



Pennsylvania Chesapeake Bay Tributary Strategy Point Sources Phase I Implementation

Background

On December 30, 2006, two years since the announcement of the Pennsylvania Department of Environmental Protection (DEP) Chesapeake Bay Tributary Strategy, the final "Trading of Nutrient and Sediment Reduction Credits - Policy and Guidelines" was published in the Pennsylvania Bulletin. Made a part of this policy and guidelines document as Attachment 1 to Appendix A is the final point source implementation policy entitled "DEP Decisions on Point Source Workgroup (PSWG) Alternate Allocation Proposal".

While there are a number of specific decisions noted in this document, the two most significant for the 184 significant municipal type dischargers (sewage treatment plants with design flow ≥ 0.4 mgd) with respect to adopting the PSWG recommendations are: (1) the decision to develop nutrient cap loads based on current plant's design annual average daily flow and effluent concentrations of 6 mg/l total nitrogen and 0.8 mg/l phosphorus and (2) the decision to implement a three-phased approach to imposing the TN and TP cap loads based on respective estimated delivered loads to the bay.

While the final policy and guidelines were being readied for publication by DEP, the Department sent a letter, dated December 20, 2006, to the 63 Phase I wastewater treatment plants. This special edition newsletter is provided to discuss the essential points of the December 20th letter and offer comments on proposed NPDES permit conditions that we have seen.

DEP Letter

The essentials of the December 20th letter provided to each of the Phase I facilities are listed above for reference.

As indicated in the Department's

Essentials of DEP Letter

- Announcement of the new method to determine cap loads for total nitrogen (TN) and total phosphorus (TP) to be issued in NPDES permits in accordance with the PSWG recommendations.
- Provision of the "estimated" annual TN and TP cap loads (lbs/yr) for the facility based on design flow and 6 mg/l and 0.8 mg/l, respectively. (DEP notes that these cap loads are estimated and provided for planning purposes.)
- For those facilities that have NPDES permits pending, notification that the Department will begin issuing new draft NPDES permits for the Phase I facilities early in 2007, which will contain TN and TP cap loads and a target compliance date of September 30, 2010.
- Notification that the cap loads may change the facility's treatment requirements and that pursuant to Section 92.8a(b) of the regulations, and within 180 days of receipt of the letter, a report is to be submitted to DEP that either establishes that the facility is capable of meeting the new requirements or outlines a plan and schedule to achieve compliance.
- For those facilities that do not have NPDES permit applications currently pending, notification that the Department will be revoking and reissuing NPDES permits for new 5-year terms and that, if an application is not already pending, then the facility is to submit a new application within 90 days of receipt of the letter.
- For facilities discharging into effluent dominated streams or streams that may be susceptible to nutrient related problems, notification that, if a future TMDL is implemented to correct a nutrient related water quality problem in the receiving stream, then nutrient effluent limits issued for the facility may be more restrictive than the Chesapeake Bay cap loads.

December 20th letter, new draft NPDES permits are beginning to be issued. If you have received a draft permit, you may be in the process of developing comments. While comments are required within 30 days, it is our understanding that DEP, in a January 24, 2007 letter, is indicating that comments may be submitted up to the time of submittal of the 180-day study report on compliance with N and P limits. This is logical since the results of your study may impact comments. It is important, however, that you consult your legal advisor to determine whether you may take advantage of DEP's flexibility without technically losing your right to comment, as the NPDES permit comment period is set by regulation. Also, you may have comments on other aspects of the permit, and it is unclear as to whether the comment period extension is only with respect to N and P limits. It seems that the safest course is to submit comments within the required period and note that further comments on the N and P comments and compliance schedule will be submitted with the 180-day report.

Nutrient Cap Load Permit Conditions

With respect to the nutrient cap load permit conditions, we offer the following general comments, some of which you may have already considered:

- Under Chesapeake Bay Nutrient Requirements Definitions, Annual Mass Load (lbs) = the sum of the monthly mass loads for the calendar year, but under Nutrient Credits & Offsets, the net annual mass load (lb/years) = the sum of the net monthly mass loads for the water year. Whether credits are used or not, the annual mass load for nutrients should be defined as the sum of the monthly mass loads for the water year.
- In the calculation of monthly mass load, the term [(Total Credits Sold - Total Credits Purchased - Total Credits Offset)/12] requires the annual credits sold, purchased, and offset be known for the entire year in order to perform the calculation (i.e., one can only use 1/12th of the credits for any monthly calculation.) The practical implication of this is that, if

credits are purchased toward the end of a water year to make up for higher monthly mass loads discharged earlier in the year, then there is no way to account for the full credits in the annual mass load. Although DEP indicates that this was not the intent, the permit condition needs to be changed to allow for credits sold, purchased, and offset to be applied for the months they are in effect, providing the flexibility to allocate the credits in any portion of the 12-month period.

- DEP permit conditions typically include a provision that prevents bypassing of any treatment process. This is to make sure that the required minimum level of treatment is maintained, either to meet secondary or water quality based limits. Nutrient cap loads based on annual mass loadings, however, are very different types of limits, necessitating different design considerations. For example, since the cap loads are annual loadings, treatment of all peak flows may not be necessary. Designs for by-passing peak flows around some nutrient treatment processes, therefore, could save considerable capital and operating costs, while still meeting the annual cap. Also, since some processes installed may be able to treat to higher levels than required to meet cap loads in initial years of operation, POTWs need to reserve the right to bypass nutrient removal processes at times to conserve power and carbon source or other chemicals.
- The issue of future TMDL driven limits that may be more stringent is very important. Clearly, the worst case scenario is to spend millions meeting the Chesapeake Bay cap loads and then a few years after completing the project, receive more stringent limits that cannot be met because no provision for further upgrade was included in the planning and design. To effectively evaluate alternatives, therefore, it is recommended that each facility contact DEP and request that DEP provide, in writing, the projected future limits and compliance schedule. One thing that also needs to be kept in mind is that trading to meet local TMDLs can only be accomplished with other nutrient sources in the local watershed.

Compliance

DEP indicates in the December 20th letter that the NPDES permits will be issued with a compliance date of September 30, 2010. Actually, October 1, 2010 is the beginning of the compliance period and compliance will be measured at the end of the ensuing water year, September 30, 2011.

Provided with this bulletin is a best case generic schedule framing the major tasks to the project within the time frame, with plant start up and testing completed by October 1, 2010. Clearly, the time frame for compliance is extremely tight. And, for the majority of facilities, will probably not be practical. Our understanding is that if, a facility cannot achieve operations for full compliance by 2010, then DEP is contemplating issuing an NPDES Permit together with a companion "friendly consent order and agreement", which would contain the implementation schedule. Our understanding from several conversations with legal counsel is that issuing consent orders for facilities that have not yet violated regulations or permit conditions is not appropriate. It would seem, therefore, that the permit itself should contain the implementation schedule as part of the permit conditions. This question is extremely important for facilities that cannot complete improvements by 2010. We strongly recommend legal counsel in your efforts to resolve the issue if your facility will not be able to meet the compliance date.

Other facilities may be able to meet the schedule with minimal new construction, depending upon existing design and available tankage. By installing various types of fixed-film media, some have achieved adequate levels of nutrient removal at design capacity using existing activated sludge tankage. One example is pictured below.



This facility, designed by Stearns and Wheler is located in Annapolis, MD. Using integrated fixed film activated sludge (IFAS), the 10 mgd plant is able to consistently achieve total nitrogen levels of less than 8 mg/l. These types of facilities, where major construction is not required, stand the best chance of meeting the schedule.

Other facilities with current plant loadings substantially less than design capacity may be able to meet cap loads for the foreseeable future with operational changes and without any immediate upgrades. For these facilities, it is important that the NPDES permit issued for the facility recognizes the current design capacity and makes provisions for maintaining that capacity.

Finally, the trading for nutrient credits is being encouraged by DEP as a cost-effective method for achieving cap loads. Given the lack of long-term credits and the uncertainty of future costs of credits under the current DEP policy and guidelines, it is our opinion that point source to non-point source trades are probably not going to be the primary means by which point sources meet the cap loads, at least to meet the cap loads at current plant design capacities. These trades may be used as an interim means to meet cap loads or come into play much more as plants are expanded or new plants are constructed to accommodate new development. Nevertheless, trading is an option and should be investigated.

Well, it appears that we are all off and running in implementing the point source portion of the strategy. It is our understanding that DEP will be holding regional outreach meetings for Phase I dischargers. Although you should be notified directly, the current schedule is as follows:

February 23, 9:00 a.m.

DEP South Central Regional Office

February 27, 10:00 a.m.

DEP Northeast Regional Office

February 28, 10:00 a.m.

DEP North Central Regional Office

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