

US EPA ARCHIVE DOCUMENT



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Protecting Aquatic Life and Human Health from Chemicals and Microbes in Water

From EPA

SAB Advice on Approaches to Derive a Maximum Contaminant Level Goal for Perchlorate. Allen, D.T. and S.M. Roberts, 2013. EPA SAB-13-004. SAB finds sufficient information to derive an MCLG for perchlorate; recommends EPA use a mode of action approach and PBPK/PD-IUI modeling.

Go to [Report](#) or www.epa.gov

2013 Biological Assessment Program Review: Assessing Level of Technical Rigor to Support Water Quality Management. 2013. EPA 820-R-13-001. With the program review process that is described, states and tribes can develop a plan to build on their program strengths and address the limitations.

Go to [Report](#) or www.epa.gov

EPA SAB and BOSC joint recommendations on Implementation of ORD Strategic Research Plans

The EPA’s Science Advisory Board (SAB) and the Executive Committee of the Office of Research and Development’s (ORD) Board of Scientific Counselors (BOSC) jointly offered comments and recommendations to the EPA Administrator on ORD’s new strategic research plans. ORD has realigned its research into six new program areas: **Air, Climate and Energy**; **Safe and Sustainable Water Resources (SSWR)**; **Sustainable and Healthy Communities**; **Chemical Safety for Sustainability**; **Human Health Risk Assessment**; and **Homeland Security Research**.

SAB and BOSC were supportive of the consolidation of EPA’s research programs as part of an integrated transdisciplinary approach to research that takes a systems approach to sustainability. They noted that ORD’s Strategic Research Action Plans for its 6 research programs are important achievements that should help to clearly communicate ORD’s new mission approach. The report’s summary points for SSWR were:

The Safe and Sustainable Waters program should identify and seek opportunities for leveraging research of other federal agencies and engage with communities in setting the program’s research priorities and research development. Program linkages with sustainability, nutrient management and green infrastructure are critical to the success of this program.

The report provides further recommendations for all 6 research programs; many suggestions for other program areas (e.g., Chemical Safety for Sustainability) are also pertinent to OW’s research and program needs. See the full report: *Implementation of ORD Strategic Research Plans: A Joint Report of the Science Advisory Board and ORD Board of Scientific Counselors*. [EPA-SAB-12-012, 2012](#).

From Collaborators

WaterRF – Nitrosamine Occurrence Survey-4461. Targeted completion 2015. Treatment plant survey to improve understanding of why nitrosamines occur and factors that impact formation.

Go to [Upcoming report](#)

Water and Hydraulic Fracturing. Carpenter, A.T., et al., 2013. *Journal American Water Works Association*, 105(3), 56-59. AWWA white paper to address increasing oil and natural gas development.

Go to [Article](#)

Acceptable Microbial Risk: Cost-benefit Analysis of a Boil-water Order for *Cryptosporidium*. Ryan, M.O., et al., 2013. *Journal American Water Works Association*, 105(4), E189-E194. Results suggest a daily risk of nine illnesses out of 10,000 people exposed would justify a BWO (finished water concentration of 0.046 oocysts/L).

Go to [Article](#)

USGS – California Groundwater Ambient Monitoring and Assessment (GAMA) Program Priority Basin Project: Shallow Aquifer Assessment. 2013. 2012-3136. In 2012, the GAMA Priority Basin Project began assessing shallow aquifers because shallow groundwaters may be more susceptible to contamination than deeper aquifers.

Go to [Report](#)

Total Chromium and Hexavalent Chromium Occurrence Analysis. Seidel, C.J. and C.J. Corwin, 2013. *Journal American Water Works Association*, 105(6), E310-E319. Occurrence was analyzed using: The National Chromium and Boron Occurrence Survey; the USEPA database of chromium from the Second Six-Year Review; and California Department of Public Health water quality analysis data. Results indicate that surface water speciation is dominated by trivalent chromium, whereas groundwater speciation is dominated by hexavalent chromium.

Go to [Article](#)

USGS – Landscape Consequences of Natural Gas Extraction in Somerset and Westmoreland Counties, Pennsylvania, 2004–2010. Milheim, L.E., et al., 2013. 2013-1126. Quantifies the landscape changes and consequences of natural gas extraction for 2 sites in Pennsylvania between 2004 and 2010.

Go to [Report](#)

Evaluating Violations of Drinking Water Regulations. Rubin, S.J., 2013. *Journal American Water Works Association*, 105(3), E137-E147. Evaluates USEPA data for violations by CWSs; summarizes violation types and differences in violations across system size, water source.

Go to [Article](#)

USGS – Geochemical Evidence of Groundwater Flow Paths and the Fate and Transport of Constituents of Concern in the Alluvial Aquifer at Fort Wingate Depot Activity, New Mexico, 2009. Robertson, A.J., et al., 2013. 2013-5098. Report examines plume of contaminants (e.g., perchlorate).

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From Journals

NDMA Formation from Amine-based Pharmaceuticals – Impact from Prechlorination and Water Matrix. Shen R. and S.A. Andrews, 2013. *Water Research*, 47(7), 2446-2457.

Go to [Article](#)

Perfluorooctanoic Acid Exposure and Cancer Outcomes in a Contaminated Community: A Geographic Analysis. Vieira V.M., et al., 2013. *Environmental Health Perspectives*, 121, 318-323.

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Arsenic Exposure from Drinking Water and QT-Interval Prolongation: Results from the Health Effects of Arsenic Longitudinal Study. Chen Y., et al., 2013. *Environmental Health Perspectives*, 121, 427-432.

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Source and Transport of Human Enteric Viruses in Deep Municipal Water Supply Wells. Bradbury, K.R., et al., 2013. *Environmental Science & Technology*, 47(9), 4096-4103.

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Perfluorooctane Sulfonate (PFOS) Affects Hormone Receptor Activity, Steroidogenesis, and Expression of Endocrine-related Genes *In Vitro* and *In Vivo*. Guizhen, D., et al., 2013. *Environmental Toxicology and Chemistry*, 32(2), 353-360.

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Selective Chlorination of Natural Organic Matter: Identification of Previously Unknown Disinfection Byproducts. Lavonen, E.E., et al., 2013. *Environmental Science & Technology*, 47(5), 2264-2271.

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Engineered Nanomaterials in Water and soils: A Risk Quantification Based on Probabilistic Exposure and Effect Modeling. Gottschalk, F., et al., 2013. *Environmental Toxicology and Chemistry*, 32(6), 1278-1287.

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Environmental Factors That Influence *Cyanobacteria* and *Geosmin* Occurrence in Reservoirs. Journey, C.A., et al., 2013. *Current Perspectives in Contaminant Hydrology and Water Resources Sustainability*, Chapter 2.

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A Method for Deriving Water-quality Benchmarks Using Field Data. Cormier, S.M. and G.W., II. Suter, 2013. *Environmental Toxicology and Chemistry*, 32(2), 255-262.

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Managing the Effects of Endocrine Disrupting Chemicals in Wastewater-impacted Streams. Bradley, P.M. and D.W. Kolpin, 2013. *Current Perspectives in Contaminant Hydrology and Water Resources Sustainability*, Chapter 1.

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Scientists Develop Microarray-based Assay to Detect Waterborne Pathogens. Brinkman, N.E., R. Francisco, T.L. Nichols, D. Robinson, F.W. Schaefer 3rd, R.P. Schaudies, and, E.N. Villegas, 2013. *Journal of Applied Microbiology*, 114(2), 564-573.

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Influence of Exposure and Toxicokinetics on Measures of Aquatic Toxicity for Organic Contaminants: A Case Study Review. Landrum, P.F., et al., 2013. *Integrated Environmental Assessment and Management*, 9(2), 196-210.

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Integrated Water Quality –Water Supply Modeling to Support Long-term Planning. Weiss, W. J., et al., 2013. *Journal American Water Works Association*, 105(4), E217-E228.

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Spatio-temporal Variability of Non-regulated Disinfection By-products within a Drinking Water Distribution Network. Mercier, S.C., et al., 2013. *Water Research*, 47(9), 3231-3243.

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LT2 *Cryptosporidium* Data: What Do They Tell Us about *Cryptosporidium* in Surface Water in the United States? Ongerth, J.E., 2013. *Environmental Science & Technology*, 47(9), 4029-4038.

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The Broad Scope of Health Effects from Chronic Arsenic Exposure: Update on a Worldwide Public Health Problem. Naujokas, M.F. et al., 2013. *Environmental Health Perspectives*, 121, 295-302.

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An Assessment of Fecal Indicator and Other Bacteria from an Urbanized Coastal Lagoon in the City of Los Angeles, California, USA. Dorsey, J.H., et al., 2013. *Environmental Monitoring and Assessment*, 185(3), 2647-2669.

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Health Implications of PAH Release from Coated Cast Iron Drinking Water Distribution Systems in the Netherlands. Blokker, E.J., et al., 2013. *Environmental Health Perspectives*, 121, 600-606.

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Modeling the Long-term Rate of Agricultural Nitrate in Groundwater in the San Joaquin Valley, California. Chapelle, F.H., et al., 2013. *Current Perspectives in Contaminant Hydrology and Water Resources Sustainability*, Chapter 6.

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Arsenic in Groundwater: A Summary of Sources and the Biogeochemical and Hydrogeologic Factors Affecting Arsenic Occurrence and Mobility. Barringer, J.L. and P.A. Reilly, 2013. *Current Perspectives in Contaminant Hydrology and Water Resources Sustainability*, Chapter 4.

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Recent and Upcoming Meetings

2012 Gordon Research Conference on Drinking Water Disinfection By-products. August 5-10, 2012 in South Hadley, MA.

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Inorganic Contaminants Symposium -- CA-NV AWWA. February 5, 2013 in Sacramento, CA.

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Disinfection and Public Health Conference 2013. February 24-26, 2013 in Indianapolis, IN.

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86th Annual Water Environment Federation Technical Exhibition and Conference. October 5-9, 2013 in Chicago, IL.

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2013 NAWC Water Summit. October 6-9, 2013 in San Diego, CA.

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AMWA 2013 Annual Meeting. October 27-30, 2013 in St. Petersburg, FL.

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ASDWA 2013 Annual Conference. October 27-31, 2013 in Long Beach, CA.

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APHA 141th Annual Meeting and Exposition. November 2-6, 2013 in Boston, MA.

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2013 Water Quality Technology Conference and Exposition (WQTC). November 3-7, 2013 in Long Beach, CA.

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SETAC North America 34th Annual Meeting. November 17-21, 2013 in Nashville, TN.

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Climate Leadership Conference. February 24-26, 2014 in San Diego, CA.

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53rd SOT Annual Meeting & ToxExpo. March 23-27, 2014 in Phoenix, AZ.

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ACE14 – AWWA Annual Conference and Exposition 2014. June 8-12, 2014 in Boston, MA.

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Innovative and Affordable Tools and Technologies for Sustainable Public Health Protection

From EPA

Emerging Technologies for Wastewater Treatment and In-plant Wet Weather Management. 2013. EPA 832-R-12-011. Technical and cost information to assist users in considering more efficient, sustainable, and cost-effective technologies.

Go to [Report](#) or www.epa.gov

From Collaborators

Hexavalent Chromium Removal Research Project Report. Hazen and Sawyer Arcadis U.S./Malcolm Pirnie, 2013. Glendale, CA research identifies technologies for removing Cr(VI) from drinking water supplies.

Go to [Report](#)

Security and Preparedness – Inactivation of Bacterial Bioterrorism Agents in Water: A Summary of Seven USEPA and CDC Research Studies. Minamyer, S. and C.L. Menefee, 2013. *Journal American Water Works Association*, 105(4), 26-29. Past use of weaponized *Bacillus anthracis* spores has prompted study of inactivation of potential bacterial bioterrorism agents in drinking water.

Go to [Article](#) or www.awwa.org

MIEX and PAC for Removal of Hydrophilic DBP Precursors. Hanigan, D., et al., 2013. *Journal American Water Works Association*, 105(3), E84-E92. Investigation of materials for potential reduction of disinfection by-product (DBP) formation resulting from reactions with hydrophilic natural organic matter (NOM).

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Water-Energy Nexus Research - Recommendations for Future Opportunities.

Alliance for Water Efficiency, 2013. Project No. 130240. The Alliance for Water Efficiency (AWE) and the American Council for an Energy-Efficient

Economy (ACEEE) investigated existing studies; report provides a summary of the major findings and additional research needs.

Go to [Report](#) or www.allianceforwaterefficiency.org

Green Infrastructure (PAS 571) a Landscape Approach. Rouse, D.C., and I.F. Bunster-Ossa, 2013. Published by APA Planning Advisory Service, 2013. Report from American Planning Association demonstrates how green infrastructure cleans the air and water, replenishes aquifers, reduces flooding, and moderates climate.

Go to [Report](#) or www.planning.org

USGS – National Assessment of Geologic Carbon Dioxide Storage Resources—Summary. 2013. 2013-3020. Examination of all sedimentary basins that contain storage assessment units (SAUs) that could be defined according to geologic and hydrologic characteristics.

Go to [Report](#) or energy.usgs.gov

Updated Principles and Guidelines for Federal Investments in Water Resources. Council on Environmental Quality, 2013. Obama Administration's updated guide for investments in water resources to accelerate project approvals, reduce costs, and support water infrastructure projects.

Go to [Report](#) or www.whitehouse.gov

From Journals

Comparative Assessment of the Environmental Sustainability of Existing and Emerging Perchlorate Treatment Technologies for Drinking Water. Choe, J.K., et al., 2013. *Environmental Science & Technology*, 47(9), 4644-4652.

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Chlorate, Perchlorate, and Bromate in Onsite-generated Hypochlorite Systems. Stanford, B.D., et al., 2013. *Journal American Water Works Association*, 105(3), E93-E102.

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Optimal Expansion of a Drinking Water Infrastructure System with Respect to Carbon Footprint, Cost-effectiveness and water Demand.

Chang, N-B., et al., 2012. *Journal of Environmental Management*, 110(15), 194-206.

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Review of Selected Inorganic Surface Water Quality-monitoring Practices: Are We Really Measuring What We Think, and If So, Are We Doing It Right? Horowitz, A.J., 2013. *Environmental Science & Technology*, 47(6), 2471-2486.

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Detection of Multiple Waterborne Pathogens Using Microsequencing Arrays. Brinkman N.E., et al., 2013. *Journal of Applied Microbiology*, 114(2), 564-573. A microarray was developed to simultaneously detect *Cryptosporidium parvum*, *Cryptosporidium hominis*, *Enterococcus faecium*, *Bacillus anthracis* and *Francisella tularensis* in water.

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Methods and Approaches Used for Detection of Cyanotoxins in Environmental Samples: A Review.

Kaushik, R., and R. Balasubramanian, 2013. *Critical Reviews in Environmental Science and Technology*, 43(13), 1349-1383.

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Automated Online Optical Biosensing System for Continuous Real-time Determination of Microcystin-LR with High Sensitivity and Specificity: Early Warning for Cyanotoxin Risk in Drinking Water Sources. Shi, H-C., et al., 2013. *Environmental Science & Technology*, 47(9), 4434-4441.

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Field Treatment of MTBE-contaminated Groundwater Using Ozone/UV Oxidation.

Patterson, C.L., et al., 2013. *Groundwater Monitoring & Remediation*, 33(2), 44-52.

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Arsenic Removal from Natural Groundwater Using Cupric Oxide. Reddy, K.J., and T.R. Roth, 2013. *Groundwater*, 51(1), 83-91.

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A New, Sensitive Marine Microalgal Recombinant Biosensor Using Luminescence Monitoring for Toxicity Testing of Antifouling Biocides. Sanchez-Ferandin, S., et al., 2013. *Applied and Environmental Microbiology*, 79(2), 631-638.

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Evaluation of Whole Effluent Toxicity Data Characteristics and Use of Welch's T-test in the Test of Significant Toxicity Analysis. Zheng, L., et al., 2013. *Environmental Toxicology and Chemistry*, 32(2), 468-474.

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Recent and Upcoming Meetings

Water Reuse Tech Summit. January 28-30, 2013 in San Diego, CA.

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16th Annual Groundwater Industry Legislative Conference. February 25-26, 2013 in Washington, DC.

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1st International Conference on Desalination Using Membrane Technology. April 7-10, 2013 in Barcelona, Spain.

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Water Research Update

17th Annual Water Reuse & Desalination Research Conference. May 6-7, 2013 in Phoenix, AZ.

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28th Annual Water Reuse Symposium. September 15-18, 2013 in Denver, CO.

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ASCE 143rd Annual Civil Engineering Conference. October 9-12, 2013 in Charlotte, NC.

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2013 SRF Workshop. November 3-5, 2013 in Minneapolis, MN.

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2013 Water Quality Technology Conference and Exposition (WQTC). November 3-7, 2013 in Long Beach, CA.

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9th Annual WERF Research Forum. January 28-29, 2014 in New Orleans, LA.

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14th National Conference Disasters and Environment - Science, Preparedness, and Resilience. January 28-30, 2014 in Washington, DC.

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WEF Midyear Meeting. January 29-February 1, 2014 in New Orleans, LA.

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AWWA/AMTA Membrane Technology Conference & Exposition. March 10-13, 2014 in Las Vegas, NV.

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WaterPro Conference. October 6-8, 2014 in Seattle, WA.

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NWRA Annual Conference. November 12-14, 2014 in Coronado, CA.

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Ecological Systems Approach to Protect and Restore Sustainable Water Quality and Water Quantity on a Watershed Basis

The President's Climate Action Plan

In June of this year, President Obama released his [Climate Action Plan](#) for the United States to:

Establish new rules and incentives to cut carbon pollution, including: directives to EPA to establish carbon pollution standards for power plants; directives and goals for the Department of the Interior to provide renewables permits (wind, solar, hydropower); expanded incentives and goals for development of innovative technologies and energy efficiency in appliances, motor vehicles, and buildings; and other goals for reduction of greenhouse gases, including through protection of forests and critical landscapes.

Prepare for the impacts of climate change by: directing agencies to support local climate-resilience; piloting innovative strategies in the Hurricane Sandy-affected region to strengthen communities against future extreme weather and other climate impacts; launching efforts to create sustainable and resilient hospitals; providing information and tools to state and local leaders for climate preparedness, including drought and wildfire preparedness.

Lead international efforts to address global climate change; to galvanize international action toward emission reductions, climate impact preparedness, the plan: commits us to expanding new and existing international initiatives, especially with other major emitting countries; calls for ending U.S. support for financing of new coal-fired power plants overseas (with exceptions for efficient technologies for the world's poorest countries, and for carbon capture and sequestration technologies); and expanding government and local community planning and response capacities.

From EPA

ORD Nitrogen Newsletter. Prepared by O'Brien, M. and J. Compton. ORD compilation of links to recent publications, news and reports related to the cycling, effects and management of nitrogen.

Draft National Rivers and Stream Assessment 2008-2009. 2013. EPA 841-D-13-001. Comprehensive survey of thousands of stream and river miles; more than half in poor condition for aquatic life.

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Watershed Modeling to Assess the Sensitivity of Streamflow, Nutrient and Sediment Loads to Potential Climate Change and Urban Development in 20 U.S. Watersheds. 2013. EPA-600-R-12-058F. Report includes methods, models, scenarios, results.

Go to [Report](#) or www.epa.gov

EPA Releases Interactive Map of Results from National Estuary Program Projects. 2013. Mapper provides information in context with National Estuary Program Study Areas.

Go to [Tool](#) or www.epa.gov

2012 Highlights of Progress: Responses to Climate Change by the National Water Program.

2013. EPA 850-R-13-001. Major climate change-related accomplishments of EPA's national and regional water programs in 2012.

Go to [Report](#) or www.epa.gov/water/climatechange

A Quick Guide to Developing Watershed Plans to Restore and Protect Our Waters. 2013. EPA 841-R-13-003. Streamlined summary of 2008 Handbook for Developing Watershed Plans to Restore and Protect our Waters.

Go to [Report](#) or www.epa.gov

Water Quality Index Aggregation and Cost Benefit Analysis. Walsh, P.J. and W. Wheeler, 2012. Working Paper #12-05. With data from 2003 EPA CAFO rule, paper examines impact of aggregation functions on estimated benefits; results show aggregation method can have profound effect on benefits.

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From Collaborators

National Climate Assessment Draft Report

Released. National Climate Assessment Development Advisory Committee, 2013. Assesses current state of adaptation, mitigation, and decision support activities in different U.S. Regions. Draft for public comment January 2013.

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USGS – Tracking and Forecasting the Nation’s Water Quality - Priorities and Strategies for 2013-2023. Rowe, G.L., et al., 2013. 2013-3008. Plans for: trend assessments; maps/models of contaminant distribution (e.g., atrazine, nitrate, and arsenic); tools for evaluating water quality changes.

Go to [Report](#) or water.usgs.gov/nawqa

USGS – Concentration, Flux, and the Analysis of Trends of Total and Dissolved Phosphorus, Total Nitrogen, and Chloride in 18 Tributaries to Lake Champlain, Vermont and New York, 1990–2011.

Medalie, L., 2013. 2013-5021. Suggests BMPs may be effective tools, along with point-source reductions, in making progress towards management goals for phosphorus reductions.

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Water Resources Utility of the Future... A

Blueprint for Action. National Association of Clean Water Agencies, the Water Environment Research Foundation, and the Water Environment Federation, 2013. Report presents the clean water industry's vision for the future as well as a series of suggested actions.

Go to [Report](#) or www.wef.org

USGS – Nutrient Concentrations in Surface Water and Groundwater, and Nitrate Source Identification Using Stable Isotope Analysis, in the Barnegat Bay-Little Egg Harbor Watershed, New Jersey, 2010–11. Wieben, C.M. et al., 2013. 2012-5287. Results indicate: total nitrogen related to land use; multiple subsurface sources likely contribute to nitrogen load; atmospheric deposition of nitrate has greater influence in less developed subbasins.

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STREAMER Tool from USGS Lets You Navigate America’s Major Rivers Without Getting Wet

[STREAMER](#) is a cool new on-line service from the USGS’ National Atlas of the United States® that maps the routes of America’s major rivers and streams. The tool lets you pick a point on a stream and trace it downstream or upstream. With STREAMER you can also:

- locate your area of interest with stream or place names, latitude and longitude coordinates, or ID number for a USGS streamflow gaging station;
- find names of streams and waterbodies by clicking on them;
- print maps and create reports for your upstream and downstream traces;
- learn about streamflow at thousands of locations along America’s streams, with just a few mouse clicks.

The National Atlas of the United States of America® is a cooperative effort to make geographic information collected by the United States government easier to find, get, and use. Its development is led by the National Geospatial Program of the USGS.

From Journals

Nutrient Enrichment and Fish Nutrient Tolerance: Assessing Biologically Relevant Nutrient Criteria. Meador, M.R., 2013. *Journal of the American Water Resources Association*, 49(2), 253-263.

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Ecosystem Services and the Protection, Restoration, and Management of Ecosystems Exposed to Chemical Stressors. Maltby, L., 2013. *Environmental Toxicology and Chemistry*, 32(5), 974-983.

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Vulnerability of Streams to Legacy Nitrate Sources. Tesoriero, A.J., et al., 2013. *Environmental Science & Technology*, 47(8), 3623-3629.

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Ecological Indicators for Stream Restoration Success. Pander, J., and J. Geist, 2013. *Ecological Indicators*, 30, 106-118.

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Approaches to Setting Organism-based Ballast Water Discharge Standards. Lee, H., II., et al., 2013. *Ecological Applications*, 23(2), 301-310.

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Regional Nutrient Thresholds in Wadeable Streams of New York State Protective of Aquatic Life. Smith, A.J., et al., 2013. *Ecological Indicators*, 29, 455-467.

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Record-setting Algal Bloom in Lake Erie Caused by Agricultural and Meteorological Trends Consistent with Expected Future Conditions. Michalak A.M., et al., 2013. *Proceedings of the National Academy of Sciences*, 110(16), 6448-6452.

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Record 2011 Spring Flood of the Mississippi River: How Much Nitrate Was Exported from Its Largest Tributary, the Atchafalaya River, into the Gulf of Mexico? Bryant M.A., and J. Jun Xu, 2013. *Journal of Hydrologic Engineering*, 18(5), 590-594.

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Linking Science and Policy to Prevent the Spread of Invasive Species from the Ballast Water Discharge of Ships. Frazier, M., et al., 2013. *Ecological Applications*, 23(2), 287-288.

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Macroinvertebrate Community Structure, Secondary Production and Trophic-level Dynamics in Urban Streams Affected by Non-point-source Pollution. Johnson, R.C., et al., 2013. *Freshwater Biology*, 58(5), 843-857.

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Salmon-mediated Nutrient Flux in Selected Streams of the Columbia River basin, USA. Kohler, A.E., et al., 2013. *Canadian Journal of Fisheries and Aquatic Sciences*, 70(3), 502-512.

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Estimating Reference Nutrient Criteria for Maryland Ecoregions. Morgan, R.P., et al., 2013. *Environmental Monitoring and Assessment*, 185(3), 2123-2137.

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The Effect of Changes in Land Use on Nitrate Concentration in Water Supply Wells in Southern Chester County, Pennsylvania. White, P., et al., 2013. *Environmental Monitoring and Assessment*, 185(1), 643-651.

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Nitrate in Watersheds: Straight from Soils to Streams? Sudduth E.B., et al., 2013. *Journal of Geophysical Research: Biogeosciences*, 118(1), 291-302.

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Ballast Water Regulations and the Move Toward Concentration-based Numeric Discharge Limits.

Albert, R.J., et al., 2013. *Ecological Applications*, 23(2), 289-300.

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Wetland Management Reduces Sediment and Nutrient Loading to the Upper Mississippi River.

Kreiling, R.M., et al., 2013. *Journal of Environmental Quality*, 42(2), 573-583.

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Diversity, Occurrence and Feeding Traits of Caddisfly Larvae as Indicators for Ecological Integrity of River-floodplain Habitats Along a Connectivity Gradient.

Van den Brink, F.W.B., et al., 2013. *Ecological Indicators*, 25, 92-98.

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Reactive Nitrogen Inputs to US lands and Waterways: How Certain are We about Sources and Fluxes?

Sobota, D.J., et al., 2013. *Frontiers in Ecology and the Environment*, 11(2), 82-90.

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Dry-season Changes in Macroinvertebrate Assemblages of Highly Seasonal Rivers: Responses to Low Flow, No Flow and Antecedent Hydrology.

Leigh, C., 2013. *Hydrobiologia*, 703(1), 95-112.

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An Integrated Assessment of Sediment Remediation in a Midwestern US Stream Using Sediment Chemistry, Water Quality, Bioassessment, and Fish Biomarkers.

Meier, J.R., et al., 2013. *Environmental Toxicology and Chemistry*, 32(3), 653-661.

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Optimizing Stream Bioassessment: Habitat, Season, and the Impacts of Land Use on Benthic Macroinvertebrates.

Carlson, P.E., et al., 2013. *Hydrobiologia*, 704(1), 363-373.

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Strength and Uncertainty of Phytoplankton Metrics for Assessing Eutrophication Impacts in Lakes.

Carvalho, L., et al., 2013. *Hydrobiologia*, 704(1), 127-140.

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Reference Diatom Assemblage Response to Restoration of an Acid Mine Drainage Stream.

Gray, J.B., and M.L. Vis, 2013. *Ecological Indicators*, 29, 234-245.

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Atmospheric Influences on Water Quality: A Simulation of Nutrient Loading for the Pearl River Basin, USA.

Joyner, T.A., and R.V. Rohli, 2013. *Environmental Monitoring and Assessment*, 185(4), 3467-3476.

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Diatom Community Response to an Acid Mine Drainage Gradient.

Schowe, K.A., et al., 2013. *Hydrobiologia*, 705(1), 147-158.

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Quantitative Microbial Risk Assessment of Pathogenic *Vibrios* in Marine Recreational Waters of Southern California.

Dickinson, G., et al., 2013. *Applied and Environmental Microbiology*, 79(1), 294-302.

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Calibration and Validation of a Regionally and Seasonally Stratified Macroinvertebrate Index for West Virginia Wadeable Streams.

Pond, G.J., et al., 2013. *Environmental Monitoring and Assessment*, 185(2), 1515-1540.

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Recent and Upcoming Meetings

2013 AWRA Spring Specialty Conference: Agricultural Hydrology and Water Quality II.

March 25-27, 2013 in St Louis, MO.

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From Theory to Practice; Restoring the Future of the Great Lakes. July 16, 2013 (Online).

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The National Environmental Monitoring Conference (NEMC). August 5-9, 2013 in San Antonio, TX.

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Online Animal Agriculture & Climate Change Course. September 3, 2013 (Online).

Go to [Meeting Page](#) or www.epa.gov/agriculture/news/index.html

Great Lakes Public Forum. September 9-10, 2013 in Milwaukee, WI.

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2013 AWRA Annual Water Resources Conference.

November 4-7, 2013 in Portland, OR.

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NGWA Expo 2013. December 3-6, 2013 in Nashville, TN.

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WEF Midyear Meeting. January 29-February 1, 2014 in New Orleans, LA.

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Conference on Stormwater and Urban Water Systems Modeling. February 26-27, 2014 in Toronto, Ontario, CANADA.

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Federal Water Issues Conference. March 31-April 2, 2014 in Washington, DC.

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Working Together for Clean Water, the National Water Quality Monitoring Council's (NWQMC) 9th National Monitoring Conference. April 28 - May 2, 2014 in Cincinnati, OH.

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NGWA Groundwater Summit 2014 – 10 Years of Moving Research to Solutions. May 4-7, 2014 in Denver, CO.

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NWRA Annual Conference. November 12-14, 2014 in Coronado, CA.

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