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1. Concord GIS Has Grown!

A lot has changed with the Concord GIS Team since our last newsletter! At the beginning of January 2023, Jill Moonheron officially retired after 17 years of service to the Town in various GIS positions. Jill's knowledge, enthusiasm, and expertise have been absolutely vital to the success of GIS within Concord for many years. The detailed and precise documentation, established procedures, and trainings that Jill has crafted over the years will help guide GIS in Concord for years to come. Thank you for all your work, Jill, and congratulations! We're very grateful that Jill is still working with us in a part-time capacity.

You may have already seen the introductory e-mails, but we had two new GIS Analysts start this quarter as well! Tristan Boyd joined the team at the end of January, having moved to Massachusetts from California. Heather Bhowmick started in the middle of March, with prior stops across Massachusetts. We're very excited about the range of skills and experiences they bring to our GIS team, and they've hit the ground running with the projects they've worked on already! I'm certain you'll hear more about their ventures in the next several GIS newsletters!



Tristan
(and Oscar!)



Heather
(and Natalie!)

We've also had a slight shuffle of GIS positions within the Town. The IT GIS Team now covers the GIS needs for Public Works, with the CPW GIS Analyst position being moved onto the central GIS Team. With this move, we'll be able to better support both Public Works and the Town in general with all of our combined skills and experiences, as well as providing greater GIS coverage and continuity of operations during any staff outages.

And finally, we've been looking into the potential for a new GIS position within the Town. Some of our datasets require significant maintenance and updating, which we don't have the current capacity to handle. As such, we're looking to create a GIS Technician position within Public Works to handle field GIS data collection, and to process those changes to update our geodatabase feature classes. The timeline of when this position might be created is currently unclear, but it's something to keep an eye out for in the future!

■ *Neill Fotheringham*

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2. Catch Basin Cleaning 2023

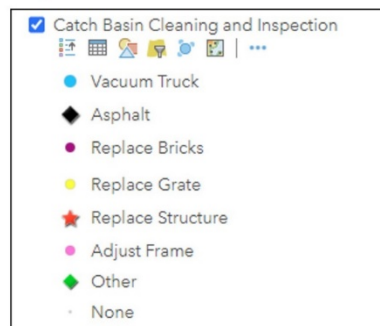
After the snow melts, the Highway and Grounds division in the Public Works department conducts inspections and cleaning of Town catch basins, or the inlets into our stormwater sewer system. With over 2,000 to keep track of, this is an enormous task that requires unique GIS applications in the field and data analysis to make sure that we are on track to have all of them inspected within the last four years.

As part of this initiative, the GIS team put together several new maps and web applications, demonstrating when catch basins were last inspected (Figure 1), and what catch basins need maintenance or follow-up work (Figure 2). Both of these maps are viewable in the field on Esri's Collector application, and online for the Public Works team through ArcGIS Online.

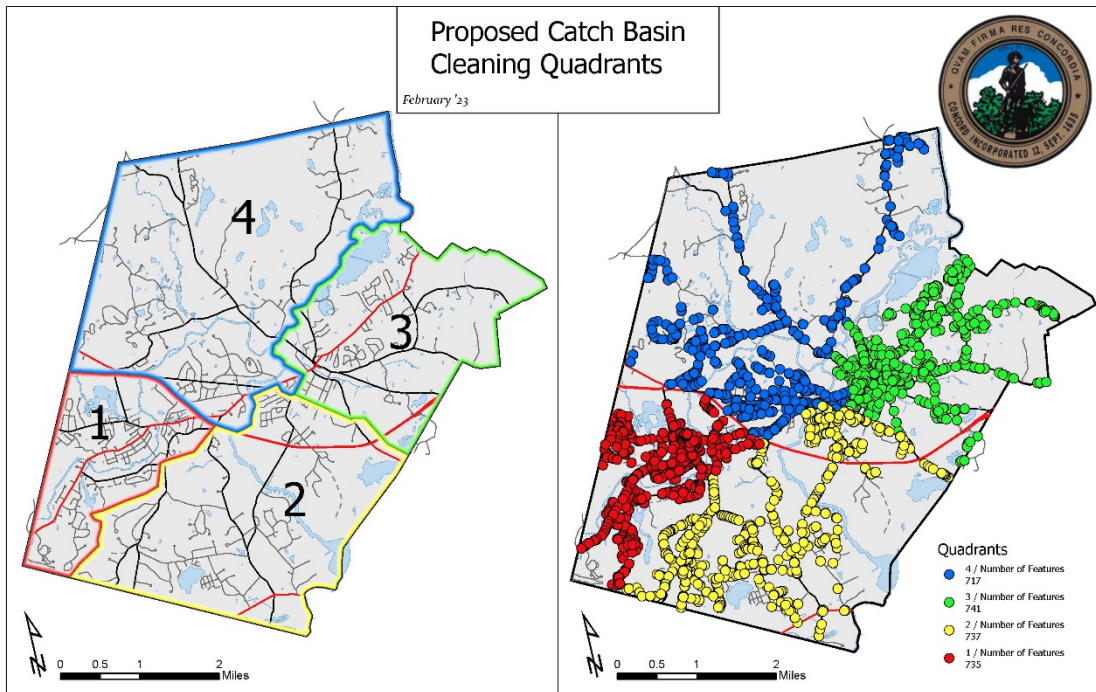
Figure 1



Figure 2



Finally, a new method of dividing the Town's catch basins was implemented so that maintenance and inspection efforts might be better targeted going forward, conserving resources and saving time!



Beyond these initial maps, the GIS team plans to develop a Dashboard to demonstrate progress on inspections and facility maintenance. In the future, there may be additional applications for maintaining and inspecting other Town assets as well.

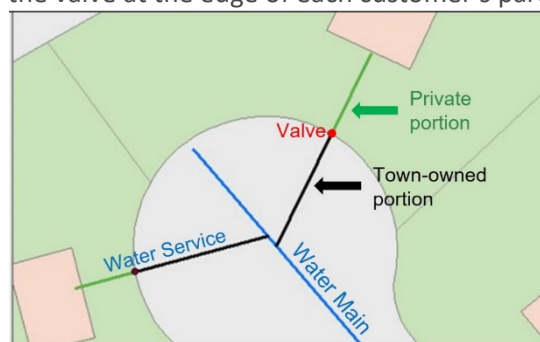
■ *Tristan Boyd*

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3. Identifying (and Replacing) Lead Water Service Lines

The EPA's Lead and Copper Rule Revisions require water utilities to create and maintain a water service line inventory along with a lead service line replacement program, to reduce the risk of exposure to lead in drinking water. Melissa Simoncini, Senior Environmental and Regulatory Coordinator, asked us to help clean up Concord's Water Service Line features in GIS, since a map-based approach would also allow her to easily share data and progress with the Town's water customers.

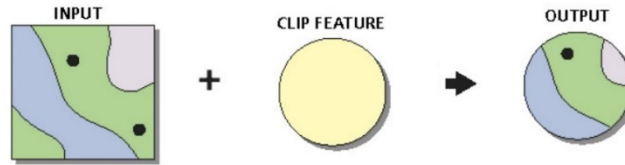
One of the first tasks was to identify the section of every Water Service line which is the Town's responsibility: The portion between the water main and the valve at the edge of each customer's parcel, and including the valve itself.



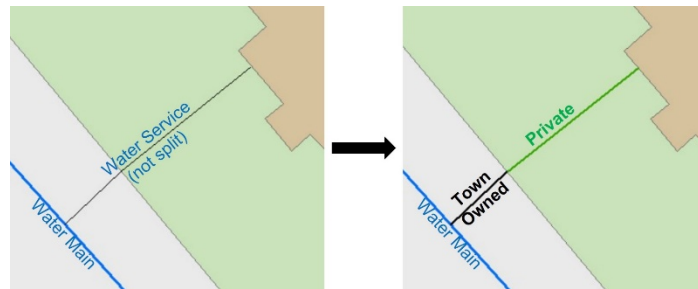
Unfortunately, almost two-thirds of these Water Services (2862) had been digitized as a single segment, without differentiating the Private and Town-Owned portions. These needed to be split at the property boundary and tagged with the proper owner; valves also needed to be added at the split point. Finally, each segment needed to be checked to make sure it represented the physical flow of the water from the main to the building.

Fortunately, a few GIS tools make this a relatively easy task.

Tool 1: Clip

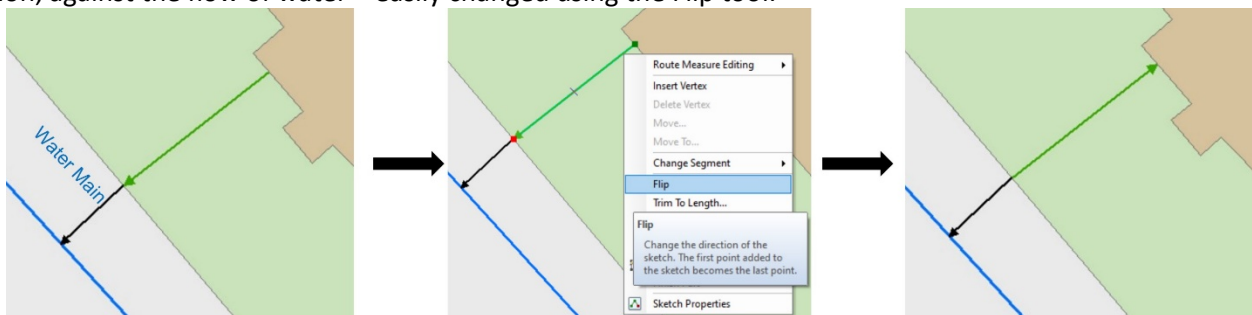


I clipped a copy of the unsplit Water Service lines (INPUT) using the Parcel polygons layer (CLIP FEATURE) to create the **Private** segments (OUTPUT), then repeated the process using the Right Of Way layer (CLIP FEATURE) to create the **Town-Owned** features:



Tool 2: Flip

Changing the line symbol to show an arrowhead at the end shows that this line was originally digitized in the wrong direction, against the flow of water – easily changed using the Flip tool:



... repeated, of course, for the Town-Owned segment.

Tool 3: Feature Vertices To Points


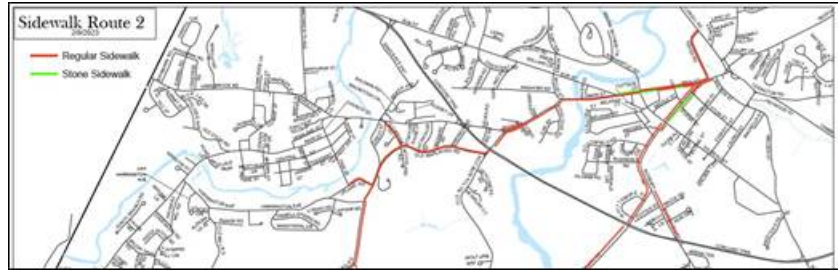


I applied this last tool to the Town-Owned segments created above, specifying that a Point feature (Valve) be created at the End vertex of the segment, which is also the vertex at the split point:



Now that all the Water Service lines are in good shape (geometrically speaking), Melissa's interns, Meghan Brady and Evan Czasty, are hard at work locating and verifying pipe materials and other attributes, for a complete inventory of Lead services: Keeping citizens healthy and the EPA happy!

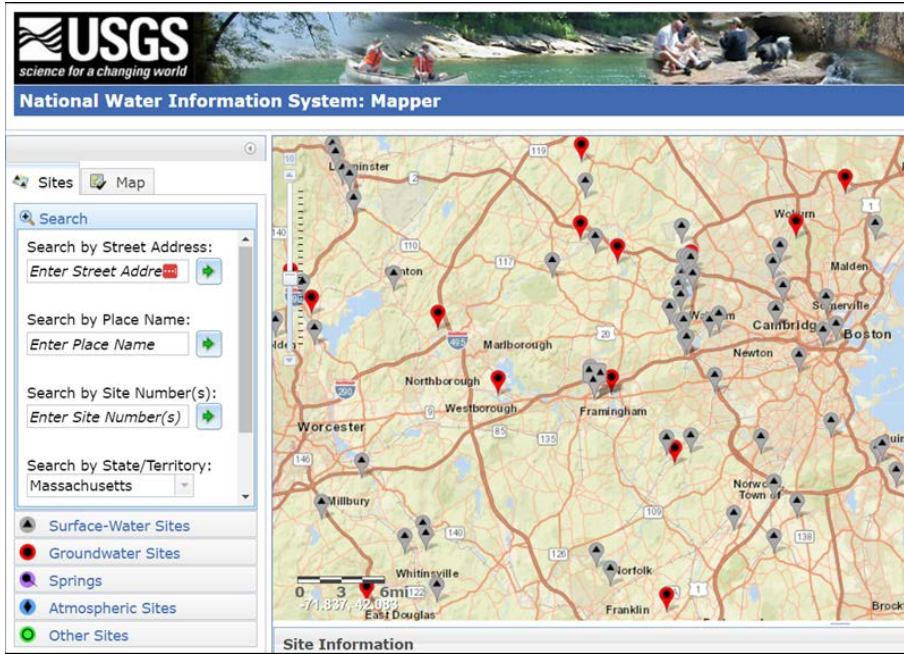
4. Map/App Gallery

CTRL-Click on a thumbnail to view a full-size map

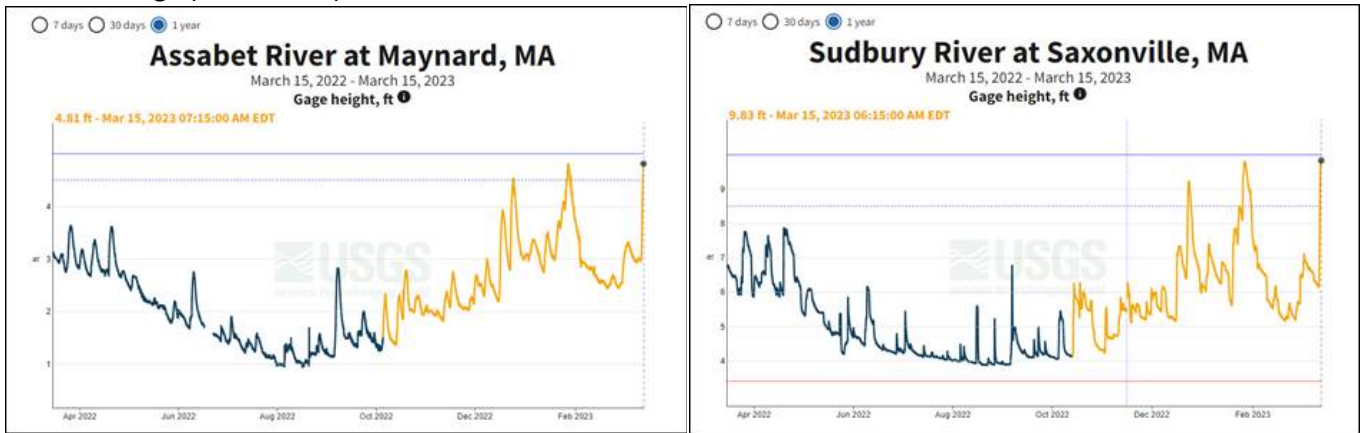
<p>Bruce Freeman Rail Trail</p>		<p>Marcia Rasmussen sent along a number of changes to the Rail Trail map, in preparation for the opening of the Acton-Concord Connector over the new Route 2 bridge – Yay!</p>
<p>Sidewalk Plowing Routes</p>		<p>Tish Hopkins requested a variety of updates to Sidewalk Plow Route maps</p>
<p>Municipal Building Directions</p>		<p>Prepared several maps for Eileen Blanchette, for a guide to site and conference room locations, starting at the Town House.</p>
<p>Tough Ruck</p>		<p>Prepared 4' x 3' map for Walter Latta, Concord Fire Dept. for emergency management planning for the annual Tough Ruck marathon through Concord, Lincoln, Lexington, and Bedford.</p>

5. Rising and Falling Waters

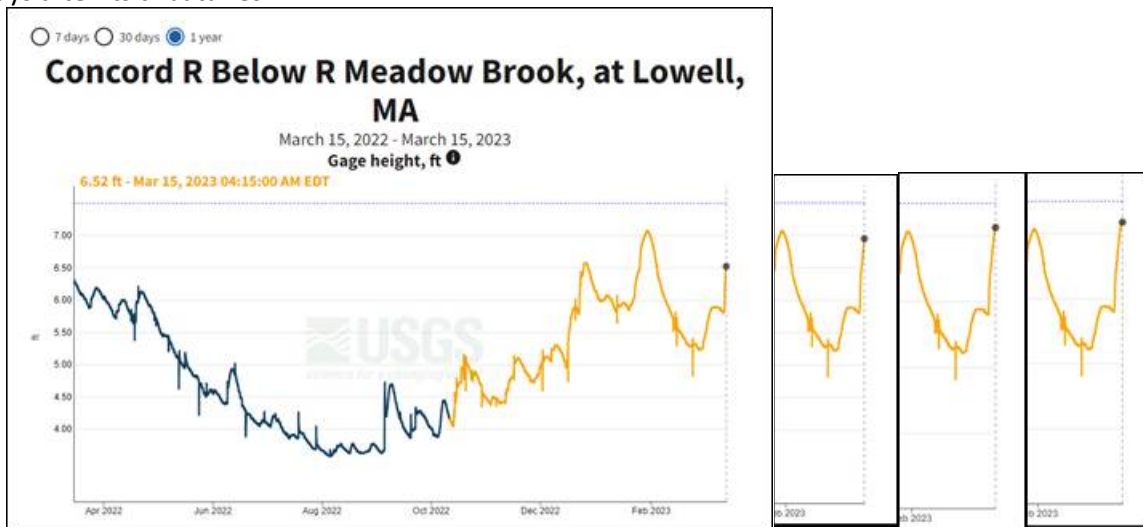
I enjoy finding new on-line map services, such as the [USGS National Water Information System](#).



In particular, I appreciate the associated real-time river level gauges – not least because I live alongside the Assabet River! The mid-March snow/sleet/rainstorm filled up the Assabet and Sudbury Rivers nicely, with both rising above Minor Flood Stage (dashed line):



These two rivers combine at Egg Rock to form the Concord River – which lags as it awaits their waters, finally topping out three days after its tributaries:



Perhaps we can avoid a drought this year...

■ *Jill Moonheron*

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