

**DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL**  
**DIVISION OF WATER RESOURCES**  
**Statutory Authority: 7 Delaware Code, Chapter 60 (7 Del.C. Ch. 60)**

**REGISTER NOTICE**

**7408 TMDL's For The Murderkill River Watershed**

**1. Brief Synopsis of the Subject, Substance, and Issues**

The Department of Natural Resources and Environmental Control (DNREC) is proposing to amend the 2001 Total Maximum Daily Loads (TMDLs) Regulation for the Murderkill River Watershed, Delaware. A TMDL sets a limit on the amount of a pollutant that can be discharged into a waterbody and still protect water quality. TMDLs are composed of three components including Waste Load Allocations (WLAs) for point source discharges, Load Allocations (LAs) for nonpoint sources, and a Margin of Safety (MOS) to account for uncertainties and future growth.

The proposed amendments are the result of additional technical studies and field work that has shown that the 2001 Murderkill River TMDL Regulation should be amended.

**2. Possible Terms of the Agency Action**

Following adoption of the proposed amendments to the 2001 Murderkill River Total Maximum Daily Loads, DNREC will develop a Pollution Control Strategy (PCS) to achieve the necessary load reductions. The PCS will identify specific pollution reduction activities and timeframes and will be developed in concert with the Murderkill River Tributary Action Team, other stakeholders, and the public.

**3. Statutory Basis or Legal Authority to Act**

The authority to develop 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.

**4. Other Legislation That May be Impacted**

None

**5. Notice of Public Comment**

A public hearing will be held at 6:00 p.m., April 7, 2005, at the Felton Fire Hall, 9 East Main Street, Felton, Delaware. If you cannot attend the hearing, you are encouraged to submit written comments well in advance of the hearing date. All written and oral comments must be received by the conclusion of the hearing. The hearing record will close at the conclusion of the hearing. Please send written comments to Hassan Mirsajadi, DNREC/Division of Water Resources, Watershed Assessment Section, Silver Lake Plaza – Suite 220, 820 Silver Lake Boulevard, Dover, DE 19904-2464, (302) 739-4590, facsimile: (302) 739-6140, email: ([Hassan.Mirsajadi@state.de.us](mailto:Hassan.Mirsajadi@state.de.us)). You are encouraged to submit comments electronically.

Copies of the proposed amended regulation and supporting technical document are available at the Department's website at <http://www.dnrec.state.de.us/water2000/Sections/Watershed/TMDL/tmdlinfo.htm> or may be obtained by contacting Hassan Mirsajadi.

**6. Prepared By:**

Hassan Mirsajadi, Watershed Assessment Branch, 739-4590

**Proposed Amendment of the 2001 Total Maximum Daily Loads (TMDLs) for the Murderkill River Watershed, Delaware**

**Introduction And Background**

On December 2001, the Cabinet Secretary of the Delaware Department of Natural Resources and Environmental Control (DNREC) issued Order No. 2001-A-0044 adopting a Total Maximum Daily Loads (TMDLs) Regulation for nutrients and oxygen consuming compounds for the entire Murderkill River Watershed. The TMDLs, which are developed in compliance with requirements of Section 303(d) of the Clean Water Act (CWA), establish maximum

amounts of pollutants that can be discharged to a waterbody from point and nonpoint sources while maintaining water quality standards. The TMDLs include Waste Load Allocations (WLAs) for point sources, Load Allocations (LAs) for nonpoint sources, and a Margin of Safety (MOS).

Following adoption of the Murderkill River TMDLs Regulation in December 2001, Kent County Levy Court, which owns and operates the Kent County Facility, appealed the TMDLs Regulation for the lower Murderkill River to the State Environmental Appeal Board and State Superior Court. As a result of settlement negotiations, which have been concluded, and additional technical studies, the Department concluded that the original hydrodynamic and water quality WASP5 model of the Murderkill River needed to be refined. Following refinement of the WASP5 model and evaluation of several loading scenarios, DNREC is proposing to amend the 2001 TMDLs Regulation.

## 7408 TMDLs for the Murderkill River Watershed

### 1.0 Introduction and Background

1.1 Intensive water quality monitoring performed by Delaware Department of Natural Resources and Environmental Control (DNREC) has shown that the waters of the Murderkill River and several of its tributaries and ponds are impaired as the result of low dissolved oxygen and high nutrients. Low concentrations of dissolved oxygen are harmful to fish, shellfish, and other aquatic life. With regard to nutrients (nitrogen and phosphorus), although they are essential elements for both plants and animals, their presence in excessive amounts causes undesirable conditions. Symptoms of nutrient overenrichment include frequent phytoplankton blooms, decreased water clarity, dissolved oxygen deficiency, alteration of composition and diversity of economically important native species of plants and animals, and possible human health effects.

1.2 A reduction in the amount of nutrients and oxygen consuming pollutants reaching the waters of the Murderkill River and its tributaries and ponds is necessary to reverse these undesirable impacts. These pollutants and nutrients enter the waters of the Murderkill River from point sources and nonpoint sources. Point sources are end-of-pipe discharges from municipal or industrial wastewater treatment plants. Nonpoint sources include runoff from agricultural and urban areas, septic tank effluent, and ground water discharges.

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 control activities are not sufficient to attain applicable water quality criteria and to develop Total Maximum Daily Loads (TMDLs) for pollutants of concern. A TMDL sets a limit on the amount of a pollutant that can be discharged into a waterbody and still protect water quality. TMDLs are composed of three components, including Waste Load Allocations (WLAs) for point source discharges, Load Allocations (LAs) for nonpoint sources, and a Margin of Safety (MOS) to account for uncertainties and future growth.

1.4 DNREC listed the Murderkill River and several of its tributaries and ponds on the Delaware's 1996, 1998, and 2000 303(d) Lists and proposes the following Total Maximum Daily Load regulation for nitrogen, phosphorous, and Carbonaceous Biochemical Oxygen Demand (CBOD).

### 2.0 Total Maximum Daily Loads (TMDLs) Regulation for the Murderkill River Watershed, Delaware

~~**Article 1.** The total nitrogen load from the four point source facilities in the watershed (City of Harrington, Kent County Facility, Canterbury Crossing Mobile Home Park, and Southwood Acres Mobile Home Park) shall be limited to 406.3 pounds per day. The load allocation for each facility includes: City of Harrington (25 pounds per day), Kent County Facility (375 pounds per day), Canterbury Crossing Mobile Home Park (4.3 pounds per day), and Southwood Acres Mobile Home Park (2.0 pounds per day).~~

~~**Article 2.** The total phosphorous load from the four point source facilities in the watershed shall be limited to 27.3 pounds per day. The load allocation for each facility includes: City of Harrington (2 pounds per day), Kent County Facility (25 pounds per day), Canterbury Crossing Mobile Home Park (0.2 pounds per day), and Southwood Acres Mobile Home Park (0.1 pounds per day).~~

~~**Article 3.** The CBOD5 (5-day Carbonaceous Biochemical Oxygen Demand) load from the four point source facilities in the watershed shall be limited to 672.1 pounds per day. The load allocation for each facility includes: City of Harrington (33 pounds per day), Kent County Facility (625 pounds per day), Canterbury Crossing Mobile Home Park (9.6 pounds per day), and Southwood Acres Mobile Home Park (4.5 pounds per day).~~

~~**Article 4.** The nonpoint source nitrogen load in the entire watershed shall be reduced by 30 percent (from the 1997 base line). This shall result in a yearly average total nitrogen load of 560 pounds per day.~~

~~**Article 5.** The nonpoint source phosphorus load in the entire watershed shall be reduced by 50 percent (from the 1997 base line). This shall result in a yearly average total phosphorous load of 96 pounds per day.~~

**Article 6.** Based upon hydrodynamic and water quality model runs and assuming implementation of reductions identified by Articles 1 through 5, DNREC has determined that, with an adequate margin of safety, water quality standards and nutrient targets will be met in the Murderkill River and its tributaries and ponds.

**Article 7.** Implementation of this TMDL Regulation shall be achieved through development and implementation of a Pollution Control Strategy. The Strategy will be developed by DNREC in concert with the Department's Whole Basin Management Program, Murderkill River Tributary Action Team, and other affected parties.

**Article 1.** The total nitrogen waste load from the Kent County Facility and Canterbury Crossing Mobile Home Park shall be limited to 755.3 pounds per day. The waste load allocation for the Kent County Facility will be 751 pounds per day and for Canterbury Crossing Mobile Home Park will be 4.3 pounds per day.

**Article 2.** The total phosphorus waste load from the Kent County Facility and Canterbury Crossing Mobile Home Park shall be limited to 62.7 pounds per day. The waste load allocation for the Kent County Facility will be 62.5 pounds per day and for Canterbury Crossing Mobile Home Park will be 0.2 pounds per day.

**Article 3.** The CBOD5 (5-day Carbonaceous Biochemical Oxygen Demand) waste load from the Kent County Facility and Canterbury Crossing Mobile Home Park shall be limited to 1010.6 pounds per day. The waste load allocation for Kent County Facility will be 1001 pounds per day and for Canterbury Crossing Mobile Home Park will be 9.6 pounds per day.

**Article 4.** Treated wastewater from the City of Harrington wastewater treatment facility shall be used for spray irrigation. However, during the winter season, as well as during wet weather periods, when spray irrigation of treated wastewater is not practical, the effluent may be discharged into Browns Branch. During periods of surface discharge, the maximum discharge flow rate shall not exceed 750,000 gallons per day and daily waste loads shall not exceed 140 pounds per day for total nitrogen, 0.75 pounds per day for total phosphorus, and 37.5 pounds per day for CBOD5. Furthermore, the total annual waste load discharged from the City of Harrington wastewater treatment facility to the surface waters of Browns Branch shall not exceed 9125 pounds per year for total nitrogen, 55 pounds per year for total phosphorus, and 3000 pounds per year for CBOD5.

**Article 5.** The nonpoint source nitrogen load in the entire watershed shall be reduced by 30 percent (from the 1997 base-line). This shall result in a yearly-average total nitrogen load of 560 pounds per day.

**Article 6.** The nonpoint source phosphorus load in the entire watershed shall be reduced by 50 percent (from the 1997 base-line). This shall result in a yearly-average total phosphorous load of 96 pounds per day.

**Article 7.** Based upon hydrodynamic and water quality model runs and assuming implementation of reductions identified by Articles 1 through 6, DNREC has determined that, with an adequate margin of safety, water quality standards and nutrient targets will be met in the Murderkill River and its tributaries and ponds.

**Article 8.** Implementation of this TMDL Regulation shall be achieved through development and implementation of a Pollution Control Strategy. The Strategy will be developed by DNREC in concert with the Murderkill River Tributary Action Team, other stakeholders, and the public.

**8 DE Reg. 1266 (3/1/05)**