

# 2012 ANNUAL WATER QUALITY REPORT

This report is a snapshot of the drinking water quality that was provided last year. Included are details about where your water came from, what it contained, and how it compared to state and federal standards. Our system makes every effort to provide you with safe and pure drinking water.

for  
**Staffordshire Country Estates**  
**PWS ID #2151009**



Prepared by

**McCLURE**  
ENGINEERING, INC

This report contains very important information about your drinking water.  
Please translate it, or speak with someone who understands it.

### ***Community Drinking Water Sources***

**S**taffordshire Country Estates is located in Leicester, MA and is served by 3 bedrock wells. Well #1, 2151009-01G is a 480-ft 8-in. well located adjacent to the pump house. Well #2, 2151009-02G is a 275-ft 8 in. well located behind building #7. Well #3, 2151009-03G is a 275-ft 6 in. well located behind the plaza and is currently offline.

### ***Water Quality***

**S**taffordshire Country Estates continuously strives to produce the highest quality water possible to meet or surpass every water quality standard. We monitor both our sources and distribution system very closely. The standards we operate under were enacted by the U.S. Congress as the Safe Drinking Water Act in 1974 and were amended in 1986 and 1996.

In order to ensure tap water is safe to drink, the MassDEP and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) and Massachusetts Department of Public Health regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

### ***Is My Water Treated?***

**T**o ensure that we provide the highest quality of water available, certified operators and MassDEP regularly monitor water quality. When standards are exceeded, MassDEP requires treatment. The source water at Staffordshire Country Estates is now treated using three different processes: aeration to remove radon (installed in 2007), ion exchange to remove arsenic (installed in 2009), and ultraviolet disinfection to protect you against microbial contaminants. (As of June 7, 2012, sodium hypochlorite has been replaced with non-chemical ultraviolet (UV) disinfection.)

### ***Drinking Water Contaminants***

**D**rinking 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: Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

### ***Should Some People Take Special Precautions?***

**S**ome people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 from their health care providers. EPA/CDC guidelines on appropriate mean to lessen the risk of infections by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

## **Staffordshire Country Estates**

*The water system at Staffordshire Country Estates is operated and maintained by McClure Engineering. If you have any questions about this report, or for additional copies, please contact McClure Engineering at 508-248-2005.*

# DISTRIBUTION SYSTEM WATER QUALITY

The following results were from sampling conducted in 2012, or during the most recent monitoring period for each contaminant group.

Bacteria 2012	Highest # Positive Samples in a Month	MCL	MCLG	Violation (Y/N)	Possible Sources
Total Coliform	0	1	0	N	Naturally present in the environment
E. Coli	0	*	0	N	Human and animal fecal waste

In order to ensure that tap water is safe to drink, MassDEP and US EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Coliform are bacteria that are naturally present in the environment and are used as an indicator of potentially harmful bacteria that may be present.

Lead & Copper	Last Date Collected	90 <sup>th</sup> Percentile	Action Level	MCLG	# of sites sampled	# of sites above Action Level	Exceeds Action Level	Possible Sources of Contamination
Lead (ppb)	9/13/12	4.1	15	0	5	0	No	Corrosion of household plumbing; erosion of natural deposits
Copper (ppm)	9/13/12	.17	1.3	1.3	5	0	No	Corrosion of household plumbing; erosion of natural deposits; leaching from wood preservatives.

Lead and copper sampling performed every 3 years. MassDEP has reduced the monitoring requirements for lead and copper to less often than once per year because the source is not at risk of contamination. The last sample collected was in September 2012, and the next collection will be in 2015.

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. Staffordshire Country Estates 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>.

## Cross Connection Control and Prevention.

Cross connections are the links through which it is possible for contaminating materials to enter a potable water supply. The contaminant enters the potable water system when the pressure of the polluted source exceeds the pressure of the potable source. The action may be called backsiphonage or backflow. Essentially it is reversal of the hydraulic gradient that can be produced by a variety of circumstances. A cross connection is an actual or potential connection between a drinking water pipe and a polluted source. The pollution can come from your own home. Using a backflow prevention device on your hose connection when washing your car, for example, can prevent backsiphonage of car wash chemicals into a water supply.

Staffordshire Country Estates recommends the installation of low-cost hose bibb vacuum breakers for all inside and outside threaded spigots and hoses. You can purchase them at a hardware store or plumbing supply store. This is a great way to help protect the water system that serves your home and community!

## SUMMARY OF FINISHED WATER CHARACTERISTICS

Unregulated Contaminants*	Last Date Collected	Range Detected	Avg	SMCL	ORSG	Possible Sources	
<b>Other Organic Contaminants</b>							
Bromodichloromethane	May 29, 2012	.63	.63	---	---	By product of drinking water chlorination	
Bromoform	May 29, 2012	.53	.53	--	---	By product of drinking water chlorination	
Chlorodibromomethane	May 29, 2012	1.0	1.0	---	---	By product of drinking water chlorination	
<b>Inorganic Contaminants</b>							
Sulfate	2009	12-13	13	250	--	Natural sources	
Sodium (ppm)	May 29, 2013	14	--	--	20	Natural sources; runoff from road salt; byproduct treatment	
<b>Radiological Contaminants</b>							
Radon (pCi/L)	May 29, 2012	310	310		10,000	Natural sources	
Regulated Contaminants	Date Collected	Highest Result or Highest Avg Detected	Range	MCL	MCLG	Violation (Y/N)	Possible Sources
<b>Inorganic Contaminants</b>							
Nitrate (ppm)	May 29, 2012	0.96	0.96	10	10	N	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Arsenic (ppb)	Quarterly 2012	ND	ND	10	-	N	Erosion of natural deposits, runoff from orchards, runoff from glass and electronics production waste
Perchlorate (ppb)	Bi-annual 2012	.11	0.11	2.0	N/A	N	Rocket propellants, fireworks, munitions, flares, blasting agents
<b>Disinfectants and Disinfection Byproducts</b>							
Free Chlorine (ppm)	Daily 2012	0.41	0.02-0.41	4	4	N	Water additive used to control microbes
Total Trihalomethane (TTHM) (ppb)	August 2011	4.3	0.60- 1.7	80	--	N	Byproduct of drinking water chlorination
Total Haloacetic Acids (HAA5) (ppb)	August 2011	0.69	n/a	60	--	N	Byproduct of drinking water chlorination
<b>Radioactive Contaminants</b>							
Uranium activity (ppb)	May 2012	5.7	5.7	30	0	N	Erosion of natural deposits
Gross Alpha (minus Uranium) (pCi/L)	May 2012	3.2	3.2	15	0	N	Erosion of natural deposits

Gross Alpha and Uranium were collected in Q2 2012. Radium 226 and 228 are due in 2015. Please note, chlorine disinfection was discontinued in June 2012, therefore TTHM and HAA5 were not collected in 2012.

**Radon:** Radon is a radioactive gas that you cannot see, taste, or smell. It is found throughout the United States. Radon can move up through the ground and into a home through cracks and holes in the foundation. Radon can build up to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will be (in most cases) a small source of radon in indoor air. Radon is a known human carcinogen. Breathing air containing radon can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 picocuries of radon per liter of air (pCi/l) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call your state radon program or call EPA's Radon Hotline (800.SOS.RADON). **Arsenic:** Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer. **Perchlorate:** Perchlorate interferes with the normal function of the thyroid gland and thus has the potential to affect growth and development, causing brain damage and other adverse effects, particularly in fetuses and infants. Pregnant women, the fetus, infants, children up to the age of 12, and people with a hypothyroid condition are particularly susceptible to perchlorate toxicity. **Sodium:** Sodium-sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart failure, should be aware of the sodium levels where exposures are being carefully controlled. **Manganese:** Drinking water may naturally have manganese and, when concentrations are greater than 50 µg/L, the water may be discolored and taste bad. Over a lifetime, EPA recommends that people drink water with manganese levels less than 300 µg/L and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 µg/L, primarily due to concerns about possible neurological effects. Children up to 1 year of age should not be given water with manganese concentrations over 300 µg/L, nor should formula for infants be made with that water for longer than 10 days.

## ~ IMPORTANT DEFINITIONS ~

**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 in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**Secondary Maximum Contaminant Level (SMCL)** – These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

**Massachusetts Office of Research and Standards Guideline (ORSG)** – This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

**Treatment Technique (TT)** – A required process intended to reduce the level of a contaminant in drinking water.

**Action Level (AL)** – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

**90<sup>th</sup> Percentile** – Out of every 10 homes sampled, 9 were at or below this level.

**ppm** = parts per million, or milligrams per liter (mg/l)

**ppb** = parts per billion, or micrograms per liter (µg/l)

**pCi/l** = picocuries per liter, or micrograms per liter (µg/l)

**ND** = Not Detected

**N/A** = Not Applicable

**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.

## ~ EDUCATIONAL INFORMATION ~

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contamination. 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 EPA's Safe Drinking Water Hotline (1-800-426-4791.)

The sources of drinking water in the United States (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 from 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 storm water runoff 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 storm water runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production. These contaminants can also come from gasoline storage, urban storm water runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

## SWAP (Source Water Assessment and Protection)

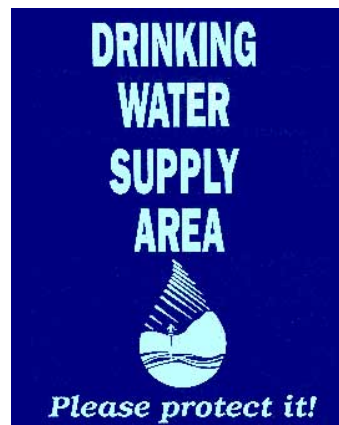
MassDEP has prepared a Source Water Assessment and Protection (SWAP) report for Staffordshire Country Estates. The report assesses the susceptibility of public water supplies to contamination and makes recommendations. This report is available at the office of McClure Engineering at 5 Masonic Home Road, Charlton, MA and the MassDEP website <http://www.mass.gov/eea/docs/dep/water/drinking/swap/cero/2151009.pdf>.

MassDEP assigned a susceptibility ranking of **High** has been assigned to the wells in our system based on the presence of at least one high threat land use or activity within the water supply protection area.

If you have any questions, please contact McClure Engineering, at 508-248-2005.

### *Opportunities to Participate*

Any matters that concern your drinking water supply or issues you would like to see addressed can be presented at the regularly scheduled meeting of the trustees, association or board. If your concerns need immediate attention please contact System Owner, Robert W. Richard at 508-892-1000 x205.



## Compliance in 2012

**O**ur water system is routinely inspected by MassDEP for its technical, financial and managerial capacity to provide safe drinking water to you. There were no Non-Compliance issues at the PWS in 2012. A treatment system for the removal of arsenic was activated in August 2009. Subsequent testing has shown that the arsenic has been effectively removed. In 2012 there were no detections of arsenic in treated water samples collected.

The aeration treatment system for the radon is effectively and consistently removing radon from the water. The disinfection system has been proven effective at ensuring that water is free of harmful organisms and safe to drink. Staffordshire used sodium hypochlorite as its primary disinfectant until June 7, 2012. On June 7, 2012 the sodium hypochlorite disinfection system was disconnected and an ultraviolet (UV) disinfection system was activated in its place. This method of disinfection has been effective.

All equipment used is approved for water treatment by one of the following organizations: National Sanitation Foundation (Now known as NSF International), or UL, both accredited by the American National Standards Institute (ANSI). Chemicals also have to meet performance standards established by the American Water Works Association.

To ensure that we provide the highest quality of water available, your water system is operated by a properly licensed Massachusetts certified operator who oversees the routine operations of our system.

**This report prepared by McClure Engineering, Inc.**

**Also available at <http://www.mcclureengineers.com/water.html>**