

2204 Griffith Drive • Champaign, IL 61820
T 217-333-2210 • F 217-333-4983
www.isws.illinois.edu

May 4, 2017

~~XXXXXXXXXX~~
~~XXXX~~ S. Wheeling Road
Prospect Heights, IL 60070

~~XXXXXXXXXXXX~~

We are enclosing copies of each of the analyses made on samples of untreated and treated water collected April 3, 2017, from your well near Prospect Heights in Cook County. The relevant sample numbers are: ~~XXXXXX~~ and ~~XXXXXX~~.

The analysis shows the untreated sample to be moderately mineralized and very hard. The iron and manganese levels are low enough that I would not expect significant staining due to these elements. The hardness in this sample is sufficient to cause the formation of a large amount of scale in hot water heaters, and to consume a large amount of soap when used for washing or laundry purposes.

The arsenic content of both samples is well below the federal maximum contaminant level of 10 µg/L. The nitrate (as N) content of both samples is well below the federal maximum contaminant level of 10 mg/L.

The water has a dissolved solids content higher than the EPA's secondary MCL. This can impart a taste to the water that some individuals may find unpleasant. The water also has a sulfate level approaching, but still under, its secondary MCL. This may give the water a bitter taste and can cause a laxative effect, especially for individuals who are not accustomed to drinking that water. The sulfate can be removed, along with the other minerals, by the use of demineralization such as reverse-osmosis.

The analysis of the treated sample looks very similar to that of the untreated sample.

None of the other parameters tested appear unusual or excessive for Illinois ground water. However, our laboratory is only capable of identifying a limited number of the contaminants found in the Safe Drinking Water Act. Testing for bacteria, radionuclides, and synthetic organic contaminants, if desired, must be arranged through other laboratories. A listing of such laboratories can be found at www.epa.state.il.us/well-water/list-accredited-labs.html or in your yellow pages under "water".

If we can be of further assistance, please let us know.

Sincerely,



Daniel L. Webb
Lab Supervisor, Chemistry & Technology Section
217/244-0625

jt

The analytical methods used for the samples are as follows:

US EPA 200.7: Metals and Trace Elements by Inductively Coupled Argon Plasma-Atomic Emission Spectrometry:

iron, Fe	sodium, Na	nickel, Ni	beryllium, Be
manganese, Mn	barium, Ba	copper, Cu	potassium, K
calcium, Ca	boron, B	zinc, Zn	cobalt, Co
magnesium, Mg	chromium, Cr	aluminum, Al	lithium, L
molybdenum, Mo	strontium, Sr	tin, Sn	titanium, Ti
vanadium, V	silica, SiO ₂	phosphorus, P	

US EPA Method 300.0: Inorganic anions by Ion Chromatography

chloride, Cl nitrate, NO₃-N sulfate, SO₄ fluoride, F bromide, Br

US EPA Method 200.9: Trace Elements by Graphite Furnace Atomic Absorption Spectrometry

arsenic, As

US EPA Method 150.1: pH, Electrometric

SM19, 2320-B: Alkalinity, electrometric titration, mg/L as CaCO₃

SM18,2540-C: Total Dissolved Solids Dried at 180°C

US EPA Method 180.1: Turbidity by Nephelometry

Hach Method 8025: Color, Platinum-Cobalt Standard Method

SM18,2340-B: Hardness by Calculation

SM18, 5310B: Non-volatile Organic Carbon



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WATER SAMPLE DATA
LABORATORY SAMPLE NUMBER: ~~XXXXXX~~

SOURCE: PRIVATE WELL
WELL#:
LOCATION: PROSPECT HEIGHTS
COUNTY: COOK
TOWNSHIP: 42N
RANGE: 11E
SECTION: 27
PLOT:
TREATMENT:

OWNER: ●●●●●●●●●●
WELL DEPTH:
DATE COLLECTED: 4/3/2017
DATE RECEIVED: 4/4/2017
FIELD TEMPERATURE (F): ND
COMMENTS: Sample collected at spigot from pressure tank. Page 3 of 4.

PARAMETER	RESULT	UNITS	PARAMETER	RESULT	UNITS
Iron (Total Fe):	0.093	mg/L	Fluoride (F):	0.40	mg/L
Potassium (K):	4.69	mg/L	Chloride (Cl):	35.3	mg/L
Calcium (Ca):	66.0	mg/L	Nitrate (NO3-N):	< 0.04	mg/L
Magnesium (Mg):	45.4	mg/L	Phosphorus (P):	< 0.074	mg/L
Sodium (Na):	64.9	mg/L	Sulfate (SO4):	238	mg/L
			Bromide (Br)	0.09	mg/L
Aluminum (Al):	< 37	µg/L			
Arsenic (As):	< 0.79	µg/L			
Barium (Ba):	20.2	µg/L			
Beryllium (Be):	< 0.56	µg/L			
Boron (B):	773	µg/L			
Chromium (Cr):	< 5.9	µg/L	Turbidity (Lab, NTU):	0.3	NTU
Cobalt (Co):	< 13	µg/L	Color (PCU):	< 1.3	PCU
Copper (Cu):	15.0	µg/L	pH (Lab):	7.68	
Lithium (Li):	< 110	µg/L			
Manganese (Mn):	2.0	µg/L			
Molybdenum (Mo):	32	µg/L			
Nickel (Ni):	< 43	µg/L			
Strontium (Sr):	1976	µg/L			
Tin (Sn):	< 87	µg/L			
Titanium (Ti):	< 0.57	µg/L	Alkalinity (CaCO3):	188	mg/L
Vanadium (V):	< 47	µg/L	Hardness (as CaCO3):	352	mg/L
Zinc (Zn):	184	µg/L	Silica (SiO2):	14.6	mg/L
			Total Dissolved Solids:	588	mg/L
			Non-Volatile Org. Carbon (Tot., as C):	1.19	mg/L

< = Below detection limit (i.e. < 1.0 = less than 1.0)
mg/L = milligrams per liter
ND = Not determined/Information not available
NTU = nephelometric turbidity units

µg/L = micrograms per Liter
hardness = (Ca mg/L * 2.497) + (Mg mg/L * 4.118)
1 mg/L = 1000 µg/L
PCU = platinum-cobalt units

Analyzed by: Rita Bargon, Tanya Grandt, Ruth Ann Nichols, Kaye J Surratt, and Daniel L Webb



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WATER SAMPLE DATA
LABORATORY SAMPLE NUMBER: ~~XXXX~~

SOURCE: PRIVATE WELL
WELL#:
LOCATION: PROSPECT HEIGHTS
COUNTY: COOK
TOWNSHIP: 42N
RANGE: 11E
SECTION: 27
PLOT:
TREATMENT: CHLORINATION

OWNER: ~~XXXXXXXX~~
WELL DEPTH:
DATE COLLECTED: 4/3/2017
DATE RECEIVED: 4/4/2017
FIELD TEMPERATURE (F): ND
COMMENTS: Sample collected from kitchen sink tap. Page 4 of 4.

PARAMETER	RESULT	UNITS	PARAMETER	RESULT	UNITS
Iron (Total Fe):	0.054	mg/L	Fluoride (F):	0.40	mg/L
Potassium (K):	4.51	mg/L	Chloride (Cl):	35.2	mg/L
Calcium (Ca):	66.2	mg/L	Nitrate (NO3-N):	< 0.04	mg/L
Magnesium (Mg):	42.3	mg/L	Phosphorus (P):	< 0.074	mg/L
Sodium (Na):	63.0	mg/L	Sulfate (SO4):	237	mg/L
			Bromide (Br)	0.09	mg/L
Aluminum (Al):	< 37	µg/L			
Arsenic (As):	< 0.79	µg/L			
Barium (Ba):	19.4	µg/L			
Beryllium (Be):	< 0.56	µg/L			
Boron (B):	752	µg/L			
Chromium (Cr):	< 5.9	µg/L	Turbidity (Lab, NTU):	0.2	NTU
Cobalt (Co):	< 13	µg/L	Color (PCU):	< 1.3	PCU
Copper (Cu):	1.8	µg/L	pH (Lab):	7.67	
Lithium (Li):	< 110	µg/L			
Manganese (Mn):	2.2	µg/L			
Molybdenum (Mo):	33	µg/L			
Nickel (Ni):	< 43	µg/L			
Strontium (Sr):	1952	µg/L			
Tin (Sn):	< 87	µg/L			
Titanium (Ti):	< 0.57	µg/L			
Vanadium (V):	< 47	µg/L	Alkalinity (CaCO3):	189	mg/L
Zinc (Zn):	135	µg/L	Hardness (as CaCO3):	340	mg/L
			Silica (SiO2):	14.3	mg/L
			Total Dissolved Solids:	589	mg/L
			Non-Volatile Org. Carbon (Tot., as C):	1.59	mg/L

< = Below detection limit (i.e. < 1.0 = less than 1.0)
mg/L = milligrams per liter
ND = Not determined/Information not available
NTU = nephelometric turbidity units

µg/L = micrograms per Liter
hardness = (Ca mg/L * 2.497) + (Mg mg/L * 4.118)
1 mg/L = 1000 µg/L
PCU = platinum-cobalt units

Analyzed by: Rita Bargon, Tanya Grandt, Ruth Ann Nichols, Kaye J Surratt, and Daniel L Webb



UNDERSTANDING YOUR WATER QUALITY ANALYSIS

Having your well water tested is an important step to ensure safe drinking water. The U.S. Environmental Protection Agency establishes drinking water standards, such as maximum contaminant levels (MCL) and secondary maximum contaminant levels (SMCL), and public water supplies are required to test their water routinely for a list of regulated contaminants. For private well owners, however, water testing is their responsibility. The following guide is intended to help customers understand the results of their water quality analysis.

Analyte	Description	MCL (or SMCL, if noted)	Source	Websites (for more information)
Alkalinity	Measure of bicarbonate, carbonate, or hydroxide constituents; not detrimental to humans; IDPH recommends 30-400 mg/L for drinking water.		IDPH	http://www.idph.state.il.us/envhealth/pdf/DrinkingWater.pdf
Aluminum	Above the SMCL may result in colored water.	0.05 to 0.2 mg/L	US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm
Arsenic	Naturally occurring in some groundwater throughout Illinois. EPA indicates some people who drink water containing arsenic in excess of the MCL for many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.	0.010 mg/L (=10 µg/L)	ISWS	http://www.isws.illinois.edu/gws/archive/arsenic/ilsources.asp
			US EPA	http://water.epa.gov/drink/contaminants/index.cfm
Barium	Naturally occurring, possible discharge of drilling wastes and metal refineries; erosion of natural deposits. Some people who drink water containing barium in excess of the maximum contaminant level (MCL) for many years could experience an increase in their blood pressure.	2 mg/L	US EPA	http://water.epa.gov/drink/contaminants/index.cfm http://water.epa.gov/drink/contaminants/basicinformation/barium.cfm
Beryllium	Naturally enters water through the weathering of rocks and soils or from industrial wastewater discharges. Some people who drink water containing beryllium in excess of the maximum contaminant level (MCL) for many years could develop intestinal lesions.	0.004 mg/L (=4 µg/L)	US EPA	http://water.epa.gov/drink/contaminants/Index.cfm http://water.epa.gov/drink/contaminants/basicinformation/beryllium.cfm
Calcium	(See hardness)			
Chloride	Naturally occurring; runoff from road deicing; pollution from brine or industrial or domestic wastes; high levels can cause salty taste and be corrosive to iron pipe.	SMCL = 250 mg/L	IDPH	http://www.idph.state.il.us/envhealth/pdf/DrinkingWater.pdf
			US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm
Chromium	Found naturally in rocks, plants; most common forms of chromium that occur in natural waters are trivalent chromium (chromium-3), and hexavalent chromium (chromium-6). Chromium-3 is a nutritionally essential element in humans and is often added to vitamins as a dietary supplement. Chromium-3 has relatively low toxicity and would be a concern in drinking water only at very high levels of contamination; Chromium-6 is more toxic and poses potential health risks (allergic dermatitis, possibly carcinogenic).	0.1 mg/L	US EPA	http://water.epa.gov/drink/contaminants/Index.cfm
Color	Visible tint in the water (yellow/tan/brown); can be caused by decaying vegetation.	SMCL = 15 units	US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm
Copper	Short-term = gastrointestinal distress, and with long-term exposure may experience liver or kidney damage. Treatment technique regulation-action level 1.3 mg/L; SMCL = 1.0 mg/L (above SMCL = metallic taste; blue-green staining)	1.3 mg/L; 1.0 mg/L	US EPA	http://water.epa.gov/drink/contaminants/basicinformation/copper.cfm
Fluoride	Commonly added to community supplies (to 1 mg/L) to promote dental health. Excessive consumption over a lifetime may lead to increased likelihood of bone fractures in adults, and may result in effects on bone leading to pain and tenderness. Children may have an increased chance of developing pits in the tooth enamel, along with a range of cosmetic effects to teeth. EPA has both an MCL and a SMCL.	4 mg/L	US EPA	http://water.epa.gov/drink/contaminants/index.cfm
		SMCL = 2 mg/L	US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm