



# Alewife Floods Start with Mystic, Pavement

*By Will Brownsberger*

At about 9:30 one night in June 1998, as a hard rain fell, a Winn Brook resident called me at home and asked that I come over right away. Sewage with visible “floatables” was rising in his basement sink. He was struggling to rig some weights to force a football into the mouth of the drain—nasty work.

Over the next few years, I connected with people in East Arlington and North Cambridge who experience both sewage backups and overland flooding of polluted storm water. Together, we started a tri-community working group on flooding issues and began trying to understand what we could do to control sewer and storm water flooding.

Ultimately, this group became a formal “environmental joint powers entity” officially sanctioned by the three communities. We focused on flooding and sewage overflows related to high water in the Alewife Brook—the most destructive flooding in the communities.

The Alewife Brook was once a meandering stream in a tidal salt marsh. The slow channel never fully drained as the tides came and went and had a water level naturally near the level of high tide in Boston Harbor. In the 19th century, tanneries and slaughter houses were clustered along the brook and polluted it heavily with organic waste.

Early in the 20th century, state legislators became concerned about malaria spreading from mosquitoes breeding in the fetid pools in the marsh. They commissioned a study which led to the construction of a sea wall, the Craddock dam, blocking the incoming tide on the Mystic in Medford Square. The tidal swamps were drained and maintained at a new level about five feet lower than before—near mid-tide in Boston Harbor. The stream was straightened and made

into a channel to create the concrete drainage ditch that we still call the Alewife Brook. The homes later built along the brook in Arlington and Cambridge and the basements of the homes in Winn Brook are below or only slightly above the level of high tide in the harbor.

Today, the Amelia Earhart dam in Everett has replaced the Craddock dam in Medford. It includes a system of locks so that the Mystic can drain at low tide, but will not rise at high tide. The operators of the dam follow a protocol designed to keep the water in a narrow, two-foot range that is navigable by boats—deep enough to clear a hull, but not so high as to cause mast collisions under bridges.

## Bottlenecks Slow Floodwater Drainage

In big rain storms, a huge volume of water is captured within the vast basin of the Mystic River watershed, 76 square miles stretching from Reading to Belmont. Most of this water ultimately has to squeeze through the Alewife Brook and the Aberjona down into the Mystic, on through Medford, through the locks of the Amelia Earhart dam, and out to the ocean. In the heaviest storms, three roaring room-sized diesel engines power pumps to boost water over the Earhart so that outflow can continue even when the tide is high.

Floods occur when the drainage system just can’t handle the flow. As the waters rise, the cross-section of the effective drainage channel becomes greater so that the discharge volume—the volume of water moving through the stream each second—rises. The waters stop rising at a point along the stream when the discharge volume has increased so as to equal to the rate of water pouring in from further upstream.

## Tri-Community Group Set Flood Goals

In 2005, as we put our minds around these facts in the tri-community working group, we agreed that our first priority had to be to maintain drainage capacity in the stream. We defined three specific goals.

- Clean up the Alewife Brook. Accumulations of trash and branches have the potential to create blockages. Last summer, the state finally brought in crews and heavy equipment and completed that job.

- Reconstruct the old Craddock Bridge to reduce its potential to obstruct flow. The Craddock had gotten little attention for many years. After the Earhart was built, the Craddock's

locks had been removed, but the subsurface structures were not fully dismantled. Those locks can become clogged with debris. Debris blockages at that location may have contributed to making the flooding events in 1996, 1998, and 2001 that much worse. In 2003, DCR removed tons of debris from that site. Plans are underway to reconstruct the bridge fully to accomplish a number of local goals. This project will undoubtedly happen, but repeated state reorganizations of the design process have kept it from progressing.

- Get a fourth pump installed at the Earhart dam. This new pump would allow dam operators to maintain water near the dam at a lower level in flooding events and so draw water more more rapidly down from upstream. It would also provide some redundancy. This project has been indefinitely stalled by state budget cuts.

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Meg Muckenhoupt, Editor, Production

**Belmont Citizens Forum Inc.** is a not-for-profit organization that strives to maintain the small-town atmosphere of Belmont, Massachusetts, by preserving its natural and historical resources, limiting traffic growth, and enhancing pedestrian safety. We do this by keeping residents informed about planning and zoning issues, by participating actively in public hearings, and by organizing forums. Our **Newsletter** is published six times a year, in January, March, May, July, September, and November. Published material represents the views of the authors and not necessarily those of the Belmont Citizens Forum. Letters to the editor may be sent to P. O. Box 609, Belmont MA 02478 or to [info@belmontcitizensforum.org](mailto:info@belmontcitizensforum.org).

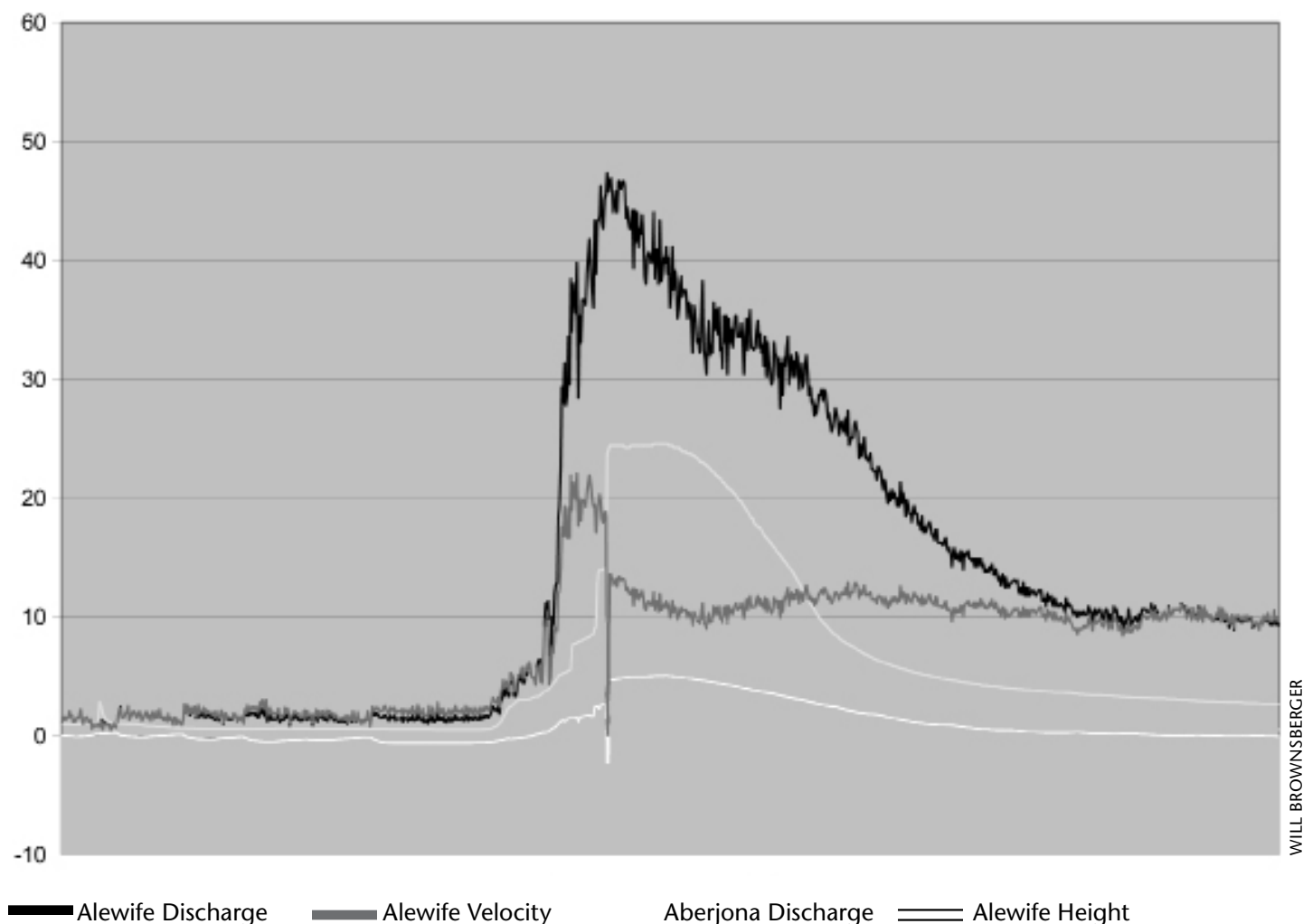
## Flood Gauge Data Raise Questions

Still, the exact dynamics of flooding in the Mystic remained uncertain. The tri-community working group contracted with the United States Geological Survey (USGS) to install a flow-and-elevation meter along the Alewife Brook at the Broadway Bridge. Real-time and historical results from this gauge can be viewed on the web at [groups.google.com/group/tri-community](http://groups.google.com/group/tri-community).

During the major March floods this year, the gauge captured valuable information. Combined with data from other gauges and field observation, the gauge produced new insights into flooding—and just how much effect achieving our three goals would have on that flooding.

First, during the mid-March storm, flooding on the Alewife brook was driven by flooding on the Mystic River. Stream velocity in the Alewife Brook was at its peak and discharge volume was near its peak hours before the gauge upriver at the Aberjona began to rise—yet the brook had not yet risen dramatically. The brook began to rise only when the Mystic River began to rise.

After the Mystic rose, stream flow velocity in the Alewife Brook dropped precipitously, and the Alewife had to rise dramatically to maintain the same total discharge; it had to rise and spread out, because the Alewife couldn't flow as rapidly into the elevated Mystic. When the water rises

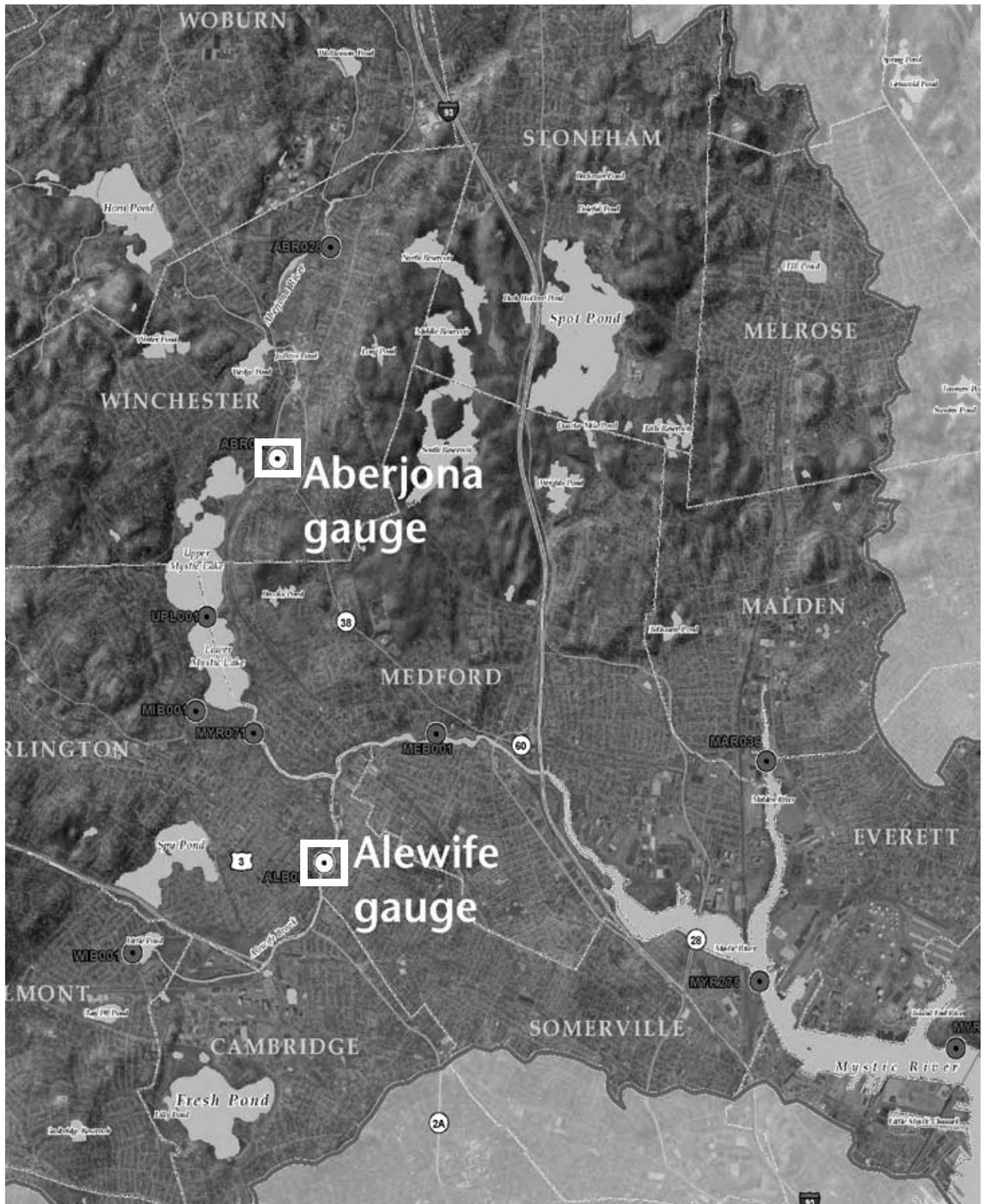


This graph shows the relative change of discharge of the Alewife Brook and the Aberjona River, as well as the change in the Alewife Brook's velocity and height, for March 10, 2010 through March 20, 2010 (10 days around the larger March flood). The y-axis values are normalized to show change rather than absolute levels. Note that the Alewife velocity drops sharply after the Aberjona discharge rises sharply. To maintain its discharge volume, the Alewife then rises sharply.

and spreads out, the cross-section of the stream increases so that the same discharge can be accommodated with slower moving water—as the saying goes, “still waters run deep.”

Second, the three existing pumps at the Earhart were able to keep up with the flow. At the height of the storm, when the Alewife Brook was up more than five feet above its normal level, the level at the Earhart was fluctuating below its pre-storm level. In the second March storm, I saw large expanses of exposed river bottom at the Earhart while the waters were high on the Alewife. The additional pump will provide additional reliability and capacity for even greater storms but will not prevent the flooding as we saw recently.

Third, direct field observations suggested that even in quite high water, the flow on the Mystic is not dramatically obstructed by the Craddock Bridge. The Craddock is a problem primarily when it gets blocked. When a 30' by 6' dock lodged broadside at the bridge at the height of the storm, it appeared that the water elevation difference was a good two feet from one side of the bridge to the other. Yet when the dock was removed, there was not an obvious acceleration in the drop of the Alewife gauge. Water was already falling before the removal of the blockage, but one would have expected it to start to fall more rapidly if the blockage were the reason for the high water. It appears that there were enough other drag factors on Mystic flow—



Detail of an Environmental Protection Agency map of the Mystic River Watershed. Gauges are indicated by circles with black dots in the center; the Aberjona and Alewife gauges are white circles with black dots.

curves, bridge footings, etc.—that the Craddock obstruction did not dramatically alter the grade line in the Mystic, although it created local turbulence.

So, the March floods were discouraging. They suggested that everything we had mapped out as high priorities might not offer the full protection that we had hoped. We had congratulated ourselves quietly after the May 2006 storm—a hard rain that didn’t lead to much flooding—thinking that the 2003 Craddock cleanup might have reduced the likelihood of major flooding on the Alewife. All the measures we have advocated are worth doing in their own right, but our neighborhoods will remain at risk.

### Flood Waters Beat Historic Highs

The Aberjona gauge—which has been operating for many years—offered a valuable perspective. On March 15, the flow there reached 1450 cubic feet per second and remained near that level for most of the day. The 70-year high daily mean flow on that site was 1110. The March storm was a huge flow event and it is quite possible that our channel clearing efforts to date have made a difference for lesser flows.

The problem is that the flows clearly are getting bigger. All six of the recorded events that exceeded 1000 cubic feet per second for a full day occurred in the last 15 years (two of them this March). Since flow is seasonal, the USGS tracks the maximum flows for any given day of the year—so, for example, the maximum event on May 15 was the 2006 Mother’s Day storm. For 77 days of the year, the maximum flow of the last 70 years’ history occurred in the past decade.

### Hard Surfaces Create Floods

Richard Vogel, professor of civil and environmental engineering at Tufts University, has analyzed the increasing flows on the Aberjona and concluded that the frequency of high-flow events is increasing, and the potential maximum flows are rising as a result of development throughout the watershed. The math is complex, but the idea is simple: water flows more rapidly over impermeable surfaces. Our densely developed watershed, covered with roofs, parking lots and roads, channels water down

into the low end of the Mystic watershed much more rapidly than it used to.

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Professor Vogel estimates that the 100-year flow event—a quantity of water that has a 1 percent chance of happening in a given year—has increased perhaps to the 2700 cubic feet per second level. That’s almost twice as bad as the recent storm. His methodology focuses on analyzing the most recent events instead of the old rain events of the 1940s and 1950s, which occurred before the watershed was fully developed.

If Professor Vogel is right—and the experiences we have had over the past 15 years certainly are consistent with his analysis—we can expect that our lowland areas around the Alewife will be subject to periodic flooding well beyond our ability to control by channel improvements. Nor can we hope to prevent flooding by storm-water retention ponds in the low lying areas. The volume of water is far too great to contain locally. This may be especially true if the effect of climate change is to increase extreme rainfall events.



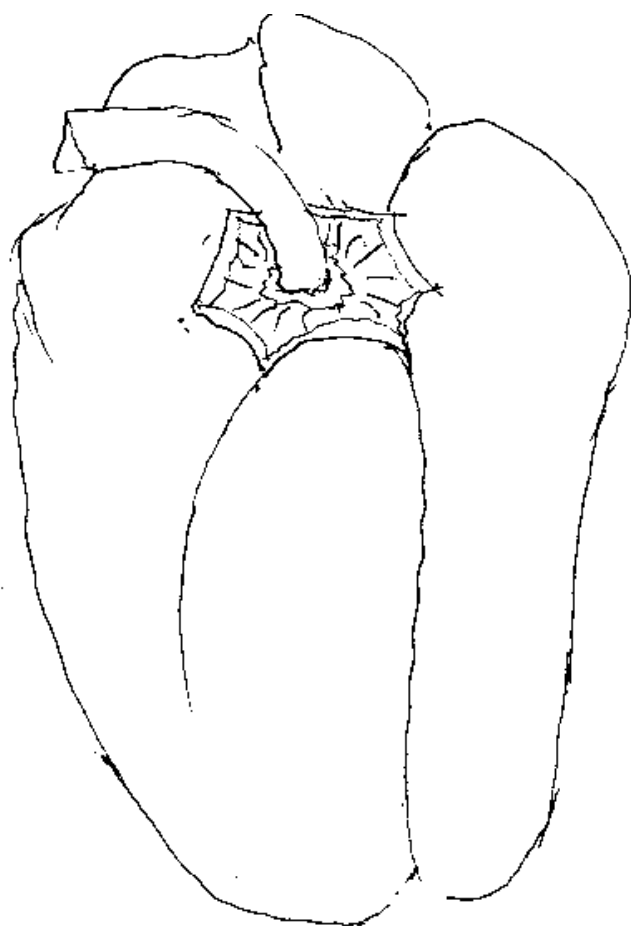
In the long run, we need to pursue storm-water regulations that encourage all development to retain storm water all over the watershed. But that is a century-scale proposition. Recent developments do follow good storm-water management practices that retain water on-site, and slow drainage as opposed to instant runoff, but it will be many years before existing homes and buildings adopt these practices on a scale adequate to make a difference.

In the medium term, we need to work with homeowners to protect them from flooding. Belmont has undertaken measures to reduce sewage backups in the Winn Brook section—measures that were identified by the tri-community group working with the MWRA. There may be strategies that will better control basement sewage backups in Arlington and Cambridge too.

As to the overland flooding in East Arlington and North Cambridge, the idea of flood barriers has resurfaced. But all of the wisdom that we could gather when we looked at that idea previously was that it wouldn't work and would probably create new problems.

The most effective strategy may be to help owners storm proof their homes, perhaps even changing zoning to permit them to increase the elevation of their homes. That would be consistent with latest insights in the ultimate flood-prone nation—Holland. The Dutch have been removing existing levees and radically storm proofing their homes—making some of them floatable.

Will Brownsberger is State Representative for the 24th District Middlesex, which includes Belmont and portions of Arlington and Cambridge.



ANN COIT SIENEOS

## Farmers' Market Opens June 10

The Belmont Farmers' Market opens its fifth season on June 10, 1:30-7 p.m., bringing just-harvested produce and locally made foods right to Belmont.

The market will run every Thursday from June 10 to October 28, and is conveniently located in the municipal parking lot in Belmont Center, at the intersection of Cross Street and Channing Road, behind the Leonard Street stores.

To keep tabs on market events—guest vendors, kids' activities, recipes, musicians, and more, sign up for the market's weekly e-newsletter at the web site [www.belmontfarmersmarket.org](http://www.belmontfarmersmarket.org).

Become a fan on Facebook and follow us on Twitter! Links are on the web site.

# Belmont Flood Data Shows Leaking Sewers

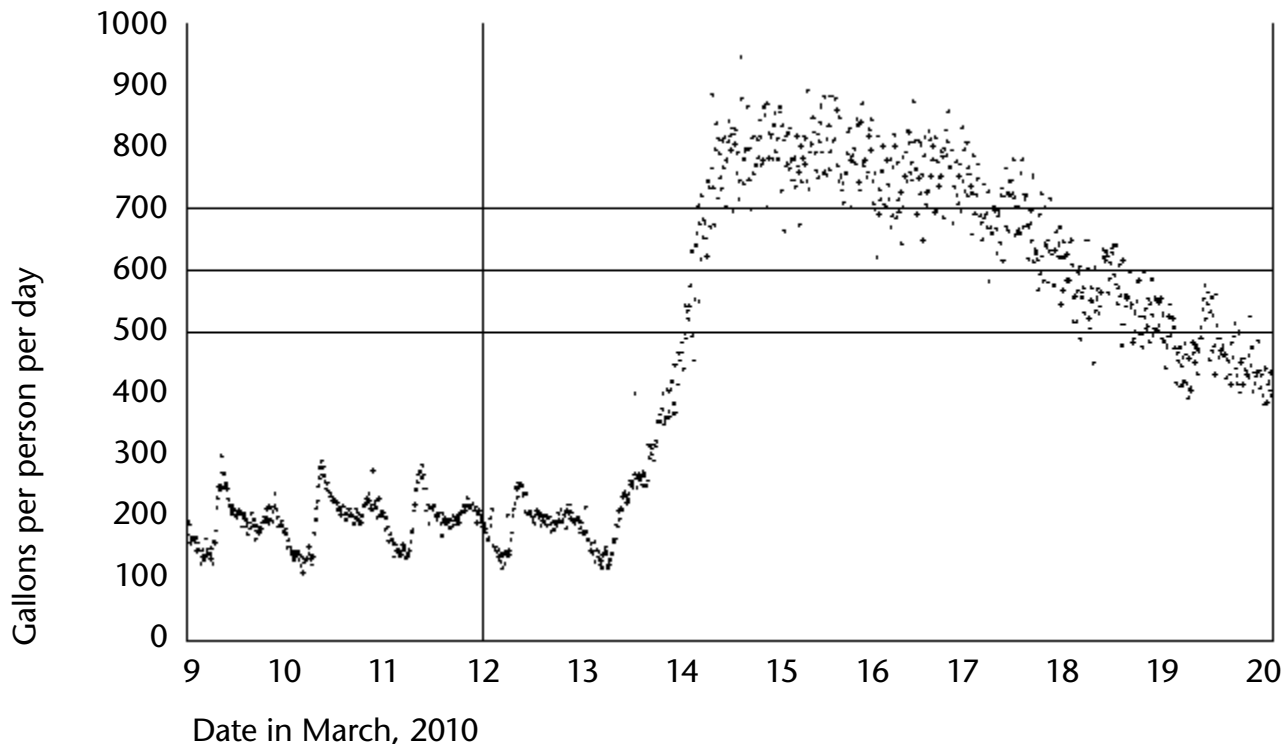
By Sumner Brown

This graph shows what happened to Belmont's sanitary sewers during the 11 days of heavy rain in March. It is easy to see when the rain started. This chart is based on data supplied by the MWRA.

people were sleeping in rather getting ready for work.

Considering that almost everyone is asleep at four in the morning, you might expect the sewer flow to go almost to zero. It should. The flow in early morning hours is due to trouble: inflow

Belmont Sanitary Sewer Flow March 9-19



SUMNER BROWN

We got 9.16 inches in the March 13-16 storm according to Massachusetts Water Resources Authority (MWRA) measurement. It was big enough that Charlie Ryan, the MWRA's Wastewater Operations Manager, will be surprised if any town in eastern Massachusetts did not have sanitary sewer overflows. Notice the pattern of sewer flow before the storm. Belmont residents typically use about 70 gallons of domestic water per person per day. The flow is lowest at about 4 a.m. and peaks as people get up and get ready for work. There is a smaller peak in the evening. Notice that March 13, the day the rain started, was a Saturday. You can see that

and infiltration, water that gets into the sewers that should not get in.

Before the storm we were averaging about 200 gallons per person per day of sewage. Out of that 200 gallons, about 70 gallons per person per day was legitimate sewage from used domestic water. The remaining 130 gallons per person per day was inflow and infiltration *before* the big rain. That figure is not so strange. At this time of year the ground is heavy with water. That is why this is mud season slightly further north, and why we have vernal pools.

For three days during the storm the sanitary sewer flow rate was about 10 times more than the domestic water usage rate, peaking at more than 900 gallons per person per day.

After the rain stopped, the sewer flow rate subsided only gradually because the ground was saturated with water. I do not believe it is possible to distinguish between inflow and infiltration with these data.

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I also got data for Arlington, Lexington, Waltham, and Watertown sanitary sewer flows during this time. They show similar patterns. When the data are normalized by flow rate per person, we are neither the best nor the worst.

One detail about the sewer flows from four nearby towns differs from Belmont. In the other towns, there is a lag between when the rain started and when the sewer flow rate increased. Belmont's immediate increase in sewer flow may indicate that we still have too many rain gutter downspouts illegally connected to sanitary sewers.

Fixing inflow and infiltration must be difficult. The MWRA has provided over \$180 million since 1993 to the 43 member towns that use Deer Island for reducing inflow and infiltration. Belmont has spent millions more of its own money for that purpose. None of the MWRA

towns is any closer to fixing the inflow and infiltration problem than Belmont. Still, I can imagine fixing sewer lines so they do not leak and being firm about ending illegal connections to sanitary sewers. If we could make substantial headway against inflow and infiltration, we could free up capacity at the Deer Island sewage treatment plant so that more towns could send their sewage there. That action would lower our water bills and make our waterways cleaner.

Sumner Brown is a Director of the Belmont Citizens Forum.



ANN COIT SIENEOS



# Uplands Dispute May Go to Superior Court

By Sue Bass

A case involving the 15-acre urban wild that is ecologically part of the state's Alewife Reservation is likely to be before a Superior Court judge soon. The Belmont Conservation Commission (ConCom) and a group of neighbors, the Coalition to Preserve the Belmont Uplands and the Winn Brook Neighborhood, have apparently lost an administrative appeal to protect the Uplands from development. The neighbors' group has vowed to appeal to the courts.

"I think the coalition group is very much committed to carrying forward," said Thomas Bracken, attorney for the neighbors. The ConCom has discussed a possible appeal but has not yet decided. Faustino Lichauco, a member of the ConCom who volunteered his services as the board's attorney in the last round of litigation, was disappointed with the ruling against the ConCom. "They didn't really consider anything we said at the hearing. Some evidence that was quite important was ignored," Lichauco said.

The 15-acre property on the Belmont/Cambridge border is also known as the Silver Maple Forest for a comparatively rare stand of trees that mainly grow in wetlands. Part of it is called the Belmont Uplands because, in a large area that's mostly in the flood plain, the Uplands occupy a small hillock that rises to a peak of about 25 feet over sea level.

This hillock is no more than seven acres on Acorn Park Drive and is surrounded by wetlands—on one side the Alewife Reservation, owned by the state Department of Conservation and Recreation, and on the other side Muskrat Marsh. The Marsh is undevelopable land owned by the Bulfinch Companies, owner of the adjacent Cambridge Discovery Park. All the land in the area was originally part of the Great Swamp of Cambridge, Arlington, and Belmont. What are now the O'Neill and Bulfinch properties were long owned by the former Arthur D. Little consulting firm.

O'Neill has been trying to develop its hillock for more than a decade. The firm won rezoning in 2002 to allow construction of a research

and development complex, but in 2003, citing the "depressed state of the Massachusetts office and laboratory market," Brian O'Neill asked the Selectmen and the Planning Board to allow condominiums instead. He was turned down because most town officials believe the site is a bad location for Belmont housing. It is distant from town neighborhoods and further isolated by Route 2 traffic jams that last more than four hours every business day.

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In December 2005, O'Neill did what he had assured town officials he would never do: He applied for a comprehensive permit under Chapter 40B of the Massachusetts General Laws, a statute that allows developers of affordable housing to bypass local zoning. The proposed 299-unit complex, of which 20 percent would be affordable, must nevertheless meet the requirements of the state Wetlands Protection Act, administered at the local level by the Belmont ConCom.

Turned down by the ConCom, O'Neill appealed to the state Department of Environmental Protection (DEP) and won a superseding order of conditions from a DEP analyst. That decision was appealed by the ConCom and the neighbors' group; after a more formal proceeding, an administrative hearing officer issued a preliminary ruling this spring. That ruling is not final until confirmed or revised by the DEP commissioner, a process that usually takes four to six weeks, according to

a DEP spokesman. After that ruling, appellants have 30 days to file their appeal, Bracken said.

The ConCom's concern is flooding, according to an article its chairman, Miriam Weil, published in the *Belmont Citizen-Herald* on April 15. "These problems could have been solved by making the project slightly smaller and including a number of additional design features. But the developers resisted these changes to the project," Weil said. "As a result, the commission denied a permit because its members were convinced that granting a permit would risk increased flooding on nearby property."

One concern for this appeal is whether a record exists of the four days of testimony heard last year by the DEP's hearing officer, Beverly Coles-Roby. When Bracken sought the audio tapes for a transcript, DEP said it had only three one-hour tapes, a fraction of what he expected.

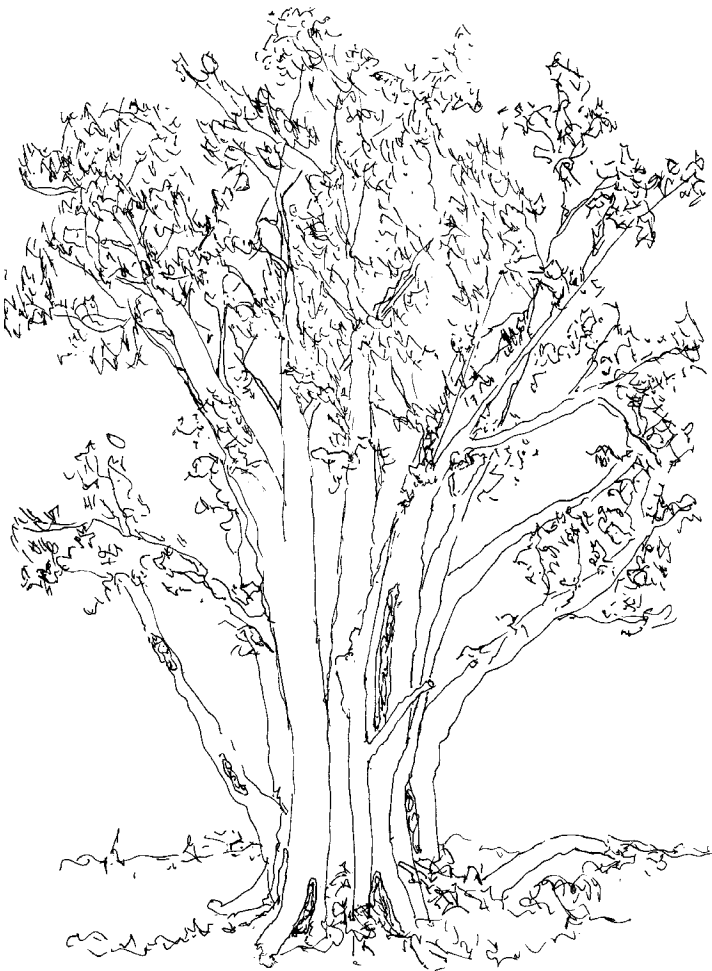
In addition, both Bracken and Lichauco said Coles-Roby's decision seems to be based solely on the written testimony filed before the hearing, not on those four days of oral testimony. A DEP spokesman denied that. "The revised RFD [recommended final decision] does encapsulate all of the pre-filed testimony and all of the live testimony that was presented orally during the hearings last year," said the DEP's Edmund Coletta. "At this time, I am not aware of any hearing tapes that have been 'lost' or misplaced in any way." O'Neill's attorney did not reply to a request for comment.

The fear of lost tapes is compounded by a large number of factual errors in Coles-Roby's preliminary decision. In the 41-page recommended final decision that she issued on March 22, Coles-Roby misidentified witnesses, confused opposing parties and consultants, and inserted words like "no" where they contradicted the sense of the testimony they were supposedly summarizing.

A motion to correct some of the errors was filed jointly by DEP's attorney and the attorney for O'Neill. Objections to the motion were filed by Bracken, attorney for the neighbors, and the ConCom's Lichauco. The rules forbid motions to renew or re-argue any part of the recommended final decision or communicating with the office of the DEP commissioner, Bracken noted. This motion constituted both, he said.

Nevertheless, on April 2, Coles-Roby revised her decision, incorporating changes urged by O'Neill but still leaving many errors, according to both Bracken and Lichauco. The new decision, Lichauco said, "is only error-pocked, not error-riddled." Meanwhile, Coles-Roby sent the parties a notice that the first decision was merely a draft that had been released accidentally.

Sue Bass is a Director of the Belmont Citizens Forum.



ANN COIT SIFNEOS

# Habitat Sanctuary Purchases Weeks Meadow

*By Roger Wrubel*

I have the pleasure to inform the readers of the Belmont Citizens Forum Newsletter that in early June, Habitat will add 2.59 acres of wildlife habitat bringing the sanctuary to over 90 acres.

Thanks to John and Katharine Weeks's generosity, foresight, and commitment to conservation, Mass Audubon, in partnership with the Belmont Land Trust is completing the purchase of the Weeks' meadow north of Concord Avenue adjoining their home with the assistance of friends, neighbors, and several local organizations interested in the land use and open space preservation, including the Belmont Citizens Forum. The land has been appraised at over \$2 million dollars, but because of the desire of the Weeks family to maintain its integrity and to

encourage public enjoyment of the open space, Mass Audubon is purchasing the property for \$724,000. This represents another chapter in the Weeks/Claflin family legacy of protecting open space on Belmont Hill. Our plan is to maintain and improve the meadow through annual mowing and removal of invasive plants. A trail will connect the meadow to the Weeks Pond Trail. It will now be possible to easily access the Habitat and Western Greenway trail systems from Belmont Center. The Belmont Land Trust will hold a conservation restriction on this property, forever preserving it as open space.

Roger Wrubel is Sanctuary Director of Habitat Wildlife Sanctuary.



ROGER WRUBEL

Aerial view of the Weeks property.

# Alternate Routes Make Belmont Cycling Safer

By David Chase

Maps of recommended cycling routes show many options for getting around Belmont and the surrounding towns. These routes are fine for experienced cyclists.

If you're confident enough riding in traffic, among potholes, next to tire-tearing curbs, around curving streets that render cyclists invisible, and up and down hills, you'll enjoy these routes. But for a young rider, a new rider, or a rider whose tolerance for risk is simply lower, there are many fewer options. Or are there?

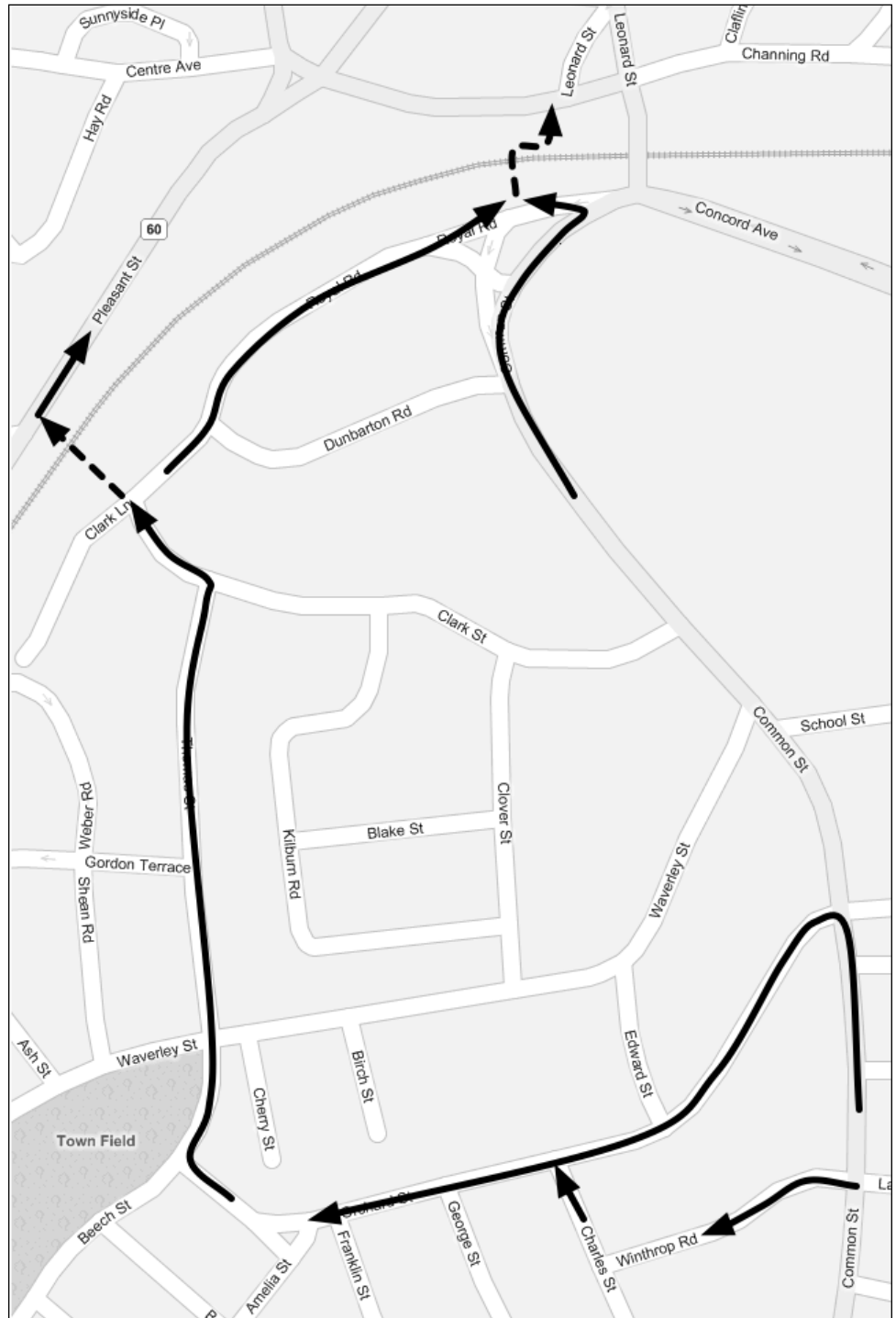
In fact, there are many good routes through Belmont for less-confident cyclists. They are not widely known. They remain obscure partly because they tend to be on roads that we drive less often, and partly because they are not promoted by experienced bicyclists. Here are some calmer alternatives to common routes that are worth avoiding.

## Avoiding the Center Underpass

The poster child for unpleasant cycling is the Concord/Common/Leonard intersection. This intersection is an obstacle on the way to Belmont Center for half the town. It is mapped as an option for cyclists, but of the six possible turns here, only one is comfortable for cyclists (turning right from Common Street onto Concord Avenue, without going under the bridge). It is also not too scary to turn right from Concord Avenue onto Leonard Street, heading under the bridge. All the left-turn options

are frightening, and turning right from Leonard into Common traverses a dark stretch of rough pavement where two lanes of cars often crowd and jockey for position. How should a cyclist deal with this scary intersection?

The best option is to ride around it. To avoid left turns from Common onto Leonard Street,



Alternate routes from Common Street to Belmont Center.

you can either take the tunnel under the rail station, or turn at Slade Street, Winthrop Road, or Orchard Street (to avoid climbing Waverley or Clark streets) and take the Clark Street bridge to Pleasant. A short ride on Pleasant, and you're there. To avoid left turns from Leonard, you can use the pedestrian underpass and take Common to turn right onto Concord.

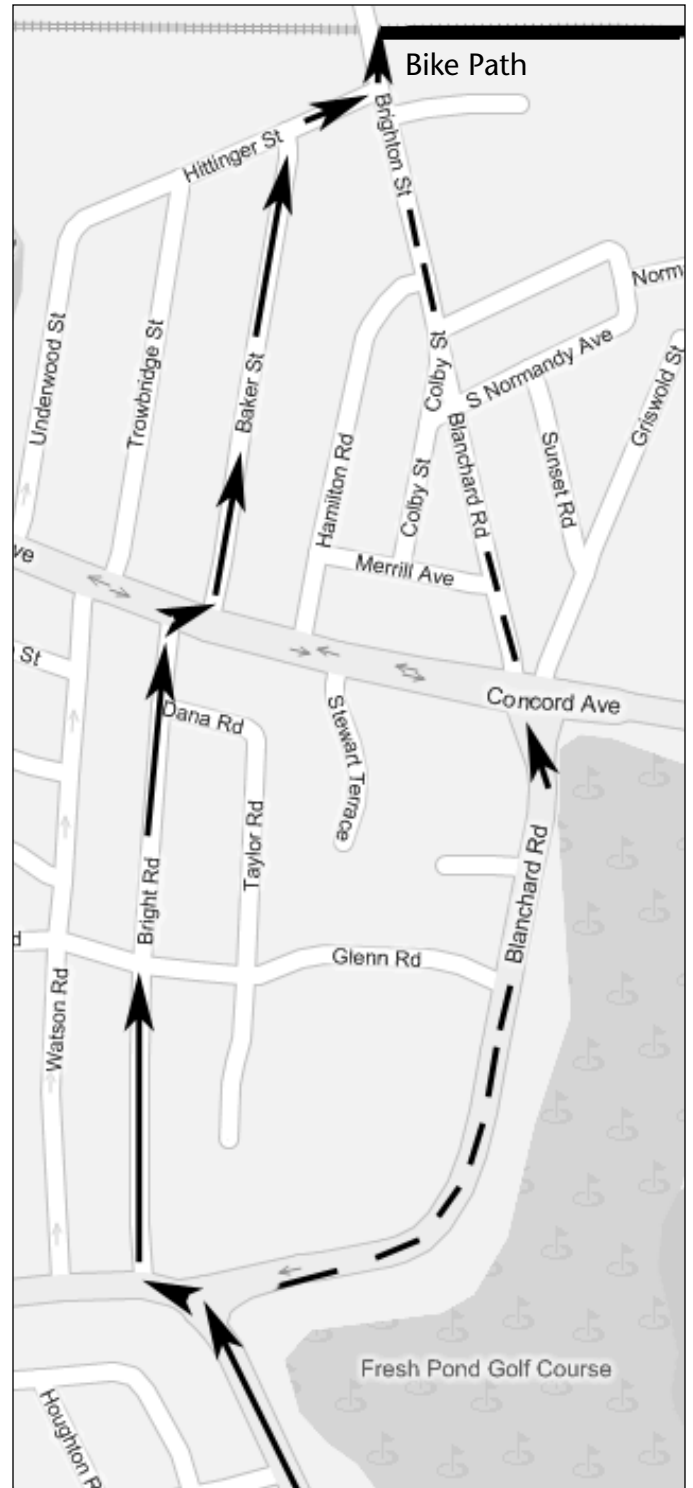
The calmer routes are not always the most direct routes, which is unfortunate, but sometimes that is a reasonable tradeoff. For example, it's easier to take Orchard than Waverley/School Street from the Burbank School area to the Center. It is less hilly, has less traffic, avoids a tricky intersection at Goden, and has crosswalks at all three intersections (Common, Goden, and School).

## Getting to Alewife

Sometime later this year the path from Brighton Street to Alewife should be paved. Many people use this path already, and it is expected that pavement will lead to increased use, which will make the path feel safer and lead to even more traffic. From Alewife, there is easy access to the Minuteman Trail, the Linear Park to Davis Square, the Red Line, and Fresh Pond shopping. Almost all of these routes are car-free and low stress.

To get to the bike path from Grove Street, the officially recommended route is Blanchard Road, and the new construction clearly attempts to accommodate cyclists. However, the traffic is heavy and fast, the curbs are sharp, and the curves in the road suggest that a cyclist might get squeezed by an inattentive driver. Instead, from Grove, go around the rotary (it's not bad!), take a right on Bright, then walk or ride across Concord to get to Baker. Go downhill to Hittinger, and then proceed to the bike path. Those roads are all straight and relatively wide with good pavement.

From the Winn Brook neighborhood, the declared bike route is Brighton Street. Again, there is somewhat heavy, somewhat fast traffic, sharp curbs, and curves. Instead, you can cut through neighborhoods in Winn Brook, aiming either for Statler Road (if approaching from the south) or Oliver Road (if from the north). The less time spent on Brighton, the better.



Alternate routes to the Brighton Street-Alewife bicycle path.

Remember, not getting enough exercise poses a much higher risk to your health than bicycle injuries. Get out on your bike; you may save your life.

David Chase is a Director of the Belmont Citizens Forum.

# Towns Can Stretch to Save Energy

## Optional Building Code Changes Make New Construction More Efficient

*By Meg Muckenhoupt*

Communities gain when residents use less energy: fewer greenhouse gases to contribute to global warming, less dependence on foreign oil, and lower costs for heating, transportation, and electricity. How to achieve those rewards? How can we reduce the energy use in our communities without raising taxes?

That's the cue for the Stretch Code. The Stretch Code is an optional appendix to the state energy code that requires increased energy efficiency in all new residential construction, most new commercial buildings, and residential renovations and additions that trigger building code requirements. It was developed by the Massachusetts Board of Building Regulations and Standards in 2009 in response to Governor Deval Patrick's November 2008 call for the state to offer a more efficient building code as a local option. It can't happen overnight; towns must adopt the Stretch Code via Town Meeting vote.

### Stretch Code Measures Performance

Requiring energy efficiency in new buildings is not radical; towns have been doing that for years. The stretch code's radical new idea is that new construction should pass performance tests, not just use certain materials or techniques.

Performance tests are critical for actually reducing energy use. You can put all the insulation you like in your attic, but if you don't seal up the drafty places around air ducts, that insulation won't make the home much more energy-efficient.

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### Stretch Code on the Web

Mass.gov: search for "Green Communities"

Energy Star Homes: [Energystar.gov](http://energystar.gov)

Cash Flow Example: [http://www.mass.gov/Eoeea/docs/doer/green\\_communities/grant\\_program/cash\\_flow\\_example.pdf](http://www.mass.gov/Eoeea/docs/doer/green_communities/grant_program/cash_flow_example.pdf)

MassSAVE: <http://www.masssave.com/>

Federal Energy Efficiency Credits:  
<http://www.energysavers.gov/financial/70010.html>

Performance tests include blower-door tests, which reveal how much air is leaking into a building, duct-blaster tests that show whether ducts leak, and infrared camera readings that measure the temperatures of walls and windows. The simplest performance test is called a Thermal Bypass Checklist. A rater takes a checklist and looks around the building where thermal bypass—heat that moves around or through insulation—could happen due to leaks and gaps between air barriers and insulation. In other words, are there air leaks that need to be sealed?

The Stretch Code requires all new construction to be rated by an independent Home Energy Rating System (HERS) rater. HERS combines



data about a home with computer modeling to calculate a HERS score of the home's average energy needs. In the HERS system—a national standard—a rating of 100 is equal to a home built to meet the 2006 national model energy code. Under the Stretch Code, new residential construction under 3,000 square feet must attain a HERS rating of 65 or less—that is, it must use 35 percent less energy than an equivalent 2006 home. Homes larger than 3,000 square feet need a HERS rating of 70 or less. Home renovations that trigger building code requirements have less stringent requirements: HERS of 80 for less than 2,000 square feet; 85 for more than 2,000 square feet.

HERS ratings are new, but builders have made energy-efficient homes for a long time now. More than 16,000 Energy Star Homes have HERS ratings of 85-80.

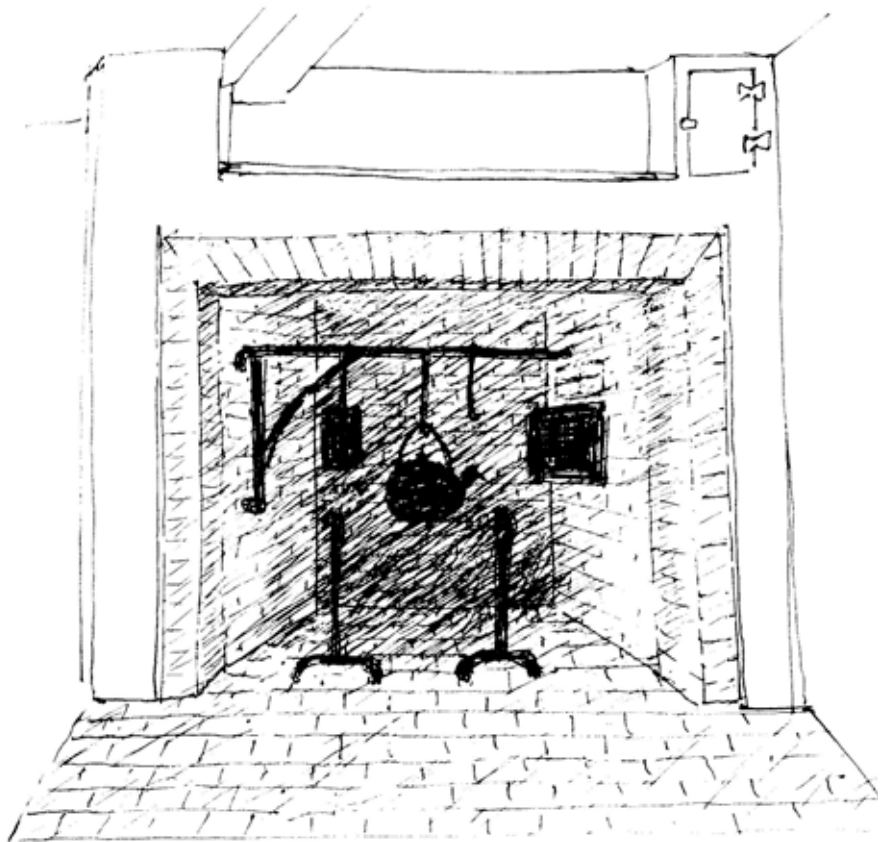
For renovations, homeowners can choose to follow a prescriptive track instead of testing performance, using Energy Star Home guidelines. The guidelines include adding insulation and sealing ducts and other areas to prevent air leaks.

## Code Means Cash for Residents, Towns

Still, Stretch Codes mean another inspection and higher initial costs. Why would anyone agree to more hassle?

In a word: money. The cash-flow example given by the state's Green Communities web site says that in return for \$9,000 in increased building costs for a 2,672-square-foot three-bedroom home, an owner can expect annual energy savings of \$1,364. The cost will be paid back in less than seven years.

That happy number doesn't even include tax credits and incentives for energy efficiency. For Belmont residents, federal tax credits repay 30 percent of the cost of energy-efficient devices, including water heaters, air conditioners, and insulation. Homeowners can also get refunds of 75



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percent of weatherization costs up to \$2000 and have access to zero-interest MassSAVE HEAT loans.

Towns can also get money from the Stretch Code. Passing the code is necessary to qualify for Green Communities grants, a pool of state money available via a 2008 law for study, design, construction, and implementation of energy-efficient projects. The annual grants are funded by Regional Greenhouse Gas Initiative (RGGI) auctions of carbon dioxide allowances under the regional cap-and-trade program; in 2010, \$7 million is available. The application deadline for the first round of grants is May 14.

In short, once a community makes progress towards energy efficiency, the state will give that community funds to become even more efficient. So far, 13 communities have adopted the Stretch Code, including Newton, Lexington, Acton, Lowell, and Springfield.

Meg Muckenhoupt is Editor of the Belmont Citizens Forum *Newsletter*.

# Think Globally, Garden Locally

By Christina Aquilino

*This article originally appeared in the Arlington Land Trust March e-mail newsletter. For more information about the Trust, see [www.arlington-landtrust.org](http://www.arlington-landtrust.org).*

Imagine a world without birds. Unimaginable, I know. If all of our birds disappeared, we would think something had gone terribly wrong. But if you've been watching birds, as I have for years, you couldn't help but notice that the population of songbirds is crashing.

In the coming weeks birds will be migrating north. On their journey, they will look for high protein food to sustain them. And what do birds eat? Insects. Yes, they also eat the seeds in your bird feeder. But that only supplements their needs. Like most animals, they eat a variety of foods to survive.

Ninety percent of our native birds depend upon native insects—insects they evolved

with—as primary nourishment for themselves and their young. And every year they find fewer of them. That's because our native insect population is also being devastated. The reason is habitat loss. Year after year swathes of land, both large and small, are clear-cut for development.

So, what can we do?

If you have a garden, you can make a difference.

First, reduce the size of your lawn. Millions of acres of land in this country—over six times the size of Massachusetts—have been converted to lawns of nonnative grasses. Lawns, usually heavily doused with chemicals, are essentially deserts to wildlife. Replace some or all of your lawn with native ground covers like bearberry, Canada mayflower, eastern foamflower, crested iris, and creeping phlox.

Second, choose native perennials, shrubs and trees instead of exotic (nonnative) ornamentals. Exotics are promoted by nurseries and chosen by gardeners because they are “pest free.” That means no or few insects will visit them. Consider this: our native birch trees host 413 species of *Lepidoptera* (butterflies and moths). The popular Bradford pear, an exotic, hosts none.

Third, remove invasive species. In my small yard, diseases brought in on imported plants killed the ash and elm trees that once provided shade. English ivy from a neighbor's yard, plus oriental bittersweet, multiflora rose, Japanese barberry, Asian burning bush, and Norway maple saplings quickly moved in. If you like ivy, better choices are Virginia creeper, trumpet vine, native clematis, or native honeysuckle. Right now my witch hazel are covered by a profusion of yellow blossoms, and I look forward to the dogwoods, viburnums, clethra, serviceberry, blueberry, and chokeberry flowering this spring. The New England Wild Flower Society in Framingham is a wonderful resource, if you need help. Think of this as a work in progress, something you do a little bit at a time over many seasons.

Fourth, avoid using pesticides. Sometimes what looks like a pest infestation to us—aphids or tent caterpillars, for example—is part of your garden's ecosystem and a bounty to wildlife. There are non-native insects like winter moths



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Lady Slipper

that are simply pests with no wildlife value, and there are blights that make it necessary to remove a plant or to prune it radically. But pesticides are toxic to everything and should be avoided. Healthy plants will recover just fine the following year.

It's only been a few seasons since I began my own habitat gardening adventure. Already I have been well rewarded. Hummingbirds, goldfinches, wrens, orioles, and a variety of woodpeckers visit my yard. And I know this is because of what I have provided for them.

The time has come for a romance with America's beautiful trees and plants. What a difference it will make to our native fauna—and to you! It puts a whole new spin on the adage: Think globally, act locally.

Christine Aquilino is an avid gardener and birder who has joined her love for wildlife to her passion for gardening by creating habitat with native plants in her own Arlington backyard.



BLUEBERRIES

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## Environmental Events

### Fresh Pond Day

**Saturday, May 8, 10 a.m.-2 p.m.**

Come celebrate Fresh Pond Day! The day will feature activities around the Reservation for participants of all ages, with games, live music, tours, demonstrations, and information tables.

Information: [www.friendsoffreshpond.org](http://www.friendsoffreshpond.org), [friendsoffreshpond@yahoo.com](mailto:friendsoffreshpond@yahoo.com), 617-349-6489. Maynard Ecology Center, Basement of Neville Place, 650 Concord Avenue, Cambridge.

### Learn to ID 10 Invasive Plant Species

**Wednesday, May 12, 8-9:15 a.m.**

Learn to identify invasive plants with a teacher/naturalist. Free. Registration required. Information: [www.massaudubon.org](http://www.massaudubon.org), [habitat@massaudubon.org](mailto:habitat@massaudubon.org), 617-489-5050. Habitat, 10 Juniper Road, Belmont.

### Wildflower Walk with Cornelia Warren

**Friday, May 14, 6-7:30 p.m.**

The Waltham Land Trust is sponsoring a walk with "Cornelia Warren" (WLT board member Lesya Struz) through historic Warren family holdings in

Waltham to see trillium and other wildflowers. Free. Information: [www.walthamlandtrust.org](http://www.walthamlandtrust.org), [info@walthamlandtrust.org](mailto:info@walthamlandtrust.org), 781-893-3355. UMass Center Waltham, 240 Beaver Street, Waltham.

### 14th Mystic Herring Run & Paddle

**Sunday, May 16, 9 a.m.**

Run or walk a 5K course, or canoe or kayak the Mystic River following a 3-, 9-, or 12-mile course. The celebration will feature a boat demonstration and kids' activities. Information: [mysticriver.org/herring-run](http://mysticriver.org/herring-run), 781-316-3438. DCR Blessing of the Bay Boathouse, 2 Shore Drive, Somerville.

### Harvard Bike Breakfast

**Wednesday, May 19, 7:30 a.m.-9 a.m.**

Ride your bike to Harvard Square, bring your helmet to Au Bon Pain, and receive a free breakfast. Sponsored by Harvard's CommuterChoice Program. Information: [www.commuterchoice.harvard.edu/bicycling](http://www.commuterchoice.harvard.edu/bicycling). Au Bon Pain, Harvard Square, Cambridge.

### Western Greenway Walk

**Wednesday, May 19, 2010 8-9:15 a.m.**

Explore the newest Western Greenway trail with

Habitat director Roger Wrubel. Free. Registration required. Information: [www.massaudubon.org](http://www.massaudubon.org), [habitat@massaudubon.org](mailto:habitat@massaudubon.org), 617-489-5050. *Habitat, 10 Juniper Road, Belmont.*

## Seeing the Impact of Invasives in Cambridge

**Wednesday, May 19, 5:30-7 p.m.**

Claudia Thompson will take us on a virtual (photo) tour of Cambridge and the region to demonstrate the proliferation of invasives locally. Information: [www.friendsoffreshpond.org](http://www.friendsoffreshpond.org), [friendsoffreshpond@yahoo.com](mailto:friendsoffreshpond@yahoo.com), 617-349-6489. *Maynard Ecology Center, Basement of Neville Place, 650 Concord Avenue, Cambridge.*

## Mayor Menino's Bike Week Festival

**Friday May 21, 6:45-9 a.m.**

Ride into work with a convoy of cyclists led by experienced cycling guides. Finish up with a celebration at City Hall with free breakfast courtesy of Boloco and a bike expo featuring tons of great gear from local bike shops. Pick up convoys at any of more than a dozen sites in metro-Boston or meet us on the Plaza. Sign up, be counted, and join the fun. Registration is free. Information: [bostonbikeweek.org](http://bostonbikeweek.org). *City Hall Plaza, Boston*

## Controlling Invasive Weeds in Your Yard and Garden

**Saturday, May 22, 1-3 p.m.**

This workshop will give you the information and tools to keep the seven most prevalent invasive plants at bay. Participants will discuss each plant's lifecycle and the associated management challenges for controlling it, and will identify and remove specimens at Fresh Pond Reservation. Come prepared to dig, cut, and pull; Friends of Fresh Pond Reservation will supply the tools. Cosponsored with Grow Native Cambridge. Free. Registration required. Information: [www.friendsoffreshpond.org](http://www.friendsoffreshpond.org), [friendsoffreshpond@yahoo.com](mailto:friendsoffreshpond@yahoo.com), 617-349-6489. *Maynard Ecology Center, 650 Concord Avenue, Cambridge.*

## Bees and Trees

**Sunday, May 23, 1 p.m.-3 p.m.**

Walk with Fresh Pond chief ranger Jean Rogers and

a Fresh Pond beekeeper and explore the complex relationships between the plant and animal worlds. Free. Registration required. Information: [www.friendsoffreshpond.org](http://www.friendsoffreshpond.org), [friendsoffreshpond@yahoo.com](mailto:friendsoffreshpond@yahoo.com), 617-349-6489. *Maynard Ecology Center, 650 Concord Avenue, Cambridge.*

## Earth- and Child-Friendly Garden Tour

**Sunday, May 23, 12:30-5 p.m.**

Sponsored by Watertown Citizens For Environmental Safety. Details to be announced. Information: [www.watertowncitizens.org/calendar.html#events](http://www.watertowncitizens.org/calendar.html#events). *Location TBA.*

## Sustainable Belmont Monthly Meeting

**Wednesday, June 2, 7 p.m.**

All are welcome. Information: [sustainablebelmont@gmail.com](mailto:sustainablebelmont@gmail.com), [www.sustainablebelmont.net](http://www.sustainablebelmont.net). *Assembly Room at the Belmont Public Library, 330 Concord Avenue, Belmont.*

## Wetland Plants at Brookhaven

**Friday, June 4th, 10-11:00 a.m.**

Join the Citizens for Lexington Conservation on a leisurely stroll around the detention pond in front of Brookhaven. The pond offers a peek at a wide range of native wetland plants in a very convenient location. CLC leaders will talk about plant identification tips, the importance of these plants in their wetland ecosystems, and cultural uses of these plants. Information: [www.lexingtonma.org/clc/Walks.htm](http://www.lexingtonma.org/clc/Walks.htm), [eschadler@lexingtonma.gov](mailto:eschadler@lexingtonma.gov), 781-862-0500 ext 240. *Brookhaven, 1010 Waltham Street, Lexington.*

## Great Neighborhoods Summit

**Thursday, June 10, 8:30 a.m.-noon.**

We all want vibrant, healthy neighborhoods with a transportation system that gets us where we want to go, a choice of homes we can afford, services we need and recreation we want, and a place where our opinions are heard. How can we create more of them? The Massachusetts Smart Growth Alliance is bringing together a panel of people who have helped communities create great neighborhoods across the country. Free. Registration required. Information: [ma-smartgrowth.org/campaigns/gn](http://ma-smartgrowth.org/campaigns/gn), [thudak@mapc.org](mailto:thudak@mapc.org), 617-451-2770, ext 2018. *Wentworth Institute of Technology, Watson*

Hall, 550 Huntington Avenue, Boston.

## An Evening with Douglas Tallamy

**Thursday, June 10, 6:30 p.m.**

Douglas Tallamy's book *Bringing Nature Home* has captured the nation's attention since it was first released two years ago. His work reveals how important it is to restore native plant communities, if we are to reverse the declines in migrating songbirds, butterfly populations, and biodiversity. He embraces the importance of land stewardship throughout urban and suburban America as critical components of this effort. Free. Information: <http://grownativecambridge.org/programs/annual-celeb>, 617-354-0502. *Cambridge Public Library, 449 Broadway, Cambridge.*

## Summer Solstice Celebration

**Friday, June 18, 6 p.m.-8p.m.**

The Summer Solstice is celebrated by many cultures. Join us as we appreciate the longest day of the year. Get the family involved in traditional solstice activities and stories in this early evening celebration. Mass Audubon members \$8, non-members \$10. Registration required. Information: [www.massaudubon.org](http://www.massaudubon.org), [habitat@massaudubon.org](mailto:habitat@massaudubon.org), 617-489-5050. *Habitat, 10 Juniper Road, Belmont.*

## Bike Friday

**Friday, June 25, 6:45 a.m.-9 a.m.**

Join a bike commuter convoy from one of dozens of locations throughout the Boston metro area. Convoys start in locations including Belmont, Lexington and Cambridge/Somerville. Join the convoy at the start, or at any point along the route--or just meet us on City Hall Plaza! Information: [bikefridays.org](http://bikefridays.org). *Various locations around Boston.*

# We need you.

If you can volunteer even a few hours a month, you can make a difference. You do not need to be an expert—just a person who cares about our town.

### *I can devote time to:*

- ☐ Archaeology & Historic Preservation
- ☐ Environmental Protection
- ☐ Planning & Zoning
- ☐ Community Path
- ☐ Walking in Belmont
- ☐ Mailings
- ☐ Newsletter

### *I can help pay for this newsletter:*

It costs about \$4,000 to publish each issue of our newsletter. Please donate for this purpose:

☐ \$25 ☐ \$50 ☐ \$100 ☐ \$250

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If you have questions, please call (617) 484-1844. The Belmont Citizens Forum is a nonprofit 501(c)(3) organization. Your donation is deductible from federal taxes to the full extent provided by law.

Make checks payable to **Belmont Citizens Forum** and mail to Belmont Citizens Forum, P.O. Box 609, Belmont MA 02478.

**Thank you.**

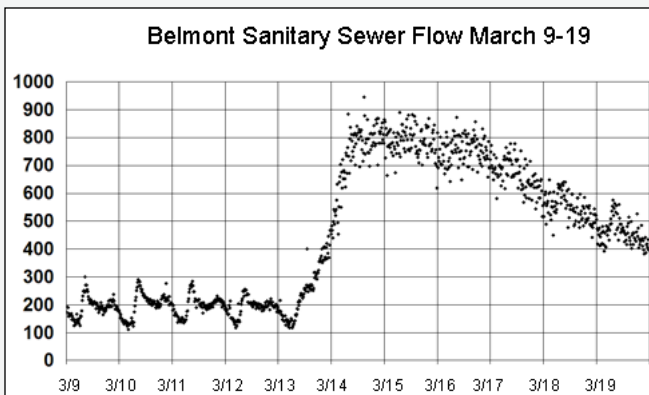
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