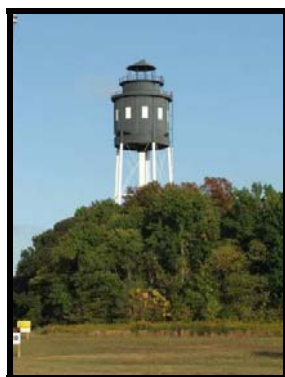


Virginia Water Central

Virginia Water Resources Research Center Blacksburg, Virginia April 2008 (No. 44)

Water for the World

In 1992, the United Nations began designating March 22 as “World Water Day” to call attention to the lack of clean, safe water by an estimated one billion people worldwide. For more information about World Water Day, visit www.worldwaterday.net, and please see this issue’s Director’s Column on page 3. *Water Central* thanks all Virginians who care about the worlds’ water needs, and we offer the photos on pages 1 and 2 as a small sample of Virginia’s water treasures and responsibilities.



Water tower at Cape Charles (Northampton County), October 2007.



Amphibian researcher holding a Spring Peeper near Pandapas Pond (Montgomery County), March 2007.



Chesapeake Bay looking north from Cape Charles, October 2007.



Waterfront of Wachapreague (Accomack County), October 2007.



Dismal Swamp Canal, April 2005.

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Intertidal marsh at Eyre Hall near Cheriton (Northampton County), October 2007.



Potomac River at Mt. Vernon, January 2005.



Old Spring House, Winchester, March 2008.



Mattaponi River, King and Queen County, summer 2000. Photo courtesy of Emily Phillips and Russell Prange.



Maury River near Buena Vista, November 2006.



New River in Grayson County, July 2007. Photo by Courtney Kimmel.



James River near Interstate-295 bridge, June 2007.



Jordan Creek in Henry County, July 2007. Photo courtesy of Doreen Davis and Philip Hash.



Smith Mountain Lake (Bedford/Franklin counties), July 2000.



North Fork Shenandoah River/Meems covered bridge, Shenandoah County, June 2007.



Thornton River, Shenandoah National Park (Rappahannock County), June 2006.



Mountain Lake (at very low level) in Giles County, November 2007. Photo by Monica Licher.

S² on H₂O



By Stephen Schoenholtz, Director
Virginia Water Resources Research Center

On the heels of the 1992 Earth Summit in Rio de Janeiro, Brazil, the United Nations

(UN) General Assembly designated March 22 as “World Water Day” to draw international attention to the critical lack of clean, safe drinking water worldwide. World Water Day now brings to millions of people awareness of the importance of a valuable resource that is a linchpin to global sustainability. In 2007, 69 cities across the United States passed resolutions acknowledging March 22 as World Water Day.

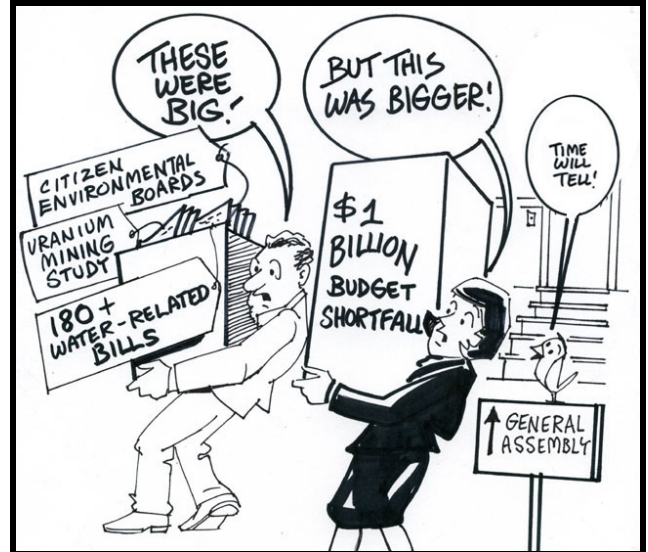
More than one billion people (about 20 percent of the world’s population) lack clean, safe drinking water, and more than 2.6 billion lack adequate sanitation services. A third of the world’s population lives in “water stressed” countries, and that number is expected to increase dramatically over the next two decades. Among its “Millennium Development Goals,” the UN has prioritized water access because inadequate, safe drinking water contributes to widespread suffering, including increased poverty, high child-mortality rates, depressed education levels, and political instability. The specific drinking water goal is to reduce by half the proportion of people without sustainable access to safe drinking water by the target date of 2015.

The importance of plentiful and safe drinking water is again reaching Virginia doorsteps, most recently because of the ongoing drought in the southeastern United States in the face of expanding demands, along with recent news about trace amounts of pharmaceuticals in many municipal drinking water supplies. These concerns increase the relevance of World Water Day to our own lives. My hope is that such concerns inspire Virginians to promote planning and management of our water resources and water infrastructure to assure long-term sustainability at the local as well as the global scale.

March 22 was a day set aside to focus public attention on critical water issues. Let it also be a catalyst for working to solve these issues. Solutions are possible, and urgently required.

FEATURE ARTICLE

Water in the 2008 Virginia General Assembly



The 2008 Virginia General Assembly session opened January 9 and adjourned March 13. Work on the biennial state budget required a few additional days beyond the scheduled adjournment date of March 8. The legislature considered 3322 bills and resolutions, passing 1654, rejecting 1351, and carrying 317 over to 2009. The reconvened session, when legislators consider the governor’s recommendations or vetoes, occurs April 23.

In this article, *Virginia Water Central* lists over 180 measures in the 2008 Assembly that dealt with water resources or with land activities with a relatively direct impact on water. The list also includes some bills that may affect water resources *indirectly*, such as certain bills about air pollution, electricity generation, or transportation. A table on page 13 lists several topics and bills from the 2008 Assembly that received attention in various news media

The bills listed below were located by searching the Legislative Information System (LIS) Web site (<http://leg1.state.va.us>) under various subject categories related to natural resources. Descriptions of the bills in this inventory were taken from bill summaries at the LIS site; the Water Center has edited the descriptions in some cases for clarity, emphasis, or space. The bills are grouped in the LIS categories in which they were found (with a few exceptions, such as bills found under “Study Commissions”).

For bills that LIS listed in more than one category, *Water Central* has listed them below in one relevant category. Within each category, bills are listed in order of their **bill number**, using the following abbreviations: **HB** = bill started in House of Delegates; **HJ** = joint resolution started in the House; **HR** = House resolution; **SB** = bill started in the Senate; and **SJ** = joint resolution started in the Senate.

Water Central does not claim that our list includes *all* bills that potentially could affect Virginia's water resources. This article notes companion and related bills where possible, but *Water Central* does not guarantee that all such connections are identified in this list.

For more information about Virginia legislation (including summaries of all bills in the current and past sessions) visit the LIS Web site at <http://leg1.state.va.us>. You may also get information on bills by phoning toll-free (877) 391-FACT (House of Delegates) or (888) 892-6948 (Senate). The General Assembly's Web site is <http://legis.state.va.us>.

Voicing Your Opinion

General Assembly members' e-mail addresses and phone numbers are available online at <http://dela.state.va.us/dela/MemBios.nsf/MWebsite?OpenView> (House of Delegates) or [http://sov.state.va.us/SenatorDB.nsf/\\$\\$Viewtemplate+for+WMembershipHome?OpenForm](http://sov.state.va.us/SenatorDB.nsf/$$Viewtemplate+for+WMembershipHome?OpenForm) (Senate) (as of 3/28/08). Or, if you know the number of your legislative districts, you can use the following code to identify your representatives' Capitol phone numbers: for delegates, (804) 698-10 + district number (for example, 698-1003 for the District 3 delegate); for senators, (804) 698-75 + district number (for example, 698-7510 for the District 10 senator). During General Assembly sessions, the Constituent Viewpoint phone line operates from 8:30 a.m.-5 p.m., M-F, toll-free at (800) 889-0229 (outside Richmond) or 698-1990 (Richmond area).

Water-related Bill Inventory and Bill Status as of April 15, 2008

If you are reading online, click on blue-colored bill numbers to access the bill at the Legislative Information System.

Abbreviations for State Agencies

DCR = Virginia Department of Conservation and Recreation; DEQ = Virginia Department of Environmental Quality; DGIF = Virginia Department of Game and Inland Fisheries; JLARC = Joint Legislative Audit and Review Commission; VMCR = Virginia Marine Resources Commission; VRA = Virginia Resources Authority

BUDGET

HB 29 Budget Bill Amending appropriations of public revenues for the two years ending, respectively, on the thirtieth day of June, 2007, and the thirtieth day of June, 2008. **Passed.**

HB 30 Budget Bill Appropriation of revenues for the two years ending respectively on the thirtieth day of June, 2009, and the thirtieth day of June, 2010. **Passed.**

CONSERVATION

HB 18 Consolidation of various citizen boards and changed authority; *amends* related 2007 legislation.

Failed in committee: House Agriculture, Chesapeake, and Natural Resources). See related HB 19, HB 650, HB 1332, and SB 423.

HB 19 Consolidation of various citizen boards and changed authority; *repeals* related 2007 legislation.

Failed in committee: House Agriculture, Chesapeake, and Natural Resources. See related HB 650, HB 1332, and SB 423.

HB 49 Utility easements; conveyance subject to being voided if not used within 20 years. **Failed in committee:** House Commerce and Labor.

HB 119 Soil and water conservation districts; Attorney General to represent in any suits or actions. **Passed and approved by governor.**

HB 124 Machinery and tool taxation; exempts certified pollution-control equipment and facilities placed in service on or after January 1, 2010. **Carried over to 2009.**

HB 158 Littering; penalties, including license suspension, for illegal dumping or disposal of unsightly matter from motor vehicle. **Failed in committee:** House Courts of Justice.

- HB 343** Cathode ray tubes; local disposal bans allowed for any (not just privately owned) waste-to-energy or solid waste facility in a locality. **Passed and approved by governor.**
- HB 344** Computer and Television Recovery and Recycling Act; adoption and implementation of recovery plan as a responsibility of the manufacturer. **Passed and approved by governor.** See related HB 1533.
- HB 360** Nonpoint source pollution reduction; authorizes the Governor and General Assembly to provide additional funding for nonpoint source pollution reduction beyond the amount deposited in the Water Quality Improvement Fund from budget surpluses. **Passed and approved by governor.** Companion bill is SB 513. See also related SB 470.
- HB 378** Golden Age Card Program; Department of Conservation and Recreation (DCR) to establish (the program would give state park camping discounts to citizens over 60). **Carried over to 2009.**
- HB 392** Stormwater ordinances (to enforce permits); authorizes localities classified as an MS4 (municipal separate storm sewer system) to enact. **Passed and approved by governor.**
- HB 514** Fossil fuel combustion products permit; establishing public notice requirements for applicant seeking to use such products as structural fill. **Failed in committee:** House Agriculture, Chesapeake, and Natural Resources Committee. See related SB 717.
- HB 650** Citizen environmental boards; permitting authority and membership. **Failed in committee:** House Agriculture, Chesapeake, and Natural Resources. See related HB 18, HB 19, HB 1332, and SB 423.
- HB 723** Virginia Resources Authority (VRA); authorized to finance park and recreation projects. **Passed and approved by governor.** Companion bill is SB 473.
- HB 727** Natural resources funding; allocates annually percentage of revenue generated by sales and use tax. **Failed in committee:** House Appropriations.
- HB 962** Residential Property Disclosure Act; disclosure of stormwater detention facilities. **Failed in committee:** House General Laws. Companion bill is SB 454.
- HB 976** Single lot development; developers to provide stormwater management. **Failed in committee:** House Counties, Cities and Towns. Companion bill is SB 457.
- HB 1115** Forest protection; increases annual amount a locality pays to State Forester. **Passed and approved by governor.**
- HB 1116** Environmental impact reports; required for any major state construction project over \$500,000. **Passed and approved by governor.**
- HB 1214** Trees, state-owned; increases minimum threshold for sales thereof from state forests. **Passed and approved by governor.**
- HB 1331** Department of Agriculture and Consumer Services; revising and recodifying pertinent laws. **Passed.**
- HB 1332** Citizen environmental boards; authority to issue and enforce permits. **Water Center note:** This is a much-publicized measure that originally would have transferred permitting authority from the citizen boards—Air Pollution Board, State Water Control Board, and Waste Management Board—to the director of the Department of Environmental Quality (DEQ). It was amended to maintain permitting authority by the boards but to add certain other requirements on the boards' procedures and membership (numbers and qualifications) and to the qualifications required for the DEQ director. **Passed and approved by governor.** Companion Senate bill is SB 423. Also see related HB 650.
- HB 1335** Virginia Natural Resources Commitment Fund established; any funds that may be appropriated or generated from other sources are to be used for the DCR's agricultural best management practices (BMPs) cost-share programs. **Passed and approved by governor.** Companion bill is SB 511.
- HB 1405** Residential Property Disclosure Act; disclosure of existence of any above-ground or underground storage tanks on the property prior to settlement. **Failed in committee:** House General Laws.
- HB 1408** Betterment loans; Director of DEQ to determine procedures for qualifying the owners of failing septic tanks, underground storage tanks, and contaminated dry cleaning stores. **Failed in Committee:** House Agriculture, Chesapeake, and Natural Resources.
- HB 1533** Television Waste Recycling Act; established. **Carried over to 2009.** See related HB 344.
- HB 1549** Glass containers; on-premises licensees of Virginia Alcoholic Beverage Control Board required to recycle. **Failed in committee:** House General Laws.
- HB 1567** Nutrient management training; expands an existing training program to include a voluntary program for commercial providers of lawn care or landscaping services to reduce nonpoint source pollution. **Carried over to 2009.**
- HJ 100** Hospitality-related services and functions at state parks; DCR to study privatization. **Failed in committee:** House Rules.

- HJ 169** Plastic bags; DEQ to study policies to mitigate negative effects of improper disposal. **Failed in committee:** House Rules. Companion bill is SJ 82.
- HJ 171** Endocrine disrupting compounds (EDC); DEQ to study effects on environment and other issues related to EDC use and disposal. **Failed in committee:** House Rules.
- SB 43** Environmental impact reports; changes dollar threshold—from \$100,000 to \$1 million—for requiring a state or local authority to submit impact reports for state projects. **Passed and approved by governor.**
- SB 166** Trees; allows certain localities to lower required minimum replacement period to 15 years (from current 20) during development process. **Carried over to 2009.** See related HB 1437 and SB 170.
- SB 254** Staunton River State Park; authorizes DCR to grant a 20-foot wide easement across a portion of the park. **Passed and approved by governor.**
- SB 303** Lake Anna State Park; authorizes DCR to grant a 30-foot wide easement across a portion of the park. **Passed and approved by governor.**
- SB 308** State Forester; authorizes right of entry to inspect any forest lands or logging operations to carry out state forestry laws. **Passed Senate; House carried over to 2009.**
- SB 423** Citizen environmental boards; authority to issue and enforce permits, etc. related to air and water pollution. See Companion House bill 1332 (above) for description. **Passed and approved by governor.** Also see related HB 18, HB 19, and HB 650.
- SB 454** Residential Property Disclosure Act; requires owner to disclose any stormwater detention facilities on a property prior to settlement. **Carried over to 2009.** Companion bill is SB 962.
- SB 457** Single lot development; developers to provide stormwater management when land-disturbing activities occur on more than 15 percent of any single lot. **Failed—stricken at request of patron.** Companion bill is HB 876.
- SB 470** Natural resources funding (for matching grants to local purchase of development rights programs, the Virginia Land Conservation Fund, and the Agricultural Best Management Practices Cost-Share Program); provides annual funding of 20 percent of remaining revenues of state recordation taxes that are not currently allocated, and of unallocated land preservation tax credits in each calendar year. **Carried over to 2009.** See related HB 360 and SB 513.
- SB 473** VRA; authorized to finance park and recreation projects. **Passed and approved by governor.** Companion bill is HB 723.
- SB 511** Virginia Natural Resources Commitment Fund; funds to be used for agricultural best management practices. **Passed.** See companion bill HB 1335 (above) for more details.
- SB 513** Nonpoint source pollution reduction. See companion bill HB 360 (above) for details. **Passed and approved by governor.** See also related SB 470.
- SB 648** Used motor oil and other automotive fluids; strengthens and broadens the current recycling program for used motor oil and used oil filters to include all automotive maintenance fluids and to require that the DEQ maintain a related toll-free hotline number. **Passed and approved by governor.**
- SB 679** Forest firefighting by localities or volunteer fire or rescue; authorization for recovery of costs expanded to include localities, not just the State Forester. **Passed and approved by governor.**
- SB 690** Water Quality Improvement Fund; changes the certification procedures for reimbursement to localities for costs of nutrient-removal upgrades. **Passed and approved by governor.**
- SB 717** Fossil fuel combustion products permit; requiring a solid waste permit to authorize the placement of unamended coal combustion byproduct as structural fill in a 100-year flood plain. **Passed Senate; failed in committee:** House Agriculture, Chesapeake, and Natural Resources. See related HB 514.
- SB 752** Brownfields; DEQ required to give public notice of voluntary remediation plans required owners of property within 100 feet or that has been contaminated. **Carried over to 2009.**
- SJ 82** Plastic bags; DEQ to study policies to mitigate negative effects. **Failed—stricken at request of patron.** Companion bill is HJ 169.

Air Quality and Greenhouse Gas Emissions Bills listed under Conservation

- HB 643** Air emissions; operators of major stationary sources of air pollution to comply with National Ambient Air Quality Standards. **Failed in committee:** House Agriculture, Chesapeake, and Natural Resources.
- HB 793** Greenhouse gas emissions; Secretary of Natural Resources to develop a strategy to reduce levels by 30 percent of 2005 levels by 2025 and 80 percent by 2050. **Failed in committee:** House General Laws.

- HB 1230** Greenhouse gas emissions; Air Pollution Board required to establish mandatory reporting for stationary sources. **Failed in committee:** House Commerce and Labor. Companion bill is SB 234.
- HB 1437** Trees; authorizes certain localities belonging to an air-quality non-attainment area to require conservation of specified tree-canopy percentages during the land development process. **Passed and approved by governor.** Companion bill is SB 710.
- HJ 109** Coal-fired generation facilities; Joint Legislative and Audit Review Commission (JLARC) to study economic impact of further investment (specifically the risk if the federal government were to regulate carbon and the emission of greenhouse gases). **Failed in committee:** House Rules.
- SB 233** Statewide Transportation Plan; required to include quantifiable measures and achievable goals for greenhouse gas emission. **Passed Senate; House carried over to 2009.** (The House Transportation Committee added an amendment to apply the bill only to carbon dioxide, not to other greenhouse gases.)
- SB 234** Greenhouse gas emissions; Air Pollution Board to establish mandatory reporting for stationary sources. **Passed Senate; failed in committee:** House Commerce and Labor. Companion bill is HB 1230.
- SB 632** Trees; conservation of during land development process for air quality improvement. **Failed—stricken at request of patron.** See related HB 1437 and SB 710.
- SB 710** Trees; conservation during the land development process. **Passed and approved by governor.** See Companion bill HB 1437 (above) for more details.
- SB 712** Cap and trade system for NO_x (nitrous oxide) and SO₂ (sulfur dioxide) in air-quality non-attainment areas; specifies the circumstances under which the Air Pollution Board can prohibit electrical-generating facilities from achieving compliance through a cap-and-trade system. **Carried over to 2009.**
- SB 748** Alternative fuels; specifies the conditions under which air-emission permit modifications, etc., are *not* required. **Passed and approved by governor.**

Land Conservation Bills

- HB 260** Abandoned railroad corridors; allows DCR to acquire for use as greenways, linear parks, or potential transportation corridors. **Failed in committee:** House Agriculture, Chesapeake, and Natural Resources.
- HB 388** Conveyance of easements by state agencies (clarification of the process). **Passed and approved by governor.**
- HB 662** Land preservation tax credit program; includes as a confidential tax document any document that is required to be filed with the DCR under the land preservation tax credit program. **Passed and approved by governor.**
- HB 849** Land preservation tax credits; specifies when a taxpayer is deemed to give consent regarding certain tax information. **Passed and approved by governor.**
- HB 1283** Land preservation tax credit; eliminates requirement for DCR verification of the conservation value of land donations that will result in \$1 million or more in land preservation tax credits, and establishes instead a review and administrative appeal process under the Department of Taxation. **Failed in committee:** House Finance. Companion bill is SB 259.
- SB 259** Land preservation tax credit; elimination of verification of conservation value. **Carried over to 2009.** See companion bill HB 1283 (above) for more details.
- SB 641** Land preservation tax credit; value of credit for conveyance for public parks, recreational areas, or trails. **Carried over to 2009.**
- SB 744** Land preservation tax credit; establishes process where properties are registered with Dept. of Taxation. **Carried over to 2009.**
- SJ 76** Open-Space Land and Farmlands; continues for one more year the Joint Subcommittee Studying Long-Term Funding for the Purchase of Development Rights to Preserve Open-Space and Farmlands. **Passed Senate; failed in committee:** House Rules.
- SJ 96** Private landowners; Board of Forestry to study provision of ecological services incentives for private landowners to hold and preserve forest lands. **Failed—stricken at request of patron.**

DRAINAGE, SOIL CONSERVATION, SANITATION, AND PUBLIC FACILITIES DISTRICTS

- HB 517** Onsite soil evaluators; Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals to adopt regulations designating classes of onsite soil evaluators. **Passed and approved by governor.**

- HB 518** Onsite soil evaluators; specifies exemptions from license requirements. **Passed and approved by governor.**
- SB 378** Stormwater; authorizes the Soil and Water Conservation Board to promote reuse and reclamation. **Passed and approved by governor.**
- SB 706** Hampton Roads Sanitation District; redefines the term “sewage disposal system,” specifies conditions for entering into contracts, and applies the provisions of the Virginia Public-Private Education Facilities and Infrastructure Act of 2002 to District construction contracts. **Passed and approved by governor.**

ENERGY CONSERVATION AND RESOURCES

- HB 139** State income tax credit for biodiesel and green diesel fuels producers. The bill incorporated HB 647, which would have provided a tax credit for other kinds of renewable and alternative energy besides biodiesel. **Passed and approved by governor.**
- HB 153** Solar water-heating system pay-as-you-save pilot program; State Corporation Commission to analyze and establish if appropriate. **Failed in committee:** House Commerce and Labor.
- HB 164** Compact fluorescent light bulbs; used required by 2011 in state buildings (owned or occupied). **Failed in committee:** House General Laws.
- HB 171** VRA; authorized to finance local-government energy-conservation and energy-efficiency projects. **Passed and approved by governor.** Companion bill is SB 242.
- HB 239** Real estate tax; expands the definition of energy-efficient buildings a separate real estate tax classification. **Passed and approved by governor.** Companion bill is SB 174.
- HB 418** Uniform Statewide Building Code; energy-efficiency rating to be included in final inspection. **Failed in committee:** House General Laws.
- HB 543** Natural gas utilities alternative ratemaking plan; authorizes any natural gas utility to file a conservation and ratemaking efficiency plan that includes, among other provisions, a normalization component to remove the weather effects from the determination of conservation and energy-efficiency results, a decoupling mechanism, and a cost-effective conservation and energy-efficiency program. **Passed and approved by governor.**
- HB 686** Retail Sales and Use Tax; exemptions include Energy Star-rated fluorescent light bulbs. **Failed in committee:** House Finance. See similar HB 1434. Companion bill is SB 280.
- HB 732** Energy-efficient equipment tax credit for *commercial* property. **Failed in committee:** House Finance. See related HB 744.
- HB 744** Energy-efficient equipment tax credit for *residential* property. **Failed in committee:** House Finance. See related HB 732.
- HB 794** Retail Sales and Use Tax; removes “purchased for noncommercial home or personal use” limitation from the Energy Star sales tax holiday. **Carried over to 2009.**
- HB 1195** Green Buildings Act; requires that all major facility projects of state agencies meet the United States Green Building Council Leadership in Energy and Environment Design (LEED) silver certification standard. **Failed in committee:** House General Laws. See similar HJ 68 and SB 447.
- HB 1229** Retail Sales and Use Tax; exemptions include WaterSense products (WaterSense is U.S. EPA water-efficiency rating program). **Passed and approved by governor.**
- HB 1287** Electric energy conservation; State Corporation Commission to conduct a meeting to establish goals. **Failed in committee:** House Commerce and Labor.
- HB 1421** Renewable Energy Research Grant Program and Fund; established under the Virginia Energy Plan for the purpose of attracting public and private funding for renewable energy research in Virginia.. **Failed in committee:** House Appropriations (after passing the House Commerce and Labor Committee).
- HB 1434** Retail Sales and Use Tax; exemptions include Energy Star-rated light bulbs. **Failed in committee:** House Finance. See similar HB 686.
- HB 1443** Permitting processes for energy generators; requires the Air Pollution Control Board to develop procedures for the expedited review of applications for the construction of a qualified energy generator. **Passed and approved by governor.**
- HB 1466** Energy electric generating facilities; DEQ required to assess environmental impact of any renewable-energy project, coordinate development of consensus recommendations to address a facility's potential adverse environmental impacts, and identify specific measures, including additional site studies, to mitigate or minimize adverse environment impacts. **Failed in committee:** House Commerce and Labor. See similar SB 321.

- HJ 68** Leadership in Energy and Environmental Design (LEED); Department of General Services to adopt standards for new state office buildings. **Failed in committee:** House Rules. See similar HB 1195.
- HJ 106** Fluorescent light bulbs containing mercury; Recycling Markets Development Council to study costs and benefits of recycling. **Failed in committee:** House Rules.
- HJ 116** Energy-efficient office buildings and public buildings; joint subcommittee to study options. **Failed in committee:** House Rules. Companion bill is SJ 32.
- HJ 129** 25X25 Project; General Assembly to express its support. (The goal of the “25X25 Action Plan: Charting America's Energy Future” is for U.S. farms, forests, and ranches to provide 25 percent of the total U.S. energy consumed in the United States by 2025.) **Failed in committee:** House Rules.
- HR 8** Electric transmission lines; State Corporation Commission to require compliance with conservation and energy requirements. **Failed in committee:** House Rules.
- SB 174** Real estate tax; expands the definition of energy-efficient buildings as a separate real estate tax classification. **Passed and approved by governor.** Companion bill is HB 239.
- SB 242** VRA; authorized to finance local-government energy-conservation and energy-efficiency projects. **Passed and approved by governor.** Companion bill is HB 171.
- SB 280** Retail Sales and Use Tax; exemptions to include Energy Star-rated fluorescent light bulbs. **Failed in committee:** Senate Finance. Companion bill is HB 686; also see related HB 1434.
- SB 320** Solar energy collection devices; limits community association restrictive covenants. **Passed; governor recommended changes.**
- SB 321** Energy electric generating facilities; DEQ to consult with others to consider environmental impact and to develop a coordinated recommendation to submit to the State Corporation Commission specifying any mitigation measures and additional site-specific studies. **Passed and approved by governor.** See similar HB 1446.
- SB 464** Virginia Commission on Energy and Environment; established as a legislative study commission to review and recommend steps to implement the Virginia Energy Plan. **Passed; governor recommended changes.**
- SB 447** Green Buildings Act; requires all major state projects to meet the standards of the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) building rating system or the Green Building Initiative's Green Globes building rating system (with provisions for exemptions). **Passed Senate; failed in committee:** House General Laws. See similar HB 1195 and HJ 68.
- SB 525** Uranium Mining Commission; establishes a 17-member legislative branch advisory commission to assess the risks and benefits of developing uranium resources in Virginia. **Passed Senate; failed in committee:** House Rules.
- SB 718** Investor-owned electric utilities; annual report required on efforts to conserve energy. The bill also shortens the time required for updates to the Virginia Energy Plan. **Passed and approved by governor.**
- HB 796** Commission on Climate Change; established to develop a Climate Change Action Plan. **Failed in committee:** House Rules.
- SJ 32** Energy efficient office and public buildings; joint subcommittee to study options. **Passed Senate; failed in committee:** House Rules. Companion bill is HJ 116.
- SJ 94** Commission on Climate Change; recognizes a need for a commission to provide leadership and assist the General Assembly and governor. **Failed—stricken at request of patron.**

FISHERIES AND HABITAT OF TIDAL WATERS

- HB 303** Menhaden fishery; decreases the annual cap on the harvest of menhaden for commercial purposes by 20 percent each year for five years until a moratorium is reached beginning in 2013. **Failed in committee:** House Agriculture, Chesapeake, and Natural Resources.
- HB 661** Agritourism Activity Liability Act of 2006; expands liability to marine tourism activities conducted by commercial fishermen. **Failed in committee:** House Courts of Justice (after passing the House Agriculture, Chesapeake, and Natural Resources Committee).
- HB 1208** Subaqueous lands; Marine Resources Commission (VMRC) to convey parcels of previously filled lands along the Elizabeth River in Norfolk to a private party. **Passed and approved by governor.**
- HB 1308** Coastal primary sand dunes; additional localities authorized to adopt ordinances, and three additional plants added to the definition of this feature. **Passed and approved by governor.**
- HB 1317** Subaqueous lands; VRA to convey parcels of previously filled lands along the Lafayette River in Norfolk to a private party. **Passed and approved by governor.**

SB 377 Crab pots; unauthorized taking of crabs to be a Class 3 misdemeanor. **Failed—stricken at request of patron.**

SB 528 VRA; waiving permits allowed in emergency situations. **Carried over to 2009.**

GAME, INLAND FISHERIES, AND BOATING

HB 319 Fishing permit, special; issued to patients from veterans hospitals or military hospitals. **Passed and approved by governor.**

HB 1088 Official records of the Department of Game and Inland Fisheries (DGIF); disclosure under the Freedom of Information Act, with exceptions. **Failed in committee:** House General Laws.

HB 1250 Personal flotation devices; required for children age 12 and under on vessels less than 26 feet. **Failed in committee:** House Appropriations (after passing House Agriculture, Chesapeake, and Natural Resources Committee).

HB 1352 Board of Game and Inland Fisheries; reconstitutes membership, with requirement that members have held a hunting or fishing license or have hunted game animals on their own property. **Failed on House floor** (after passing House Agriculture, Chesapeake, and Natural Resources Committee).

HB 1361 DGIF director; requires quarterly reports to the Secretary of Natural Resources. **Passed House; failed in committee:** Senate Agriculture, Conservation, and Natural Resources.

HB 1502 Alcoholic beverage control; canal boat operator license created. **Passed and approved by governor.**

HJ 231 Game and Inland Fisheries regulations process; board and department requested to provide for greater citizen input in formulation of regulations. **Passed.**

SB 552 Fishing license for disabled persons; adds a fishing-license exemption to the hunting-license exemption for persons assisting disabled persons. **Passed and approved by governor.**

SB 765 Water safety enforcement; requires DGIF to increase enforcement effort on Smith Mountain Lake in summer. **Passed and approved by governor.**

HAZARDOUS SUBSTANCES

HB 1089 Toxic substances; removes requirement for biennial Board of Health reports to General Assembly. **Passed and approved by governor.**

SB 196 Hazardous materials; localities to prohibit initiation of new storage in floodplains for five miles upstream of a public water-supply intake. **Failed—stricken at request of patron.**

SB 514 Radioactive material; Department of Health established as the state radiation-control agency, and includes provisions related to radioactive material from mining. **Passed and approved by governor.**

SJ 133 Low-level radioactive waste; Department of Health to study long-term options for disposal. The bill also incorporated SJ 100, which would have established a joint subcommittee to study nuclear energy within Virginia, including the advisability of uranium mining in Virginia. **Passed Senate; failed in committee:** House Rules.

HEALTH

HB 193 Private wells; exempts any tract of land less than *three* acres from the prohibition on constructing a private well within 50 feet of an adjacent property used for agricultural operation. **Passed and approved by governor.**

HB 404 Private wells; exempts any tract of land less than *five* acres from the prohibition on constructing a private well within 50 feet of an adjacent property used for agricultural operation. **Failed in committee:** House Health, Welfare and Institutions.

HIGHWAYS, BRIDGES, AND FERRIES

HB 1259 Environmental impact reports; requires any county, city, or town to submit such a report on highway projects costing \$500,000 or more. **Passed and approved by governor.**

HB 1288 Bridge and safety funding; prioritization by Transportation Board of bridges similar to collapsed I-35 bridge in Minnesota. **Carried over to 2009.**

HB 1301 Bridge replacement and repair; allows Transportation Board to award contracts for design-build procurement. **Carried over to 2009.**

SB 94 Patrick County to be designated Covered Bridge Capital of Virginia. **Passed and approved by governor.**

PUBLIC SERVICE COMPANIES

- HB 1409** Electric utility rates; incentives for use of alternative energy and distributed generation. **Carried over to 2009.**
- SB 324** Utility Facilities Act; exemption for certain renewable energy facilities (producing less than 50 megawatts) from the definition of a public utility and the requirements of the Utility Facilities Act. **Carried over to 2009.**
- SB 446** Renewable energy; requirement that 20 percent of electricity sold in Virginia by from renewable sources by 2020. **Failed in committee:** Senate Commerce and Labor.
- SB 93** Electric Utility Restructuring Act; repeals certain provisions relating to rate of return, recovery of expenses, and incentives for constructing new generation facilities and meeting voluntary renewable energy targets. **Failed in committee:** Senate Commerce and Labor.

WASTE DISPOSAL

- HB 1398** Tire recycling fee; extended until July 1, 2011. **Passed and approved by governor.** Companion bill is SB 665.
- HB 1548** Landfills; prohibits publicly owned landfills from accepting construction and demolition debris under certain conditions. **Carried over to 2009.**
- SB 322** Solid waste as energy source; includes “municipal solid waste” as a renewable energy source in the Electric Utility Restructuring Act. **Passed and approved by governor.**
- SB 665** Tire recycling fee; extended until July 1, 2011. **Passed and approved by governor.** Companion bill is HB 1398.

WATER AND SEWER SYSTEMS

- HB 8** Water and sewer charges; adds the Town of Kenbridge to localities that may attach a lien on real estate. **Passed and approved by governor.**
- HB 294** Water and sewer connections; New Kent County to require connection by certain property owners. **Failed in committee:** House Counties, Cities and Towns.
- HB 358** Water hook-up permits; allows localities to suspend permit requirements during certain emergencies. **Failed in committee:** House Counties, Cities and Towns.
- HB 394** Water and waste authorities; granted powers related to intellectual property rights. **Passed and approved by governor.**
- HB 645** Water Protection Permit; requires the State Water Control Board, prior to issuing a Virginia Water Protection Permit, to consider the permitted project as part of local or regional water supply plans. **Failed in committee:** House Agriculture, Chesapeake, and Natural Resources.
- HB 689** Combined Sewer Overflow Fund; designating conditions for funds to be deposited for use by Lynchburg and Richmond. **Failed in committee:** House Appropriations.
- HB 1166** Onsite treatment works; authorizes the Board of Health, Commissioner of Health, and Department of Health to accept treatment works designs from licensed professional engineers. **Passed and approved by governor.**
- HB 1342** Water and sewer charges; adds Isle of Wight County to localities that may attach a lien on real estate. **Passed and approved by governor.**
- HB 1355** Sewage treatment plants; expanded or upgraded facility may limit amount of septage from onsite systems. **Passed and approved by governor.**
- HB 1380** Sewer system approval/denial; authorizes counties and towns to approve a sewer-system application at a reduced size if the size reduction is in the best interests of the locality. **Failed in committee:** House Counties, Cities and Towns. See similar SB 777.
- HB 1527** Failure to pay sewer charges; provides that in Planning Districts 1 or 2 a water and waste authority may require that water service provided by another entity be discontinued under certain circumstances for nonpayment of sewer charges. **Passed and approved by governor.**
- SB 681** Certified water well systems providers; change to onsite requirements. **Passed and approved by governor.**
- SB 751** Water and sewer rates; specifies circumstances when towns may charge higher rates for out-of-town customers. **Carried over to 2009.**
- SB 755** Water and Waste Authorities Act; power to mandate use of a *specific* solid waste authority. **Failed—stricken at request of patron.**

SB 777 Water and sewer system denial; authorizes counties and towns to deny a proposed water or sewer system if the system is not in the best interests of the locality or does not conform to a comprehensive plan. **Carried over to 2009.** See similar HB 1380.

WATERS OF THE STATE, PORTS AND HARBORS

- HB 211** Virginia Water Protection Permit for wetlands impacts; exempts construction and maintenance of farm or stock ponds from activities requiring a permit. **Passed and approved by governor.**
- HB 233** Phosphorus in dishwashing detergents; bans use of detergents with over 0.5 percent phosphorus for household dishwashing machines. **Passed and approved by governor.**
- HB 455** North and South Mayo Rivers; designating portions in Henry County as State scenic rivers. **Passed and approved by governor.** Companion bill is SB 40.
- HB 528** Chesapeake Bay Preservation Act; allows localities to set a limit (no less than 30 days) on the time allowed for ordinance appeals. **Passed and approved by governor.**
- HB 555** Mitigation banks; localities authorized to establish, operate, and purchase credits from wetland and stream mitigation banks. **Passed and approved by governor.** Another mitigation bank bill for streams only is SB 361.
- HB 837** Dam break inundation zones; localities given authority to address development in such zones. **Passed and approved by governor.**
- HB 1125** Craney Island Dredged Materials Management Area; authorizes the VRA to grant easements in the lower James River to the Port Authority for the Craney Island expansion. **Passed and approved by governor.**
- HB 1206** Port Authority; allows Authority police officers to provide security beyond where Authority property is located. **Passed and approved by governor.** Companion bill is SB 465.
- HB 1211** Port Authority; authorizes a trust fund to post-employment benefits other than pensions. **Passed and approved by governor.** Companion bill is SB 467.
- HB 1212** Port Authority; authority for employees' automatic enrollment in a deferred compensation plan. **Passed and approved by governor.** Companion bill is SB 466.
- HB 1309** Riparian waterway tax credit; definition of "individual." **Passed and approved by governor.**
- HB 1457** VRA; authorized to finance construction of local government buildings. **Passed and approved by governor.** Companion bill is SB 56.
- HJ 114** Public's right to float, fish, and navigate waters of State; joint subcommittee to study. **Failed in committee:** House Rules.
- HJ 117** Craney Island Dredged Materials Management Area; JLARC to study impact of greater elevations created by expansion. **Failed in committee:** House Rules. Companion bill is SJ 50.
- HJ 72** Seaports; joint subcommittee to study public-private partnerships. **Passed.**
- SB 40** North and South Mayo Rivers; designating portions in Henry County as State scenic rivers. **Passed and approved by governor.** Companion bill is HB 455.
- SB 56** VRA; authorized to finance construction of local government buildings. **Passed and approved by governor.** Companion bill is HB 1457.
- SB 361** Stream mitigation banks; Henrico County to establish and operate. **Carried over to 2009.** Another mitigation bank bill for streams *and* wetlands is HB 555.
- SB 386** Chesapeake Bay Preservation Act; redefines localities that are under jurisdiction (related to coverage under stormwater law). **Failed—stricken at request of patron.**
- SB 465** Port Authority; allows Authority police officers to provide security beyond where Authority property is located. **Passed and approved by governor.** Companion is HB 1206.
- SB 466** Port Authority; authority for employees' automatic enrollment in a deferred compensation plan. **Passed and approved by governor.** Companion bill is HB 1212.
- SB 467** Port Authority; authorizes a trust fund to post-employment benefits other than pensions. **Passed and approved by governor.** Companion bill is HB 1211.
- SB 594** Dam safety; exempts owners of historically significant dams that do not present an imminent danger from having to correct deficiencies identified in a dam safety inspection conducted by the DCR. **Failed in committee:** Senate Agriculture, Conservation, and Natural Resources.
- SJ 50** Craney Island Dredged Materials Management Area; JLARC to study impact of greater elevations. **Failed in committee:** Senate Rules. Companion bill is HJ 117.

News-making Water Resource Issues during the 2008 Virginia General Assembly.*

TOPIC AND RELATED BILL NUMBERS	MEDIA SOURCES**
Budget: Agricultural Nonpoint Source Pollution Reduction Funding Proposal for \$100 million/year for 10 years	DP, FLS, HDNR, RTD, SNL, V-P
Budget: Alternative Energy Research Funds Algae-to-biodiesel, wind energy on Tangier Island	HDNR, V-P
Budget: Uranium Regulation-writing Funds	DP, LNA, ROA, V-P
Citizen Environmental Boards HB 18, HB 19, HB 650, HB 1332, SB 423	AG, BHC, Connection, DP, FLS, HDNR, LNA, ROA, RTD, SNL, V-P, WP
Coal Fly Ash Use and Disposal HB 514, SB 717	ROA, RTD
Endocrine Disruptors in Fish HJ 171	AP, EX.com
Energy: Renewable Sources SB 324, SB 446	CH, FLS, ROA, RTD
Energy: Uranium Mining SB 525, SJ 133	AP, BUS, CST, DP, DRB, FLS, LNA, ROA, RTD, V-P, WP
Environmental Impact Analysis HB 1116 (construction projects), SB 43 (transportation projects)	LNA, V-P
Game and Inland Fisheries Director Reports HB 1361	LNA
Plastic Bags' Environmental Impact HJ 169, SJ 82	RTD, V-P
Phosphorus in Dishwasher Detergents Ban HB 233	HDNR, ROA
Recycling of Electronics HB344, HB 1533	V-P
Soil and Water Conservation Districts HB 119	HDNR
Trees and Development Projects HB 1437, SB 632, SB 710	FC

*Each general topic, but not necessarily each specific issue or bill, was mentioned at least once by each source noted.

**Abbreviations for media sources: AG = *Alexandria Gazette*; AP = *Associated Press*; BHC = *Bristol Herald Courier*; BUS = *Brookneal Union Star*; CH = *Charlottesville Hook*; Connection = *Connection Newspapers (collectively)*; CST = *Chatham Star Tribune*; DP = *Daily Press* [Hampton Roads area]; DRB = *Danville Register & Bee*; EX.com = *Examiner.com (Washington Examiner)*; FC = *Fairfax Connection*; FLS = *Fredericksburg Free Lance-Star*; HDNR = *Harrisonburg Daily News-Record*; LNA = *Lynchburg News & Advance*; ROA = *Roanoke Times*; RTD = *Richmond Times-Dispatch*; SNL = *Staunton News Leader*; V-P = *Virginian-Pilot*; WP = *Washington Post*.

TEACHING WATER

Especially for Virginia's K-12 teachers

This Issue and the Virginia Standards of Learning

Below are suggestions for Virginia Standards of Learning (SOLs) that may be supported by this issue's Feature article, Science article, Water Status Report, and For the Record section. The SOLs listed below are from Virginia's 2003 Science SOLs and 2001 Social Studies SOLs. Abbreviations: BIO = biology; CE = civics and economics; ES=earth science; GOV = Va. and U.S. government; LS=life science; WG = world geography.

Newsletter Section	Science SOLs	Social Studies SOLs
Feature (2008 Virginia General Assembly)	6.9, LS.12, ES.7, ES.11	CE.7, GOV.8, GOV.9, GOV.16
Science (Nutrients and Stormwater)	6.5, 6.7, 6.9, LS.11, LS.12, ES.9, BIO.9	CE.7, WG.2, WG.7, GOV.9, GOV.16
Water Status (Precipitation, Groundwater, and Stream Flow)	4.6, 4.8, 6.5, 6.7, LS.7, LS.12, ES.7, ES.9, ES.13	WG.2
Drought Report	4.5, 4.8, 6.5, 6.7, LS.7, LS.12, ES.7, ES.9, ES.13	WG.2

Nutrient and Stormwater Researchers Tackle Two Water-quality Toughs

By Ana Constantinescu and Alan Raflo

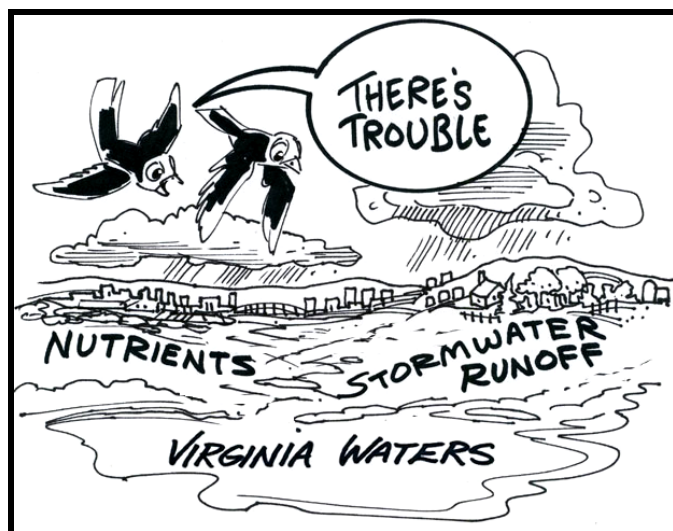
Two of the most widespread water-quality problems in Virginia and many other areas are nutrients and stormwater.

Nutrients (in this context) are substances—primarily chemical compounds containing nitrogen and phosphorus—that fertilize plants and other organisms that perform photosynthesis (using light, carbon dioxide, and water to produce food). Nutrients are essential to life, but *excessive nutrients* in water can stimulate excessive growth of some aquatic plants or of algae. Excessive growth of aquatic plants or algae can result in depleted oxygen¹ for other living things and can shade out submerged aquatic plants, which provide food and habitat to many animals, such as Blue Crabs in the Chesapeake Bay.

Stormwater, meanwhile, is “our most common cause of water pollution,” according to the U.S. Environmental Protection Agency’s (EPA) Stormwater Outreach Web page (cfpub1.epa.gov/npdes/stormwatermonth.cfm, 3/19/08). Stormwater is the runoff of rain and melted snow from streets, lawns, farms, and construction and industrial sites. This runoff transports fertilizers, soil, pesticides, oil, and many other substances to streams, rivers, lakes, and coastal waters. In developed areas, the amount of **impervious surfaces** (roofs, asphalt, and concrete) affects the quantity and quality of stormwater runoff.

This article describes two current research efforts in Virginia on the challenges of excessive nutrients and stormwater runoff. For more on water quality in Virginia and the nation, please see the Water Quality Overview table at the end of this article.

¹ When plants or algae perform photosynthesis, they produce oxygen, but they also use oxygen through respiration. During the day, more oxygen is produced than consumed, but at night the reverse will be true. In addition, when a large mass of plants or algae dies, bacteria consume a lot of oxygen decomposing the mass, resulting in reduced oxygen available to fish, shellfish, and other animals.



The Academic Advisory Committee and Freshwater Nutrient Standards

A group of faculty and researchers from Virginia Tech and three other universities are working with the Virginia Department of Environmental Quality (DEQ) to provide the scientific information needed to establish water-quality standards for nutrients in Virginia’s freshwater areas. The multi-university panel called the Academic Advisory Committee (AAC) is based at the Virginia Water Resources Research Center. The group comprises faculty with expertise in environmental sciences, biology, statistics, stream ecology, and environmental engineering from Virginia Tech, the University of Virginia, Virginia Commonwealth University, and the Virginia Institute for Marine Science. Since its formation in 1997, the AAC has been involved in several water-quality standards projects and served as a liaison between the partnering universities and the DEQ.

Since 2005, the AAC has been studying the safe levels of nitrogen and phosphorus in streams, rivers, lakes, and reservoirs. (“Safe” in this context means that the levels do not cause harm to aquatic life or ecological systems.) Many of the nation’s waters are affected by nitrogen and phosphorus pollution resulting from several sources: fertilizer (both residential and agricultural); stormwater flowing over cropland and over urban/suburban areas; animal feeding

operations and pastures; wastewater treatment plants; and septic systems.²

In recommending target nutrient levels to state regulators, water scientists need to strike a balance between too much or too little nitrogen and phosphorus, depending on the different types of waters and their uses. “Nitrogen and phosphorous are chemicals essential to sustaining aquatic life in surface waters,” explained Tamim Younos, associate director of the Water Center. Fisheries, for example, need a certain level of nutrients to support food sources for fish. But, as noted above, an excess of the two nutrients can lead to the growth of undesirable levels of algae or aquatic plants, as shown in the photos below. “We need to establish scientifically what exactly are the safe levels for nutrients in order to keep our waters healthy for various uses,” said Dr. Younos.



Algae in a small stream in Leesburg, Va., March 2008.

The AAC has assisted the Virginia DEQ with two nutrient regulation processes: first, the completed establishment of nutrient standards for *lakes and reservoirs* (the regulation is 9 VAC-25-260); second, a still ongoing process for *rivers and streams*.³ In each case, AAC scientists helped in several ways: 1) reviewing scientific literature for background information on nutrient levels and processes in various kinds of water bodies; 2) reviewing regulatory approaches in other states; 3) identifying scientists with special expertise;

² U.S. EPA, “Water Quality Criteria for Nitrogen and Phosphorus Pollution,” www.epa.gov/waterscience/criteria/nutrient/, accessed 3/20/08.

³ Information on the status of Virginia’s freshwater nutrient regulations is available online at www.deq.virginia.gov/wqs/rule.html#NUT2 (as of 3/20/08).

4) recommending parameters to measure for determining nutrient impairment; and 5) proposing water quality levels as possible numeric criteria based on analyses of datasets from Virginia's water bodies.

The following AAC reports are available online at www.vwrrc.vt.edu/special_reports.html: SR34-2007—“Nutrients in Lakes and Reservoirs: A Literature Review for Use in Nutrient Criteria Development”; SR33-2007—December 2006 Report...on Freshwater Nutrient Criteria for Rivers and Streams”; SR30-2006—June 2006 Report...on Freshwater Nutrient Criteria for Rivers and Streams; SR28-2006—A Literature Review for Use in Nutrient Criteria Development for Freshwater Streams and Rivers in Virginia”; and SR 27-2005—“Issues Related to Freshwater Nutrient Criteria for Lakes and Reservoirs in Virginia.”



Duckweed covering a southeastern Virginia lake, July 2004. Photo by Ephraim Seidman, used with permission.

AAC involvement in Virginia’s water-quality regulatory process has been both innovative and well received. “The AAC-DEQ partnership is quite a unique initiative for establishing water-quality standards,” said Dr. Younos, who has served as the AAC project leader since 2002. “It is one of the few such partnerships in the United States between research universities and a state agency.” Jean Gregory, environmental manager in the water quality standards program at DEQ, said that the AAC—DEQ cooperation “has been invaluable” to the agency. Gregory also noted that the DEQ has received particularly positive feedback from various stakeholders about the nutrient work for lakes and reservoirs.

AAC activities are supported by funds from the DEQ and the U.S. EPA.

A New Urban Stormwater Tool

In the future, we may see cleaner streams, lakes, and bays thanks to an innovative approach to managing stormwater runoff and the contaminants it can deliver to water bodies. The novel software application will help engineers and planners select the most effective and site-specific “best management practices” (BMPs) for controlling pollutants that enter receiving waters through urban stormwater runoff. Funded by the U.S. EPA, the research project involves a team of researchers: Kevin Young, research associate in Virginia Tech’s Via Department of Civil and Environmental Engineering (CEE); Tamim Younos of the Water Center; David Kibler, CEE professor; Randy Dymond, Virginia Tech Center for Geospatial Information Technology (CGIT) co-director and CEE associate professor; and CEE graduate students David Lee and Dan Phipps.

For many years, civil engineers have used a variety of BMPs to control stormwater runoff and contaminants, with varying degrees of success. One widely used approach, for example, is building ponds near commercial or residential areas. “Stormwater is directed to a pond where gravity takes over, depositing sediment and some pollutants onto the bottom,” said Dr. Younos, who serves as project coordinator. “The pond overflow, however, still may contain dissolved pollutants that can reach streams, rivers, lakes, and possibly groundwater.” Other types of BMPs are trenches and porous pavement that allow the stormwater to infiltrate into the ground, vegetated wetlands and sand filters that help filter the pollutants, and proprietary stormwater technologies such as hydrodynamic separators.



Stormwater pond for a residential development in Leesburg, Va., March 2008.

Reducing Guesswork

Traditionally, selection of urban stormwater BMPs has been done only by proficient stormwater experts, typically guided by little more than vaguely written regulations, along with the experts’ experience and intuition. Sometimes general or standard solutions have been applied to complex stormwater management needs, with ineffective results. What has been missing is an efficient way to match specific BMPs to specific stormwater runoff situations.

The new BMPs selection approach developed at Virginia Tech uses what’s known as the “Analytical Hierarchy Process (AHP) Optimization Tool.” Mr. Young developed the principles of this approach in his Virginia Tech master’s thesis, under the guidance of Dr. Kibler and the late Professor G. V. Loganathan. The approach factors in dozens of site-specific criteria such as soil types, land slopes, maintenance accessibility, and maintenance cost to select the optimal BMPs for a particular location. “Our technique is expected to reduce the BMP selection time and minimize the human error from such a complex process,” said Dr. Younos. The new tool is *not* designed to replace professional judgment, but rather to enhance it with the most accurate information available.



Kevin Young and Tamim Younos review plans for a stormwater BMP on the Virginia Tech campus, November 2007. Photo by Kim Peterson, courtesy of Virginia Tech.

Blacksburg to Benefit from Pilot Study

The AHP application will be pilot-tested on the Town of Blacksburg’s stormwater system and the local Stroubles Creek watershed. The software will be used by the research team to select BMPs within the watershed contributing runoff to Stroubles Creek, the town’s main receiving water body. A computer model will be used to simulate selected BMP effects on stormwater runoff volume and pollutant loads.

The computer simulations will compare the effectiveness of various BMPs for watershed protection in a given site.

“The best part about conducting a pilot test in Blacksburg is that the Town will be able to implement our recommendations,” said Dr. Younos. “We are very pleased by the Town’s enthusiasm and support for this project.”

Other stakeholders include the New River Planning District Commission, the Virginia DEQ, and the Virginia Department of Conservation and Recreation.

Upon completion of the project this summer, the software will be available for free to all interested engineers and planners, localities, and BMP review authorities. The tool will be applicable in other states with geographic and climatic environments similar to Virginia.

For Further Reading

For more basic information on nutrients and stormwater, please see the following *Water Central* articles. All *Water Central* issues are online at www.vwrrc.vt.edu/watercentral.html; page numbers refer to the *two-column* version): “*Pfiesteria* or Not, There’s Always Algae,” June 1998, p. 9.
 “Nutrients in the News,” June 2003, p. 2;
 “Nutrients as Limiting Factors,” June 2003, p. 9;
 “Nutrient Management Programs: Taking Steps Toward a Solution,” Jan. 2004, p. 7;
 “An Introduction to Urban Stormwater,” Feb. 2000, p. 1; and
 “News Focus on Stormwater,” Sept. 2006, p. 11.
 These articles cite many additional sources of information.

Surface Water Quality—A National and Virginia Overview

NATIONWIDE (as reported by states in 2002)	Streams and Rivers (miles)	Lakes, Ponds, and Reservoirs (acres)	Estuaries (square miles)
Water Body Totals	3.7 million	40.6 million	87,370
Water Bodies Assessed	695,540	14.8 million	30,446
Water Bodies Impaired*	309,755	6.9 million	9836
Leading Impairment Causes	Sediments Pathogens Habitat Alterations (e.g., water diversions and channelization)	Nutrients Metals (mostly mercury) Organic Enrichment	Metals (mostly mercury) Nutrients Organic Enrichment
VIRGINIA (as reported in 2006 for the period 2000-04)	Streams and rivers (miles)	Lakes and Reservoirs (publicly owned) (acres)	Estuaries (square miles)
Water Body Totals	50,356	116,058	2425
Water Bodies Assessed	14,265	112,473	2382
Water Bodies Impaired	9002	109,202	2212
Leading Impairment Causes (miles/acres/sq. miles in parenthesis)	Bacteria (7842) Benthic Impairment (1192) Low Dissolved Oxygen (1250) pH (1206) PCBs (973) Mercury (374)	Low Dissolved Oxygen (93,166) PCBs (72,008) pH (8409) Bacteria (6209) Mercury (3401)	PCBs (2110) Low Dissolved Oxygen (1905) Benthic Impairment (639) Bacteria (139)

*“Impaired” means the water body fails to support one or more “designated uses,” which in Virginia are aquatic life, fishing, shellfishing, swimming, public water supply (where applicable), and wildlife.

Sources: U.S. Environmental Protection Agency, *National Water Quality Inventory: Report to Congress (2002 Reporting Cycle)*, October 2007, www.epa.gov/305b/2002report/, accessed 3/25/08. Virginia Department of Environmental Quality, *Final 2006 305(b)/303(d) Water Quality Assessment Integrated Report*, October 2006, www.deq.virginia.gov/wqa/ir2006.html, accessed 4/15/08.

Ana Constantinescu is the Water Center’s communications manager. Alan Raflo is editor of Water Central.

VIRGINIA WATER STATUS REPORT

This section of *Water Central* presents recent and historical data on Virginia's precipitation, groundwater levels, and stream flow (next three pages).

Precipitation in Virginia, April 2007-March 2008

The chart below shows precipitation (in inches) over the last 12 months at eight National Weather Service observation sites in Virginia. The upper number for each entry is the **total precipitation** for the respective site and month (with yearly total at the bottom of the chart), including the equivalent amount of water contained in any snowfall or other frozen precipitation. These values were found (on 4/8/08) at the "Climate" sections of National Weather Service Web sites, as follows: www.weather.gov/climate/index.php?wfo=rnk, for Blacksburg, Danville, Lynchburg, and Roanoke; www.weather.gov/climate/index.php?wfo=lwx, for Washington-Dulles; and <http://mi.nws.noaa.gov/climate/index.php?wfo=akq>, for Norfolk and Richmond. Charlottesville data were provided by the University of Virginia Climatology Office (4/21/08). The lower number in each entry (in parenthesis) is the **average precipitation** for the respective site month (again, with the average yearly total at the bottom of the chart), over the period 1971—2000, according to the National Climatic Data Center, *Climatology of the United States No. 81* (available online at <http://www5.ncdc.noaa.gov/climate/normal/clim81/VAnorm.pdf>, as of 4/8/08). RL and RH mean record low or high, respectively, for that month. The recent monthly amounts (but not the long-term averages) are classified by the Weather Service as *preliminary* data and are subject to revision; the National Climatic Data Center maintains any edited and *certified* data that are available.

More Virginia climate information and data are available from the Virginia State Climatology Office, online at <http://climate.virginia.edu>. To contact the State Climatologist's office in Charlottesville, phone (434) 924-0548 or send e-mail to climate@virginia.edu.

	Blacksburg (Station #012)	Charlottesville (Station #023)	Danville (Station #037)	Lynchburg (Municipal Airport)	Norfolk (Internat. Airport)	Richmond (Byrd Intern. Airport)	Roanoke (Woodrum Airport)	Wash.-Dulles Airport
Apr. 2007	3.63 (3.83)	3.69 (3.34)	3.66 (3.83)	3.10 (3.46)	3.19 (3.38)	3.62 (3.18)	2.60 (3.61)	3.38 (3.22)
May 2007	2.93 (4.39)	2.36 (4.86)	1.38 (3.96)	3.37 (4.11)	2.06 (3.74)	3.69 (3.96)	2.59 (4.24)	0.34 RL (4.22)
Jun. 2007	3.07 (3.93)	4.35 (4.46)	2.2 (3.5)	3.06 (3.79)	3.87 (3.77)	5.22 (3.54)	2.62 (3.68)	2.92 (4.07)
Jul. 2007	2.83 (4.17)	2.90 (4.94)	3.96 (4.44)	7.19 (4.39)	4.77 (5.17)	1.69 (4.67)	3.22 (4.00)	1.75 (3.57)
Aug. 2007	1.75 (3.68)	3.43 (4.14)	0.60 RL (3.54)	1.49 (3.41)	3.71 (4.79)	6.81 (4.18)	1.50 (3.74)	1.67 (3.78)
Sep. 2007	0.97 (3.39)	0.69 (4.85)	1.71 (4.08)	1.21 (3.88)	0.38 (4.06)	1.11 (3.98)	1.11 (3.85)	1.40 (3.82)
Oct. 2007	4.93 (3.19)	5.22 (4.22)	6.35 (3.71)	4.97 (3.39)	5.39 (3.47)	3.54 (3.60)	5.33 (3.15)	3.52 (3.37)
Nov. 2007	0.78 (2.96)	0.71 (3.74)	1.02 (3.07)	0.46 (3.18)	0.31 (2.98)	0.80 (3.06)	0.18 RL (3.21)	1.49 (3.31)
Dec. 2007	2.67 (2.87)	2.68 (3.26)	3.18 (3.16)	2.65 (3.23)	3.50 (3.03)	3.24 (3.12)	2.76 (2.86)	2.97 (3.07)
Jan. 2008	1.40 (3.37)	1.04 (3.71)	0.79 (4.03)	1.27 (3.54)	1.36 (3.93)	0.96 (3.55)	0.96 (3.23)	1.26 (3.05)
Feb. 2008	1.86 (3.02)	2.86 (3.30)	2.24 (3.41)	1.95 (3.10)	3.41 (3.34)	3.41 (2.98)	1.86 (3.08)	2.68 (2.77)
Mar. 2008	2.57 (3.83)	3.58 (4.05)	3.11 (4.25)	3.61 (3.83)	2.96 (4.08)	3.50 (4.09)	2.27 (3.84)	2.47 (3.55)
Total for Period	29.39 (42.63)	33.51 (48.87)	30.20 (44.98)	34.33 (43.31)	34.91 (45.74)	37.59 (43.91)	27.00 (42.49)	25.85 (41.80)

Groundwater Levels at Selected Virginia Wells, April 2008

As of April 8, 2008, *real-time data* (updated every 5 to 60 minutes) were being recorded from 67 observation wells in 31 Virginia localities and were available online at the U. S. Geological Survey's (USGS) Web site at <http://waterdata.usgs.gov/va/nwis/current/?type=gw>. The table below shows one April 8 measurement (between 9 and 11 a.m.) from each of 19 real-time observation wells; all April 2008 readings are *provisional* (i.e., subject to revision). All measurements are in **feet below the land surface**, rounded to the nearest 0.1 foot; **a smaller value means wetter conditions, while a larger value means drier conditions**. The table also shows levels reported in previous issues of *Water Central*, plus the deepest (driest) and shallowest (wettest) values recorded for each well during the well's period of record. Period of record values are from *Water Resources Data-Virginia-Water Year 2005, Volume 2*. This publication is the USGS' most recent (as of April 2008) annual report of data from several hundred observation wells in Virginia. Annual reports back to 2002 are available online at <http://pubs.usgs.gov/wdr/>; for previous years, check your local library.

Well (Local #)	4/8/08 Level	1/2/08 Level	5/14/07 Level	Record Deepest (Driest)	Record Shallowest (Wettest)	Period of Record
Accomack (66M 19 SOW 110S)	9.2	10.0	8.6	11.3 (Nov. 1981)	7.4 (Apr. and Aug. 2004)	Since Sep. 1978
Buckingham (41H 3)	24.3	25.3	18.7	36.4 (Oct. 2002)	7.3 (Apr. 1973)	Since Mar. 1970
Clarke (46W 175)	42.2	43.7	35.8	45.7 (Sep. 2002)	22.9 (Sep. 2003)	Since Jul. 1987
Fairfax (52V 2D)	14.0	16.2	12.5	24.9 (Dec. 1998)	6.5 (Mar. 1984)	Since Oct. 1976
Frederick (46X 110)	44.3	43.9	37.4	44.4 (Nov. 2002)	18.0 (June 2003)	Since Nov. 2002
Hanover (53K 19 SOW 080)	19.0	21.3	16.4	22.9 (Aug. 1984)	3.8 (Aug. 2004)	Since Jan. 1978
Loudoun (49Y 1 SOW 022)	59.7	61.5	58.1	62.0 (Jan. 2002)	48.0 (June 1972)	Since Aug. 1969
Montgomery (27F 2 SOW 019)	4.5	5.4	4.0	7.3 (Dec. 1969)	0.0 (Mar. 1993)	Jul. 1953, then since Apr. 1969
Northampton (63H 6 SOW 103A)	6.9	7.7	5.5	10.0 (Oct. 2002)	0.6 (Aug. 2004)	Since Oct. 1977
Orange (45P 1 SOW 030)	29.6	37.1	22.5	39.0 (Aug. 2002)	11.8 (Apr. 1973)	Since Feb. 1965
Prince William (49V 1)	8.1	9.2	9.4	13.1 (Sep. 1991)	6.6 (Dec. 2003)	Since Nov. 1968
Roanoke City (31G 1 SOW 008)	18.6	18.8	18.8	19.3 (Jun. 1987)	12.4 (Feb. 1986)	Since Aug. 1966
Rockbridge (35K 1 SOW 063)	26.9	28.5	22.5	30.4 (Sep. 2002)	14.3 (Apr. 1987)	Since Jun. 1972
Rockingham (41Q 1)	79.5	85.2	66.0	99.0 (Oct. 2002)	57.7 (Feb. 1998)	Since Aug. 1970
Suffolk (58B 13)	10.4	13.2	8.8	13.4 (Jan. 1981)	0.6 (Sep. 1999)	Since Mar. 1975
Surry (57E 13 SOW 094C)	7.9	9.5	7.5	11.2 (Dec. 1981)	3.9 (May 1980)	Since Jul. 1978
Virginia Beach (62B 1 SOW 098A)	3.4	5.5	3.6	12.0 (Sep. 1980)	0.8 (Aug. 2004)	Since Jun. 1979
Westmoreland (55P 9)	1.6	10.8	1.0	12.8 (Dec. 1998)	0.8 (Aug. 2004)	Since Jul. 1977
York (59F 74 SOW 184C)	6.7	6.8	2.4	13.4 (Jan. 2002)	2.0 (Feb. 1994)	Since Jun. 1990

Stream Flow in Virginia, Late February- Early April, 2008

The graphs on this page from the U.S. Geological Survey's (USGS) Internet site, "WaterWatch—Current Water Resources Conditions" (<http://water.usgs.gov/waterwatch/?m=real&r=va&w=real%2Cplot,4/8/08>) compare recent Virginia stream flow to historical records.

The data in the graphs come from 100 sites that have at least 30 years of records. The left graph covers February 23-April 8, 2008; the right graph covers July 2, 1999 through April 8, 2008. Each graph uses a "stream flow index," which measures how a site's average stream flow *over 24 hours* (the **average daily stream flow**) compares to the historical average stream flow *for that same site and date*. The graphs show a further average: the stream flow index averaged *over all 99 monitoring stations*.

Index values (1-7 on the vertical axis in the graphs) mean the following:

Values indicating dry conditions:

1 = average daily flow is record low for that date;

2 = average daily flow is in the lowest 10 percent of historical values for that date;

3 = average daily flow is in the lowest 25 percent of historical values for that date, but exceeds the lowest 10 percent.

Value indicating "normal" flow:

4 = average daily flow exceeds the lowest 25 percent of historical values for that date, but is less than the highest 25 percent of values.

Values indicating wet conditions:

5 = average daily flow exceeds 75 of historical values for the date, but is lower than the highest 10 percent of values.

6 = average daily flow exceeds 90 percent of historical values for that date;

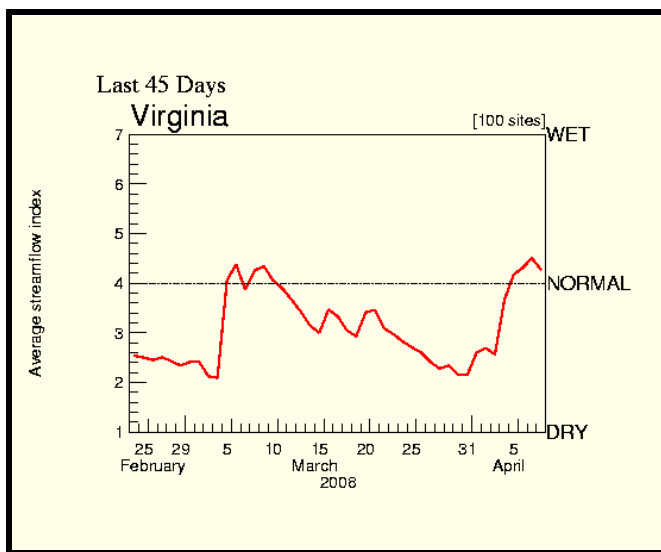
7 = average daily flow for the graphed date is record high for that date.

Gaps in the data: Data are not plotted for days when less than two-thirds of the sites report data (due to equipment or weather problems), because a statewide average on those days may misrepresent actual conditions.

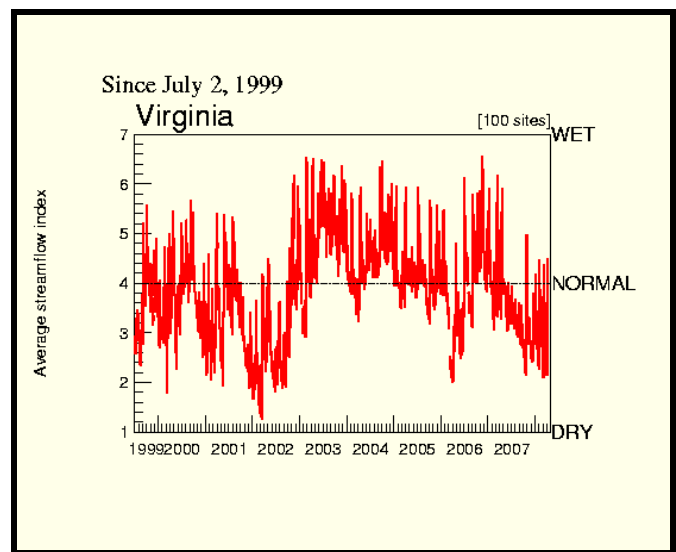
A USGS **map of current stream flow conditions** (with links providing access to details for each measuring station) is available online at <http://water.usgs.gov/waterwatch/?m=real&w=map&r=va>.

Average Daily Stream Flow Index, Compared to the Historical Average for the Date

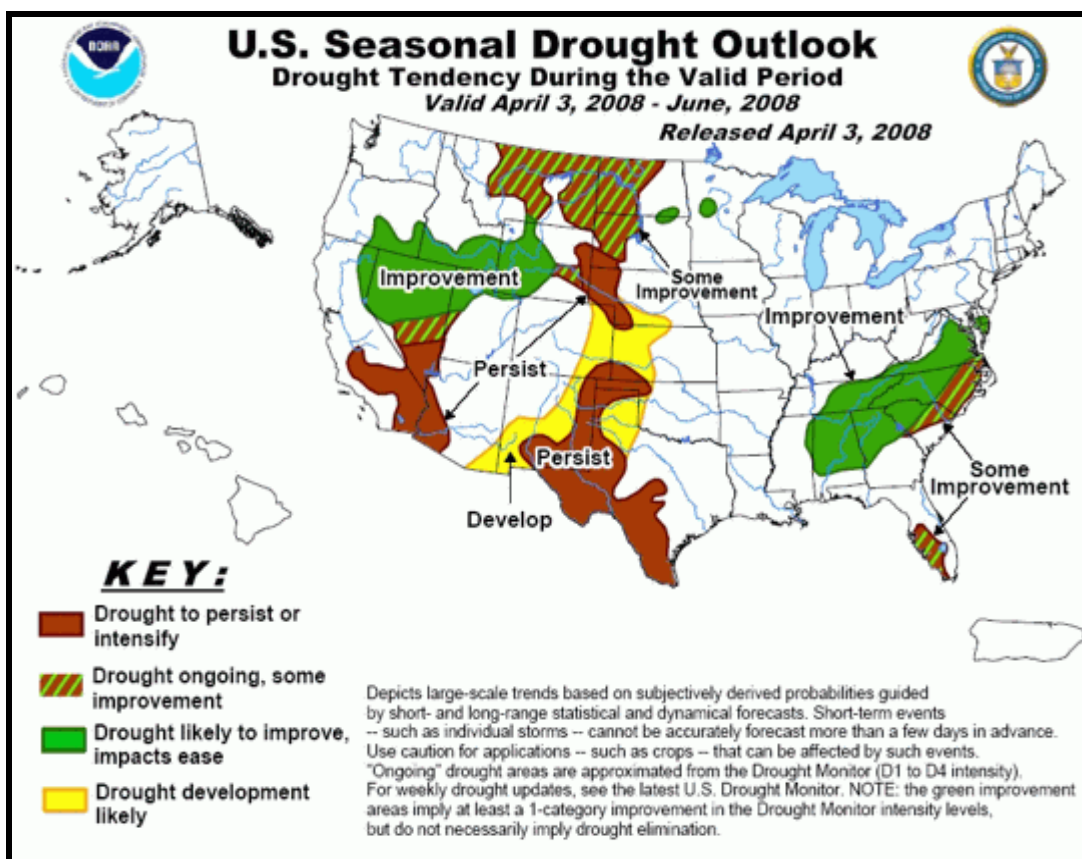
For February 23—April 8, 2008



For July 2, 1999—April 8, 2008



DROUGHT REPORT



The national drought outlook for April-June 2008, according to the National Oceanic and Atmospheric Administration (NOAA) Climate Prediction Center Web site, www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html, accessed 4/8/08.

Recent Drought-related Headlines in Virginia

- "Rains Ease SW Virginia Water Woes," *Kingsport Times-News*, 1/11/08
- "Another Drought Could Be Disaster," *Charlottesville C-Ville Weekly*, 1/15-1/21/08
- "Rain Not Enough to Lift Restrictions," *Norfolk Virginian-Pilot*, 1/23/08
- "Continuing Va. Drought Could Be Trouble in Spring," *Richmond Times-Dispatch*, 1/26/08
- "Verdict On Dry Conditions: It Could Be Worse," *Norfolk Virginian-Pilot*, 1/31/08.
- "Despite Rain, Drought Steady," *Fredericksburg Free Lance-Star*, 2/12/08
- "Groundwater Levels Give Rise to Concern," *Winchester Star*, 2/21/08
- "Reservoir's Level Prompts Concern," *Lynchburg News & Advance*, 2/24/08
- "Drought Proves Costly to Area Farmers," *Lynchburg News & Advance*, 2/23/08
- "Voluntary Water Use Restrictions Are Lifted," *Winchester Star*, 2/29/08
- "Little Relief in Va. From Drought," *Richmond Times-Dispatch*, 3/1/08
- "Recent Rain Makes Small Dent in Drought," *Kingsport Times-News*, 3/8/08
- "Stafford Lifts Water Restrictions," *Fredericksburg Free Lance-Star*, 3/19/08.
- "Drought Conditions are Fueling Spring Wildfire Season," *Bristol Herald Courier*, 3/28/08

March 2008 Report from the Virginia Drought Monitoring Task Force

The Virginia Drought Monitoring Task Force includes the following state agencies: Climatology Office, Dept. of Agriculture and Consumer Services, Dept. of Emergency Management, Dept. of Environmental Quality, Dept. of Forestry, Dept. of Game and Inland Fisheries, and Virginia Cooperative Extension. Federal partners include the U.S. Farm Service Agency, National Weather Service, and U.S. Geological Survey. The Task Force's Drought Status Reports (issued as conditions warrant) and much more information about drought conditions are available

at www.deq.virginia.gov/waterresources/drought.php. The most recent report was issued on March 25, 2008 (revised March 28). Following are excerpts from that report.

Overall

“...The relatively wet period from February 1 until March 21...had very little effect on accumulated precipitation deficits across the Commonwealth. All drought evaluation regions in the Commonwealth are currently below normal for the period beginning October 1, 2006.... Drought conditions have improved over the Commonwealth during the last month with a general reduction of one category in drought severity. ...While the intensity of drought impacts has diminished slightly during the last month, these are likely only short-term improvements. Current moisture deficits will likely result in significant drought impacts across all socio-economic sectors during the 2008 growing season without significant additional precipitation during the summer of 2008.”

Groundwater

“Ground water levels in 14 of 19 dedicated monitoring wells have shown increases in water levels in the last month indicating a short period of groundwater recharge. While this period of ground water recharge is beneficial, all indications are that ground water recharge will be below normal prior to the onset of the 2008 growing season.

Public Water Supply

“Levels of most large reservoirs have continued to rebound over the last month and are now full. There are three significant reservoirs that remain unusually low: Lake Anna [in Louisa and Spotsylvania counties], Carvins Cove [Roanoke area], and Spring Hollow [Roanoke area]. ...While the Virginia Department of Health has not reported any impacts to public water supplies that have compromised their ability to provide the needs of their customers, 29 systems remain on voluntary water conservation requirements and 9 systems remain on mandatory water conservation requirements. The reduction in conservation requirements is likely reflective of decreased water demands during the winter season and it is likely that additional systems will initiate water conservation requirements with the onset of the growing season.”

Wildfire

“Forestry related impacts from the drought have slightly improved over the last month. ...Since January 1st, VDOF [the Virginia Department of Forestry] has responded to more than 670 wildfires which have burned more than 18,000 acres as well as damaging or destroying 12 homes and 30 other structures. On a positive note, VDOF has saved or protected 325 homes and 237 other structures during this same period. The historic wildfire outbreak on February 10, 2008, has pushed these totals well above 5 and 10 year averages for the period.” (According to the February 25 Drought Task Force report, February 10 was “the most intense single day of wildfire activity in the preceding 70 years, [with] 357 reported fires that burned almost 14,000 acres, and damaged or destroyed 9 homes, 19 other structures and 7 vehicles.”)

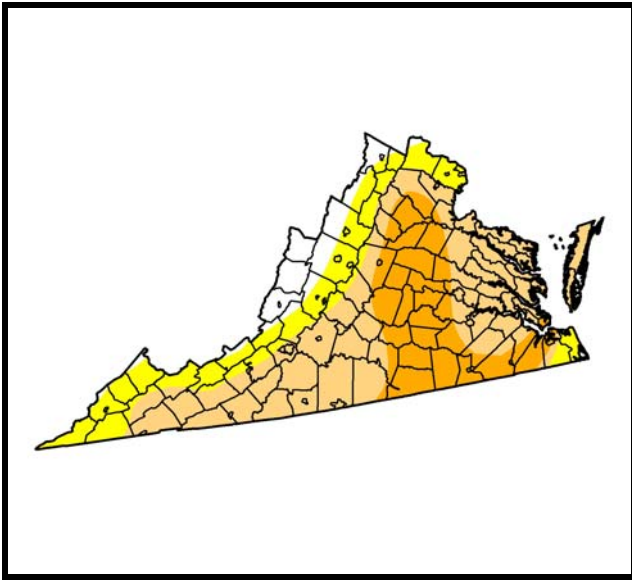
Fisheries and Aquatic Life

“The Department of Game and Inland Fisheries reports all boating access facilities are accessible and operating to support the beginning of the spring fishing season. Reservoirs are expected to be at normal levels for both recreation and the spring fish-spawning period. Trout stocking is on schedule in the western part of the state, however the average size and the total number of fish is down due to the drought and reduced production during 2007. While river and stream flows increased to near average levels during the recent rainfall events, flows rapidly decreased due to depressed ground water levels. As the spring growing season begins, significant precipitation events will be necessary to maintain stream flows and recreational opportunities. Periodic spring rains are necessary to recharge seasonal pools and wetlands that amphibians require for reproduction. Climate change, habitat fragmentation, and recent drought have contributed to significant declines in many species of frogs and salamanders.”

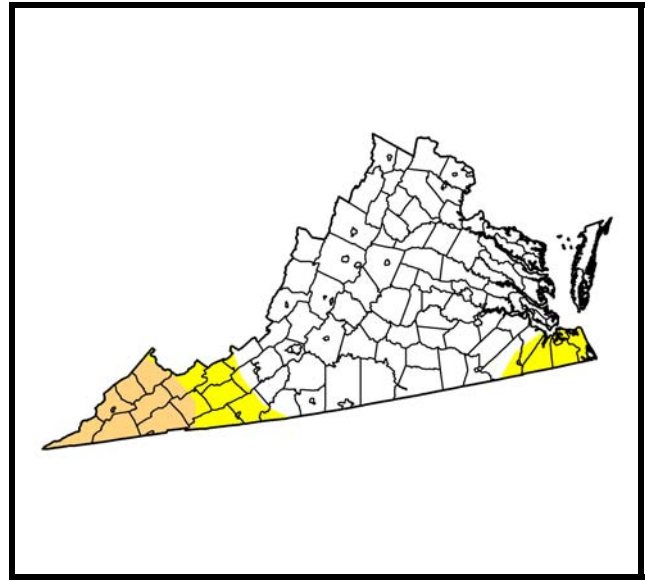
From the U.S. Drought Monitor: Conditions Now, Recently, and One Year Ago

The U.S. Drought Monitor, available online at www.drought.unl.edu/dm/monitor.html, is a weekly nationwide drought assessment by federal agencies and state climatological centers. The Drought Monitor’s ratings, starting from the driest, are as follows: D4 = exceptional drought; D3 = extreme drought; D2 = severe drought; D1 = moderate drought; and D0 = abnormally dry.

The following graphs (next page) show the Drought Monitor assessments of conditions in Virginia on April 8, 2008 compared to April 3, 2007. Note the widespread occurrence of drought (up to the Drought Monitor’s “severe drought” rating) this early April compared to a largely drought-free state—except, notably, for far southwestern Virginia—in April 2007. This difference in drought rating makes sense given the precipitation deficits over the past year (see above, p. 18) and the lower groundwater levels in April 2008 vs. May 2007 (see above, page 19).



From April 8, 2008, Drought Monitor



From April 3, 2007, Drought Monitor

Color Codes for Drought Monitor Ratings

= D0 Abnormally Dry
 = D1 Moderate Drought
 = D2 Severe Drought

Source: Images taken from archive of U.S. Drought Monitor, <http://drought.unl.edu/dm/archive.html>, 4/14/08. Authors: Rich Tinker, CPC/NOAA, for April 8, 2008 image; Thomas Heddinghaus, CPC/NOAA, for April 3, 2007 image.

The Drought Monitor also gives *percentages* of the country, of regions, and of individual states classified in the drought categories. The following table shows how much of the country and of Virginia received different Drought Monitor ratings on dates between January 1 and April 8, 2008, as well as the ratings one year ago. Note again the difference in Virginia between early April 2007 and early April 2008.

Drought Monitor Report Date	Percentage of area rated “abnormally dry” (D0) or worse	Percentage of area rated “severe drought” (D2) or worse
4/8/08	U.S. = 44% Va. = 91%	U.S. = 7% Va. = 24%
3/4/08	U.S. = 47% Va. = 93%	U.S. = 13% Va. = 38%
2/5/08	U.S. = 52% Va. = 93%	U.S. = 13% Va. = 41%
1/1/08	U.S. = 51% Va. = 92%	U.S. = 17% Va. = 27%
4/3/07	U.S. = 48% Va. = 19%	U.S. = 9% Va. = 0%

Other Useful Sources of Information

U.S. Geological Survey “Drought Watch” for Virginia: <http://va.water.usgs.gov/drought/>.

Virginia Forestry Department list of burn bans: <http://www.dof.virginia.gov/fire/burn-bans.shtml>.

Virginia Department of Environmental Quality water-conservation tips:
www.deq.virginia.gov/waterresources/waterconservation.html.

Parting Word

“It’s not like the economy. We can’t just ask them to increase the rainfall a few percentages. All we can do is wait and see.”—Jerry Stenger, Virginia state climatologist, *Virginian-Pilot*, 1/31/08

WATER QUALITY and YOU/LA CALIDAD de AGUA y USTED*

In this section, *Water Central* offers suggestions for how individuals can help maintain and improve the condition of Virginia's waters and aquatic habitats. Unless otherwise noted, you are welcome to reproduce and distribute items in this section, but please retain the credits to the original source(s). All Web sites mentioned were functional as of 4/9/08. **Para información en español, por favor vea la pagina proxima (for information in Spanish, please see the following page).*

Reducing Marine Debris

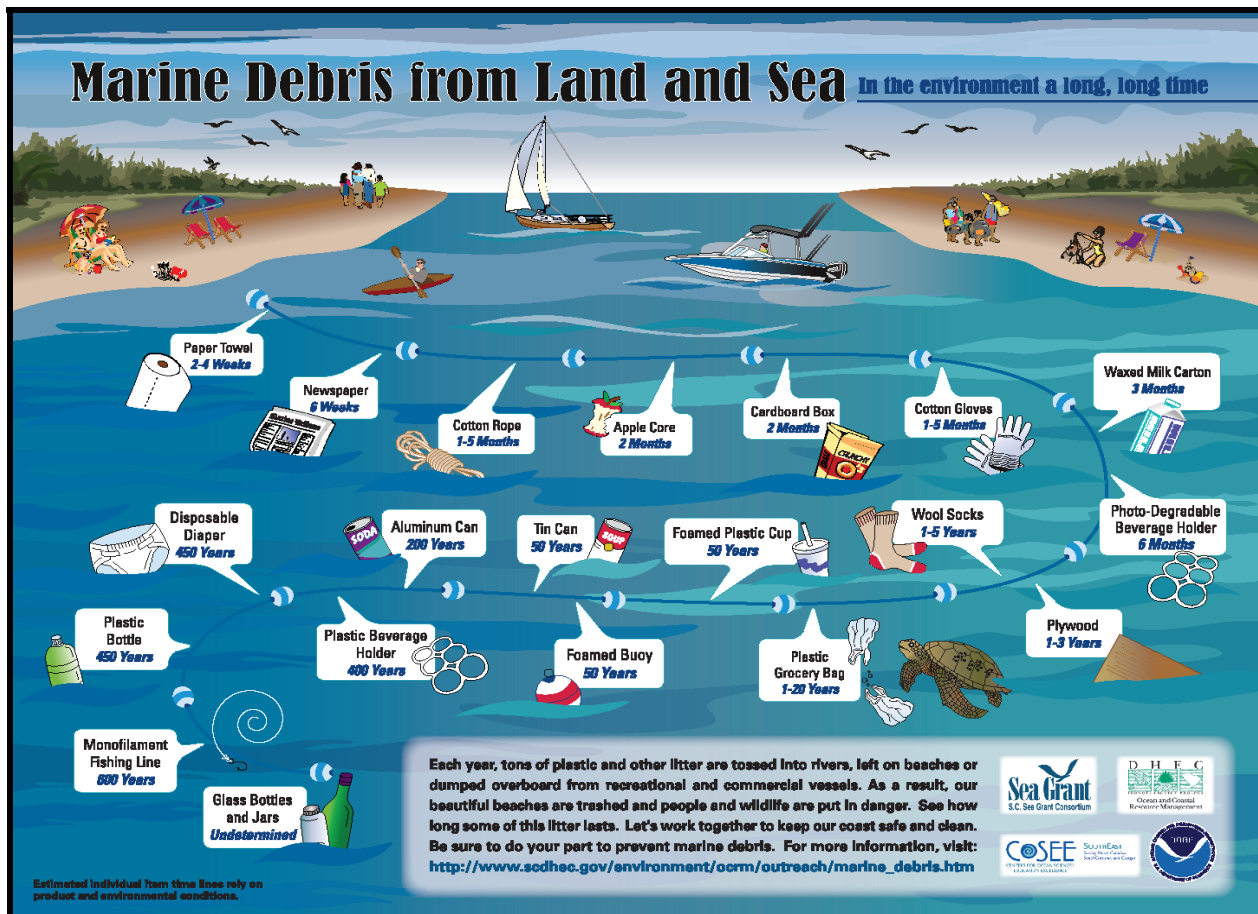
"Marine debris" is litter on beaches and in oceans, estuaries, and other coastal waters. According to the U.S. EPA, "marine debris is any man-made, solid material that enters our waterways directly (e.g., by dumping) or indirectly (e.g., washed out to sea via rivers, streams, storm drains, etc.)" (EPA Office of Wetlands, Oceans, and Watersheds, www.epa.gov/owow/oceans/debris/). The EPA lists the following ways that individuals can help reduce marine debris:

- Dispose of trash properly.
- Reduce, reuse, and recycle materials whenever possible.
- Cut up plastic six-pack holders to lower the risk of entanglement by marine animals.
- Participate in local beach, river, or stream clean-ups.
- Look for alternative materials or avoid excessive packaging when deciding on purchases.
- Educate others about marine debris.

Below are some tools to help you learn about, teach about, and participate in reducing marine debris.

Marine Debris Poster

The illustration below, provided to *Water Central* by the South Carolina Sea Grant consortium, shows the time it takes for various kinds of marine litter to decompose or disintegrate. A full-page, downloadable version of this poster is available on the Water Center's Web site at www.vwrrc.vt.edu/more_resources.html and at the South Carolina Sea Grant Web site at www.scdhec.gov/environment/ocrm/outreach/marine_debris.htm.



Coastal Clean-up Results

The International Coastal Cleanup is held annually to collect trash from shorelines and waterways. Virginia participates in the international event through the Annual Virginia Waterways Cleanup, organized by Clean Virginia Waterways, during which thousands of volunteers clean up litter and recycle appropriate items from Virginia's coastal and inland waters. To participate in or find out more these events, contact Katie Register, Clean Virginia Waterways executive director, at (434) 395-2602 or cleanva@longwood.edu; Web site: www.longwood.edu/cleanva.

Coastal Cleanup volunteers also fill out data cards to document the kinds and amounts of litter found. The chart below shows the results from the 2006 events in Virginia.

Item	Number Found	Percent of Total
1. Beverage Bottles (Plastic) 2 liters or less	9729	13.5%
2. Cigarettes/Cigarette Filters	9542	13.3%
3. Bags	8364	11.6%
4. Food Wrappers and Containers	7537	10.5%
5. Beverage Cans	7418	10.3%
6. Beverage Bottles (Glass)	7400	10.3%
7. Cups/Plates/Forks/Knives/Spoons	4083	5.7%
8. Caps/Lids	3992	5.5%
9. Straws/Stirrers	2066	2.9%
10. Balloons	1279	1.8%

Source: Clean Virginia Waterways, April 2008.

LA CALIDAD de AGUA y USTED

En esta sección, *Water Central* le ofrece sugerencias de como individuales puedan mantener y mejorar la condición de las aguas y las habitaciones acuáticas de Virginia. Aprovechese de reproducir y distribuir esta pagina, pero por favor retenga los créditos a los originales.

Desperdicios en Nuestros Océanos: Usted Puede Ser Parte de la Solución

(Fuente: La Agencia de Protección Ambiental de EE.UU. www.epa.gov/owow/oceans/debris/, 4/8/08.)

Los desechos marinos comúnmente llamados basura marina, se han tornado en un serio problema a lo largo de las costas, estuarios y océanos alrededor del mundo. Estos se definen como cualquier material sólido manufacturado por el hombre que directamente (ej. arrojada por alguien) o indirectamente (ej. arrastrada hacia el mar, ríos, quebradas, alcantarillados pluviales por la escorrentía, etc.) entran a nuestros cuerpos de agua. Objetos tales como botellas de detergentes, desperdicios médicos peligrosos y líneas de pesca; todos son considerados como basura marina. Además de ser desagradable, los mismos representan un gran riesgo para cualquier organismo que entre en contacto con ellos. Estos desperdicios pueden ser peligrosos para la vida marina, la salud pública y causar estragos en las comunidades costeras y la industria pesquera.

Que Usted Puede Hacer para Ayudar a Solucionar este Problema

- Disponer de la basura de forma adecuada. Esto ayudará a reducir la cantidad de basura que es lavada por la lluvia hacia nuestros cuerpos de agua.
- Reducir, re-utilizar, reciclar.
- Corte las yuntas de refrescos. Esto reducirá el riesgo de enredo para los animales marinos si las yuntas llegan hasta las aguas costeras.
- Participe en las limpiezas locales de playas, ríos y arroyos.
- Tenga buenas prácticas de consumo.
- Siempre busque alternativas para el empaque de productos y evite el exceso de envolturas al momento de hacer las compras.
- Eduque a otros sobre el problema de la basura marina.
- Involucrese en las actividades de conservación en su vecindario.

Para más información, comuníquese:

U.S. EPA/Office of Wetlands, Oceans and Watersheds
Mail Code 4504T/1200 Pennsylvania Avenue, NW
Washington, DC 20460
(202) 566-1200

IN AND OUT OF THE NEWS

Newsworthy Items You May Have Missed

The items in this section are based on information in the source(s) indicated in parentheses at the end of each item. This issue presents relatively short takes on a large number of items collected between September 2007 and April 2008. Except as otherwise noted, the localities mentioned are in Virginia and the dates are in 2008. Frequently used abbreviations include the following: DCR = Va. Dept. of Conservation and Recreation; DEQ = Va. Dept. of Environmental Quality; EPA = U.S. Environmental Protection Agency; SWCB = Va. State Water Control Board; VMRC = Va. Marine Resources Commission.

In Virginia

- In September 2007, **Water Lettuce** (*Pistia stratiotes*), an invasive, non-native aquatic plant, was found for the first time growing in the Potomac River (by Nancy Rybicki of the U.S. Geological Survey). (*Potomac Basin Reporter*, Sep.-Oct. 2007)

- In October 2007, the **Rappahannock River Valley National Wildlife Refuge** (Richmond County) was listed by Defenders of Wildlife as one of 10 “refuges at risk” nationwide, because of adjacent development and a lack of federal funds to complete the refuge. (*Richmond Times-Dispatch*, 10/12/08)

- Stafford County voted in December 2007 to use a \$9.5-million Va. DCR grant and a \$9.5-million VA DEQ low-interest loan to purchase 1,720 acres of the **Crows Nest peninsula** (*Fredericksburg Free Lance-Star*, 12/19/07)

- A 2007 survey of 20 **Fairfax County rain gardens** by the Northern Virginia Soil and Water Conservation District found that the stormwater-management effectiveness of many gardens was reduced by poor design, construction, or maintenance, and that more education on the technique is needed. (*Conservation Currents*, Fall 07-Winter 08)

- In January, Richmond’s **Massey Energy Company** agreed to a \$20-million settlement with the U.S. EPA for water-pollution violations during coal extraction in Kentucky and West Virginia (the country’s largest civil penalty to date for a water-pollution case). (*Richmond Times-Dispatch*, 1/18/08)

- In January, Fred Barnes of Chesapeake broke Virginia’s **saltwater Striped Bass (Rockfish) record** with a 73-pound catch near Cape Henry; the old record was a fish of just over 68 pounds, caught in 2006. (*Virginian-Pilot*, 1/24/08)

- In January, the Va. Dept. of Game and Inland Fisheries, the Prince William [County] Conservation Alliance, and the U.S. Marine Corps bought (for \$2.8 million) the **300-acre Merrimac Farm**—near the Quantico Marine base—to become a state wildlife preserve. (*Washington Post*, 2/7/08)

- In February, the Town of Stephens City approved an **ordinance to address sinkholes** in developed areas. (*Winchester Star*, 2/6/08)

- In February, a tanker truck overturned in **Giles County**, spilling over 7,000 gallons of fuel oil and kerosene, with about 2,000 gallons reaching a New River tributary (*Roanoke Times*, 2/16/08). Also that month, a tanker truck spilled about 5,700 gallons of

diesel fuel at the Mirant Potomac River Generating Plant in **Alexandria**, with an unknown amount reaching the river (www.alexandrianews.org, 2/19/08).

- A seven-acre parking lot expansion at Prime Outlets Mall in Williamsburg is being billed as the United States’ **largest pervious concrete project**. The surface will allow stormwater to infiltrate to the ground and an underground storage system will detain and slowly release water. (*Virginian-Pilot*, 3/20/08)

- Tests by the **Shenandoah River Fish Kill Task Force** have indicated that Largemouth Bass virus and hemorrhagic septicemia virus are most likely *not* the cause of the past several years’ kills. (*Northern Virginia Daily*, 3/10/08)

- In **wastewater snapshots**—**Charlottesville** learned in January that needed repairs and upgrades to its sewer system could cost \$26.7 million over the next five years. **Waynesboro** began the process of borrowing \$18 million to continue long-term work to correct “infiltration and inflow” problems (stormwater leaks into the sewer system). **Elkton** will undergo a consent order process with the Va. DEQ that will eventually mean fines for 10 wastewater-treatment violations in late 2007 and early 2008. (*Charlottesville Daily Progress*, 1/8/08; www.nbc29.com, 2/14/08; and *Harrisonburg Daily News Record*, 2/22/08)

- In **water supply snapshots**—The Rivanna Water and Sewer Authority (serving Albemarle County and Charlottesville) received a Va. DEQ permit for expanding the **Ragged Mountain Reservoir** (for a previous *Water Central* item; Jun. 2006, p. 22). King William County and the City of Newport News agreed that the City will provide interim financing for the County’s purchase of land needed for the proposed **King William reservoir**. (*Charlottesville Daily Progress*, 2/14/08; and *Daily Press*, 2/26/08. For the most recent *Water Central* item on the King William reservoir: Dec. 2007, p. 16.)

Chesapeake Bay Items

- At the December 2007 meeting of the **Chesapeake Executive Council** (the governors of Virginia, Maryland, and Pennsylvania; the mayor of the District of Columbia; the U.S. EPA administrator; and the chair of the Chesapeake Bay Commission), the Council acknowledged that Bay water-quality and habitat-restoration goals for 2010 will not be met by then; pledged to conserve 695,000 forest acres by 2020; and assigned various tasks for each partner to

“champion,” with Virginia agreeing to lead efforts to reduce pollution from agriculture (through nutrient-management plans, stream buffers, stream fencing, conservation tillage, and cover crops). (*Bay Journal*, Jan. 2008)

- At monthly meetings in January, February, and March, the VMRC took several **actions on Blue Crabs and oysters** (minutes are available online at www.mrc.virginia.gov/calendar.shtm). On oysters, the VMRC approved a Corps of Engineers request to restrict permanently oyster harvesting from a 30-acre area of the Lynnhaven River and to set aside temporarily another 60-acre area of the river. The VMRC also approved the request from the Virginia Seafood Council to grow 1.3 million non-native oysters in the Bay, beginning in June. This would be the Seafood Council’s seventh non-native oyster growth experiment since 2000 and the largest to date; approval is also needed from the VMRC director and the Corps of Engineers’ District Office in Norfolk. (*Virginian-Pilot*, 1/25, 2/29, and 3/26/08; and *Washington Times*, 3/3/08)

On crabs, the VMRC imposed new harvest rules requiring use of cull rings, raising the minimum size for “peeler” crabs, limiting working on another person’s permit, capping at the current level (55) the number of permits for the winter dredge season, and lengthening the duration of the Blue Crab sanctuary period. Additional changes are expected at the April VMRC meeting. With Maryland also planning new crab-harvest restrictions, Virginia Gov. Tim Kaine and Maryland Gov. Martin O’Malley met on April 15 to receive more data from scientists. (*Virginian-Pilot*, 2/27 and 3/26/08; Associated Press, 2/28/08; and *Richmond Times-Dispatch*, 4/15/08)

- A November article described the near elimination of **crab-picking businesses** from Virginia’s Eastern Shore, attributed to reduced Bay crab populations, shoreline development, and competition from imported crabmeat. (www.delmarvanow.com, 11/5/07)

Water, Energy, and Climate

- In November 2007, Dominion Virginia Power received an early site permit from the Nuclear Regulatory Commission (NRC) for a **third nuclear reactor at the North Anna Power Station** in Louisa County, and a week later filed an application with the NRC for a construction and operating license for a third reactor. (*Richmond Times-Dispatch*, 11/21 and 11/29/07. For previous *Water Central* items: June 2006, p. 19 and Jan. 2007, p. 19.)

- In December 2007, the City of Hopewell approved a plan by Osage Bio Energy LLC to a **barley ethanol-production plant** (reportedly Virginia’s first) near the city’s downtown. (*Richmond Times-Dispatch*, 12/5 and 12/19/07; and *Petersburg Progress-Index*, 12/19/07)

- In December, the State Corporation Commission approved Virginia’s **first commercial wind farm**, in Highland County, with requirements to monitor bird or bat deaths caused by the turbines, keep animal deaths below a prescribed level, and pay penalties if raptors are killed. (*Roanoke Times*, 12/21/07)

- Efforts to use or sell **methane** (one of the “greenhouse gases”) generated at solid waste landfills for electricity production are taking place at about 20 Virginia facilities and interest is growing throughout the state. (*Roanoke Times*, 1/17/08; *Fredericksburg Free Lance-Star*, 1/20/08; and *Daily Press*, 1/31/08)

- Old Dominion University is leading Virginia’s research efforts into using **algae nourished by nutrients in wastewater to produce biodiesel fuel**. (*Virginian-Pilot*, 1/19/08)

- In January, Appalachian Power became the first Virginia utility to file a plan with the State Corporation Commission for meeting a voluntary Virginia Energy Plan goal of generating 4 percent of its **electricity from renewable sources** by 2010 and 12 percent by 2022 (utilities can earn extra profit for meeting the goal). (*Richmond Times-Dispatch*, 1/24/08)

- As of mid-April, S.2191, the U.S. Senate bill sponsored by Virginia Sen. John Warner and Connecticut Sen. Joseph Lieberman that would establish a **“cap-and-trade” system for carbon emissions** had passed the Senate Committee on Environment and Public Works. (Library of Congress’ “Thomas” Web site, <http://thomas.loc.gov>, 4/14/08)

- Dominion Virginia Power’s **proposed coal-fired power plant in Wise County** and the reactions to the proposal reveal many of the current questions and conflicts generated by the connections among energy, economics, coal, climate, air, land, and water. In the latest regulatory developments, the proposal was approved on March 31 by the State Corporation Commission and is now before the Air Pollution Control Board. (*Washington Post*, 4/1/08)

Final Words

- “There is a gradual but growing acceptance of the reality of **climate change** within the bulk of the business community. If the governor’s commission can shed more light on that and identify new techniques [to address] climate change, we would welcome that.”—Hugh Keogh, president of the Virginia Chamber of Commerce, referring to the Virginia Climate Change Commission. (*Richmond Times-Dispatch*, 2/1/08)

- “Reston is literally breaking ground in one of the most comprehensive **stream restoration** projects in an urban area.”—Robin Smyers, director of the Reston Association, referring to stream restoration work resulting from funds paid into the Northern Virginia Stream Restoration Bank. (*Reston Connection*, 2/13/08)

- “**Mercury** is a very difficult issue to tackle [and] each river behaves differently. We’ve learned a lot, but we’re not to the point where we can say, ‘Here’s the fix.’”—Don Kain, Va. Department of Environmental Quality, referring to mercury contamination discovered in the 1970s in the South River at Waynesboro. (*Harrisonburg Daily News-Record*, 4/5/08)

- “Make the **Mummichog** well again by the year 2020.”—This goal of the Elizabeth River Watershed Action Plan refers to a small fish whose health is being monitored as an indicator of the river’s water quality. (www.wvec.com, 2/13/08)

SPECIAL NEWS ITEM—ENVIRONMENTAL AWARDS

This section reports some recent recognitions of various environmental and water-related achievements.

Governor's Environmental Excellence Award Winners

At the 2008 Environment Virginia Conference in Lexington on April 2, the annual Governor's Environmental Excellence Awards were presented. The winners are listed below. *Water Central* thanks the Virginia Department of Environmental Quality (DEQ) for providing the text (edited for space) for this section.

Environmental Programs-Large Business

Micron Technology (Manassas) won both a Gold Medal and the Flag for its Environmental Management System.

MeadWestvaco Corporation (Covington) won a Gold Medal for its innovative approach to operating a sludge-treatment system, which led to reductions in the level of phosphorous.

BAE Systems Norfolk Ship Repair won a Gold Medal for constructing wildlife-protection areas and researching technology to remove toxic paint additives from its wastewaters.

Lockheed Martin (Manassas) won a Bronze Medal for its Environmental Performance Reporting System.

Cargill Meat Solutions (Dayton) won a Bronze Medal for the Cooks Creek Restoration Project.

Environmental Programs-Small Business

SOZO Clean (Newport News) won a Bronze Medal for its policy to safeguard the health and safety of staff and clients and to eliminate toxic wastewater from its jobs.

Environmental Programs-Government

The City of Charlottesville won a Gold Medal and Flag for its Environmental Sustainability Initiative.

The Center for Environmental & Natural Sciences at Freedom High School (Prince William County) won a Gold Medal for projects and programs to increase students' knowledge in the environmental and natural sciences, conserve resources and reduce waste, improve water quality and local habitats, and increase awareness of environmental issues.

The York County School Division won a Silver Medal for its Energy Conservation Program.

The U.S. Army Transportation Center, Fort Eustis won a Silver Medal for its Environmental Management System.

The University of Virginia's Office of Environmental Health and Safety won a Silver Medal for its Sustainability Initiative.

The Virginia Department of Corrections won a Bronze Medal for its Pollution Prevention Program.

The Virginia Beach School Division won a Bronze Medal for its Green Schools Program.

The Town of Blacksburg, in coordination with **Virginia Tech and Sustainable Blacksburg**, won a Bronze Medal for Sustainability Week 2007.

Old Dominion University's Environmental Advisory Committee won a Bronze Medal for its work as the university's focal point for its environmental, pollution-prevention, and sustainability programs and measures.

Environmental Projects-Large Business

Volvo Trucks North America-NRV Plant (Dublin) won a Gold Medal and Flag for its wastewater-reuse project.

Canon Virginia (Newport News) won a Silver Medal for implementing an innovative and environmentally friendly pretreatment technology.

Boehringer Ingelheim Chemicals (Petersburg) won a Silver Medal for reducing emissions of VOCs (volatile organic compounds), reducing wastewater discharges, increasing recycling, and conserving natural resources.

Columbia Gas of Virginia (Chester) won a Silver Medal for addressing potential environmental risks of land areas through remediation and the development of green space.

The Coors Brewing Company's Shenandoah Facility (Elkton) won a Silver Medal for constructing biogas boilers as part of its wastewater-treatment system, allowing the facility to use methane and reduce emissions.

Smithfield-North won a Bronze Medal for its "Dressed to Save—Boiler Jackets" project (extra insulation on its boilers).

Smithfield Ham & Products won a Bronze Medal for efforts to reduce use of water, natural gas, and electricity.

Philip Morris USA-Park 500 won a Bronze Medal for its project relating to recycling and reusing two of its solid-waste streams.

Environmental Projects-Small Business

Hopewell Cogeneration Facility won a Silver Medal for developing a way to reduce nitrous oxide (NO_x) on plant startup.

The Chesapeake Energy Center Carbon Burn Out Plant won a Silver Medal for enabling PMI Ash Technologies and Dominion Virginia Power to reuse fly ash.

Environmental Projects-Partnerships

The Gaines Group and the Charlottesville-Albemarle Technical Education Center won a Gold Medal for the Hinge House, made of local materials and designed to be water- and energy-efficient.

The Virginia Regional Environmental Management System Partnership (under the leadership of Defense Supply Center Richmond) won a Gold Medal for its regional approach to environmental and community-based issues.

The Town of Blacksburg and the YMCA at Virginia Tech won a Gold Medal for the Blacksburg Community Electronics Reuse and Recycling Project.

Land Conservation-Government

Virginia's Coastal Zone Management Program, the Virginia Department of Conservation and Recreation, the Virginia Department of Game and Inland Fisheries, the U.S. Fish and Wildlife Service, and the Nature Conservancy won a Gold Medal for the Southern Tip Partnership of Northampton County.

The US Army Garrison-Fort A.P. Hill won a Silver Medal for its efforts to cost-share the acquisition of conservation easements from willing landowners.

Land Conservation-Individual

Charlotte Hanes won a Gold Medal for the New River conservation activities, including placing land along the New River into conservation easements and identifying an alternate site for a state prison that had been proposed for a site on the New River.

Mr. William Owen, III, won a Silver Medal for the Raccoon Creek Pinelands 1 project, a donation of a 1,400-acre easement.

Caroline Stalnaker won a Bronze Medal for the Mount Pleasant Farm project, protecting over 100 acres of farm and forest land.

Other Recent Recognitions and Achievements

•In November 2007, **Roanoke's State and City Building**—a mix of residential, office, and retail spaces—earned a **Leadership in Energy and Environmental Design (LEED) certification** from the U.S. Green Building Council. The certification recognized the building's energy and water-saving features. The Roanoke building joins approximately 25 other Virginia buildings that have received some level of LEED certification. Hundreds of other Virginia building projects are *registered* with LEED, the first step towards possibly earning certification. (*Roanoke Times*, 3/13/08; and www.usgbc.org, 4/10/08)

•Also in November 2007, **Dr. Jennifer Howard, a dentist in Smithfield**, won a **Businesses for the Bay Environmental Excellence Award** for reducing water and energy use and well as use of mercury and other chemicals. **Businesses for the Bay** is a Virginia Department of Environmental Quality (DEQ) pollution-prevention program; more information is available at www.deq.virginia.gov/p2/programs.html. (*Daily Press*, 2/28/08).

•In January, the **Elizabeth River Project's River Stars program** recognized 28 Hampton Roads-area businesses, organizations, and government agencies for reducing pollution by almost 16 million pounds, conserving 169 acres of wildlife habitat, and recycling or reusing over one billion pounds of materials. (www.elizabethriver.org, accessed 4/10/08)

•The **March 14 Shamrock Marathon in Virginia Beach** was the state's first certified *event* in the Virginia DEQ's Virginia Green program. The certification was based on efforts to reduce materials used and provide recycling opportunities. More information about Virginia Green is available at www.deq.virginia.gov/p2/virginiagreen/about.html. (*Virginian-Pilot*, 3/14/08)

•In March, the **King George County landfill** won an Exemplary Environmental Enterprise (E3) award in the Virginia DEQ's Environmental Excellence Program. The facility received the award for long-term implementation of environmental-management and pollution-prevention programs, such as providing free recycling for automotive fluids, fluorescent bulbs, and other materials. More information about the Environmental Excellence Program is available at www.deq.virginia.gov/veep/. (*King George Journal Press*, 4/2/08)

VIRGINIA GOVERNMENT WATER ISSUES OVERVIEW

This section lists water issues under current consideration (study or regulation) by state boards, commissions, or agencies in Virginia, plus schedule and contact information for key water-related boards and commissions. Information in this issue is based on public meetings listed **January 7-April 14, 2008**, on the **Virginia Regulatory Town Hall** Web site, at www.townhall.state.va.us. The Town Hall site posts agendas of upcoming meetings and minutes of past meetings held by Virginia's boards, commissions, and departments. Unless otherwise noted, all contact people listed in this section are Virginia state employees. To find the e-mail address any state employee, go online to www.employees.state.va.us/directory-search.cfm. You can also request state employee phone numbers by calling (800) 422-2319. All Web sites listed in this section were functional as of 4/11/08.

Ongoing Total Maximum Daily Load (TMDL) Development

Under the federal Clean Water, when a water body fails to meet state water-quality standards, the water is to be designated as "impaired," requiring development of a total maximum daily load (TMDL). A TMDL *study* identifies the pollutant source(s) causing the impairment and determines how much of the pollutant(s) the water can receive (the "load") and still meet standards. A TMDL *implementation plan* (required by Virginia law) maps a process for reducing the pollutant load to the TMDL level. Many Virginia TMDLs are underway, each involving many public meetings. Information on all TMDLs in Virginia is available online at www.deq.state.va.us/tmdl/.

Location	Water(s) & Impairment	Larger Watershed(s)	For More Information
Accomack County	Holdens Creek, Petit Branch, Sandy Bottom Branch, and unnamed tributary to Sandy Bottom Branch for bacteria; and unnamed Tributary to Pitts Creek for dissolved oxygen impairment	Chesapeake Bay	Jennifer Howell
Accomack County	Parker Creek for aquatic life impairment	Coastal bays	Jennifer Howell
Accomack County	Shellfish waters in the Occohannock Creek watershed for bacteria	Chesapeake Bay	Jennifer Howell
Albemarle, Green, and Orange counties	Rivanna River and tributaries, including Beaver Creek, Meadow Creek, Mechums River, North Fork Rivanna River, and Preddy Creek, for bacteria and aquatic-life impairment	James River	Robert Brent
Amelia and Nottoway counties	Deep Creek, Flat Creek, Nibbs Creek, and West Creek for bacteria	Appomattox River/James River	Mark Alling
Amelia and Prince Edward counties	Bush River, Briery Creek, Little Sandy Creek, and Saylers Creek for bacteria	James River	Ram Gupta
Appomattox and Campbell counties	Falling River for bacteria	Roanoke River	Krystal Coxon
Augusta and Rockbridge counties	Hays Creek, Moffatts Creek, Otts Creek, and Walker Creek for bacteria	James River	Robert Brent
Augusta and Rockingham counties	South River for bacteria and aquatic life impairment	Shenandoah River/Potomac River	Robert Brent
Buchanan County	Bull Creek and all tributaries for aquatic life impairment	Levisa Fork/Big Sandy River	Shelley Williams
Caroline, King George, Spotsylvania, and Stafford counties and City of Fredericksburg	Tidal freshwater portions of Rappahannock River for bacteria	Chesapeake Bay	Katie Conaway
Charles City, Chesterfield,	James River for bacteria	Chesapeake Bay	Mark Alling

and Prince George counties and City of Hopewell			
Cumberland, Fluvanna, Goochland, Louisa, and Powhatan counties	James River for bacteria	Chesapeake Bay	Mark Alling
Fairfax County and City of Fairfax	Accotink Creek and Difficult Run for bacteria and aquatic-life impairment	Potomac River	Katie Conaway
Halifax and Pittsylvania counties	Dan River and several tributaries (Byrds Branch, Double Creek, Falls Creek, Sandy Creek, and Sandy River) for bacteria	Roanoke River	Amanda Gray
Henrico County and City of Richmond	Upham Brook and tributaries for bacteria	James River	Mark Alling
Henry and Patrick counties and City of Martinsville	North Fork and South Fork of Mayo River for bacteria; Smith River for bacteria and aquatic life impairment	Dan River/Roanoke River	Mary Dail
King George County	Shellfish waters in Upper Machodoc Creek and its tributaries for bacteria	Potomac River	Chester Bigelow
James City County	Mill Creek and Powhatan Creek watersheds for bacteria	James River	Jennifer Howell
Rockbridge County	Maury River for aquatic life impairment	James River	Robert Brent
Wise County	North and South Fork Pound rivers for aquatic life impairment	Russell Fork/Big Sandy River	Shelley Williams

Ongoing Solid Waste Groundwater Program Situations

The Virginia Department of Environmental Quality's (DEQ) Waste Management Division regulates solid waste landfills and other sites where contaminants potentially can seep into groundwater. When this occurs, a monitoring program or corrective action plan may be needed, and various public meetings are held during development of such plans. The following table lists locations where groundwater monitoring program or corrective action plans are currently being (or have recently been) addressed in public meetings; this list does not include sites where plans or programs have already been implemented. Information on the DEQ's Solid Waste Groundwater Program and solid waste groundwater remediation is available online at www.deq.virginia.gov/waste/groundwater.html, or by contacting Geoff Christe, (804) 698-4283 or gxchriste@deq.virginia.gov. For questions about specific facilities other than those listed below, contact the regional DEQ office nearest you: Northern Region, Woodbridge; Piedmont Region, Glen Allen; South Central Region, Lynchburg; Southwest Region, Abingdon; Tidewater Region, Virginia Beach; Valley Region, Harrisonburg; West Central Region, Roanoke. Internet inks for these offices are available at www.deq.virginia.gov/regions; phone numbers for these offices should be in the state government pages of your local phone book.

Location	Facility/issue	For More Information
Franklin County	Franklin County landfill	Elizabeth Logman

Other Topics Under Current Statewide Consideration

Items are listed alphabetically by topic, followed by the agency or group coordinating state study or action and then a contact name. Agency Abbreviations: DCR = Dept. Conservation and Recreation; DEQ = Dept. Environmental Quality; DGIF = Dept. Game and Inland Fisheries; DMME = Dept. Mines, Minerals and Energy; SWCB = State Water Control Board; VDH = Department of Health.

Aquaculture Enhancement Zones—The SWCB is considering amending Virginia's Water Quality Standards to establish "aquaculture enhancement zones" on the Eastern Shore. The technical advisory committee met Mar. 18. More information: Eleanore Daub.

Biosolids—A state panel under the secretaries of Natural Resources and of Health and Human Resources is studying biosolids in Virginia. Two work groups met Jan. 23. More information: Jeff Corbin.

Concrete Product Facilities' General Wastewater Discharge Permit Regulation (9 VAC 25-193)—The SWCB is considering changes and reissuance of this regulation. A public hearing was held Jan. 7 and the public comment period ended Jan. 25. More information: Eleanore Daub.

- Energy Plan and Policy**—The Governor’s Energy Policy Advisory Council, tasked with reviewing and evaluating strategies for implementing the Virginia Energy Plan, met Mar. 25. More information: Eileen Leonard.
- Industrial Activity Stormwater Discharge General Permit Regulation (9 VAC 25-151)**—The SWCB is considering changes and reissuance of this regulation. The technical advisory committee for this regulation met Feb. 28. More information: Burt Tuxford.
- Mined Land Reclamation**—DMME’s Division of Mined Land Reclamation held a public meeting on Feb. 22 on the FY 2008 Abandoned Mine Land Consolidated Grant Application to be submitted to the Federal Office of Surface Mining. More information: Roger Williams.
- Non-metallic Mineral Mining Discharge General Permit Regulation (9 VAC 25-190)**—The SWCB is considering changes and reissuance of this regulation. The technical advisory committee for this regulation met Mar. 27. More information: George Cosby.
- Recycling**—DEQ’s Recycling Markets Development Council met Mar. 6. More information: Thomas Smith, Prince William County Public Works, tsmith@pwcegov.org or (703) 792-6252.
- Solid Waste Management Regulation (9 VAC 20-80), Amendment 7**—According to the Waste Management Board’s Notice of Intended Regulatory Action (NOIRA), the purpose of this amendment is to “review each section of the regulation [siting, design, construction, operation, closure, and post-closure care] for clarity and complexity in order to transform the regulation into a standard that is easier for the public and regulated community to read and to follow” (*Virginia Register of Regulations*, 1/28/08). A public hearing on the NOIRA was held Feb. 21, and the public comment period ended Feb. 28. More information: Allen Brockman.
- Stormwater Best Management Practices (BMPs)**—The Virginia Stormwater BMP Clearinghouse Committee, coordinated by the DCR and the Virginia Water Resources Research Center, is working to develop a Web site to serve as Virginia’s reference site for stormwater BMPs. The committee met Mar. 13. More information: David Dowling.
- Underground Storage Tank Technical Standards and Corrective Action Requirements Regulation (9 VAC 25-580)**—The SWCB is considering whether to amend this regulation. The technical advisory committee assisting in developing amendments met Feb. 8. More information: Russ Ellison.
- Water reclamation and reuse regulation (9 VAC 25-740)**—The Technical Advisory Committee for this regulation, which was approved by the SWCB on Dec. 4, 2007, reconvened on Jan. 9 to discuss only Section 105, addressing nutrient issues from irrigation reuse. More information: Valerie Rourke.

Regular Meetings of Statewide Boards and Commissions

- Cave Board**—meets three times per year. More information: DCR (804) 786-7951; www.dcr.virginia.gov/natural_heritage/cavehome.shtml.
- Chesapeake Bay Local Assistance Board**—meets March, June, September, and December. More information: (800) CHESBAY; www.dcr.virginia.gov/chesapeake_bay_local_assistance/board.shtml.
- Coal Surface Mining Reclamation Fund Advisory Board**—meets at least twice a year. More information: DMME Web site, <http://www.dmme.virginia.gov/PublicMeetings/meetings.shtml>; or Les Vincent, DMME, (276) 523-8100, les.vincent@dmme.virginia.gov.
- Game and Inland Fisheries Board**—meets bimonthly. More information: www.dgif.virginia.gov.
- Gas and Oil Board**—meets the third Tuesday of each month. More information: Bob Wilson, DMME, (276) 5423, bob.Wilson@dmme.virginia.gov; <http://www.dmme.virginia.gov/divisiongasoil.shtml>.
- Groundwater Protection Steering Committee**—meets third Tuesday of odd-numbered months. More information: www.deq.virginia.gov/gwpsc/.
- Land Conservation Foundation**—meets about three times per year. More information: DCR, (804) 786-3218; www.dcr.virginia.gov/virginia_land_conservation_foundation/index.shtml.
- Licensing and Regulation Boards** for engineers, soil scientists, waterworks and wastewater works operators, and wetland delineators, under the Dept. of Professional and Occupational Regulation, (804) 367-8500, TDD (804) 367-9753; www.dpor.virginia.gov/dporweb/boards.cfm.
- Marine Resources Commission**—meets monthly. More information: (757) 247-2200, TDD (757) 247-2292; www.mrc.state.va.us.
- Scenic River Advisory Board**—meets at least two times a year. More information: Lynn Crump, DCR, (804) 786-5054 or lynn.Crump@dcr.virginia.gov; www.dcr.virginia.gov/recreational_planning/srmain.shtml.
- Soil and Water Conservation Board**—meets bimonthly. More information: DCR (804) 786-1712; www.dcr.virginia.gov/soil_water/vs&wcb.shtml.
- State Water Control Board**—meets March, June, September, and December. More information: Dept. of Environmental Quality, (800) 592-5482; www.deq.virginia.gov/cboards/homepage.html#water.
- Waste Management Board**—meets about three times per year. More information: Dept. of Environmental Quality, (800) 592-5482; www.deq.virginia.gov/cboards/homepage.html#waste.

N O T I C E S

All Web sites listed in this section were functional as of April 11, 2008.

Virginia Lakes and Watersheds Association Leo Bourassa Scholarship

The Virginia Lakes and Watersheds Association is offering scholarships for 2008 to Virginia residents who are attending an accredited Virginia college or university. The purpose of the scholarships is to support and acknowledge students for their academic and personal accomplishments in the field of water resources. Past scholarship award amounts have each been approximately \$2,500. **The application deadline is May 31, 2008.** More information: Shelly Frie, (757) 671-6222 or shelly.frie@gmail.com.

They Swim, They Creep, They Climb, and Some Even Peep!

“Amphibians and Reptiles: A Look Outside” is a new video from the Virginia Department of Game and Inland Fisheries (DGIF). For an entertaining and informative 21 minutes, watch as Cub Scouts learn about these fascinating creatures. The video is available at www.dgif.virginia.gov/video/?video=6. More information: (804) 367-1000 (DGIF in Richmond).

It's Not *Just* about the Bass

The 2008 “Smallmouth Bass Fishing River Report” from the Virginia Department of Game and Inland Fisheries is full of information about Virginia rivers and their game-fish populations. The report is available at www.dgif.virginia.gov/fishing/conditions/smallmouthforecast.asp.

Green Government Challenge

The Virginia Municipal League's (VML) “Green Government Challenge” is a “friendly competition” to encourage local governments to implement policies and actions to reduce carbon (greenhouse gas) emissions. A two-page checklist has 30 possible actions. The challenge is part of VML's “Go Green Virginia” initiative. More information: Denise Thompson, (804) 523-8530 or dthompson@vml.org; Web site: www.gogreenva.org.

Stewardship Virginia

Stewardship Virginia is a statewide initiative held twice annually to help citizens with projects that enhance and conserve Virginia's natural and cultural resources. April 1-May 31 and September 1-October 31 are the two Stewardship Virginia time periods in 2008. To learn how you can get involved—including getting a certificate from the governor!—visit the Virginia Department of Conservation and Recreation's Web site at www.dcr.virginia.gov/stewardship/.

Virginia Nutrient-trading Guidance for Agriculture

Trading Nutrient Reductions from Nonpoint Source Best Management Practices in the Chesapeake Bay Watershed: Guidance for Agricultural Landowners and Your Potential Trading Partners is available online at <http://www.deq.virginia.gov/vpdes>. This document, written for landowners in Virginia's Bay watershed tributaries with an interest in nutrient trading, focuses on agricultural offsets generated through best management practices.

Livestock, Fences, and Streams

Streamside Livestock Exclusion: A Tool for Increasing Farm Income and Improving Water Quality (September 2007) is a short, informative report on the methods and potential benefits of limiting livestock access to streams. The report includes information from interviews with 20 Virginia agricultural producers. The report (VCE 442-766) is available online at www.ext.vt.edu/pubs/bse/442-766/442-766.pdf, or contact Virginia Cooperative Extension (listed in your local phone book).

Federal Clean Water Act Guidance

In the June 8, 2007, *Federal Register*, the U.S. EPA and Army Corps of Engineers published an agency “guidance” regarding the jurisdiction of the Clean Water Act (that is, what water bodies are covered by the Act), following the U.S. Supreme Court's June 2006 *Rapanos* decision. (Please see the January 2007 *Water Central*, p. 1, for a discussion of the *Rapanos* decision.) The guidance is available online at www.epa.gov/owow/wetlands/guidance/CWAwaters.html. For more information, contact Donna Downing, (202) 566-1783, cwawaters@epa.gov.

2008 Virginia Water Quality Assessment: Draft Report Coming Soon

The Virginia Department of Environmental Quality's (DEQ) biennial water quality report for 2008 should be available in draft form sometime in May. Watch for information on the *305(b)/303(d) Integrated Report* to be posted at <http://www.deq.virginia.gov/wqa/>. More information: Darryl Glover, DEQ Office of Water Monitoring and Assessment, (804) 698-4321 or dmglover@deq.virginia.gov.

New USGS Report on Virginia Coastal Plain Groundwater

Private Domestic-Well Characteristics and the Distribution of Domestic Withdrawals among Aquifers in the Virginia Coastal Plain was recently published by the U.S. Geological Survey (USGS). The report (Scientific Investigations Report 2007-5250) is available online at <http://pubs.usgs.gov/sir/2007/5250/>. For a print copy, contact Jason Pope at (765) 848-1040 or jpope@usgs.gov.

Walking for Water

"Walking for Water" is an annual walk in Leesburg, Virginia, to raise funds for water wells, medicine, and education in the African country of Burkina Faso. A sophomore at Heritage High School in Leesburg began the event in 2004, which has since raised \$150,000. This year's walk is on May 31. More information: Wisdom Spring, Inc., P.O. Box 542, Leesburg, VA 20178; shoughlinks@aol.com; Web site: www.wisdomspring.org.

Peace Corps Opportunities for Water and Sanitation Professionals

The Peace Corps is recruiting water professionals who are interested in new opportunities or alternatives to traditional retirement. Currently the demand is high for people with experience and expertise in environmental and water-resource engineering. More information: (800) 424-8580; Web site: www.peacecorps.gov/index.cfm?shell=learn.whatvol.env.water&cid=prwater.

Hurricane Season Starts June 1

The mid-Atlantic hurricane season normally runs from June 1 to November 30. The Virginia Department of Emergency Management (VDEM) provides hurricane information at www.vaemergency.com/threats/hurricane/index.cfm. Contact the VDEM Public Affairs Office at (804) 897-6510 or pio@vdem.virginia.gov. The National

Hurricane Center's Web site is www.nhc.noaa.gov. A recent book, *Hurricanes and the Middle Atlantic States*, examines tropical storms over the past 400 years. For more information: (703) 719-6973; Web site: www.bluediamond.com. Don't forget to check your local library!

Upcoming Conferences and Workshops

If you would like to receive a weekly e-mail notification about *upcoming meetings, conferences, and other events related to water quality*, you may do so by joining the Virginia Water Monitoring Council; contact Jane Walker at the Water Center at (540) 231-4159 or janewalk@vt.edu.

Also, please see the Water Center's "Quick Guide to Water-related Meetings and Conferences in Virginia," on our Web site at www.vwrrc.vt.edu/VAConfQuickGuide.html.

Events in Virginia

Apr. 24-25, Breaks Interstate Park: **Big Sandy Watershed Conference**. Organized by the Big Sandy River Basin Coalition. More information: (276) 926-6621.

May 16-18, Giles County: **Mountain Lake Migratory Bird Festival**. More information: Peggy Spiegle Opengari, (540) 921-4340 or gramby@pentel.net; Web site: www.mountainlakebirding.com.

Jun. 9-14, Blacksburg: **Beyond Wetlands-Engineering the Landscape**. Eighth Annual American Ecological Engineering Society Meeting. More information: Cully Hession, (540) 231-9480 or chession@vt.edu; Web Site: www.cpe.vt.edu/aees/.

Jun. 14-19, Richmond: **American Society of Mining and Reclamation Annual Meeting**. More information: Lee Daniels, (540) 231-7175 or wdaniels@vt.edu; Website: www.cses.vt.edu/revegetation/ASMR_2008.html.

Jun. 30-Jul. 2, Virginia Beach: **Riparian Ecosystems & Buffers-Working at the Water's Edge**. American Water Resources Association Specialty Conference. More information: Terry Meyer, terry@awra.org; Web Site: www.awra.org/meetings/Virginia_Beach2008/.

Jul. 25-27, Roanoke: **Seventh International Conference on Recirculating Aquaculture**. Organized by Virginia Tech and the Aquaculture Engineering Society. More information: Terry T. Rakestraw, (540) 231-6805 or aqua@vt.edu; Web Site: www.cpe.vt.edu/aquaculture/r-aqua.

Oct. 15-19, Roanoke: **Society of Environmental Journalists Annual Conference**. Hosted and sponsored by Virginia Tech. More information: Linda Knouse, (215) 884-8174; Web site: www.sej.org/confer/index1.htm.

Events Elsewhere

May 18-22, Atlantic City, N.J.: **National Water Quality Monitoring Council Conference**. More information: Water Environment Federation at (800) 666-0206 or monitoring2008@wef.org; Web site: <http://acwi.gov/monitoring/>.

May 20-22, Tucson, Ariz.: **5th National Environmental Conflict Resolution Conference**. Organized by the U.S. Institute for Environmental Conflict Resolution. More information: (520) 901-8501 or usiecr@ecr.gov; Web site: <http://ecr.gov/ecr.asp?link=607>.

July 22-24, Durham, N.C.: **International Water Resources: Challenges for the 21st Century**. Annual conference of the Universities Council on Water Resources and the National Institutes for Water Resources. More information: (618) 536-7571 or ucowr@siu.edu; Web site: www.ucowr.org.

July 26-30, Tucson, Ariz.: **Soil and Water Conservation Society's Annual Conference**. More information: (515) 289-2331 or swcs@swcs.org; Web site: www.swcs.org.

Aug. 3-7, Orlando, Fla.: **StormCon (North American Surface Water Quality Conference and Exposition)**. Organized by Forester Communications. More information: Steve Di Giorgi at (805) 682-1300, or stevedg@forester.net; Web site: www.stormcon.com

Sept. 7-10, Dallas, Tex.: **23rd Annual WaterReuse Symposium**. Organized by the WaterReuse Association (in Alexandria, Va.). More information: Courtney Tharpe, (703) 548-0880, ext. 101 or ctharpe@watereuse.org; Web site: www.watereuse.org/2008Symposium/Index.html.

Nov. 17-19, Shepherdstown, West Va.: **2008 Mid-Atlantic Regional Water Resources Research Conference**. For more information, please see "At the Water Center," later on this page.

Also Out There...

(Brief descriptions of some interesting items *Water Central* has recently discovered.)

Rethinking Hurricanes Katrina and Rita Two Years Later—This special issue of *National Wetlands Newsletter* (Sep.-Oct. 2007) contains 12 articles on many aspects of the recovery of the Gulf Coast—focusing largely on Louisiana—following the 2005 hurricanes. Available by subscription. Environmental Law Institute (800) 433-5120 or orders@eli.org; Web site: www.elistore.org/nwn.asp; or check for the publication at your local library.

AT THE WATER CENTER

To reach the Virginia Water Resources Research Center: phone (540) 231-5624; FAX (540) 231-6673; e-mail water@vt.edu; Web site www.vwrrc.vt.edu.

2008 Mid-Atlantic Regional Water Resources Research Conference— An Eight-state Collaboration

The Water-Energy Nexus: A Necessary Synergy for the 21st Century will be multi-state collaborative conference, held November 17-19, 2008, at the National Conservation Training Center of the U.S. Fish and Wildlife Service in Shepherdstown, West Virginia. The West Virginia Water Research Institute is the lead sponsor. Co-sponsors are the Virginia Water Center and the state water centers of Delaware, the District of Columbia, Maryland, New Jersey, New York, and Pennsylvania.

CALL FOR PAPERS! Researchers from colleges and universities (faculty, graduate and undergraduate students), federal and state agencies, private organizations, consulting firms, and others are invited to present papers. Please submit abstracts via email to the conference coordinator, Tamara Vandivort, at tamara.vandivort@mail.wvu.edu by **June 30, 2008**. For more information, please visit the conference Web site at www.wri.nrcce.wvu.edu/2008waterconference.

Research Symposium Proceedings Available

The proceedings (presented papers) from the November 2007 Virginia/West Virginia Water Research Symposium, as well as from all Water Center research symposia from 1996 to 2006, are now available online at the Water Center's Web site, at www.vwrrc.vt.edu/proceedings.html.

Published Research

A Water Center research grant partly funded a project investigating chemical substances found in biosolids (treated sewage sludge) and their impacts on a liver protein and DNA in Fathead Minnows (a fish species widely used in aquatic toxicology studies). The work was conducted by researchers at the Virginia Institute of Marine Science and the University of Maryland Center for Environmental Science. A report of the research, "Induction of CYP1A and DNA Damage in the Fathead Minnow (*Pimephelas promelas*) following Exposure to Biosolids," was published in *Science of the Total Environment*, Vol. 384 (2007), pp. 221-228, available online at www.sciencedirect.com.

Virginia Water Central

Published by the Virginia Water Resources Research Center (0444), 210 Cheatham Hall, Blacksburg, VA 24061; (540) 231-5624; fax (540) 231-6673; Stephen Schoenholtz, director. *Water Central* staff: Alan Raflo, editor (araflo@vt.edu); George Wills, illustrator; photographs by Alan Raflo, unless otherwise noted.

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