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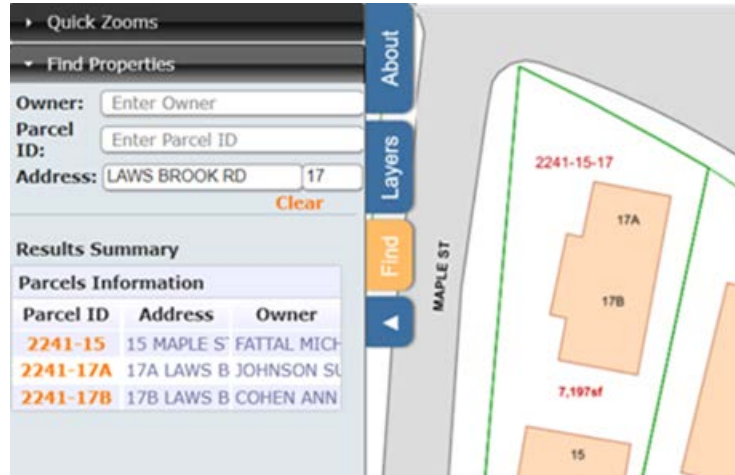
1. How I Use GIS: Treasury

In Treasury we manage the billing and collection of all Real Estate, Personal Property and Motor Vehicle Excise Taxes, along with Curbside Collection subscriptions. We receive hundreds of payments daily that must be matched to bills. We also sign off on numerous types of internal and external requests. For example, the Building Department asks us to verify that all taxes have been paid on a property before a permit can be issued. In addition, we respond to a wide variety of requests for information.

For the Concord Treasury Department, GIS is a valuable resource we use almost daily. Checks often come in with incomplete information: an unclear or outdated address, a generic bank name, or no indication of what they're trying to pay. People just send us money! If the name and address don't match up in Admins, we don't know which account to credit, and we have to be precise!

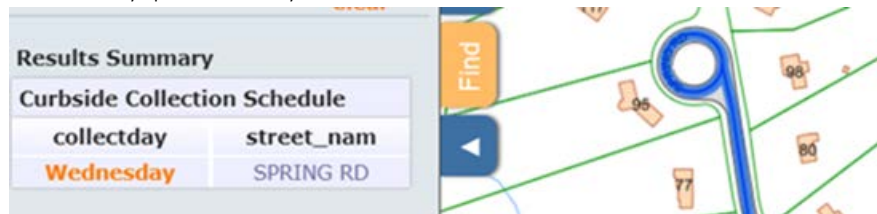
We recently received a payment from the condo at 15-17 Laws Brook, without an indication of which of three unit

owners was paying. We just popped over to the WebGIS where we can see all the addresses on the parcel, then took the correct Parcel ID back to Admins and updated that bill as paid.



The GIS also helps with parcel splits and merges. I was able to look up and identify the three parcels on Main Street that will make up the new Millrun development. Taxes were in arrears for one of them, so the Building Permit could not be issued until they were all paid up.

When we set up new Curbside Collection accounts, people want to know which is their collection day. Due to Town House renovations, the book we usually reference is in a box somewhere, but I recently learned that we can look that up on the GIS too – very quick and easy.



Our Department is also an informal concierge for all kinds of inquiries. Where can I park for the train? Where is White Pond? Where's the Visitor Center? Using the GIS, we can quickly provide addresses – it's easier than explaining with directions, and referencing it increases our knowledge base of the Town: We're interested, curious, and always want to be helpful – the GIS helps us greatly in this.

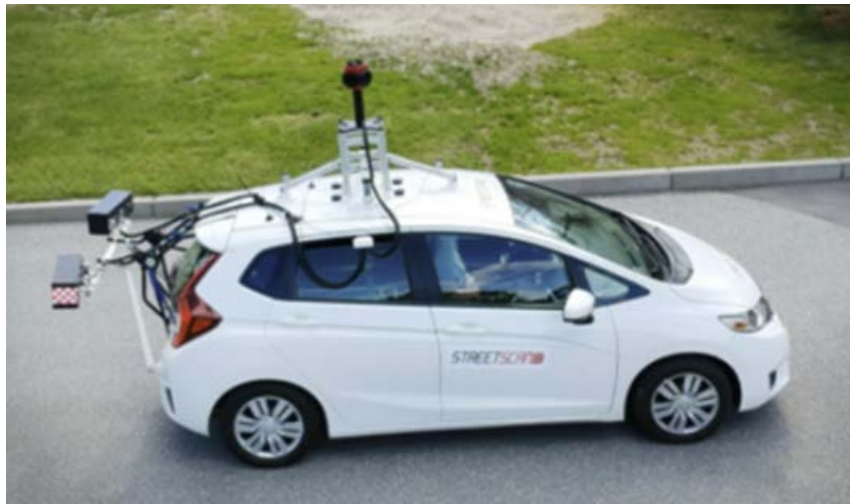
- Bitzy Upham, Treasury

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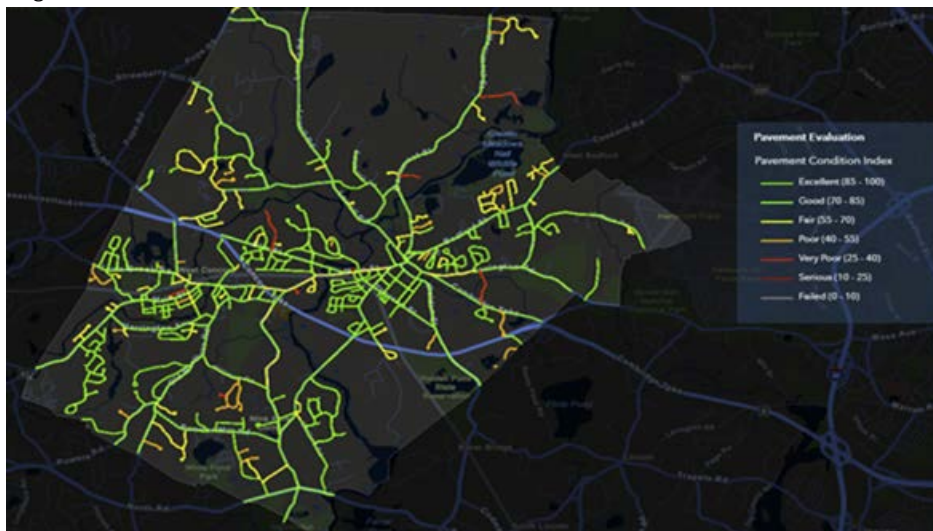
2. Streetlogix

Any New England resident knows our roads can take a serious beating over the course of a winter. Setting priorities for roadway maintenance is a significant challenge for the Town. In 2017, Concord Engineering employed Streetlogix out of Wakefield to assist with pavement and sidewalk management practices and decision-making.

Streetlogix sent out their proprietary autonomous sensor-filled vehicle to conduct an initial evaluation of our roadway system:



After the scanning was complete, we received access to a comprehensive portal displaying Pavement Condition Index (PCI) ratings for all of our roads and sidewalks.



Streetlogix also recommended a repair method for each individual street, and provided budget planning and cost estimate tools.

StreetName	FromStreet-Name	ToStreet-Name	Functional Class	PCI	Maintenance Suggestion	Estimated Cost (\$)	surface_type	Area (sy)	Year
Main St	West Side Of Rte 2	250' E of Or- chard Rd	Arterial	84	Preventative Maintenance	1066	Asphalt	1067	1
Old Marlboro Rd	Williams Rd	Old Pickard Rd	Arterial	78	Preventative Maintenance	11792	Asphalt	11805	1
Monument St	315' N of Bridge	287' N Of Lib- erty St	Arterial	61	Overlay	29595	Asphalt	1976	1
Walden St	906' S Of Rt 2	Lincoln Town Line	Arterial	71	Preventative Maintenance	7479	Asphalt	7486	1
Sudbury Rd	Main St	200' N Of Thoreau St	Arterial	85	Preventative Maintenance	5707	Asphalt	5711	1
Main St	Macarthur Rd	392' E Of Westgate Rd	Arterial	83	Preventative Maintenance	5544	Asphalt	5550	1
Old Pickard Rd	Old Marlboro Rd	Sudbury Town Line	Arterial	73	Preventative Maintenance	10956	Asphalt	10966	1

Our current average PCI rating of 80 is very good, but we would like to see this number approach 90 overall.



We are having our entire road network re-scanned and re-evaluated this summer. Public Works relies on this information in order to justify road repair priority and methods to the public, and to ensure we are maximizing our budget and remedying the roads that are most in need.

We eagerly await the results of our new roadway scan to see how our decision-making has improved over the last four years, and to create a long-term plan for future road repair and sidewalk maintenance.

- Ben Griffiths, GIS Technician

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3. Integration: GIS to Electronic Permitting

In 2020, the Town of Concord went live with our online permitting solution, Permit Eyes. This was the culmination of a years-long effort requiring extensive work to procure and set up this software across several Town departments. At the heart of the system is the ability to track whatever happens at a particular address, parcel, or location.

The Assessor is responsible for maintaining the system of record for Concord parcels, and it is through close coordination with the IT and GIS Department that the Assessor’s system aligns with the Master Address Table. This associates parcels with locations on a coordinate grid which can then be used for mapping.

To provide a system where permits can be pulled against a location, the data must be systematically (and automatically) extracted from the Assessors’ database to ensure accurate, up-to-date ownership and related information flows to Permit Eyes. The process was coordinated by the GIS Department and required careful analysis of the data to ensure a unique identifier for every parcel in Concord. To accomplish this, GIS staff and consultants merged records from the Assessors’ database with the Master Address Table. The result is the ability to link all types of permits with every parcel in Concord.

Permit applicants select Street and Number, provided by the Master Address Table, from drop-down lists:

Parcel number, Zone and Owner information from the Assessing system immediately appear in the form:

SECTION 1 - SITE INFORMATION		NO STREET ADDRESS / OWN	
* Street Name:	ELM ST.	* Parcel Number:	1999-1
* Street Number:	1175	Zone:	A
Unit Number:			

SECTION 2 - OWNER INFORMATION			
* Owner Name:	TOWN OF CONCORD		
* Street Number:	1175	* Street Name:	ELM ST
* City:	CONCORD	* State:	MA
		* Zip:	01742

We sometimes take for granted the work required behind the scenes to make such systems operate smoothly, so I want to thank Jill, our Assessor Lane Partridge, and our consultants, CGIS Solutions, for their wonderful work on this project.

- Jason Bulger, Chief Information Officer

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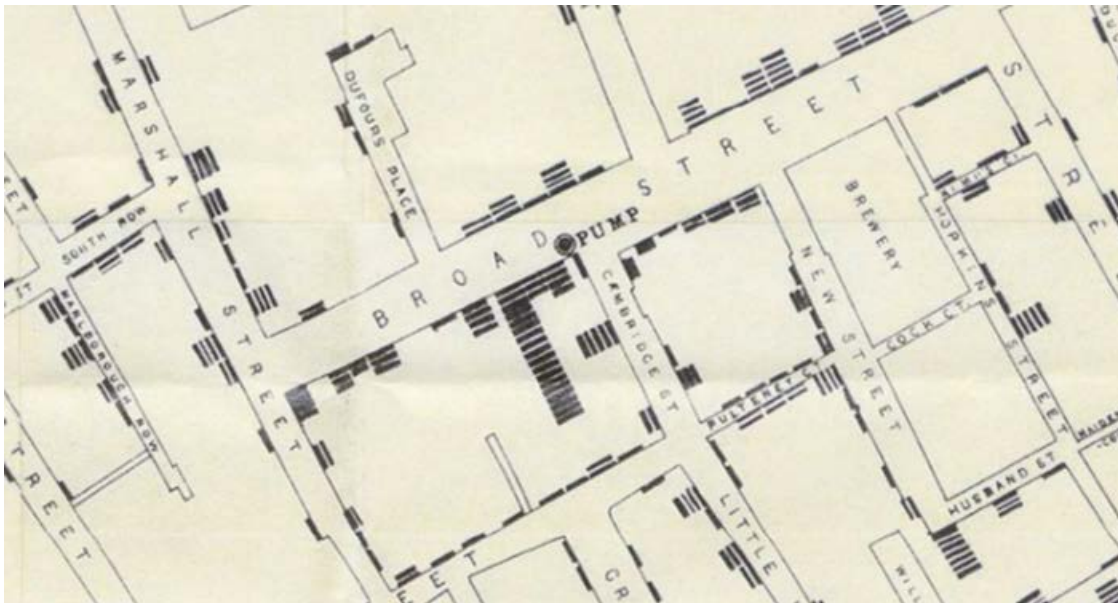
4. Disease Mapping through History

I'm constantly discovering how other folks use maps. Here are two life-saving examples, one historic and one very modern.

1854: Cholera in London Cholera

When a cholera outbreak killed 10% of the population of Soho in one week, Dr. John Snow, a London physician, had trouble convincing others that the disease was spreading through drinking water rather than through the very polluted air of those times. He turned to mapping to make his point.

Dr. Snow charted the deaths by household (stacked bars) on a street map, along with public water pump locations. *[Click on image below for the full map]*



Source: <https://www.visualcapitalist.com/data-visualization-cholera/> accessed 6/10/2021

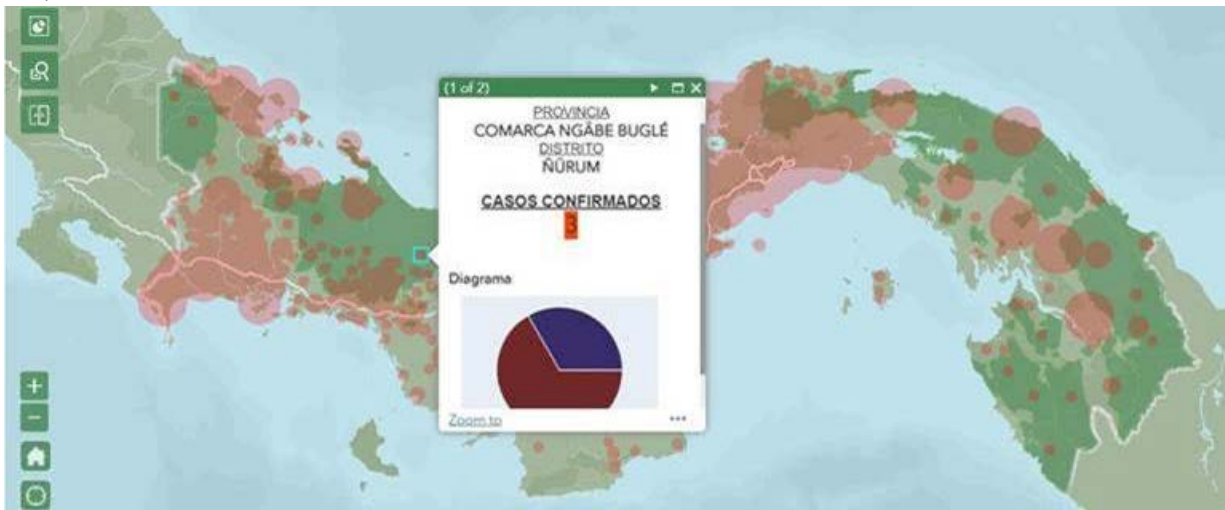
Dr. Snow's map pinpointed the Broad Street pump as the outbreak's source and convinced doubters. Residents began boiling their water, the outbreak came to an end, and John Snow is now viewed as one of the father's of modern epidemiology.

For more information, visit [ESRI's article](#) on John Snow's Maps.

Indigenous COVID in Panama

Carlos Doviaza, an indigenous cartographer, has been mapping Panama's indigenous lands since 2015. His maps have helped tribes deep in the rainforest achieve government recognition of their lands as official reservations.

When COVID arrived in Panama, Doviaza's maps, which include infrastructure features often captured using drones, proved instrumental in allowing food and medicine to reach remote communities during lockdown. He also created an online mapping service highlighting COVID cases (red) in indigenous areas (dark green) of Panama. Pop-ups show the number of confirmed cases, with a status pie chart of Quarantining at Home (maroon) Recovered (blue), Hospitalized and Deceased.



Source: <https://rainforestfoundation.org/covid-panama-gis-map/> accessed 6/10/2021


Doviaza continues updating his COVID map due to his ongoing concerns about what might happen now that people are getting vaccinated and taking off their masks. Many people around the world share his concern...




For more information, visit [NPR's story](#) on Cartographer Carlos.

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5. Map/App Gallery

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

<p>Reprecincting</p>		<p>Preliminary data from the 2020 Census shows that Concord's population growth will require the Town to re-draw its Voting Precincts. The Secretary of State's office provided an initial look at potential new Precinct boundaries, though final data will not be available until late summer.</p>
<p>West Concord</p>		<p>The West Concord Advisory Committee and the West Concord Junction Cultural District Committee began updating the 2010 West Concord Design Guidelines after</p>

<p>Junction Cultural District</p>		<p>designation of the West Concord Junction Cultural District in 2016. The committee members requested a new WCJ cultural district map, to which they will be adding various Points of Interest.</p>
<p>Concord Fire Department</p>		<p>Drawn by two of the CFD's long-since-retired members Capt. Bruce Kidder and Firefighter Don Chase, and scanned by Firefighter Arthur St. John, these sketches provide the unique perspective of "How many feet of hose would we need?"</p>
<p>Sleepy Hollow Update</p>		<p>The Sleepy Hollow Cemetery list of Graves of Interest recently expanded to include the last African American owner of the Robbins House, and the librarian who started the Bookmobile. This necessitated an update to the Sleepy Hollow Tour app.</p>

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