



February 15, 2005

Mr. Chuck Yingling
Pennsylvania Department of Environmental Protection
Water Quality Assessment and Standards
Rachel Carson State Office Building
400 Market Street
P.O. Box 8467
Harrisburg, PA 17105-8467

**Re: Proposed Total Maximum Daily Load (TMDL) for Bear Run Watershed,
35 Pa. Bull. 294 (January 8, 2005)**

Dear Mr. Yingling:

Citizens for Pennsylvania's Future (PennFuture) appreciates the opportunity to present these comments on the December 31, 2004 Draft Total Maximum Daily Load (Draft TMDL) prepared by the Department of Environmental Protection (DEP) for the Bear Run Watershed in Clearfield, Indiana, and Jefferson Counties.

1. DEP's "No Limit Therefore No WLA" Rationale is Incorrect and Unintentionally Leads to the Result that Non-Detect NPDES Permit Limits Must be Required Where the Existing Load Equals or Exceeds the Allowable Load.

The automatic failure of the Department of Environmental Protection (DEP) to assign a wasteload allocation (WLA) for aluminum where the point source's National Pollutant Discharge Elimination System (NPDES) permit does not contain an effluent limit for aluminum is a serious methodological problem that DEP has repeated in several TMDLs for mine drainage impairments, and one that it should correct promptly.

The result of not assigning a WLA for aluminum is acceptable where aluminum is not detected at the immediate downstream sampling point, as is the case at sampling point Bear3.0 in this Draft TMDL, but the rationale DEP offers for that result is backwards. It is not that a WLA for aluminum is unnecessary at the P&N Hillman Tipple (PNHT) because the NPDES permit for the tipple contains no aluminum limits, but exactly the opposite: the permit need not contain aluminum limits because a WLA for aluminum is unnecessary (because there is essentially no detectable load of aluminum at the immediate downstream sampling point, Bear3.0). Thus, the sentence on page 30 that reads, "The P & N processing site does not have a BAT limit for aluminum; therefore, a WLA is not assigned for this parameter.", should be replaced with something like: "A WLA is not assigned for aluminum because aluminum was not detected at downstream sampling point Bear3.0 frequently enough to conduct Monte Carlo analysis, and the concentration of aluminum at Bear3.0 therefore is listed as 'non-detect.'"

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It is important for DEP to state the rationale correctly, because the backwards, “No Limit Therefore No WLA” formulation gets DEP into trouble where the measured load meets or exceeds the allowable load. PennFuture and Mountain Watershed Association, Inc. have highlighted this issue in an appeal they filed before the Environmental Hearing Board in April 2004 (Mountain Watershed Association, Inc. and Citizens for Pennsylvania’s Future v. Commonwealth of Pennsylvania, Department of Environmental Protection and Kaiser Refractories, Permittee, EHB Docket No. 2004-102-R). The upshot is that where the measured aluminum load equals or exceeds the allowable load for the stream or stream segment but the TMDL includes no WLA for aluminum from a point source discharge of mine drainage into that segment, and instead allocates the entire allowable load to the nonpoint sources, the failure to assign any of the allowable load to the point source means that the point source must be prohibited from discharging aluminum. That is, in order to ensure that the total allowable load (load allocation (LA) plus WLA) is not exceeded and that the instream limit for aluminum is achieved, the NPDES permit must be made consistent with the WLA of zero pounds per day by including water quality based effluent limits (WQBELs) of non-detect for aluminum. See 40 C.F.R. § 122.44(d)(1)(vii)(B) (NPDES permit must be “consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7.”), incorporated into Pennsylvania law by 25 Pa. Code § 92.2(b)(14).

This kind of scenario appears in the Draft TMDL for the Bear Run watershed at sampling point SBTR3.1 (page 35), for which there are two upstream point source discharges of treated mine drainage. Although both discharges are from “primacy” surface mines, the NPDES permit for one of them (the Becker Coal Company Buchanan Job (BCBJ, pages 33-34) apparently includes effluent limits for aluminum, while the permit for the second mine, the A&T Coal Company Fisher Strip (ATFS, page 34) does not. Based on the monthly average concentration limit in the permit and an assumed flow rate, DEP assigns the Becker mine a WLA of one pound of aluminum per day. (p. 34) But despite the fact that the estimated flow from the A&T mine is roughly 2.5 times the flow from the Becker mine, DEP follows its “No Limit Therefore No WLA” rationale and does not assign any WLA at all for aluminum to the A&T mine. (p. 34) As a result, when determining the load reductions necessary at downstream point SBTR3.1, DEP assumes that the Becker mine is adding one pound of aluminum to the stream each day, but that the A&T mine, despite having a higher flow rate, is adding zero pounds per day. Obviously, that makes no sense.

Unlike the situation at sampling point Bear3.0, here at point SBTR3.1 the problem of failing to assign a WLA for aluminum has practical implications because the existing load at point SBTR3.1 of 1.1 pounds per day exceeds the allowable load of 0.2 pounds per day. PennFuture explains in Comment No. 2.C, below, that WLAs for both the Becker and A&T mines are required in order to allocate equitably the allowable load of 0.2 pounds of aluminum per day at point SBTR3.1. No matter what specific WLA is adopted for the A&T mine, however, some WLA is required. And if DEP allocates the entire allowable load to the Becker mine and therefore continues to allocate zero pounds per day of aluminum to the A&T mine, then the NPDES permit for the A&T mine must be revised to be consistent with this assumption by including non-detect effluent limits for aluminum in that permit, which is the only way to ensure that the actual load does not exceed the assumed load of zero pounds per day. That is to

say, if the TMDL's allocation of the allowable aluminum load is based on an assumption of no load coming from the A&T mine, then DEP must make sure that assumption comes true by prohibiting any discharge of aluminum from the A&T mine. Presumably DEP does not intend that result. DEP accordingly must eliminate from page 34 of the Draft TMDL the following sentence, which is based on its flawed, "No Limit Therefore No WLA" rationale: "The permit does not have a BAT limit for aluminum; therefore, a WLA is not assigned for that parameter." As explained in Comment No. 2.C, DEP must assign a WLA for aluminum for the A&T mine.

More generally, DEP must eliminate the "No Limit Therefore No WLA" rationale from its approach to TMDLs. The central problem with that rationale is that it assumes away (treats as zero) contaminant loading from a point source that is actually occurring (is greater than zero), and thereby assumes away the possibility that WQBELs are necessary to achieve instream criteria. As shown in Comment No.2.C, below, that is precisely what has happened at sampling point SBTR3.1 in the Draft TMDL. Instead of assuming that actual loading away, the TMDL must properly account for it. Otherwise, the TMDL will not achieve the objective of ensuring the attainment of water quality standards.

As DEP has properly recognized in other contexts,¹ the fact that the current NPDES permit for a point source does not contain technology or water quality based limits for a particular parameter does not show that a WLA for that parameter is unnecessary. To the contrary, the violation of the instream criterion for that parameter at a downstream monitoring point is an indication that a WLA and WQBELs are needed. That is precisely the situation at monitoring point SBTR3.1.

2. The Allocation at SBTR3.1 and the Need for More Stringent WLAs and the Imposition of WQBELs.

A. Math Errors

In Table D7 on page 34 showing the waste load allocations at ATFS, the allowable load for manganese should be 1.6 pounds per day rather than 0.6 pounds per day. As a result, in the manganese column in Table D9 on page 35, the "Waste load allocation" figure should be 2.3 rather than 1.3, and the "Remaining load at SBTR3.1" figure should be -1.9 rather than -0.9.

¹ An example of a pending draft TMDL that does not follow the "No Limit Therefore No WLA" approach is the December 2004 draft TMDL for the Little Juniata River in Blair County, which correctly observes that even though the NPDES permits for two sewage treatment plants that discharge into the river do not contain effluent limits for phosphorus, "it is apparent that regulation of the phosphorus loads discharged from these facilities is needed in order to achieve acceptable water quality conditions." (p. 16) The draft TMDL goes on to propose a two-phase approach for developing and implementing phosphorus WQBELs for those two point sources. (pp. 19-24)

B. Total Elimination of Metals Loadings from Nonpoint Sources is Untenable.

The Draft TMDL states: “All nonpoint sources of pollution to the segment must be reduced by 100 percent to allow for the WLAs from the treatment systems upstream of SBTR3.1.” In other words, all of the nonpoint sources of mine drainage contaminants must be completely abated. The likelihood of achieving such total elimination of nonpoint source loading would seem infinitesimal in an area identified as having abandoned mine lands and abandoned mine discharges. Even if every abandoned discharge were captured and treated, some loading of metals would remain. But in this instance, even if it were feasible, a “100 percent” load reduction from the nonpoint sources would not go far enough. PennFuture shows in Comment No. 2.C, immediately below, that for iron, manganese, and aluminum, the Draft TMDL actually requires negative contaminant loads from nonpoint sources. Those negative numbers conclusively prove that more stringent WLAs, and the resulting imposition of WQBELs, are necessary to ensure attainment of the total allowable loads, and thus the instream water quality criteria, for the three metals at SBTR3.1.

For the moment, however, we simply point out that there is no suggestion in the Draft TMDL that it is feasible to eliminate completely the loading of iron, manganese, or aluminum from nonpoint sources into the unnamed tributary to the South Branch of Bear Run. For watersheds like this one that include both LAs to nonpoint sources and WLAs to point sources, EPA’s TMDL guidance states that “the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable.” (EPA May 20, 2002 Guidelines, p. 4) (emphasis added) The idea behind this requirement is that because there are no permitting or enforcement mechanisms available for nonpoint sources, if the agency cannot provide “reasonable assurances” that load reductions assigned to nonpoint sources actually will be realized, it must ensure that the necessary reductions occur by further reducing the WLA(s) and tightening the effluent limits on the point source(s). Given that mine drainage treatment systems for permitted point sources do not completely eliminate the loading of metals from those sources (and are not assumed to do so in this Draft TMDL), there is no basis for the assumption in the Draft TMDL that 100% of the loading of metals from nonpoint sources can be eliminated from this tributary.²

By itself, the fact that the Draft TMDL would require unrealistic and unjustified, 100 percent load reductions from the unregulated nonpoint sources shows that more stringent WLAs and the imposition of WQBELs on the point sources are required to provide reasonable assurance that the water quality criteria for the three metals will be achieved. As the next subsection shows, however, the Draft TMDL actually goes beyond the unrealistic to the bizarre in positing that nonpoint sources must somehow contribute negative loads of the three metals to the unnamed tributary – that is, they must reduce the allowable loads coming from the two point sources.

² Although this assumption is unrealistic for acidity as well, because the two points sources add no acidity load to the tributary, all of the required reductions in acidity loads are properly allocated to nonpoint sources.

C. Because the Sum of the Technology-Based WLAs Exceeds the Total Maximum Daily Load for Each of the Three Metals, WQBELs Based on More Stringent WLAs are Necessary.

Even if all of the nonpoint sources of metals loading could be completely eliminated in this instance, however, it would not be enough. Under this Draft TMDL, the nonpoint sources of the three metals must somehow remove contaminant loadings from the stream.

The row of Table D9 labeled “Remaining load at SBTR3.1” shows the amount of allowable load from the nonpoint sources after fully allocating the entire WLAs from Tables D6 and D7 to the two point sources. The negative numbers in that row for the three metals show that in order to ensure that the total allowable loads (and thus the water quality criteria) are attained, the nonpoint source not only cannot add an ounce of the contaminants to the streams, but also must somehow reduce the loadings of the three contaminants that are allowed to be introduced by the point sources. Those negative numbers simply express mathematically the fact that tighter WLAs, and therefore WQBELs, are necessary.

Another way to reach the same conclusion is simply to compare the sum of the two WLAs to the total allowable load at point SBTR3.1. In general, if the sum of the WLAs for a particular contaminant exceeds the allowable load for the segment, a tighter WLA, and thus the establishment of a WQBEL, is necessary for one or more of the point sources. That is the situation at SBTR3.1. For all three metals, the sum of the WLAs exceeds the total allowable load. Given that the TMDL uses an implicit margin of safety, since the sum of the LAs and WLAs must not exceed the total allowable load (the TMDL), it follows inexorably that even if the LA for each contaminant is miraculously reduced to zero, the sum of the two WLAs also must be reduced to a level no higher than the total allowable load. That is:

$$\text{Given: } LA_{\text{SBTR3.1}} + WLA_{\text{Becker}} + WLA_{\text{A\&T}} \leq \text{TMDL}_{\text{SBTR3.1}}$$

$$\text{If } LA_{\text{SBTR3.1}} = 0, \text{ then } WLA_{\text{Becker}} + WLA_{\text{A\&T}} \leq \text{TMDL}_{\text{SBTR3.1}}$$

So, for iron, the sum of the two WLAs to the point sources may be no greater than the allowable load of 0.3 pounds per day (and probably must be lower than that to allow for some nonpoint source contribution of iron). The same reasoning applies to manganese and aluminum, for which the sum of the WLAs may be no greater than 0.4 pounds per day and 0.2 pounds per day, respectively. The WLA reductions that are necessary to ensure those results will require the imposition of WQBELs on both point sources.

Summarized in the table immediately below are the results of a hypothetical allocation of equal one-third shares of the allowable loads at point SBTR3.1 to each of the Becker mine (BCBJ), the A&T mine (ATFS), and the nonpoint sources (NPS-SBTR3.1). The WQBELs are based on the allowable loads that appear in the table and the assumed flow rates that appear in Tables D6 and D7 of the Draft TMDL.

ALLOCATION OF ALLOWABLE LOAD AT POINT SBTR3.1 (Based on Equal, One-Third Shares)						
	Iron		Manganese		Aluminum	
	Allowable Load (lb/day)	WQBEL (Mo. Ave. Conc.)	Allowable Load (lb/day)	WQBEL (Mo. Ave. Conc.)	Allowable Load (lb/day)	WQBEL (Mo. Ave. Conc.)
NPS-SBTR3.1	0.1		0.13		0.07	
BCBJ	0.1	0.3 mg/l	0.13	0.38 mg/l	0.07	0.2 mg/l
ATFS	0.1	0.12 mg/l	0.13	0.16 mg/l	0.07	0.09 mg/l
Total	0.3		0.4		0.2	

The following table shows the results of a hypothetical allocation of the allowable metals loads at SBTR3.1 based on splitting the total allowable load evenly between the Becker and A&T mines. It shows that even under the unsupported assumption that the loading from the nonpoint sources will be reduced to zero, and thus that it is appropriate to split the entire allowable load between the two point sources, considerable reductions in the existing effluent limits for the two point sources are necessary to ensure that the total allowable load is not exceeded.

ALLOCATION OF ALLOWABLE LOAD AT POINT SBTR3.1 (Splitting the Allowable Load Evenly Between the Two Point Sources)						
	Iron		Manganese		Aluminum	
	Allowable Load (lb/day)	WQBEL (Mo. Ave. Conc.)	Allowable Load (lb/day)	WQBEL (Mo. Ave. Conc.)	Allowable Load (lb/day)	WQBEL (Mo. Ave. Conc.)
NPS-SBTR3.1	0.0		0.0		0.0	
BCBJ	0.15	0.44 mg/l	0.2	0.6 mg/l	0.1	0.3 mg/l
ATFS	0.15	0.2 mg/l	0.2	0.25mg/l	0.1	0.12 mg/l
Total	0.3		0.4		0.2	

Please feel free to contact me at 717-214-7920 if you have any questions about our comments.

Sincerely,

Kurt J. Weist
Senior Attorney
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cc: Mary Kuo, U.S. EPA, Region 3