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MISSION STATEMENT

"Protecting and preserving the water and wastewater resources of Rural Illinois through education, representation and on-site technical assistance".

on the cover:

This picture was taken at Cave in Rock State Park in Cave in Rock, Illinois by Pat Gammill, IRWA Circuit Rider

Water Ways is the official publication of the Illinois Rural Water Association, P.O. Box 49, Taylorville, Illinois 62568, and is published quarterly for distribution to members as well as other industry associations and friends. Our website is www.ilrwa.org. Articles and photographs are encouraged. Advertising and submissions should be mailed to the above address or e-mail us at ilrwadb@ilrwa.org.



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Water Distribution System Considerations

by Don Craig,
IRWA Deputy Director

Through my many years in the industry, I am often questioned by operators and board members, on what considerations should be made when upgrading or expanding their main distribution system. It's important to remember that the system should be capable of supplying water to its customers with a minimum amount of service interruptions. To help insure this, the following recommendations should be considered.

1. Locate mains so that extensions can easily be made for later expansions, yet still provide adequate service to present customers
2. Insure easy access for operation and maintenance, thus limiting disruptions during and repair work
3. Maintain adequate system pressure (recommended levels should never be less than a minimum of 20 psi, and never more than 90 psi as the maximum, and with a normal average static pressure of 45 to 60 psi.... some may be a bit higher)
4. Maintain a good flow to all parts of the system, with use of pipe at least six inches in diameter (the normal standard.... although some exceptions may be made by IEPA)
5. Avoid dead-end lines to assure proper system circulation and better service
6. Implement consistency in location of valves and hydrants



7. Insure proper cross-connection protection

In most cases, soil, climate conditions, and particular applications dictate what type of pipe should be selected. Throughout the state, ductile iron and plastic piping are largely used.

continued on page 5

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Consideration should be given in use of plastic pipe to insure that it does not contain leachable toxic materials. Also, another concern is that of corrosion control, which can be caused by reactions between the soil and pipe and/or the water and pipe. These are only a couple considerations needed when selecting pipe. All water system line types, should meet required AWWA standards.


Fire hydrants should be located throughout the system, on lines that supply a flow of at least 500 gallons per minute. Fire protection and line flushing are the two primary functions of hydrants. Thus, to assure proper

locations, the Insurance Service offices should be contacted.

Good valve locations are essential to isolate sections of the main water distribution system during repairs. Such locations should provide maximum flexibility in isolating lines while keeping the service disruption at a minimum. The following recommendations should be considered when choosing valve locations.

1. Placement every 1000 feet or less, on lines 8 inches or less (2000 feet or less for 10 to 12 inch lines)
2. Placement on each side of all railroad tracks, creeks, rivers, and highway crossings

3. Placement at line tees and crosses
4. Placement at all hydrants to serve as a control valve for their maintenance or replacement

In conclusion, effective main distribution system operation and maintenance can be, and should be achieved by instituting such considerations as these. As operators, supervisors, managers, and board members; you should actively take part in assuring system efficiency when expanding, upgrading, or building a new system. 

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Drought Causing Unique Problems for Water Systems

*by Wayne Nelson
IRWA Training Specialist*

The Drought of 2012 that has hit the United States is, as I write this article, worse than the one we experienced in 1988, is being compared to the conditions in 1953-54, and could surpass the record drought of the mid-1930's. Everyone in the country will feel the adverse effects caused by this perfect storm of high temperatures during the summer (many in the triple-digits) and little or no precipitation. The National Weather Service announced in early August that July, 2012 was the nation's hottest on record (2nd hottest in Illinois). And, we all realize now, the bill for this past winter that was near perfect with above-average temps but way below average snowfall now has to be paid.

Food prices, especially meat, are ris-

ing because cattlemen and hog-producers are getting rid of their herds due to the shortage of feed and hay. Corn and bean prices are soaring and these two grains are present in much of the food we eat. The cheapest way to transport grain, oil, and other items needed to make our lives easier is by barge. The great Mississippi River is so low in places that barges are cutting short their loads to prevent running aground. Less tonnage moved per barge = more barge trips needed = higher costs.

Never has it been so apparent that water is the essence of life. As water people, we have always known that. Many of our customers didn't but they are learning.



During this drought, IRWA Executive Director Frank Dunmire has been a part of drought task forces that are monitoring conditions in our business of treating drinking water. Information that he and other IRWA staff have gathered is showing that systems using groundwater

continued on page 7

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Drought Causing Unique Problems for Water Systems

continued from page 6

are usually faring relatively well. Some systems have had to institute some form of conservation measures but most that we talked with still have water to sell.

It is the surface water systems that are experiencing minor to major problems due to the loss of raw water caused by higher than normal usage, little or no rainfall, and high evaporation rates caused by the extreme heat. Most surface supplies that we are monitoring have instituted mandatory restrictions. Most have a plan with several levels of conservation requirements and these levels change as their surface water levels do.

The beneficial rain that Illinois received from the remnants of Hurricane Isaac in late August definitely was welcomed but was not a drought-ender by any means. I hope that by the time that this article goes to print the skies are dumping copious amounts of rain that can recharge our soil moisture, water tables, and refill our streams, lakes, and rivers. The long-range forecast doesn't show that happening. However, I've said many times that being a weather forecaster is the only career you can have


where you can be wrong 50% of the time and still keep your job.

As I said earlier, most groundwater supplies are dealing with the drought reasonably well at the treatment plant. What we are seeing is a lot of problems building up in our distribution systems. Illinois Rural Water Association Circuit Riders have been as busy or busier locating water main leaks now as they do in the middle of a cold winter. The shifting and cracking of the ground around water mains is causing stress that can literally snap a main. Even when normal rainfall returns, this problem will not go away quickly.

One problem we are seeing is that of maintaining system chlorine residuals. I have received several calls from both groundwater and surface water supply operators in regard to the loss of adequate chlorine residuals in their distribution systems this summer. While the higher-than-normal usage is helping several systems in keeping its residuals up, the extreme heat is literally cooking the chlorine out of many storage tanks and water lines. Even higher ground

temperatures around water mains are eating away at residuals. Systems experiencing this problem will most likely need to increase their chlorine feed rate. With air and soil temperatures declining with the advent of fall, this problem should go away.

In a recent article in ISAWWA's *Splash* magazine, the writer related the story of a water customer calling in to tell the operator that their cold water was no longer cold. The operator responded that they get their water from the Mississippi River and that the temperature of the river water was around 90 degrees F.

I'm sure that the problems I've described above are just a part of a possible long list that we in the water business are or will be facing before needed precipitation returns. Let me know if you are having other types of problems due to this severe weather event. I can be contacted at 217-820-1561 (cell) or at ilrwawn@ilrwa.org. 

The IRWA office will be closed in observance of the following holidays:

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Monday—November 12—Veteran's Day

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Monday & Tuesday—December 24 & 25—Christmas Eve & Christmas

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H	N	R	K	T	Z	A	Y	N	S	H	G	Q	H	T	R	L	A	R
Q	Q	M	W	L	Y	G	C	E	D	G	R	R	K	R	D	R	C	M
A	U	T	U	M	N	X	V	O	F	H	S	R	I	R	V	H	P	Z
R	L	X	H	V	C	A	J	S	R	Q	W	U	F	E	A	K	C	Q
R	T	D	L	A	E	B	E	T	U	N	Q	N	S	N	X	L	A	R
R	E	V	P	L	Y	E	H	A	C	S	N	T	G	N	N	D	R	R
K	E	B	N	Q	R	R	S	W	Z	N	E	E	W	O	L	L	A	H
M	C	B	M	T	V	H	I	R	T	V	K	M	F	R	O	N	M	G
N	B	N	M	E	Y	Y	P	D	G	G	O	U	R	D	C	F	E	R
T	W	D	O	E	T	R	M	K	E	J	H	E	S	N	T	S	L	Z
C	K	C	Z	I	V	P	A	R	M	Q	J	G	E	H	O	N	A	T
G	C	C	C	L	T	O	E	K	Q	B	G	N	L	Y	B	I	P	L
T	T	M	B	J	L	A	N	S	E	P	L	A	P	E	E	K	P	P
J	Y	J	Z	N	K	B	R	D	J	T	Z	R	P	L	R	P	L	Z
V	Z	G	X	W	B	G	N	G	D	P	P	O	A	L	L	M	E	K
R	C	W	B	K	K	M	F	Q	I	N	Z	T	W	O	P	U	S	Q
R	X	B	L	M	T	T	Z	Y	H	M	L	R	C	W	L	P	C	N

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Drought or Test

by Greg Bates,
IRWA Board President

For many years now we have been blessed with a sufficient amount, and in some cases too much, rainfall. Grass was green and our lawn mowers were running at what seemed like a non-stop pace while farmers were reporting record yields. Then 2012 arrived! At first it appeared that it would be somewhat of a dry year with a less than average rainfall that would quickly pass. No one really expected that an exceptional drought was on the horizon until the grass quickly transformed from a luscious emerald green to a disheartening straw yellow. And now farmers are telling each other how low their yields are – that is if they were fortunate enough to have anything to harvest.

As purveyors of water, we were put to the test in a slightly different manner. In these rough economic times I, like many of you, appreciated the additional revenue from record sales of water. But, accompanying moving this additional volume of water throughout our service area was the revelation of some weak spots within our distribution system. During the month of July, Jersey County Rural Water Company purchased nearly 45 million gallons. In comparison, an average July would be around 35 million gallons. This approximately 30%

increase in demand resulted in record-breaking water sales and unfortunately pointed out some low pressure areas where improvements are going to have to be made in the future.

I'm sure a lot of you out there had many sleepless nights wondering if you were going to make it on the production side or the pumping side of the water system. It is a helpless feeling watching your water tower levels continue to decline while you are pumping or producing at, or exceeding, your maximum design capacity. At the same time you were hoping and praying you didn't experience a large main break or fire to make things even worse.

If nothing else, I guess it can be said that droughts could be a good test for water systems (the old adage that if life serves up lemons – make lemonade could apply here) and goes a long way in convincing elected officials that improvements are needed to keep up with any future demands. I have been in the water business 30 years and it has been my experience that far more people are installing lawn irrigation systems, having swimming pools installed or just use a lot of more water regardless the cost. As I alluded earlier, we are in the business to sell water and the cost of that water is not



at a profit but, rather, priced high enough to keep the distribution system well maintained and keep production ahead of anticipated demand. This can be a challenge both financially and politically but as Operations Specialists not one that we can't overcome. Keep up the good work out there! 💧



Word Search Answer Key



Word Search
is on Page 8



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Village of Viola Water Treatment Plant Upgrade

by Gale Moore
IRWA Circuit Rider

The Village of Viola, located in Mercer County, utilizes one water treatment plant. Shortly after Dave Maynard took over the superintendent's position, his first task at hand was to improve the operation of water treatment plant. The original pump was a single Amona-Fairbanks Morse, turbine pot style. It was remarkable this pump was still operating after an estimated 45 years of duty. Maynard estimated that it pumped over 600 million gallons of water throughout its lifespan. This style of pump utilized a 4 ft. deep reservoir at which the pump assembly sits in, as well as an above ground assembly that consisted of the pump shaft and motor. The pot pump drew water from the 10,000 gallon above ground storage tank and pumped it to the 200,000 gallon water tower. While the pump had performed extremely well over the years, the fact that if this pump failed, Viola's 800 customers would be without water.

The first step in the proposed project was to contact Judd R. Giffin, PE with Snarr Giffin & Associates for an evaluation. Maynard had SGA begin to engineer a replacement for the single booster pump. This new system would incorporate a duplex booster style system that could perform at the capacity of the existing system, as well perform at the estimated capacity the Village needed in the future.

Maynard next called in Jerry Boyles from Linden & Company, Peoria, Illinois for a recommendation for a duplex pump setup. SGA and Linden & Company recommended two Grundfos CR-32 inline booster pumps, both rated at 7.5 hp, 150 gpm, 3500 rpm, with a 2 1/2 connection. Control of the new pumps was next for Maynard, he then called Bill McDonald from CAM, Inc. McDonald provided for a new level transducer, motor soft starts, and Ethernet accessible



PLC (Programmable Logic Control). Also a controller option was incorporated to notify Maynard by text message of any system alarms and failures.

Next to consider was installation of the new pumps, Maynard and the village employees would remove the old pump and install the new ones themselves. A permit from The Illinois Environmental Protection Agency was next on the list, as it is a requirement of the IEPA when altering any part of the water supply



Village of Viola Water Treatment Plant Upgrade

continued from page 8

system. The critical next phase to make this project happen required Mayor Doonan and the village board to vote on the financing for the project to be completed, they recognized the need for the upgrade and approved the project.

Last Maynard began preparing for the project by ordering the pumps, piping, pouring of the pad, electrical changes, and also the installation of standby power. Due to the fact that the water system would be out of commission

while the pump was replaced, everything needed to be ready as the 200,000 gallon tower would only last a couple of days. Once it came time to remove the old pump and piping, it took less than a day, thus not affecting the residents of Viola. The goal of this project was to achieve as close to 100% redundancy as possible on a very tight budget. The Village received a duplex system that was fully controlled and monitored with safety notifications and even back up power. 💧



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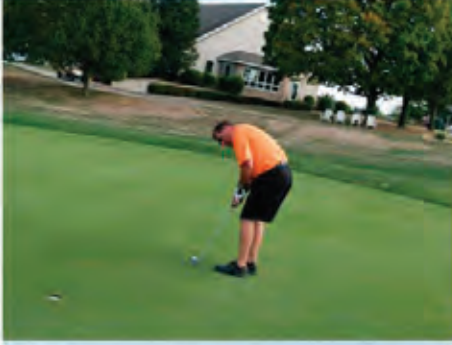
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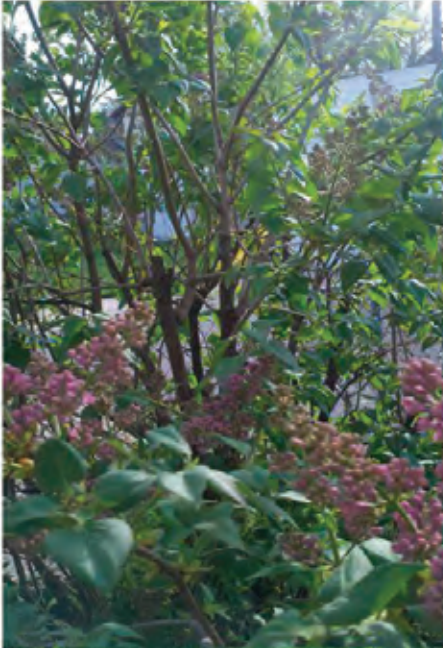


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Is Your Furnace Ready for “Old Man Winter”?

HOW CAN YOU TUNE-UP YOUR FURNACE SYSTEM?

HVAC systems are mechanical, so like all mechanical systems they do need to be maintained. A thorough professional tune up will cost you \$100 or more and is definitely something you should do every few years. However, you can do an annual tune up and maintenance process yourself, and save some of that money.

1. First take a look at your furnace. There shouldn't be any black soot or combustion residue on or around the furnace. Next, turn up the thermostat so your furnace comes on. Check the flames in the burner. They should be blue and steady, not yellow or orange and flickering. Soot build-up or yellow flames are an indication of poor combustion, and if you see any signs of either, call a professional technician to fix the problem.
2. Next, turn the thermostat back down and let your furnace cool. For extra safety, turn off the circuit breaker that powers your furnace. When the furnace is cool, remove the sides of your furnace and using a vacuum with a long nozzle, get rid of any dust that may have accumulated. Use a damp rag to clean the blades of the blower fan and any other areas the vacuum couldn't reach. While you've got the sides off, check to see if your blower fan has oil cups at the ends of the central shaft (some are sealed units and don't need oiling). If there are cups there, give them a few drops of oil.

3. An electric motor and a fan belt drive many blower fans, while some are direct drive and don't use a fan belt. If your blower does have a fan belt, check its condition and tension. The underside should be free of cracks, but over time, age and heat will dry out the rubber belt and cause cracks. If there are cracks in the belt, replace it with one of the same size. Checking the tension of the belt is as simple as pushing down on it. There should be about 1/2 inch of play in a properly adjusted belt. If you have more or less movement than that, adjust the tension by loosening the electric motor mounts and moving the motor to create the proper tension.
4. Reattach the furnace panels, and turn the circuit breaker back on.
5. Finally, changing your furnace filter once a month during heating season is a good maintenance practice. So when you're doing your furnace tune up, get ready for the season by installing a fresh filter.

Now your furnace is ready for “Old Man Winter.”

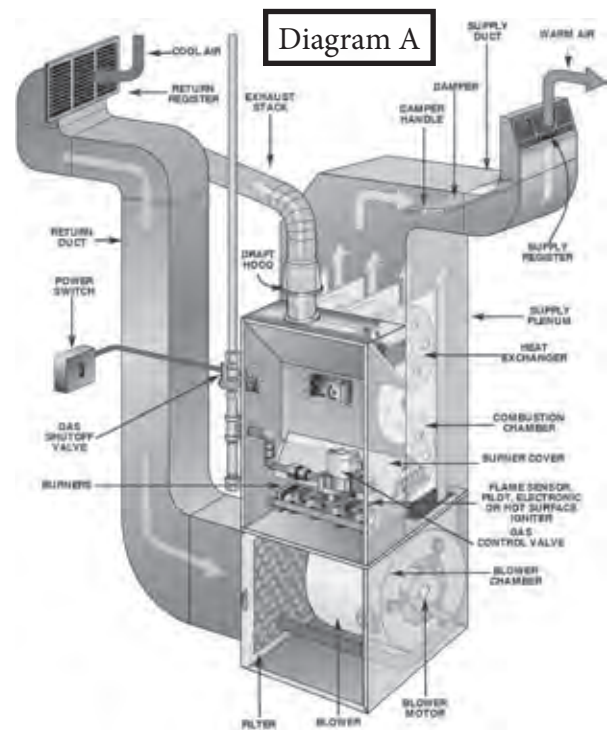
BE SAFE!

Combustion creates Carbon Monoxide (CO), a colorless, odorless gas that can be deadly. Normally the CO produced by the combustion in your furnace

is exhausted up the chimney and out of your home. However, a furnace that is out of adjustment can leave CO in your home. You can help protect yourself from CO poisoning by installing a Carbon Monoxide detector in your furnace room. If the detector indicates any build up of Carbon Monoxide at any time, have your furnace professionally inspected immediately.

While doing your own tune up will help keep your furnace running efficiently, a professional inspection and tune up every few years is a good investment. The pros are the people who have the skills and equipment to ensure that any parts that might degrade over time are still functioning properly in your furnace. 💧

Below (Diagram A) is of a gas furnace (the most common household furnace), although yours may be different, this will give you a rough idea of where burner, filter and other parts to be maintained are located.



Family Dinners

by Anthony Valentine

The dinner table can be one of the best places to bring your family together. Eating a nice home cooked meal with your whole family is a wonderful experience, and can bring great discussion, or humor to everyone attending.

My family has a wonderful pasta dinner every Sunday night. My mother spends all day preparing her sauce, meatballs, and whatever else it takes to create her masterpiece. After hours of preparing it's finally done. The family gathers at the dinner table and begins the feast.

On Sundays we always sit at the dinner table. Your asking, where else would you sit? Well, during the week



we have an island counter top which we eat our meals at. The island is simply more convenient, and easy to use for my mother when she's cooking. For our Sunday feast, we always set the dinner table, and sit at the table together to eat our meal. I look forward to every Sunday for a number of reasons. The main reason being I love to eat, and I love to eat pasta more than anything. We are an Italian family and we all enjoy a fabulous pasta dinner every

week. Besides the eating part of our feast, I enjoy joining my family and starting conversation. It's not often you get to sit down with your whole family at once for an extended period of time. Being able to talk to my all my brothers at once is pretty cool. I have three brothers, and having them all there at once can be quite exciting. Asking one brother one thing can lead to a fun conversation, or sometimes a ruthless argument.

Overall it's a fun experience and you get to learn a lot about your siblings, and/or parents. My brothers all attend school, and two of them work full time jobs, theres just no time to spend time with them. Having a weekly dinner is a very exciting aspect of our family. No matter what is happening that week, I know that the upcoming Sunday I will see my whole family whether it's at our dinner table, or simply out to eat at one of our favorite restaurants. Not everyone can make it every Sunday, but that's understandable and we forgive them.

continued on page 21



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Most Sunday's we have the whole family attending, including my grandma, who I feel is the most important person at the dinner table. My grandma, who we call "nuni" or "nonna" which is Italian for grandmother. Our nonna came over from Italy over 50 years ago on a boat, and has never been the same since. I love talking to her at the dinner table about the old times in the old country. She teaches us some cool things about cooking, and just being Italian in general. Sometimes my nunna will teach us some Italian phrases, or secrets to different things that she's learned over in Italy. I love comparing her different ways to go about doing certain things to the way we do certain things over here in America, it's very interesting.

One of the coolest things I've learned from my grandmother is how to make homemade pasta. My grandmother grew up in a village in Sicily, and was taught to produce her own pasta noodles when it came to their family feasts. Learning how to make my own homemade pasta was easily one of the coolest things I've learned from here.

I currently attend the University of New Hampshire for Culinary Arts, and cooking happens to be my passion. Having my grandma around is so awesome, and I learn a lot from her every day. She taught me the basics of using a Pasta Machine, and how to make my own pasta from scratch. After a few hours of preparing our noodles, our product was done. I had produced enough pasta for weeks! We ate the homemade pasta

later that night and it was fantastic. May not taste like it was store bought, but it definitely tastes homemade, and delicious.

The moral of the article is to make more people aware of the power of food, whether your preparing it or eating it. Take advantage of your family dinners, who knows how much longer you'll have with them. Whether you sit and enjoy the presence, or strike a conversation with your family members, a family dinner is a great way to gather the family each week.

About The Author

Anthony Valentine attends the University of New Hampshire for culinary arts. Valentine also runs a pasta website (<http://www.letseatpasta.com>) which provides recipes, tutorials, and pasta products. ♪

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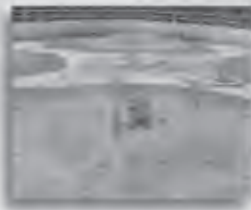


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