Report to EPA

SAFE DRINKING WATER ACT ANNUAL COMPLIANCE REPORT FOR CALENDAR YEAR 2007

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Department of the Environment
Water Supply Program

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EXECUTIVE SUMMARY

The Safe Drinking Water Act reauthorization of 1996 requires states to submit annual reports of their drinking water violations to the United States Environmental Protection Agency (EPA). This report constitutes Maryland's annual compliance report for calendar year 2007. The report contains an overview of the State's Water Supply Program, and describes some new initiatives that were undertaken in 2007. This report also provides information on water quality standards and summarizes public water system violations that occurred during 2007 or prior to 2007 and were not resolved. The report covers the period from January 1 through December 31, 2007.

The Maryland Department of the Environment's (MDE's) goal is to ensure that the water quality and quantity at all public water systems meet the needs of the public and is in compliance with federal and State regulations. This report describes the activities that are undertaken on a routine basis by MDE to ensure that public drinking water systems provide safe water to their consumers. Routine activities include regular on-site inspections of water systems to identify any sanitary defects in the systems, and a permitting process that helps ensure that systems obtain the best possible source of water. In addition, MDE works with private contractors and local health departments to identify potential sources of contamination in close proximity to ground water and surface water supplies so that the systems can protect their water sources before contamination occurs.

Public water systems are required to sample for a variety of contaminants on a routine basis, depending on the population served, source type, and historical monitoring data of the water system. When contaminants are found at levels exceeding the federally established Maximum Contaminant Level (MCL), it is considered a violation of federal and State standards. MCL violations are rare in Maryland for most types of chemical contaminants. During 2007, no systems exceeded the MCL for an organic (volatile or synthetic) contaminant, five systems exceeded the MCL for nitrate, six systems exceeded the MCL for arsenic, three systems exceeded the MCL for total trihalomethanes, three systems exceeded the MCL for haloacetic acids, and two systems exceeded the MCL for radionuclides. Most total coliform MCL violations occurred in smaller systems where treatment may not be present or properly maintained.

Violations are also incurred for failure to monitor as required, failure to use required treatment techniques, or failure to notify the public under certain circumstances. During 2007, 81 systems had monitoring violations for inorganic contaminants, one system had a monitoring violation for VOCs, 121 systems had monitoring violations for lead and copper, and 107 systems had monitoring violations for coliform bacteria.

During 2007, MDE accomplished many goals beyond its routine regulatory activities in the areas of water and sewer planning, water resource management, and security. The Advisory Committee on the Management and Protection of the State's Water Resources continued to deliberate and consider the need for assessing and developing water supply resources. Population and water demand projections indicate that areas of the State will be faced with water supply deficits in coming years. Several study efforts addressing supply issues and associated environmental impacts for large regions of the State have been proposed. The Committee's

interim report also recommended several legislative changes needed to better focus the limited staff resources and improve enforcement of water appropriations permit requirements. The Committee will continue to evaluate and recommend improvements to regulatory and programmatic structures related to water resource management in the State. The Committee is required to submit a final report by July 1, 2008.

THE DRINKING WATER PROGRAM: AN OVERVIEW

The United States Environmental Protection Agency (EPA) established the Public Water System Supervision (PWSS) Program under the authority of the 1974 Safe Drinking Water Act (SDWA). Under the SDWA and its 1986 and 1996 Amendments, EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as Maximum Contaminant Levels (MCLs) and Maximum Residual Disinfection Levels (MRDLs). For some regulations, EPA establishes Treatment Techniques (TTs) in lieu of an MCL to control unacceptable levels of contaminants in water. The Agency also regulates how often public water systems (PWSs) monitor their water for contaminants and report the monitoring results to the states or EPA. Generally, the larger the population served by a water system, the more frequent the monitoring and reporting (M/R) requirements. In addition, EPA requires PWSs that serve more than 10,000 persons to monitor for unregulated contaminants in order to provide data for future regulatory development. Finally, EPA requires PWSs to notify the public when they have violated these regulations. Public notification must include a clear and understandable explanation of the nature of the violation, its potential adverse health effects, steps that the PWS is undertaking to correct the violation, and the possibility of alternative water supplies during the violation.

The SDWA applies to the 50 states, the District of Columbia, Indian Lands, Puerto Rico, the Virgin Islands, American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, and the Republic of Palau.

The SDWA allows states and territories to seek EPA approval to administer their own PWSS Programs. The authority to run a PWSS Program is called primacy. For a state to receive primacy, EPA must determine that the state meets certain requirements laid out in the SDWA and the regulations, including the adoption of drinking water regulations that are at least as stringent as the federal regulations and a demonstration that they can enforce the program requirements. All 50 states have primacy with the exception of Wyoming. The EPA Regional Offices report the information for Wyoming, as well as the District of Columbia and all Indian Lands but the Navaho Nation. EPA Regional Offices also report federal enforcement actions taken. Maryland received primacy for the PWSS program in 1977.

Each quarter, primacy states submit data to the federal Safe Drinking Water Information System (SDWIS/Fed), an automated database maintained by EPA. The data submitted include, but are not limited to, PWS inventory information, sample results for specific contaminants (i.e. lead and copper), the incidence of MCL, monitoring, and TT violations, and information on enforcement activities related to these violations. Section 1414(c)(3) of the SDWA requires states to provide EPA with an annual report of violations of the primary drinking water standards. This report provides an overview of violations in each of six categories: MCLs, TTs, variances, exemptions, significant monitoring violations, and significant consumer notification violations. Data retrieved from the SDWIS/Fed database and from Maryland's database (Public Drinking Water Information System (PDWIS)) form the basis of this report.

MARYLAND'S WATER SUPPLY PROGRAM

The Water Supply Program (WSP) is a part of the Water Management Administration within the Maryland Department of the Environment (MDE). The mission of the WSP is to ensure that public drinking water systems provide safe and adequate water to all current and future users in Maryland, and that appropriate usage, planning, and conservation policies are implemented for Maryland's water resources. This mission is accomplished through proper planning for water withdrawal, protection of water sources that are used for public water supplies, oversight and enforcement of routine water quality monitoring at public water systems, regular on-site inspections of water systems, and prompt response to water supply emergencies. In addition to ensuring that public drinking water systems meet federal and State requirements under the PWSS program, the WSP also oversees the development of Source Water Assessments for water supplies, and issues water appropriation permits for both public drinking water systems and commercial entities statewide. Because all of these activities reside together in the WSP, Maryland has the unique opportunity to evaluate and regulate public drinking water systems from a broad perspective that includes an evaluation of the resource for both quantity and quality. The WSP's activities help to ensure safe drinking water for almost five million Marylanders.

The WSP is responsible for regulating public drinking water systems in Maryland. Public drinking water systems fall into three categories: community, non-transient non-community, and transient non-community. Community water systems (CWSs) serve year-round residents, non-transient non-community water systems (NTNCWSs) serve non-residents (e.g. school or business), and transient non-community water systems (TNCWS) serve different consumers each day (e.g. campground or restaurant). During 2007, the number of public water systems remained consistent compared with previous years. Currently, Maryland has 486 CWSs, 559 NTNCWSs, and 2,488 TNCWSs.

MDE directly regulates community water systems (county and municipal systems, small communities, and mobile home parks) and non-transient non-community water systems (businesses, schools, and day care centers that have their own water supply system). Transient non-community water systems, such as gas stations, campgrounds, and restaurants, are regulated and enforced by the local county environmental health departments through State-County delegation agreements, with the exception of systems in Montgomery, Prince George's, and Wicomico Counties, which are directly regulated and enforced by the WSP. Table 1 presents a summary of Maryland's 2007 statistics on public water systems and the populations served by each type of system.

In the Water Supply Program, emphasis is placed on preventative measures instead of reactive enforcement actions in order to avert serious public health incidents. The vast majority of drinking water violations are corrected immediately, or following the initial notices of violation. Preventive measures include source water (ground and surface) protection, monitoring schedules, technical assistance, and sanitary survey inspections. Source water protection programs, such as wellhead protection and surface water protection, are used to identify sources of potential contamination and activities that can prevent future contamination incidents.

Table 1. Maryland Drinking Water Statistics	
Population of Maryland (2007)	5,618,344
Number of individuals served by community water systems	4,844,668
Percent of population served by public water systems	86
Percent of population served by individual wells	14
Number of Public Water Systems	3,533
Number of Community Systems	486
Number of Non-transient Non-community Systems	559
Number of Transient Non-community Systems	2,488
Number of Systems using surface water	69
Number of Systems using only ground water	3,464

Program Activities

Routine oversight of public drinking water systems involves a wide range of activities. These activities focus on helping systems to obtain and protect the best available source of water, ensuring that systems comply with State and federal water quality monitoring requirements, and making certain that systems maintain sufficient treatment processes to address any water quality concerns. As EPA develops new regulations and guidelines, or as other drinking water issues arise, the Water Supply Program (WSP) must respond by developing corresponding programs or adopting regulations. Table 2 presents a summary of the major regulatory activities conducted by the WSP in 2007.

Table 2. Water Supply Program's Major Activities for the Year 2007	
Sanitary Surveys Conducted of CWS and NTNCWS	773
Sanitary Surveys Conducted of TNC Systems (by local health departments and MDE)	355
Comprehensive Performance Evaluations Conducted	3
Technical Reviews of Water Construction Projects	59
Water Appropriation Permits Issued (New and Renewal)	618
Individuals Certified to Sample Drinking Water	1,067
New Wells Sited	42
Ground Water Under the Direct Influence of Surface Water Determinations	538
Water Quality Reports Reviewed	39,018
County Water and Sewer Plans Reviewed	32

Appropriation Permits Any person who wishes to appropriate water for agricultural (greater than 10,000 gallons per day), municipal, commercial, industrial or other non-domestic uses must obtain a Water Appropriation Permit from the WSP. Issuance of the permit involves evaluating the needs of the user and the potential impact of the withdrawal on neighboring users and the water source in order to maximize beneficial use of the waters of the State. Permits for large appropriations often involve conducting pump tests to measure the adequacy of an aquifer and safe yield of a well, or reviewing stream flow records to determine the adequacy of a surface water source. In 2007, State legislation passed that provides for additional enforcement authority and removes the permit requirement for small water users (less than 5000 gallons per day) when such users are located in a water management strategy area.

Arsenic in Ground Water in the Major Aquifers of the Maryland Coastal Plain Ground water arsenic levels in some parts of Southern Maryland and the Eastern Shore are known to exceed the EPA's Maximum Contaminant Level (MCL) of 5 micrograms per liter. In State Fiscal Year 2008, Maryland Geological Survey (MGS) personnel compiled data from more than 3,000 arsenic analyses collected by county health departments in Queen Anne's, Dorchester, Talbot, Calvert, and St. Mary's Counties. This data, along with data previously collected by MGS, provides a more complete picture of arsenic distribution in drinking water, particularly in the Aquia and Piney Point aquifers. A final report was completed in 2008.

Capacity Development Regulations were finalized in 1999 that require all new community and non-transient non-community water systems to have sufficient technical, managerial, and financial capacity to provide safe drinking water to their consumers prior to being issued a Construction Permit. These capacity development regulations are currently being enforced by the WSP.

The WSP works closely with training providers in Maryland to coordinate training and ensure that water system training needs are being met. During sanitary survey inspections, the WSP staff also provide technical assistance in emergency response and vulnerability assessments to small water systems.

The WSP conducted a baseline capacity development self-assessment survey for all community water systems in 2002. A second survey was conducted beginning in November 2007. Findings of the second survey are being evaluated and compared with the previous survey. Results will be presented in the Capacity Development annual report, which will be submitted to EPA in November 2008. The survey findings will be used to target training to the needs of the water systems.

On November 8, 2007, the EPA determined that MDE continued to meet the statutory requirements under the SDWA for implementing a Capacity Development Program for new and existing community and non-transient non-community water systems.

Capacity Management In 2007, the WSP's "Water Supply Capacity Management Plan" guidance document was finalized and distributed to all community water systems and posted on MDE's website. WSP staff, along with MRWA circuit riders, provided technical assistance to water systems in completing plans. The WSP has started to receive capacity management plans from

water systems; the plans are reviewed and comments provided to the water systems. Capacity limiting factors include source capacity, treatment capacity, and appropriation permit quantity. Growth in some areas of central and western Maryland has outpaced the water resources in the area. Additional State resources are needed for this task.

Coastal Plain Aquifer Study The 2003 Advisory Committee on the Management and Protection of the State's Water Resources identified the need for a comprehensive assessment of ground water resources in the Maryland Coastal Plain, where population is expected to grow by 44 percent between the years 2002 and 2030. Withdrawals from the confined aquifers of the Coastal Plain in Southern Maryland and the Eastern Shore have caused water levels in some aquifers to decline by tens to hundreds of feet from their original levels, and the rate of decline is expected to increase as the population in these areas grows. A more comprehensive understanding of the confined aquifer systems and how much water is available in these systems is needed in order to make sound management decisions and appropriately evaluate water withdrawal requests. The first phase of a three-phase Regional Coastal Plain Assessment began in 2006.

During 2007 and 2008, the U.S. Geological Survey (USGS), the Maryland Geological Survey (MGS), and MDE continued their Phase I work (2006 to 2008) on the Regional Coastal Plain Assessment of the Maryland Coastal Plain. Activities included developing a "beta" version of an aquifer information system (a prototype of which was delivered to the MDE) and documenting the hydrogeologic characteristics of the aquifer system. MGS completed a preliminary revision of the hydrogeologic framework of the Maryland Coastal Plain. Future assessment activities will include conducting detailed studies of the regional ground water flow system and water budget, improving documentation of patterns of water quality in the aquifers, enhancing ground water level, streamflow, and water quality monitoring networks, and developing tools to facilitate scientifically sound management of the ground water resources in the Maryland Coastal Plain. Phase I activities are being jointly supported by funds and services from MDE, MGS, and USGS. Phases II and III will require significant additional investment from current and new funding partners from 2009 to 2013.

Compliance Activities More than 1,000 community and non-transient non-community water systems in Maryland must test for over 90 regulated contaminants on schedules which vary based on source type, historical data, and population. Data is received throughout the year and reviewed for compliance with the regulations. WSP staff received and reviewed more than 39,000 water quality reports for samples collected in 2007. The WSP issues Notices of Violations (NOVs) for Maximum Contaminant Level (MCL) and Treatment Technique (TT) violations as they occur. NOVs for monitoring violations are issued quarterly. The WSP maintains an inventory of more than 3,500 public water systems.

Consumer Confidence Reports The Consumer Confidence Report Rule requires all community systems to report water quality data in an understandable format to their consumers. Maryland received full primacy for this program in September 2001. The reports must be submitted annually to the WSP by July 1 for the previous calendar year, and certification of their delivery to each resident within the system must be submitted to the WSP by October 1 of each year.

Drought Management Since January 2001, MDE has been evaluating hydrologic conditions using a plan developed by the Statewide Water Conservation Advisory Committee. Conditions are evaluated on a regional basis, and drought status is assessed monthly during normal conditions, and more frequently during times of water shortage. Hydrologic conditions were dry over most of the State during 2007, with the Central, Southern, and Eastern regions in a drought "watch" beginning in July 2007. The WSP maintained a vigilant oversight of hydrologic conditions with regular updates of the Department's website.

Emergency Response WSP staff are available to respond to water supply emergencies 24 hours a day and may offer technical advice, special sampling, or on-site assistance. Frequently, emergency response involves evaluating the safety of the water supply and determining whether a boil-water advisory is required to protect public health. WSP staff provided assistance to the public in response to 53 complaints in 2007.

In June 2007, MDE and Washington County Health Department (WCHD) traced a Norwalk virus outbreak, which affected dozens of people, to a well supplying Beaver Creek Country Club. MDE provided technical assistance to the County in terms of a thorough sanitary survey, sampling, and lab analyses. The sanitary survey uncovered several sanitary defects, including two possible sources of the virus. With the help of MDE and the WCHD, the water system was able to correct the sanitary defects and sanitize the water system.

After an unusually large number of private wells in Somerset County experienced supply difficulties in 2007, MDE worked with the Maryland Environmental Service (MES) to sharply reduce the water usage of the Eastern Correction Facility, which is operated by MES. MDE provided technical assistance to MES in developing a water conservation plan, and this plan was implemented by MES. Improvements of the Prison's wastewater treatment facility also helped to conserve a substantial amount of water.

Enforcement Strategy The strategy that has been adopted for managing enforcement is progressive enforcement. This technique has been effective in resolving violations, and reserving formal civil and criminal actions for the most serious cases. Mechanisms for obtaining compliance from a water system include:

- Voluntary compliance and correction by the system;
- Telephone calls: an effective method for obtaining complete details about the violation, which enables the State to answer any questions about system responsibilities (NOTE: Many small water systems serving fewer than 100 persons are managed by volunteers who appreciate the extra assistance);
- Site visits: a system may require hands-on technical assistance by trained staff to address problems not previously encountered;
- Notice of violation: a formal action (e.g. letter) which contains information on the violation, public notification requirements, and potential enforcement actions;
- Consent agreement: a legal document prepared jointly between the water company and the State, with jointly negotiated deadlines;
- Order: a legal document which orders a water system to complete specific actions by deadlines established by the State;
- Civil and criminal judicial actions taken through the local courts;

- Administrative penalties issued by MDE;
- Financial assistance for a water system which may consist of federal Drinking Water State Revolving Loan Funds, or State Drinking Water Grant Assistance.

When there is a risk to the public's health due to failure of the treatment plant or the loss of water, progressive enforcement is not appropriate. In these types of cases, the State, in cooperation with the local health department, may issue an immediate notice to the system users through the local radio/TV stations, or by door-to-door handouts. Boil-water advisories are managed in this manner. If corrective actions are expected to take days, alternative water sources may be recommended in the notices, or a safe supply of water may be hauled to the water system. MDE works to ensure that all public water is safe for the consumer, and to assist water systems in achieving compliance with the federal and State requirements.

In 2007, MDE adopted a Department-wide Enforcement Policy. The development of the Enforcement Policy will assist MDE in establishing standardized timelines and uniform penalties where applicable. The Enforcement Policy for public water systems is under review for coordination with the Department policy.

Enterprise Environmental Management System (EEMS) and Safe Drinking Water Information System for States (SDWIS/State) MDE has initiated the development of the Enterprise Environmental Management System, also known as EEMS. This system will become MDE's unified relational database housing the regulated entity, permitting, inspection, and enforcement activity data supporting MDE's programs, and will eventually consolidate MDE's separate permit, compliance, enforcement, and other databases that correspond to the Department's various regulatory activities. EEMS is expected to eliminate the inefficiencies of maintaining multiple databases, streamline processes, and improve customer service. TEMPO (Tools for Environmental Management and Protection Organizations) is the primary software system that is being adapted for MDE. New Jersey, Louisiana, Mississippi, New Mexico, Kentucky utilize this software.

MDE met with EPA in 2007 to evaluate the newest version of the SDWIS/State database. In addition to reviewing SDWIS/State's capabilities, the status of Maryland's current database, Public Drinking Water Information System (PDWIS), was reviewed. Problems with aging programs, new regulation development, and the need to move toward electronic laboratory reporting are driving factors. A decision was made in early 2008 to adopt the SDWIS/State database over the next two years.

Field Operations MDE's Science Services Administration (SSA) conducts sampling operations for public water systems on a year-round basis. The samplers from SSA collect routine compliance samples for inorganic compounds, synthetic organic compounds, volatile organic compounds, and radionuclides according to schedules and priorities established by the WSP. In addition, samplers collect special request samples as needed to follow up on MCL violations, complaints, or other situations that warrant additional sampling.

Laboratory Certification Program In July 2005, the responsibilities for the Laboratory Certification Program and the chief Certification Officer (CO) transferred from Maryland's

Department of Health and Mental Hygiene to MDE. This action was taken in response to the 2003 on-site evaluation of the Program by EPA that identified an inspection backlog of nine months to a year for various activities.

In January 2007, MDE's CO left service with the State. Following an on-site inspection by EPA Region III in May 2007, the Laboratory Certification Program was placed on temporary restrictions until new staff and support for the Program was in place. One WSP staff person was temporarily reassigned to this activity until new staff were hired.

In September and October of 2007, MDE hired two new COs. Following an extensive training program that involved classes, laboratory work, and participation in on-sites assessments with EPA, Pennsylvania, and Delaware, the COs were approved for Microbiology and Inorganic Contaminants by EPA.

The COs completed six Microbiology inspections in November and December 2007. Maryland also developed a request for proposal (RFP) for a third party assessor to assist with on-site triennial inspections in the areas of Organic Chemistry and Radiological contaminants. The RFP deadline is July 11, 2008.

The Laboratory Certification Program continues to review the annual applications for both in-state and out-of-state laboratories. As of January 2008, there was a backlog of approximately six months for the review of applications. Triennial on-site inspections are required for all in-state laboratories. On-site inspections were not performed for most of calendar year 2007. Microbiological inspections by MDE were initiated in November 2007. In 2008 and 2009, the backlog for annual reviews and on-site inspections are expected to be fully addressed.

MDE purchased software licenses for maintaining the Laboratory Certification Program. The multi-year license for the IT Toolworks Software will facilitate the Performance Test review and help maintain the overall inventory and data related to certification program. Software installation and initial training was held in August 2007. The software was upgraded in June 2008.

Operator Certification Legislation for establishing a program to certify operators at water and wastewater facilities in Maryland was first passed in 1957. The most recent revision to the Maryland Annotated Code was in 1999 when the Board and the associated regulations were reestablished until July 1, 2011. The Code of Maryland Regulations (COMAR) for the Operator Certification Program was revised in January 2001, and approved by EPA on July 13, 2001. The regulations require community and non-transient non-community water systems to have State-certified operators. MDE has made no statutory or regulatory changes to the Operator Certification Program since January 2001. In 2005, a new regulation was passed that requires process-related training for certification renewal. The Board must review and approve all training as process or nonprocess training. The new requirements went into effect in January 2006.

During 2007, a total of 424 of 492 community water systems were in compliance with the requirement to maintain a certified operator. Of the 566 non-transient non-community water

systems, 421 systems employed certified operators. Compliance with the operator certification regulations increased from 59 percent of water systems in the 2001 baseline to 79 percent of the water systems in 2007. The majority of the water systems that serve more than 100 persons are in compliance: Of the 668 water systems that serve over 100 persons, 493 water systems employ certified water operators. On September 28, 2007, EPA Region III informed MDE that the Operator Certification Program continued to comply with the EPA guidelines.

Operator Expense Reimbursement Grant (ERG) In 2003, the WSP applied for funds through the federal ERG to reimburse operators for certification and examination costs and to support training for operators of public drinking water systems that serve fewer than 3,300 persons. The grant request was approved by EPA in November 2003. The reimbursement program for certification and examination costs is ongoing and operators are reimbursed upon request. The WSP is currently negotiating agreements with three separate training organizations to provide additional training opportunities for operators at these smaller systems. Reimbursement of expenses related to operator certification started in 2004 and is expected to continue until the grant is expended in 2009.

Regulations In 2006, EPA finalized three major regulations: Long Term 2 Surface Water Treatment Rule (LT2SWTR), Stage 2 Disinfection Byproduct Rule (Stage 2 DBPR), and the Ground Water Rule. In 2006, MDE entered into an informal agreement with EPA-Region III for early implementation activities under the LT2SWTR and the Stage 2 DBPR. Due to staffing shortages, MDE informed EPA that the WSP would not be able to implement Schedule 4 activities for the Stage 2 DBPR and the LT2SWTR. MDE continues early implementation for Schedule 1 – 3 systems (systems serving more than 10,000 persons). In December 2007, MDE requested an extension for the adoption of both regulations from EPA Region III.

In 2007, EPA finalized three regulations: Unregulated Contaminant Monitoring Rule 2, Lead and Copper Rule Short-Term Revisions, and Analysis and Sampling Procedures.

Sanitary Survey Inspections A sanitary survey is an on-site inspection of a water system, including the source, treatment, storage, and distribution systems, as well as a review of the operations and maintenance of the system. These inspections are conducted for the purpose of determining the adequacy and reliability of the water system to provide safe drinking water to its customers. The sanitary survey can be used to follow up known or suspected problems or on a routine basis to assess the water system's viability and prevent future problems from occurring. Inspectors may require system upgrades if sanitary deficiencies are identified. The WSP strives to inspect community and non-transient non-community water systems once each year. A total of 773 sanitary surveys were completed for community and non-transient non-community water systems in 2007. In addition, WSP staff and county health departments conducted sanitary survey inspections for 355 transient non-community water systems during 2007.

Small System Technical Assistance MDE continued the funding for the ninth year of a circuit rider for the Maryland Rural Water Association (MRWA) to train operators of small water systems. MDE refers systems in need of assistance to the MRWA, and the MRWA's circuit rider provides hands-on training to system operators for chemical feed systems, leak detection,

corrosion control, compliance sampling, and consumer confidence reporting. In 2007, MRWA's circuit rider also assisted systems with the upcoming Stage 2 Disinfection Byproducts Rule.

Source Water Assessments The Safe Drinking Water Act reauthorization of 1996 requires states to develop and submit to EPA source water assessments for all public water supplies. Maryland's Source Water Assessment Plan (SWAP) was approved by EPA in November 1999. As part of the SWAP, Maryland conducted studies to define areas of contribution for each public water supply, identified potential sources of contamination within those areas, and assessed the vulnerability of the supply to those sources of contamination. By March 2006, source water assessment reports had been completed for all community water systems and non-community (non-transient and transient) water systems.

Surface Water Filtration Plant Optimization Program MDE has a long history of working to improve the technical, managerial, and financial capacity of Maryland's surface water filtration plants, which serve the vast majority of Maryland's population. This has primarily been accomplished by the WSP through the use of Comprehensive Performance Evaluations (CPEs). CPEs are used to evaluate the performance of a surface water treatment plant to determine if the plant is optimized for removal of particles and parasitic organisms such as *Giardia* and *Cryptosporidium*. The CPE assists in identifying areas of potential improvement in the operation, maintenance, design, and administration of the plant in order to achieve optimized plant performance. Since 1990, when the WSP adopted optimization goals and began conducting CPEs, the process has helped improve surface water systems' technical, managerial, and financial capacity and has strengthened drinking water treatment understanding among operators and local government officials across the State. Three CPEs were conducted by the WSP in calendar year 2007.

In addition to plant optimization activities through the CPE process, the WSP continued its participation in EPA's Area Wide Optimization Program (AWOP). These additional optimization efforts include tracking of turbidity data in the form of graphs, and prioritizing filtration plants that can benefit from technical assistance. By Federal Fiscal Year 2006, most surface water systems were reporting turbidity and other data electronically, which allows the WSP to more easily analyze water plant performance. As an extension of optimization activities through AWOP, the WSP joined with other states in EPA Region III to extend Performance Based Training (PBT) to operators of several water plants in several Region III states for the purpose of working through a structured program that will assist with achieving plant optimization. Two Maryland plants participated in the multi-state PBT which commenced in July 2006 and concluded in August 2007.

Transient Non-community Water System Oversight Transient water systems, such as churches, campgrounds, rest stops, and restaurants, account for approximately 70 percent of Maryland's public water systems. In 2007, 20 of Maryland's 23 counties had delegated authority for oversight of transient non-community systems in their jurisdictions, and received funding from MDE through the State Revolving Loan Fund set-asides. Transient systems in the delegated counties accounted for more than 96 percent of the total number of transient systems. One hundred-ten systems are directly managed by the Water Supply Program in the remaining three counties.

Counties with delegated authority have overseen this program since 1998. The WSP has provided delegated counties with written and verbal guidance, and has offered several training opportunities to educate the county programs about the federal and State requirements for these systems. Beginning in 2001, the WSP initiated routine program evaluations of the delegated counties in order to provide additional direction. The program evaluations involve visiting each county for a file review, interviewing county staff regarding program operations, and preparing a written evaluation of each program. All 20 delegated county programs have undergone an initial program review, and a second round of evaluations is in progress. Guidance and technical assistance are provided to the counties as needed.

Water and Sewer Plan Evaluations In 1997, the Maryland Legislature enacted Smart Growth legislation limiting most State infrastructure funding to areas that local governments designate for growth (i.e. Priority Funding Areas). Through the Smart Growth planning process, funding programs, such as the Drinking Water State Revolving Fund (DWSRF), give preference to infrastructure improvement projects that are in the Priority Funding Areas. All new water systems must be incorporated in the County Water and Sewerage Plans before a Construction Permit is issued by MDE. These planning processes help prevent unnecessary new systems and generally encourage consolidation of small systems to improve system reliability and economy. In addition, the County Water and Sewerage Plans assist in the long-term planning of water resources and treatment plants, thereby reducing the potential for undersized water treatment plants and water outages.

Since January 2005, the WSP reviews all County Water and Sewerage Plans in order to address source water protection issues and to ensure compliance with Capacity Development and other SDWA requirements. For calendar year 2007, the WSP reviewed 32 County Water and Sewerage Plans.

Water Conservation Act As water appropriation permits for large water systems (serving 10,000 or more people) are renewed or expanded, they are being modified to require these utilities to conduct annual audits of their water use. The Maryland Water Conservation Act, passed during the 2002 legislative session, required MDE to produce guidelines on water conservation best management practices for water utilities. This document was published in October 2003 and is available on MDE's website at www.mde.state.md.us.

Water Resources Management Advisory Committee A Governor's Advisory Committee on water resource management has been meeting since 2005 to review information on the State's water resources, assess existing laws, regulations, and policies, and to develop recommendations to ensure that Maryland's water resources remain sustainable into the foreseeable future. The Committee produced an interim report in June 2006, and a final report is due by July 1, 2008.

The Committee's final report is expected to focus on the need for improved information and technical resources to better understand the adequacy of Maryland's ground water and surface water resources, the need for integrated water resources planning on the State, local, and regional level, and the need for a reliable funding source to support water resources planning programs at the State and local level.

Water System Security Planning WSP staff provide on-going technical assistance to water systems on vulnerability assessments, emergency response plans, sampling protocols, and

security resources. In 2004, public water systems serving populations greater than 3,300 people were required under the Bioterrorism Act of 2002 to complete vulnerability assessments. Systems also had to certify that they have prepared emergency response plans. In addition, WSP passes along security related updates and federal security alerts to water systems. WSP also monitors the daily infrastructure reports produced by the Department of Homeland Security to remain cognizant of any relevant drinking water security information.

As an outgrowth of the work done in 2004 by the Water Security and Sewerage Systems Advisory Council, MDE partnered with State and federal agencies to form a Joint Maryland Committee on Water Security. In April 2006, the Committee successfully proposed and obtained an Urban Area Security Initiative (UASI) grant in the amount of $1.55 million from the Senior Policy Group for the National Capital Region. These funds originate from the Department of Homeland Security and are sub-awarded by the Washington D.C. government. The funds are intended to initiate an early warning system (EWS) for monitoring water quality in raw source waters at five sites in the Potomac and Patuxent Rivers. The EWS is anticipated to achieve three main water security goals:

1. The EWS will protect public health by providing remote, automated surveillance and monitoring of public drinking water quality. At present, there is no system in place to continuously monitor raw water quality for sudden changes that could indicate natural or terrorist induced contamination.
2. The project follows a risk-based counter-terrorism strategy. One hundred percent protection of all water infrastructures is impossible, but this project focuses attention properly on drinking water system intakes that are at greatest risk on the Potomac River.
3. This project is directly responsive to Homeland Security Presidential Directive (HSPD), which calls for the development of "… robust, comprehensive, and fully coordinated surveillance and monitoring systems, including …public health and water quality that provides early detection and awareness of disease, pest, or poisonous agents" (HSPD-9, § (8)(a)). Providing early warning of intentional or accidental chemical or biological contamination is a must.

The core objectives of the EWS are to provide rapid analytical results in order to determine response needs. The EWS will screen a number of basic parameters with sufficient sensitivity, and allow automated, remote monitoring. The primary approach will be 1) to analyze water quality in locations where baseline conditions are established and to detect significant departures or "state changes" from the benchmarks that may indicate a contamination event, and 2) employ bio-monitors to detect potentially toxic conditions in water.

Through the EPA Water Security Coordination Grant, the WSP contracted with the Horsley Witten Group to develop two documents. The first, a Water Security Strategic Plan for the WSP, identifies the strengths and weaknesses of the WSP and outlines a plan for improving the WSP's ability to support drinking water utilities during an emergency. The second document is an Emergency Response Plan (ERP) for the Program. The ERP is an all-hazards plan that addresses both intentional contamination scenarios and other types of emergencies that might be faced by a water utility. Both plans are currently under review and should be finalized by September 2008.

During 2008, Horsley Witten Group will assist the WSP with four security-related events: 1) a training session for WSP staff; 2) an internal tabletop exercise for WSP staff; 3) a functional tabletop exercise with water utilities and outside agencies; and 4) a conference for water utilities and other water security professionals.

Watershed Management Several of the largest water systems in Maryland, including the City of Baltimore, the City of Cumberland, and the Washington Suburban Sanitary Commission, rely on surface water sources. All of these systems currently have formalized watershed management programs in place. The purpose of watershed management programs is to ensure the high quality of water in streams and reservoirs used for drinking water. This is accomplished in a variety of ways, including the formation of watershed technical groups, the promotion of agricultural and urban best management practices (BMPs), the purchase of conservation easements and buffers along waterways, implementation of low-development zoning, and public education. The WSP has completed all source water assessments; these assessments include recommendations for the establishment of new watershed management plans for Maryland communities that rely on surface water sources.

In 2007, MDE continued working with drinking water protection partners in the Potomac watershed. The partnership includes the States of Virginia, West Virginia, Pennsylvania, and Maryland, the District of Columbia, multiple water suppliers, the EPA, and the USGS. The Interstate Commission of the Potomac River Basin helps facilitate and provides support for the partnership. Additional information regarding the partnership can be found at the Potomac River Basin Drinking Water Source Protection Partnership (DWSPP) website: www.potomacdwspp.org

Well Siting One important step in protecting a ground water supply is to identify the best possible location for the well. WSP staff conduct joint site inspections with local health department personnel to assist systems in locating new wells at community and non-transient non-community water systems. In 2007, approximately 42 well sites were approved by the WSP.

Wellhead Protection Maryland's Wellhead Protection (WHP) Program was approved by EPA in 1991. Delineations of areas of contribution have been completed for more than 400 ground water systems. To date, 57 systems are implementing protection measures for their ground water supplies. These systems serve approximately 203,750 residents in Maryland (see Table 3).

Table 3. Source Water Protection in Maryland For the Year 2007

System Type	No. of Systems	Population Benefited
Systems with Active Wellhead Protection Programs	57	203,750
Systems with Active Watershed Management Programs	19	2,650,000

ANNUAL COMPLIANCE INFORMATION

This report includes violation data for calendar year 2007. Maximum Contaminant Level (MCL) and Treatment Technique (TT) violations are reported for all types of public water systems. Monitoring/Reporting (M/R) violations are reported for all systems that are directly overseen by MDE, including all community water systems, all non-transient non-community water systems, and transient non-community water systems in Montgomery, Prince George's, and Wicomico Counties.

Figure 1 presents the various types of violations incurred by community water systems in 2007 based on the population size. If a water system has multiple violations in the same category, it is counted once.

Summaries of the various violations for all public water systems in 2007 are presented in Tables 4 through 10.

As indicated by Figure 1, both MCL and M/R violations occur more frequently in smaller systems, which have fewer resources and less technical expertise for operating the systems. MDE inspectors regularly visit systems where water quality problems occur to advise and assist system owners to meet their regulatory and water quality requirements.

Maximum Contaminant Level (MCL) Compliance

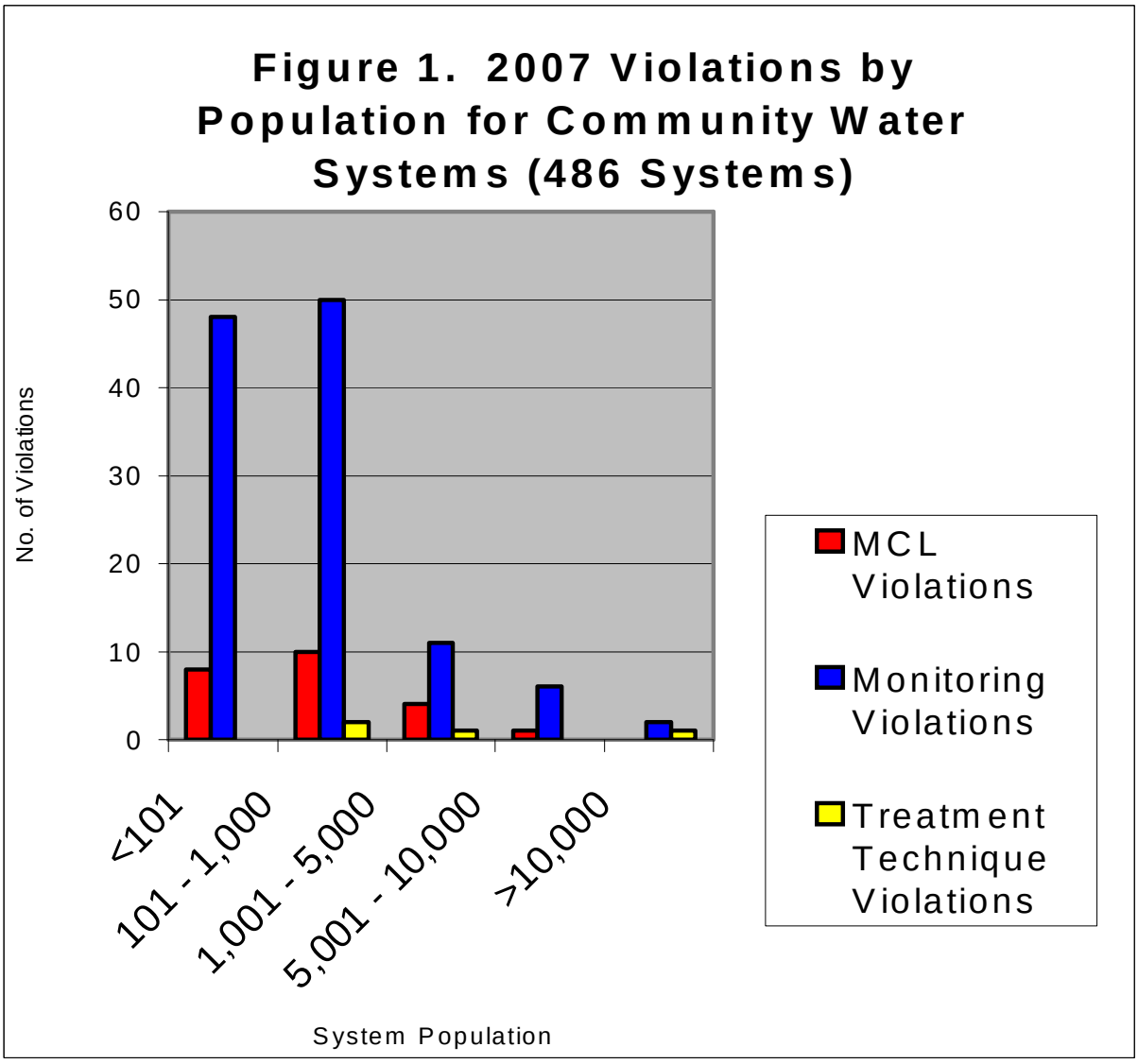
Under the Safe Drinking Water Act (SDWA), the EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as Maximum Contaminant Levels (MCLs). Contaminants are categorized into four main categories: 1) Inorganic Contaminants, 2) Organic Contaminants, 3) Microbiological Contaminants, and 4) Disinfectants and Disinfection Byproducts. Tables 4 through 8 present summaries of public water system violations that occurred during 2007, or violations that occurred prior to 2007 and were not resolved.

Table 4 presents a summary of inorganic contaminant (IOC) violations. In 2007, five water systems exceeded the MCL for nitrate, six systems exceeded the MCL for arsenic, two systems exceeded the MCL for gross alpha radioactivity (NOTE: Two additional systems had on-going MCL violations which occurred prior to 2007 but were not resolved), and one system exceeded MCL for combined Radium-226 and Radium-228.

Table 5 presents a summary of volatile organic contaminant (VOC) violations and Table 6 presents a summary of synthetic organic contaminant (SOC) violations. No systems exceeded the MCL for any organic contaminant in 2007; however one system exceed the MCL for benzene (VOC) in 2006 and returned to compliance in 2007 by drilling a new well.

Violation summaries for all public water systems under the Total Coliform Rule are presented in Table 7. The data indicates that the 29 MCL violations for 1045 community and non-transient non-community water systems were lower than previous years, with the exception of 2006, which also had 29 MCL violation (compared to 52 reported in 2005 and 40 reported in 2004).

The majority of the MCL violations are related to transient non-community water systems which typically have little or no treatment.



Monitoring Compliance

A PWS is required to monitor and verify that the levels of contaminants present in the water do not exceed the MCL. If a PWS fails to have its water tested as required or fails to report test results correctly to the primacy state, a monitoring violation occurs.

Water systems are notified annually by MDE of their monitoring requirements. In addition, a reminder notice is sent to the systems approximately one month before the end of the monitoring period if reports are not received. If a system fails to report or complete the required testing, a violation letter is sent to the water system. If there is no response after about one month, a second notice of violation letter is sent by certified mail to the water system; this letter will typically contain a requirement for public notification, and potential fines. Phone calls and visits by the technical staff are also used to provide assistance to water systems.

Significant Monitoring Violations For this report, significant monitoring violations are generally defined as any major monitoring violation that occurred during the calendar year of the report or occurred prior to the calendar year of the report and were not resolved. A major monitoring violation, with rare exceptions, occurs when no samples were taken or no results were reported during a compliance period. The tables in this report include monitoring violations for community water systems, non-transient non-community water systems, and the transient non-community water systems in Montgomery, Prince George's and Wicomico Counties, which were overseen directly by MDE. During 2007, 81 systems had monitoring violations for IOCs, one system had a monitoring violation for VOCs, no systems had monitoring violations for SOCs, and 107 systems had monitoring violations for total coliform (see Tables 4, 5, 6, and 7). Thirty-eight systems failed to collect their initial tap sample for lead and copper, and 83 systems failed to collect follow-up sampling for lead and copper (see Table 9).

Table 4. Inorganic Contaminant Violations (2007)								
Contaminant			MCL Violations			Monitoring Violations		
Code	Name	MCL (mg/L)	# of Vios	# Vios RTC	# of Systems with Vios	# of Vios	# Vios RTC	# of Systems with Vios
1074	Antimony*	0.006	0	0	0	37	29	37
1005	Arsenic	0.010	45	21	13	33	26	33
1094	Asbestos	7 mil. fibers/L	0	0	0	0	0	0
1010	Barium*	2	0	0	0	37	29	37
1075	Beryllium*	0.004	0	0	0	37	29	37
1015	Cadmium*	0.005	0	0	0	38	30	38
1020	Chromium*	0.1	0	0	0	37	29	37
1024	Cyanide	0.2	0	0	0	0	0	0
1025	Fluoride	4	0	0	0	13	11	13
1035	Mercury*	0.002	0	0	0	37	29	37
1036	Nickel	N/A	0	0	0	37	29	37
1040	Nitrate-N	10	13	5	5	40	37	40
1041	Nitrite-N	1	0	0	0	2	2	2
1045	Selenium*	0.05	0	0	0	37	29	37
1085	Thallium*	0.002	0	0	0	37	29	37
4000	Gross Alpha Radioactivity	15 pCi/L	5	1	4	0	0	0
4100	Gross Beta Radioactivity	4 mrem	0	0	0	0	0	0
4010	Combined Radium 226 +228	5 pCi/L	4	0	1	0	0	0
	Totals		67	27	23	422*	338	81**

MCL = maximum contaminant level
RTC = returned to compliance

* The nine Phase II/V metals are typically sampled and reported as a group
** Eighty-one systems had one or more monitoring violations for IOC contaminants

Table 5. Violations for Volatile Organic Contaminants (2007)								
Contaminant			MCL Violations			Monitoring Violations		
Code	Name	MCL (mg/L)	# of Vios	# Vios RTC	# of Systems with Vios	# of Vios	# Vios RTC	# of Systems with Vios
2977	1,1-Dichloroethylene	0.007	0	0	0	1	1	1
2981	1,1,1-Trichloroethane	0.2	0	0	0	1	1	1
2985	1,1,2-Trichloroethane	0.005	0	0	0	1	1	1
2980	1,2-Dichloroethane	0.005	0	0	0	1	1	1
2983	1,2-Dichloropropane	0.005	0	0	0	1	1	1
2378	1,2,4-Trichlorobenzene	0.07	0	0	0	1	1	1
2990	Benzene	0.005	1	1	1	1	1	1
2982	Carbon Tetrachloride	0.005	0	0	0	1	1	1
2380	cis-1,2-Dichloroethylene	0.07	0	0	0	1	1	1
2964	Dichloromethane (methylene chloride)	0.005	0	0	0	1	1	1
2992	Ethylbenzene	0.7	0	0	0	1	1	1
2989	Monochlorobenzene	0.1	0	0	0	1	1	1
2968	o-Dichlorobenzene	0.6	0	0	0	1	1	1
2969	p-Dichlorobenzene	0.075	0	0	0	1	1	1
2996	Styrene	0.1	0	0	0	1	1	1
2987	Tetrachloroethylene	0.005	0	0	0	1	1	1
2991	Toluene	1	0	0	0	1	1	1
2979	trans-1,2-Dichloroethylene	0.1	0	0	0	1	1	1
2984	Trichloroethylene	0.005	0	0	0	1	1	1
2976	Vinyl Chloride	0.002	0	0	0	1	1	1
2955	Xylenes (Total)	10	0	0	0	1	1	1
	Totals		1	1	1	21*	21	1**

MCL = maximum contaminant level
RTC = returned to compliance

* The 21 VOCs are typically sampled and reported as a group
** One system had a monitoring violation for all 21 VOCs and returned to compliance

Table 6. Violations for Synthetic Organic Contaminants (2007)								
Contaminant			MCL Violations			Monitoring Violations		
Code	Name	MCL (mg/L)	# Vios	# Vios RTC	# of Systems with Vios	# Vios	# Vios RTC	# of Systems with Vios
2063	2,3,7,8-TCDD(dioxin)	3x10-8	0	0	0	0	0	0
2105	2,4-D (Formula 40, Weedar 64)	0.07	0	0	0	0	0	0
2110	2,4,5-TP (Silvex)	0.05	0	0	0	0	0	0
2051	Alachlor (Lasso)	0.002	0	0	0	0	0	0
2050	Atrazine (Atranax, Crisazina)	0.003	0	0	0	0	0	0
2306	Benzo(a)pyrene	0.0002	0	0	0	0	0	0
2046	Carbofuran (Furdan, 4F)	0.04	0	0	0	0	0	0
2959	Chlordane	0.002	0	0	0	0	0	0
2031	Dalapon	0.2	0	0	0	0	0	0
2035	Di(2-ethylhexyl)adiphate	0.4	0	0	0	0	0	0
2039	Di(2-ethylhexyl)phthalate	0.006	0	0	0	0	0	0
2931	Dibromochloropropane (DBCP, Nemafume)	0.0002	0	0	0	0	0	0
2041	Dinoseb	0.007	0	0	0	0	0	0
2032	Diquat	0.02	0	0	0	0	0	0
2033	Endothall	0.1	0	0	0	0	0	0
2005	Endrin	0.002	0	0	0	0	0	0
2946	Ethylene Dibromide (EDB, Bromofume)	0.00005	0	0	0	0	0	0
2034	Glyphosate	0.7	0	0	0	0	0	0
2065	Heptachlor (H-34, Heptox)	0.0004	0	0	0	0	0	0
2067	Heptachlor Epoxide	0.0002	0	0	0	0	0	0
2274	Hexachlorobenzene	0.001	0	0	0	0	0	0
2042	Hexachlorocyclopentadiene	0.05	0	0	0	0	0	0
2010	Lindane	0.0002	0	0	0	0	0	0
2015	Methoxychlor (DMDT, Marlate)	0.04	0	0	0	0	0	0
2036	Oxamyl (Vydate)	0.2	0	0	0	0	0	0
2326	Pentachlorophenol	0.001	0	0	0	0	0	0
2040	Picloram	0.5	0	0	0	0	0	0
2384	Polychlorinated biphenyls (PCB, Aroclor)	0.0005	0	0	0	0	0	0
2037	Simazine	0.004	0	0	0	0	0	0
2020	Toxaphene	0.003	0	0	0	0	0	0
	Totals		0	0	0	0	0	0

MCL = maximum contaminant level
RTC = returned to compliance

Table 7. Total Coliform Rule Violations (2007)				
Violation Name	**MCL**	**# of Vios**	**# Vios RTC**	**# of Systems with Vios****
MCL, Acute (Fecal Coliform) Violation type 21	Absence	15	15	15
MCL, Monthly (Total Coliform) * Violation type 22	Absence	224	217	197
Monitoring, Routine and Repeat Major Violation types 23 – 26	N/A	271	253	107
Totals		510	487	309**

MCL = maximum contaminant level
RTC = returned to compliance

* For a system that serves 33,000 people or fewer and collects less than 40 samples per month, two positive samples in one compliance period is a violation. For a system that serves more than 33,000 people, greater than 5% of the samples testing positive in one compliance period is a violation.
** Three hundred-nine systems had one or more violations (MCL and/or M/R) for coliform bacteria

Disinfection Byproduct Rule Compliance

Surface water systems that serve 10,000 or more persons are required to sample for haloacetic acids (HAA5) and total trihalomethane (TTHM). Beginning in 2004, all water systems that disinfect the drinking water with chlorine, chlorine dioxide, or ozone were required to monitor for disinfection byproducts. In 2007, seven systems had MCL violations for disinfection byproducts.

Table 8. Disinfection Byproduct Rule Violations (2007)								
Contaminant			**MCL/TT Violations**			**Monitoring Violations**		
Code	**Name**	**MCL (mg/L)**	**# of Vios**	**# Vios RTC**	**# of Systems with Vios**	**# of Vios**	**# Vios RTC**	**# of Systems with Vios**
2950	Total Trihalomethanes	0.08	28*	0	3	1	1	1
2456	Haloacetic Acids (5)	0.06	10*	3	3	1	1	1
2920	Total Organic Carbon	N/A	1	1	1	0	0	0
Totals			39	4	7	2	2	1**

* Some THM violations have been on-going since 2005 and some HAA violations since 2006
** One system had monitoring violations for both THMs and HAAs

After the three years of initial monitoring for the DBP Rule were completed, 534 of the ground water systems that serve fewer than 10,000 persons were reduced to triennial monitoring frequency due to the low concentration of DBPs. In 2007, consecutive water systems were sampled quarterly for DBPs in order to determine how the Stage 2 DBP Rule may impact these water systems. Most ground water systems were eligible for either small system waivers (for systems serving fewer than 500 persons), or 40/30 waivers (for systems with low DBP concentrations).

Treatment Technique Compliance

For some regulations, the EPA establishes treatment techniques (TTs) in lieu of an MCL to control unacceptable levels of certain contaminants. In 2007, there were two Surface Water Treatment Rule (SWTR) treatment technique violations and 25 Lead and Copper Rule (LCR) treatment technique violations, as outlined in Tables 9 and 10.

Lead and Copper Rule Community and non-transient non-community water systems are required to treat their water if it is found to be corrosive and/or if the source water contains unacceptable levels of lead or copper. Based on a system's population, five to 100 samples are collected at homes or sample locations with the highest probability of elevated lead concentrations. This is determined based on a survey of when buildings were constructed and/or when plumbing is installed, and/or if the service line leading to the building contains lead, and/or if the interior plumbing of the building contains lead pipes. Lead solder was prohibited from use in water system plumbing beginning in the mid-1980s. A water system's results for the compliance period cannot exceed the Action Level (AL) for lead or copper in more than 10 percent of the samples. Although exceeding the AL level is not a violation, follow-up actions are required. In 2007, 15 systems failed to conduct required lead public education activities (see Table 9).

Table 9. Lead and Copper Violations (2007)

Violation Name	# of Vios	# Vios RTC	# of Systems with Vios
Initial Tap Sampling for Lead and Copper (51) M/R	40	25	38
Follow-up or Routine Tap Sampling (52) M/R	85	51	83
Lead Public Education (65) TT	25	10	25
Treatment Installation (58) TT	0	0	0
Totals	150	86	133*

RTC = returned to compliance
# of Vios = Number of violations that occurred in 2007 plus number of ongoing, unresolved violations

* Thirteen systems had violations in multiple categories and were counted once

Surface Water Treatment Rule Water systems that use surface water as their drinking water source are required to provide filtration and disinfection. The treatment process is monitored throughout each day, and reported monthly to the State. Table 10 outlines the Surface Water Treatment Rule violations for 2007. No water systems exceeded the turbidity MCLs. To date, all ground water systems under the direct influence of surface water (GWUDI) have installed treatment. As of June 2005, Maryland's last unfiltered surface water source was taken out of service; the water system connected to a regional water system. Maryland continues to evaluate ground water systems for vulnerability. Six water systems (2 CWS and 4 TNCWS) have exceeded the 18 month deadline.

Table 10. Surface Water Treatment Rule Violations (2007)

Type of System	Violation Type	# of Vios	# Vios RTC	# of Systems with Vios
Filtered Water Systems	Treatment Technique (41)	1	1	1
Filtered Water Systems	Treatment Technique - Exceeds 1 NTU (43)	1	1	1
Filtered Water Systems	Treatment Technique - Exceeds 0.3 NTU (44)	0	0	0
Filtered Water Systems	Monitoring, Routine/Repeat (36)	1	1	1
Filtered Water Systems	Turbidity Monitoring, Filtered (38)	1	1	1
Unfiltered Water Systems	Treatment Technique - Failure to Filter (42) - GWUDI	6	0	6
Totals		10	4	10

RTC = returned to compliance

Variances

A primacy state can grant a PWS a variance from a primary drinking water regulation if the characteristics of the raw water sources reasonably available to the PWS do not allow the system to meet the MCL. To obtain a variance, the system must agree to install the best available technology, treatment techniques, or other means of limiting drinking water contamination that the Administrator finds are available (taking costs into account), and the state must find that the variance will not result in an unreasonable risk to public health. At the time the variance is granted, the state must prescribe a schedule that the PWS will follow to come into eventual compliance with the MCL. Small systems may also be granted variances if they cannot afford (as determined by application of the Administrator's affordability criteria) to comply with certain MCLs (non-microbial, promulgated after January 1, 1986) by means of treatment, alternative source of water, restructuring, or consolidation. Small systems are allowed three years to install and operate EPA approved small system variance technology. The variance must be reviewed not less than every five years to determine if the system remains eligible for the variance. In 2007, no variances were granted by MDE.

Exemptions

A primacy state can grant an exemption temporarily relieving a PWS of its obligation to comply with an MCL, treatment technique, or both if the system's noncompliance results from compelling factors (which may include economic factors) and the system was in operation on the effective date of the MCL or treatment technique requirement. A new PWS that was not in operation on the effective date of the MCL or treatment technique requirement by that date may be granted an exemption only if no reasonable alternative source of drinking water is available to the new system. Neither an old or a new PWS is eligible for an exemption if management or restructuring changes can reasonably be made that will result in compliance with the SDWA or improvement of water quality, or if the exemption will result in an unreasonable risk to public health. The state will require the PWS to comply with the MCL or treatment technique as expeditiously as practicable, but not later than three years after the otherwise applicable compliance date.

In September 2004, MDE distributed information, including a guidance document, to the water systems that were impacted by the new Arsenic Rule standard of 0.010 milligrams per liter in the drinking water. The guidance document provided information to water systems on obtaining an exemption as allowed in the regulations. Maryland received 20 exemption requests for the Arsenic Rule by the deadline of January 23, 2006. After reviewing the documents and plans for achieving compliance, MDE tentatively approved 17 exemptions pending on the development of a final schedule. Memorandums of Understanding and schedules have been signed for all 17 water systems. Eight systems are drilling new wells to a deeper aquifer, six systems are installing arsenic removal treatment, and three systems are connecting to a larger PWS. All 17 water systems are expected to have completed their upgrades by January 2009.

Consumer Confidence Report (CCR) Compliance

Every community water system is required to deliver to its customers a brief annual water quality report. This report is required to include some educational material, and provides information on the source water, the levels of any detected contaminants, and compliance with drinking water regulations. During 2007, letters were sent to 387 systems as a reminder to submit their CCRs by the July 1 compliance deadline. Systems that failed to submit their CCRs were contacted by telephone by the Rule Manager. Table 11 presents a summary of the Consumer Confidence Report Reporting Violations.

Table 11. Consumer Confidence Reporting Violations (2007)

Violation Name	# of Vios	# Vios RTC	# of Systems with Vios
Consumer Notification	90	84	88

Conclusion

Maryland public water systems maintain a high level of compliance with all Safe Drinking Water Act requirements. In general, compliance is more difficult for smaller systems, which struggle both financially and technically to meet a continually increasing number of complex regulations. MDE's technical assistance approach is aimed at helping all public drinking water systems to achieve the highest possible level of public health protection.

DEFINITIONS

Filtered Systems Water systems that have installed filtration treatment [40 CFR 141, Subpart H].

Inorganic Contaminants Non-carbon-based compounds such as metals, nitrates, and asbestos. These contaminants are naturally occurring in some water, but can get into water through farming, chemical manufacturing, and other human activities. EPA has established MCLs for 15 inorganic contaminants [40 CFR 141.62].

Lead and Copper Rule This rule established national limits on lead and copper in drinking water [40 CFR 141.80-91]. Lead and copper corrosion pose various health risks when ingested at any level, and can enter drinking water from household pipes and plumbing fixtures. States report violations of the Lead and Copper Rule in the following four categories:

> *Initial lead and copper tap monitoring and reporting:* SDWIS Violation Code 51 indicates that a system did not meet initial lead and copper testing requirements, or failed to report the results of those tests to the State.
>
> *Follow-up or routine lead and copper tap monitoring and reporting:* SDWIS Violation Code 52 indicates that a system did not meet follow-up or routine lead and copper tap testing requirements, or failed to report the results.
>
> *Public education:* SDWIS Violation Code 65 shows that a system did not provide required public education about reducing or avoiding lead intake from water.

Maximum Contaminant Level (MCL) The highest amount of a contaminant that EPA allows in drinking water. MCLs ensure that drinking water does not pose either a short-term or long-term health risk. MCLs are defined in milligrams per liter (parts per million) unless otherwise specified.

Monitoring EPA specifies which water testing methods the water systems must use, and sets schedules for the frequency of testing. A water system that does not follow EPA's schedule or methodology is in violation [40 CFR 141].

States must report monitoring violations that are significant as determined by the EPA Administrator and in consultation with the states. For purposes of this report, significant monitoring violations are major violations and they occur when no samples are taken or no results are reported during a compliance period. A major monitoring violation for the surface water treatment rule occurs when at least 90% of the required samples are not taken or results are not reported during the compliance period.

Organic Contaminants Carbon-based compounds, such as industrial solvents and pesticides. These contaminants generally get into water through farm cropland or discharge from factories. EPA has set legal limits on 54 organic contaminants that are to be reported [40 CFR 141.61].

Public Water System A Public Water System (PWS) is defined as a system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year. There are three types of PWSs. PWSs can be community (such as towns), non-transient non-community (such as schools or

factories), or transient non-community systems (such as rest stops or parks). For this report when the acronym "PWS" is used, it means systems of all types unless specified in greater detail.

Radionuclides Radioactive particles that can occur naturally in water or result from human activity. EPA has set legal limits on four types of radionuclides: radium-226, radium-228, gross alpha, and beta particle/photon radioactivity [40 CFR 141]. Violations for these contaminants are to be reported using the following three categories:

Gross alpha: SDWIS Contaminant Code 4000 for alpha radiation above MCL of 15 picoCuries/liter (pCi/L). Gross alpha includes radium-226 but excludes radon and uranium.

Combined radium-226 and radium-228: SDWIS Contaminant Code 4010 for combined radiation from these two isotopes above MCL of 5 pCi/L.

Gross beta: SDWIS Contaminant Code 4100 for beta particle and photon radioactivity from man-made radionuclides above 4 millirem/year.

Uranium: SDWIS Contaminant Code 4006 for total Uranium above MCL of 30 µg/L.

Reporting Interval The WSP Annual Compliance Report is submitted to EPA by July 1 of each year, and reports violations for the previous calendar year.

SDWIS Code Specific numeric codes from the Safe Drinking Water Information System (SDWIS) have been assigned to each violation type included in this report. The violations to be reported include exceeding contaminant MCLs, failure to comply with treatment requirements, and failure to meet monitoring and reporting requirements. Four-digit SDWIS Contaminant Codes have also been included in the chart for specific MCL contaminants.

Surface Water Treatment Rule The Surface Water Treatment Rule establishes criteria under which water systems supplied by surface water sources, or ground water sources under the direct influence of surface water, must filter and disinfect their water [40 CFR 141, Subpart H]. Violations of the Surface Water Treatment Rule are to be reported for the following four categories:

Monitoring, routine/repeat (for filtered systems): SDWIS Violation Code 38 indicates a system's failure to carry out required tests, or to report the results of those tests.

Treatment techniques: SDWIS Violation Code 41 shows a system's failure to properly treat its water. States report Code 41 for filtered and unfiltered systems to EPA.

Failure to filter (for unfiltered systems): SDWIS Violation Code 42 shows a system's failure to properly treat its water.

Total Coliform Rule (TCR) The Total Coliform Rule establishes regulations for microbiological contaminants in drinking water. These contaminants can cause short-term health problems. If no samples are collected during the one month compliance period, a significant monitoring violation occurs. States are to report four categories of violations:

Acute MCL violation: SDWIS Violation Code 21 indicates that the system found fecal coliform or E. coli, potentially harmful bacteria, in its water, thereby violating the rule.

Non-acute MCL violation: SDWIS Violation Code 22 indicates that the system found total coliform in samples of its water at a frequency or at a level that violates the rule. For systems collecting fewer than 40 samples per month, more than one positive sample for total coliform is a violation. For systems collecting 40 or more samples per month, more than 5% of the samples positive for total coliform is a violation.

Major routine and follow-up monitoring: SDWIS Violation Codes 23 and 25 show that a system did not perform any monitoring.

Sanitary Survey: SDWIS Violation Code 28 indicates a sanitary survey was not performed.

Treatment Technique A water treatment process that EPA requires instead of an MCL for contaminants that laboratories cannot adequately measure. Failure to meet other operational and system requirements under the Surface Water Treatment and the Lead and Copper Rules have also been included in this category of violation for purposes of this report.

Unfiltered Systems Water systems that do not need to filter their water before disinfecting it because the source is very clean [40 CFR, Subpart H].

Violation A failure to meet any State or federal drinking water regulation.