



## The IRWA Mapping Program

By: Don Craig, Deputy Director

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THE ILLINOIS RURAL WATER ASSOCIATION

Our GPS-GIS Mapping Program is continuing to grow, and is gaining more demand throughout the state. The program is one of IRWA's three major internal undertakings. The other two that I am referring to, are the Sewer Video Inspection and Fee Based Training programs.

We started the Mapping Program, four years ago, with the intent to help rural community water and wastewater supplies develop useful and accurate maps, based on good GPS coordinates of the features in their utility systems.... and to do so, at an economical price. The term 'features' refers to main line gate valves, hydrants, wells, storage tanks, treatment facilities, lift stations, man-holes, etc.

As many of you may already know, there are numerous rural systems throughout the state (and nation), that need their current maps updated for accuracy and legibility. Many do not have any maps, per se, and struggle to make the best of things within their utility. These is a hit and miss proposition, and one that no individual likes, wants, and can continue to deal with on a day to day basis, over years and years. And, of course, frequently there are facilities that rely on the memory of one or two individuals, to know the location of every valve or man-hole in their respective systems. This, of course, is not the way to manage and maintain utility information. It's a credit to those individuals who have undertaken that 'duty' for many years on the job, but it's a scary scenario for those people that will eventually replace those one or two people with all the data stored in their head. Too many times, good people... operators, managers, etc... haven't, or do not have the opportunity, to pass along several years of knowledge of having worked in their water and/or wastewater system, on to the others that will take over the reins after they are gone. Needless to say, that is not good.... especially in the winter, when some of those feature locations are under several inches of snow or ice.

When dealing with, maintaining, replacing, and expanding your water, wastewater, and storm sewer systems, it is important to understand, you are addressing matters of the biggest assets that your community probably has. Without a doubt, it is imperative, that those utilities and all their features be considered important parts of overall system asset management.

So, that brings us back to GIS Mapping, because it is an important cog in the wheel of the asset management of your utility systems. As I said, four years ago, we entered into this process gradually and on a 'learning curve', if you will. Our first system, that had a mapping project completed, was for

the water utility in the small town of Benson, which has a population of 400 people. The community is located in Woodford County, north of Bloomington-Normal. We developed new digital and hard copy maps of their main distribution system (gate valves, hydrants, wells, and tanks). I want to thank Fred Luedtke, who was the manager of the system at that time, as well as their Village Board, for putting their confidence in our program in its infancy.

And, four years later, we've completed many mapping projects; and have a growing list of more that have been approved for start, and potential new ones presently under consideration. The most recent systems completed were for the City of Vienna in Johnson County in extreme southern Illinois, and the Village of DePue in Bureau County in north-central Illinois. Each were larger projects, and both had very old, inaccurate, and sometimes confusing maps on hand, and needed to upgrade and manage those maps of the assets they have in the ground.

It's a credit to those individuals who have undertaken that 'duty' for many years on the job .....

Specifically, the Village of DePue was a very large overall project, as the town

wanted all of their storm sewer collection system, including manholes and catch basins mapped, as well as the entire sanitary sewer system, and all of the water distribution system, including customer curb stops (shutoffs). Needless to say, this process was lengthy, as various feature locations in all the utilities had to be located and marked ahead of time, so that a true sub-foot accuracy GPS shot could be taken of each location.

Presently, large mapping projects at Paxton, in Ford County and Williamsville in Sangamon County, are underway. I will be giving a presentation in October at Rockford during our annual Northern Conference, in regard to our GPS-GIS Mapping Program, and going through the DePue maps that were developed as a result of that large project. If your system needs new maps, or just would like more information in regard to our mapping program, please do not hesitate to contact me directly via email or telephone at [craig@ilrwa.org](mailto:craig@ilrwa.org) or 217-561-1061.

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One last comment..... Many of you already know that at the end of May, longtime IRWA field staff member, Wayne Nelson, officially retired from full time work with the organization. He will still be 'around' for some various consulting work for the Association, but his daily presence, dedication, and knowledge will be sorely missed. I have known Wayne for a long time, and consider him a colleague and a friend. And, I wish him all the best in his retirement.

## **ILLINOIS RURAL WATER ASSOCIATION HAS LOST A DIAMOND: WILL THE PRESSURE ON THE COAL LEFT BEHIND BURN ME UP OR HARDEN ME INTO A GEM?**

**By: Mark Mitchell, USDA Source Water Specialist**

I guess the answer really lies within. Lives, jobs, careers are really what we make of them.

Wayne often said to us "I wasn't born knowing this stuff, do what I did and crack a book!"

As most of you are aware, Wayne Nelson retired after 21 years with Illinois Rural Water Association (full time) and stints during the 1993 major Mississippi River flood plus a part time gig as an Illinois Environmental Protection Agency funded program that had him working part-time assisting PWS's developing and implementing Maximum Setback Zones (I still use his hand written templates for calculating Lateral Area of Influence for a pumping well -Thanks, Wayne!)

In June of 1994 Wayne started full time as a Water Circuit Rider and proceeded to work in almost every program Illinois Rural Water Association ever had, (We often teased him that "Some people just can't keep a job"!) except he was smart enough to stay away from wellhead/source water protection maybe because he started out doing that way back under the IEPA Program assisting PWS's with maximum setback zones and he already knew... "There's nothing funny down that road!"

I started the following April of 1995 and Wayne was there for advice, pointers, tips, help and just always willing to go the extra mile to help me out. He was just being "Wayne". You all know what I'm talking about; he did it for you too. Wayne wanted you to think for yourself but would never leave you to yourself without the help you needed not just for that time but for how to figure it out the next time it came up again and maybe two or three little "shortcuts" along the way.

So after more miles and hours and nights away from home than he would care to admit; now Wayne gets to move to a new chapter in his life. Those of us left at IRWA have BIG shoes to fill and HIGH standards to live up to. Wayne you have been an outstanding co-worker, a fair supervisor, and above all I want you to remain our good friend. I know retiring does not change your passion for IRWA, the water treatment field in general, so whatever you choose to do in your "relaxing" years, I know you will do it the only way you know how.

"FULL BORE" "BOTH BARRELS" "HEAD FIRST" "110%"

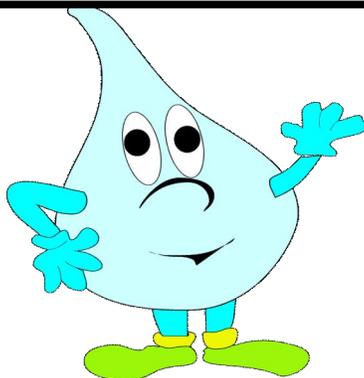
Just watch out for those stairs!

Thank You Wayne for all you have been and done to help me personally and professionally over the years. Thank you for your contribution in making IRWA what it is today.



**CONGRATULATIONS WAYNE NELSON ON YOUR RETIREMENT AFTER 21 YEARS WITH ILLINOIS RURAL WATER ASSOCIATION!!!!**

**BEST WISHES,  
THE IRWA BOARD AND STAFF**



**Remember to check out our website, [www.ilrwa.org](http://www.ilrwa.org), for the latest training sessions to register for!!**



By: Chuck Woodworth, Circuit Rider

1. A new six inch PVC water main is 3250 feet long, how many gallons does this section of water main hold?
2. How many pounds of 70% calcium hypochlorite would be needed to disinfect the new water main in question #1 to 50 MG/L?
3. A water tank is 15 feet wide, 35 feet long and 12 feet deep, how many gallons does this tank hold when full?
4. The water tank in question 3 has a flow in and out of the tank of 175 gallons per minute, what is the detection time in minutes?
5. A ground storage tank is 40 feet high and 30 feet in diameter, how many gallons will this tank hold when full?
6. A 250,000 gallon stand pipe is 160 feet high, how much pressure will it provide when full?
7. A 5 foot diameter pressure filter was backwashed at a rate of 400 gpm, what was the backwash rate in gpm/sqft?
8. A drilled well is 130 feet deep its airline is 110 feet long. The pump has been running for 3 hours, air is added to the airline until the reading on the gauge stabilizes at 10.9 psi. The pumping level for the well is how many feet?
9. The drawdown for a pumping well 20 feet and the well is pumping 650 gpm, what is the specific capacity for this well?
10. How many pounds of chlorine is needed to treat 2 MG of water to a concentration of 3 mg/l ?



Answers

1.  $.785 \times D \times D \times L \times 7.48$  divided by 144  
 $.785 \times 6 \times 6 \times 3250 \times 7.48 = 687000.6$   
 $687000.6$  divided by 144 = 4770.8 gallons
2.  $MGD \times mg/L \times 8.34$   
 $4770$  divided by 1,000,000 = .0047 MGD  
 $.0047 \text{ MGD} \times 50 \text{ mg/L} \times 8.34 = 1.9599$   
 $1.9599$  divided by .70 = 2.79 lbs
3.  $W \times L \times H \times 7.48 =$  gallons  
 $15 \times 35 \times 12 \times 7.48 = 47124$  gallons
4. gallons divided flow = minutes  
 $47124$  divided by 175 = 269 minutes
5.  $.785 \times D \times D \times H \times 7.48 =$  gallons  
 $.785 \times 30 \times 30 \times 40 \times 7.48 = 211385$  gallons
6. 1 psi = 2.31 feet  
 Feet divided by 2.31 = psi  
 $160$  divided by 2.31 = 69.2 psi
7.  $.785 \times D \times D =$  sqft  
 $.785 \times 5 \times 5 = 19.625$  sqft  
 Flow divided by sqft = gpm/sqft  
 $400$  divided by 19.625 = 20.38 gpm/sqft
8. psi X 2.31 = feet  
 $10.9 \times 2.31 = 25.179$   
 Subtract gauge reading from airline length  
 $110 - 25 = 85$  feet
9. gpm divided by feet = gpm/ft  
 $650$  divided by 20 = 32.5 gpm/ft
10.  $MGD \times 8.34 \times mg/l =$  pounds  
 $2 \times 8.34 \times 3 = 50.04$  pounds

**IRWA'S MISSION STATEMENT**

**“Protecting and preserving the water and wastewater resources of Rural Illinois through education, representation and on-site technical assistance”**

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**MARK YOUR CALENDARS!**

**ILLINOIS RURAL WATER ASSOCIATION**

**12TH ANNUAL GOLF OUTING**

**WHEN: FRIDAY, AUGUST 21, 2015  
10:00 A.M. SHOT GUN START**

**WHERE: PIPER GLEN GOLF CLUB  
SPRINGFIELD, ILLINOIS**



**PLEASE LOOK ONLINE AT OUR WEBSITE AT [WWW.ILRWA.ORG](http://WWW.ILRWA.ORG) OR IN  
YOUR MAILBOX IN THE NEXT FEW WEEKS FOR THE AGENDA. WE LOOK  
FORWARD TO SEEING YOU THERE!!**