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## Small Community Mapping, the Little Town that Could

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### **Background**

Gorham New Hampshire's Water and Sewer Superintendent knew that an accurate and up to date map of the sanitary sewer system was necessary, but was concerned that it would cost tens of thousands of dollars. Like many municipalities, Gorham's wastewater discharge permit requires that the town have an accurate map of their collection system. However, the Superintendent was interested in not only updating the existing maps, but in creating an electronic map and database of the underground system to capture all the information about the system that he could.

As a small community, Gorham has little money or time to update paper maps which date back to the 1970's and earlier. In part, the Superintendent's desire to develop an electronic sewer system map was driven by the need to capture knowledge from soon to be retired staff members. He had recently heard about an EPA Global Positioning System (GPS) loan program, but was initially wary of EPA's involvement. He decided to take advantage of the opportunity and found that the town could save money by doing some of the work themselves. Gorham derived added benefits when they finished mapping the system manholes very quickly and were able to continue using the GPS to map their water system hydrants as well.

If Gorham could learn how to do the mapping and save money, other small communities could do it too. Historically the Water and Sewer Department maps have been paper maps and with homeowner connection and account information stored in file cabinets. Some of the original maps are more than 35 years old and hand drawn over county tax maps. Some of the sewer system information was stored in Computer Aided Design (CAD) files. While Gorham did know a lot about their sewer system, it was becoming increasingly difficult to manage the information on repairs and additions for the growing community.

### **Training and Field Work**

In January of 2012, EPA staff travelled to Gorham to provide a one day training on collecting GPS data and creating a map from those data points. Gorham Water & Sewer Department staff members were trained on how to collect a GPS reading and associated data in the field. The first part of the training consisted of an overview of the technology followed by hands-on use of the equipment. It turned out that the town did not have a numbering system to identify their manholes which is essential for

electronic data management. With guidance from EPA, the group immediately began working on a manhole numbering system that made sense to the staff for their system.

After lunch, six Gorham staff members and their local surveyor headed outside for the hands-on portion of the training. The surveyor was invited because of their involvement with other town projects and was eventually hired to create the final GIS sewer map. Within a few days after the training, the staff had completed the field work. With all of the sewer manholes located in the field with GPS, the data was uploaded to a computer software program to improve the accuracy. On the computer, surveying staff added the lines to connect the manholes to represent the sanitary sewer system. Detailed Information from past engineering drawings in the CAD system were used to assign characteristics such as size and material to the newly mapped pipes and manholes.

EPA loaned the equipment for one month. The town expected they would be capturing the GPS data in between snow storms, but a stretch of mild weather allowed them to finish collecting the sewer data in just a few days. EPA suggested that they could use the GPS to collect data on their water system, which they did, and located all of their 146 water system hydrants. This data was also incorporated into the water and sewer map created by the surveyor. The total cost for York Land Services to produce the water and sewer map was \$3700. The combination of in-house field data collection, borrowing EPA equipment, and support from the local surveyor, allowed Gorham to create their water and sewer system maps with little disruption and at a lower cost than if they had not used loaned equipment and their own field staff.

### **Opportunity Pays Off**

Many small communities are burdened with the same issues as a large community, but with fewer staff and less money. With a little training, some equipment, and a positive attitude, any small community like Gorham can identify and map their water, wastewater, and stormwater systems. The move from paper to electronic maps and databases does have a cost, but the benefits and opportunities to store, access and update data easily helps move a community toward better management.

If you would like to know more about this story or the EPA equipment loan program contact Dave Patry in Gorham NH at 603-466-3302, email [dpatrygorhamws@ne.rr.com](mailto:dpatrygorhamws@ne.rr.com) , or Deb Cohen at EPA New England 617-918-1145, email [cohen.deborah@epa.gov](mailto:cohen.deborah@epa.gov)