City of Spokane Environmental Programs

2018 Technical Drinking Water Report

CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
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REPORT ON CITY OF SPOKANE DRINKING WATER FOR 2018

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Executive Summary

Spokane's drinking water meets or exceeds all State and Federal drinking water quality standards. This annual report prepared by the City of Spokane's Environmental Programs supports and informs our Water Department annual Consumer Confidence Report, distributed as the City of Spokane Water Quality Report. This report provides wholesale water customers, businesses and the public with a more detailed discussion, with additional references, a complete list of the year's testing, and thorough consideration on the reasons for testing.

The City tested for 35 different inorganic parameters. There were detections of arsenic and nitrate.

The drinking water was tested for 205 organic compounds, and none were detected.

Radionuclide testing revealed levels of gross alpha emitters, Radium 228, and radon in the drinking water.

The City disinfects the drinking water with chlorine gas, resulting in the generation of low concentrations of disinfection byproducts. The city tests for nine of these compounds quarterly. There were detections at the farthest reaches of the distribution system.

The City tests both the source water and the distribution system for microbiological contaminants. In 2018, there was one unconfirmed detection of total coliform in the distribution system.

2018 was the fourth round of Unregulated Contaminant Monitoring Rule (UCMR) testing. This federal program under the Safe Drinking Water Act requires large water systems such as the City to sample for contaminants that are unregulated but are a health concern. There were detections of low concentrations of haloacetic acid compounds in the distribution system.

In July, the City completed the removal of all remaining lead service lines in the distribution system. In August, the City performed the regular lead and copper rule in home sampling. 56 homes were sampled. The City is in compliance with the 90th percentile homes at 1.41 ppb for lead and 80 ppb for copper. The action level for lead is 15 ppb and 1300 ppb for copper.

The following narrative and attachments summarize and explain recent results in more detail. Appendix V and the last two pages of this narrative (General Information) contain information relevant to the annual Consumer Confidence Report. As such, the information may be redundant relative to the main text of this report.

The detections mentioned are below applicable drinking water standards. The results were within the range of results from previous testing. Arsenic and radionuclides, including radon, are from naturally occurring geological sources. Nitrate is primarily from anthropogenic sources such as fertilizer and septic systems, but has declined in recent years with the conversion of individual septic systems to centralized sewer systems.

Introduction and Source Water Information

All of the City of Spokane's drinking water comes from the Spokane Valley-Rathdrum Prairie Aquifer - designated a sole source aquifer in 1978. The Spokane Valley-Rathdrum Prairie Aquifer slowly flows through two different states and a number of different counties and is the source water for a large number of water purveyors, including the City of Spokane. This water and any contaminants freely move across political boundaries. Many groups and/or private individuals may claim this water to be used for diverse purposes. Some of these competing interests include (but are not limited to) drinking water rights, irrigation, fisheries, hydroelectric power, and industrial processes. The Spokane Aquifer (that portion of the larger aquifer lying within Washington State) and the Spokane River exchange water. While the aquifer contains a large volume of water, many factors play into the volume of water in the Spokane River, complicating the management of these resources. Some of these factors include pumping for irrigation and potable water, hydroelectric dam operations, and the variations of weather and precipitation. Learn more about the Spokane Valley-Rathdrum Prairie Aquifer by downloading the Aquifer Atlas from www.spokanecounty.org/1227/SVRP-Aquifer-Home

The City of Spokane's Water Department delivers up to 180 million gallons of clean, safe drinking water every day to more than 220,000 people in our community. The City's water system is the third largest in the state of Washington, behind Seattle and Tacoma. Our water system includes pumps, reservoirs, seven source wells, and more than 1,000 miles of water mains and smaller water lines that bring water from our wells to homes and businesses**.**

Due to the porous nature of the ground surface and the number of potential contaminant sources, the possibility of contaminating the aquifer exists if good housekeeping measures are not followed for all activity over and adjacent to the aquifer. The physical and economic health of our area depends on the quality of our drinking water. In order to safeguard water quality, the City continues its efforts to make available to the community information about, and appropriate disposal mechanisms for, dangerous wastes that are generated in the Aquifer Sensitive Area. The City, in cooperation with other local governments and the Spokane Aquifer Joint Board, continues to work toward strengthening regulations for the storage and use of critical materials to safeguard the local water supply.

For additional information regarding the City of Spokane's drinking water or related issues:

City of Spokane Water Department	(509) 625-7800	www.spokanewater.org/
City of Spokane-Environmental Programs	(509) 625-6533	www.greenspokane.org/
Spokane County - Water Resources	(509) 477-7579	www.spokanecounty.org/1192/Water-Resources
Spokane Regional Health District – Environmental Health Div.	(509) 324-1560	www.srhd.org/programs-and-services/#-environmental-hazards-resources
Washington State Department of Health - Eastern Regional Office (Drinking Water)	(509) 329-2100	www.doh.wa.gov/YouandYourFamily/HealthyHome/DrinkingWater
Washington State Department of Ecology – Eastern Regional Office	(509) 329-3400	www.ecy.wa.gov/
U.S. EPA Safe Drinking Water Hotline	1-800-426-4791	www.epa.gov/your-drinking-water

Table 1 List of Resources

QUALITY Drinking Water
An Invaluable Community Resource

INORGANICS

The City typically has a Washington State Department of Ecology accredited laboratory run a full drinking water inorganics analysis once every three years on each of our source wells. In addition, nitrates are tested annually, as required. The most recent inorganic results from accredited laboratories are in Appendix III. **All sources are in compliance with existing National Primary Drinking Water Regulations for Inorganic Maximum Contaminant Levels (MCL)**.

ARSENIC

The arsenic readings in 2018 at the Nevada, Parkwater and Ray Street wells were 2.77 µg/L, 3.18 µg/L and 3.86 µg/L respectively. The MCL for arsenic is 10 µg/L, or parts per billion (ppb). For City drinking water, 5.13 µg/L of arsenic in 2009 from Ray Street Well represents the highest result to date.

City drinking water currently meets EPA's drinking water standard for arsenic. However, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's health effects against the cost of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Further information concerning health impact issues, regulatory requirements, and compliance costs for water utilities/water customers can be found at safewater.zendesk.com/hc/en-us/sections/202366558Arsenic and www.doh.wa.gov/Portals/1/Documents/Pubs/331-167.pdf.

LEAD - COPPER

Lead and copper testing of sources and at-risk residences were conducted in 2018. The highest reading of lead in a home was 3.58 µg/L (ppb). The maximum reading for copper was 154 µg/L. These results for lead and copper continue to be less than the 15 µg/L Action Level for lead and the 1300 µg/L Action Level for copper. The lead results, based on City in-home sampling, also continue to qualify our water system as having "Optimized Corrosion Control."

City drinking water currently meets EPA's drinking water standards for lead and copper. The EPA standard for lead balances the current understanding of lead health effects against the effectiveness and cost of corrosion control processes. The EPA is currently reassessing standards for lead.

In July, the City completed the program to remove lead service lines in the City's water system. In May 2016, the City initiated a project to eliminate the remaining 486 lead service lines. City records indicate that some 981 homes built during World War II originally were connected to the City's distribution system with lead alloy pipes. In addition, before lead solder was banned in 1988, it was commonly used to connect copper piping in homes.

Sampling methods require testing water left sitting in lead-containing pipes for at least 6 hours. This results in a worst-case scenario for lead to move into the water. The City encourages anyone with this kind of plumbing, drawing water for cooking or drinking purposes, to let water run from the tap until cold before filling their container, especially if the water is to be given to infants or children.

For further information concerning lead in drinking water, you can find further information at www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/Contaminants/Lead and www.epa.gov/your-drinking-water/basic-information-about-lead-drinking-water .

Further information about copper in drinking water can be found at www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/Contaminants/Copper and safewater.zendesk.com/hc/en-us/sections/202346427.

Drinking water is only one of many potential sources of exposure to lead. An EPA publication titled "Protect Your Family From Lead In Your Home" can be downloaded from https://www.epa.gov/lead/protect-your-family-lead-your-home.

NITRATE - NITROGEN

The Ray Street Well continues to be monitored quarterly for Nitrate-N. **In 2018, the highest accredited lab quarterly result for the Ray Street Well was 3.32 mg/L,** or parts per million (ppm)**.** The federal MCL for Nitrate –N is 10 mg/L. The result from a duplicate sample analyzed by the Riverside Park Water Reclamation Facility (RPWRF) Laboratory was 3.41 mg/L. The quarterly results for Ray Street Well for 2018 are as follows:

Sample Date	*Accredited Laboratory Result - Nitrate-N, mg/L*	*RPWRF Laboratory Result – Nitrate+Nitrite-N, mg/L*
30-January-2018	3.32	3.41
24-April-2018	3.11	3.27
17-July-2018	2.94	2.84
30-October-2018	3.20	3.27

Table 2 Ray Street Well Nitrate levels

All other City sources average 1.13mg/L for 2018, less than a fifth of the MCL for nitrate-nitrogen. The 2018 results for the other City source wells are as follows:

Source Well	*Accredited Laboratory Result - Nitrate-N, mg/L*	*RPWRF Laboratory Result – Nitrate+Nitrite-N, mg/L*
Well Electric	1.47	1.63
Parkwater	1.48	1.55
Hoffman	1.53	1.54
Grace	0.65	0.64
Nevada	0.77	0.80
Central	0.88	0.91
Federal MCL	10	

Table 3 City Source Well Nitrate levels

The following map depicts the results of monitoring wells sampled during 2018 by the Spokane County Water Resources Program. The results are for nitrate+nitrite as nitrogen from monitoring wells and springs along the Spokane River and purveyor wells over the Spokane Aquifer. Where multiple sampling events occurred at the same location, the highest result is depicted on the map. There are a number of wells that had results between 2.51and 5.23 mg/L. These wells, including the City of Spokane Ray Street Well, are typically located along the edge of the aquifer and appear to be subject to nitrate loading to the aquifer that originates at higher elevations.

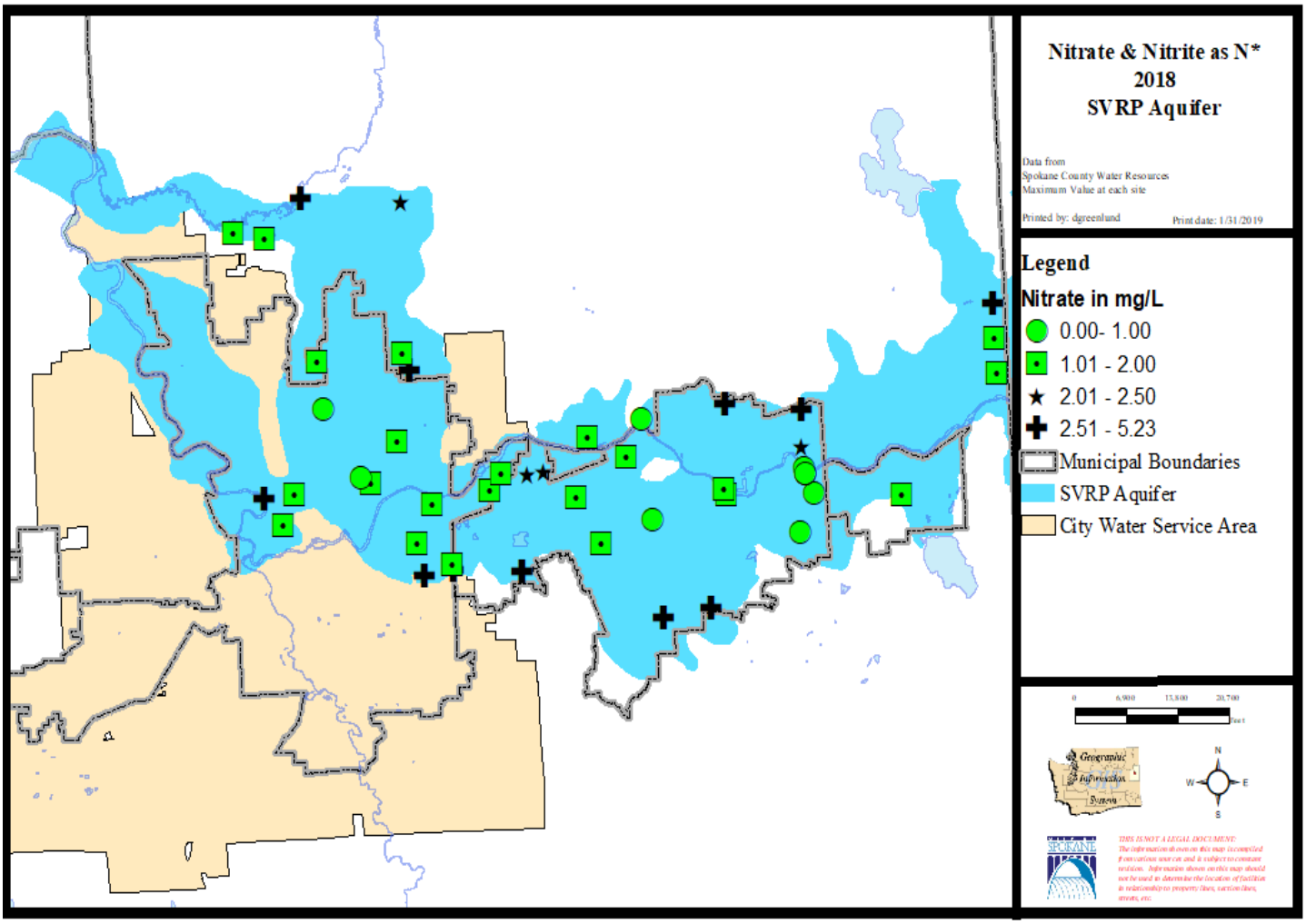


Figure 1 Aquifer Nitrate level

For further information concerning nitrate in drinking water and potential health issues, you can access the EPA website at safewater.zendesk.com/hc/en-us/sections/202346267-Nitrate or the Washington State Dept. of Health website at www.doh.wa.gov/Portals/1/Documents/Pubs/331-214.pdf.
(Para ver información adicional, visite al; www.doh.wa.gov/Portals/1/Documents/Pubs/331-214s.pdf)

RADIONUCLIDES & RADON

RADIONUCLIDES

In 2018, the City of Spokane tested the Grace, and Well Electric source wells for Radium 228 and Gross Alpha. The table below has the results.

	Gross Alpha Particle Activity	Radium 228	Combined Radium 226/228 *
Grace	< 3	< 0.149	1.5
Well Electric	<3	0.306	1.5
MCL	15		5

Table 4 Radionuclide Results

All results in picocuries per liter (pCi/L)

Gross Alpha particle activity has an MCL of 15 pCi/L. The federal MCL for Radium 226 and Radium 228 (combined) is 5 pCi/L. **The City of Spokane results were below the MCL**.

The radionuclide rule allows Gross Alpha results to be used in lieu of Radium 226 if the Gross Alpha particle activity is below 5 pCi/L. If the gross alpha particle activity result is below the detection limit, one-half of the detection limit is used to determine compliance[1]. The radionuclide rule also allows a Gross Alpha particle activity measurement to be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/l. The Gross Alpha activity was below 15 pCi/L so the City did not test for Uranium.

* If the Radium 228 or 226 value is <1.0, a value of zero will be used to calculate the Combined Radium 226/228[2].

For more information on radionuclides in drinking water, access the EPA website at safewater.zendesk.com/hc/en-us/sections/203280387-Radionuclides

RADON

The Water Department monitored the Grace, and Well Electric wells for radon in 2018, with results of 380 pCi/L, and 510 pCi/L respectively.

The Environmental Protection Agency has published a proposed rule for regulating the concentration of radon-222 in drinking water. The rule proposes a maximum contaminant level goal (MCLG) of zero, a maximum contaminant level (MCL) of 300 pCi/L, and an alternative maximum contaminant level (AMCL) of 4000 pCi/L.

Comments for the proposed rule were accepted until February 4, 2000; however no final rule was promulgated and at the current time this regulatory action is not on the EPA agenda list.

Currently, water purveyors are required to inform their customers of known results for Radon-22 testing, which the City of Spokane voluntarily monitors.

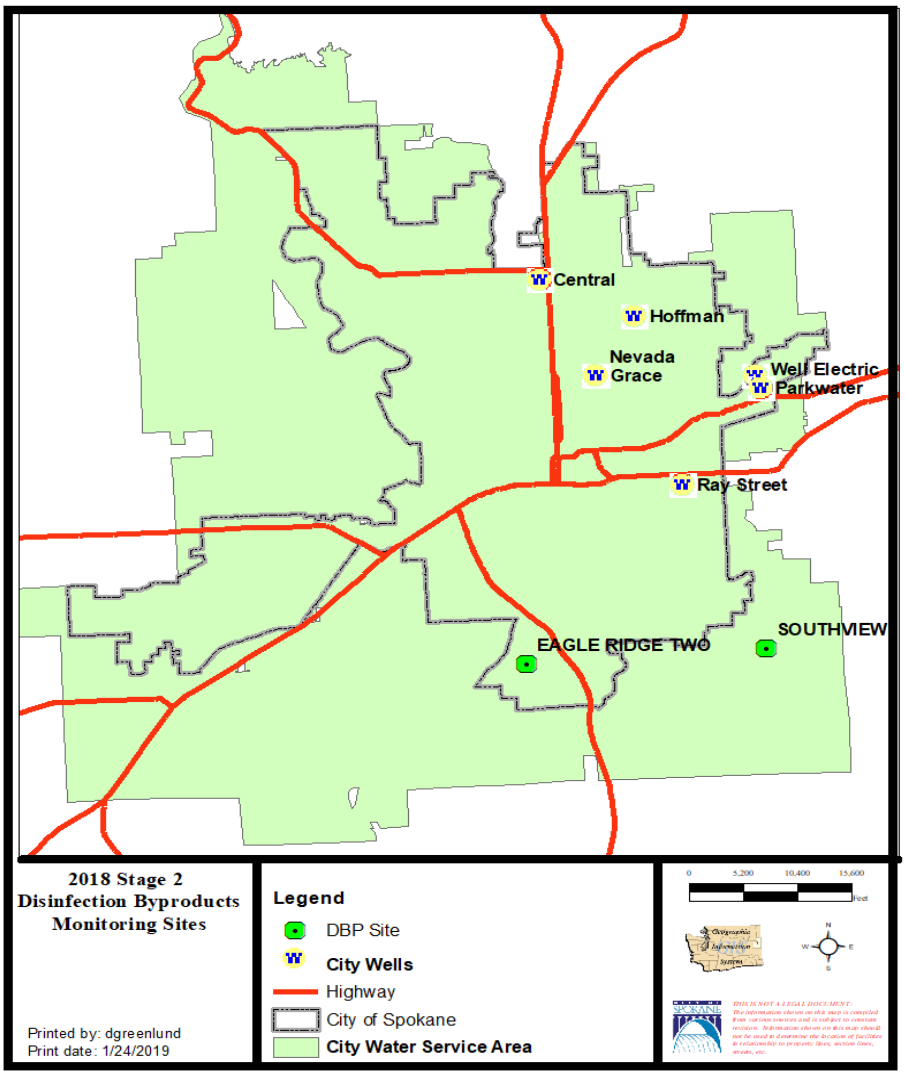
Radon gas is one of a number of radioactive elements that result from the radioactive decay of uranium found locally in natural deposits. Exposure to excessive amounts of radon may increase cancer risk. Most of these risks result from exposure to radon in indoor air. The EPA has determined that 1-2% of the radon in indoor air comes from drinking water. General information concerning radon in the environment and the associated health issues, including drinking water, can be found at www.epa.gov/radon or call the Radon Hotline at *1-800-SOS-RADON [*1-800-767-7236]. An EPA publication titled "A Citizen's Guide to Radon" can be downloaded from www.epa.gov/radon/citizens-guide-radon-guide-protecting-yourself-and-your-family-radon. The EPA has published a National Radon Action Plan (https://www.epa.gov/radon/national-radon-action-plan-strategy-saving-lives) to more broadly mitigate Radon exposure.

[1] 40 CFR 141.26a (5)
[2] 40 CFR 141.26c (3) v

ORGANICS

DISINFECTION BY-PRODUCTS – DISTRIBUTION SYSTEM

The maximum value during 2018 compliance monitoring of the distribution system for total trihalomethanes (TTHM) was 5.331 µg/L and for haloacetic acids (HAA5) was no detection. This is well below the federal MCL of 80 µg/L for total trihalomethanes and 60 µg/L for the sum of five haloacetic acids. The by-products are only detected at the extreme end of the distribution system. The Stage 2 Disinfectants and Disinfection By-products Rule requires a Locational Running Annual Average (LRAA) be used for reporting compliance. This is the average of four quarterly samples for each sampling location. The City uses small amounts of chlorine as a drinking water disinfectant. However, the disinfectants themselves can react with materials in the water to form byproducts, which may pose health risks. The maximum value for TTHM was 3.86 µg/L. Appendix IV has the results for all 2018 quarterly sampling. There were no detections of haloacetic acids at any sampling site in 2018. Unregulated Contaminant Monitoring – Round 4 (UCMR4) included testing for the five haloacetic acids. Three compounds were detected, Bromochloroacetic acid, Dibromoacetic acid and Dichloroacetic acid. UCMR4 has lower reporting limits than the disinfection byproduct rule so although the water was non-detect for these compounds under the Disinfectants and Disinfection Byproducts rule, they exceeded the minimum reporting limits of 0.2 µg/L and 0.3 µg/L set by UCMR4 rules. See Appendix V for complete results of UCMR4.



In 2018, two sites were sampled every quarter. They were Eagle Ridge Two, and Southview. For more information on the Stage 2 DBPR, go to the EPA website water.epa.gov/lawsregs/rulesregs/sdwa/stage2/index.cfm

2018 was the eighth year of sampling under the Stage 2 Disinfectants and Disinfection Byproducts Rule. Starting in 2007 and continuing until 2010, the City Water Department performed assessment monitoring at over 20 locations (approximately five each year) to determine the potential for disinfection by-products (DBP) to be formed during the detention period in the distribution system. The DBP assessment sampling sites were selected from the existing coliform sampling sites. Based on this sampling and analysis of the retention time of water in the distribution system, locations were determined for the Stage 2 distribution system sampling program.

Figure 2 Disinfection Byproduct Monitoring Sites

VOLATILE ORGANICS

In 2018, the City of Spokane tested the Parkwater, Ray Street and Well Electric well stations for Volatile Organic Compounds (VOC). There were no detections. A complete list of the chemicals analyzed is in Appendix I.

Trihalomethanes (THMs, chloroform, bromoform, bromodichloromethane, dibromochloromethane) are one group of volatile organic, disinfection by-products. That is to say, they can originate from chemical interactions between a disinfectant (chlorine gas in the City's system) and any organic matter present in the raw water. **There were no detections of THMs in source water monitoring for 2018**.

SYNTHETIC ORGANICS

The City of Spokane tested the Nevada, Parkwater, Ray Street and Well Electric wells for Synthetic Organic Chemicals (SOC) in 2018. There were no detections. The City conducts tests for 150 different chemicals including pesticides, herbicides, PCB, and phthalates (plasticizers). A complete list of the chemicals analyzed is in Appendix I.

UNREGULATED CONTAMINANT MONITORING - ROUND 4

The Unregulated Contaminant Monitoring Rule (UCMR) is a tool for the EPA to find unregulated contaminants of concern in the nation's drinking water. The contaminants for testing are selected on three main criteria: EPA believes that they are likely to occur in drinking water, they could be harmful, and there are testing methods to look for them in drinking water. UCMR 4 has 30 contaminants including: ten cyanotoxin chemical contaminants, eight pesticides, one pesticide manufacturing byproduct, three semivolitile chemicals, two metals, three alcohols, three Brominated Haloacetic Acid (HAA) groups, and two indicator chemicals. The City was not required to test for cyanotoxin chemical contaminants. Two sets of samples were collected from five source wells. The Brominated Haloacetic Acid groups were sampled at the distribution system disinfection by-product sampling sites. A complete list of the contaminants, analytical results, minimum reporting limits (MRL's), and available Health Reference Levels (HRL's) is in appendix V. For more information on UCMR 4 visit this EPA site https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule. Nationwide results from UCMR 4 will help the EPA determine whether it should regulate a specific contaminant. More information on how the EPA regulates drinking water contaminants is available at https://www.epa.gov/dwucmr.

Dichloroacetic acid was detected in the January 2018 sampling at the Southview tank.

Dibromoacetic acid was detected at both sampling locations in January and at the Southview tank in July.

Bromochloroacetic acid was detected at the Southview tank in both January and July.

These three chemicals are part of the required disinfection by-product sampling the city performs quarterly. The chemicals were not detected in the routine sampling. The routine sampling has a reporting limit of 1 µg/L UCMR4 has lower reporting limits than the disinfection byproduct rule so although the water was non-detect for these compounds under the Disinfectants and Disinfection Byproducts rule, they exceeded the minimum reporting limits of 0.2 µg/L and 0.3 µg/L set by UCMR4 rules. See Appendix V for complete results of UCMR4.

The indicator chemical Total Organic Carbon was detected once at the Central Well. Bromide was detected at the Ray Street Well in both sampling cycles.

MICROBIOLOGICAL CONTAMINANTS

COLIFORM BACTERIA - SOURCE

The City of Spokane well station raw source water (the water before disinfectant chlorination) has been tested regularly for coliform bacteria. While historically there has been no requirement to test for coliform bacteria in source water, the City has monitored for this water quality parameter. More recently, testing requirements to determine whether hydraulic continuity exists with the Spokane River have increased the testing frequency. **In 2018, out of 70 tests for coliform bacteria in the City source water wells, there were no detections of total coliform, and no detections of fecal coliform.**

Out of 400 tests over the five-year period from 2014 through 2010, there have been no detections of total coliform. There have been no detections of fecal coliform in the source water during this time frame.

HETEROTROPHIC PLATE COUNT BACTERIA – SOURCE

In 2018, out of 70 Heterotrophic Plate Count (HPC) tests on source water, there were 13 positive results. The greatest concentration was 43.5 colonies per milliliter of sample at the Central Well. HPC tests were conducted 362 times over the five-year period from 2014 through 2018 on raw source water. There have been 80 positive HPC results. The maximum detection during this five-year period was 681 colonies per milliliter at the Hoffman Well in 2015. Without regard to source water HPC levels, City source water is treated with chlorine to safeguard drinking water quality. This is done based on the historical use of open reservoirs (which no longer exist) and to preserve the sanitary quality when a well or piping is open to the environment during construction, repair or routine maintenance. Some water utilities in this area (drawing from the same aquifer) do not add any disinfectant.

COLIFORM BACTERIA - DISTRIBUTION SYSTEM

Coliform testing is typically done four days a week from various points in the distribution system. The Water Department has more than 220,000 customers. This population tier[3] requires taking 150 samples per month, which was adopted as the target for distribution system coliform monitoring by the Water Dept. in 2007. When a coliform positive test result is reported, re-sampling is done in compliance with the Total Coliform Rule and the Groundwater Rule. **During 2018, the City Water Department had 1,992 coliform bacteria samples analyzed. On August 28th there was one positive total coliform result in the distribution system.** Pursuant to the Revised Total Coliform Rule, three resamples were obtained (one at the original sample site and two nearby customer connections). Also, pursuant to the Groundwater Rule, three raw water samples were taken from source wells contributing to this pressure zone. The coliform detection was **not confirmed**, as all resampling was total coliform-absent. 1,972 coliform bacteria samples were analyzed in 2017 and, 1,973 samples were analyzed in 2016.

The Water Department staff has worked to refine the sampling sites for the distribution system. Concerns about inadvertent contamination of sampling sites and locations that don't adequately represent the distribution of the water system has caused the Water Department staff to establish more dedicated sampling sites at locations more representative of the entire system. Following is a map of the distribution system sampling sites during 2018, overlaid on the City's water service area. It is important to note that the sample sites are evenly placed based on the distribution system, which may not currently reach all parts of the water service area, and population density. Water Department staff state that coliform bacteria have not been confirmed in the distribution system for at least the last 35 years. Sample handling or collection errors are suspected causes of any original detections.

[3] Ref. WAC 246-290-300 (3)(e-Table 2)

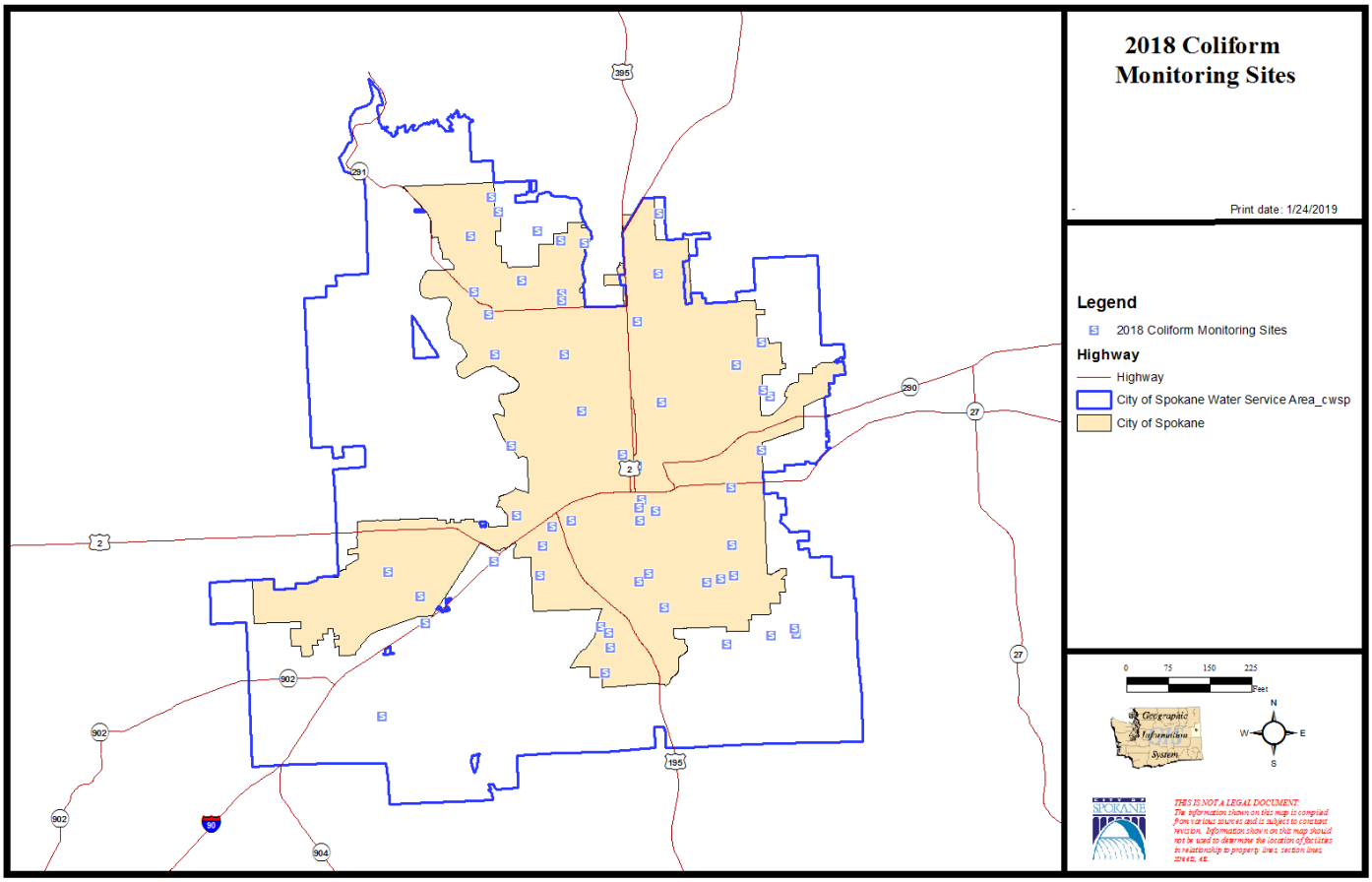


Figure 3 Coliform Monitoring Sites

PROTOZOA

A number of cities and towns throughout the country, in years past, have experienced problems with giardia and/or cryptosporidium getting into the distribution systems. Most times, problems with these parasitic organisms in potable water have been associated with surface water sources. **The City is not aware of, nor has the State Department of Health or Spokane Regional Health District indicated an awareness of, cases where infections with these organisms were traced back to the City's water system**.

Please note that cryptosporidium and other water borne organisms can be spread in many ways. People who become ill as a result of consuming giardia and/or cryptosporidium typically recover after suffering severe bouts of diarrhea. However, small children, people whose immune systems are compromised, or those who are otherwise in poor health can die as a result of these infections. For further information concerning the potential health effects issues, access the websites at the CDC at www.cdc.gov/parasites/crypto/index.html (cryptosporidium) and www.cdc.gov/parasites/giardia/index.html (giardia) and the EPA website at safewater.zendesk.com/hc/en-us/sections/202346417 .

English:
This report contains important information about the drinking water supplied by the City of Spokane. Translate it, or speak with someone who understands it well.

Spanish:
Este reporte contiene información importante acerca del agua potable suministrada por la Ciudad de Spokane. Tradúzcalo, o hable con alguien que lo entiende bien. (Para ver información adicional, visite al; http://espanol.epa.gov/espanol/agua)

Russian:
В этом отчете содержится важная информация относительно питьевой воды, поставляемой службой города Спокэн. Переведите этот отчет или поговорите с тем, кто его хорошо понимает.

Vietnamese:
Bản phúc trình này chứa đựng những thông tin quan trọng về nước uống được cung cấp bởi City of Spokane. Hãy phiên dịch, hay hỏi thăm người nào hiểu rõ về tài liệu này.

GENERAL INFORMATION

Across the nation, the sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and radioactive material and can pick up substances resulting from the presence of animals or human activity.

Contaminants that may be present in source water include:
- Biological contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm run-off, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, storm water run-off, and residential uses.
- Organic chemicals, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water run-off and septic systems.
- Radioactive materials, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food & Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protections for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by contacting the Environmental Protection Agency's Safe Drinking Water Hotline (1-800-426-4791), on line at www.epa.gov/your-drinking-water/safe-drinking-water-hotline, or you can access additional information at EPA website: www.epa.gov/your-drinking-water

HEALTH INFORMATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised 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 from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Additional information concerning:

Radon: During 2018, the City conducted tests at Grace and Well Electric wells for Radon-222. The results were 380 pCi/L, and 510 pCi/L. The EPA has proposed a MCL of 300 pCi/L, which has not been finalized.

Radon is a radioactive gas that you can't see, taste, or smell and is a known carcinogen. Compared to radon entering the home through soil, radon entering the home through tap water will, in most cases, be a small source of radon in indoor air. Breathing air containing radon can lead to lung cancer and/or drinking water containing radon also may cause increased risk of stomach cancer. If

you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 picocuries per liter of air (pCi/L) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information call EPA's Radon Hotline (1-800-577-2366) or, access the EPA website at www.epa.gov/radon/radon-hotlines-and-information-resources

Arsenic: The arsenic readings in 2018 at the Nevada, Parkwater, and Ray Street wells were 2.77, 3.18 and 3.86 ppb respectively. The Maximum Contaminant Level (MCL) for Arsenic is 10 ppb.

City of Spokane drinking water currently meets EPA's revised drinking water standard for arsenic. However, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the cost of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems. Information on arsenic in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at safewater.zendesk.com/hc/en-us/sections/202366558-Arsenic

Lead: In home testing for lead was performed in 2018. The City tested 56 at-risk residences for lead. The single highest result was 3.58 ppb. This result for lead is below the 15 ppb Action Level for lead**.** The lead results, based on City in-home sampling, also continue to qualify our water system as having "Optimized Corrosion Control". Source water is analyzed for lead concurrent with the in-home testing. In 2018 the maximum concentration in the source water testing of all the wells for lead was 0.16 ppb.

All remaining lead service lines have been replaced during a program 2016 to 2018.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Spokane is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline, 1-800-426-4791 or at www.epa.gov/your-drinking-water/basic-information-about-lead-drinking-water.

CITY OF SPOKANE'S SYSTEM

All of the City of Spokane's drinking water comes from the Spokane Valley-Rathdrum Prairie (SVRP) Aquifer - designated a "sole source" aquifer in 1978. The Spokane Aquifer (that portion of the SVRP aquifer lying within Washington State) and the Spokane River exchange water. The rates and locations of exchange are the subject of continued study.

Due to the porous nature of the ground surface and the number of potential contaminant sources, the possibility of contaminating the aquifer exists if good "housekeeping" measures are not followed for all activity over and adjacent to the aquifer. In order to safeguard water quality, the City, in coordination with other stakeholders, is currently implementing a Wellhead Protection Program. This program endeavors to inform the public about the Spokane Valley-Rathdrum Prairie Aquifer, and about appropriate disposal mechanisms for dangerous and/or critical materials that are generated in the Aquifer Sensitive Area. The program is advocating land use regulations to help protect drinking water wells from contamination.

For additional information regarding the City of Spokane's Drinking Water or related issues, you can call:

City of Spokane Water & Hydroelectric Services	509-625-7800
City of Spokane Environmental Programs	509-625-6533

The Mayor recommends Water and Hydroelectric Services policy and rates to the Spokane City Council.
The Council meets most Mondays at 6:00 p.m. in the Council Chambers at
Spokane City Hall (808 W. Spokane Falls Blvd., Spokane, WA).

Appendix I - Tests Run on City of Spokane Water 13-Mar-2019

FIELD TESTS
Chlorine, Total Residual
Conductivity
Hardness
pH
Temperature
Turbidity

RADIONUCLIDES
Alpha emitters (gross)
Radon 222
Radium 228

MICROBES
BACTERIA
Total Coliform - Before & After Treatment
Fecal Coliform - Before & After Treatment
Heterotrophic Plate Count - Raw water

DISINFECTION BY-PRODUCTS
TRIHALOMETHANES
Chloroform
Bromoform
methane, Dibromochloro-
methane, Bromodichloro-
Total Trihalomethanes
FIVE HALOACETIC ACIDS (HAA5)
acetic Acid, Monochloro-
acetic Acid, Dichloro-
acetic Acid, Trichloro-
acetic Acid, Monobromo-
acetic Acid, Dibromo-

GENERAL INORGANICS
Color
Conductivity
Hardness, Total
Total Alkalinity
Total Dissolved Solids
Turbidity

INORGANIC IONS
Ammonia Nitrogen
Chloride
Cyanide
Fluoride
Nitrate Nitrogen
Nitrite Nitrogen
* Phosphorus
Silica
Sulfate

INORGANIC METALS
Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Copper
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Selenium
Silver
Sodium
Thallium
Zinc

VOLATILE ORGANICS
Benzene
benzene, 1,2,3-Trichloro-
benzene, 1,2,4-Trichloro-
benzene, 1,2,4-Trimethyl-
benzene, 1,3,5-Trimethyl-
benzene, Bromo-
benzene, Butyl-
benzene, Chloro-
benzene, Ethyl
benzene, Isopropyl-
benzene, m-Dichloro-
benzene, o-Dichloro-
benzene, p-Dichloro-
benzene, Propyl-
benzene, sec-Butyl-
benzene, tert-Butyl-
Butadiene, Hexachloro-
Chloride, Carbon Tetra-
Chloride, Methylene (aka methane, dichloro)
Chloride, Vinyl
Chloroform (Freon 20)
ethane, 1,1,1,2-Tetrachloro-
ethane, 1,1,1-Trichloro-
ethane, 1,1,2,2-Tetrachloro-
ethane, 1,1,2-Trichloro-
ethane, 1,1-Dichloro-
ethane, 1,2-Dichloro-
ethane, Chloro-
ethene, 1,1-Dichloro-
ethene, cis-1,2-Dichloro-
ethene, Tetrachloro-
ethene, trans-1,2-Dichloro-
ethene, Trichloro-
methane, Bromo-
methane, Bromochloro-
methane, Chloro-
methane, Dibromo-
methane, Dichlorodifluoro-
methane, Trichlorofluoro- (Freon 11)
Naphthalene
propane, 1,2,3-Trichloro-
propane, 1,2-Dichloro-
propane, 1,3-Dichloro-
propane, 2,2-Dichloro-
propene, 1,1-Dichloro-
propene, cis-1,3-Dichloro-
propene, trans-1,3-Dichloro-
Styrene
Toluene
toluene, o-Chloro-
toluene, p-Chloro-
toluene, p-Isopropyl-
Xylene, m&p-
Xylene, o-
Xylene, total

* - Typically run by the City's Wastewater Laboratory only

Appendix I (continued)
SYNTHETIC ORGANICS

2-Chloronaphthalene
2-Methylnapthalene
4-bromophenyl phenyl ether
4-Chlorophenyl phenyl ether
5-Hydroxydicamba
Acenaphthene
Acenaphthylene
Acifluorfen
Adipate, Di-(2-ethylhexyl)
Alachlor
Aldicarb
Aldicarb Sulfone
Aldicarb Sulfoxide
Aldrin
Ametryn
Amtryne
Anthracene
Anthracene, Benz(a)-
Anthracene, Dibenzo(a,h)-
Arochlor 1016
Arochlor 1221
Arochlor 1232
Arochlor 1242
Arochlor 1248
Arochlor 1254
Arochlor 1260
Atraton
Atrazine
Baygon
Benefin
Bentazon
benzene, Hexachloro-
benzoic acid, 3,5-Dichloro-
BHC (alpha)
BHC (beta)
BHC (delta)
Bromacil
Butachlor
Butylate
Carbaryl
Carboxin
Chloramben
Chlordane
Chlordane, alpha-
Chlordane, gamma-
Chlorpropham
Chrysene
Cyanazine
Cycloate
D, 2,4-
Dalapon
DB, 2,4-
DCPA (Dacthal)
DDD, 4,4-
DDE, 4,4-
DDT, 4,4-
Diazinon
Dibenzofuran
Dicamba
Dichlorprop
Dichlorvos
Dieldrin
Diesel (as straight alka chain)
Dimethoate
Dinoseb
Diphenylamine
Diquat
Disulfoton
Disulfoton sulfone
Disulfoton sulfoxide (A)
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endothall
Endrin
Endrin aldehyde
EPTC
Ethoprop
Ethylene Dibromide
Fenamiphos
Fenarimol
Fluoranthene
Fluoranthene, Benzo(b)
Fluoranthene, Benzo(k)
Fluorene
Fluridone
furan, 3-Hydroxycarbo-
furan, Carbo-
Glyphosate
Heptachlor
Heptachlor Epoxide
Hexachloroethane
Hexazinone
Isodrin
Isophorone
Isopropalin
Isosafrole
Lindane
Malathion
Merphos
Methiocarb
Methomyl
Methoxychlor
Methyl paraoxon
Methylparathion
Metolachlor
Metribuzin
Mevinphos
MGK-264
Molinate
N-Nitrosodi-N-propylamine
Napropamide
Nonachlor, cis-
Nonachlor, trans-
Norflurazon
Oxadiazon
Oxamyl
Oxyfluorfen
Pendamethalin
Pentachloronitrobenzene
pentadiene, Hexachlorocyclo-
Perylene, Benzo(g,h,i)
Phenanthrene
phenol, 2,4,6-Trichloro
phenol, 2,4-Dichloro
phenol, 4-Chloro-3-methyl
phenol, Pentachloro-
phenyls, Polychlorinated Bi- (PCB, total Arochlor)
phthalate, Butylbenzyl-
phthalate, Di-(2-Ethylhexyl)-
phthalate, Di-n-Butyl-
phthalate, Diethyl
phthalate, Dimethyl-
Picloram
Profuralin
Prometon
Propachlor
propane, Dibromochloro- (DBCP)
Pyrene
pyrene, Benzo a-
Pyrene, Indeno(1,2,3,c,d)
Safrole
Simazine
T, 2,4,5-
Terbacil
Terbuphos
Toxaphene
TP, 2,4,5-
Trifluralin
Vernolate

* - Typically run by the City's Wastewater Laboratory only

Appendix I (continued)

UNREGULATED CONTAMINANT MONITORING ROUND 4

Germanium
Manganese
Alpha-hexachlorocyclohexane
Chlorpyrifos
Dimethipin
Ethoprop
Oxyfluorfen
Profenofos
Tebuconazole
Total Permethrin (cis - & trans -)
Tribufos
Butylated hydroxyanisole
o-Toluidine
Quinoline
1-butanol
2-methoxyethanol
2-propen-1-ol
Dichloroacetic acid (DCAA)
Monochloroacetic acid (MCAA)
Trichloroacetic acid (TCAA)
Monobromoacetic acid (MBAA)
Dibromoacetic acid (DBAA)
Bromochloroacetic acid (BCAA)
Bromodichloroacetic acid (BDCAA)
Chlorodibromoacetic acid (CDBAA)
Tribromoacetic acid (TBAA)
TOC (total organic carbon)
Bromide

* - Typically run by the City's Wastewater Laboratory only

Appendix II - Annual Testing Summary - Tests Run on City of Spokane Water 13-Mar-2019

2018 DRINKING WATER SOURCE - COMPLETED QUARTERLY MONITORING

	SOURCE #	8	6	5	1	3	4	2
	WELL	CENTRAL	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY STREET	WELL ELECTRIC
BACTERIA								
COLIFORM - RAW SOURCE *								
Total Coliform -number of samples per year / number of positive detections		8 / 0	7 / 0	6 / 0	8 / 0	11 / 0	8 / 0	22 / 0
E. coli - number of samples per year / number of positive detections		8 / 0	7 / 0	6 / 0	8 / 0	11 / 0	8 / 0	22 / 0
HETEROTROPHIC PLATE COUNT - RAW SOURCE *								
number of samples per year / greatest result value		8 / 46	7 / 1	6 / 2	8 / 45	18 / 0	8 / 2	22 / 1
* All operating wells are typically sampled once per month								
INORGANIC								
FULL LIST- ACCREDITED LAB (phase II & V included)	3rd Qtr - Jul				completed-see App. III	completed-see App. III	completed-see App. III	
NITRATE	1st Qtr - Jan						3.32	
	2nd Qtr - April						3.11	
	3rd Qtr - Jul	0.88	0.65	1.53	0.77	1.48	2.94	1.47
	4th Qtr - Oct						3.2	
NITRATE + NITRITE - RPWRF LAB	1st Qtr - Jan						3.41	
	2nd Qtr - April						3.27	
	3rd Qtr - Jul	0.91	0.64	1.54	0.80	1.55	2.84	1.63
	4th Qtr - Oct						3.27	
ORGANIC								
VOLATILES	1st Qtr - Jan					no detections	no detections	
(including TRIHALOMETHANES)	2nd Qtr - April							
	3rd Qtr - Jul							no detections
	4th Qtr - Oct							
SYNTHETIC ORGANICS (515.1, 525.2, 531.1)	1st Qtr - Jan							
	2nd Qtr - April				no detections			
	3rd Qtr - Jul				no detections	no detections	no detections	no detections
	4th Qtr - Oct					no detections	no detections	no detections
RADIOACTIVE CONTAMINANTS								
Radium 228 - pCi/L,	3rd Qtr - Jul		< 0.149					0.31
Gross Alpha - pCi/L	3rd Qtr - Jul		< 3					< 3
Radon - pCi/L	3rd Qtr - Jul		380					510

Appendix III - Drinking Water Inorganics Summary

CITY OF SPOKANE 13-Mar-2019

DRINKING WATER INORGANICS SUMMARY

MOST RECENT WELL STATION MONITORING ANALYTICAL RESULTS

ACCREDITED LABORATORIES

								Maximum Contaminant Levels		CURRENT DATA SUMMARY			
WELL STATION	CENTRAL	ELECTRIC	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	MCL's**	Goals MCLG's	MEAN	MAX	MIN	COUNT
SAMPLING DATE	26-Jul-2016	26-Jul-2016	25-Jul-2017	25-Jul-2017	17-Jul-2018	17-Jul-2018	17-Jul-2018						
LABORATORY	(Anatek)	(Anatek)	(Anatek)	(Anatek)	(Anatek)	(Anatek)	(Anatek)						
ALKALINITY	110	121	86	127	84	143	168	unregulated		120	168	84	7
HARDNESS (as CaCO3) #	122	132	93	144	96	163	201	unregulated		136	201	93	7
CONDUCTIVITY (µmos/cm)	236	278	199	293	201	330	443	700 t		283	443	199	7
TURBIDITY (NTU)	0.112	0.146	0.135	< 0.1	0.181	0.383	0.138	1 t		0.156	0.383	< 0.1	7
COLOR (color units)	< 5.00	< 5.00	< 5	< 5	< 5.00	< 5.00	< 5.00	15 s			< 5.00	< 5.00	7
CHLORIDE	4.27	4.01	4.91	6.87	4.89	7.4	22	250 s		7.8	22.0	4.01	7
TOT. DISSOLVED SOLIDS	118	125	113	168	97	86	235	500 s		135	235	86	7
MAGNESIUM	12.9	13.1	7.95	15.2	8.05	17	16.8	unregulated		13.0	17.0	7.95	7
CALCIUM	26.2	31.1	23.6	31.7	23.7	36.5	53	unregulated		32	53	23.6	7
ORTHO-PHOSPHATE	not tested	not tested	not tested	not tested	not tested	not tested	not tested	unregulated		N/A	N/A	N/A	0
AMMONIA	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	unregulated			< 0.02	< 0.02	7
CYANIDE	< 0.05	< 0.05	< 0.01	< 0.01	< 0.05	< 0.05	< 0.05	0.2	0.2		< 0.05	< 0.01	7
FLUORIDE	< 0.071	0.073	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	2 s	4	0.073	0.073	< 0.071	7
NITRATE (NO3-N)	0.87	1.33	0.79	1.30	0.765	1.48	2.94	10	10	1.35	2.94	0.765	7
NITRITE (NO2-N)	< 0.063	< 0.063	< 0.063	< 0.063	< 0.1	< 0.1	< 0.1	1	1		< 0.1	< 0.063	7
SILICA (SI02)	11.4	11.9	11..1	11.8	10.2	11	18.9	unregulated		10.7	18.9	10.2	7
SULPHATE	12.8	10.4	7.82	13	6.76	14.6	15.7	250 s	400	11.6	15.7	6.8	7
ALUMINUM	< 0.00151	0.0016	< 0.01	< 0.01	< 0.05	< 0.05	< 0.05	0.05 - 0.2 s			< 0.05	< 0.05	7
ANTIMONY	0.00033	0.0006	< 0.001	< 0.001	< 0.003	< 0.003	< 0.003	0.006	0.006	0.00013	< 0.00300	< 0.001	7
ARSENIC	0.00349	0.00507	0.00261	0.00276	0.00277	0.00318	0.00386	0.010	0	0.0034	0.00507	0.00261	7
BARIUM	0.0233	0.0205	0.0155	0.0276	0.0167	0.0274	0.0595	2	2	0.0272	0.0595	0.0155	7
BERYLLIUM	< 0.00011	< 0.00011	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.004	0.004		< 0.0003	< 0.00011	7
CADMIUM	< 0.00029	< 0.00029	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.005	0.005		< 0.001	< 0.00029	7
CHROMIUM	< 0.0004	< 0.0004	< 0.001	< 0.001	< 0.007	< 0.007	< 0.007	0.1	0.1		< 0.007	< 0.0004	7
COPPER	0.00443	0.00098	0.0026	< 0.001	0.0145	< 0.02	0.00506	TT	1.3	0.0055	0.0145	0.00098	7
IRON	<0.0018	<0.0018	0.0144	< 0.01	< 0.1	< 0.1	< 0.1	0.3 s			< 0.1	<0.0018	7
LEAD	< 0.00031	< 0.00031	0.00262	0.00271	< 0.001	< 0.001	< 0.001	TT	0	0.0027	0.00271	< 0.00031	7
MANGANESE	0.00032	0.00035	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	0.05 s		0.0003	0.00035	< 0.001	7
MERCURY	<0.00004	0.00006	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	0.002	0.002	0.00006	0.00006	<0.00004	7
NICKEL	0.00065	0.00081	< 0.001	0.00103	< 0.005	< 0.005	< 0.005	0.1 * * *	0.1 * * *	0.00083	0.00103	< 0.001	7
SELENIUM	0.00066	0.00115	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	0.05	0.05	0.00091	0.00115	< 0.001	7
SILVER	< 0.00034	< 0.00034	< 0.001	< 0.001	< 0.1	< 0.1	< 0.1	0.1 s			< 0.1	< 0.00034	7
SODIUM	2.83	3.44	2.8	4.16	2.8	4.6	10.8	unregulated		4.5	10.8	2.8	7
THALLIUM	< 0.00029	< 0.00029	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.0005		< 0.001	< 0.00029	7
ZINC	0.00993	0.00803	0.0143	0.00965	0.00949	0.0104	0.00981	5 s		0.01023	0.0143	0.00803	7

RESULTS ARE IN mg/L EXCEPT WHERE OTHERWISE NOTED

* TT = Treatment Technique; s = Secondary MCL; t = State only MCL

* * Aluminum is a secondary regulated contaminant

* * * The MCL and MCLG for Nickel were remanded on February 9, 1995, monitoring requirements still in effect

divide by 17.1 to convert to grains per gallon

Appendix IV - Disinfection Byproducts - Distribution System

Distribution System Sampling for Disinfection Byproducts

Reported 13-Mar-2019

Location	Southview	Eagle Ridge II	Southview	Eagle Ridge II	Southview	Eagle Ridge II	Southview	Eagle Ridge II	Southview	Eagle Ridge II	MAXIMUM CONTAMINANT LEVELS (MCL)
Date	11-Aug-2016	11-Aug-2016	16-Nov-2016	16-Nov-2016	16-Feb-2017	16-Feb-2017	11-May-2017	11-May-2017	10-Aug-2017	10-Aug-2017	
Organics Lab	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Total Chlorine Residual, mg/L											
TRIHALOMETHANES, results micrograms/L											
Chloroform	**0.27**	< 0.5	**0.69**	**0.45**	**0.28**	<0.5	**0.29**	<0.5	**0.29**	<0.5	
Bromodichloromethane	**0.68**	< 0.5	**1.44**	**0.69**	**0.54**	< 0.5	**0.74**	**0.68**	**0.77**	< 0.5	
Dibromochloromethane	**1.18**	< 0.5	**1.81**	**0.83**	**0.78**	<0.5	**1.01**	**0.77**	**1.32**	<0.5	
Bromoform	**0.77**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.6**	< 0.5	**1.6**	< 0.5	
TOTAL TRIHALOMETHANES	**2.90**	< 0.5	**3.94**	**1.97**	**1.6**	< 0.5	**2.64**	**1.45**	**3.98**	< 0.5	80
LRAA	**3.95**	**1.53**	**3.52**	**1.11**	**3.07**	**0.62**	**2.77**	**0.86**	**3.04**	**0.86**	
HALOACETIC ACIDS (HAA5), results micrograms/L											
Chloroacetic acid	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	
Bromoacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Di-Chloroacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Tri-Chloroacetic acid\	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Di-Bromoacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
TOTAL HAA (5)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	60
Chloro,bromoacetic acid *	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	

Results are in μg/L (ppb) except where otherwise noted
* State Unregulated
Prepared by Environmental Programs Department

Distribution System Sampling for Disinfection Byproducts

Location	Southview	Eagle Ridge II	Southview	Eagle Ridge II	Southview	Eagle Ridge II	Southview	Eagle Ridge II	Southview	Eagle Ridge II	MAXIMUM CONTAMINANT LEVELS (MCL)
Date	16-Nov-2017	16-Nov-2017	30-Jan-2018	30-Jan-2018	10-May-2018	10-May-2018	17-Jul-2018	17-Jul-2018	8-Nov-2018	8-Nov-2018	
Organics Lab	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Total Chlorine Residual, mg/L											
TRIHALOMETHANES, results micrograms/L											
Chloroform	**0.73**	**0.37**	**0.47**	**0.38**	**0.5**	<0.5	**<0.5**	<0.5	**0.76**	0.57	
Bromodichloromethane	**1.46**	**0.65**	**1.07**	**0.62**	**1.04**	<0.5	**0.78**	<0.5	**1.58**	0.85	
Dibromochloromethane	**1.67**	**0.72**	**1.37**	**0.79**	**1.31**	<0.5	**1.29**	<0.5	**2.14**	1.12	
Bromoform	**0.84**	< 0.5	0.63	<0.5	0.77	<0.5	**0.9**	<0.5	**0.83**	0.51	
TOTAL TRIHALOMETHANES	**4.70**	**1.74**	**3.54**	**1.79**	**3.62**	0	**2.97**	0	**5.31**	3.05	80
LRAA	**3.23**	**0.80**	**3.72**	**1.25**	**3.96**	**0.88**	**3.71**	**0.88**	**3.86**	**1.21**	
HALOACETIC ACIDS (HAA5), results micrograms/L											
Chloroacetic acid	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	
Bromoacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Di-Chloroacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Tri-Chloroacetic acid\	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Di-Bromoacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
TOTAL HAA (5)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	60
Chloro,bromoacetic acid *	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	

Results are in μg/L (ppb) except where otherwise noted
* State Unregulated
Prepared by Environmental Programs Department

Appendix V - Unregulated Contaminant Monitoring - Round 4 (UCMR 4)

3/13/2019

Chemical	January 2018 Results (µg/L)							minimum	Health Reference
List 1	Central	Hoffman	Nevada	Parkwater	Ray Street	Southview	Eagle Ridge Two	reporting level (µg/L)	Concentrations (µg/L)
germanium	ND	ND	ND	ND	ND	N/A	N/A	0.3	NA
manganese	ND	ND	ND	ND	ND	N/A	N/A	0.4	300
alpha-hexachlorocyclohexane	ND	ND	ND	ND	ND	N/A	N/A	0.01	0.006 to 0.6
chlorpyrifos	ND	ND	ND	ND	ND	N/A	N/A	0.03	2
dimethipin	ND	ND	ND	ND	ND	N/A	N/A	0.2	140
ethoprop	ND	ND	ND	ND	ND	N/A	N/A	0.03	1.14 to 114
oxyfluorfen	ND	ND	ND	ND	ND	N/A	N/A	0.05	200
profenofos	ND	ND	ND	ND	ND	N/A	N/A	0.3	0.3
tebuconazole	ND	ND	ND	ND	ND	N/A	N/A	0.2	190
total permethrin (cis - & trans -)	ND	ND	ND	ND	ND	N/A	N/A	0.04	3.344 to 334.4
tribufos	ND	ND	ND	ND	ND	N/A	N/A	0.07	0.6
butylated hydroxyanisole	ND	ND	ND	ND	ND	N/A	N/A	0.03	NA
o-toluidine	ND	ND	ND	ND	ND	N/A	N/A	0.007	NA
quinoline	ND	ND	ND	ND	ND	N/A	N/A	0.02	0.01 to 1
1-butanol	ND	ND	ND	ND	ND	N/A	N/A	2	700
2-methoxyethanol	ND	ND	ND	ND	ND	N/A	N/A	0.4	NA
2-propen-1-ol	ND	ND	ND	ND	ND	N/A	N/A	0.5	35
Dichloroacetic acid (DCAA)	N/A	N/A	N/A	N/A	N/A	0.206	ND	0.2	
Monochloroacetic acid (MCAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	2	
Trichloroacetic acid (TCAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	0.5	
Monobromoacetic acid (MBAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	0.3	
Dibromoacetic acid (DBAA)	N/A	N/A	N/A	N/A	N/A	0.454	0.313	0.3	
Bromochloroacetic acid (BCAA)	N/A	N/A	N/A	N/A	N/A	0.329	ND	0.3	
Bromodichloroacetic acid (BDCAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	0.5	
Chlorodibromoacetic acid (CDBAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	0.3	
Tribromoacetic acid (TBAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	2	
Associated Indicators								method reporting level (µg/L)	
TOC (total organic carbon)	ND	ND	ND	ND	ND	N/A	N/A	1000	N/A
Bromide	ND	ND	ND	ND	52	N/A	N/A	20	N/A

Chemical	July 2018 Results (µg/L)							minimum	Health Reference
List 1	Central	Hoffman	Nevada	Parkwater	Ray Street	Southview	Eagle Ridge Two	reporting level (µg/L)	Concentrations (µg/L)
germanium	ND	ND	ND	ND	ND	N/A	N/A	0.3	NA
manganese	ND	ND	ND	ND	ND	N/A	N/A	0.4	300
alpha-hexachlorocyclohexane	ND	ND	ND	ND	ND	N/A	N/A	0.01	0.006 to 0.6
chlorpyrifos	ND	ND	ND	ND	ND	N/A	N/A	0.03	2
dimethipin	ND	ND	ND	ND	ND	N/A	N/A	0.2	140
ethoprop	ND	ND	ND	ND	ND	N/A	N/A	0.03	1.14 to 114
oxyfluorfen	ND	ND	ND	ND	ND	N/A	N/A	0.05	200
profenofos	ND	ND	ND	ND	ND	N/A	N/A	0.3	0.3
tebuconazole	ND	ND	ND	ND	ND	N/A	N/A	0.2	190
total permethrin (cis - & trans -)	ND	ND	ND	ND	ND	N/A	N/A	0.04	3.344 to 334.4
tribufos	ND	ND	ND	ND	ND	N/A	N/A	0.07	0.6
butylated hydroxyanisole	ND	ND	ND	ND	ND	N/A	N/A	0.03	NA
o-toluidine	ND	ND	ND	ND	ND	N/A	N/A	0.007	NA
quinoline	ND	ND	ND	ND	ND	N/A	N/A	0.02	0.01 to 1
1-butanol	ND	ND	ND	ND	ND	N/A	N/A	2	700
2-methoxyethanol	ND	ND	ND	ND	ND	N/A	N/A	0.4	NA
2-propen-1-ol	ND	ND	ND	ND	ND	N/A	N/A	0.5	35
Dichloroacetic acid (DCAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	0.2	
Monochloroacetic acid (MCAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	2	
Trichloroacetic acid (TCAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	0.5	
Monobromoacetic acid (MBAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	0.3	
Dibromoacetic acid (DBAA)	N/A	N/A	N/A	N/A	N/A	0.545	ND	0.3	
Bromochloroacetic acid (BCAA)	N/A	N/A	N/A	N/A	N/A	0.380	ND	0.3	
Bromodichloroacetic acid (BDCAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	0.5	
Chlorodibromoacetic acid (CDBAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	0.3	
Tribromoacetic acid (TBAA)	N/A	N/A	N/A	N/A	N/A	ND	ND	2	
Associated Indicators								method reporting level (µg/L)	
TOC (total organic carbon)	1144	ND	ND	ND	ND	N/A	N/A	1000	N/A
Bromide	ND	ND	ND	ND	44	N/A	N/A	20	N/A

ND = Not Detected at minimum reporting level
N/A = Not Applicable

CONTAMINANTS FOUND IN DRINKING WATER TESTING IN 2018

CITY OF SPOKANE, WATER & HYDROELECTRIC SERVICES

Data presented, if not from 2018, is from the most recent testing done in accordance with the regulations.

SOURCE WATER TESTING CONTAMINANT	Units	Highest Average	Detected Maximum	Detected min.	Number Positive Samples	Number of Samples	MCL	MCLG	MAJOR SOURCES
Arsenic	µg/L	**(a)**	**3.9**	**2.8**	**3**	**3**	**10**	**0**	**Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes**
Nitrate	mg/L	**(a)**	**3.32**	**0.65**	**10**	**10**	**10**	**10**	**Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits**
Combined Radium 226 and 228 (b)	pCi/L	**(a)**	**1.5**	**1.5**	**2**	**2**	**5**	**0**	**Erosion of natural deposits**

DISTRIBUTION SYSTEM TESTING CONTAMINANT	Units	LRAA	Detected Maximum	Detected min.	Number Positive Samples	Number of Samples	MCL	MCLG	MAJOR SOURCES
Disinfection Byproducts - TTHMs [Total Trihalomethanes]	µg/L	**3.86**	**5.31**	**1.79**	**6**	**8**	**80**	**0**	**By-product of drinking water disinfection**

CONTAMINANT		Date sampled	90th Percentile (d)	Number of Sites exceeding AL	Number Positive Samples	Number of Samples	MCL	MCLG	MAJOR SOURCES
Copper (c)	mg/L	**Aug-18**	**0.08**	**0**	**56**	**56**	**TT, AL= 1.3**	**1.3**	**Corrosion of household plumbing systems; Erosion of natural deposits: Leaching from wood preservatives**
Lead (c)	µg/L	**Aug-18**	**1.41**	**0**	**53**	**56**	**TT, AL= 15**	**0**	**Corrosion of household plumbing systems; Erosion of natural deposits**

UNREGULATED CONTAMINANTS IN SOURCE WATER AND DISTRIBUTION SYSTEM TESTING (e)		Detected	Detected	Number Positive	Number of		
CONTAMINANT	Units	Maximum	Minimum	Samples	Samples	**MCL**	**MCLG**
Dichloroacetic acid (DCAA)	µg/L	**0.206**	**< 0.2**	**1**	**4**	**N/A**	**N/A**
Dibromoacetic acid (DBAA)	µg/L	**0.545**	**0.313**	**3**	**4**	**N/A**	**N/A**
Bromochloroacetic acid (BCAA)	µg/L	**0.380**	**0.329**	**2**	**4**	**N/A**	**N/A**
Bromide	µg/L	**52**	**44**	**2**	**10**	**N/A**	**N/A**
Total Organic Carbon (TOC)	µg/L	**1144**	**< 1000**	**1**	**10**	**N/A**	**N/A**

Notes

(a) Compliance with MCL is determined by single sample results, so no average is used.

(b) Gross Alpha results were used in lieu of Radium 226, one half of the detection limit of 1.0 was used for the ND

(c) Faucet samples were from 'at risk' homes (those with lead service lines and those with copper pipes with lead solder joints).

(d) 90% of at-risk homes had this concentration, or less, of lead/copper.

(e) Unregulated contaminant monitoring help's EPA to determine where certain contaminants occur and whether the Agency should consider regulating those contaminants in the future

Key to Table

AL = Action Level = The concentration of a contaminant which, if exceeded, triggers treatment or other requirement which a water system must follow.

LRAA = Locational Running Annual Average

MCL = Maximum Contaminant Level = The highest level of a contaminant that is 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 = The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

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