



Michael D. Zagata
Commissioner

MEMORANDUM

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Previous Date: August 14, 1991
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TO: Regional Water Engineers, Bureau Directors, Section Chiefs

SUBJECT: Division of Water Technical & Operational Guidance Series (1.3.1.C)

TOTAL MAXIMUM DAILY LOADS AND WATER QUALITY-BASED EFFLUENT LIMITS

AMENDMENT - METALS

(Originator - Jim Dalton/Al Bromberg)

PURPOSE

TOGS 1.3.1 describes the principles and procedures for developing water quality-based effluent limits (WQBELs) using the total maximum daily load (TMDL) process. This amendment provides direction on applying water quality standards for metals when ambient background concentrations of metals are present in the receiving waters.

DISCUSSION

In July 1985, NYSDEC adopted an extensive number of water quality standards and guidance values. At about this same time, the Division of Water initiated a watershed/basin approach for the development of water quality-based effluent limits using the total maximum daily load approach. Through the late 1980s, as ambient water quality data became available, it was recognized that natural background concentrations of some metals approached or exceeded state water quality standards in certain river basins. When applying the total maximum daily load/wasteload allocation (TMDL/WLA) process, it was also apparent that factors which include analytical detectability, treatability, background concentrations and the waste assimilative capacity of the receiving waters needed to be taken into account.

The TMDL/WLA process is a reasonable approach to developing WQBELs using the best available data and information. Recognizing that advances in science and availability of additional resources result in the continuing improvement of sampling procedures and analytical detection, the analysis process must account for the availability of more and better data over time. This can be done by conducting "phased" TMDL analyses and making adjustments in subsequent phases.

This amendment provides direction to water quality analysts and permit writers in applying the "phased" TMDL process to the development of water quality-based effluent limits for metals.

GUIDANCE

Total maximum daily loads, wasteload allocations and water quality-based effluent limits should be developed using the procedures in TOGS 1.3.1.

Form of the Metal Standard

When a metal standard is expressed as **total recoverable** or **acid soluble**, the TMDL/WLA should be **developed as total recoverable** and the WQBEL expressed as total recoverable.

When a metal standard is expressed as **dissolved** or **ionic**, the TMDL/WLA should be **developed as dissolved**. The dissolved WLA should be converted to total recoverable using the receiving water total recoverable to dissolved metal ratio. The WQBEL should be expressed as total recoverable, and effluent monitoring required for both the dissolved and total recoverable forms of the metal.

Development of Water Quality-Based Effluent Limits

When developing a TMDL/WLA for a given metal, the best available ambient monitoring data should be used in conjunction with point source "baseline" discharge loads as developed by the permit writer.

Where there are background concentrations of a metal, the WLA becomes the

difference between the loading capacity of the receiving water and the background load.

When the metal background concentration is confirmed as being equal to or greater than the water quality standard, the WQBEL should be:

- the background concentration when there is no documented impairment to the aquatic life resource or use of the water body as a drinking water source.
- the water quality standard if there is a documented impairment to the aquatic life resource or drinking water source.

When applying the TMDL/WLA process, and it is apparent that a computed WQBEL is clearly unreasonable due to factors such as analytical detectability, treatability, and background concentrations of the receiving waters (Part 702.16), the effluent limit should represent:

- Existing effluent quality (EEQ) for publicly owned treatment works (POTW).
- Best treatment technology requirements, or equivalent, for industries. The permit writer will confirm whether more stringent effluent limitations are technically achievable.

This analysis is considered to be a phased TMDL. The implication is that more data will be needed to refine this type of TMDL analysis.

The effluent limit should be conditioned with a requirement and schedule for the collection of additional ambient and/or source data, and for effluent toxicity testing to evaluate the impact on the receiving waters. These monitoring efforts should be used in "future phase" TMDL analyses. Subsequent phase TMDL(s) may result in refinements, adjustments or confirmation of the initial effluent limitations.

The permittee may apply for a variance of an effluent limit based on a standard or guidance value for the protection of aquatic life (Part 702.17) or seek approval for the development of a site-specific criterion.

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