***Nonpoint** continued*

construction, and septic systems are all potential sources of nonpoint contaminants. Household contributors include improperly disposed pet waste, lawn fertilizer, paints, and motor oil. Automobiles, factories, and wood stoves emit airborne contaminants that return to the earth in the form of rain or snow. The amount of these contaminants that reaches water sources is increased by impermeable surfaces, such as roofs and pavements, which keep the soils from naturally filtering stormwater.

The Cities of Salem and Beverly are in the process of implementing Stormwater Management Plans (SWMP) designed to reduce stormwater runoff pollution and protect your source and surface waters. Public education and participation are required control measures for the SWMP.

Massachusetts Source Water Assessment and Protection Program

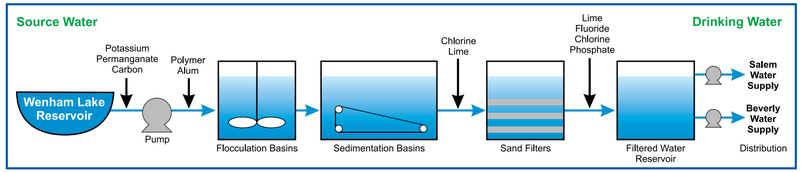
The Source Water Assessment and Protection (SWAP) Program assesses the susceptibility of public water supplies to contamination due to land uses and activities within the recharge area of Salem and Beverly's water supply. The water supply for these towns consists of surface water from Wenham Lake (Source ID #3030001-01S), Longham Reservoir (Source ID #3030001-02S), Putnamville Reservoir (Source ID #3030001-03S) and the Ipswich River (Source ID #3030001-04S).

A susceptibility ranking of high was assigned to this system using the information collected during the assessment by the Massachusetts Department of Environmental Protection (MassDEP). A high ranking is given to any water supply that has at least one high threat within the water supply protection area. Since there are seventeen high threat land uses within the protection area, the Salem and Beverly water supply must be assigned a high susceptibility ranking. The potential contaminant sources within the protection area are: manure storage or spreading, pesticide storage or use, airports, body shops, gas stations, service stations/auto repair shops, bus and truck terminals, dry cleaners, photo processors, repair shops (engine, appliance, etc.), hazardous materials storage, machine/metalworking shops, RCRA TSDF facilities, large quantity hazardous waste generators, landfills and dumps, military facilities (past and present), former NIKE sites, and underground storage tanks. This ranking does not imply that the towns have poor water quality or will have poor water quality in the future. It only draws attention to various activities within the watershed that may be potential sources of contamination.

The SWAP then assesses what the water supplier is doing to prevent contamination and recommends other measures that can be taken to further protect the sources. Some source protection measures Salem and Beverly have already implemented include reviewing the development of plans in the City of Beverly and the Town of Wenham, conducting stream monitoring throughout the watersheds, and managing geese on Wenham Lake.

If you would like more information, the complete SWAP report is available at the Salem and Beverly Supply Board and online at http:/www.mass.gov/dep/water/drinking/3030001.pdf. You can also call the Salem and Beverly Water Supply Board at 978-922-2600.

Water Treatment and Distribution



Water from the Ipswich River and the three reservoirs goes to a water filtration plant, operated 24 hours a day, 7 days a week by the Board. The plant removes naturally occurring impurities from the source water, as required by federal regulations and good public health practices, and delivers the water to pumping stations owned by the cities of Salem and Beverly. These pumping stations deliver drinking water to your home in pipes owned and maintained by each city water department.

Before water enters the filtered water reservoir that precedes the pumping stations, it is fluoridated. Fluoride is added to prevent tooth decay/cavities.

To improve corrosion control in the distribution pipes, the Board modified existing treatment by switching to a new phosphate additive that is designed to optimize corrosion control throughout the distribution system and minimize dissolved lead in the pipes and household plumbing.

Salem & Beverly Water Supply Board
50 Arlington Avenue
Beverly, MA 01915

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Salem and Beverly Water Supply Board

2012 Water Quality Report

Public Water Supply ID # 3030001

2012 Water Quality Report

This report describes the Salem and Beverly Water Supply Board's (the Board) drinking water sources and treated water quality for 2012.

This publication is mandated by the federal public right-to-know regulation requiring community water suppliers to provide specific treated water quality information annually to customers.

This report includes additional information beyond the minimum federal requirements as part of our ongoing commitment to increase public awareness of your drinking water and protection of this valuable resource.

For More Information...

About contaminants and potential health effects, please call the EPA's Safe Drinking Water Hotline at 800-426-4791 or visit www.epa.gov/safewater.

About the Salem and Beverly Water Supply Board (PWS ID #3030001) and your water quality, please call Thomas Knowlton, Superintendent, at 978-922-2600. The Board meets at the Water Filtration Plant at 50 Arlington Avenue in Beverly. The Board usually meets on Tuesday after the first Monday of each month, but please call to confirm that a meeting is scheduled. Notices of these meetings are posted in the Beverly and Salem City Halls.

About your water distribution system, please contact the appropriate department in your city:

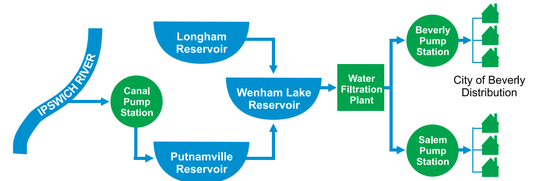
Salem Water Department
(PWS ID #3258000)
phone: 978-745-9595

Beverly Water Department
(PWS ID #3030000)
phone: 978-921-6000

Sources of Your Drinking Water

Salem and Beverly use approximately 3.5 billion gallons of drinking water per year. This water is drawn from the Ipswich River and three reservoirs: Wenham Lake Reservoir, Putnamville Reservoir and Longham Reservoir. Beverly's water mains have interconnections with Wenham, Danvers, and Manchester. Salem's water mains have interconnections with Marblehead and Peabody.

The Board recognized the practical and ecological importance of storing high winter and spring flows of the Ipswich River for use in summer when river flows are naturally low. During winter and spring, water is pumped from the Ipswich River to Putnamville Reservoir and/or Wenham Lake Reservoir for storage and use in summer. Water is not pumped from the river during summer. Similarly, Longham Reservoir augments Wenham Lake Reservoir.



Salem & Beverly Water Supply System

Nonpoint Source Pollution

The US Environmental Protection Agency (EPA) Phase II Stormwater regulations require all communities with populations under 100,000 to implement control measures aimed at reducing water pollution caused by stormwater runoff. Stormwater runoff is a major component of nonpoint source (NPS) pollution.

Approximately 40 percent of America's surveyed lakes, rivers, and estuaries fail to meet standards for safe fishing or swimming. According to the EPA, NPS pollution constitutes the nation's largest source of water quality problems.

NPS pollution occurs when runoff (rainwater or snowmelt) moves over the land picking up sediments and contaminants and then deposits them into lakes, rivers and coastal waters. Overland flow picks up pollutants from driveways, crops, industrial sites, or malfunctioning septic systems before discharging into the river or storm drain.

NPS pollution can lead to beach closures, fish kills, habitat destruction, and unsafe drinking water. Unlike point sources (e.g., discharge pipes from facilities), nonpoint sources are diffuse, which makes them difficult to trace and control.

Everyone contributes to NPS pollution in one way or another. Land use such as agriculture, forestry,

***Nonpoint** continued on next page*

Treated Water Quality Data for 2012

Listed below are 26 contaminants detected in Salem's and Beverly's drinking water in 2012. We tested for more than 100 other contaminants in 2012 that were also not detected in your water.

Samples Collected from the Water Filtration Plant (After Treatment)

Substance	Units	Highest Result or Highest Running Average Detected	Range of Detection	Highest Level Allowed (MCL)	Ideal Goal (MCLG)	Violation Y/N	Sources of Contaminant
Microbiological							
Total Organic Carbon (1)	ppm	2.86	1.63 – 2.86	TT	NR	N	Naturally present in the environment
Turbidity (2)	NTU	0.48	0.08 - 0.48	TT = 0.3	NR	N	Soil runoff
The lowest monthly percentage of samples <0.3 NTU was 98.71%							
Inorganic Chemicals							
Barium	ppm	0.021	No range, 1 sample required	2	2	N	Discharge of drilling wastes, discharge from metal refineries, erosion of natural deposits
Fluoride (3)	ppm	1.14	0.37 - 1.24	4	4	N	Water additive which promotes strong teeth, discharge from fertilizer and aluminum factories, erosion of natural deposits
Nitrite	ppm	ND	No range, 1 sample required	1	1	N	Runoff from fertilizer use, leaching from septic tanks, sewage, erosion of natural deposits
Nitrate	ppm	ND	No range, 1 sample required	10	10	N	Runoff from fertilizer use, leaching from septic tanks, sewage, erosion of natural deposits
Perchlorate	ppb	ND	No range, 1 sample required	2	N/A	N	Rocket propellants; fireworks; monitors; flames; blasting agents
Sodium (4)	ppm	40	No range, 1 sample required	NR	NR	N	Natural sources; runoff from use of salt on roadways; by-product of treatment process
Radionuclides							
Beta Particles (5)	mrem/yr	2.4	2.1 – 2.4	4	0	N	Decay of natural and man-made deposits
Gross Alpha (5)	pCi/L	0.23	0.14 – 0.23	15	0	N	Erosion of natural deposits
Radium(6) (226 & 228 combined)	pCi/L	0.3	0.1 – 0.3	5	0	N	Erosion of natural deposits

Secondary Contaminant	Units	Highest Result Detected	Range of Detection	SMCL	Sources of Contaminant
Aluminum	ppb	80	No range, 1 sample required	200	Byproduct of treatment process
Calcium	ppm	24.8	No range, 1 sample required	NR	Naturally present in the environment
Chloride	ppm	73.7	No range, 1 sample required	250	Runoff from road de-icing, use of inorganic fertilizers, landfill leachates, septic tank effluents, animal feeds, industrial effluents, irrigation drainage, and seawater intrusion in coastal area
Magnesium	ppm	4.18	No range, 1 sample required	NR	Naturally present in the environment
Potassium	ppm	1.94	No range, 1 sample required	NR	Naturally present in the environment
Sulfate	ppm	26.1	No range, 1 sample required	250	Naturally present in the environment

Unregulated Contaminants	Units						
Bromodichloromethane	ppb	19	No range, 1 sample required	NR	0	N	Trihalomethane; by-product of drinking water chlorination
Chloroform	ppb	60	No range, 1 sample required	NR	NR	N	Trihalomethane; by-product of drinking water chlorination
Dibromochloromethane	ppb	3.5	No range, 1 sample required	NR	NR	N	Trihalomethane; by-product of drinking water chlorination

Samples Collected from the Distribution System

Substance	Area	Units	90th Percentile	Range of Detection	Action Level	# of Samples that Exceeded Action Level	Ideal Goals (MCLG)	Lead & Copper (Possible Source of Contamination)
Copper (7)	Salem	ppm	0.127	0.0069 – 0.171	1.3	0	1.3	Corrosion of household plumbing systems;
	Beverly	ppm	0.107	0.001 – 0.369	1.3	0	1.3	erosion of natural deposits; leaching from
	Both	ppm	0.127	0.0069 – 0.369	1.3	0	1.3	wood preservations
Lead (7)	Salem	ppb	2	ND - 4	15	0	0	Corrosion of household plumbing systems,
	Beverly	ppb	8	ND - 13	15	0	0	erosion of natural deposits
	Both	ppb	4	ND - 13	15	0	0	

Substance	Units	Highest Results or Highest Running Average Detected	Range of Detection	Highest Level Allowed (MCL)	Ideal Goal (MCLG)	Violation (Y/N)	Sources of Contaminant
Disinfection Contaminants							
Haloacetic Acids	ppb	27.2 (9)	ND – 58.2 (10)	60 (11)	NR	N	By-product of drinking water chlorination
Total Trihalomethanes (8)	ppb	61.3 (9)	11.1 – 122.0 (10)	80 (11)	NR	N	By-product of drinking water chlorination
Chlorine (total)	ppm	1.55	0.91 – 2.20	4 (MRDL)	4 (MRDLG)	N	Water additive used to control microbes

Substance	Units	Highest % Positive in a Month	Total # Positive	Highest Level Allowed (MCL)	Ideal Goal (MCLG)	Violation (Y/N)	Sources of Contaminant
Microbiological							
Total Coliform Bacteria	–	0%	0 in 1,404 samples	>5%	0	N	Naturally present in the environment

Notes:

(1) Finished water TOC compliance is determined in accordance with the requirements of 310 CMR 22.07E(6)(e)4a. TOC levels for 2012 were in compliance with applicable criteria.

(2) Turbidity is a measure of the cloudiness of the water. Turbidity is monitored because it is a good indicator of water quality and the effectiveness of filtration. 95% of monthly samples of filtered water leaving the treatment plant must be <0.3 NTU and no samples can exceed 1 NTU.

(3) Fluoride also has a SMCL of 2.0 ppm.

(4) The MassDEP Office of Research and Standards has set a guideline concentration of 20 ppm for sodium. Sodium-sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart disease, should be aware of the sodium levels if exposures are being carefully controlled.

(5) Gross alpha and beta particle testing was performed in 2004, and will be performed again in 2013.

(6) Because past monitoring results for radium have been extremely low, the Board is now on a 9-year monitoring interval. Radium testing was performed in 2004.

(7) See lead and copper compliance monitoring sections below for details on lead and copper sampling.

(8) Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their livers, kidneys, or central nervous systems. They may have a greater statistical risk of getting cancer.

(9) Highest level detected is based on the running annual average of data from the four quarters of 2012.

(10) The range of detection is based on the samples collected quarterly at each sampling site and is not an average.

(11) The highest level allowed (MCL) for total trihalomethanes and haloacetic acids based on the average of four quarterly samples.

Lead and Copper Compliance Monitoring

There is no lead in the water that enters the distribution system. Lead enters the drinking water through the corrosion of household plumbing. Lead in tap water is controlled by adding corrosion inhibiting chemicals to the water supply during the treatment process.

Since the Board began implementing a new blended phosphate corrosion control treatment in 2004, frequent monitoring of lead and copper levels has been continuing in the distribution system. This monitoring examines the progress of the corrosion control treatment process and will continue until the treatment is optimized in accordance with the Lead and Copper Rule. The Board is on a 3-year monitoring schedule. The last round of monitoring was completed in 2011; the results can be found in the table and described in the paragraph below.

During 2011, one monitoring round was performed. During this time, 60 samples were collected from residents' homes, 30 in Salem and 30 in Beverly. Federal and State drinking water standards require that lead and copper levels in drinking water be less than 15 ppb and 1.3 ppm, respectively, in at least 90 percent of the samples tested. These limits are referred to "Action Levels". The 90th percentile levels in the samples tested were 4 ppb lead and 0.127 ppm copper. These concentrations are below the drinking water standards and indicate that the new treatment is working effectively in the system.

Important Health Information

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

Definitions

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

MCL (Maximum Contaminant Level) – 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.

MCLG (Maximum Contaminant Level Goal) – 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.

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

MRDLG (Maximum Residual Disinfectant Level Goal) – The highest level of a disinfectant (chlorine, chloramines, chlorine dioxide) below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfection to control microbial contaminants.

mrem/yr (millirems per year) – a measure of radiation absorbed by the body.

NR (Not Regulated) – Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining their occurrence in drinking water and whether future regulation is warranted.

NTU (Nephelometric Turbidity Units) – A measure of the suspended material in water.

pCi/L (picoCuries/liter) – A measure of the radioactivity in water.

ppb – Parts per billion, or micrograms per liter (µg/L). One ppb is equivalent to $1 in $1,000,000,000.

ppm – Parts per million, or milligrams per liter (mg/L). One ppm is equivalent to $1 in $1,000,000.

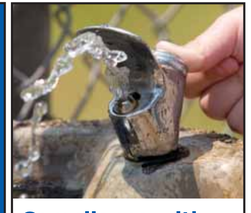
SMCL (Secondary Maximum Containment Level) – These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

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

90th percentile – Out of every 10 homes sampled, 9 were at or below this level.

N/A - Not applicable.

ND – Not detected.



Compliance with Health and Safety Standards

The Board is committed to providing drinking water that meets or surpasses all primary and secondary health and safety standards. State and federal regulators routinely monitor our compliance and testing protocols to ensure that we deliver safe drinking water to customers. Laboratory staff at our water filtration plant conduct more than 38,000 water-quality tests on your drinking water every year.

Substances Found in Drinking Water

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. It can also 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 salt and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and 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.

In order to ensure that tap water is safe to drink, the MassDEP and EPA prescribe regulations that limit the amount of certain contaminants in the water provided by public water systems. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. 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 EPA's Safe Drinking Water Hotline at 800-426-4791.

Copper and Lead

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their doctor.

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.

The Board 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 drinking 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.

Water Conservation

Indoor Conservation

The average household can reduce indoor water use by approximately 20 gallons per person per day by following some of these tips.

Bathtub: Fill your bathtub only half way. Save 5 gallons or more.

Bathtub Drain: Close the bathtub drain prior to turning on the faucet to fill the tub. Saves 3 gallons or more.

Dishwasher: Run your dishwasher only when full. Saves up to 15 gallons per load.

Garbage Disposal: Run your disposal only when necessary, and not for one or two items at a time. Saves 2 to 5 gallons per minute.

Bathroom Faucet: Turn off the tap while brushing your teeth or shaving. Saves 4 to 10 gallons per day.

Shower: Consider taking shorter showers. About 5 minutes is sufficient to get you clean. Save 3 to 7 gallons per shower.

Kitchen Sink: Fill your sink or basin when washing or rinsing dishes, rather than letting the water run. Saves 2 to 5 gallons per day.

Toilet: Never use the toilet as a wastebasket. Saves 1.5 to 5 gallons per flush.

Washing Machine: Run your washing machine only when full, or adjust the water level setting appropriately. Washing machines use 25-30 gallons per load.

Outdoor Water Conservation

- Water your lawn only every 3 to 5 days as needed.
- Water during the early morning or late evening hours.
- Do not use automatic sprinkler systems.
- If you do own an automatic sprinkler system, install a moisture sensor.
- Consider alternative landscaping, using native grasses and plants. This type of landscaping requires much less water.

Water conservation is always good practice; it can help save valuable resources, save energy, save the environment, and save you money!