Municipal Water System (MWS) Plan for Eastham
Frequently Asked Questions Part I: Why Water?

Vision:
"The Board of Selectmen recognizes that every citizen of the Town of Eastham has the right to a clean and safe water supply. Therefore, we propose the development of a municipal water system for our town. This will provide for immediate and long term public health, improve fire safety, and protect property values, ensuring the continued vitality of the Town and its Citizens, now and for future generations."

Where can I find information on the Municipal Water System (MWS) for Eastham, that will help to answer my questions?
www.eastham-ma.gov

When will the decision on the MWS be made, and by whom?
Warrant Article #7, MWS, will be voted on at Annual Town Meeting Monday May 6th; funding to be voted on at Town Election Tuesday May 21st. Only registered Eastham voters may vote. Non-resident voters may attend meeting, but not vote.

PART I: Why Water?

Why do Town Officials and others believe Eastham needs a MWS?

Growth of the town and a pattern of deteriorating water quality support the need for a MWS to safeguard purity of drinking water. A MWS was first proposed for Eastham in 1971 and subsequent studies continue to reinforce this need.

How is water quality tested and what do test results indicate?

Water can be tested for many things: acidity, turbidity, bacteria, disinfectants, minerals, sodium, biological and chemical contaminants; measuring nitrates is the simplest, most economical way to gage drinking water quality. Nitrates themselves pose little health risk. However, the primary source of nitrates in our water is wastewater from nearby septic systems; levels > 2ppm (parts per million) indicate that nearby septic system liquid is part of the well water. Biologic agents (e.g., viruses, bacteria) and chemical contaminants (e.g., pharmaceuticals) that may be in wastewater travel together in ground water. Higher nitrate levels indicate higher levels of other contaminants. The national EPA (and MASS DEP) standard for safe drinking water is a maximum level of 10ppm nitrates. Eastham uses the Cape Cod Commission guideline of 5ppm.

What contaminants in Eastham drinking water have been detected (and where), what are considered "safe" levels, and what is the health impact of these different contaminants?

Nitrates: The percentage of private wells with nitrate levels ≥2ppm (evidence of septic impact) has increased from < 20% in 1984 to >40% in 2012. This steady increase parallels the increase in population. The number of wells testing >10

ppm has not increased because, in most cases, corrective action has been taken by drilling a new well or replacing a failed septic system.

Other contaminants:
Testing monitor wells at the capped landfill has identified 1, 4 Dioxane and arsenic, prompting required testing of nearby resident wells. As of April 1, 2013, 1, 4 Dioxane has been detected in well water at 11 addresses. Working with MASS DEP, nine households have been offered bottled water due to 1, 4 Dioxane levels of ≥1.5ppm (half the DEP guideline of 3ppm). Testing has expanded to 89 area homes and may be expanded further as results indicate.

The Silent Spring study tested Cape Cod wells, including six in Eastham, for emergent contaminants from septic systems; results showed detectable levels of pharmaceuticals, fire retardants and cleaning products; detection and higher levels of these were correlated with higher nitrate levels in the same wells.

Nitrates alone are unlikely to be a health hazard. "Blue baby syndrome" is rare and was historically found in rural farmland where wells and manure are close together. "Safe" levels of contaminants that may get into drinking water are evolving; as more is known, the "safe" concentration of many chemicals has decreased. For example, the first EPA drinking water standard for arsenic was 50 ppb. It was later dropped to 10 ppb, and subsequent studies have indicated that the "safe" level should be ≤0.5 ppb. 1, 4 Dioxane is not on the EPA list of carcinogens or prohibited contaminants, but is categorized as an "emerging contaminant". That means that while animal studies suggest it is a carcinogen, this has not been confirmed in humans. While it is of concern, the EPA has set no specific maximum contaminant level. The state has set a drinking water guideline of 3ppm and expects to reduce that level to 0.3ppm. The chemical dissolves easily and travels quickly in groundwater.

I'm a senior citizen, and my well tests <2 nitrates. Is my health in danger from this?

No. If the nitrate level increases, it may indicate a problem with a septic system nearby and that wastewater from this system or systems is getting into your well. See the answer to ""What other benefits besides safe drinking water would Town Water provide to Eastham residents" on page 5.

Wouldn't pumping septic tanks prevent the problem?

No. Pumping the tank removes solid waste, preventing backup of sewage into the home. Once pumped, it takes about two weeks for the tank to fill with liquid waste, which flows directly into the leach field (which can't be pumped). Besides household chemicals and detergents, many medicines and other drugs are excreted in biologically active form and thus go into septic systems and out in the liquid portion of waste, with little treatment, into our aquifer. Pumping is still important, because if overflowing solids reach the leaching area, it will no longer

work properly and you will need a new septic system (expensive). Eastham sends reminders to property owners if there isn't a record of pumping within 3 years.

Why can't the Town ban use of phosphate and other fertilizing agents that can contaminate drinking water and ponds, etc.?

The federal government banned phosphates in detergents. The law prohibits towns from banning things that are legal in the state. See a past Cape Cod Times cover story on Falmouth's attempt to regulate fertilizer. The Town, through its Water Resources Committee, Conservation Commission and Board of Selectmen, has prepared an Organic Land Management Program that discourages the use of inorganic fertilizers on private property and prohibits their use on Town owned land. The Town uses only organic products on Town land. The Water Resources Committee is working on an educational brochure to inform citizens about environmental friendly lawn and vegetation management.

What alternatives to Town Wide Water have been considered?

Why not treat individual problem wells, and encourage those worried about their well water quality to have in-house water treatment system installed?

Economies of scale in water treatment and testing make individual home treatment impractical and could be costlier than municipal water in the long run. In-house water treatment protection varies, and no single type of system works on all types of contaminants. Different systems are designed to remove bacteria, change pH, and remove volatile organics. Systems must be maintained to reduce and not increase harmful contaminants in water.

Reverse Osmosis systems require 4 to 5 gallons of water to make 1 gallon to drink. Estimates (based on internet research) for one devise, tank, installation, and disposal of the "waste" water ranges widely from $400 for an under-sink unit, to $10,000 and up for a whole-house system. Please check with a specialty installer as to cost and effectiveness for different components of your water.

Some innovative systems used in third world countries for clean drinking water were reviewed. These systems do not treat water but work to provide clean water in response to using surface water. A coconut shell treatment system was installed at one Eastham home, and appears to be working well. More data are needed to evaluate the long term effectiveness and costs. The DEP asked Eastham for permanent solutions beyond bottled water and on site treatment.

Individual treatment systems for all Eastham houses would be expensive, and still would probably not provide the quality and quantity of safe monitored water that a Municipal Water System would provide.

Why not just drill new wells for contaminated properties, or buy up the properties and use them for another purpose (e.g., open space)?

A new well was drilled at one of the contaminated properties. We don't yet know the full extent of properties beyond the 7 wells with ≥1.5 ppm 1, 4 Dioxane that may be impacted by landfill contaminants now or in the future. DEP is currently requiring tests at 89 properties; it is unknown what others tests may be required in the future. If owners were willing to sell, taxpayers would need to support the Town cost to purchase and fix wells or remove house.

Why not a partial system for Route 6 and the landfill-impacted area only?

Plans for a partial system were not approved by voters at the 2012 Town Meeting. Reasons for a partial vs. a full system were reviewed again this year, and the Board of Selectmen decided a full system is preferred because 1) it would provide benefits to all citizens, since using taxes to finance either a partial or whole system would require all property owners to pay; and 2) water quality deterioration is not limited to the landfill area. The density of development is high in many areas of Eastham, and with so many wells and septic systems in close proximity, there is continued concern over degradation of the water supply.

What happened to a prior plan to buy water from Orleans for a partial system?

Discussions between Orleans water commissioners and Eastham selectmen determined the price per gallon was higher than Eastham's estimated cost to produce, and the 500,000 gallons/day supply offered was not enough for a full MWS in Eastham. The water was to be delivered to the rotary and billed to the town. Eastham would still have to install pumps and pumphouses, build the delivery system to fewer properties served, and meter, bill and collect from those users. These findings led Selectmen to judge this impractical for Eastham needs.

Why not fix the landfill problem?

The Eastham Landfill is not a Super Fund Site, and was capped in accordance with MA DEP Regulations in 1997. There are no plans (nor funds) to remove the buried trash. Even if the landfill leakage could be fixed, the contaminants already in the aquifer may remain for many years. Also, targeting the landfill would not address the greater problem of water quality in Eastham.

What ensures that water pumped though a Town System from the same aquifer as supplies private wells would be any safer?

The municipal wells are located in areas removed from development where water quality is currently excellent, and can be closely monitored. Water quality standards for public water supplies require stringent monitoring on a regular and frequent basis for many more parameters and contaminants than are included on routine testing for private well water, which is primarily voluntary (nitrogen alone is the testing offered at no cost by the Health Department).

If a Town well gets contaminated, it would be taken off-line and de-contaminated. Other wells would be used in the meantime. Eastham has plenty of water, as shown by the test-pumping of three wells that would be used for Town Water; there is redundancy built into the system to manage problems quickly. If Town Water needed treatment for any reason, treatment systems for public water supplies include carbon filtration and "mixed oxidants" systems (ozone and peroxide), which could be used in conjunction, depending on the target contaminant. These are not feasible for individual residential use.

What other benefits besides safe drinking water would Town Water provide to Eastham residents?

The proposed MWS would enhance fire protection for all town properties by having fire hydrants every 500 feet on main roads. Currently the fire department must get water from a nearby source (e.g., pond) and transport it to a fire. This is labor intensive and may delay putting a fire out; they often ask surrounding communities to help deliver water. Fire hydrants would solve this problem. Eastham currently rates 9 (of 10 = worst) for fire protection. Enhanced fire protection can lower homeowner insurance premiums (See Finance section).

For properties hooked into MWS, water would be available during power outages (current well systems require electricity to run the pump). In addition, those with town water will not need water treatment to decrease iron, acidity or other things that can stain or damage pipes. If a well fails, a property owner could hook up rather than install a new well (cost estimates from $2-5K).

Some Eastham homeowners, including those who rent out homes for seasonal use have expressed concern about possible negative impact on both home values and interest in renting homes in Eastham related to lack of access to town water. There is also concern among local realtors that property values are threatened by lack of Municipal Water. Installation of a MWS may address these concerns.

Would having Town Water alter regulations septic regulations and/or increase development?

No. Clean water is needed for both human consumption and environmental health. A MWS will address the human consumption need, but not help keep our estuaries, wetlands, and ponds from continued degradation due primarily to nitrogen, detergents and fertilizers from lawns and septic systems. Title V regulations are state-mandated and still apply to towns with municipal water. Development density is determined by zoning regulations. Any changes must be approved at Town Meeting. There is no automatic increase in density based on town water installation.