

TMDL RESOURCE DIRECTORY

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INTRODUCTION

The Total Maximum Daily Load (TMDL) program, which is mandated by the Clean Water Act, is a watershed management process that integrates watershed planning with water quality assessment and protection. Water bodies in violation of state water quality standards are referred to as “impaired.” Pollutant-specific TMDL plans are required for impaired water bodies. Developing a TMDL plan involves a study that 1. identifies the sources of the pollutants causing water quality impairments, 2. quantifies the pollutant contribution from each source, or source category in the case of nonpoint source pollution (NPS), and 3. determines the pollutant reduction from each source required to meet applicable state water quality standards.

Across the nation, the EPA is under court ordered consent decrees to ensure that tens of thousands of TMDLs are developed in the next 10 to 15 years. Some 636 TMDLs must be developed by 2010 in Virginia alone. These TMDLs only address existing water quality impairments. However, as additional water quality monitoring data are collected, and additional ambient water quality standards are developed and promulgated, more TMDLs will be required. Public and private costs associated with TMDL development and implementation over the next 15 years are estimated to be \$1 billion for development of TMDL plans, \$255 million for additional monitoring to support TMDLs, and \$13.5 to \$64.5 billion for TMDL implementation, a total cost of approximately \$15 to \$66 billion nationally (USEPA, 2001). Both research and outreach efforts are needed to ensure these public and private funds are invested wisely and result in measurable water quality improvement.

Environmental Protection Agency Links

National TMDL Program

<http://www.epa.gov/owow/tmdl/>

Region 3 (Mid-Atlantic) TMDL Program

<http://www.epa.gov/reg3wapd/tmdl/>

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DELAWARE

Background

Delaware takes a whole basin management (WBM) approach to TMDL development (DNREC, 2003). Thus, the monitoring, assessment, and management of basins in the state are coordinated by considering the whole ecosystem. There is a great degree of coordination of efforts among state agencies. Delaware uses the Environmental Fluid Dynamic Code (EFDC) model, the HSPF model, and the most current version of the Water Quality Analysis Simulation Program (WASP) to develop TMDLs. Consultants have developed specific models for the state – for instance, the Inland Bays Model, which uses a water quality component originally developed for the Chesapeake Bay. State agency personnel develop most of Delaware’s TMDLs. As of the 1998 303(d) report, there were 758 impairments listed for 381 water bodies (USEPA, 2003a).

Like most states, Delaware does not have standards for nutrients and uses a non-model based approach to address such pollutants. Delaware calculates a target load for the TMDL based on literature values and best professional judgment. Therefore, TMDLs developed for nutrients in Delaware have a quantitative goal. Delaware uses an enterococcus standard for bacteria impairments, rather than an *E. coli* or fecal coliform standard. Delaware’s enterococcus standard is 100 counts per 100 mL for fresh waters and 10 counts per 100 mL for marine waters (DNREC, 1998).

State TMDL Program – EPA Link

http://www.epa.gov/reg3wapd/tmdl/de_tmdl/index.htm

State Agencies

Delaware Division of Water Resources

<http://www.dnrec.state.de.us/water2000/Sections/Watershed/TMDL/tmdlinfo.htm>

1998 Section 303(d) List Fact Sheet for Delaware

http://oaspub.epa.gov/waters/state_rept.control?p_cycle=1998&p_state=DE

Universities

University of Delaware

- <http://www.udel.edu>

- ◆ Delaware Water Resources Center (<http://ag.udel.edu/dwrc/>)

- ◆ Department of Food and Resource Economics
<http://ag.udel.edu/departments/frec/>

- FREC 444 -- Economics of Environmental Management

The course surveys criteria for evaluating environmental policies; tests several techniques for estimating economic values of environmental amenities; and analyzes market and government failures that yield sub-optimal policy outcomes. We then critique specific policies on air pollution, water quality, toxic wastes, solid waste management, land use and biodiversity. We conclude with a review of international economic and equity issues associated with ozone depletion and global warming, and summarize recent attempts to resolve these.



- ♦ Graduate College of Marine Studies
<http://www.ocean.udel.edu/>
 - The Role of Land Use and Land Cover in the Delivery of Nutrients to Delaware's Inland Bays: DWRC Progress Report
(<http://ag.udel.edu/dwrc/publications/Fellows00-03/Jennings2002.pdf>)
- ♦ Graduate School of Urban Affairs and Urban Policy
<http://www.udel.edu/suapp/>
 - UAPP611, Regional Watershed Management (Graduate Level)
Reviews the practical applications of watershed planning as a tool to manage land, water and ecosystem resources. Explores public policies and practices of watershed planning by examining case studies. Uses a multidisciplinary approach involving the fields of geography, environmental science, geology, public policy, land planning, geographic information systems (GIS) and engineering
- ♦ Christina River Basin Home Page
(<http://www.wr.udel.edu/publicservice/chbasin.html>)
- ♦ Christina River Basin TMDL Status Report
(<http://www.wr.udel.edu/publicservice/cbstatus.html>)
- ♦ Lower Christina TMDL Project (<http://www.udel.edu/FREC/spatlab/tmdl/>)
- ♦ Delaware's Water Quality Problems: Causes and Solutions
(<http://ag.udel.edu/dwrc/newsletters/Donnelly2002p1-3.pdf>)
- ♦ Institute for Public Administration, The Town of Felton Comprehensive Plan
(http://www.ipa.udel.edu/localgovt/municipalities/felton/felton-comp-plan_draft-text.pdf) See Page 31
- ♦ Water Resources Center Annual Technical Report (1999)
(<http://ag.udel.edu/dwrc/reports/dwrcfy99.html>)



DISTRICT OF COLUMBIA

State TMDL Program – EPA Link

http://oaspub.epa.gov/waters/state_rept.control?p_state=DC

Activists Groups

DC Watch

<http://www.dccwatch.com/issues/environ.htm>

Universities

University of The District of Columbia

- <http://www.udel.edu>
 - ◆ DC Water Resources Research Center
(<http://www.universityofdc.org/master.php?sid=18>)

Other Publications and Links

- ◆ District of Columbia TSS TMDL & Clarity
(<http://www.chesapeakebay.net/pubs/subcommittee/wqsc/doc-DC-TMDL-10-30-2001.pdf>)
- ◆ Total Maximum Daily Loads, Kingman Lake
(http://www.epa.gov/reg3wapd/tmdl/pdf/anacostia_pdf_040403/Kingman_fecal_coli_form_bacteria.pdf)
- ◆ District of Columbia Summary of Impairments and State TMDL Program Evaluation
(http://www.nwf.org/watersheds/paralysis/state_rank/district_of_columbia.pdf)
- ◆ Construction Industry Compliance Assistance
(<http://www.cicacenter.org/tmdl.cfm?st=DC>)
- ◆ District of Columbia TMDL for Oil and Grease in Anacostic River
(http://www.epa.gov/reg3wapd/tmdl/pdf/anacostia_pdf_040403/Anacoatia_oil_grease.pdf)



MARYLAND

Background

Maryland TMDLs are developed by state personnel and use WASP5.1 for nutrient and biological oxygen demand (BOD) modeling (MDE, 2002). It uses the Vollenweider Relationship for phosphorus modeling in lakes (Vollenweider, 1976). Most of the TMDLs developed in Maryland are for phosphorus impairments. To address these impairments, the TMDLs are designed for chlorophyll concentration in the water, assumed to be representative of algal blooms. Although there is no standard in Maryland for chlorophyll *a* concentration, a target value of 50 µg/L is used based on recommendation from the literature and from EPA (Thomann and Mueller, 1987; USEPA, 1997). This target value allows TMDLs to be developed with a quantitative goal.

State TMDL Program – EPA Link

http://oaspub.epa.gov/waters/state_rept.control?p_state=MD

State Agencies

Maryland Department of the Environment

<http://www.mde.state.md.us/Programs/WaterPrograms/TMDL/index.asp>

Universities

University of Maryland

- <http://www.umd.edu/>

- ♦ Maryland Water Resources Center (<http://www.waterresources.umd.edu/>)

- ♦ School of Public Affairs

- <http://www.puaf.umd.edu/>

- PUA 740 Public Policy and the Environment

Themes and issues that will run throughout the course will include:

Have environmental laws worked effectively to improve the quality of the environment?

How can society go about establishing environmental policies when there are large scientific uncertainties?

How useful are concepts and methods such as risk analysis, benefit-cost analysis, cost effectiveness, and others in addressing environmental policy problems?

To what degree is the making of environmental policy an exercise in deciding social values, perhaps even dependent on ethical beliefs of a cultural or quasi-religious character?

- ♦ College of Agriculture and Natural Resources

- <http://www.agnr.umd.edu/>

- Water Pollution from Your Livestock: How Do You Measure Up?

- (<http://www.agnr.umd.edu/MCE/Publications/Publication.cfm?ID=501>)



- ◆ Taking on Toxins in Baltimore Harbor
(<http://www.mdsg.umd.edu/MarineNotes/Mar-Apr01/>)
- ◆ Overview of Maryland's TMDL Program
(<http://www.puaf.umd.edu/faculty/papers/nelson/740%20--%20Perez%20-%20TMDL%20Research%20Paper.pdf>)



PENNSYLVANIA

Background

Pennsylvania uses a reference watershed approach to model all non-point source pollutants in river watersheds (PADEP, 2002). These qualitative TMDLs utilize the ArcView-Generalized Watershed Loading Function (AV-GWLF) to model pollutant loads in streams. The target load for nutrients in lakes is set to the chlorophyll concentrations typical for a mesotrophic lake. The BATHTUB model is used to simulate pollutant concentrations in lakes (Walker 1985; 1986). Most of the TMDLs in Pennsylvania are done in-house, although a few have been contracted out. Pennsylvania has a total of 7,368 impairments listed on 4,298 waters in its 2002-303(d) report (USEPA, 2003b). The Commonwealth of Pennsylvania, in anticipation of widespread TMDL development, has performed water quality monitoring on smaller streams not included in the 303(d) report. These streams comprise a 303(d) “sub-list.” As an added convenience to the stakeholders, each TMDL in Pennsylvania has an accompanying TMDL fact sheet that contains generic information on the TMDL program and contact information for relevant agencies, as well as a summary of the TMDL for the specific watershed.

The fecal coliform standards for Pennsylvania are split into two classes referred to as designated uses for potable water supply and water contact sports. During swimming season (May 1 through September 30) the maximum fecal coliform shall not exceed the geometric mean of 200 fecal coliform per 100ml, based on a minimum of five consecutive samples taken during a 30-day period. For the remainder of the year, the maximum fecal coliform level shall not exceed the geometric mean of 2,000 fecal coliform per 100ml, based on a minimum of five consecutive samples collected on different days during a 30-day period.

State TMDL Program – EPA Link

http://www.epa.gov/reg3wapd/tmdl/pa_tmdl/index.htm

State Agencies

Pennsylvania Department of Environmental Protection

<http://www.dep.state.pa.us/dep/deputate/minres/districts/watershedii/tmdl.htm>

Universities

Penn State

- <http://www.psu.edu>

- ♦ Pennsylvania’s Water Resource Research Center
(http://www.pawatercenter.psu.edu/about_us.htm)
- ♦ Penn State Institutes of the Environment (<http://www.environment.psu.edu/>)
 - Sampling Strategies for TMDL of AMD-Affected Streams
(http://www.environment.psu.edu/research/project_details/88e5/tmdl_sampling_amdstreams.pdf)
- ♦ College of Agricultural Sciences



<http://www.cas.psu.edu/>

- Recommendations to the Rendell Administration on Environmental and Natural Resources Priorities
(<http://goddard.cas.psu.edu/Environmental%20Priorities.pdf>)
- Farm Economics
(<http://extension.aers.psu.edu/FarmEconomics/FarmEcon2613.pdf>)
- Nutrient Management Program
(http://www.cas.psu.edu/docs/casdept/agronomy/cbb10/main_related_programs.htm)
- Department of Agricultural Economics and Rural Sociology
<http://www.aers.psu.edu/>
 - Nutrient and Water Policy Update
(<http://agenvpolicy.aers.psu.edu/TMDLs/menu.htm>)
- ♦ Department of Statistics
<http://www.stat.psu.edu/>
 - Development of Watershed Classification Systems for Diagnosis of Biological Impairment in Watersheds: Classifying and Prioritizing Watersheds for Protection and Restoration
(<http://www.stat.psu.edu/~gpp/PDFfiles/Prospectus-10.pdf>)
 - Center for Statistical Ecological and Environmental Statistics
(<http://www.stat.psu.edu/~gpp/PDFfiles/prospectus-7%20Watersheds.pdf>)
 - Classification and Prioritization of Watersheds for Monitoring, Protection, and Restoration
(<http://www.stat.psu.edu/~gpp/PDFfiles/prospectus-7%20Watersheds.pdf>)
- ♦ Software
 - AVGWLF (<http://www.avgwlf.psu.edu/overview.htm>)
 - A Comprehensive GIS-Based Modeling Approach for Predicting Nutrient Loads in Watersheds
(<http://www.avgwlf.psu.edu/AvGWLFOverview.pdf>)
- ♦ Pennsylvania TMDL Overview
(<http://www.orser.psu.edu/gissupport/tmdl-overview.htm>)

Lehigh University

- <http://www3.lehigh.edu/default.asp>

- ♦ Department of Civil and Environmental Engineering



<http://www.lehigh.edu/~incee/incee.html>

- CE 327. Surface Water Quality Modeling

Description: Fundamentals of modeling water quality parameters in receiving water bodies, including rivers, lakes, and estuaries. Modeling of dissolved oxygen, nutrients, temperature, and toxic substances. Emphasis on water quality control decisions as well as mechanics and model building.



WEST VIRGINIA

Background

In West Virginia, the vast majority of waters are on the 303(d) list due to contamination from acid mine drainage and metals (WVDEP, 2003). The state hired a group of engineers and utilities to develop a watershed model for use in acid mine drainage modeling using the Watershed Analysis Risk Management Framework (WARMF). The Mining Data Analysis System (MDAS) is used for modeling of metals transport, and MINETAQ2 is used to model pH. GWLF is used in modeling other contaminants. Almost all of the TMDLs that have been developed for West Virginia are for metals or pH impairments. The established numeric standards for these pollutants allow for the development of a quantitative goal for the TMDL.

EPA has been developing the TMDLs for West Virginia since 1997 because the state did not have the personnel or funds to develop them; however, the state is currently poised to take over the process from EPA, largely due to the efforts from the stakeholders in the state. EPA has contracted the TMDLs for West Virginia to private consultants. The fecal coliform standards for West Virginia are based on two main designations. The public water supply/primary contact land use must maintain a geometric mean less than or equal to 200 fecal coliform per 100ml, based on a minimum of five samples per month. From November through April the geometric mean must be less than or equal to 2000 fecal coliform per 100ml, based on a minimum of five samples per month for the Ohio River. Basically the allowable number of fecal coliform is increased by a factor of 10 during the winter (non-recreational season).

State TMDL Program – EPA Link

http://oaspub.epa.gov/waters/state_rept.control?p_state=WV

State Agencies

Division of Water and Waste Management

<http://www.dep.state.wv.us/Item.cfm?ssid=11&SSIID=188>

Universities

West Virginia University

- <http://www.wvu.edu/>
 - ◆ Cooperative Extension
 - Changes in Assigned Effluent Limits Under TMDL and Anti-degradation (<http://www.wvu.edu/~agexten/landrec/TMDL2.htm>)
 - Watershed Assessments and TMDLs (http://www.wvu.edu/~agexten/landrec/pcampbell_files/frame.htm)
 - Total Maximum Daily Loads and Anti-degradation (<http://www.wvu.edu/~agexten/landrec/TMDL.htm>)
 - Overview of TMDL and Anti-degradation Issues (<http://www.wvu.edu/~agexten/landrec/2003TFS/Brannon.pdf>)



VIRGINIA

Background

The Commonwealth of Virginia (VADEQ, 2003) has completed 47 TMDLs for 42 watersheds since 1996. Of the TMDLs developed in the commonwealth 35 were due to bacteria impairments, 10 for violations of the General Standard for Aquatic Life Use (hereafter referred to as a benthic impairment), one for nitrate impairment, and one for PCB impairment. Only three implementation plans have been completed. Several other TMDLs are being developed or are awaiting approval. All of these TMDLs have been developed for rivers and streams; none have been developed for lakes or estuaries, although there are lakes and estuaries on Virginia's 303(d) list of impaired waters. Virginia is rather unique in EPA Region 3 in that it contracts out its TMDL development to universities and consultants. In many other states, government agency personnel develop the TMDLs.

Virginia has a numeric standard for bacteria in streams. The commonwealth has recently switched from a fecal coliform standard to an *Escherichia coli* (*E. coli*) standard for bacteria in streams. TMDLs developed for waters with bacteria impairments must also meet the numeric water quality standard for *E. coli* bacteria. The Hydrologic Simulation Program – Fortran (HSPF) is the model of choice in Virginia for modeling bacterial pollution. This model is also used to predict nitrate concentration in streams, for which there is also a numeric drinking water quality standard in Virginia.

Virginia currently has no numeric standard for nutrient or sediment concentrations in a stream. Some streams listed for benthic impairments are stressed by either nutrients or sediment and require a qualitative approach. For these streams, a TMDL must meet the qualitative General Standard. This is accomplished by using a reference watershed approach to determine the level to which the pollutant must be reduced. The reference watershed approach determines the pollutant load in an unimpaired watershed (a 'reference watershed') with similar geological, climatic, and land use characteristics to the impaired watershed. The pollutant load from the reference watershed is adjusted to account for differences in area between the two watersheds. This adjusted load is then used as the target load for the TMDL. The Generalized Watershed Loading Function (GWLF) or AV-GWLF computer model is suitable for this comparison modeling and is used in Virginia for this purpose.

Some impaired waters could be addressed using a narrative TMDL. In these cases, no modeling or additional sampling may be required. As the name implies, narrative TMDLs address the impairment through a narrative explaining the source of the impairment and necessary remediation using existing data. An example of a narrative TMDL may include a TMDL developed for an impairment whose source is accepted to be a single permitted point source. To address the impairment, permit conditions may be adjusted and/or upgrades to the implicated facility planned.

The TMDL development group at Virginia Tech is a part of the Department of Biological Systems Engineering (BSE). Since 1996, the group has developed over 25 TMDLs through contracts with the Virginia Department of Environmental Quality (VADEQ) and the Department of Conservation and Recreation (VADCR). Some of these TMDLs were completed in cooperation with Virginia Tech's Department of Biology. Several fecal coliform TMDLs developed by the BSE TMDL development group have been approved by EPA. The group developed the first TMDL in Virginia that meets the new *E. coli* standard for bacteria impairments (as opposed to the fecal coliform standard or the transitional fecal coliform and *E. coli* standard). It is currently under review



by VADEQ and EPA. The BSE TMDL development group has recently developed TMDLs for waters violating the General Standard for Aquatic Life Use (benthic impairment). Of the four recently completed TMDLs for benthic impairments: one addresses non-point sources of pollution (mainly agriculture) and the other a single point source polluter.

State TMDL Program – EPA Link

http://oaspub.epa.gov/waters/state_rept.control?p_state=VA

State Agencies

Virginia Department of Environmental Quality

<http://www.deq.state.va.us/tmdl/>

Universities

Virginia Tech

▪ <http://www.vt.edu/>

- ♦ Virginia Water Resources Research Center (<http://www.vwrrc.vt.edu/>)
 - View of the Virginia Impaired – Waters List (<http://www.vwrrc.vt.edu/pdf/vwc1299.pdf>)
- ♦ Cooperative Extension (<http://www.ext.vt.edu/index.html>)
 - Identifying Impaired Waters (http://www.ext.vt.edu/~itdev/training/tmdl/tmdl_handout.pdf)
- ♦ Department of Biological Systems Engineering (<http://www.bse.vt.edu/>)
 - BSE 5984 TMDL Development and Implementation

Course Overview and Purpose: The Total Maximum Daily Load (TMDL) program is intended to bring all waters in the US into compliance with applicable state water quality standards. The Virginia legislature estimates program costs in Virginia alone of \$500 million over the next decade. TMDL development requires engineering knowledge in the areas of nonpoint and point source pollution control, water quality modeling, geographic information systems, and applied economics, as well as in the fundamental processes used in TMDL development. The purpose of this course is to introduce graduate level students to the history and policy issues associated with the TMDL program and to the basic techniques and procedures used in TMDL development and implementation.

 - ABC's of TMDL Workshop (<http://www.bse.vt.edu/swcs/ABCsOfTMDLs.html>)
 - TMDLs for Benthic Impairments (<http://www.ext.vt.edu/pubs/bse/442-556/442-556.pdf>)
 - TMDLs Terms and Definitions (<http://www.ext.vt.edu/pubs/bse/442-550/442-550.pdf>)
 - Annual Meeting Focuses on TMDLs (<http://www.bse.vt.edu/swcs/NewsletterFall1999.pdf>)



- Estimating Bacterial Loadings to Surface Waters From Agricultural Watersheds (<http://scholar.lib.vt.edu/theses/available/etd-12242002-143119/unrestricted/FinalThesis.pdf>)
- ♦ Department of Crop and Soil Environmental Sciences
 - <http://sudan.cses.vt.edu/>
 - Biological Source Tracking (http://soils1.cses.vt.edu/ch/biol_4684/BST/BST.html)
 - Biological Source Tracking Methodology (http://soils1.cses.vt.edu/ch/biol_4684/bst/update.htm)
 - Environmental Detection News (http://soils1.cses.vt.edu/ch/biol_4684/bst/edition1.pdf)
- ♦ Department of Dairy Science
 - <http://www.dasc.vt.edu/>
 - Environmental Issues Affecting Calf and Heifer Growers: What do you need to know? (<http://www.dasc.vt.edu/knowlton/FinalPDHGA2002Paper.pdf>)
- ♦ Department of Fisheries and Wildlife Sciences
 - <http://www.cnr.vt.edu/fisheries/wwwmain.html>
 - Guidelines for Conducting TMDL Consultations on Selenium (http://www.trout.forprod.vt.edu/fishpubs/lemly2000_02.pdf)

Other Publications and Links

- ♦ A Comparative Study of the Total Maximum Daily Load (TMDL) Program and Process in Virginia and Kansas: Possible Outcomes and Effects upon Stakeholders (<http://scholar.lib.vt.edu/theses/available/etd-05192003-154904/unrestricted/TMDLmajorpaperfinal.pdf>)

University of Virginia

- <http://www.virginia.edu/>
 - ♦ Professors Involved with TMDLs (<http://www.seas.virginia.edu/researchdirectory/page.php?emailID=tbc4e>)
 - ♦ Total Maximum Daily Loads: Balancing Water Quality and Public Safety (<http://www.virginia.edu/ien/tmdl.pdf>)
 - ♦ Total Maximum Daily Load of Nitrate for Muddy Creek/Dry River, Virginia (<http://www.people.virginia.edu/~enqstorm/pdf/muddycreek.pdf>)
 - ♦ A Stream Corridor Protection Strategy for Local Governments (http://www.virginia.edu/ien/stream%20guide_final.pdf%202)



MID-ATLANTIC CSREES REGIONAL WATER QUALITY PROGRAM

<http://www.agnr.umd.edu/users/waterqual/>

REGIONAL TMDL CONCERNS AND LINKS

Links

Chesapeake Bay Program

<http://www.chesapeakebay.net/>

Chesapeake 2000 an Innovative Approach

<HTTP://WWW.CHEESAPEAKEBAY.NET/WQCCHESAPEAKE2000.HTM>

The Comprehensive Approach to Restoring Bay Water Quality

<http://www.chesapeakebay.net/wqcriteriatech.htm>

Schedule for Restoring Chesapeake Bay Water Quality

<http://www.chesapeakebay.net/wqcscheduletech.htm>

Tributary Strategies: Local Watershed Implementation

<http://www.chesapeakebay.net/wqctributarytech.htm>

Bay Criteria: Defining Restored Bay Water Quality

<http://www.chesapeakebay.net/wqcadoptingtech.htm>

Chesapeake Bay Water Quality

<http://www.chesapeakebay.net/wquality.htm>

Publications

Chesapeake Bay Water Quality Protection and Restoration: An Innovative Approach

http://www.chesapeakebay.net/pubs/waterqualitycriteria/doc_wq_backgrounders_081601.pdf

Processes for Intergrating the Cooperative and Statutory Programs of The Chesapeake Bay and its Tributaries

<http://www.chesapeakebay.net/pubs/subcommittee/wqsc/wqpln924.pdf>

Setting Nutrient and Sediment Reduction Goals for the Chesapeake Bay Watershed

<http://www.chesapeakebay.net/pubs/waterqualitycriteria/doc-wqbackgrounderpack.pdf>

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<http://www.dnrec.state.de.us/dnrec2000/Library/Water/sec3ch3.pdf> (25 March 2003).
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<http://www.mde.state.md.us/Programs/WaterPrograms/TMDL/index.asp> (25 March 2003).
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http://www.dep.state.pa.us/watermanagement_apps/tmdl/ (25 March 2003).
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<http://www.dep.state.wv.us/item.cfm?ssid=11&sslid=188> (25 March 2003).
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