring programs for baseline¹⁰ and standard operations."

I have interpreted this statement, particularly the first sentence, to mean that the given parameters and constituents would be tested after each unit process in the treatment train, i.e., before and after primary treatment; before and after secondary treatment; and before and after tertiary treatment. That is the only way to determine what part each unit process in the treatment train plays in the removal of these compounds, and each of the unit processes will remove these compounds with varying efficiencies.

Related to this, paragraph 6 of this same section states:

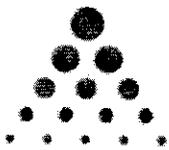
"For groundwater recharge/reuse projects using surface spreading, removal differential should be based on recycled water quality prior to discharge to the spreading area compared to recycled water quality in soil or groundwater beneath the surface spreading location. For groundwater recharge/reuse projects using direct injection, removal differential should be based on recycled water quality prior to and after treatment by reverse osmosis and advanced oxidation processes."

This paragraph seems to contradict what I understand the previously mentioned paragraph to say, indicating that the removal differential for the surrogate parameters and constituents will only be determined by differences in the measurements listed here in paragraph 6. If that is indeed what is being proposed, then I submit that this monitoring procedure and calculation of the removal differential is flawed. Some of these performance indicator CECs and surrogate parameters and constituents will be affected little if any by either time in the ground or reverse osmosis/advanced oxidation processes. And some of them will be fully attenuated by the prior unit processes in the treatment train before reaching this point in the process. To only take into account the removal differential for any of these compounds at this last step in the process would give incomplete at best and at worst misleading results about the nature of the treatment process as a whole. Removal differential should be determined for each unit process in the treatment train, not just this last step.

D. Evaluation and Response to Monitoring Results

In the section labeled Evaluation and Response to Monitoring Results, paragraph 10 states:

"Furthermore, if a measured concentration of a CEC at the point of monitoring (i.e., groundwater beneath a surface spreading area or following reverse osmosis and advance oxidation process prior to groundwater injection) exceeds its respective MTL,



Golden State Water Company

A Subsidiary of American States Water Company

the finding does not confirm a public health risk exists. The MTLs and their application were developed to be conservative and used only for the prioritizing CECs for monitoring. The MEC/MTL thresholds and MTLs should not be used to make predictions about risk."

I would like to commend staff for including this statement in their report, and add my support to it. It is imperative that all parties understand that there is no confirmed health risk associated with any of these compounds, and including a statement to that effect in this report will help to drive that point home.

E. Recommended Research

Finally, in the section labeled Recommended Research, the last paragraph states:

"Staff recommends the second path as being the more productive route for expending research money. It sees the first path, the chemical-by-chemical approach, as being never ending, given the large number of chemicals in use. Hence, staff recommends seeking funding only for research recommendation Number 6 at this time. Further research may later be needed, however, to develop analytical methods and evaluate risk of those chemicals identified by the bioanalytical screening tests."

Bioanalytical testing is only appropriate for those compounds with certain endocrine disrupting characteristics, primarily measuring the relative estrogenicity or androgenicity of the whole sample. While they are beneficial in measuring the complex interplay of multiple endocrine disrupting compounds, these tests do not measure other toxicities, especially those of a chronic nature, so their benefit is limited. I also submit that one of the primary needs for research in this field is the collection of more baseline occurrence data such as that suggested by recommendation Number 5. As stated in this recommendation, there are "...CECs that exhibit relatively low MTLs (e.g. < 500 ng/L), but for which no or little MEC or predicted effluent concentration information is available for secondary/tertiary effluents used for the water reuse practices of interest;". This lack of information hinders further research and the formulation of good and effective regulation. I would therefore suggest that staff change its research recommendation from Number 6 to Number 5.

I appreciate your consideration of these comments and the opportunity to participate in this process. GSWC looks forward to further involvement and discussion on the development of recycled water policy in California.

Sincerely,

Patrick Vowell
Water Quality Engineer
Golden State Water Company