Office of the Registrar of Regulations,
Legislative Council,
State of Delaware

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF WATER RESOURCES

Statutory Authority: 7 Delaware Code, Section 60, (7 **Del.C.** §60)
7 **DE Admin. Code** 7404

PROPOSED

REGISTER NOTICE

7404 Total Maximum Daily Load (TMDL) for Zinc in the Red Clay Creek, Delaware

Brief Synopsis of the Subject, Substance, and Issues

The Department of Natural Resources and Environmental Control (DNREC) is proposing to adopt an amended Total Maximum Daily Load (TMDL) Regulation for zinc in the Red Clay Creek. The original TMDL Regulation for zinc in the Red Clay Creek was published in the Delaware Register of Regulations on December 1, 1999 (3 DE Reg. 806 (12/1/99)). That TMDL Regulation was appealed by the National Vulcanized Fiber (NVF) Company to the State Environmental Appeals Board and the State Superior Court. The Department entered into a Settlement Agreement with the NVF Company in February of 2007, thereby resolving the appeal subject to the conditions of the Agreement. One condition of the Settlement Agreement was for the Department to consider an amended TMDL based upon a lognormal probability modeling approach. Such an approach provides an improved match between the strength, location, and timing of zinc mass loading to the Red Clay Creek with the inherent ability of the Red Clay Creek to assimilate the zinc loading without adverse impact. The lognormal probability modeling has been completed and the Department is now proposing to adopt an amended TMDL based upon the approach.

Possible Terms of the Agency Action

Following adoption of the amended Total Maximum Daily Load for zinc in the Red Clay Creek, the Department will submit the Final TMDL Regulation to the U.S. Environmental Protection Agency (EPA) for their review and approval. The Department will also monitor compliance with the terms of the Settlement Agreement between the Department and the NVF Company to ensure commitments are being met.

Statutory Basis or Legal Authority to Act

The authority to develop (and amend) a TMDL is provided by Title 7 of the **Delaware Code**, Chapter 60, and Section 303(d) of the federal Clean water Act, 33 U.S.C. 1251 et. seq., as amended.

Other Legislation That May Be Impacted

None

Notice of Public Comment

A public hearing will be held on the proposed regulation to amend the Department of Natural Resources and Environmental Control's Total Maximum Daily Load regulation for zinc in the Red Clay Creek, Delaware. The public hearing will be held on Tuesday, October 28, 2008, beginning at 6:00 p.m., at the Delaware Department of Natural Resources and Environmental Control, 391 Lukens Drive, New Castle, Delaware.

If you are unable or do not wish to attend the hearing, you may submit written comments to the Department by 4:30 p.m., November 5, 2008. Comments should be directed to the attention of Maryann Pielmeier, DNREC, Watershed Assessment Section, 820 Silver Lake Blvd., Suite 220, Dover, DE, 19904-2464, (maryann.pielmeier@state.de.us), fax: (302) 739-6140.

Additional information and supporting technical documents may be obtained from the Watershed Assessment Section, Division of Water Resources, Department of Natural Resources and Environmental Control, Silver Lake

Plaza, Suite 220, 820 Silver Lake Blvd., Dover, DE 19904-2464, (302) 739-9939. Supporting technical documents will also be available beginning October 1, 2008 at the following DNREC web site: http://www.dnrec.state.de.us/water2000/Sections/Watershed/TMDL/tmdlinfo.htm.

Prepared By:

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7404 TMDLs for Zinc in the Red Clay Creek, Delaware

~~1.0 Introduction and Background~~

~~1.1~~ ~~Water quality monitoring performed by the Delaware Department of Natural Resources and Environmental Control (DNREC) and others has shown that the Red Clay Creek, adjacent to and downstream of Yorklyn, Delaware, does not meet applicable water quality standards for zinc. Although zinc is an essential element for both aquatic life and humans, excessive concentrations can adversely affect aquatic life and human health. Zinc concentrations in the Red Clay Creek are not high enough to adversely affect people who drink water that is withdrawn from the Red Clay Creek. Zinc concentrations do, however, frequently exceed water quality criteria designed to protect fish and other aquatic life from the toxic affects of the metal.~~

~~1.2~~ ~~A reduction in the amount of zinc reaching the Red Clay Creek is necessary to assure that applicable water quality standards are met and beneficial stream uses are protected. Zinc enters the Red Clay Creek from point sources and nonpoint sources. The National Vulcanized Fiber (NVF) Company located in Yorklyn, Delaware, is the only permitted point source discharge of zinc to the Red Clay Creek in Delaware. Nonpoint sources of zinc in the Red Clay Creek include background loading from the area of the Red Clay Creek watershed upstream of Yorklyn, seepage of contaminated groundwater from beneath the NVF facility to the Red Clay Creek, and diffusive flux from Creek sediments to the overlying water column.~~

~~1.3~~ ~~Section 303(d) of the Federal Clean Water Act (CWA) requires States to develop a list (303(d) List) of waterbodies for which existing pollution controls are not sufficient to attain applicable water quality standards. Section 303(d) also requires each state to develop Total Maximum Daily Loads (TMDLs) for those waterbodies and pollutants placed on the state's 303(d) List. A TMDL sets a limit on the amount of a substance that can enter a water body while still assuring that applicable water quality standards are met and beneficial stream uses are protected. A TMDL is composed of three components, including a Waste Load Allocation (WLA) for point source discharges, a Load Allocation (LA) for nonpoint sources, and a Margin of Safety (MOS) to account for uncertainties.~~

~~1.4~~ ~~DNREC listed the Red Clay Creek on Delaware's 1996 and 1998 303(d) Lists because applicable water quality standards for zinc were, and continue to be, frequently exceeded. Therefore, DNREC is proposing the following Total Maximum Daily Load (TMDL) regulation for zinc in the Red Clay Creek.~~

~~2.0 Total Maximum Daily Load (TMDL) Regulation for Zinc in the Red Clay Creek, Delaware~~

~~Article 1.~~ ~~The TMDL for zinc in the Red Clay Creek shall be 1.81 pounds per day, measured as total zinc.~~

~~Article 2.~~ ~~The combined mass loading of zinc to the Red Clay Creek from NVF's permitted discharge 002 (i.e., WLA_{002}), plus the mass loading of zinc to the Red Clay Creek from contaminated groundwater beneath the NVF property (i.e., $LA_{g.w.}$) shall not exceed 1.2 pounds of zinc per day, measured as total zinc.~~

~~Article 3.~~ ~~The load allocation of zinc from the area upstream of Yorklyn (i.e., LA_{up}) shall be capped at 0.6 pounds per day, measured as total zinc.~~

~~Article 4.~~ ~~The margin of safety (MOS) for the TMDL listed in Article 1 has been set at 0.01 pounds of zinc per day. This small margin of safety (less than 1% of the TMDL) reflects the robust data set and the~~

~~conservative approach used to establish the TMDL, while still accounting for the uncertainty associated with possible diffusion of zinc from Red Clay Creek sediments.~~

~~Article 5. DNREC has determined with a reasonable degree of scientific certainty that water quality standards for zinc will be met in the Red Clay Creek once the mass loading requirements of Articles 1 through 3 are met.~~

~~Article 6. Implementation of this TMDL Regulation shall be achieved through the development of a Pollution Control Strategy. The Strategy will be developed by DNREC in concert with affected parties, the interested public, and the Department's ongoing Whole Basin Management Program. The manner in which the 1.2 pounds per day that is noted in Article 2 above is allocated between discharge 002 and the contaminated groundwater discharge shall be one particular area of focus as part of the Pollution Control Strategy. The Pollution Control Strategy will also consider how monitoring will be conducted to verify compliance with the TMDL.~~

1.0 Introduction and Background

A TMDL specifies the maximum allowable mass loading of a pollutant (e.g., pounds per day) that can be delivered to a waterbody while still assuring that applicable water quality standards are met. A TMDL is composed of three components, including a Waste Load Allocation (WLA) for point source discharges, a Load Allocation (LA) for nonpoint sources, and a Margin of Safety (MOS) to account for uncertainties regarding the relationship between mass loading and resulting water quality. In simple terms, a TMDL attempts to match the strength, location, and timing of pollution sources within a watershed with the inherent ability of the receiving water to assimilate the pollutant without adverse impact.

On December 1, 1999, a Final TMDL Regulation for zinc in the Red Clay Creek was published in the *Delaware Register of Regulations* (**3 DE Reg. 806 (12/1/99)**). That TMDL Regulation was appealed by the National Vulcanized Fiber (NVF) Company to the State Environmental Appeals Board and the State Superior Court. The NVF Company owns and operates a manufacturing facility in Yorklyn, DE along the banks of the Red Clay Creek. The Department entered into a Settlement Agreement with the NVF Company in February of 2007, thereby resolving the appeal subject to the conditions of the Agreement. One condition of the Settlement Agreement was for the Department to propose an amended TMDL based upon a lognormal probability modeling approach. Such an approach provides an improved match between the strength, location, and timing of zinc mass loading to the Red Clay Creek with the inherent ability of the Red Clay Creek to assimilate the zinc loading without adverse impact. The lognormal probability modeling has been completed and the Department is now proposing to adopt an amended TMDL based upon the approach.

2.0 Amended Total Maximum Daily Load (TMDL) Regulation for Zinc in the Red Clay Creek, Delaware

Article 1. The TMDL for zinc in the Red Clay Creek shall be 55.93 pounds per day, measured as total zinc.

Article 2. The combined mass loading of zinc to the Red Clay Creek from NVF Yorklyn's permitted discharge 002 (i.e., WLA_{002}), plus the mass loading of zinc to the Red Clay Creek from contaminated groundwater beneath the NVF Yorklyn property (i.e., $LA_{g.w.}$) shall not exceed 25.17 pounds of zinc per day, measured as total zinc.

Article 3. The load allocation of zinc originating from upstream of Yorklyn (i.e., LA_{up}) shall not exceed 25.17 pounds of zinc per day, measured as total zinc.

Article 4. The margin of safety (MOS) for the TMDL listed in Article 1 has been set at 5.59 pounds of zinc per day, measured as total zinc. This MOS represents 10% of the TMDL and accounts for uncertainties in the overall TMDL analysis.

Article 5. DNREC has determined with a reasonable degree of certainty that water quality standards for zinc will be met in the Red Clay Creek once the mass loading requirements of Articles 1 through 3 are met.

3 DE Reg. 806 (12/1/99)

12 DE Reg. 425 (10/01/08) (Prop.)