



[Newsletter Archive](#)

## In This Issue

1. [Topic 1](#): GIS Solutions for Missing Data and Deferred Data Maintenance
2. [Topic 2](#): 3D View Analysis Exploration
3. [Topic 3](#): Advanced Metering System (AMS) Project
4. [Map/App Gallery](#)
5. [Topic 5](#): Nearmap and AI

[Back to Top](#)

## 1. GIS Solutions for Missing Data and Deferred Data Maintenance

As the GIS team works to maintain our geospatial data and prepare maps for Town business, we occasionally encounter data that have not been touched for several years or, rarely, do not exist! You may have found yourself in a similar situation, working with datasets you know could be updated or searching for a map to no avail. If this sounds familiar, now is a good time to reach out about updating and creating your geospatial data.

Catch Basin Data Entry

Data Entry Form 24

FACILITYID  
  
 Read-only

Inspector  
  
\* Required

Date\_Inspected  
  
</> Required

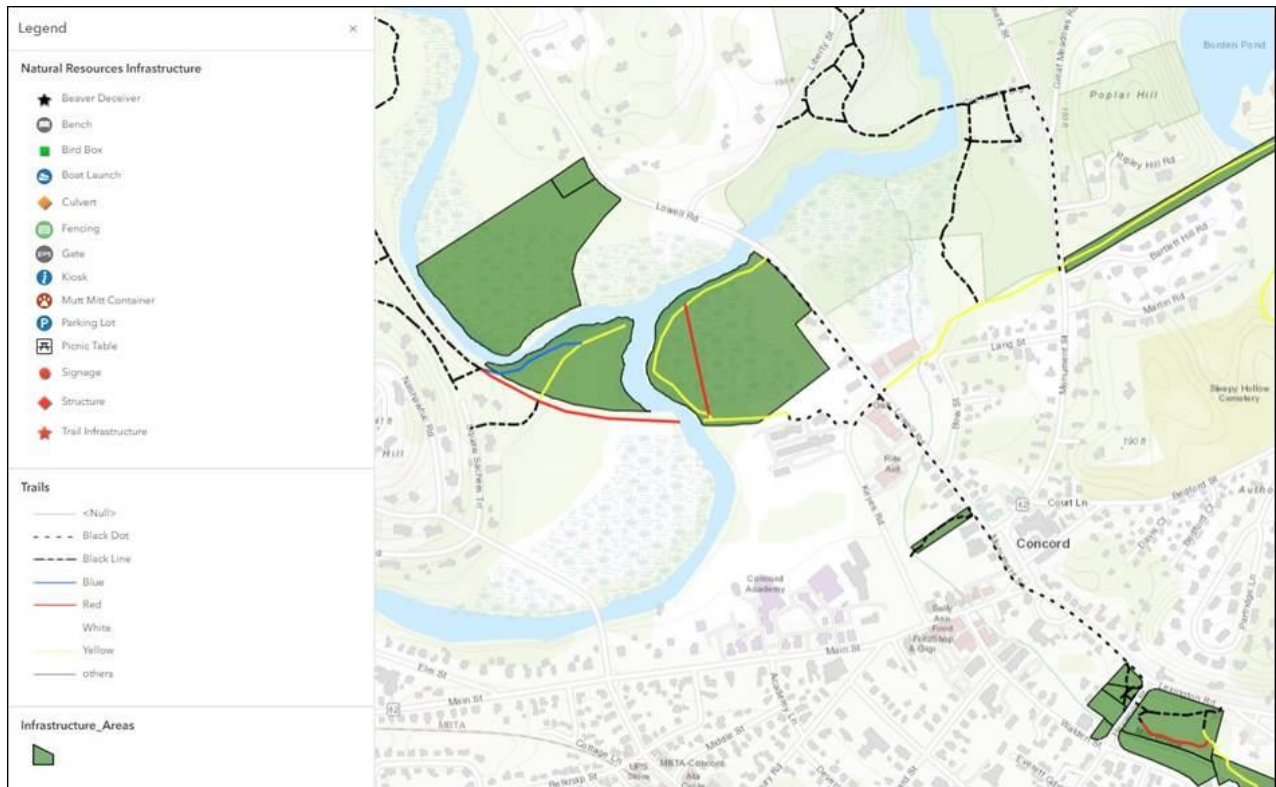
Inspection\_Completed\_Year  
  
\* Required

Month  
  
 Read-only \* Required </> Calculated

Custom forms built in Field Maps Designer (above) produce rich data for tracking progress and identifying problems (below)

Date_Inspected	5/8/2023, 10:26 AM
Inspection_Completed_Year	Yes 2023
Month	5
Fiscal Year	2023
Tagged	Dump Disc
Depth_Before	8.600000
Depth_After	9.600000
Debris Removed	0.590000
Condition	Good
IDDE	No Illicit Discharge Detected
Notes	
Quadrant	Quadrant 1
Follow Up Needed	No

Esri offers a wide array of applications for collecting, maintaining, and sharing geospatial data. Their ArcGIS Online platform offers customizable data and GIS solutions through products like Dashboard and Field Maps which we use to craft comprehensive data maintenance and collection programs. Two programs of note are the Catch Basin Cleaning and Inspection application, assisting the Public Works Highways and Grounds team on tracking and maintaining the thousands of catch basins around Concord, and the Natural Resources Infrastructure Inventory application shown below.



*This app will collect a wide range of data for the Natural Resources team.*

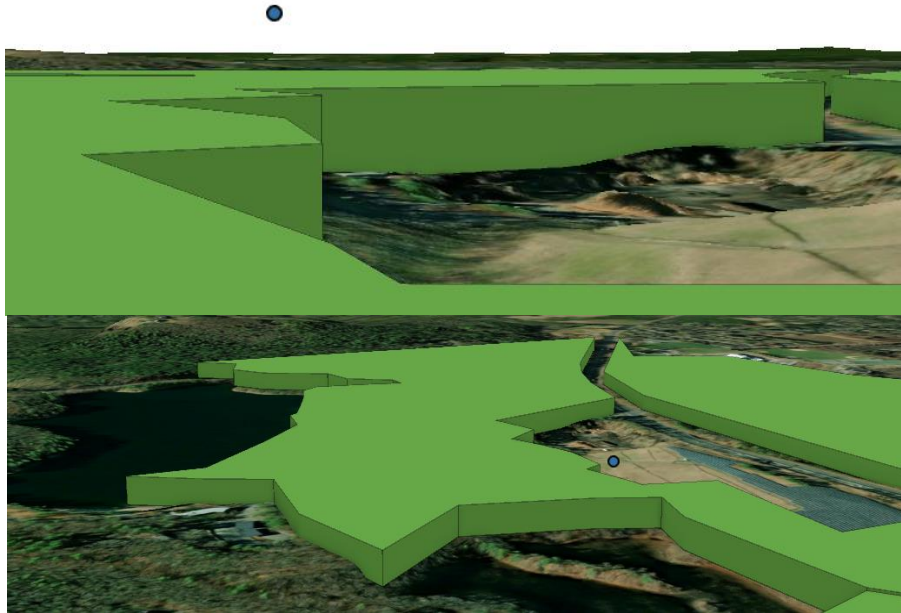
These applications are carefully designed through collaboration and consideration, and could be part of the solution to your data problems! If you have data you would like to update or collect, reach out to us to see how we can help.

■ *Tristan Boyd*

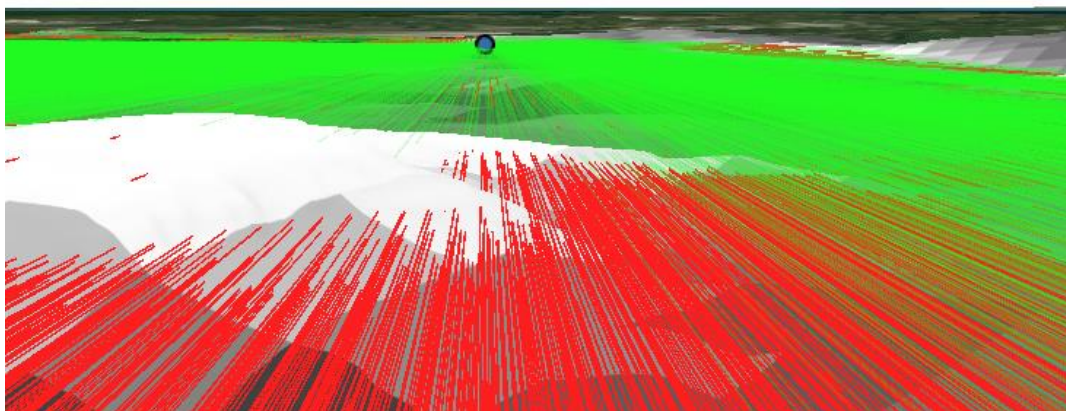
[Back to Top](#)

## 2. 3D View Analysis Exploration

We received an interesting project request to explore the viewing impact of a potential cell tower location within the Town, which required us to explore the concept of using some 3D mapping and analyses! Using ArcGIS Pro, you can either create a map tab for 2D projects (similar to ArcMap), or you can use a global scene for 3D mapping. With a global scene, you can enable elevation settings for your layers - which is important for a 3D analysis! This allows us to display 3D terrain and to create a 3D point to estimate the top of the proposed cell tower. We can also use 'multipatch' layers (essentially a 3D polygon) to represent some tree/leaf coverage around the site:

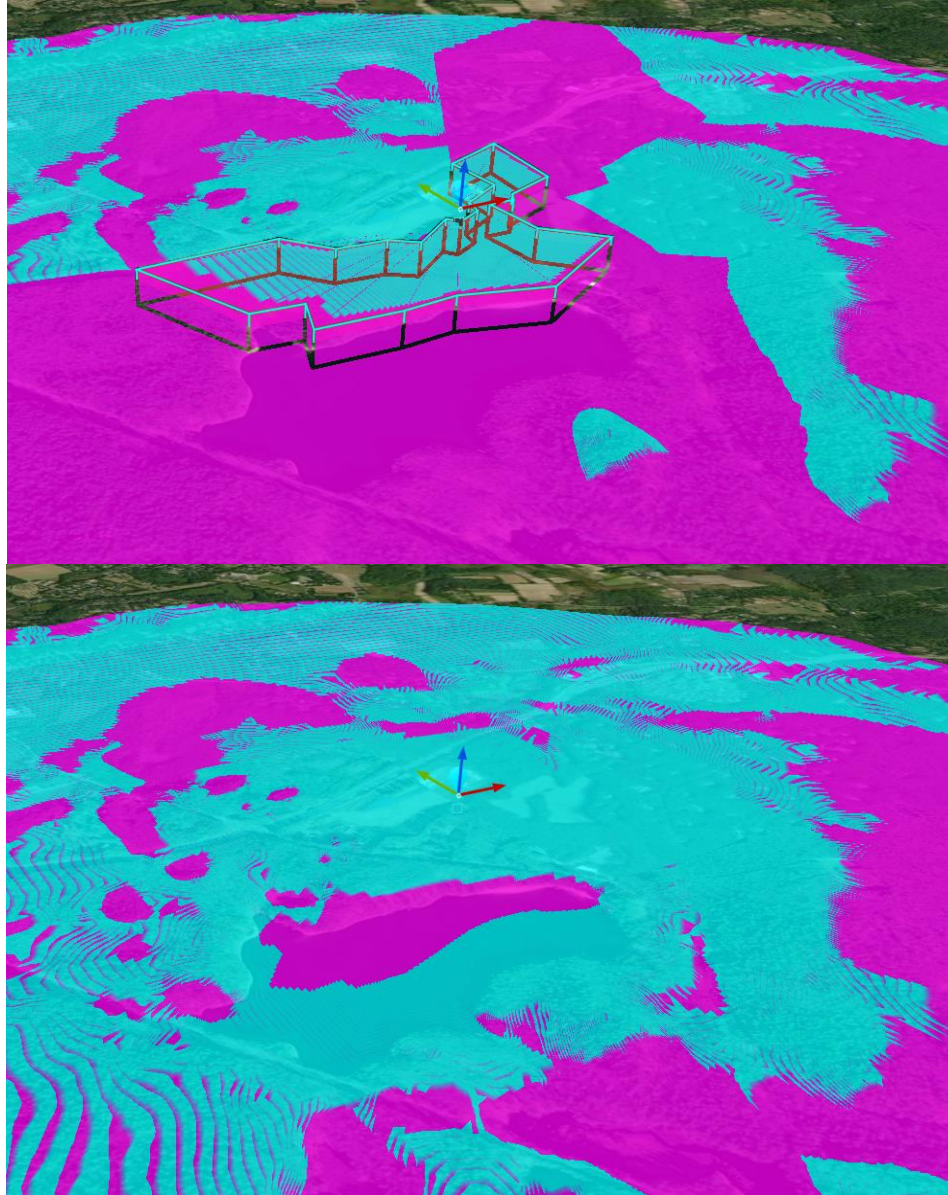


From this point, we can run a line-of-sight analysis to see where the terrain would obstruct the view of our elevated point:



We've also explored another GIS application called ArcGIS Earth, which allows you to do some 3D analysis on the fly. Here is an example of a viewshed analysis in ArcGIS Earth for the same area as the screenshots above, around Walden Pond – teal areas would be visible from the proposed cell tower

location and height, and purple would not be visible. We also have a screenshot of how the analysis looks with our estimated tree coverage, compared to one without trees (quite a difference!):



The analyses in ArcGIS Earth are very quick and easy to run but have very limited options to customize and do not export any layers – once you close the tool window, your analysis disappears. Still, it's a useful application to be able to reference quickly.

As it turns out, 3D multipatch layers are quite fiddly to work with, so this project is still very much a work in progress! It's been very interesting to learn more about the process to run these 3D analyses and to consider future applications for such work here in Concord. Perhaps we'll have more 3D projects to share in future editions of our GIS Newsletter!

■ *Neill Fotheringham*

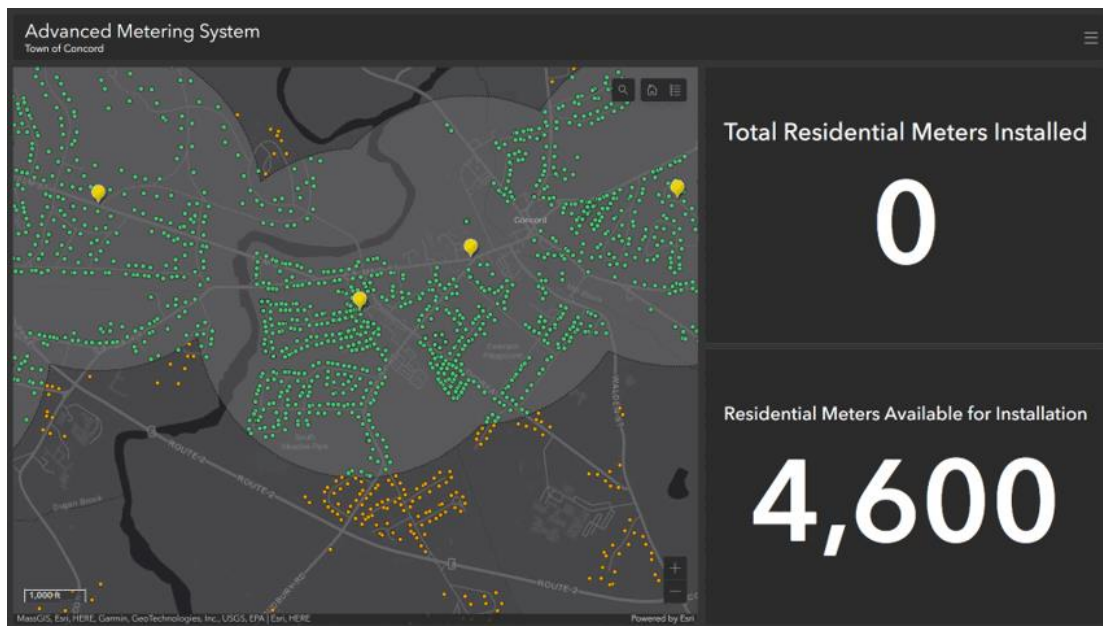
[Back to Top](#)

### 3. Advanced Metering System (AMS) Project

The Concord Municipal Light Plant (CMLP) will soon begin installing the first residential meters as part of the [Advanced Metering System Project](#) to upgrade Concord's power grid. This system will provide numerous benefits, including improved reliability, efficiency, billing, and customer service, as well as supporting Town-wide conservation goals.

Smart meters have limited signal range and thus will need to be installed in a predetermined order to ensure they can communicate with existing meters and gateways as the network expands. The GIS team is using geospatial analysis and programming to model the network and prioritize installation sequence.

The visual below demonstrates a potential installation workflow and how program rollout can be monitored over time. You'll notice eligible AMS meters change from orange to green as they are determined to be within range of the network.



CMLP will install the advanced metering system and electric meters beginning mid-2023 through 2024. Any questions on the program can be submitted to:

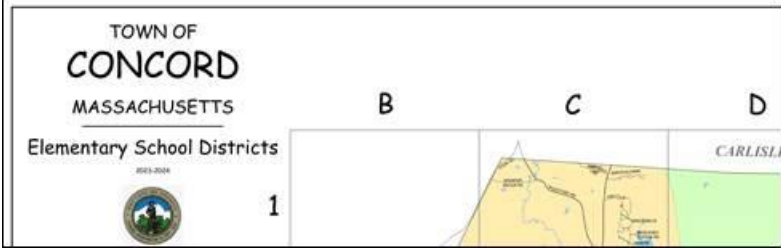
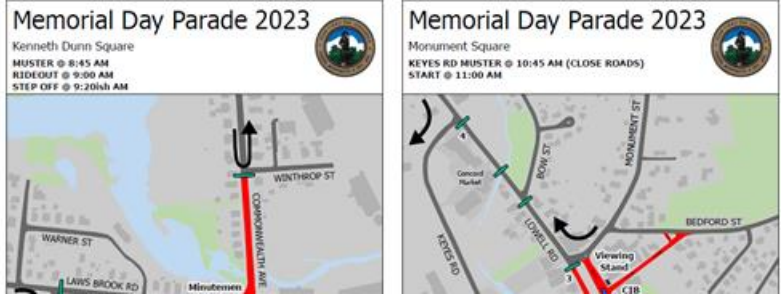

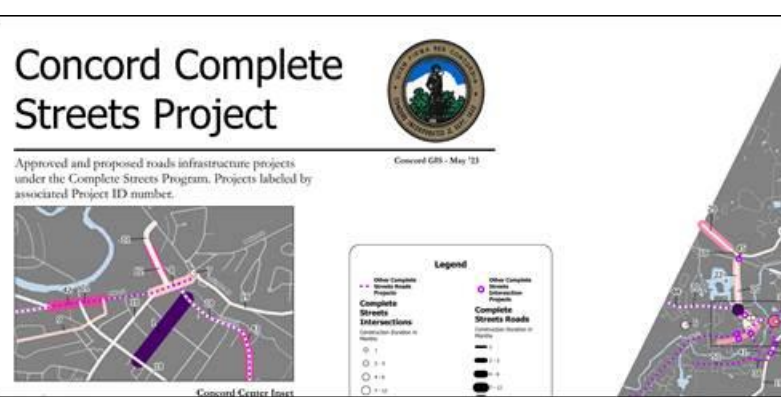
[AskAboutAMS@concordma.gov](mailto:AskAboutAMS@concordma.gov)  
or call Customer Service 1-978-318-3101  
email: [concordutilities@concordma.gov](mailto:concordutilities@concordma.gov)

■ *Heather Bhowmick*

[Back to Top](#)

## 4. Map/App Gallery

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

<p><b>Elementary School Districts</b></p>		<p>Updated School Districts map for the coming school year (2023-4), for Erin Higgins. Nathan Pratt was switched into the Alcott Elementary School district, to better balance out student populations.</p>
<p><b>Memorial Day</b></p>		<p>Prepared two road closure maps for Concord Police Dept. detail officers for the annual Memorial Day Parade through West Concord and Monument Square.</p>
<p><b>Catch Basins Dashboard</b></p>		<p>Developed a dashboard for the Dept. of Public Works to monitor progress on catch basin inspections and facility maintenance.</p>
<p><b>Complete Streets Map</b></p>		<p>Concord's Complete Streets project symbolized by project cost and duration. The map includes two insets for Concord Center and West Concord, and a table with project names and descriptions.</p>

## 5. Nearmap and AI

This Spring's Nearmap imagery captured a nicely wet (but not flooded) Old North Bridge, just ahead of the Patriots Day festivities:



In addition to wonderfully-detailed aerial imagery, Nearmap offers additional services, including feature layers extracted from the imagery via Artificial Intelligence. Assessor Meredith Stone, familiar with this capability from her previous position, requested several such layers, including Buildings, Construction and Swimming Pools. Here are some samples:

Swimming Pools (blue)



Buildings (red-brown)



Construction



Once the vendor delivers shapefiles for these AI layers, the GIS team will be able to update the existing Buildings layer and create a new one for Swimming Pools, for Assessing to reference.

You can view these yourself in your Nearmap account by making sure you're in Overhead View mode, and then clicking on the Layers icon (upper left):



If you don't have a Nearmap account and would like one, just [email](#) me and I'll send you an invitation!

■ *Jill Moonheron*

[Back to Top](#)