James M. Seif, Secretary  
Pennsylvania Department of Environmental Protection  
Post Office Box 2063  
Harrisburg, Pennsylvania 17105-2063

Dear Mr. Seif:

The Environmental Protection Agency (EPA), Region III, is pleased to approve the Trout Creek Total Maximum Daily Load (TMDL), submitted to EPA on April 7, 1998. The TMDL was established and submitted in accordance with Sections 303(d)(1)(c) and (2) of the Clean Water Act. The TMDL was established to address impairment of water quality as identified in Pennsylvania’s 1996 303(d) list. Pennsylvania identifies the impairment for this water quality limited segment as violations of ammonia nitrogen and total residual chlorine water quality criteria. Trout Creek is a tributary to the Schuylkill River in Montgomery County.

In accordance with federal regulations found at 40 CFR 130.7, a TMDL must: be designed to meet water quality standards; include, as appropriate, both waste load allocations (from point sources) and load allocations (from nonpoint sources); consider the impacts of background pollutant contributions; take critical stream conditions into account (the conditions when the water quality standard is most likely to be violated); consider seasonal variations; include a margin of safety (which accounts for any uncertainties in the relationship between pollutant loads and resulting instream water quality); and be subject to public participation. Attachment A to this letter further describes how the Trout Creek TMDL satisfies each of these requirements.

Following approval of this TMDL, Pennsylvania shall incorporate it into the state’s water quality management plan pursuant to 40 CFR 130.7(d)(2). If you have further questions, please have your staff call Joseph T. Piotrowski, Associate Director of the Office of Watersheds, at (215) 566-5715.

Sincerely,

W. Michael McCabe  
Regional Administrator

Enclosure
TOTAL MAXIMUM DAILY LOAD (TMDL) FOR TROUT CREEK, PENNSYLVANIA

RATIONALE FOR APPROVAL

Trout Creek (Lower Delaware River Subbasin, stream code 980) was listed on Pennsylvania’s 1996 303(d) list due to “other” pollutants from municipal point sources. The state identified a distance of 0.2 miles as impaired at low streamflow conditions. The listing was based on the 305(b) Water Quality Assessment Summary. The Summary identified the “other” pollutants as ammonia nitrogen (NH$_3$-N) and total residual chlorine (TRC). The point source is the Upper Merion Trout Run Sewage Treatment Plant. The state has developed a TMDL for NH$_3$-N and TRC consistent with federal regulations and Agency guidance.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>TMDL (lbs/day)</th>
<th>WLA $^1$ (lbs/day)</th>
<th>LA (lbs/day)</th>
<th>MOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NH$_3$-N (Summer)</td>
<td>63.33</td>
<td>63.0</td>
<td>0.33</td>
<td>Implicit</td>
</tr>
<tr>
<td>NH$_3$-N (Winter)</td>
<td>220.66</td>
<td>220.0</td>
<td>0.66</td>
<td>Implicit</td>
</tr>
<tr>
<td>TRC</td>
<td>4.75</td>
<td>4.75</td>
<td>0</td>
<td>Implicit</td>
</tr>
</tbody>
</table>

$^1$ WLA is assigned to the Upper Merion Trout Run Sewage Treatment Plant

EPA approves the Trout TMDLs because they meet the following regulatory requirements:

1. **The TMDL is designed to meet water quality standards.** Trout Creek was listed on Pennsylvania’s 1996 303(d) list because the water quality criteria to protect aquatic life for NH$_3$-N and TRC were not being met even after technology-based controls required by law were in place. Pennsylvania’s Water Quality Standards (WQS) (Chapter 93) identifies the instream criteria for these parameters as 0.95 mg/l for summer NH$_3$-N, 2.66 mg/l for winter NH$_3$-N, and 0.019 mg/l for TRC. The TMDLs were calculated to satisfy the WQS.

2. **The TMDL includes both waste load allocations and load allocations.** The TMDLs for NH$_3$-N include both a wasteload allocation (WLA) and a load allocation (LA). The TRC TMDL has a LA equal to zero since this is not naturally found in the stream (zero background) and there is no nonpoint source contribution of this parameter at the critical low flow condition.

3. **The TMDL considers the impacts of background pollutant contributions.** Ambient background NH$_3$-N loads of the receiving water were determined from Eco-Region data (WQN 0177, 0178, and 0179). As discussed in item #2 above, and based on the Eco-Region data, it is appropriate for the state to set the background TRC value at zero.
4. The TMDL takes critical stream conditions into account. The TMDLs are designed to ensure that water quality standards are met during the critical conditions—the conditions during which the water quality standards are most likely to be violated. Critical conditions occur during low streamflow conditions, when there is little assimilative capacity. The DEP developed the TRC TMDL using the 7Q10 low flow—the flow that occurs for seven consecutive days in a ten-year period. The NH₃-N TMDLs used the 30Q10 flow in accordance with the state’s ammonia guidance. The values of the flows were derived from the measurements at the USGS stream gage 01475300. In addition, DEP assumes the point source is discharging at the permitted flow. Thus, the TMDLs consider critical conditions both in terms of streamflow and pollutant loading.

5. The TMDL considers seasonal variations. Since the WQS for NH₃-N is dependent on stream temperature and pH, both a winter and summer TMDL were developed. The TRC TMDL considers seasonal variations by calculating the TMDL (and associated WLAs and LAs) for the only period of the year when water quality standards are most likely to be violated. There is no evidence that the criteria are exceeded during other conditions, such as high flows and storm events, and therefore there is no need to develop the TRC TMDL for the seasons during which these conditions occur.

6. The TMDL includes a margin of safety. The TMDLs use an implicit margin of safety. This is consistent with EPA’s 1991 guidance (Guidance for Water Quality-based Decisions: the TMDL Process) which states that the margin of safety is normally met through conservative assumptions used to develop TMDLs. The TMDLs assumed the 7Q10 or 30Q10 low flow stream condition which, statistically, has less than one tenth of a percent probability of occurring in a given year. EPA believes the implicit margin of safety DEP used in developing the TMDLs is adequate.

7. The TMDL has been subject to public participation. The TMDL was public noticed on January 24, 1998 in the Pennsylvania Bulletin and on January 26, 1998 in the Norristown Times Herald. DEP also held a public meeting to hear testimony on February 19, 1998 at DEP’s Conshohocken Regional Office. DEP received comments from one (1) individual and has provided these comments and their responses to EPA as part of the TMDL submittal.
Trout Creek

Documents Used in Development of TMDL

☐ Water Quality Model, Implementation Guidance and Section 95.4 Phosphorus Discharge to Lakes, Ponds and Impoundments

☐ Water Quality Analysis Model 6.3 and Supporting Documentation

☒ Water Quality Model for Ammonia Toxicity, Implementation Guidance and Section 93.7 Ammonia Criteria

☒ Water Quality Model, Implementation Guidance and Total residual Chlorine Regulation

☐ Water Quality Model and Implementation Guidance for temperature Criteria

☐ Implementation Guidance and Section 95.9 Phosphorus Discharges to Free Flowing Streams

☐ Protocol for Estimating First Order fate Coefficients for Volatile Organic Substances

☐ PENNTOXSD Water Quality Model and Supporting Documentation

☐ Pennsylvania Process for Documentation and Submission of TMDLs for Low Flow Conditions

☒ Other

Ambient Monitoring Data from WQNs 177, 178, 179

Q7-10 data from USGS 01475300 (and Q30-10)

305(b) Water Quality Assessment Summary
TMDL for Trout Creek

Introduction

Water quality in Trout Creek was identified as impaired on the 1996 303(d) List. The 305(b) Water Quality Assessment Summary, which serves as the basis for the 303(d) listing, defines "other" pollutants as ammonia nitrogen and total residual chlorine. It further identifies Upper Merion's Trout Run Sewage Treatment Plant as the source of the pollutants. Pennsylvania's water quality standard for NH3-N (Ch.93, Water Quality Standards, Section 93.7) is pH and temperature dependent. The criteria for Trout Creek, 0.95 ppm as a thirty-day average, reflects the characteristics of the receiving stream under design conditions. For TRC, the criteria are 0.011 ppm as a 4-day average and 0.019 ppm as a 1-hour average. Discharge monitoring reports (DMRs) for the STP indicate NH3-N concentrations are as high as 17 ppm and TRC concentrations range from 1 - 2 ppm. The discharge dominates Trout Creek under low-flow conditions, resulting in exceedances of water quality standards and the need for additional controls, as evidenced by the attached modeling results.

For NH3-N, a background concentration of 0.02 ppm was used in the TMDL determination. Based on a review of ambient monitoring data, the value reflects the trace concentrations that may be naturally occurring. Because TRC is a non-naturally occurring substance and because nonpoint sources do not contribute any pollutant loadings at low flows, a background concentration of zero was used. These background concentrations and the water quality criteria for NH3-N and TRC are used with a protective stream flow to determine the TMDLs for the impaired segment of the stream. The design stream flows used (30Q10 for the NH3-N TMDL and 7Q10 for the TRC TMDL) are statistically expected to occur less than one percent of the time, affording an implicit, but significant margin of safety to ensure protection of Trout Creek.

The TMDLs for NH3-N and TRC are summarized in the attached tables, along with modeling results and documentation detailing the development of the TMDLs.
INFORMATION SHEET

Proposed Total Maximum Daily Loads for Trout Creek

What is being proposed?
A TMDL plan to improve the quality of water in Trout Creek, a tributary to the Schuylkill River, in Upper Merion Township, Montgomery County.

Who is proposing the plan? To whom? Why?
The Pennsylvania Department of Environmental Protection is proposing to submit the plan to the US EPA for review and approval as required by the federal regulations.

In 1995, EPA was sued for not developing TMDLs when Pennsylvania did not do so. DEP has entered into an agreement with EPA to develop TMDLs for certain specified waters over the next several years. DEP developed this TMDL in compliance with the state/EPA agreement.

What is a TMDL?
A Total Maximum Daily Load (TMDL) sets a ceiling on the pollutant loads that can enter a waterbody so that the water will meet water quality standards. The Clean Water Act requires states to list all waters that do not meet their water quality standards even after pollution controls required by law are in place. For these waters, the state must calculate how much of a substance can be put in the water without violating the standard, and then distribute that quantity among all the sources of the pollutant on that waterbody. A TMDL plan includes waste load allocations for point sources, load allocations for nonpoint sources and a margin of safety.

The Clean Water Act requires states to submit their TMDLs to EPA for approval. Also, if a state does not develop the TMDL, the Clean Water Act states that EPA must do so.

What is a water quality standard?

The Clean Water Act sets a national minimum goal that all waters be "fishable" and "swimmable". To support this goal, states must adopt water quality standards.

Water quality standards are state regulations which have two components. The first component is a designated use, such as "warm water fishes" or "recreation". States must assign a use, or several uses to each of their waters. The second component relates to the instream conditions necessary to protect the use(s). These conditions or "criteria" are physical, chemical or biological characteristics such as temperature, the minimum concentration of dissolved oxygen, and the maximum concentrations of toxic pollutants.

It is the combination of the "designated use" and the "criteria" to support the use that make up a water quality standard. If any criteria are being exceeded, then the use is not being met, and the water is said to be violating water quality standards.

What is the purpose of the plan?
Trout Creek has several designated uses including warm water fishes. Two of the criteria necessary to protect that use are maintenance of instream ammonia nitrogen (NH3-N) at or below its water quality criterion of 0.95 mg/l and maintenance of instream total residual chlorine (TRC) at or below 0.011 mg/l (as a four-day average) and 0.019 mg/l (as a one-hour average).

Based on instream measurements, the amount of NH3-N and TRC in Trout Creek exceed the water quality criteria for protection of aquatic life. The plan is needed to restore the water quality in Trout Creek.

The plan includes a calculation of how much of a total pollutant load can safely be put into Trout Creek without causing the NH3-N or TRC levels to exceed the water quality standards. The proposed TMDL plan, when
implemented, is expected to achieve both the NH3-N and TRC standards.

Why did we choose Trout Creek?
In 1996, the Department listed a segment of Trout Creek under Section 303(d) of the Clean Water Act as not meeting or not expected to meet water quality standards for NH3-N and TRC, even though all the pollution controls required by law are already in place. The listed stream segment extends from the Upper Merion Municipal Authority’s sewage treatment plant outfall to its confluence with the Schuylkill River, a distance of approximately 0.13 mile.

What pollutants does this TMDL address?
The proposed plan provides calculations of the stream’s total capacity to absorb NH3-N and TRC under critical low flow conditions and allocates allowable loadings to point source discharges in Trout Creek.

Where do the pollutants come from?
NH3-N is naturally present in streams as a result of the biological decomposition of plant and animal proteins, but only in trace amounts. Other sources include agricultural and urban runoff and discharges from wastewater treatment plants. For Trout Creek, the Upper Merion Municipal Authority sewage treatment plant (PA0026131) is the primary source of NH3-N at low flow conditions.

TRC results from disinfection using chlorine, which is typical of many water and wastewater treatment plants. Sources typically responsible for elevated levels in streams include water main breaks, improper draining of swimming pools, and point source discharges from water and wastewater treatment plants. For Trout Creek, the Upper Merion Municipal Authority sewage treatment plant is the primary source of TRC at low flow conditions.

How were the TMDLs developed?
The TMDLs for NH3-N and TRC were developed by calculating the maximum amounts of the pollutants that could be discharged under critical design conditions and allocating them to the sources/dischargers. A critical “low-flow” design condition of Q30-10 was used for developing the TMDL for NH3-N, while Q7-10 was used for developing the TMDL for TRC. These are defined as the actual or estimated lowest 30 consecutive day and 7 consecutive day average flows that occur once in 10 years. Since the concentration of a pollutant introduced into a stream can largely be reduced depending on the amount of upstream flow (i.e., dilution), a TMDL that is developed using the limited dilution available during “drought” conditions will be protective at almost all other times.

How much pollution is too much?
The maximum amount of NH3-N and TRC that can safely be absorbed by Trout Creek under critical design conditions is as follows:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia Nitrogen</td>
<td>63.33 lbs/day</td>
</tr>
<tr>
<td>Total Residual Chlorine</td>
<td>4.75 lbs/day</td>
</tr>
</tbody>
</table>

How will these limits be met?
Upper Merion Municipal Authority, which is the primary source of these pollutants under low flow conditions, must reduce the amount it contributes to Trout Creek in accordance with the proposed TMDL plan, when it is put into effect.

How can I get more information on the TMDL?
To request a copy of the full report, contact Robert Ryan at 610-832-6130 during business hours or by writing to him at PA DEP, Lee Park, Suite 6010, 555 North Lane, Conshohocken, PA 19428.

How can I comment on the proposal?
You can provide written comments and/or attend the public meeting. The meeting is scheduled for February 19, 1998 at 10 AM at PA DEP’s Conshohocken office. For more information on the meeting, you may contact Robert Ryan at the above telephone number. You also can submit written comments to the Department. The comments must be postmarked no later than February 23, 1998.
# TOTAL MAXIMUM DAILY LOAD (TMDL) FOR TOTAL RESIDUAL CHLORINE

<table>
<thead>
<tr>
<th>Point Source</th>
<th>Parameter Name</th>
<th>Discharge Flow (MGD)</th>
<th>Stream Flow (cfs)</th>
<th>Partial Mix Factor</th>
<th>WQ Criteria (mg/l)</th>
<th>Background Water Quality (mg/l)</th>
<th>WLAs (lbs/day)</th>
<th>LAs (lbs/day)</th>
<th>MOS</th>
<th>TMDL (lbs/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Merion Mun. Auth. (Trout Run) PA0026131</td>
<td>TRC</td>
<td>6.0</td>
<td>2.22</td>
<td>1.0</td>
<td>0.019</td>
<td>0</td>
<td>4.75</td>
<td>0</td>
<td>0</td>
<td>4.75</td>
</tr>
</tbody>
</table>

* Margin of Safety (MOS) is implicit in determination of TMDL

(SMC97)337-3
### TOTAL MAXIMUM DAILY LOAD (TMDL) FOR AMMONIA NITROGEN

#### Summer TMDL:

<table>
<thead>
<tr>
<th>Point Source</th>
<th>Parameter Name</th>
<th>Discharge Flow (MGD)</th>
<th>Stream Flow (cfs)</th>
<th>Partial Mix Factor</th>
<th>WQ Criteria (mg/l)</th>
<th>Background Water Quality (mg/l)</th>
<th>WLAs (lbs/day)</th>
<th>LAs (lbs/day)</th>
<th>MOS</th>
<th>TMDL (lbs/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Merion Mun. Auth. (Trout Run) PA0026131</td>
<td>NH3N</td>
<td>6.0</td>
<td>3.06</td>
<td>1.0</td>
<td>0.95</td>
<td>0.02</td>
<td>63</td>
<td>0.33</td>
<td>0</td>
<td>63.33</td>
</tr>
</tbody>
</table>

#### Winter TMDL:

<table>
<thead>
<tr>
<th>Point Source</th>
<th>Parameter Name</th>
<th>Discharge Flow (MGD)</th>
<th>Stream Flow (cfs)</th>
<th>Partial Mix Factor</th>
<th>WQ Criteria (mg/l)</th>
<th>Background Water Quality (mg/l)</th>
<th>WLAs (lbs/day)</th>
<th>LAs (lbs/day)</th>
<th>MOS</th>
<th>TMDL (lbs/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Merion Mun. Auth. (Trout Run) PA0026131</td>
<td>NH3N</td>
<td>6.0</td>
<td>6.12</td>
<td>1.0</td>
<td>2.66</td>
<td>0.02</td>
<td>220</td>
<td>0.66</td>
<td>0</td>
<td>220.66</td>
</tr>
</tbody>
</table>

* Margin of Safety (MOS) is implicit in determination of TMDL

(SMC97)337-2
Comments applicable to both NH3-N and Total Residual Chlorine TMDLs:

1) TMDLs apply to the segment of Trout Creek beginning at the outfall (RMI = 0.13) of Upper Marion Municipal Authority's sewage treatment plant and extending to its confluence with the Schuylkill River.

2) Upper Marion is the only point source discharge located in the reach under consideration. Under low flow conditions, it is the only significant contributor to the waterbody. Any NPS loadings are insignificant. Because of physical limitations, no other dischargers are expected to ever be located within the reach under consideration. Most of the area within the Trout Creek watershed is served with municipal waste, along with commercial and industrial waste, directed to either the Upper Marion plant or another municipal plant which discharges to a different waterbody. Future growth will be accommodated by these municipal plants so the likelihood of any other point source discharge (with the possible exception of SWRO, which does not affect a low-flow TMDL) being located on Trout Creek is remote.

3) The calculations include a "built-in" margin (factor) of safety:

- The Margin of Safety is a required element of the TMDL, per 40 CFR 130.7(d). To satisfy this requirement the MOS, according to EPA guidance (EPA 1991, Guidance for Water Quality-based Decisions: The TMDL Process, EPA 440/4-91-001), may be expressed explicitly or implicitly. For example, an explicit MOS approach allocates a portion of the load to the margin of safety. An implicit MOS may be the sum of conservative assumptions that are part of the TMDL development process. In many cases, a specific load cannot be identified for an implicit MOS. DEP has used the implicit approach in developing this TMDL. There are several conservative assumptions that constitute the MOS. First, the analysis assumed stream flows at the 7Q10 and 30Q10 levels -- the lowest flow that occurs for seven (or thirty) consecutive days once every ten years. The statistical probability of this flow actually occurring is less than one percent. The analysis also assumed the low flows were accompanied by warm temperatures. The improbability of the low flows and warm temperatures coinciding further bolsters the MOS.

- The Margin of Safety is used to account for any uncertainties or imprecision in the calculation of the TMDL. In the case of Trout Creek, any uncertainties are minimal. Design stream flows are based on an active USGS gauge which, although not located on Trout Creek, is located on a nearby stream which exhibits similar geology and land use characteristics. Background/discharge concentrations for NH3-N, TRC, pH and Temperature are based on either site-specific or ecoregion data, or acceptable default values that are representative of the site conditions. The highest degree of uncertainty would be associated with the validity of fate mechanisms and decay rates; none were used since the TMDLs were based on a single discharge analysis and protection at the point of discharge.

4) The load allocation for TRC is "0" and for NH3-N the load allocation is 0.33 lbs/day (summer) and 0.66 lbs/day (winter). The load allocation for NH3-N reflects ambient background concentrations.
controls required by law are installed. This TMDL establishes the following allowable pollutant loadings for Pennypack Creek from its confluence with an unnamed tributary near Moreland Avenue in Hatboro Boro, Montgomery County downstream 1.1 miles (for TCE); from the headwaters of Pennypack Creek in Montgomery County to the head-of-tide in the City of Philadelphia (for Bacteria); and from the Upper Moreland-Hatboro Joint Sewer Authority discharge point in Upper Moreland Township, Montgomery County (River Mile 19.9) to Lower Rahn Street in Philadelphia (River Mile 3.4) (for Organic Enrichment/Dissolved Oxygen). Pennypack Creek is a tributary to the Delaware River in the City of Philadelphia:

### Pollutant

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>TMDL =</th>
<th>WLA + (Wasteload Allocation - by source)</th>
<th>LA + (Load Allocation)</th>
<th>MOS (Margin of Safety)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCE</td>
<td>0.516 lb/day</td>
<td>0.03 lb/day</td>
<td>0.0 lb/day</td>
<td>0.48 lb/day</td>
</tr>
<tr>
<td>Bacteria</td>
<td>200 col/100 ml</td>
<td>200 col/100 ml</td>
<td>200 col/100 ml</td>
<td>**</td>
</tr>
<tr>
<td>Organic Enrichment/DO</td>
<td>988 lbs/d</td>
<td>988 lbs/d</td>
<td>0.0 lb/d</td>
<td>**</td>
</tr>
</tbody>
</table>

**MOS is implicit in determination of water quality criteria, but is unquantifiable.

### Point Source Discharges Affected

- Fisher and Porter
- Upper Moreland Hatboro Joint Sewer Authority
- Academy of the New Church
- HPC (aka Meadowbrook Apts)

The Department has determined that Fisher and Porter is the only significant contributor of TCE and Upper Moreland Hatboro Joint Sewer Authority, Academy of the New Church and HPC are the only significant contributors of Bacteria and Organic Enrichment/DO consuming wastes to Pennypack Creek under critical conditions (the 7-day—10 year low flow). Nonpoint source contributions for these pollutants are negligible at critical low flow conditions.

The data and all supporting information used to develop the proposed TMDL are available from the Department. To request a copy of the proposed TMDL and an information sheet, contact Robert Ryan, Chief, Water Quality Assessment Section, PA DEP Southeast Region, Lee Park, Suite 6010, Conshohocken, PA 19428, (610) 832-6000. Persons with a disability may use the AT&T Relay Service by calling 1 (800) 654-5984 (TDD users) or 1 (800) 654-5988 (voice users).

Written comments will be accepted at the above address and must be postmarked by February 23, 1998. Persons who plan to make a presentation at the public meeting, should notify the Department no later than 4 p.m. on Friday, February 13, 1998. The Department will consider all comments in developing the final TMDL, which will be submitted to the EPA for approval.

### Trout Creek Basin

The Department of Environmental Protection (Department) is holding a public meeting on February 19, 1998 beginning at 10 a.m. at the Southeast Regional Office, Lee Park, Suite 6010, Conshohocken, PA to discuss and accept comments on a proposed TMDL, established in accordance with the requirements of section 303(d) of the Clean Water Act. The Trout Creek was listed on Pennsylvania's 1996 section 303(d) List because water quality standards for Ammonia Nitrogen and Total Residual Chlorine needed to support the designated use of warm water fishery are not expected to be met even after technology-based controls required by law are installed. This TMDL establishes the following allowable pollutant loadings for Trout Creek, located in Upper Merion Township, Montgomery County, and extending from the Upper Merion Municipal Authority's Sewage Treatment Plant outfall to its confluence with the Schuylkill River, a distance of approximately 0.13 mile:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>TMDL =</th>
<th>WLA + (Wasteload Allocation - source)</th>
<th>LA + (Load Allocation)</th>
<th>MOS (Margin of Safety)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia Nitrogen</td>
<td>63 lbs/day</td>
<td>63 lbs/day</td>
<td>0 lb/day</td>
<td>*</td>
</tr>
<tr>
<td>Total Residual Chlorine</td>
<td>2.2 lbs/day</td>
<td>2.2 lbs/day</td>
<td>0 lb/day</td>
<td>*</td>
</tr>
</tbody>
</table>

* MOS is implicit in determination of water quality criteria, but is unquantifiable.
NOTICES

Point Source Discharges Affected
Upper Merion Municipal Authority PA 0026131

The Department has determined that Upper Merion Municipal Authority is the only significant contributor of use pollutants to Trout Creek under Q7-10 critical conditions. Nonpoint source contributions for these pollutants are negligible at critical low flow conditions.

The date and all supporting information used to develop the proposed TMDL are available from the Department. To request a copy of the proposed TMDL and an information sheet, contact Robert Ryan, Chief, Water Quality Assessment Section, PA DEP Southeast Region, 1100 East Park Avenue, Suite 3010, 555 North Lane, Conshohocken, PA 19428, (610) 832-6000. Persons with a disability may use AT&T Relay Service by calling 1 (800) 654-9584 (TDD) or 1 (800) 654-5988 (voice users).

Written comments will be accepted at the above address and must be postmarked by February 23, 1998. Persons who plan to make a presentation at the public meeting, should notify the Department no later than 4 p.m. on February 13, 1998. The Department will consider written comments in developing the final TMDL, which will be bitted to the EPA for approval.


Availability of Technical Guidance

Technical guidance documents are on DEP's World Wide Web site (http://www.dep.state.pa.us) at the Public Participation Center. The "June 1997 Inventory" heading is the Governor's List of Nonregulatory Documents. The search the Inventory of Technical Guidance Documents" heading is a database of the Inventory. The "Final Documents" heading is the link to a menu of the various EP bureaus and from there to each bureau's final technical guidance documents. The "Draft Technical Guidance" heading is the link to DEP's draft technical guidance documents.

DEP will be adding its revised documents to the Web through 1998.

Ordering Paper Copies of DEP Technical Guidance

Persons can order a bound paper copy of the latest inventory or an unbound paper copy of any of the final documents listed on the Inventory by calling DEP at (717) 33-8727.

In addition, bound copies of some of DEP's documents available as DEP publications. Persons should check with the appropriate bureau for more information about the availability of a particular document as a publication.

Changes to Technical Guidance Documents

Here is the current list of recent changes. Persons who have any questions or comments about a particular document should contact the contact person whose name and phone number is listed with each document. Persons who have questions or comments in general should call Nathan Brightbill at (717) 783-8727.

Final Technical Guidance—Substantive Revision

DEP ID: 254-5401-001 Title: Best Practices for Environmental Protection in the Mushroom Farm Community Description: Provides uniform instructions and operating procedures for the use or disposal of spent mushroom substrates. Effective Date: December 12, 1997 Page Length: 74 pages Location: Vol 06, Tab 25 Contact: Stephen Socash at (717) 787-7381.

JAMES M. SEIF, Secretary


Cleanup Standards Scientific Advisory Board Meeting Change

The Cleanup Standards Scientific Advisory Board meeting has been rescheduled from February 4th to February 17th. The meeting will be held at 400 Market Street, Rachel Carson State Office Building, 12th Floor conference room, beginning at 9:30 a.m.

Questions concerning this meeting can be directed to Marilyn Wooding at (717) 783-7509 or e-mail to Wooding.Marilyn@dep.state.pa.us. The agenda and meeting materials will be available through the Public Participation Center on DEP's World Wide Web site at http://www.dep.state.pa.us.

Persons in need of accommodations as provided for in the Americans With Disabilities Act of 1990 should contact Marilyn Wooding directly at (717) 783-7509 or through the Pennsylvania AT&T Relay Service at 1 (800) 654-5984 (TDD) to discuss how the Department may accommodate their needs.

JAMES M. SEIF, Secretary


DEPARTMENT OF ENVIRONMENTAL PROTECTION

ENVIRONMENTAL QUALITY BOARD

Notice of Hearing; Areas Unsuitable for Coal Mining; Petition No. 11969901

The Department of Environmental Protection (Department) and the Environmental Quality Board invite all interested persons to attend a public hearing on a proposal to designate the Muddy Run watershed in Reade Township, Cambria County, and the upper portion of the Muddy Run watershed in Beccaria and Gulich Townships, Clearfield County, as an area unsuitable for surface mining operations.

The hearing will be held at 6:30 p.m. on Thursday, February 26, 1998, in the Glendale High School auditorium, located at 1466 Beaver Valley Road, Flinton, PA 16640-8900.

The hearing concerns Petition No. 11969901, which was submitted by the Reade Township Municipal Authority.

PENNSYLVANIA BULLETIN, VOL. 28, NO. 4, JANUARY 24, 1998
(1) **Low Flow TMDL calculations for NH3-N:**

Per Ch.93.7, design flow is Q30-10 (as opposed to Q7-10)

Q30-10 at outfall is 3.06 cfs  
(based on USGS 01475300, Darby Creek at Waterloo Mills near Devon, PA,  
where Q30-10 = 1.815 cfs/5.15 mi² = 0.352 cfsm for period of record from  
1974-1994. This is a nearby gage, where geology and land uses are similar.  
Applying the yield to the drainage area above Upper Merion’s outfall results  
in 0.352 cfsm x 8.7 mi² = 3.06 cfs.)

Permitted Wasteflow = 6 mgd = 9.28 cfs

**Background NH3-N = 0.02 ppm, based on the following:**

- 6/7/90 Aquatic Biology Investigation, NH3-N = 0.02 ppm at various stations  
  (Report dated 1/17/92) upstream of outfall

- 4/11/95 Aquatic Biology Investigation, NH3-N < 0.02 ppm upstream of outfall  
  (Report dated 3/25/97)

Also, a review of ambient/ecoregion data for WQN 179 (White Clay Creek) indicates  
that from 8/95 - 7/97:

- 18 measurements were “Not Detectable” at < 0.02 ppm
- 2 measurements = 0.02 ppm
- 2 measurements = 0.03 ppm
- 1 measurement = 0.04 ppm
- 1 measurement = 0.07 ppm

A review of ambient/ecoregion data for WQN 178 (Pine Creek) indicates that from  
7/95 - 7/97:

- 23 measurements were “Not Detectable” at < 0.02 ppm
- 1 measurement = 0.05 ppm

A review of ambient/ecoregion data for WQN 177 (Northkill Creek) indicates that  
from 5/95 - 7/97:

- 25 measurements were “Not Detectable” at < 0.02 ppm
- 2 measurements = 0.02 ppm

Taking into consideration the above data, a value of 0.02 ppm is used to account for  
background concentration. This value is protective considering the number of  
“Not Detectables” but is used to reflect the trace concentrations that may be  
naturally occurring.
Per Ch. 93.7, 

\[ \text{(pKt - pH)} \]

Average Total NH3-N = unionized NH3-N \times \left[ 10^{\left( \frac{10 - \text{pH}}{10} \right)} + 1 \right], \text{ where (allowable instrm. conc.)}

- unionized NH3-N = 0.025 \times \frac{f(T)}{f(\text{pH})}

- \[ f(T) = 1 \text{ for } T > 10 \degree C \]

- \[ f(\text{pH}) = \begin{cases} 0.74(7.7 - \text{pH}) & \text{for } \text{pH} < 7.7 \\ 10 & \text{for } \text{pH} \geq 7.7 \end{cases} \]

\[ \text{pKt} = 0.09 + \left[ \frac{2730}{(T + 273.2)} \right] \]

Since equations are pH and temperature based, determine appropriate values:

Bkgd. pH = 8, T = 25 \degree C - Default values from Implementation Guidance for WWF / Limestone Geology.

Also, 6/7/90 Aq. Biol. Sampling = 8.3 upstream pH

4/11/95 Aq. Biol Sampling = 7.86 upstream pH, which reflect the influence of limestone springs.

Discharge pH = 7.5, T = 25 \degree C - Default values typical of treated effluent.

Based on field observations, complete mix occurs immediately downstream of outfall.

Inserting the data into the above equations results in the following:

Complete mix (CM) temp = 25 \degree C

Complete mix (CM) pH = 7.58

\[ \text{pKt} = 9.24 \]

\[ \text{unionized NH3-N} = 0.0203 \text{ ppm} \]

\[ \text{total NH3-N} = 0.95 \text{ ppm} \]

Limit using mass balance equation:

\[ (3.06 \text{ cfs}) (0.02 \text{ ppm}) + (9.28 \text{ cfs}) (\text{WLA}) = (12.34 \text{ cfs}) (0.95 \text{ ppm}) \]

\[ \text{WLA} = 1.26 \text{ ppm} \quad (1.26 \text{ ppm} \times 8.34 \times 6 \text{ mgd} = 63 \text{ lbs/day}) \]
Since the TMDL includes a “built-in” margin of safety:

\[ \text{TMDL} = \text{WLA} + \text{LA} \]

\[ \text{WLA} = 63 \text{ lbs/day, based on critical summer conditions} \]

\[ \text{LA} = 0.33 \text{ lbs/day } (0.02 \text{ ppm } \times 5.39 \times 3.06 \text{ cfs}) \]

\[ \text{TMDL} = 63 \text{ lbs/day } + 0.33 \text{ lbs/day } = 63.33 \text{ lbs/day} \]
Winter Toxicity for NH3-N:

Assumptions:

Q30-10 = 2 x Q30-10summer, based on Implementation Guidance for winter modelling

Bkgd. pH = 8 (same as summer)

Bkgd. T = 5 C (Implementation Guidance)

Discharge pH = 7.5 (same as summer)

Discharge T = 15 C (Implementation Guidance)

Based on the above,

CM temp = 11 C

CM pH = 7.64

pKt = 9.7

unionized NH3-N = 0.023

total NH3-N = 2.66 ppm

Limit using mass balance equation:

(6.12 cfs) (0.02 ppm) + (9.28 cfs) (WLA) = (15.4 cfs) (2.66 ppm)

WLA = 4.4 ppm \quad (4.4 \text{ ppm} \times 8.34 \times 6 \text{ mgd} = 220 \text{ lbs/day})

Above limit indicates that the seasonal relaxation allowed for winter months (11/1 - 4/30) of the summer limit will not violate instream standard.

Since the TMDL includes a "built-in" margin of safety:

TMDL = WLA + LA

WLA = 220 \text{ lbs/day}, based on critical winter conditions

LA = 0.66 \text{ lbs/day} \quad (0.02 \text{ ppm} \times 5.39 \times 6.12 \text{ cfs})

TMDL = 220 \text{ lbs/day} + 0.66 \text{ lbs/day} = 220.66 \text{ lbs/day}

***Print-out from Department’s DO/NH3-N model showing the above results is attached.***
(2) **Low Flow TMDL for Total Residual Chlorine:**

Q7-10 = 2.22 cfs (based on USGS 01475300, where Q7-10 = 1.313 cfs / 5.15 mi² from 1974 - 1994. Applying the yield to the DA above the outfall results in 0.255 cfs/m x 8.7 mi² = 2.22 cfs.)

Permitted Wasteflow = 6 mgd = 9.28 cfs

Background TRC = 0 (based on TRC being a non-naturally occurring pollutant and Upper Merion the only known point source discharge at low-flow conditions. Only other known permitted discharge is for stormwater runoff, located approximately 0.5 mi upstream. No discharge should occur except during storm events. Parameters of concern would not include TRC.)

Partial Mix Factor (PMF) = 1 based on field observations

Per Ch. 93.7, TRC criteria are 0.011 ppm (4-day average) and 0.019 ppm (1-hr average).

The attached Department developed spreadsheet calculates WLA's and effluent limits using principles of EPA's Technical Support Document (March 1991) and the Department's Implementation Guidance for Total Residual Chlorine.

WLA = 0.095 ppm (0.095 ppm x 8.34 x 6 mgd = 4.75 lbs/day)

Since the TMDL includes a "built-in" margin of safety:

TMDL = WLA + LA

WLA = 4.75 lbs/day

LA = 0

TMDL = 4.75 lbs/day + 0 = 4.75 lbs/day