DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF WATER RESOURCES

Statutory Authority: 7 Delaware Code, Chapter 60 (7 **Del.C**. Ch. 60)
7 **DE Admin. Code** 7416, 7420 and 7424

FINAL

Secretary's Order No. 2006-W-0054

Total Maximum Daily Load (TMDLs) for the Army Creek, Dragon Run Creek, and Red Lion Creek Watersheds

Date of Issuance: November 14, 2006
Effective Date of TMDL: December 11, 2006

On Tuesday, August 29, 2006 at 6:00 p.m., a public hearing was held in the DNREC Offices located at 391 Lukens Drive, New Castle, Delaware, to receive public comment on the Department's proposed regulation to amend the Total Maximum Daily Loads ("TMDLs") for the Army Creek, Dragon Run Creek, and Red Lion Creek watersheds, as defined by elevation maps.

Section 303(d) of the Clean Water Act requires States to identify water quality impaired waterways and to develop Total Maximum Daily Loads ("TMDLs") for the pollutants that impair those waterways. DNREC has identified that the water quality of Army Creek (segments DE020-001, DE020-002, DE020-003), Red Lion Creek (segments DE270-001-01 and DE270-001-02), and Dragon Run Creek (segments DE130-001 and DE130-002) was impaired because of elevated bacteria and nutrient levels and low dissolved oxygen concentrations. These segments were placed on the State's 1996, 1998, 2002, 2004, and draft 2006 303(d) lists and were targeted for development of TMDLs.

The Army Creek, Dragon Run Creek, and Red Lion Creek watersheds are situated in the upper portion of the Delaware Bay and Estuary Drainage Basin on the eastern edge of Delaware in New Castle County, north of the Chesapeake and Delaware Canal. The Army Creek watershed lies furthest to the north, with the Christina River watershed bounding the northern edge. The Red Lion Creek watershed lies to the south of the Army Creek Watershed and to the north of the Dragon Run Creek watershed. The Dragon Run Creek watershed lies furthest to the south with the C and D Canal watershed bounding the southern edge. Each stream flows to the east and discharges into the Delaware River. The three watersheds are similar in size.

There are several point source facilities within the Army Creek, Red Lion Creek, and Dragon Run Creek watersheds, however, all treated wastewater is discharged into the Delaware River and not into these three tributaries. Therefore, all pollutants are coming from nonpoint sources. Since New Castle County in its entirety has been issued a Municipal Separate Storm Sewer System (MS4) permit (NPDES Permit #DE 0051071), the nonpoint source TMDL loads will be assigned as Waste Load Allocation (WLA) for the above watersheds.

The development of the Army Creek, Dragon Run Creek, and Red Lion Creek nutrient TMDLs was based on the assessment of Army Creek, Dragon Run Creek, and Red Lion Creek water quality and water flow under two different environmental conditions: (1) annual average condition; and (2) summer critical condition. Draft proposed TMDLs for the Army Creek, Dragon Run Creek, and Red Lion Creek watersheds were reviewed during a public workshop held on May 16, 2006. All comments received at the workshop and during the May 1st through May 31st comment period were considered by the Department. The Department's technical report, "TMDL Analysis for the Watersheds of Army Creek, Red Lion Creek, and Dragon Run Creek, DE" as prepared by the Watershed Assessment Section, Division of Water Resources, August 2006, was updated to address comments regarding a more detailed discussion of sources of pollution; the process of selecting a Qual2K simulation date; the handling of stormwater outfall loads; and conservative assumptions supporting the implicit margin of safety. In addition, subsequent to the aforementioned workshop in May of 2006, further nutrient modeling analyses have been conducted in the Army Creek watershed to address the unnamed tributary to Army Creek, which was recently listed as impaired for bacteria, nutrients, and dissolved oxygen in the draft 2006 303(d) list. Also subsequent to the

workshop, a minor modification was made in the bacteria analyses, resulting in slight changes to the bacteria percent reductions for the Army Creek, Dragon Run Creek, and Red Lion Creek watersheds. These minor changes are all set forth in the Department's aforementioned technical report of August 2006. Proper notice of the hearing was provided as required by law.

Although there were comments submitted from the Mid-Atlantic Environmental Law Center subsequent to the public workshop held in May of 2006, no additional comments were received by the Department either at the public hearing of August 29, 2006, nor during the comment period phase which ended on September 15, 2006. Subsequent to the public hearing of August 29, 2006, the Hearing Officer prepared her Report dated November 13, 2006, and that Report, including its attachments, is expressly incorporated herein to this Order.

Based on the record, including the public hearing record reviewed in the November 13, 2006 Hearing Officer's Report, the proposed regulation is adequately supported and is not arbitrary or capricious. The Report reviews and summarizes the record developed throughout this regulatory process, and recommends approval of the proposed regulation as a final regulation without modification. I agree with the Report and adopt it as part of this Order along with its reasons.

The proposed regulation is based upon sound scientific evidence, is consistent with State and Federal law, and is a reasoned regulation that will result in improved water quality within the Army Creek, Dragon Run Creek, and Red Lion Creek watersheds. In conclusion, the following findings and conclusions are entered:

1. The Department, acting through this Order of the Secretary, adopts the proposed regulation as a final regulation, as set forth in the Attachment "A" to the Hearing Officer's Report, under 29 **Del.C.** §6010(a) and pursuant to the Federal Clean Water Act, 33 *U.S.C.* §1251 *et seq.* and the United States Environmental Protection Agency's regulations pursuant to the Clean Water Act;

2. The issuance of the proposed regulation as a final regulation will protect and improve the water quality of the Army Creek, Dragon Run Creek, and Red Lion Creek watersheds, as defined by elevation maps, and allow the Pollution Strategies to be developed for these watersheds;

3. The TMDLs that are approved by this Order were developed consistent with the applicable law and regulatory standards and are adequately supported by technical analysis;

4. The Department provided adequate public notice of the proceeding and the public hearing in a manner required by the law and regulations, held a public hearing in a manner required by the law and regulations, and considered all timely and relevant public comments in making its determination;

5. The Department's proposed regulation, as published in the August 1, 2006 *Delaware Register of Regulations* and set forth in Attachment "A" hereto, is adequately supported, not arbitrary or capricious, and is consistent with the applicable laws and regulations, and should be approved as a final regulation, to go into effect ten days after its publication in the next available issue of the *Delaware Register of Regulations*; and that

6. The Department shall submit the proposed regulation as a final regulation to the *Delaware Register of Regulatio*n for publication in its next available issue, and shall provide written notice to the persons affected by the Order.

John A. Hughes
Secretary

7416 Total Maximum Daily Loads (TMDLs) for the Army Creek Watershed, Delaware

1.0 Introduction and Background

Water quality monitoring performed by the Department of Natural Resources and Environmental Control (DNREC) has shown that the waters of Army Creek and several of its tributaries and ponds are impaired by high levels of bacteria and elevated levels of the nutrients nitrogen and phosphorous, and that the designated uses are not fully supported due to levels of these pollutants in these waterways.

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 or stressors causing the impairment. 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).

DNREC listed Army Creek on several of the State's 303(d) Lists and proposes the following Total

Maximum Daily Loads regulation for nitrogen, phosphorous, and *enterococcus* bacteria.

2.0 Total Maximum Daily Loads (TMDLs) Regulation for Army Creek

Article 1. The nonpoint source nitrogen load in the entire Army Creek watershed shall be reduced by 40 percent from the 2002-2005 baseline level. This shall result in a yearly-average total nitrogen load of 24.3 pounds per day.

Article 2. The nonpoint source phosphorous load in the entire Army Creek watershed shall be reduced by 40 percent from the 2002-2005 baseline level. This shall result in a yearly-average total phosphorous load of 2.04 pounds per day.

Article 3. The nonpoint source *enterococcus* bacteria load in the entire Army Creek watershed shall be reduced by 39 percent from the 1997-2005 baseline level.

Article 4. Based upon water quality model runs and assuming implementation of reductions identified by Article 1 through Article 3 above, DNREC has determined that, with an adequate margin of safety, water quality standards will be met in the Army Creek.

Article 5. Implementation of this TMDLs Regulation shall be achieved through the development and implementation of a Pollution Control Strategy. The Strategy will be developed by DNREC in concert with the Tributary Action Teams, other stakeholders, and the public.

7420 - Total Maximum Daily Loads (TMDLs) for the Dragon Run Creek Watershed, Delaware

1.0 Introduction and Background

Water quality monitoring performed by the Department of Natural Resources and Environmental Control (DNREC) has shown that the waters of Dragon Run Creek and several of its tributaries and ponds are impaired by high levels of bacteria and elevated levels of the nutrients nitrogen and phosphorous, and that the designated uses are not fully supported due to levels of these pollutants in these waterways.

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 or stressors causing the impairment. 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).

DNREC listed Dragon Run Creek on several of the State's 303(d) Lists and proposes the following Total Maximum Daily Loads regulation for nitrogen, phosphorous, and *enterococcus* bacteria.

2.0 Total Maximum Daily Loads (TMDLs) Regulation for Dragon Run Creek

Article 1. The nonpoint source nitrogen load in the entire Dragon Run Creek watershed shall be reduced by 40 percent from the 2002-2005 baseline level. This shall result in a yearly-average total nitrogen load of 79.7 pounds per day.

Article 2. The nonpoint source phosphorous load in the entire Dragon Run Creek watershed shall be reduced by 40 percent from the 2002-2005 baseline level. This shall result in a yearly-average total phosphorous load of 4.25 pounds per day.

Article 3. The overall *enterococcus* bacteria load in the entire Dragon Run Creek watershed shall be reduced by 15 percent from the 1997-2005 baseline level.

Article 4. Based upon water quality model runs and assuming implementation of reductions identified by Article 1 through Article 3 above, DNREC has determined that, with an adequate margin of safety, water quality standards will be met in the Dragon Run Creek.

Article 5. Implementation of this TMDLs Regulation shall be achieved through the development and implementation of a Pollution Control Strategy. The Strategy will be developed by DNREC in concert with the Tributary Action Teams, other stakeholders, and the public.

7424 Total Maximum Daily Loads (TMDLs) for the Red Lion Creek Watershed, Delaware

1.0 Introduction and Background

Water quality monitoring performed by the Department of Natural Resources and Environmental Control

(DNREC) has shown that the waters of Red Lion Creek and several of its tributaries and ponds are impaired by high levels of bacteria and elevated levels of the nutrients nitrogen and phosphorous, and that the designated uses are not fully supported due to levels of these pollutants in these waterways.

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 or stressors causing the impairment. 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).

DNREC listed Red Lion Creek on several of the State's 303(d) Lists and proposes the following Total Maximum Daily Loads regulation for nitrogen, phosphorous, and *enterococcus* bacteria.

2.0 Total Maximum Daily Loads (TMDLs) Regulation for Red Lion Creek

Article 1. The nonpoint source nitrogen load in the entire Red Lion Creek watershed shall be reduced by 40 percent from the 2002-2005 baseline level. This shall result in a yearly-average total nitrogen load of 121.3 pounds per day.

Article 2. The nonpoint source phosphorous load in the entire Red Lion Creek watershed shall be reduced by 40 percent from the 2002-2005 baseline level. This shall result in a yearly-average total phosphorous load of 3.7 pounds per day.

Article 3. The nonpoint source *enterococcus* bacteria load in the entire Red Lion Creek watershed shall be reduced by 40 percent from the 1997-2005 baseline level.

Article 4. Based upon water quality model runs and assuming implementation of reductions identified by Article 1 through Article 3 above, DNREC has determined that, with an adequate margin of safety, water quality standards will be met in the Red Lion Creek.

Article 5. Implementation of this TMDLs Regulation shall be achieved through the development and implementation of a Pollution Control Strategy. The Strategy will be developed by DNREC in concert with the Tributary Action Teams, other stakeholders, and the public.