

2016 WATER QUALITY REPORT
MANASQUAN WATER SUPPLY SYSTEM

PWSID 1352005

A division of the New Jersey Water Supply Authority, serving the customer communities of BRIELLE, SEA GIRT, SPRING LAKE, SPRING LAKE HEIGHTS AND WALL TOWNSHIP

The Manasquan Water Treatment Plant, located on Hospital Road in the Allenwood section of Wall Township, is owned by the Southeast Monmouth Municipal Utilities Authority and is operated by the New Jersey Water Supply Authority. The Manasquan Water Treatment Plant provides an average of 60% of the water used by the residents of the above customer communities. Raw water for this facility is taken from the MANASQUAN RIVER in Wall Township and the MANASQUAN RESERVOIR in Howell Township. The Manasquan Water Supply System also provides raw water to New Jersey American Water, for treatment and distribution to other communities in Monmouth and Ocean Counties.

The water produced by the Manasquan Water Treatment Plant is monitored for a large number of contaminants. The contaminants, which have been detected in monitoring from January 1st, 2016 through December 31st, 2016, are listed in the **TEST RESULTS** tables below.

For the complete monitoring schedule or for further information about this report, you can contact Operations Supervisor Donald LeRoy or System Manager Paul McKeon at the Manasquan Water Supply System. Telephone - 1-732-974-8383; Fax - 1-732-974-8607 or E-mail – dleroy@njwsa.org or pmckeon@njwsa.org.

This report is available at <http://www.njwsa.org/mwssccr.pdf>

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 (1-800-426-4791).

TEST RESULTS TABLE

CONTAMINANT	HIGHEST LEVEL DETECTED	RANGE DETECTED	UNIT OF MEASUREMENT	MCLG	MCL	LIKELY SOURCE OF CONTAMINATION	VIOLATION
MICROBIOLOGICAL CONTAMINANTS 2016							
TOTAL COLIFORM BACTERIA	0	0	%	0	5% OF SAMPLES POSITIVE	NATURALLY PRESENT IN THE ENVIRONMENT	NO
SUSPENDED MATTER REMOVAL 2016							
TOTAL ORGANIC CARBON (TOC)	ANNUAL AVERAGE REMOVAL 35.3	MONTHLY SAMPLES	%	N/A	TT REQUIRED REMOVAL MINIMUM IS 35% TO 45% OF AVERAGE RAW WATER TOC OR 0% IF THM AND HAA RESULTS ARE BELOW A PERCENTAGE OF THEIR MCL	NATURALLY PRESENT IN THE ENVIRONMENT	NO
	MINIMUM REMOVAL 15.2	15-48	%	N/A			
TURBIDITY FILTERED WATER	MAXIMUM 0.44	0.03-0.44	NTU	N/A	> 1 NTU (1.49 due to rounding)	SOIL AND ORGANIC MATTER RUNOFF	NO
	Goal is for > 95% of samples to be <0.3NTU	> 99.8% of samples were <0.3NTU (Only 2 results out of 30,600 exceeded 0.30 NTU) Average =0.05 NTU	%	N/A	TT = 95 % OF MONTHLY SAMPLES < 0.3 NTU	SOIL AND ORGANIC MATTER RUNOFF	NO
RADIOACTIVE CONTAMINANTS (RESULTS BASED ON DATA FROM 2011)							
GROSS ALPHA EMITTERS	0.96	048 – 1.25	pCi/L	0	15	EROSION OF NATURAL DEPOSITS	NO
RADIUM 228	<1	ND – 0.18	pCi/L	0	5	EROSION OF NATURAL DEPOSITS	NO
INORGANIC CONTAMINANTS							

TEST RESULTS TABLE							
CONTAMINANT	HIGHEST LEVEL DETECTED	RANGE DETECTED	UNIT OF MEASUREMENT	MCLG	MCL	LIKELY SOURCE OF CONTAMINATION	VIOLATION
BARIUM	0.039	0.039	PPM	2	2	EROSION OF NATURAL DEPOSITS	NO
FLUORIDE	0.20	0.20	PPM	4	4		
INORGANIC CONTAMINANTS							
NITRATE	0.0987	0.0987	Mg/l	10	10	RUNOFF FROM FERTILIZER USE; INDUSTRIAL AND DOMESTIC WASTE WATER DISCHARGES; EROSION OF NATURAL DEPOSITS	No
ASBESTOS	<0.093	<0.093	Million Fibers /Liter		7x10 ⁶ fibers/ >10 um	EROSION OF NATURAL DEPOSITS	No
ORGANIC CONTAMINANTS							
BROMATE	<0.005	N/A	Mg/l		0.010 RUNNING ANNUAL AVERAGE OF ONE MONTHLY SAMPLE	REACTION OF NATURALLY OCCURRING BROMIDE WITH OZONE	No

TEST RESULTS TABLE
DISINFECTANT/DISINFECTANT BY-PRODUCTS (BASED ON SAMPLES OF WATER LEAVING THE PLANT AND IN THE DISTRIBUTION SYSTEM)

CHLORINE	Highest Value 1.79	Range 1.07-1.79	PPM	4 MRDL GOAL	4 MRDL	WATER ADDITIVE USED TO CONTROL MICROBES	NO
TTHM (TOTAL TRICHALOMETH ANES) FROM THE END OF THE DISTRIBUTION SYSTEM	HIGHEST SINGLE PARAMATER VALUE.	<.05-19.9	PPB	N/A	ANNUAL SITE SAMPLING 80	BY-PRODUCTS OF DRINKING WATER CHLORINATION	NO
	19.9						
HAA5 (HALOCETIC ACIDS) FROM THE END OF THE DISTRIBUTION SYSTEM	HIGHEST SINGLE PARAMATER VALUE.	<1.0-19	PPB	N/A	ANNUAL SITE SAMPLING 60	BY-PRODUCT OF DRINKING WATER CHLORINATION	NO
	19						

MONITORING WAIVERS

The Safe Drinking Water Act regulations allow *monitoring waivers* to reduce or eliminate the monitoring requirements for asbestos, volatile organic chemicals, and synthetic organic chemicals. The NJDEP conducted monitoring of synthetic organic chemicals (SOC) during 2012 that included sampling during storm conditions at our surface water intake. Based on these results, a waiver for the 2011 – 2013 period was received. The waiver for the 2014-2016 period is under NJDEP review.

SECONDARY CONTAMINANTS / WATER QUALITY PARAMETERS				
CONTAMINANT OR PARAMETER	AVERAGE LEVEL DETECTED	UNIT OF MEASUREMENT	MCL (RUL)	LIKELY SOURCE OF CONTAMINATION
IRON	<0.05	Mg/L	0.3	EROSION OF NATURAL DEPOSITS;
MANGANESE	0.015	Mg/L	0.05	EROSION OF NATURAL DEPOSITS;
HARDNESS	84	Mg/L	50 – 250	N/A
SODIUM	20.6	Mg/L	50	EROSION OF NATURAL DEPOSITS; ROADWAY ICE AND SNOW CONTROL
ALUMINUM	<0.15	Mg/L	0.5	BASE ELEMENT OF ADDITIVE USED IN WATER TREATMENT
CHLORIDE	45	Mg/l	250	ROADWAY ICE AND SNOW CONTROL, SALT WATER INTRUSION INTO FRESH WATER

SECONDARY CONTAMINANTS / WATER QUALITY PARAMETERS				
CONTAMINANT OR PARAMETER	AVERAGE LEVEL DETECTED	UNIT OF MEASUREMENT	MCL (RUL)	LIKELY SOURCE OF CONTAMINATION
ZINC	0.341	Mg/L	5.0	CORROSION CONTROL ADDITIVE USED IN WATER TREATMENT ZINC - ORTHOPHOSPHATE
COPPER	<0.010	Mg/L	1.3	EROSION OF NATURAL DEPOSITS;

Additional Inorganic compounds tested that could be the product of erosion, human activity or natural deposits:

<u>Analysis</u>	<u>Result</u>	<u>Units</u>	<u>MCL</u>
Antimony	<0.0004	mg/l	0.006
Arsenic	<0.0005	mg/l	0.005
Barium	0.039	mg/l	2.0
Beryllium	<0.0003	mg/l	0.004
Cadmium	<0.0005	mg/l	0.005
Chromium	<0.0005	mg/l	0.1
Cyanide	<0.0050	mg/l	0.2
Mercury	<0.0002	mg/l	0.002
Nickel	0.001	mg/l	0.1
Orthophosphate	0.128	mg/l as P	
Total Dissolved Solids	206	mg/l	500
Selenium	<0.0025	mg/l	0.05
Sulfate	31.6	mg/l	250
Silver	<0.002	mg/l	0.1

MBAS	<0.1	mg/l	0.5
Thallium	<0.0003	mg/l	0.002

Information on the hardness of water in “grains per gallon” can improve the function of dishwashers, cooling equipment, and other process applications. To convert the Hardness value shown above into grains per gallon, divide the Hardness value in milligrams per liter by 17.

Volatile Organic Compounds results required for the three year cycle of 2014 through 2016 were reported with the 2015 CCR which referenced 2014 results. Below are the results of another set of samples that were tested in 2016:

ANALYSIS	RESULT	UNITS	MCL
Volatile Organic Compounds			
Method: 524.2; page 1 of 3			
Dichlorodifluoromethane	<0.5	ug/l	
Chloromethane	<0.5	ug/l	
Vinyl Chloride	<0.5	ug/l	2
Bromomethane	<0.5	ug/l	
Chloroethane	<0.5	ug/l	
Trichlorofluoromethane	<0.5	ug/l	
1,1-Dichloroethylene	<0.5	ug/l	2
Methylene Chloride	<0.5	ug/l	3
Methyl tert-Butyl Ether	<0.5	ug/l	70
t-1,2-Dichloroethylene	<0.5	ug/l	100
Isopropyl Ether	<0.5	ug/l	
1,1-Dichloroethane	<0.5	ug/l	50
2,2-Dichloropropane	<0.5	ug/l	
cis-1,2-Dichloroethylene	<0.5	ug/l	70
Chloroform	13.0	ug/l	
Bromochloromethane	<0.5	ug/l	
1,1,1-Trichloroethane	<0.5	ug/l	30
1,1-Dichloropropylene	<0.5	ug/l	
Carbon Tetrachloride	<0.5	ug/l	2
Benzene	<0.5	ug/l	1
1,2-Dichloroethane	<0.5	ug/l	2
Trichloroethylene	<0.5	ug/l	1
1,2-Dichloropropane	<0.5	ug/l	5
Bromodichloromethane	6.7	ug/l	

< = less than, not detected.

DEFINITIONS :

In the preceding **Test Results** table you will find terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Non-Detects (ND) - laboratory analysis indicates that the constituent is not detectable above the minimum

detection level for that analysis method.

Parts per million (ppm) or Milligrams per liter (mg/l) - one part per million corresponds to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) or Micrograms per liter - one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

Picocuries per liter (pCi/L) - picocuries per liter is a measure of the radioactivity in water.

Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

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

MBAS - Methylene blue active substances assay - is a colorimetric analysis test method that uses methylene blue to detect the presence of anionic surfactants (such as a detergent or foaming agent) in a sample of water.

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

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

Maximum Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Total Organic Carbon - Total Organic Carbon has no health effects. However, total organic carbon provides a medium for the formation of *Disinfection By-products*. The *Treatment Technique* for total organic carbon requires that 35% to 45% of the total organic carbon in the raw water is removed through the treatment processes.

Turbidity - Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity is measured as an indication of the effectiveness of the filtration process. The *Treatment Technique* for turbidity requires that no individual sample exceeds 1 NTU and 95% of the samples collected during a month must be less than 0.3 NTU.

TTHM - Total Trihalomethanes are carcinogenic compounds created when Chlorine is added to water as a disinfectant. The *MCL* for TTHM's requires that one annual sample from an approved location does not exceed 80 *parts per billion*.

Secondary Contaminant - Substances that do not have an impact on health. Secondary Contaminants affect aesthetic qualities such as odor, taste or appearance. Secondary standards are recommendations, not mandates.

Recommended Upper Limit (RUL) - Recommended maximum concentration of secondary contaminants. These reflect aesthetic qualities such as odor, taste or appearance. RULs are recommendations, not mandates.

Disinfection By-products - These compounds are by-products of the addition of chlorine or ozone employed in the disinfection of drinking water. These compounds are confirmed or suspected carcinogens for which *MCLs* have been set.

HAA5 - Haloacetic Acids are compounds created when Chlorine is added to water as a disinfectant. The MCL for HAA5's requires that one annual sample from an approved location does not exceed 60 *parts per billion*.

Monitoring Waiver - Permission from NJDEP or EPA to reduce or eliminate sampling for specific contaminants.

SPECIAL HEALTH CONCERNS

Special considerations regarding children, pregnant women, nursing mothers, and others:

Children may receive a slightly higher amount of a contaminant present in the water than do adults, on a body weight basis, because they may drink a greater amount of water per pound of body weight than do adults. For this reason, reproductive or developmental effects are used for calculating a drinking water standard if these effects occur at lower levels than other health effects of concern. If there is insufficient toxicity information for a chemical (for example, lack of data on reproductive or developmental effects), an extra uncertainty factor may be incorporated into the calculation of the drinking water standard, thus making the standard more stringent, to account for additional uncertainties regarding these effects. In the cases of lead and nitrate, effects on infants and children are the health endpoints upon which the standards are based.

Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider.

Lead in Drinking Water

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. New Jersey Water Supply Authority – Manasquan Water Treatment Plant is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

Please note that the New Jersey Water Supply Authority is not responsible for lead testing within the customer communities. Consult the Consumer Confidence Report of your community water system for lead results.

Cryptosporidium

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Cryptosporidium is usually removed through the filtration process and inactivated by other treatment processes such as ozonation. In order to check for the presence of Cryptosporidium, USEPA issued the Long Term 2 Enhanced Surface Water Treatment Rule in January 2006. As part of this rule, the Manasquan System

began monthly sampling and testing for Cryptosporidium in April 2008 and this testing continued through its completion in March 2010. The sample results did not show any presence of Cryptosporidium. All sources of drinking water are subject to potential contamination by substances that are naturally occurring or man made. These substances can be microbes, inorganic or organic chemicals and radioactive substances. All 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 the 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 1-800-426-4791.

The sources of drinking water (both tap water 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 human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage 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 stormwater run-off, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater run-off 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 run-off and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the EPA prescribes regulations (MCL's) which limit the amounts of certain contaminants in water provided by public water systems. Further information about EPA safe drinking water regulations can be obtained over the Internet at EPA's drinking water website, <http://www.epa.gov/safewater>. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

The New Jersey Department of Environmental Protection (NJDEP) has completed Source Water Assessment Reports and Summaries for all the public water systems in New Jersey. A summary of the report for NJWSA/Manasquan is included below. A complete copy of the Source Water Assessment Report with appendices and a four-page summary are available on-line at the NJWSA website: <http://www.njwsa.org/mwssrpt.pdf>. Further information on the Source Water Assessment Program can be obtained by logging onto NJDEP's source water web site at <http://www.state.nj.us/dep/swap> or by contacting NJDEP's Bureau of Safe Drinking Water at 609-292-5550. You may also contact the Manasquan Water Supply System at 732-974-8383.

The New Jersey Department of Environmental Protection issues an individual Public Water System Identification Number (PWSID) to each water supply facility. The PWSID for the NJWSA/Manasquan Water Treatment Plant is **1352005**. You can use this PWSID number to assist you in obtaining local drinking water quality information on the Internet at the USEPA website at <http://www.epa.gov/safewater/dwinfo/nj.htm> or at the NJDEP Bureau of Safe Drinking Water website at <http://www.state.nj.us/dep/watersupply/waterwatch/>

Interested individuals may participate in discussions of the operation of the Manasquan Water Supply System by attending the regular monthly meetings of the New Jersey Water Supply Authority or Southeast Monmouth Municipal Utilities Authority.

- New Jersey Water Supply Authority: first working Monday of each month at the NJWSA headquarters, 1851 Route 31, Clinton, NJ 08809. Call 1-908-638-6121 for details. Information on the New Jersey Water Supply Authority can also be obtained over the Internet at <http://www.njwsa.org>.
- Southeast Monmouth Municipal Utilities Authority: first Thursday of each month in the Main Meeting Room, First Floor, Wall Township Municipal Complex, 2700 Allaire Road, Wall, NJ 07719. Call 1-732-449-8444 for specific meeting dates and times or e-mail ph805@optonline.net.

NJ Water Supply Authority - Manasquan System- PWSID # 1352005

NJ Water Supply Authority - Manasquan System is a public community water system consisting of 0 well(s), 0 wells under the influence of surface water, 2 surface water intake(s), 0 purchased ground water source(s), and 0 purchased surface water source(s).

This system's source water comes from the following aquifer(s) and/or surface water body(s) (if applicable): Manasquan Reservoir, Manasquan River

This system purchases water from the following water system(s) (if applicable):

Susceptibility Ratings for NJ Water Supply Authority - Manasquan System Sources

The table below illustrates the susceptibility ratings for the seven contaminant categories (and radon) for each source in the system. The table provides the number of wells and intakes that rated high (H), medium (M), or low (L) for each contaminant category. For susceptibility ratings of purchased water, refer to the specific water system's source water assessment report.

The seven contaminant categories are defined at the bottom of this page. DEP considered all surface water highly susceptible to pathogens, therefore all intakes received a high rating for the pathogen category. For the purpose of Source Water Assessment Program, radionuclides are more of a concern for ground water than surface water. As a result, surface water intakes' susceptibility to radionuclides was not determined and they all received a low rating.

If a system is rated highly susceptible for a contaminant category, it does not mean a customer is or will be consuming contaminated drinking water. The rating reflects the potential for contamination of source water, not the existence of contamination. Public water systems are required to monitor for regulated contaminants and to install treatment if any contaminants are detected at frequencies and concentrations above allowable levels. As a result of the assessments, DEP may customize (change existing) monitoring schedules based on the susceptibility ratings.

Sources	Pathogens			Nutrients			Pesticides			Volatile Organic Compounds			Inorganics			Radio-nuclides			Radon			Disinfection Byproduct Precursors					
	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L			
Wells - 0																											
GUDI - 0																											
Surface water intakes - 2	2				2			2			2			2				2			2	2					

- **Pathogens:** Disease-causing organisms such as bacteria and viruses. Common sources are animal and human fecal wastes.
- **Nutrients:** Compounds, minerals and elements that aid growth, that are both naturally occurring and man-made. Examples include nitrogen and phosphorus.
- **Volatile Organic Compounds:** Man-made chemicals used as solvents, degreasers, and gasoline components. Examples include benzene, methyl tertiary butyl ether (MTBE), and vinyl chloride.
- **Pesticides:** Man-made chemicals used to control pests, weeds and fungus. Common sources include land application and manufacturing centers of pesticides. Examples include herbicides such as atrazine, and insecticides such as chlordane.
- **Inorganics:** Mineral-based compounds that are both naturally occurring and man-made. Examples include arsenic, asbestos, copper, lead, and nitrate.
- **Radionuclides:** Radioactive substances that are both naturally occurring and man-made. Examples include radium and uranium.
- **Radon:** Colorless, odorless, cancer-causing gas that occurs naturally in the environment. For more information go to <http://www.nj.gov/dep/rpp/radon/index.htm> or call (800) 648-0394.
- **Disinfection Byproduct Precursors:** A common source is naturally occurring organic matter in surface water. Disinfection byproducts are formed when the disinfectants (usually chlorine) used to kill pathogens react with dissolved organic material (for example leaves) present in surface water.