GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

January 27, 2010

Environmental Quality Board
P.O. Box 8477
Harrisburg, PA 17105-8477

Reference: Comments Regarding Chapter 95 Proposed Revisions

Dear Environmental Quality Board Representatives:

Gilmore & Associates, Inc. serves as consulting engineer to a number of municipalities and municipal authorities that own and operate sanitary sewerage systems in southeastern Pennsylvania.

We have reviewed the proposed changes to the Chapter 95 regulations along with the supplemental material prepared by PADEP. We understand that Chapter 95 regulations are being considered for revision relative to requiring new and quite stringent drinking water level effluent standards for new sources of wastewater with high TDS concentrations. New sources are defined as those which did not exist on April 1, 2009 and also those that include an additional source, an expanded discharge or an increased discharge from an existing facility which existed prior to April 1, 2009. We gather that existing facilities and discharges with high TDS concentrations would be grandfathered at their current requirements so long as there were no changes to the operations or discharge. Furthermore, we understand that the threshold for a high TDS concentration, which in turn imposes the new stringent drinking water level effluent limitations (TDS of 500 mg/l, chloride of 250 mg/l and sulfates of 250 mg/l) is for cases where the TDS concentration will exceed 2000 mg/l or where the TDS loading will exceed 100,000 pounds per day.

Limiting TDS, sulfates and chlorides to drinking water standards in treated wastewater effluent poses significant issues for many industrial discharge categories and for municipal wastewater treatment plants which accept industrial wastewater. While we support the protection of water quality and hence the uses of Waters of the Commonwealth, including the critical drinking water use, we do not feel that a "one size fits all approach" is best in this situation and that it could result in unintended consequences. Discharges of high concentrations of TDS, sulfates and chlorides would be prohibited even in those cases where the water quality at the point of discharge would be maintained or where there is very little impact on water quality. We cite the following examples/situations:

1. **Small discharge to a fairly small stream:** Assume a discharge of 5000 gpd of industrial wastewater from a proposed metal plater (or an existing metal plater that wants to add an additional line) with a TDS concentration of 2500 mg/l. Assume a receiving stream of 2 square miles drainage area, with a critical low flow of 0.1 cfs per square mile, and 200 mg/l background TDS concentration. A mass balance at the point of discharge results in an increase in TDS from 200 mg/l to 285 mg/l or 42 percent, but still well under the Chapter 93 requirement of 500 mg/l to protect the drinking water use.

65 E. Butler Avenue, Suite 100 | New Britain, PA 18901 Phone: 215-345-4330 | Fax: 215-345-8606
www.gilmore-assoc.com

OR

Assume an existing sewage treatment plant with a design capacity of 50,000 gpd (current flow of 30,000 gpd with a TDS level of 475 mg/l). Assume a receiving stream of 5 square miles drainage area, with a critical low flow of 0.1 cfs per square mile, and 200 mg/l background TDS concentration. Assume the plant will accept 20,000 gpd of industrial wastewater with a TDS concentration of 5000 mg/l which will increase the effluent concentration to 2285 mg/l. A mass balance at the point of discharge results in an increase in TDS from 223 mg/l to 478 mg/l or a significant 115 percent, but still under the Chapter 93 requirement of 500 mg/l to protect the drinking water use.

2. **Medium discharge to a major river:** Assume a discharge of 100,000 gpd of treated landfill leachate with a TDS concentration of 7000 mg/l to the Delaware River at head of tide in Morrisville, PA which receiving stream has a low flow objective of 2700 cfs and a background TDS concentration of 200 mg/l. A mass balance at the point of discharge results in a TDS increase in the Delaware River from 200 to 200.4 mg/l or 0.2 percent. Even if only 1 percent of the low flow objective were considered for dilution, the TDS would increase from 200 mg/l to less than 240 mg/l.

OR

Assume an existing sewage treatment plant with a design capacity of 1 mgd (current flow of 0.75 mgd with a TDS concentration of 475 mg/l) with discharge to the Delaware River at head of tide in Morrisville, PA which receiving stream has a low flow objective of 2700 cfs and a background TDS concentration of 200 mg/l. Assume that the plant will accept a new industrial flows of 0.25 mgd with a TDS concentration of 7000 mg/l which will increase the effluent concentration to 2100 mg/l. A mass balance at the point of discharge results in a TDS increase in the Delaware River from 200.12 to 201.09 mg/l or 0.48 percent. Even if only 1 percent of the low flow objective were considered for dilution, the TDS would increase from 200.12 mg/l to less than 305 mg/l.

3. **Stream segments with no potable water use:** The zone of the Delaware River from Big Timber Creek (NJ) to the Pennsylvania-Delaware state line doesn't even have a promulgated drinking water use per Chapter 93 or DRBC regulations, because of the influence of ocean tides. It would seem ludicrous to require a discharger to, in essence, provide drinking water quality water in terms of TDS, sulfates and chlorides to this zone of the Delaware River which is naturally saline and already contains a number of heavy industrial dischargers including several oil refineries and a large municipal sewage treatment plant which treats significant amounts of industrial wastewater.

We strongly urge that water quality based effluent limits be developed on a watershed basis, rather than a state wide basis, as is currently performed for such parameters as BOD-5, ammonia, heavy metals, etc. Establishing stringent effluent limits on a state wide basis for these parameters very well may result in municipal plants refusing to accept additional industrial waste (which presumably is not what the PADEP desires) and may also possibly lead to industrial locations/relocations out of state with the associated loss of jobs, tax revenues, etc. (which presumably is not what the Commonwealth desires). TDS, sulfates and chlorides have no practical treatment options particularly at municipal facilities. Removal of TDS can be accomplished by high energy processes such as reverse osmosis (desalinization), electrodialysis or distillation, but even then a brine remains which must be handled. As an alternative, the wastewater could be hauled out of state at a significant cost which requires fuel and generates emissions.

Protection of an interstate stream such as the Delaware River would also be problematic given that the State of New Jersey requirements would likely not be nearly as stringent. We also want to call your attention to the current DRBC requirements for the Delaware River watershed which requires that "Total dissolved solids shall not exceed 1,000 mg/l, or a concentration established by the Commission which is compatible with designated water uses and stream quality objectives, and recognizes the need for reserve capacity to serve future dischargers" (Water Code 3.10.4.D2). In implementing this particular effluent requirement, DRBC requires that "the concentration of total dissolved solids, except intermittent streams, shall not exceed 133 percent of background" (Water Code Section 3.10.3.B1b).

It is unclear as to whether the threshold TDS concentration/load [paragraph 95.10.(a)] applies to the total discharge of an existing sewage treatment plant which wants to accept new industrial wastewater flows with a high TDS concentration or is limited to the new sources of industrial wastewater entering the plant. The discharge of high TDS industrial wastewater to an existing sewage treatment plant may offer no treatment benefit (i.e. only benefit is dilution) and may not cause the sewage treatment plant to exceed the threshold TDS concentration/load. In such cases, the TDS impact upon the receiving stream may well be greater than a direct discharge of the industrial wastewater which is subject to the proposed treatment requirements for a high TDS concentration (where threshold level exceeded). In other words, diverting an industrial wastewater discharge with a high TDS concentration to a sewage treatment plant could avoid the need to reduce the TDS through simple dilution and thereby not provide protection to the water quality of the receiving stream; furthermore, under this scenario, precious treatment capacity would be utilized which would be better reserved for other biological waste streams.

In summary, we recommend that water quality based effluent limits for TDS, sulfates, and chlorides be developed on a watershed basis as necessary to protect the water quality, and hence the water uses, of that particular watershed.

Thank you for having allowed us to comment on the proposed Chapter 95 revisions as part of the regulation development process. Should there be any questions or follow up needed, please advise.

Sincerely,

Stuart L. Rosenthal, P. E.
Vice-President
Water/Wastewater Services

cc: The Upper Hanover Authority
Limerick Township
Washington Township Municipal Authority
Upper Makefield Township