The Village of Western Springs Water System

WHERE DOES YOUR WATER COME FROM?

Since the development of the Western Springs' water system in 1882, the Village has obtained its water from groundwater sources. During the early years these included springs; however, in subsequent years, the Village became dependent upon well water.

Since the late 1950s the Village has become dependent on its deep wells. The Village has three wells, two deep wells and one shallow well. Of the two deep wells, one draws water from the Galesville aquifer and the other draws water from both Galesville and Mt. Simon aquifers. These aquifers are part of the Cambrian-Ordovician aquifer system which consists of underground rivers passing through sandstone formations which extend north into Wisconsin. Many communities throughout the upper Midwest obtain their drinking water from this aquifer system.

Figure 20. The Cambrian–Ordovician aquifer system, which consists of predom-inantly sandstone aquifers separated by poorly permeable confining units, extends over a large part of the north-central United States.

Modified from Young, H.L., 1992b, Hydrogeology of the Cambrian-Ordovician aquifer system in the northern midwest, United States, with a section on Ground-water quality by D.I. Siegel: U.S. Geological Survey Professional Paper 1405–B, 99 p.

HOW DOES YOUR WATER GET TO YOU?

The Village's current water production system consists of three wells, a treatment plant, three storage tanks, the connecting water mains and the associated equipment. The Village has a 2 million gallon standpipe located near Lyons Township High School and a 1 million gallon elevated tank located at Spring Rock Park, both of which pressure the current system. The Village has over 52 miles of water main, of which approximately 77% is over 40 years in age.

The Village completed a major renovation of the water treatment plant in 2013 which transitioned the Village from a lime softening treatment process to a low pressure reverse osmosis process (LPRO). The Village of Western Springs' average daily consumption levels range from approximately 1.2 – 2.8 millions of gallons per day (MGD) and the treatment plant is able to produce nearly 600 million gallons of water per year.

Well #1, which is only used in emergencies, is a shallow well, drilled to a depth of 385 feet below the surface within the St. Peter Formation. Well #1 was drilled in 1924 and currently has a capacity just under 780 gallons per minute (GPM) or a maximum of 1.1 MGD. This well has a high total hardness (approximately 55 grains, 942 mg/L) and iron, but meets all federal primary drinking water standards. When this well is operated to distribution, residents will often notice a change in the water quality.

Well #3 is one of the primary sources of water for the Village. Drilled in 1955 to the Ironton-Galesville formation to the depth of approximately 1,600 feet, well #3 is a deep well and the production capacity is approximately 1,300 GPM or a maximum of 1.8 MGD. The well contains natural fluoride, low sodium and meets all other measurements for water quality. It also has an emergency diesel generator to supply electricity to the well, if needed. Well #3 was recently out of service due to unforeseen circumstances.

Well #4 is a deep well drilled in 1966 to the Mt. Simon formation and is approximately 1,900 feet below the surface. This well has a production capacity of approximately 1,100 GPM or a maximum of 1.6 MGD. Total hardness on this well is lower than well #3. The well was rehabilitated in 2010, 1998 and prior to that in 1990.

THE TREATMENT PROCESS

Beginning in 2011, the Village transitioned from lime softening to low pressure reverse osmosis. Low Pressure Reverse Osmosis (LPRO) is a water purification technology that uses a semipermeable membrane to remove larger particles from drinking water. Reverse osmosis can remove many types of molecules and ions from solutions, including bacteria, and is used in both industrial processes and the production of potable water. The technology is most commonly found in desalination plants and other rural treatment plants in the United States.

After the feed water is processed through the Village's RO trains no more than 45% of the raw water from the deep wells is bypassed and blended back into the RO water to allow for adjustments to taste and texture. The water is then chlorinated before going out to the Village's distribution system.

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WATER TESTING AND DATA

Currently, Water Department staff performs testing on the finished water leaving the plant four times a day. This testing includes: total hardness, calcium hardness, alkalinity, iron, pH, turbidity, fluoride, TDS, total chlorine, and free chlorine. The Village also conducts weekly BacT and chlorine residual samples at various locations in distribution. Details regarding those samples and sampling locations can be found on the IEPA's Water Watch Website.
The following data is required to be submitted to the IEPA on the listed timelines below. All sample data submitted to the IEPA is conducted by a third party, independent lab.

DISTRIBUTION

Program	# of Samples	Frequency
Coliform	15	Monthly
Lead/Copper	30	Every 3 Years
Disinfection By-Products	2	Yearly

TREATMENT PLANT- FINISHED WATER

Program	# of Samples	Frequency
Coliform	1	Weekly
Combined Radium	1	Yearly
Gross Alpha	1	Every 3 Years
Inorganics	1	Every 3 Years
Nitrate	1	Yearly
Nitrite	1	Every 3 Years
Synthetics	2	Every 3 Years
Vinyl Chloride	1	Every 3 Years
Volatiles	1	Every 3 Years

WELL #1, #3, AND #4- RAW WATER

Program	# of Samples	Frequency
Coliform	1	Monthly
Inorganics	1	Every 3 Years
Nitrate	1	Every 3 Years
Nitrite	1	Every 3 Years
Combined Radium	1	Every 3 Years
Synthetics	1	Every 3 Years
Vinyl Chloride	1	Every 3 Years
Volatiles	1	Every 3 Years

Per the Safe Water Drinking Act the Village is required to produce an annual report known as the Consumer Confidence Report (CCR). A CCR is an annual water quality report delivered by community water systems to their customers. The CCR includes information on source water, the levels of detected contaminants, compliance with drinking water rules, and some educational language. The reports are due to customers by July 1st each year. The Village mails a copy to each address, posts the report in the Village Hall Lobby, and makes it available on the Water Department webpage.

UPDATE ON WELL #3 REPAIRS

Restoration of Well #3 was completed on June 2nd and the well was brought back online. Watering restrictions were lifted on June 5th. Between June 2nd and July 13th, Well #3 was being chlorinated and run to the reservoir on a supplemental basis dependent upon demand. Well #4 was softened through the RO plant. As of Thursday, July 13th, we have been able to soften Well #3 through the RO plant, as well, on a supplemental basis.
Some additional repairs to the lightning suppression and controls systems are still required and parts are currently under manufacture; however, water quality should be returning to normal.

WATER QUALITY DATA

Well #4…	Hardness(avg)	Iron (avg)
with Well #1	265	0.38
with Well #3 chlorinated	184	0.15
with Well #3 treated w/ RO	113	0.06

CONTACT INFORMATION

If residents are experiencing issues with the taste or quality of the water at their home they are encouraged to contact the Water Department at 708-246-1800 x 214. Plant operators can follow up regarding various issues and if needed take a water sample for testing.

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