



Anne Arundel County Department of Public Works 2004 Drinking Water Quality Report

Continuing our commitment...

Anne Arundel County Department of Public Works' Bureau of Utility Operations once again proudly presents our annual drinking water quality report. As in past years, the exemplary drinking water delivered to our customers has been consistently clean, safe, dependable and has met all federal and state standards, with one minor exception.* In 2004, Anne Arundel County delivered over 11.5 billion gallons of water to approximately 400,000 consumers. More than 9.7 billion gallons were treated and distributed after being taken from deep wells throughout the County. About 1.7 billion gallons were purchased from Baltimore City. Recognizing that drinking water is a vital resource, we appreciate the importance of providing information to



our customers about the sources, treatment and delivery of their drinking water. We encourage you to take the time to read this report.

2004 System Improvements...

Every year, through the Capital Improvement Program, the County manages projects designed to improve drinking water by responding to and anticipating future growth, as well as preventing the deterioration of the County's existing system. Current projects include a series of water transmission mains on the east and west sides of the County which will eventually provide the means to transport large quantities of drinking water from Arnold and Crofton Meadows Water Treatment Plants throughout the east and west sides of the County, respectively, as well as parts of northern Anne Arundel County. Other ongoing projects provide cleaning and lining of existing distribution pipes, rehabilitation of water services, valves, fire hydrants and other parts of the water distribution system.

Your Drinking Water from Source to Consumer... The County's public water system is

divided into 8 water service areas as illustrated in the map in this report. All of the service areas receive drinking water produced at County water treatment facilities. Two of the service areas also receive drinking water that is purchased by the County from Baltimore City. The City facilities use surface water from reservoirs as a supply source. The County facilities use ground water from wells as a supply source.

Water produced in the County is taken from deep wells (150 to over 1000 feet) in the Patapsco, Patuxent and Aquia aquifers. Ground water flows from recharge areas, where water flows into the ground to resupply a water source, into the aquifers, through which water travels at a slow rate to the area the wells are located.

Groundwater treated in the County typically goes through the following processes: aeration for oxidation of iron; chlorine addition for disinfection; lime addition for pH adjustment; sedimentation and filtration for iron and particle removal; and fluoride addition to prevent dental decay. Treated water enters the "distribution" system which consists of about 1,200 miles of water mains which deliver the water directly to customers.

Monitoring for quality...

Utility Operations continuously monitors the water treated and distributed by the County. Water is tested by the County's state certified laboratory, the State of Maryland, and, in some cases, private laboratories. The County operates its water system to provide water of a higher quality than required by federal and state agencies. In 2004 more than 22,500 samples were collected and approximately 38,000 analyses performed for approximately 130 parameters. The results of these analyses, performed throughout the year for both regulated and unregulated contaminants, are included in this report.

A leader in the industry...

To stay abreast of the industry's best practices, Utility Operations has active membership in the following professional water-related organizations:

*Association of Metropolitan Water Agencies (AMWA) works with large publicly owned drinking water systems that provide clean, safe drinking water to more than 110 million Americans. AMWA works with Congress and federal agencies to help ensure safe and cost-

Note: The Elvaton Road water treatment plant, located in the Pasadena/Baltimore City #2 Zone, recently violated a drinking water standard. Test results for 2004 show that this facility slightly exceeded the standard, or maximum contaminant level (MCL), for combined radium. The standard for combined radium is 5 pCi/L (picocuries per liter). The average level of combined radium over the last year was 6 pCi/L. Please see more about Radium in drinking water under the "Learn more about..." section of this report on page 3.

effective federal drinking water laws and regulations.

*American Water Works Association (AWWA) is a clearinghouse for information and expertise and an advocate for large water suppliers for public health and water quality issues. With its broad based knowledge and proven experience, AWWA, with its 56,000 members, acts as an advocate and voice for the drinking water community.

*American Water Works Association Research Foundation (AWWARF), is an international non-profit research organization whose mission is to enable water utilities and other professionals to provide safe and affordable drinking water to consumers.

*WaterISAC, is the primary source of sensitive information to support drinking water and wastewater utilities in an effort to protect critical water infrastructure.

Information on your water system...

In addition to this annual report, information about your water system is provided in Customer Updates, which come in your utility bill, as well as comprehensive information on the Department of Public Works' web site at www.aacounty/dpw. Other informational materials are available from Public Works' Customer Relations staff at 410-222-7582. Most printed informational materials are available under the Customer Relations section of the web site. In addition, all capital projects which include improvements and/or additions to the water supply system are included in the annual budget presented by the County Executive to the County Council each spring. Public hearings are held throughout the County and public comment is welcome. The County also maintains a "Ten Year Master Plan for Water Supply and Sewage Systems." The County Budget and Master Plan can be reviewed at any branch of the County library. For information on the Master Plan, contact Long Range Planning Section, Office of Planning and Zoning at 410-222-7432.



Information from the EPA...



Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from waste treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm runoff, industrial or domestic discharges, oil and gas production, mining or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.





Learn more about...

Radium...

Radium is a naturally occurring substance which can, if exposed to acidic conditions (low pH), leach

into groundwater. The EPA has set maximum contaminant levels for radium that are based on lifetime exposure. The County and State monitor the public water system. With one exception, all results were within the acceptable limits set by EPA. As noted on page 1, the level of radium at the Elvaton Road SCW exceeded the MCL by 1 pCi/L. This is not an immediate health risk. Some people who drink water containing combined radium in excess of the MCL over many years, may have an increased risk of getting cancer. However, the risk is very small.

Radon...

Radon is a naturally occurring radioactive gas that may cause cancer, and may be found in drinking water and indoor air. The EPA advises that some people who are exposed to radon in drinking water may have increased risk of cancer over the course of their lifetime, especially lung cancer. Radon in soil under homes is the biggest source of radon in indoor air, and a greater risk of lung cancer than radon in drinking water. For more information, call EPA's Radon Hotline (800-SOS-RADON) or visit the web site at www.epa.gov/iaq/radon. Testing has indicated that radon is not present in the public water system at concentrations which would cause any health concerns.

Cryptosporidium...

Cryptosporidium is a microscopic parasite that may cause diarrhea, fever and related gastrointestinal disorders in infected humans and animals. Cryptosporidium may find its way into

drinking water that comes from surface water, such as reservoirs, rivers or lakes. Cryptosporidium is not a problem in drinking water taken from aquifers via deep wells. Since the source of drinking water from Baltimore City is reservoirs, the City monitors its' raw water sources for cryptosporidium. Samples from the raw water sources were analyzed and determined to be free of viable organisms. The City protects its' water supply reservoirs to help prevent these organisms from entering the water supply.

Arsenic...

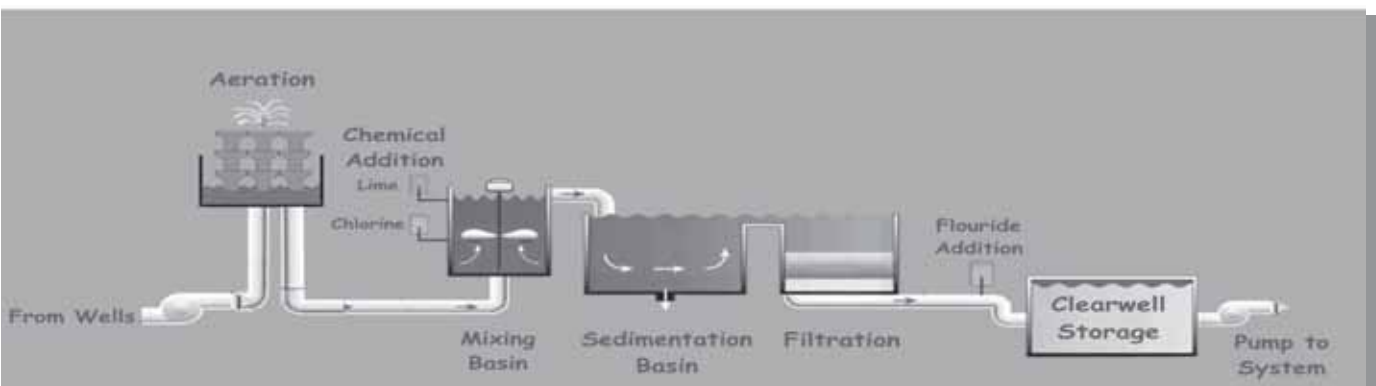
Arsenic is a naturally occurring substance which, if contained in drinking water, could increase the risk of serious health concerns such as circulatory problems. The proposed EPA level for this contaminant is 10 mg/l. Testing has indicated that there is no arsenic in the public water system.

Lead...

The source of lead in drinking water is normally from leaching in individual home plumbing systems and not from source water, water treatment processes, or the water distribution system. Testing has indicated that lead is not present in the public water system at concentrations which would cause any health concerns.

Source Water Assessment...

Source Water Assessment is a process for evaluating the vulnerability to contamination of the source of a public drinking water supply. The assessment does not address the treatment process, or the storage and distribution aspects of the water system, which are covered under separate provisions of the Safe Drinking Water Act. The Maryland Department of the Environment is the lead agency in developing these Assessments. Source Water Assessments are in progress but have not yet been completed for all of the County's water systems.



Typical Water Treatment Processes

Notes for Data Table

Note 1: The “MCL” and “MCLG” for Total Coliforms is based on the percentage of “positive coliform results” in a given month. The MCL requires that less than or equal to 5% of the samples test positive. The percentage of positive sample results is shown in the “highest level” column.

Note 2: Turbidity standards are based on a “treatment technique” and are only applicable to systems using surface water as a source. The maximum Turbidity allowed in a given month is 5 NTU, and 95% of the results must be less than 0.5 NTU. This % is indicated in the “range of detection” column.

Note 3: Compliance with the MCL for these contaminants is based on the average of four quarterly samples. The “range of detection”: numbers represent individual analysis results, not an average.

Note 4: Compliance with the MCL for Lead and Copper is based on the “90th percentile” value of all analysis results. The number of sample results exceeding the MCL for these parameters is indicated in the “range of detection” column.

Note 5: Testing for some parameters is not required on an annual basis. Some results reflect the most recent testing between 2002 and 2004.

Note 6: Testing required by EPA to determine if an MCL/health standard should be set.

Note 7: EPA considers a level of 50 pCi/l equivalent to the actual MCL of 4 mrems/l.

General Note: The drinking water was analyzed for more than 100 parameters. These contaminants do not appear in the data table because they were not detected.



Definitions of Terms Used in Water Quality Data Table

Maximum Contaminant Level Goal (MCLG) - level of contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL) - highest level of a contaminant allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology.

Action Level - concentration of a contaminant which, if exceeded, triggers a treatment or other requirement which a water system must follow

N/A - not applicable

ND - not detectable at testing limit

NT - not tested

ppm - parts per million or milligrams per liter. One part per million is the equivalent of 1 cent in \$10,000 or one minute in two years.

ppb - parts per billion or micrograms per liter. One part per billion is the equivalent of 1 cent in \$10,000,000 or one minute in two thousand years.

pCi/l - picocuries per liter (a measure of radiation)

mrems/l - millirems per liter (a measure of radiation)

NTU - nephelometric turbidity units (a measure of clarity)

TT - treatment technique, a required process intended to reduce the level of a contaminant in drinking water

Contact us...

24 Hour Emergency Hotline 410-222-8400

(from South County) 410-451-4118

Billing Office 410-222-1144

DPW Customer Relations 410-222-7582

DPW General Information 410-222-7500

For more information about the Department of Public Works or to contact us by email, visit our website at:

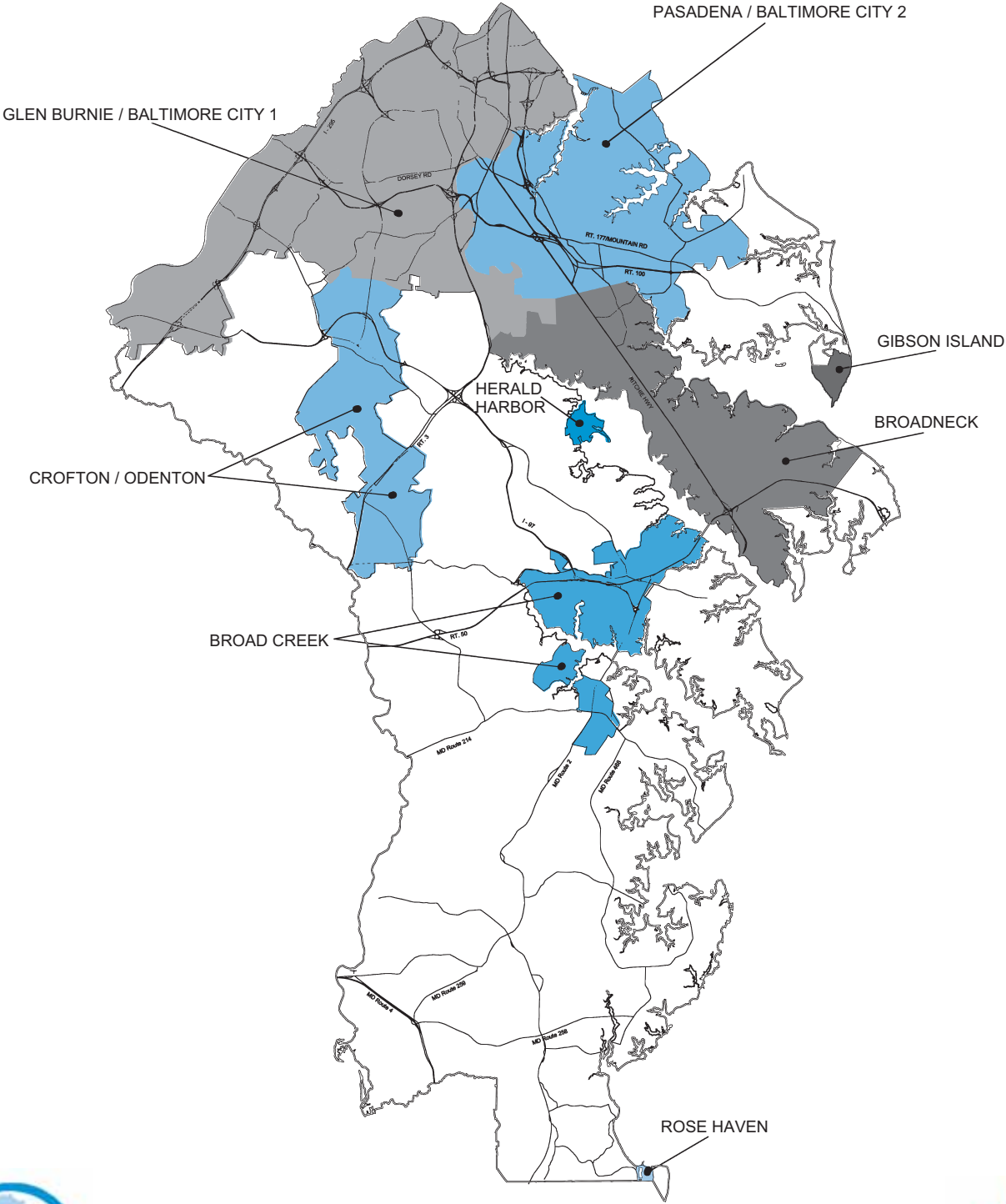
www.aacounty.org/dpw

En Español: Este Informe contiene información muy importante. Tradúscalo o hable con un amigo quien lo entienda bien.

Anne Arundel County Water Service Areas

Glen Burnie/Baltimore City #1
 Pasadena/Baltimore City #2
 Broadneck
 Crofton/Odenton

Broad Creek
 Gibson Island
 Herald Harbor
 Rose Haven



A Commitment to Excellence.



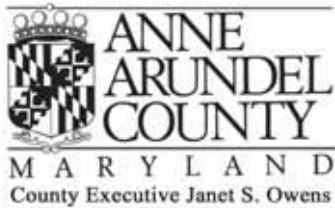
DRINKING WATER QUALITY DATA – 2004

PARAMETER	UNITS	MAXIMUM CONTAMINANT LEVELS		GLEN BURNIE / BALTIMORE CITY #1 ZONE		PASADENA / BALTIMORE CITY #2 ZONE		BROADNECK ZONE		CROFTON / ODENTON ZONE		BROAD CREEK ZONE		GIBSON ISLAND ZONE		HERALD HARBOR ZONE		ROSE HAVEN ZONE		NOTES	TYPICAL SOURCES OF CONTAMINATION
		MCL	MCLG	highest level	range of detection	highest level	range of detection	highest level	range of detection	highest level	range of detection	highest level	range of detection	highest level	range of detection	highest level	range of detection	highest level	range of detection		
Microbiological Contaminants																					
Total Coliforms	#	<5% positive	0% positive	0%	N/A	0%	N/A	0%	N/A	0%	N/A	0%	N/A	0%	N/A	0%	N/A	0%	N/A	1	Naturally present in the environment.
Turbidity	NTU	TT	N/A	0.16	100%	0.37	99.9%	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A	2	Soil run-off.
Radioactive Contaminants																					
Alpha Emitters	pCi/l	15	0	2	ND - 3.6	6	1.0 - 11.2	7	0.7 - 14.0	2	1.0 - 3.0	1	1.0 - 1.0	ND	N/A	1	1.0 - 1.0	ND	N/A	3, 5	Erosion and/or decay of natural deposits.
Beta Emitters	pCi/l	50	0	3	3.0 - 3.0	2	1.6 - 3.0	NT	N/A	4	4.0 - 4.0	4	4.0 - 4.0	ND	N/A	ND	N/A	10	10.0 - 10.0	3, 5, 7	Erosion and/or decay of natural deposits.
Combined Radium	pCi/l	5	0	3	1.3 - 3.6	6	2.0 - 8.5	NT	N/A	0	0.2 - 0.2	ND	N/A	ND	N/A	ND	N/A	ND	N/A	3, 5	Erosion and/or decay of natural deposits.
Inorganic Contaminants																					
Barium	ppb	2000	2000	ND	N/A	30	ND - 30	28	ND - 28	19	19 - 19	10	10 - 10	ND	N/A	3	3 - 3	NT	N/A	5	Erosion and/or decay of natural deposits; discharge of drilling wastes; discharge from metal refineries.
Fluoride	ppm	4	4	1.75	0.27-1.75	1.70	0.07-1.70	1.50	0.12-1.50	1.70	0.08-1.70	1.20	0.90 - 1.20	2.20	0.84-2.20	1.50	0.27-1.50	0.41	0.27 - 0.41		Erosion and/or decay of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.
Nitrate	ppm	10	10	2.46	0.54-2.46	2.75	1.38-2.75	0.18	ND - 0.18	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A		Erosion and/or decay of natural deposits; leaching from septic tanks; sewage.
Beryllium	ppb	4	4	0.5	ND - 0.5	ND	N/A	ND	N/A	ND	N/A	ND	N/A	NT	N/A	ND	N/A	NT	N/A	5	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries.
Lead	ppb	AL = 15	0	ND	1	ND	1	ND	1	ND	0	ND	0	ND	1	ND	0	ND	0	4, 5	Erosion and/or decay of natural deposits; corrosion of household plumbing systems.
Copper	ppm	AL = 1.3	1.3	0.07	0	0.07	0	0.07	0	0.10	0	ND	0	ND	0	ND	0	0.67	0	4, 5	Erosion and/or decay of natural deposits; corrosion of household plumbing systems.
Selenium	ppb	50	50	ND	N/A	ND	N/A	4	4 - 4	ND	N/A	4	4 - 4	ND	N/A	3	3 - 3	ND	N/A		Run - off from herbicide.
Disinfection By-Products																					
Total Trihalomethanes	ppb	80	N/A	41	ND - 69	46	20 - 81	1	ND - 3	2	ND - 4	5	3 - 8	ND	N/A	ND	N/A	20	20 - 20	3, 5	By-product of drinking water treatment processes.
Total Haloacetic Acids	ppb	60	N/A	44	ND - 92	41	2 - 83	3	ND - 13	1	ND - 3	1	ND - 5	ND	N/A	ND	N/A	8	8 - 8	3, 5	By-product of drinking water treatment processes.
Volatile Organic Contaminants / Synthetic Organic Contaminants																					
Tetrachloroethene	ppb	5	0	ND	N/A	2.7	ND - 2.7	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	5	Leaching from pvc pipes; discharge from factories and dry cleaners.
Di(2-ethylhexyl) phthalate	ppb	6	0	0.6	ND - 0.6	0.8	ND - 0.8	2.2	1.0 - 2.2	NT	N/A	ND	N/A	0.6	0.6 - 0.6	0.8	0.8 - 0.8	0.5	0.5 - 0.5	5	Discharge from rubber and chemical factories.
Di(2-ethylhexyl) adipate	ppb	400	400	ND	N/A	0.7	ND - 0.7	ND	N/A	NT	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	5	Discharge from chemical factories.
Toluene	ppb	1000	1000	ND	N/A	ND	N/A	0.6	ND - 0.6	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	5	Discharge from petroleum factories.
Xylenes (total)	ppb	10000	10000	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	1.4	1.4 - 1.4	5	Discharge from petroleum or chemical factories.
Pentachlorophenol	ppb	1	0	ND	N/A	ND	N/A	0.85	ND - 0.85	NT	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	5	Discharge from wood preserving factories.
Unregulated Contaminants																					
Sodium	ppm	N/A	N/A	14.9	1.3 - 14.9	15.8	1.2 - 15.8	2.3	0.6 - 2.3	2.4	1.0 - 2.4	1.0	0.6 - 1.0	6.5	3.4 - 6.5	4.3	1.0 - 4.3	8.3	6.2 - 8.3	5, 6	Naturally present in the environment; by-product of drinking water treatment processes.
Sulfate	ppm	N/A	N/A	14.2	1.1 - 14.2	17.0	ND - 17.0	16.4	9.1 - 16.4	NT	N/A	9.0	9.0 - 9.0	NT	N/A	7.4	7.4 - 7.4	8.0	8.0 - 8.0	5, 6	Naturally present in the environment.
Chloromethane	ppb	N/A	N/A	ND	N/A	0.6	ND - 0.6	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	5	Discharge from industrial chemical factories.



2004 Drinking Water Quality Report

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June 2005



A Message from the County Executive

An abundant supply of clean, safe drinking water is essential to any thriving community. Anne Arundel County has a long-standing record of consistently providing high quality, safe drinking water and meeting the ever-growing demands of residents and businesses. Since 1998, the Department of Public Works has been providing our customers with an annual report on the quality of their public drinking water. I am pleased to present this report, a summary of the many thousands of analyses done on the water produced and distributed by Anne Arundel County in 2004. As in past years, we are proud to report that the quality of our drinking water has met all state and federal requirements, with one exception. The exception occurred at the Elvaton Road water treatment facility where a slightly elevated amount of the naturally occurring substance, radium, was found. That water facility was shut down in January 2005. Please see the note on page 1 of this report for more information.

This report reflects the vision and hard work of the many skilled and dedicated employees of the Bureau of Utility Operations, Water Operations. I hope you take the time to read this important information about the quality of the water we supply to your homes and businesses every day.

Sincerely,

Janet S. Owens
County Executive

