

The cover features a light blue background with a white wavy line at the top. A clear glass is shown at the bottom, with water being poured into it from a tap, creating a dynamic splash and bubbles. The text is positioned on the left side of the image.

CITY OF NORMAN

# **WATER UTILITY REPORT 2018**



*Sadie Holland enjoys a cup of water  
from the Water Taste Test Contest at Earth Day 2019.  
Photo by Bryce Holland.*

## **ABOUT SOURCE WATER**

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some constituents. The presence of some constituents does not necessarily indicate that water poses a health risk. More information about constituents and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain parameters in water provided by public water systems.

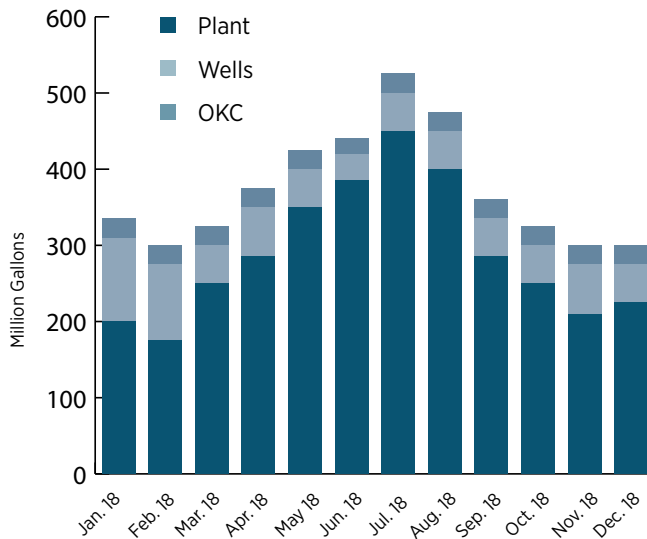
Food and Drug Administration regulations establish limits for constituents in bottled water, which must provide the same protection for public health, although these regulations are less stringent than those for public water systems.

Some people may be more vulnerable to certain constituents in drinking water than the general population. Immunocompromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk for infection. These people should seek advice about drinking water from their health care providers.

## 2018 WATER QUALITY DATA

Parameter	City of Norman Water Treatment Plant Average	Well Water Average	Units
Total Hardness	72.7	116	mg/L as Calcium Carbonate
Calcium Hardness	33.0	55.1	mg/L as Calcium Carbonate
Magnesium	39.0	no data	mg/L as Calcium Carbonate
Total Alkalinity	58.0	223	mg/L as Calcium Carbonate
Chloride	24.7	8.89	mg/L
pH	8.96	8.04	pH units
Fluoride	0.65	0.31	mg/L
Chloramine	3.21	no data	mg/L
Turbidity	0.07	0.45	NTU

## 2018 WATER PRODUCTION



Norman's lowest monthly water consumption for 2018 was February, at 303.6 million gallons; the highest monthly water consumption was July at 548.8 million gallons. This 80.8% increase between February and July is the result of lifestyle changes associated with seasonal usage.

The peak daily water usage occurred on July 16, when 21.3 million gallons of water was consumed, about 292.1 gallons per person. Minimum daily water usage occurred on December 6, when 11.6 million gallons was consumed, or 159.1 gallons per person.

The City's Water Treatment Division purchases one million gallons of treated water each day from Oklahoma City through a contract signed in 2015 by the Norman Utilities Authority. This purchase is necessary to meet Norman's annual water supply needs.

\*Population taken from number of customers served by Norman WTP in 2018 (Pop. 72,928)



## 2018 DETECTABLE CONTAMINANTS TABLE (WATER WELLS)



	Nitrate-Nitrite level (ppm)	Fluoride level (ppm)	Barium level (ppb)	Selenium level (ppb)	Arsenic level (ppb)	Chromium (ppb)	Adjusted Gross Alpha (pCi/L)	Uranium (ppb)
Well #1	0.14	0.623	71.2			4.4	1.14	9.1
sample date	7/16/2018	7/16/2018	7/16/2018			7/16/2018	*	*
Well # 2							3.85	18
sample date							1/18/2018	1/18/2018
Well # 3A	0.53	0.24	234	3.5	0.36	46	3.6	10.1
sample date	2/15/2018	9/5/2017	9/5/2017	9/5/2017	8/2/2017	9/5/2017	2/28/2017	2/28/2017
Well # 8	0.44	0.86	194	6.5	1.0	48	9.8	25
sample date	2/15/2018	5/17/2016	5/17/2016	5/17/2016	2/15/2018	5/17/2016	2/28/2017	2/28/2017
Well # 20	0.60		688	8.0	3.2	7.9	5.5	8.1
sample date	2/15/2018		3/1/2016	3/1/2016	8/2/2017	3/1/2016	2/28/2017	2/28/2017
Well #31	0.76	0.25	96	11	4.8	26	0.30	3.3
sample date	5/3/2018	2/23/2017	2/23/2017	2/23/2017	5/1/2018	2/23/2017	7/6/2017	7/6/2017
Well # 33	0.55	0.32	220		0.59	51	6.3	6.0
sample date	2/22/2018	11/20/2012	11/2/2012		3/30/2017	11/20/2012	7/6/2017	7/6/2017
Well # 34	0.74	0.39	215	3.6	0.59	72	6.8	7.0
sample date	3/8/2018	10/14/2016	10/14/2016	10/14/2016	8/2/2017	10/14/2016	2/16/2017	2/16/2017
Well # 38	0.64	0.33	279	2.9		50	5.3	9.3
sample date	3/8/2018	10/14/2016	10/14/2016	10/14/2016		10/14/2016	7/6/2017	7/6/2017
Well # 39	0.36	0.76	217	19	5.6	84	6.8	5.9
sample date	2/8/2018	4/12/2016	4/12/2016	4/12/2016	3/5/2018	4/12/2016	2/28/2017	2/28/2017
Well # 40	0.30	0.29	231		0.87	46	7.3	6.0
sample date	2/8/2018	11/20/2012	11/20/2012		2/5/2014	11/20/2012	2/28/2017	2/28/2017
Well # 41	0.45	0.22	236	2.4	2.6	31	5.8	4.4
sample date	2/8/2018	9/5/2017	9/5/2017	9/5/2017	8/2/2017	9/5/2017	4/24/2014	4/24/2014
Well # 42	0.65	0.18	371	0.98		16	8.6	3.0
sample date	2/8/2018	9/5/2017	9/5/2017	9/5/2017		9/5/2017	3/5/2018	3/5/2018
Well # 43	0.62	0.19	395			4.0	3.5	1.8
sample date	2/8/2018	10/9/2017	10/9/2017			10/9/2017	4/24/2014	4/24/2014
Well # 44	0.22	0.35	1.82		0.95	98	7.1	5.1
sample date	2/8/2018	10/9/2017	10/9/2017		12/29/2015	10/9/2017	4/24/2014	4/24/2014
Well # 45	0.24	0.12	183	0.81	0.7	73	6.3	4.6
sample date	2/15/2018	10/9/2017	10/9/2017	10/9/2017	10/9/2017	10/9/2017	2/28/2017	2/28/2017
Well # 46	0.18	0.31	165	2.3	1.9	57	3.0	7.8
sample date	2/22/2018	10/9/2017	10/9/2017	10/9/2017	9/5/2017	10/9/2017	5/17/2017	5/17/2017



## 2018 DETECTABLE CONTAMINANTS TABLE (WATER WELLS)



	Nitrate-Nitrite level (ppm)	Fluoride level (ppm)	Barium level (ppb)	Selenium level (ppb)	Arsenic level (ppb)	Chromium (ppb)	Adjusted Gross Alpha (pCi/L)	Uranium (ppb)
Well # 47	0.42	0.18	427		0.71	11	6.8	1.7
sample date	2/15/2018	10/9/2017	10/9/2017		9/5/2017	10/9/2017	9/22/2016	9/22/2016
Well # 48	0.31	0.33	211	13	6.2	93	6.9	13
sample date	2/8/2018	11/13/2017	11/13/2017	11/13/2017	9/5/2017	11/13/2017	3/8/2018	3/8/2018
Well # 49		0.59	199		2.7	16	3.0	9.8
sample date		11/13/2017	11/13/2017		9/5/2017	11/13/2017	5/17/2017	5/17/2017
Well # 51	0.21	0.3	217		1.3	65	14	7.3
sample date	2/8/2018	4/4/2017	4/4/2017		4/4/2017	4/4/2017	5/17/2017	5/17/2017
Well # 52	0.14	0.13	145	1.49	9.40	16.4	3.07	20.4
sample date	1/25/2018	4/30/2018	4/30/2018	4/30/2018	*	4/30/2018	*	*
Well # 55	0.21	0.27	176	1.1	4	37	3.4	5.1
sample date	2/22/2018	10/9/2017	10/9/2017	10/9/2017	10/9/2017	10/9/2017	1/5/2017	1/5/2017
Well # 56	0.22	0.15	367	2.0	4.4	10	5.9	5.2
sample date	2/22/2018	8/23/2017	8/23/2017	8/23/2017	4/11/2017	8/23/2017	9/22/2016	9/22/2016
Well # 57	0.19	0.27	241	1.1	2.8	49	5.0	7.1
sample date	2/22/2018	10/9/2017	10/9/2017	10/9/2017	10/9/2017	10/9/2017	4/11/2017	4/11/2017
Well # 58	0.17	0.23	212	2.3	4.3	47	8.6	6.8
sample date	2/22/2018	8/23/2017	8/23/2017	8/23/2017	4/11/2017	8/23/2017	2/16/2017	2/16/2017
Well # POE2	0.21	0.43	245	8.9	0.9	66		9.0
sample date	2/15/2018	10/14/2016	10/14/2016	10/14/2016	2/9/2017	10/14/2016		3/6/2014
Well # POE3	0.26	0.46	58		0.44	1.2	1.6	
sample date	2/28/2018	10/9/2017	10/9/2017		2/9/2017	10/9/2017	4/13/2010	
Well # POE04		0.22	213	2	2.6	33	7.3	5.3
sample date		7/11/2017	7/11/2017	7/11/2017	*	7/11/2017	11/7/2016	11/7/2016

### 2018 ADDITIONAL DETECTED CONTAMINANTS

	Cyanide	Simazine	Pentachlorophenol	2,4-D	Nitrite
Well #1		0.42		0.30	0.067
Well #3A			0.16		
Well #52	0.18				
POE03		0.45			

\* indicates a composite of quarterly data

As of June 2016, Well 49 does not provide water to the City of Norman drinking water system.  
 As of June 2018, Well 2 does not provide water the the City of Norman drinking water system.  
 As of October 2018, Well 52 does not provide water to the City of Norman drinking water system.

Blanks indicate the value is UNDER the detection limit.

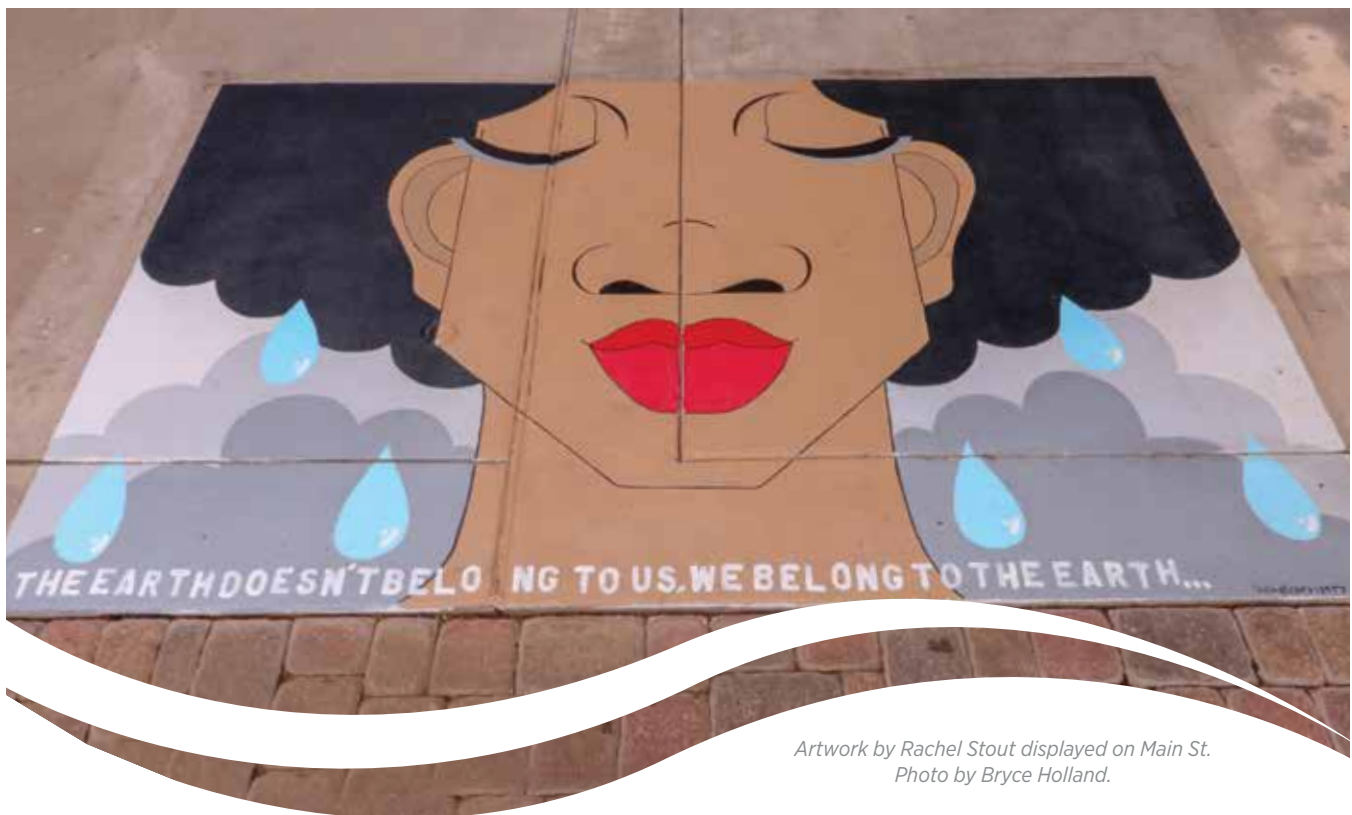
# WATER QUALITY SUMMARY 2018 WHOLESALE PURCHASE SYSTEMS, DISTRIBUTION SYSTEM AND WATER TREATMENT PLANT

DETECTED CONTAMINANTS	UNITS	IDEAL GOAL (EPA'S MCLG)	HIGHEST LEVEL ALLOWED (EPA'S MCL)	NORMAN WTP PWS ID 1020801	HEFNER WTP PWS ID 1020902	DRAPER WTP PWS ID 1020902B	Purchase systems of City of Norman			COMPLIANCE	MAJOR SOURCES IN DRINKING WATER
							UNIVERSITY of OKLAHOMA 3001414	*GRIFFIN MEMORIAL HOSPITAL PWS ID 3001404	*TURTLE CREEK MHP PWS ID 3001409		
Inorganic Compounds											
Fluoride	ppm	4	4	Highest level - 2018	Average level detected in most recent testing - 2018					YES	Added during treatment for dental health or dissolved from natural deposits
				0.78	0.63	0.69					
Lead	ppb	0	AL = 15	2018 Most Recent Testing - 90th Percentile						YES	Corrosion of household plumbing; erosion of natural deposits
				<5.00	<1.00	<5.00	6.9	<5.00			
Barium	ppm	2	2	Most recent testing 2015	Highest level, most recent testing - 2013					YES	Discharge of Drilling Wastes; discharge from metal refineries; erosion of natural deposits
				0.06	0.05	0.06					
Copper	ppm	0	AL = 1.3	2018 Most Recent Testing - 90th Percentile						YES	Corrosion of household plumbing; erosion of natural deposits
				0.07	0.19	74.40	94.60	7.40			
Arsenic	ppb	0	10	Most recent testing 2014	Highest level, most recent testing - 2013					YES	Erosion of natural deposits; runoff from orchards; runoff from electronics and glass production wastes
				<2.00	<2.00	<2.00					
Nitrate-Nitrite	ppm	10	10	Highest level, most recent testing - 2018						YES	Runoff from fertilizer; leaching from septic tanks, sewage or erosion of natural deposits
				0.37	0.20	0.03					
Organic Compounds											
Simazine	ppb	4	4	0.475- composite of quarterly data	Non-detect	Non-detect				YES	synthetic organic chemical used in herbicides
2,4-D	ppb	70	70	0.2- highest single reading, 2018	Non-detect	Non-detect				YES	synthetic organic chemical used in herbicides
Radiological											
				Most recent testing- 2017	Most recent testing- 2018					YES	Decay of natural and man-made deposits
Gross Alpha	pCi/L	0	15	1.4	<3.00	<3.00					
Gross Beta	pCi/L	0	50	<2.24	7.31	<4.00					
Radium 226 + 228	pCi/L	0	5	3.71	<1.00	<1.00					
Uranium	ppb	0	30	<1.00	<1.00	<1.00					
Disinfection By-Products Stage 2 Rule Monitoring											
Total Trihalomethanes	ppb	0	80 (LRAA)	Most recent systemwide distribution testing - 2018						YES	By-product of drinking water disinfection
				Highest Locational Running Annual Average (LRAA)							
				8.45	19.82	67.1	8.78	3.80	8.90		
				Range detected							
Haloacetic Acids	ppb	0	60 (LRAA)	Highest Locational Running Annual Average (LRAA)						YES	By-product of disinfection by ozone
				12.5	8.74	43.17	8.31	1.80	7.40		
				Range detected							
				<5.00 - 14.0	4.51 - 13.85	23.24 - 44.43	2.2 - 14.1	1.80	7.40		
Bromate	ppb	0	10	Highest quarterly average (RAA) - <5.10					YES	By-product of disinfection by ozone Only Hefner Plant uses Ozone	
			(RAA)	Range detected - <5.00 - <5.10							

# WATER QUALITY SUMMARY 2018 WHOLESALE PURCHASE SYSTEMS, DISTRIBUTION SYSTEM AND WATER TREATMENT PLANT *cont'd*

DETECTED CONTAMINANTS	UNITS	IDEAL GOAL (EPA'S MCLG)	HIGHEST LEVEL ALLOWED (EPA'S MCL)	NORMAN WTP PWS ID 1020801	HEFNER WTP PWS ID 1020902	DRAPER WTP PWS ID 1020902B	Purchase systems of City of Norman			COMPLIANCE	MAJOR SOURCES IN DRINKING WATER
							UNIVERSITY of OKLAHOMA 3001414	*GRIFFIN MEMORIAL HOSPITAL PWS ID 3001404	*TURTLE CREEK MHP PWS ID 3001409		
Precursor Removal											
Total Organic Carbon6 (TOC)			TT = Ratio must be greater than or equal to 1.00 for compliance	Average of monthly ratios						YES	Naturally occurring
				1.28	1.84	0.42					
				Monthly Ratio = (% TOC removed) divided by (% TOC removal required)							
Disinfection Residual											
Chloramines as Chlorine	ppm	NA	MRDL	Average readings						YES	Water additive used to control microbes
			4.0	3.21	3.53	3.37	1.34	2.21	0.17		
			Range detected	2.55 - 3.90	2.0 - 5.0	2.1 - 3.8	0.1 - 2.4	1.9 - 2.4	0.05 - 0.5		
Microbiological											
Coliform Bacteria	CFUs	0	Presence of Coliform bacteria in <5% of samples	Highest monthly %			0% total coliform positive samples	0% total coliform positive samples	0% total coliform positive samples	YES	Naturally present in the environment
				Month having highest % positive (2 samples each) August - 1.59% November - 1.87%	Month having the highest % positive - September/October/December (Each month had 1 positive sample in 243 samples - 0.412 %)						
				Four positive Coliform results in 1033 samples (0.39% occurrence)	Four positive Coliform results in 2638 samples (0.152 % occurrence)						
Clarity											
Turbidity	NTU % > 0.3	NA	TT => 0.3 NTU in not more than 5% of samples	Monthly lowest % < 0.3 NTU						YES	Lime and/or calcium carbonate particles from softening efforts; soil runoff
				99.2%	99.5%	99.5%					
				Highest single reading							
			0.56	0.64	0.40						
Long Term 2 Enhanced Surface Water Treatment Rule											
Cryptosporidium	cysts/L	0	NA	Average for 2018: <0.01 cysts/L	Most recent testing 2016-2017. Source water averages are <0.075 cysts/L, which is considered low risk category.				YES	Storm runoff, agricultural runoff and leaking sewage systems	

\* In 2018 the State re-classified these locations as part of the NUA Public Water System.



Artwork by Rachel Stout displayed on Main St.  
Photo by Bryce Holland.

## DEFINITIONS & ABBREVIATIONS USED IN THE WATER QUALITY SUMMARY

**EPA** – US Environmental Protection Agency

**MCL** – Maximum Contaminant Level is the highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

**MCLG** – Maximum Contaminant Level Goal is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow a margin of safety.

**MRDL** – Maximum Residual Disinfectant Level is the highest level of a disinfectant allowed in drinking water based on an annual average and does not apply to individual samples. There is convincing evidence that addition of a disinfectant is necessary to control microbial contaminants. Compliance with the MRDL is calculated as a Running Annual Average (RAA).

**MRDLG** – Maximum Residual Disinfectant Level Goal is the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

**RAA** – Running Annual Average is the average of the last 12 months or last 4 quarters that the facility

is in operation. Disinfectants and disinfectant by-products monitored in this way are Total Trihalomethanes, Haloacetic Acids, Bromate and Chloramines.

**LRAA** – Locational Running Annual Average is the average of the last 12 months or last 4 quarters for each identified monitoring location in the distribution system. This differs from past requirements, which determined compliance by calculating the RAA of samples from all monitoring locations across the distribution system. Total Trihalomethanes and Haloacetic Acids are monitored in this way.

**AL** – Action Level

**TT** – Treatment Technique - a required process intended to reduce the level of a contaminant in drinking water.

**NTU** – Nephelometric Turbidity Units (a measure of clarity)

**pCi/L** – picocuries per liter (a measure of radioactivity)

**ppm** – parts per million or milligrams per liter (mg/L)

**ppb** – part per billion or micrograms per liter (ug/L)

**CFU** – Colony Forming Units

< – less than > – greater than





## MAXIMUM CONTAMINANT LEVEL (MCL) LIST



Parameter	Units	MCLG	MCL	Major Sources in Drinking Water
Cyanide	ppm	0.2	0.2	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
Simazine	ppm	0.004	0.004	Herbicide runoff
Pentachlorophenol (PCP)	ppm	0	0.001	Discharge from wood preserving factories; herbicide runoff
2,4-D	ppm	0.07	0.07	Runoff from herbicide used on row crops
Nitrite	ppm	1	1	Runoff from fertilizer use; leaking from septic tanks, sewage; erosion of natural deposits
Nitrate-Nitrite	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Fluoride, Total	ppm	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from deposits
Barium, Total	ppb	2000	2000	Discharge from drilling water; discharge from metal refineries; erosion of natural deposits
Selenium, Total	ppb	50	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Arsenic, Total	ppb	0	10	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Chromium, Total	ppb	100	100	Discharge from steel and pulp mills; erosion of natural deposits
Lead	ppb	0	AL= 15	Corrosion of household plumbing systems; erosion of natural deposits
Copper	ppm	1.3	AL= 1.3	Corrosion of household plumbing systems; erosion of natural deposits
Turbidity	NTU	n/a	TT= >0.3 NTU in not more than 5% of samples	Soil runoff
Total Organic Carbon (TOC)	ppm		TT= ratio must be greater or equal to 1.00 for compliance	Naturally occurring
Gross Alpha	pCi/L	15	15	Decay of natural and man-made deposits
Gross Beta	pCi/L	50	50	
Radium 226-228	pCi/L	5	5	
Total Trihalomethanes	ppb	0	80 (RAA)	By-product of drinking water chlorination
Haloacetic Acid	ppb	0	60 (RAA)	By-product of drinking water chlorination
Bromate	ppb	none	10	By-product of drinking water chlorination
Coliform Bacteria	CFU	0	presence of coliform bacteria in <5% of samples	Naturally present in the environment
Parameter	Units	MCLG	MRDL	Major Sources in Drinking Water
Chloramine	ppm	none	4	Water additive used to control microbes

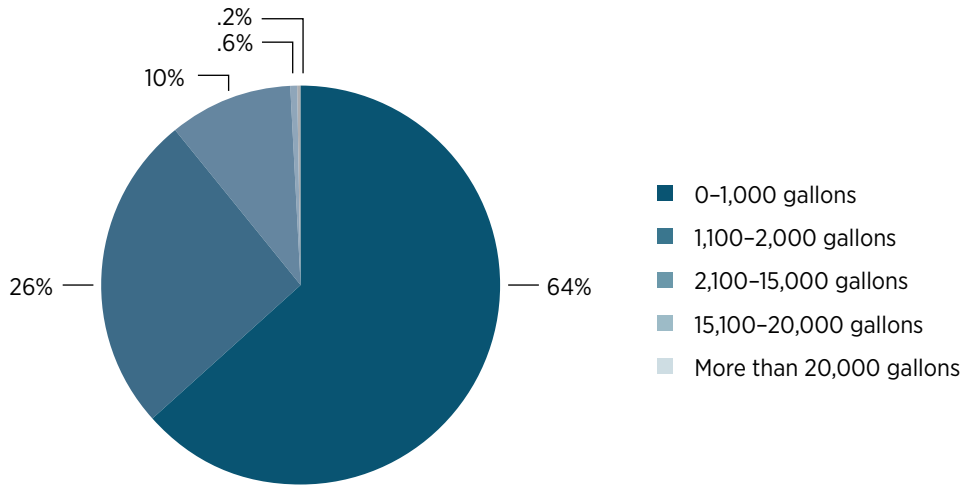
## UNREGULATED CONTAMINANTS MONITORING RULE 3—DETECTED ANALYTES

Detected Contaminant	Units	IDEAL GOAL (EPA's MCLG)	HIGHEST LEVEL ALLOWED (EPA's MCL)	Average		Range		Average and Range	MAJOR SOURCES IN DRINKING WATER
				Norman	Oklahoma City	Norman	Oklahoma City	University of Oklahoma	
Chlorate	ppb	NA	NA	234	36.4	<20-970	< 20.0-36.4	<20	By-product of drinking water disinfection, making of dyes, explosives, matches, printing fabrics, herbicides, antiseptics, toothpastes and in paper pulp processing.
Hexavalent Chromium	ppb	NA	NA	41	0.14	0.08-97	< 0.03-0.39	2.8	Naturally occurring. By-product of making steel and other alloys, plating, dyes and pigments, leather and wood preservation.
Total Chromium	ppb	100	100	41	0.43	0.31-89	< 0.20-0.47	2.6	Naturally occurring. By-product of making steel and other alloys, plating, dyes and pigments, leather and wood preservation.
Molybdenum	ppb	NA	NA	1.4	2.76	1.0-2.6	< 1.00-3.24	1.38	Naturally occurring. By-product of making steel and other alloys, lubricants, dyes and pigments, fertilizers.
Strontium	ppb	NA	NA	442	295	89-820	42.9-763	145	Naturally occurring. By-product of making electronics and fireworks.
Vanadium	ppb	NA	NA	28	2.78	2.8-140	< 0.20-7.50	10.1	Naturally occurring. By-product of making steel alloys, chemical manufacturing, ceramics and batteries.



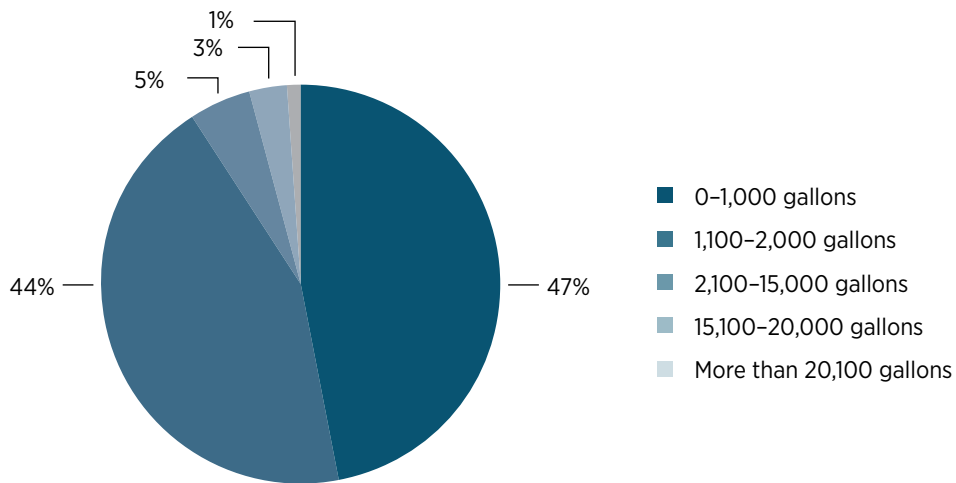
Photo by Bryce Holland, taken at Earth Day 2019 at the Water Treatment Booth.

## 1998 HOUSEHOLD WATER CONSUMPTION



In 1998, prior to the voter approval of our current water rate structure, 64% customers used greater than 20,000 gallons of water. High usage is typically driven by irrigation.

## 2018 RATE DRIVEN HOUSEHOLD WATER CONSUMPTION



The 2018 chart shows the percentage of household customers using greater than 15,000 gallons per month has declined over the years by 25%. This observation indicates Odd/Even irrigation requirements and the tiered rate structure are changing customer usage patterns.



## FOR MORE INFORMATION

The Norman Utilities Authority members are also the elected Mayor and City Council members. Their meetings are held at the same time as City Council meetings and are open to the Public. Meeting schedule: Second and fourth Tuesday of each month at City Hall, beginning at 6:30pm.

### **For Questions Regarding Water Quality Phone (405) 321-2182**

Geri Wellborn.....Water Treatment Plant Manager.....E-mail: [geri.wellborn@normanok.gov](mailto:geri.wellborn@normanok.gov)  
Scott Aynes .....Water Treatment Plant Supervisor.....E-mail: [scott.aynes@normanok.gov](mailto:scott.aynes@normanok.gov)  
Rachel Croft.....Laboratory Manager .....E-mail: [rachel.croft@normanok.gov](mailto:rachel.croft@normanok.gov)

### **For Questions Regarding City Services**

The Action Center.....Phone (405) 366-5396 .....E-mail: [action.center@normanok.gov](mailto:action.center@normanok.gov)  
Customer Service/Billing.....Phone (405) 366-5320  
Water/Sewer Emergency .....Phone (405) 329-0703 (Daytime) .....(405) 321-1600 (After hours)

Citizens can go to [www.greennorman.org](http://www.greennorman.org) to get more conservation information.



CITY OF  
**NORMAN**

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