

23 September 2008

Steven Church
California Air Resource Board
1001 I Street
Sacramento, CA 95814

RE: Comments on the CCAR Local Government Operations Protocol

Dear Mr. Church:

The Air Issues and Regulations (AIR) Committee is a coalition of San Francisco Bay Area Publicly Owned Treatment Works (POTWs) working cooperatively to address air quality issues, under the guidance of the Bay Area Clean Water Agencies (BACWA). Many of our member agencies also manage potable water treatment, distribution systems, wastewater treatment, and biosolids residual programs. The AIR Committee has 18 member agencies, including large metropolitan facilities such as East Bay Municipal Utility District, the City and County of San Francisco, Central Contra Costa Sanitary District, and the City of San Jose. Together, AIR Committee member agencies treat over ninety percent of the municipal wastewater in the Bay Area.

We understand that the goal of the California Climate Action Registry (CCAR) Local Government Operations Protocol is to provide policy framework, calculation methodologies, and reporting guidance for quantifying GHG emissions to promote local government involvement in this important global issue. We appreciate the efforts made to advance the consistent, comparable and relevant quantification of GHG emissions for better understanding of system procedures and their effects on the environment.

This protocol has the potential to impact our member agencies while simultaneously benefiting the public through emissions reductions. Therefore, we have reviewed the proposed sector-specific protocol and have summarized our major concerns in this comment letter.

In general, we are concerned that the protocols tend to be somewhat unrealistic, in the name of being conservative, for wastewater treatment plant procedures and processes. This may result in overstated estimates of emissions as compared to the actual conditions present.

CH₄ Emissions:

Several factors used by the U.S. Environmental Protection Agency (US EPA) may be considered overly conservative, resulting in an inflated estimate of CH₄ emissions. In January 2007, the National Association of Clean Water Agencies (NACWA) submitted a comment letter to the US EPA with suggestions for improving the emissions estimate (attached as Appendix A).

Additionally, NACWA submitted further comments on the same US EPA estimation equations and factors in another letter dated April 7, 2008 (attached as Appendix B). NACWA's major comments included the following:

- Equations 10.3 through 10.6: the maximum CH₄-producing capacity (Bo) of 0.6 kg CH₄/kg BOD removed is overly conservative and is more accurately calculated to be 0.4 kg CH₄/kg BOD removed. 0.6 kg CH₄/kg BOD is used in the US EPA Protocol, however, the NACWA comment letter suggests a value of 0.4 kg CH₄/kg BOD₅ (see comment 1 on the CH₄ emissions in Appendix A).
- Equations 10.3 and 10.4: CH₄ correction factor for anaerobic systems (MCF_{anaerobic}) value of 0.8 is used in the US EPA Protocol, however, the NACWA comment letter suggests a value less than 0.67 (see comment 3, 4 on the CH₄ emissions in Appendix B).

Also referred to as oxidation ponds or facultative ponds, facultative lagoons are a relatively common method of municipal wastewater treatment in California, particularly in non-urban (or formerly non-urban) areas. True anaerobic lagoons are rare in municipal treatment, but may be used to treat high strength industrial or agricultural wastewaters. Facultative lagoons utilize both anaerobic and aerobic processes to remove BOD, and may or may not be preceded by separate a primary treatment process.

Although the latter is accounted for in Equations 10.3 and 10.4 of the LGOP, the equations incorrectly apply a methane correction factor (MCF) for anaerobic treatment to the calculations. This in effect gives no credit for BOD reductions that occur aerobically in these systems. The aerobic processes account for a significant, and in some cases, majority portion of the overall BOD reduction, and do not generate CH₄ as a byproduct. In effect, the calculations assume 100% anaerobic conversion, which is completely contrary to observed conditions and NPDES permit requirements for the discharge from these systems.

Furthermore, it is instructive to look at the original source document upon which the MCF value of 0.8 was based (2006 IPCC Guidelines for National Greenhouse Gas Inventories). Although a suitable value for combined aerobic-anaerobic systems is noticeably lacking, the document recommends a much lower MCF value of 0.2 for shallow anaerobic systems (less than 2 meters). A shallow anaerobic layer overlain by a deeper aerobic layer is typical of most facultative ponds used for municipal wastewater treatment. A MCF value between 0.2 and 0.5, a conservative value suggested in the NACWA comments, (see comment 2 on the CH₄ emissions in Appendix A) would be more appropriate to characterize CH₄ emissions from facultative lagoons.

- Equation 10.4: The fraction of overall lagoon BOD₅ removal performance (F_{removed}) of 1 is used in the US EPA Protocol, however, the NACWA comment letter suggests a value of 0.9 (see comment 4 on the CH₄ emissions in Appendix A).

The proposed changes outlined by NACWA result in a more appropriate estimate of national wastewater CH₄ emissions and would significantly reduce US EPA's national estimate and the estimate for individual wastewater treatment plants in the LGOP.

N₂O Emissions:

NACWA also reviewed the US EPA's estimation of N₂O methods and concluded that the following overly conservative factors were resulting in overestimation of N₂O emissions:

- The US EPA Protocol uses a value of 0.026 kg N/person/day ($=42.1 \times 0.16 \times 1.4 / 365$), however, the NACWA comment letter suggests a value of 0.015 kg total N/person/day (see comment 1 on the N₂O emissions in Appendix A). In the method used by the USEPA, nitrogen content in wastewater is calculated according to annual protein consumption. This method results in a per capita nitrogen load of 9.43 kg N/person-year or 0.026 kg N/person/day.

This method does not agree with the per capita nitrogen discharge rate to wastewater from the Metcalf & Eddy standard reference of 5.48 kg N/person-year or 0.015 kg total N/person/day, notably less than half of the US EPA value.

NACWA collected measured per-capita nitrogen loadings from wastewater treatment facilities in the U.S. The average of these results verified the Metcalf & Eddy value of 5.48 kg N/person-year as a reasonable assumption (see comment 1 on the N₂O emissions in Appendix B).

- The US EPA calculations also include a factor of 1.25 (from the IPCC methodology) to account for industrial discharges. However, the NACWA comment letter suggests a value of 1 (see comment 2 on the N₂O emissions in Appendix A). NACWA argues that industrial discharges are inherently accounted for in both the protein consumption approach and in the per capita nitrogen load approach.

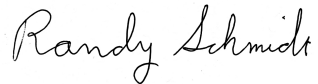
The emissions factor used by the US EPA to estimate N₂O from effluent conversion should also be further reviewed. The proposed changes outlined by NACWA would result in a significantly lower estimate of N₂O wastewater treatment emissions (roughly 50 percent).¹

¹ Source: U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990-2005 (2007) and LACSD analysis of sector coverage.

We urge you to consider our comments on the proposed Local Government Operations Protocol. We believe that CCAR should ensure that the proposed report provide consistent and accurate guidance throughout the State of California for estimating and quantifying emissions.

Please contact Randy Schmidt at (925) 229-7333 with any questions or comments. Thank you for your consideration.

Sincerely,

A handwritten signature in cursive script that reads "Randy Schmidt".

Randy Schmidt
AIR Committee Chair
Bay Area Clean Water Agencies