REPORT ON CITY OF SPOKANE DRINKING WATER FOR 2011

Reported by
Doug Greenlund, Environmental Analyst
1 April 2012

Note: Unlike previous reports, this report provides a summary of the drinking water monitoring conducted during 2011 only. For a comprehensive review of past monitoring, please see the 2010 report.

The City of Spokane's water is of very high quality. Many different tests are conducted at varying intervals to confirm that the City's drinking water meets Washington state and federal EPA drinking water quality standards. The City drinking water supply, to date, has consistently met Federal standards. This report is meant to provide consumers and other interested parties with insight into what analytical tests have been conducted and, in some cases, substances that have been detected. Appendix II of the 2010 Drinking Water Report has a comprehensive list of substances tested in City water. The state and federal Maximum Contaminant Level (MCL) information is provided as a risk benchmark.

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 co
n alguien que lo entiende bien.
(Para ver información adicional, visite al; www.epa.gov/espanol/ciudadanos.html

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.

This report also summarizes the amount of water the City used in 2011 and documents some indicators to show the progress being made to meet conservation goals adopted by the City in its Water Stewardship Strategic Plan.

The final pages (appendices) of this report summarize the most recent analytical testing. Appendix II summarizes the testing completed during 2011. Appendix III provides a summary of inorganic testing results. The following narrative and attachments summarize and explain recent results in more detail. Appendix IV 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.

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, but are not limited to, pumping for irrigation and potable water, hydroelectric dam operations, and the variations of weather and precipitation. The rates and locations of exchange between the aquifer and the Spokane River have been re-

examined as part of the Bi-State Aquifer Study. In January 2008, the states of Washington and Idaho announced signing a Memorandum of Agreement (www.idwr.idaho.gov/WaterInformation/projects/svrp/PDFs/svrp_MOA_10-26-07.pdf) concerning the *"…continued coordination involving the maintenance and improvement of the technical tools developed in a bi-state water study.*" Discussions to agree on how to utilize these technical tools to manage this valuable resource will continue. The results of these studies and agreements will help give the City information it needs to continue to supply high-quality water to the citizens of Spokane.

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 further 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	509-625-6570	www.greenspokane.org/
Spokane County - Water Resources	509-477-3604	www.spokanecounty.org/WQMP/
Spokane Regional Health District – Environmental Health Div.	509-324-1560	www.srhd.org/services/environment.asp
Washington State Department of Health - Eastern Regional Office (Drinking Water)	509-329-2100	www.doh.wa.gov/ehp/dw/default.htm
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	water.epa.gov/drink/index.cfm

REPORT ON CITY OF SPOKANE DRINKING WATER FOR 2011

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To obtain free software to read some of these digital files:

- Adobe Acrobat files: www.adobe.com/products/acrobat/readstep2.html
- Microsoft Word files: www.microsoft.com/downloads/details.aspx?FamilyID=3657ce88-7cfa-457a-9aec-f4f827f20cac&displaylang=en

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QUANTITY - Water for the Future

Our Water.
Our Future.
Our Priority.

As a result of the increasing recognition of the limits to our groundwater resources, the state has encouraged local interests and authorities to come together to manage this resource. The City of Spokane has taken an active role in area-wide partnerships to safeguard the quality and quantity of our water supply. The City of Spokane and all its water customers are challenged to use water resources wisely and responsibly. The City of Spokane Water Stewardship Program was established by resolution of the City Council on May 1, 2006 (Resolution 06-49).

Changes in federal building standards have resulted in water savings nationwide. The City's Building Services Dept. enforces these standards. The City of Spokane Water Department has taken additional steps to conserve water through education programs, metering water use, reducing the loss of water resulting from leaking pipes, and implementing, in stages, a conservation-oriented rate structure. The Water Use Efficiency Rule requires that municipal water suppliers adopt a plan to make more efficient use of their water. Two of the quantifiable elements are discussed in this section.

GOALS

The City of Spokane adopted the Water Stewardship Strategic Plan on May 1, 2006. This Plan includes goals for per capita reductions in water use. The goals are based on per capita consumption for all uses including residential, commercial, industrial, and government. These goals are for reducing the water consumption by 2017 and are specified for seasonal periods of October through March, April through June, and July through September. The goals for these periods are different, as is the per capita water use.

The October through March timeframe is typically a period of mostly indoor water use. The amount used during this period is nearest the water use essential for health and safety. Furthermore, a modest, but increasing rate of growth for our community is assumed.

The April through June timeframe is a transitional period from mostly indoor use to increasing outdoor use.

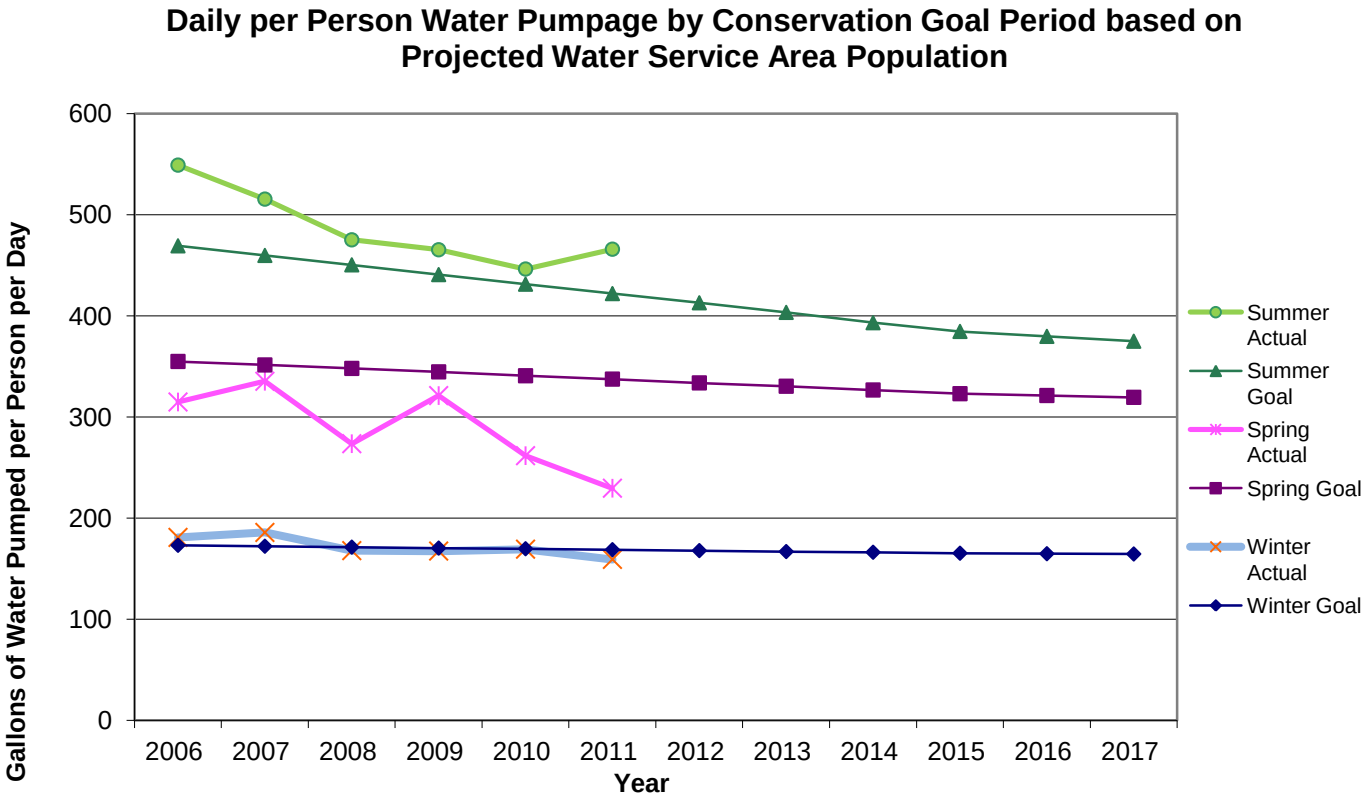
The July through September period is a period of increasing demand for outdoor irrigation. This is also the most critical period for flows in the Spokane River. The per capita reduction in water use for this period is the most ambitious.

The detailed source water pumping totals versus the adopted Water Stewardship Goals are in Appendix I. The following table and graphs illustrates this information for 2011:

WATER YEAR	2011 pumpage (1,000 gallons)		
Period	Total	Goal	Result
October 2010 through March 2011 (winter)	6,454,442	6,920,000	-6.7%
April through June (spring)	4,655,473	6,920,000	-32.7%
July through September (summer)	9,450,578	8,750,000	8.0%
sum of seasonal totals	20,560,493		

The preceding table shows the difference between the Goal and the actual Use as a percentage. A positive value equals exceedances of the goal. Total pumpage for the periods for 2002 - 2011 is available in Appendix I.

It is our estimate that the City, while continuing to show improvement, did not achieve its water conservation pumpage goal for 2011, specifically for the timeframe of July – September 2011. The following graph demonstrates the total pumpage vs. goals for each season for 2006 thru 2011.



In 2011, the City met the conservation goal for the winter period of October 2010 through March 2011. This was the fourth consecutive year for meeting this conservation goal.

The City of Spokane has consistently met the conservation goal for the months of April, May and June**. The City met its goal for April through June again in 2011.**

The City did not meet its goal for July through September in 2011. To date, the City has not met its goal for July through September. Note that the rate of water use reduction is most ambitious during this season.

It is important to note that the commitment taken on by the City is based on per capita usage and the actual population served in 2011is not immediately known. However, an indicator of population would be the number of single-family residences served. The following table provides the number of single-family residences over the last 10 years. Please note that the number of residences is typically lower in the winter because some local residents go south for the winter, and during that time, such residences are not counted as "connections."

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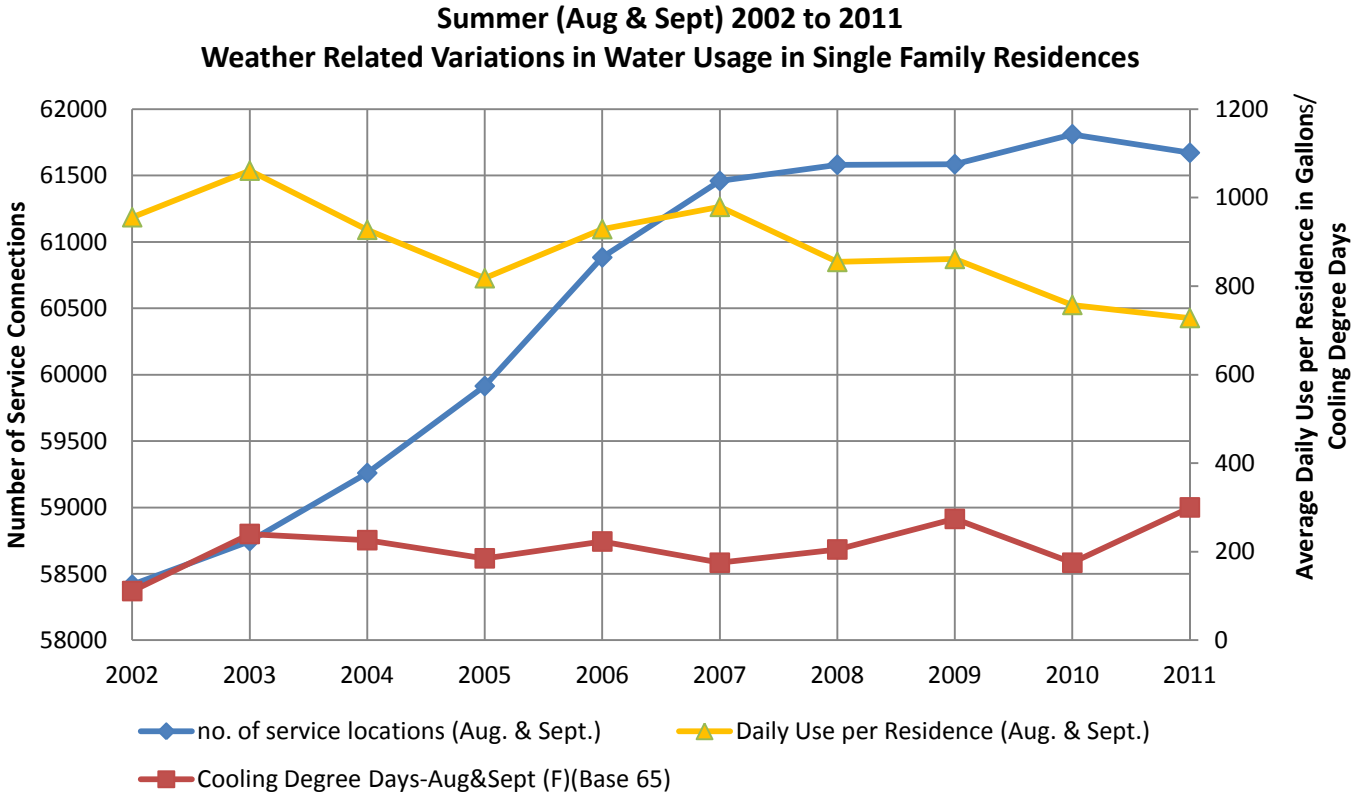
	no. of service locations (Jan. & Feb.)	*no. of service locations (Aug. & Sept.)*
2002	**57,239**	**58,418**
2003	**57,238**	**58,747**
2004	**57,978**	**59,259**
2005	**58,403**	**59,914**
2006	**59,231**	**60,883**
2007	**59,881**	**61,459**
2008	**60,435**	**61,581**
2009	**60,683**	**61,585**
2010	**60,608**	**61,810**
2011	**60,492**	**61,671**

In addition to total population served, seasonal weather variations impact water use. The following graph illustrates daily usage (City of Spokane billing records) in single-family residences during the summer for the period 2002-2011:



The preceding graph compares water usage of single-family residences with temperature (i.e. cooling degree days). The summer of 2011 had the most cooling degrees days (was hotter) compared to the previous 9 years but continued the downward trend in summertime water use of single family residences.

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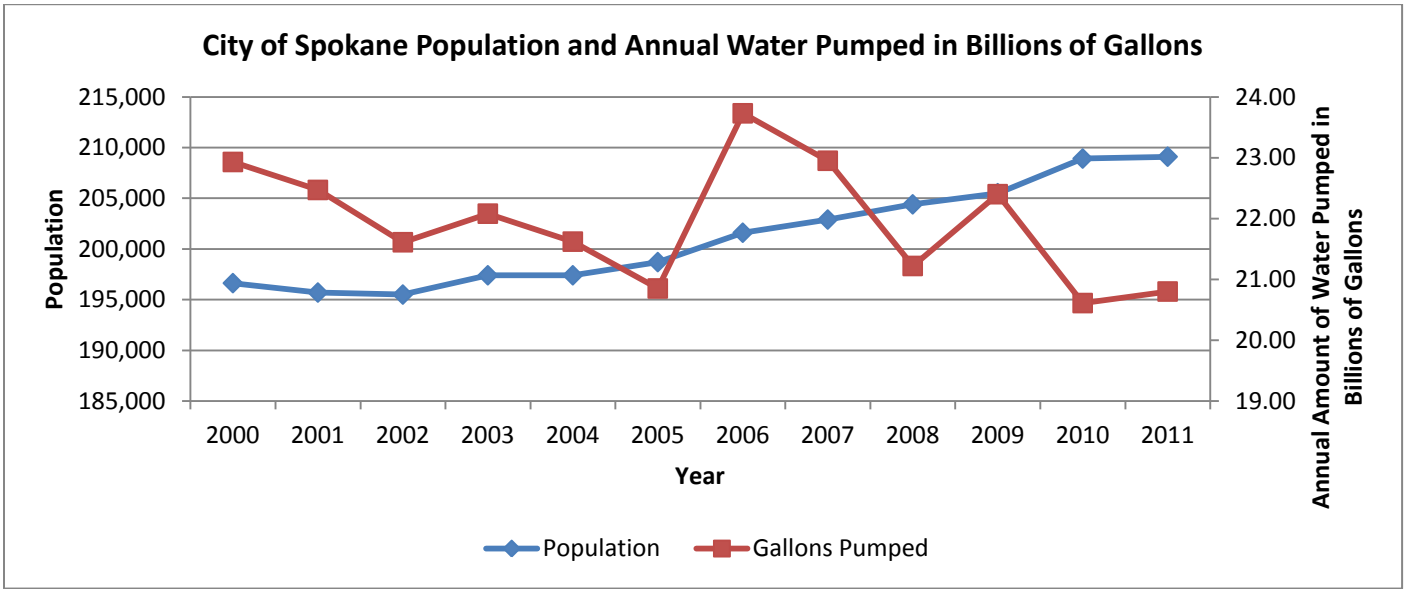
The following table shows the daily usage of single family residences during the winter and summer periods:

	Single family residence	
	Gallons used per day, January & February	*Gallons used per day August & September*
2002	199	956
2003	187	1061
2004	214	927
2005	178	818
2006	206	929
2007	176	979
2008	170	855
2009	186	861
2010	170	758
2011	177	728

The following graph shows the growth in the City of Spokane and the total amount of water annually pumped by the City of Spokane Water and Hydroelectric Department. The actual population served is greater.



The following table shows the annual total gallons delivered to our wholesale customers:

	Annual Total Intertie Demand, gal.	Percent Change
2005	161,179,040	
2006	190,312,144	18.1 %
2007	227,270,824	19.4 %
2008	75,063,296	- 67.0 %
2009	95,439,564	27.1 %
2010	108,846,716	14.0 %
2011	165,106,788	51.7%

The following graph displays the total gallons per month wholesaled to water purveyors outside the City's water service area.

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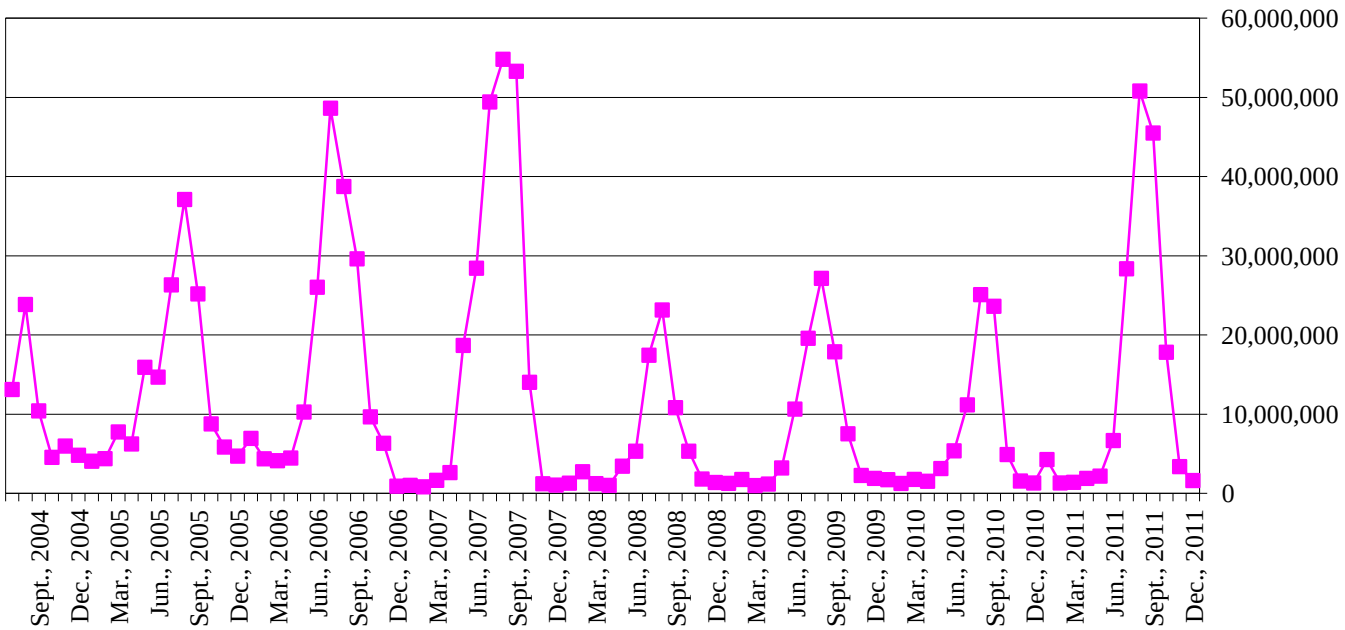
Total Intertie Water Demand, gallons per month



WATER YEAR	2011 pumpage (1,000 gallons)				
Period	Total	Intertie Demand	Adjusted Total	Goal	Adjusted Result
October 2010 through March 2011 (winter)	6,454,442	14,819	6,439,623	6,920,000	-6.9%
April through June (spring)	4,655,473	10,776	4,644,697	6,920,000	-32.9%
July through September (summer)	9,450,578	124,686	9,325,892	8,750,000	6.6%
sum of seasonal totals	20,560,493				

If wholesale water use were not counted in the conservation goal we would be 1.4% closer to achieving the summer goal.

MEANS to ACHIEVE GOALS

The City of Spokane has instituted several programs to achieve conservation goals. In 2011, the Water Department managed the Water Stewardship Program. Rebate programs encouraged both indoor and outdoor conservation to meet the goals. The indoor conservation program provided 423 rebates of $100 for WaterSense high efficiency toilets. The Water Stewardship Program also continued its Sprinkler Controls Upgrade incentive program. This program provided rebates to residential customers for installing smart controls such as rain shut off switches or evapotransporation controllers. 437 water customers participated in the program. The Water Stewardship Program also utilized the skills of the Water Department's Certified Licensed Irrigation Auditor who performed 58 audits and inspections of residential systems. In addition to the rebate programs, the Water Stewardship Program continued its many public education events. This included sponsoring the water conservation night at the Spokane Chiefs hockey game and sponsorship of the Spokane Indians Baseball Club for the 2011 season including full sponsorship of the grounds crew. The Water Stewardship Program funded a regional multimedia campaign to encourage summer outdoor water conservation.

For further information check these three websites: EPA-WaterSense Program (www.epa.gov/watersense/) H2OUSE-Watersaver Home (www.h2ouse.net/) and the City of Spokane Water Stewardship Program, at www.waterstewardship.org/

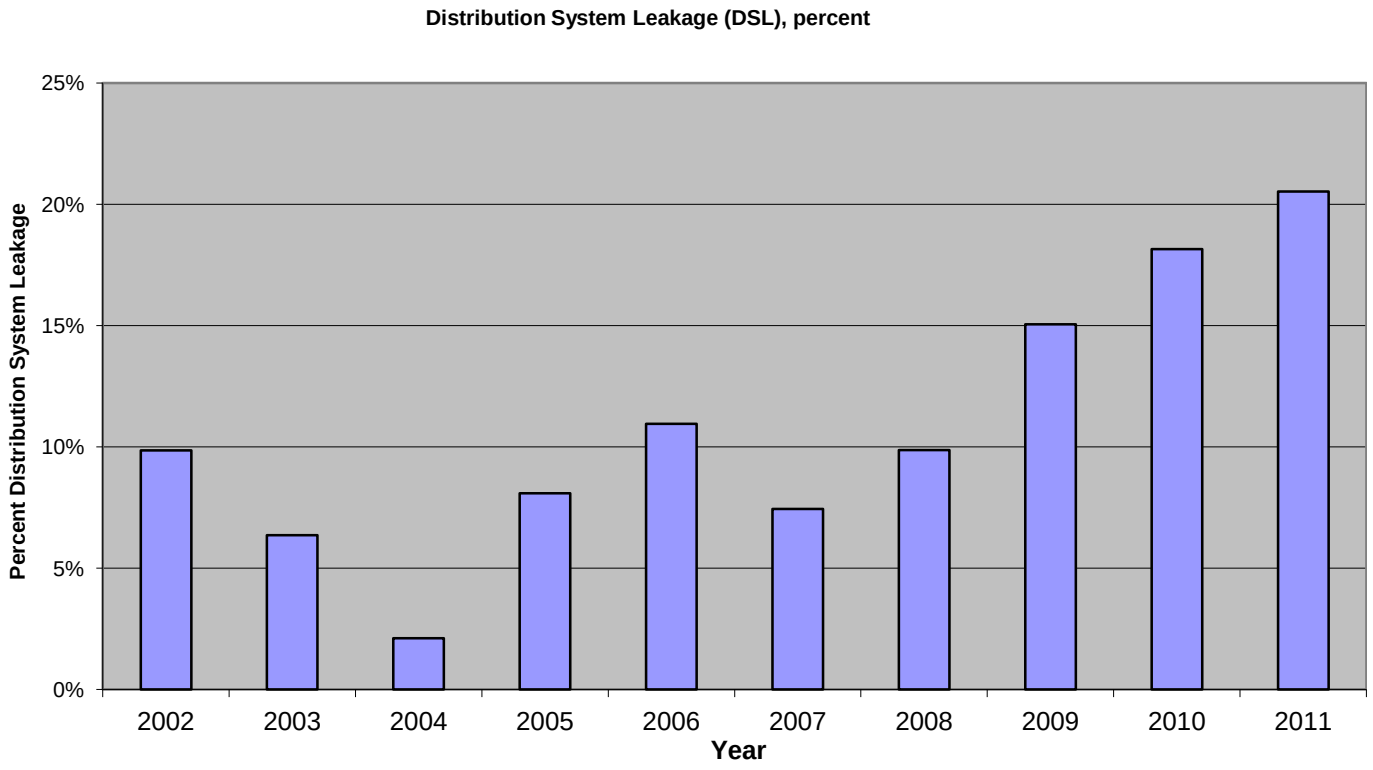
DISTRIBUTION SYSTEM LEAKAGE (DSL)

The Water Use Efficiency Rule requires the calculation of system water loss (leakage). Prior to this calculation, water systems are also required to install service meters on all direct service connections[1] before January 22, 2017. The City of Spokane has had a long-standing policy of metering service connections. The calculations determine the volume of water not attributed to delivery to a customer and thus assumed to be lost to the ground. This loss is to be reported as volume and as percentage. In both cases, the DSL is determined as a running three-year average, and the water system must relate this DSL to the DSL standard promulgated by Washington Department of Health. The water use category of Non-Revenue Accounted-For Water is included in the Total Authorized Consumption (AC). This category, which is estimated (non-metered), includes such uses as street cleaning, cleaning water tanks/reservoirs, and water system maintenance (flushing). This estimate was reassessed in 2009.

The method for DSL calculation and the data for the calculation are in Appendix I, pg. 25. The volume and percent DSL for the last three years are as follows:

	2009	***2010***	***2011***	***Average***
DSL, percent	15.0%	18.1%	20.5%	17.9%
DSL, volume (gallons x 1000)	3,371,258	3,739,318	4,266,726	3,792,434

The most direct means to comply with the Water Use Efficiency Rule standard for DSL is for the 3-year running average to be less than 10% [2] . **The DSL for the City of Spokane Water System is 17.9 %, which does not meet the standard.** The City will continue to encourage the responsible use of our water resources, continue to assess accuracy of our reporting, and implement projects to reduce our system leakage. Following is a graph depicting the annual DSL for 2002-2011:



[1] WAC 246-290-820(2)(a)
[2] WAC 246-290-820(1)(b)(i)

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Quality Drinking Water
An Invaluable Community Resource

INORGANICS

The City typically has a Washington State Department of Ecology certified 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 certified laboratories are in Appendix IV. **All sources are in compliance with existing National Primary Drinking Water Regulations for Inorganic Maximum Contaminant Levels (MCL)**.

ARSENIC

The arsenic readings in 2011 at the Grace and Hoffman wells were 2.6 µg/L and 2.3 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. A 2007 result from Well Electric (4.92 µg/L) was the previous high.

City drinking water currently meets EPA's drinking water standard for Arsenic. However, it does contain low levels of arsenic. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most types of cancer and circulatory diseases are due to factors other than exposure to arsenic. EPA's standard balances the current understanding of arsenic's health effects against the cost of removing arsenic from drinking water.

Further information concerning health impact issues, regulatory requirements, and compliance costs for water utilities/water customers can be found at water.epa.gov/drink/contaminants/basicinformation/arsenic.cfm and www.doh.wa.gov/ehp/dw/fact_sheets/Arsenic_in_Drinking_Water_questions.htm.

ASBESTOS

Compliance testing for asbestos is no longer required because the Washington State Department of Health has granted the City an automatic asbestos monitoring waiver. The City has 0.02% asbestos containing concrete pipe in the distribution system. The remaining asbestos containing concrete pipe is located in the Yardley and Geiger portions of the distribution system.

Testing for asbestos involves counting the number of fibers greater than 10 micrometers in length. On October 29, 1996, and on October 26, 1999, the City took a sample of water from a location in the distribution system being served by asbestos-cement pipe. In 1996, the laboratory detected one fiber and this led to the laboratory reported result of 194,000 asbestos fibers per liter, and in 1999, no fibers were detected, which resulted in "less than 98,000 fibers per liter" reported. The MCL is 7 million fibers per liter.

CHROMIUM and HEXAVALENT CHROMIUM

Chromium is a metallic element that occurs in the environment most commonly in three forms: trivalent, hexavalent and the metal form. The EPA established a drinking water standard of 0.1 mg/L, or parts per million (ppm), for all forms of chromium in 1991. The City has monitored for this element since the rule was established and has had two detections for chromium. These were in July 1995 with .022 mg/L at the Central Well and .027 mg/L at the Grace Well.

In January 2011, the EPA strongly encouraged water systems to sample for hexavalent chromium. This was based on recent toxicity studies that indicate the potential for greater human health risks than when the original standards were established in 1991. In April 2011, four City wells were sampled. The table below shows these test results along with the current federal MCL for total chromium and a new California public health goal (PHG) for hexavalent chromium.

Location (treated water, unless otherwise noted)	*Sample date*	*Result, chromium-6 (µg/L)*	*Current total chromium MCL (µg/L)*	*California public health goal (µg/L)***
Well Electric #5 (raw water)	4/26/2011	0.329	100	0.02
Parkwater	4/26/2011	0.262		
Grace	4/26/2011	0.163		
Nevada	4/26/2011	0.164		
Parkwater	6/8/2011	0.259		

** California's Office of Environmental Health Hazard Assessment established a public health goal (PHG) for hexavalent chromium (chromium -6) on July 28, 2011. California's PHG is a level of a contaminant in drinking water that does not pose a significant health risk. The PHG for chromium -6 is 0.02 parts per billion (ppb), which is the estimated "one in one million" lifetime cancer risk level. This means that for every million people who drink two liters of water with that level of chromium 6 daily for 70 years, no more than one person would be expected to develop cancer from exposure to chromium 6. A PHG reflects the risk from long-term exposure to a contaminant and should not be used to estimate risks from short-term or acute exposure. The State of California and the Federal government will use this kind of information in the processes that result in new maximum contaminant levels
www.oehha.ca.gov/public_info/facts/Cr6facts072711.html
More information on chromium in drinking water is available at this EPA site
water.epa.gov/drink/info/chromium/index.cfm
The draft toxicological Review is also on line at cfpub.epa.gov/ncea/iris_drafts/recordisplay.cfm?deid=221433

NITRATE-NITROGEN

The Ray Street Well continues to be monitored quarterly for Nitrate-N. **In 2011, the highest certified lab quarterly result for the Ray St. Well was 3.33 mg/L.** 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 3.53 mg/L. The quarterly results for Ray St. Well for 2011 are as follows:

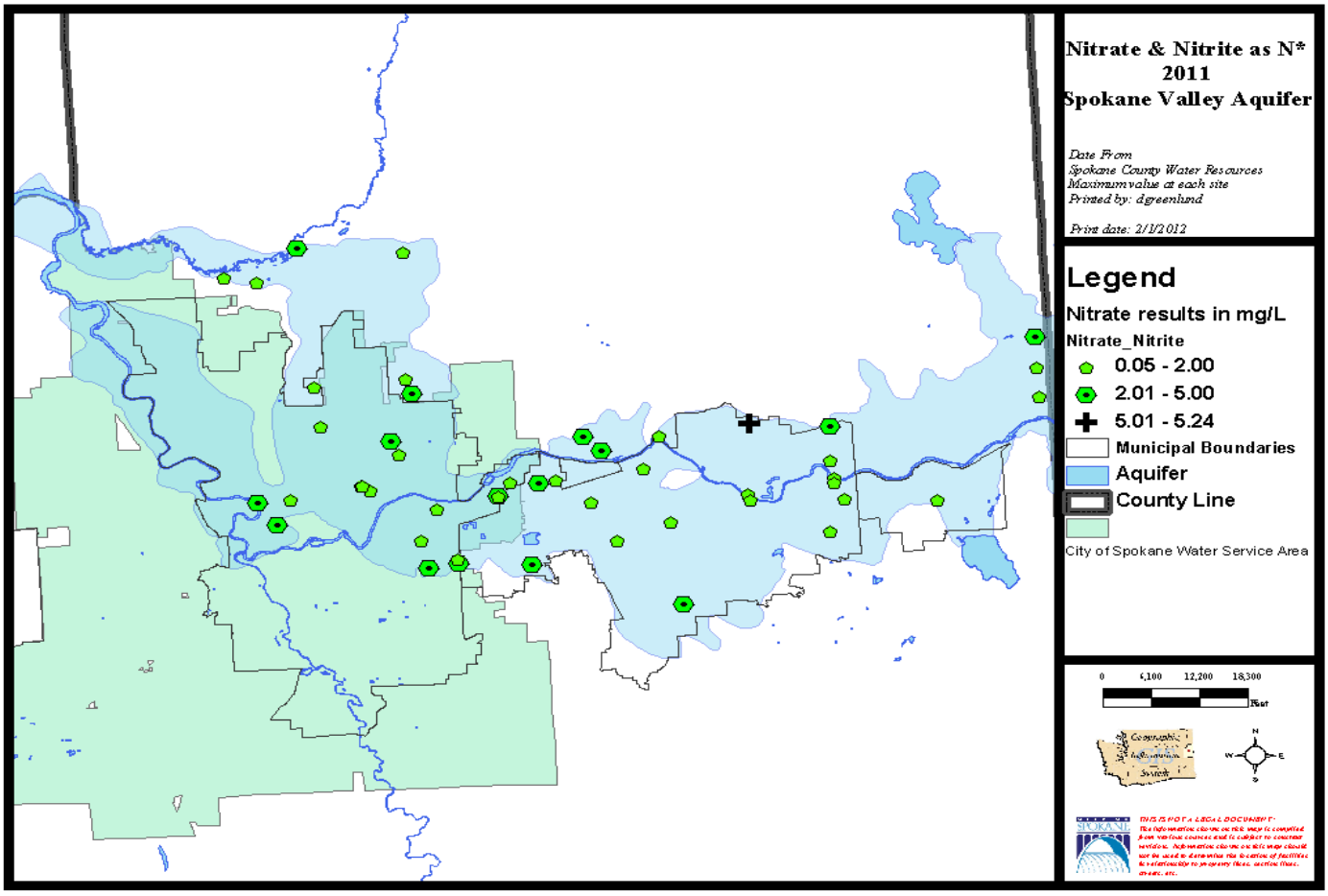
Sample Date	*Certified Laboratory Result - Nitrate-N, mg/L*	*RPWRF Laboratory Result – Nitrate+Nitrite-N, mg/L*
25-January-2011	3.33	3.53
26-April-2011	3.24	3.21
26-July-2011	2.54	1.76
25-October-2011	3.22	3.24

The trend for nitrate-nitrogen at the Ray Street Well has remained constant to slightly declining for a number of years.

All other City sources average 1.37 mg/L for 2011, less than a fifth of the MCL for nitrate-nitrogen. The 2011results for the other City source wells are as follows:

Source Well	*Certified Laboratory Result - Nitrate-N, mg/L*	*RPWRF Laboratory Result – Nitrate+Nitrite-N, mg/L*
Well Electric	1.41	0.82
Parkwater	1.36	0.95
Hoffman	1.33	1.76
Grace	0.77	0.24
Nevada	0.90	0.41
Central	0.95	0.46

The following map depicts the results of monitoring wells sampled during 2011 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. For the fourth consecutive year, samples at a monitoring well near East Valley High School exceeded 5 mg/L, half of the MCL of 10 mg/L. A long-term trend will need to be assessed, but preliminary analytical results and well drilling descriptions indicate the groundwater at this location is not completely mixed with the Spokane Aquifer. There are a number of wells that had results between 2.5 and 5 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.



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For further information concerning nitrate in drinking water and potential health issues, you can access the EPA website at water.epa.gov/drink/contaminants/basicinformation/nitrate.cfm or the Washington State Dept. of Health website at www.doh.wa.gov/ehp/dw/Publications/331-214.pdf.
(Para ver información adicional, visite al; www.doh.wa.gov/ehp/dw/Publications/331-214s.pdf)

LEAD - COPPER

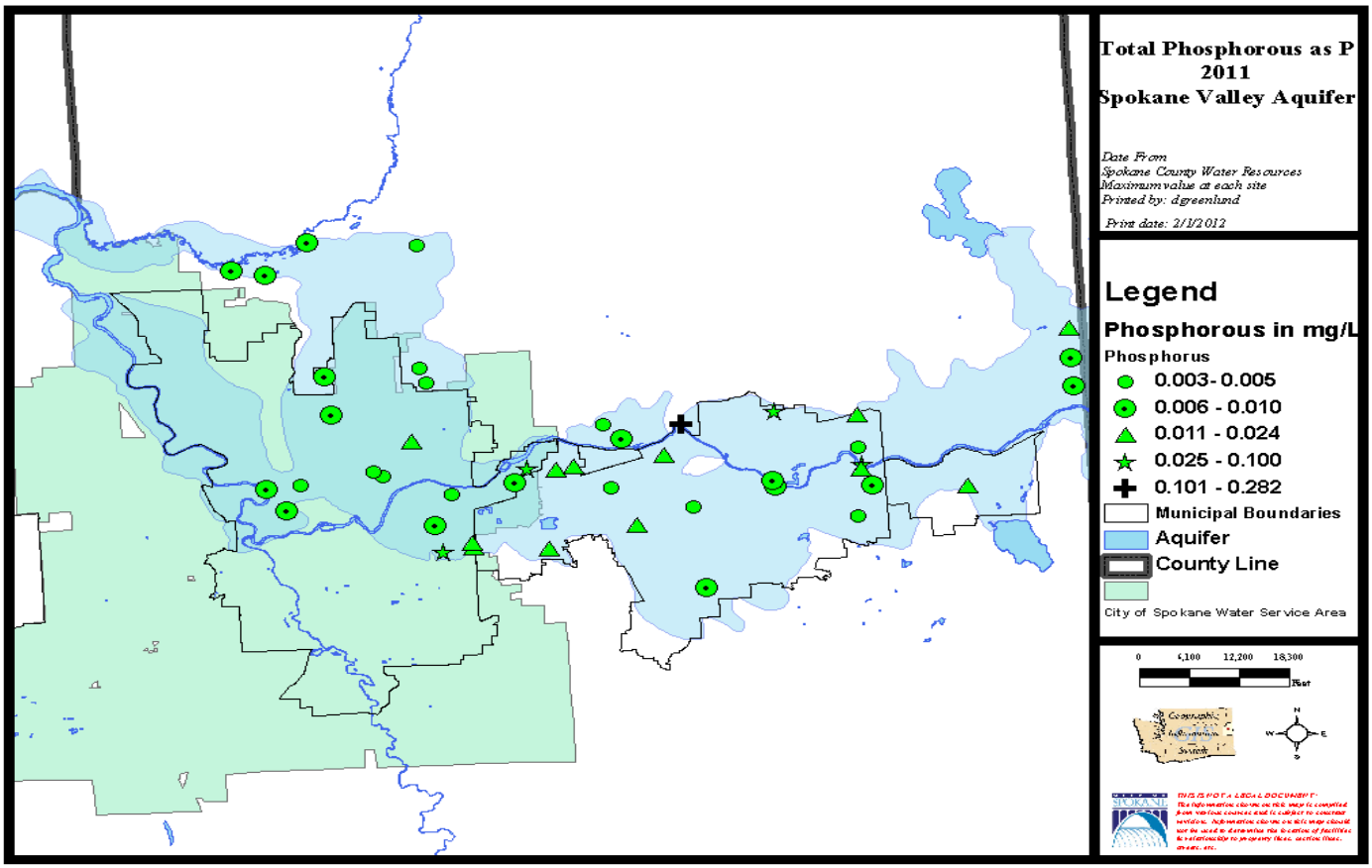
Lead and Copper testing of sources and at-risk residences were conducted in 2009. The next scheduled testing for lead and copper in at-risk residences is 2012.

For further information concerning lead and copper in drinking water, you can access the Washington Dept. of Health website at www.doh.wa.gov/ehp/dw/Programs/lead.htm and www.doh.wa.gov/ehp/dw/Publications/copper-dw.htm.

PHOSPHORUS

Drinking water regulations typically deal solely with human health-related impacts. Phosphorus is not a drinking water regulated contaminant, but is of significant concern in this region as a pollutant of concern in the Spokane River. Local groundwater makes significant contribution to the River and is the background for water discharged to sewer.

During 2011, the Spokane County Water Resources Program took more than 158 samples from 50 locations for Total Phosphorus (including duplicate samples at several locations). Of that number, 44 samples from 19 different locations exceeded 0.010 mg/L. Following is a map demonstrating the distribution of Total Phosphorus results on the Washington side of the Spokane Valley-Rathdrum Prairie Aquifer;



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The preceding map illustrates that, similar to nitrate concentrations in groundwater, phosphorus concentrations are greatest along the sides of the valley. This likely indicates loading from run-off from higher elevations. There are a couple of sampling sites with higher values that appear to not be located near the sides of the valley or near the Spokane River. These sampling sites have Total Phosphorus concentrations in the range of 0.011 to 0.024 mg/L.

In July 2011, groundwater samples from the City source wells were analyzed by the City RPWRF Laboratory. **Similar to Nitrate concentrations, most City wells have fairly low concentrations. The average concentration of the six city wells not including the Ray St. Well was 0.003mg/L. Ray St. Well was sampled four quarters, and the greatest result was .024 mg/L.** There is no drinking water regulatory limit for phosphorus, but to give this some context, the Total Maximum Daily Loading for Dissolved Oxygen for the Spokane River calls for a phosphorus concentration limit of 0.010 mg/L in the river during the critical summer season.

Location	*Date Sampled*	*PO4-P, mg/L **	*Location*	*Date Sampled*	*PO4-P, mg/L **
Electric	7/26/2011	0.0044	Central	7/26/2011	0.0032
Parkwater	7/26/2011	0.0031	Ray Street	1/25/2011	0.022
Nevada	7/26/2011	0.0041	Ray Street	4/26/2011	0.024
Grace	7/26/2011	0.0030	Ray Street	7/26/2011	0.021
Hoffman	7/26/2011	0.0028	Ray Street	10/25/2011	0.024

RADIONUCLIDES & RADON

RADIONUCLIDES

In 2011, the City of Spokane tested the Parkwater and Ray Street source wells for Radium 228 and Gross Alpha. The Parkwater Radium 228 was 2.51 pCi/L, and the Gross Alpha particle activity was < 1.0 pCi/L. At Ray Street, the Radium 228 was 0.95 pCi/L, and the Gross Alpha Particle activity was 1.8 pCi/L.

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, as occurred in the Parkwater sample, one-half of the detection limit is used to determine compliance[3]. 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 has not tested for Uranium. Beta particle and photon emitter testing is only required of a few vulnerable water systems, the City has not been required to do this testing.

For the purpose of calculating the Combined Radium 226 and Radium 228, zero was used as the Radium 228 value for those results below the federal detection limit of 1 pCi/L. Therefore the Combined Radium 226 and Radium 228 was the Gross Alpha Particle activity of 1.8 pCi/L at Ray Street. At Parkwater, which has a Radium 228 result, the Combined Radium 226 and Radium 228 was 3.0 pCi/L.

Gross Alpha Particle Activity has an MCL of 15 pCi/L. The MCL for Gross Beta particle activity and photon emitters is 4 millirems per year. Millirems is a measure of human exposure to radiation. The MCL for uranium is 30 µg/L. The federal MCL for Radium 226 and Radium 228 (combined) is 5 pCi/L.

For more information on radionuclides in drinking water, access the EPA website at water.epa.gov/lawsregs/rulesregs/sdwa/radionuclides/index.cfm

[3] 40 CFR 141.26a (5)

RADON

The Water Dept. monitored the Parkwater and Ray Street wells for Radon in 2011, the results are 486 pCi/L and 475 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. The proposed rule would require that community water supply systems (including the City's) generally would have to comply with the MCL of 300 pCi/L, unless there is a multi-media mitigation program (MMM) in place. With a MMM, the AMCL of 4000 pCi/L would apply.

The publication of the proposed rule was November 2, 1999, and the comment period closed February 4, 2000. The final rule was expected to be published one year from that date. The rule had been listed on the Unified Agenda of Federal Regulatory and Deregulatory Actions with the status of the radon regulation final action "To Be Determined." In the most recent update of the Unified Agenda, January 2012, the rule has been removed.

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. For further information concerning radon in drinking water, access the EPA website at www.epa.gov/radon/rnwater.html. For more general information concerning radon in the environment and the associated health issues, access the EPA website at www.epa.gov/radon/index.html 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/pubs/citguide.html.

ORGANICS

DISINFECTION BY-PRODUCTS – DISTRIBUTION SYSTEM

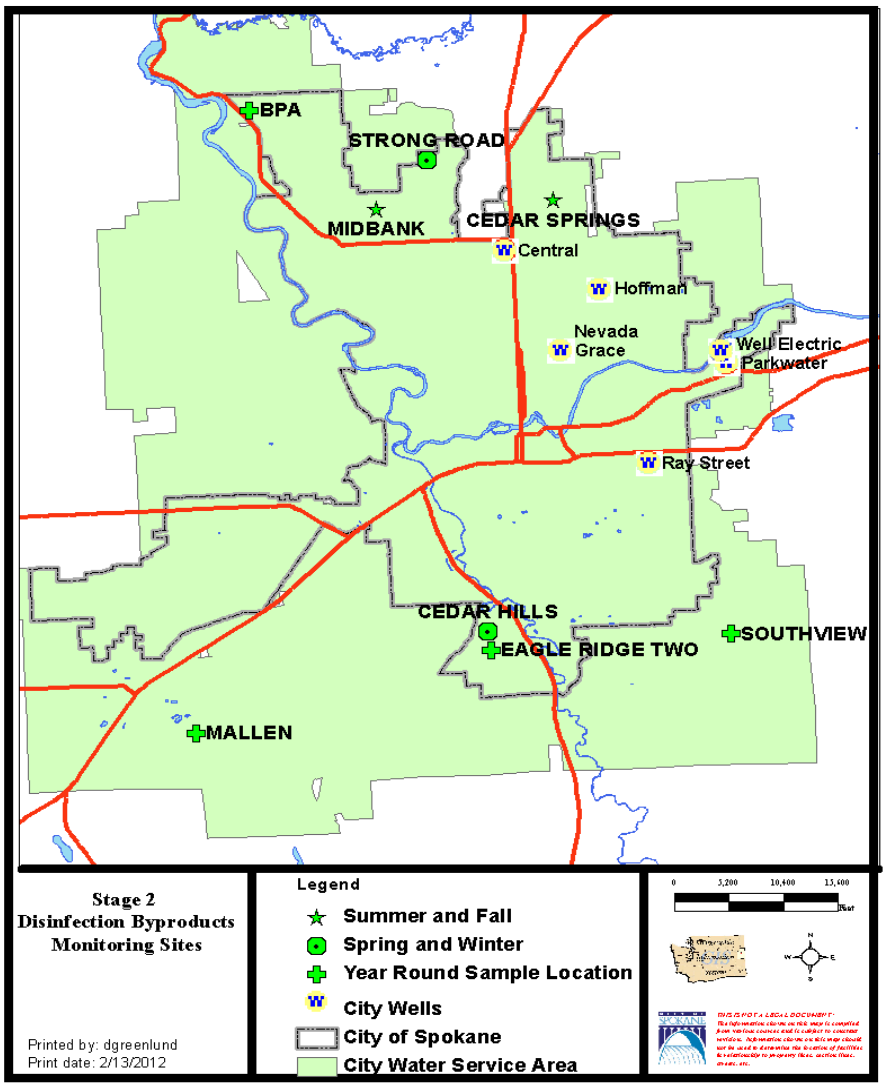
The maximum value during 2011 compliance monitoring of the distribution system for Total Trihalomethanes (TTHM) was 5.35 ppb and for Haloacetic Acids (HAA5) was no detection. This is well below the Federal MCL of 80 ppb for total Trihalomethanes and 60 ppb for the sum of five Haloacetic acids and is only detected at the extreme end of the distribution system. This table shows the 2011 results for trihalomethanes. Appendix V of the 2010 Drinking Water Report provides historic results for context.

Location	Mallen Tank	Mallen Tank	BPA Trans Easement	BPA Trans Easement
Date	25-Jan-2011	26-Apr-2011	26-Jul-2011	25-Oct-2011
Total Chlorine Residual, mg/L	0.23	0.19	0.23	0.09
TRIHALOMETHANES, results micrograms/L				
Chloroform	<0.5	**0.51**	< 0.5	**0.65**
Bromodichloromethane	**0.98**	**0.97**	**0.55**	**1.45**
Dibromochloromethane	**1.19**	**1.18**	**0.73**	**2.18**
Bromoform	**0.51**	**0.53**	< 0.5	**1.07**
TOTAL TRIHALOMETHANES	**2.68**	**3.19**	**1.28**	**5.35**

The City uses small amounts of chlorine as a drinking water disinfectant. Data on chlorine by-products in the distribution system (such as trihalomethanes) indicates that for the most part, such compounds are not at levels above 1 ppb except out at the far ends of the distribution system.

In 2004, the City of Spokane Water Dept. started Disinfection Byproducts Rule routine quarterly monitoring in the distribution system for TTHM and HAA5. The Water Department developed a sampling plan, which identified sampling location(s) that reflected the maximum residence time for water in the distribution system. It was determined that the maximum residence time changed in response to increased irrigation use during the summer/autumn months requiring two sampling locations.

The Mallen Reservoir, near the west extreme of the City Water Service Area, is regarded as having the longest residence time in the system and is the location for winter and spring quarterly monitoring. Increased nearby irrigation during the summer/fall reduces this residence time. The BPA Transmission Easement, near the north city limits, has a longer residence time during these periods, and is the sampling location during summer and fall quarterly monitoring. The figure on page 18 shows the relative positions of these sampling locations.



On March 6 2006, the EPA finalized the Stage 2 Disinfectants and Distribution Byproducts Rule (DBPR). 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. The map to the left shows the current sampling locations and the additional stage 2 locations. In 2012, six locations will be sampled each quarter. Cedar Hills and Strong Road will be sampled in the spring and winter. Midbank and Cedar Springs will be sampled in the summer and fall. For more information on the Stage 2 DBPR, go to the EPA website water.epa.gov/lawsregs/rulesregs/sdwa/stage2/index.cfm

MtBE (Methyl tert-Butyl Ether)

Central, Grace, Hoffman, and Nevada wells were monitored for MtBE in 2011 in conjunction with the regularly scheduled Volatile Organic Compounds (VOC) monitoring. There were no detections at a detection limit of 0.5 µg/L. The City has included testing for MtBE with the VOC monitoring since 2005 and has had no detections.

There is currently a drinking water advisory for MtBE water.epa.gov/action/advisories/drinking/mtbe.cfm. This advisory recommends a range of 40 µg/L or less based on consumer acceptance of potential taste and odor. The EPA believes this would also provide a large margin of exposure (safety) from toxic effects.

Further information concerning the health impact, environmental effects, and technical background of MtBE can be found at the following website: the EPA Office of Water at www.epa.gov/mtbe/water.htm.

OTHER VOLATILE ORGANICS

Refer to Appendix VI in the 2010 Drinking Water Report for a historic summary of ORGANIC CHEMICAL DETECTIONS for each well station that contributes to the City Water System. Only organic compounds that have previously been detected in City water are listed. Many compounds have been tested for and not detected - see Appendix II: "TESTS RUN ON CITY OF SPOKANE WATER" in the 2010 Drinking Water Report for a comprehensive list.

In 2011, the City of Spokane tested the Central, Grace, Hoffman and Nevada well stations for Volatile Organic Compounds (VOC). There were no detections.

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 THM in source water monitoring for 2011**.

SYNTHETIC ORGANICS

In 2011, the City of Spokane sampled Central, Grace and Hoffman wells (twice each) for Synthetic Organic Chemicals (SOC). There were no detections.

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 of Spokane 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 2011, out of 79 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 402 tests over the 5-year period from 2007 through 2011, 2 positive total coliform results were found. The greatest concentration detected was 1 colony per 100 mL for total coliform bacteria at Well Electric in 2007.

HETEROTROPHIC PLATE COUNT BACTERIA – SOURCE

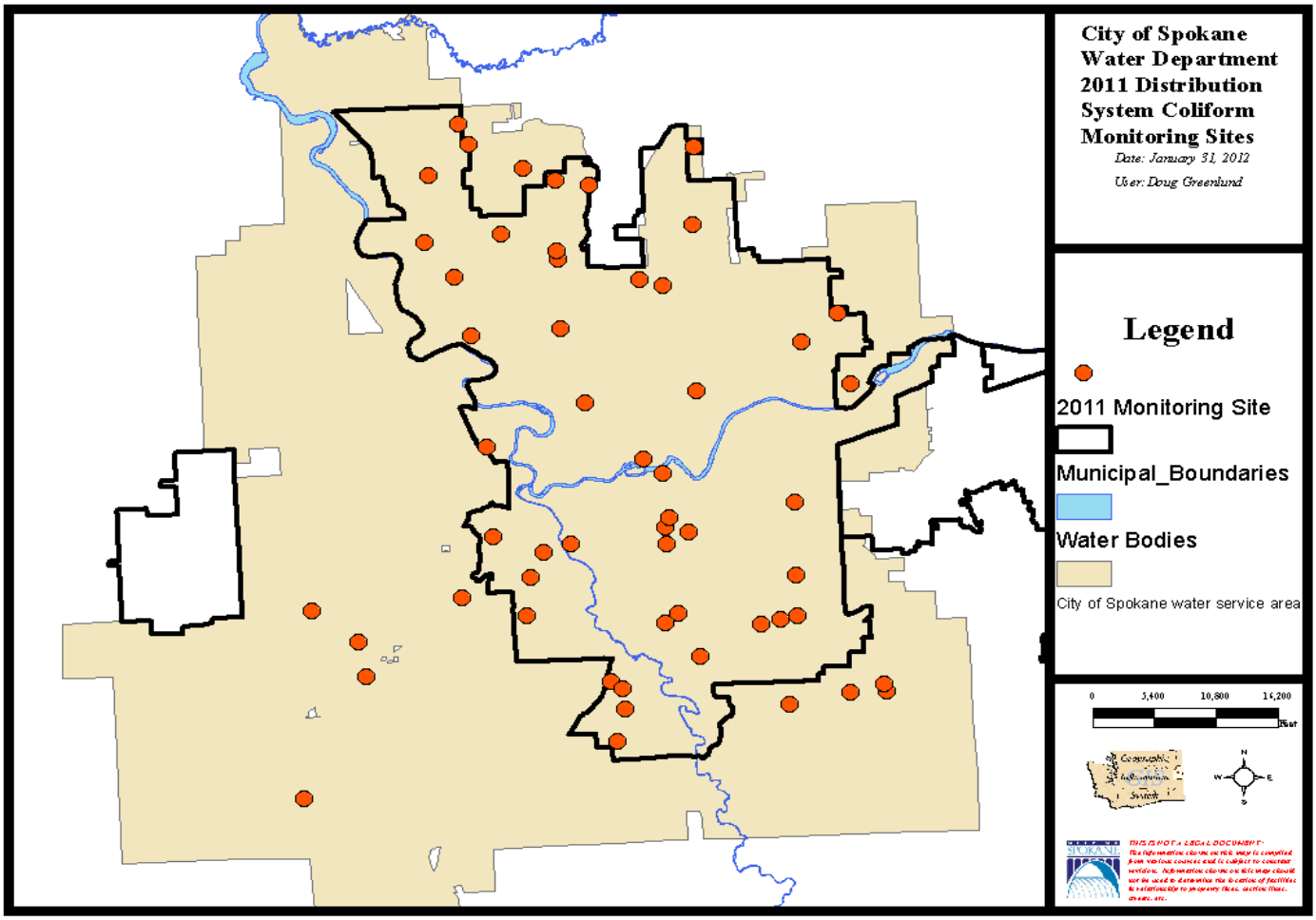
In 2011, out of 80 Heterotrophic Plate Count (HPC) tests on source water, there were 26 positive results. The greatest concentration was 806 colonies per milliliter of sample at the Hoffman well. This represents the highest detection in the past five years. HPC tests were conducted 395 times over the five-year period from 2007 through 2011 on raw source water. There have been 151positive HPC results. Washington State Drinking Water regulations state *"Water in a distribution system with a HPC level less than or equal to 500/mL is considered to have a detectable residual disinfectant concentration"*[4]. The maximum detection during this five-year period prior to this year was 347 colonies per milliliter at the Ray St. Well in April 2007. Without regard to source water HPC levels, City source water is treated with chlorine to safeguard drinking water quality. This is done primarily because of the size and age of the City's distribution system. Some water utilities in this area (drawing from the same aquifer) do not add any disinfectant.

COLIFORM BACTERIA - DISTRIBUTION SYSTEM

Coliform testing is typically being done four days a week from various points in the distribution system. The Water Department anticipates having greater than 220,000 customers in the near future. This population tier[5] would require 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. **During 2011, the City Water Department had 1,983 coliform bacteria samples analyzed. There were no detections of coliform bacteria.** 2,010 samples were analyzed in 2010 and 1,990 in 2009.

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 2011, overlaid on the water service area. It is important to note that the sample sites are evenly sited based on the distribution system and population density, which may not currently reach all parts of the water service area:

[4] Ref. WAC 246-290-451 (3)(c)
[5] ref. WAC 246-290-300 (3)(e-Table 2)



Water Department staff state that coliform bacteria have not been confirmed in the distribution system for at least the last 30 years. Sample handling or collection errors are suspected causes of the original detections.

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 can also spread many ways, for further risk information go to the Centers for Disease Control and Prevention (CDC) at www.cdc.gov/parasites/crypto/gen_info/infect.html. 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 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 www.epa.gov/safewater/consumer/pdf/crypto.pdf (Para ver información adicional, visite water.epa.gov/drink/agua/upload/crypto_spanish.pdf

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; www.epa.gov/espanol/ciudadanos.html)

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, 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 at (800) 426-4791, or you can access additional information at EPA websites: water.epa.gov/drink/index.cfm or water.epa.gov/drink/info/index.cfm

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 2011, the City conducted tests from two source wells for Radon-222. The results were 486 pCi/L and 475 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 (800-SOS-RADON) or access the EPA website at www.epa.gov/radon/hotlines.html.

Arsenic: The arsenic readings in 2010 at the Central and Well Electric Wells were 3.24 ppb and 4.22 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. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most types of cancer and circulatory diseases are due to factors other than exposure to arsenic. EPA's standard balances the current understanding of arsenic's health effects against the cost of removing arsenic from drinking water. 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 water.epa.gov/lawsregs/rulesregs/sdwa/arsenic/index.cfm.

Lead: During 2009, the City tested 56 at-risk residences for lead. The single highest result was 8.07 ppb. This result for lead is less than 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 also analyzed for lead concurrent with the in-home testing. The maximum concentration in 2009 source water testing for lead was 0.3 ppb.

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 water.epa.gov/drink/info/lead/index.cfm

CITY OF SPOKANE'S SYSTEM

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 Aquifer (that portion of the larger 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 seeks 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	509-625-6570

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 - Water Use Efficiency compliance data

6-Mar-2012

Distribution System Leakage (DSL)

	2011	2010	2009	2008	2007	2006	2005	2004	2003
Service Meter Reading-Single Family, cu.ft.	1,070,078,904	1,112,029,865	1,290,030,800	1,152,981,200	1,202,265,680	1,203,061,552	1,086,928,400	1,193,035,800	1,237,952,600
Service Meter Reading-Multi Family, cu.ft.	283,945,347	288,245,615	315,618,069	409,792,300	472,555,248	461,200,784	421,588,600	412,155,800	419,161,800
Service Meter Reading-Commercial/Industrial, cu.ft.	496,371,204	520,982,640	563,865,863	744,076,700	831,283,552	836,985,600	797,205,000	892,540,700	777,286,200
Service Meter Reading-Government, cu.ft.	179,265,601	177,171,760	219,667,715	212,251,200	275,573,144	275,364,760	268,069,400	270,143,600	268,998,700
Emergency Interties, cu.ft.	**	* *	* *	* *	* *	* *	29,600	23,490,900	17,600
Wholesale Amount Sold, cu.ft.	22,073,100	14,551,700	12,833,300	10,046,300	29,756,900	21,344,300	13,107,300	9,443,600	9,983,100
Non-Revenue Accounted for Water, cu.ft. (estimate) *	159,071,524	142,296,791	142,296,791	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000
Total Authorized Consumption, cu.ft. *	2,210,805,680	2,255,278,371	2,544,312,538	2,557,147,700	2,839,434,524	2,825,956,996	2,614,928,300	2,828,810,400	2,741,400,000
Total Authorized Consumption (gal. X1000) (AC) *	16,536,826	16,869,482	19,031,458	19,127,465	21,238,970	21,138,158	19,559,664	21,159,502	20,505,672
Total Production (gal. X1000) (TP)	20,803,552	20,608,800	22,402,716	21,222,058	22,947,090	23,735,049	20,855,394	21,615,890	22,083,269
Distribution System Leakage (DSL), volume (gal. X1000)	4,266,726	3,739,318	3,371,258	2,094,593	1,708,120	2,596,891	1,295,730	456,388	1,577,597
Distribution System Leakage (DSL), percent	20.5%	18.1%	15.0%	9.9%	7.4%	10.9%	6.2%	2.1%	7.1%

* Total Authorized Consumption includes Non-Revenue Accounted for Water, which is consistent with Water Use Efficiency Rule guidance (see definition at right). This is different from past practice in previous Water System Plans. The value for Non-Revenue Accounted for Water (estimated, non-metered) was reassessed in 2009.

WAC 246-290-010 Definitions. - "Authorized consumption" means the volume of metered and unmetered water used for municipal water supply purposes by consumers, the purveyor, and others authorized to do so by the purveyor, including, but not limited to, fire fighting and training, flushing of mains and sewers, street cleaning, and watering of parks and landscapes. These volumes may be billed or unbilled.

* * Emergency intertie volumes are combined with Wholesale Amount sold

Method for calculating the Distribution System Leakage (DSL)

Calculating Percent DSL

To calculate percent DSL, use the following equation:

Percent DSL = [(TP - AC) / (TP)] x 100

Where:

DSL = Percent (%) of distribution system leakage

TP = Total water produced and purchased

AC = Authorized consumption

Calculating Volume DSL

To calculate volume DSL, use the following equation:

Volume DSL = TP - AC

Report volume DSL in millions of gallons or gallons

Total System Pumpage vs. Water Stewardship Strategic Plan Goals (source - City of Spokane Water Department)

WATER YEAR (Oct. through Sept.)	2011	2010	2009	2008	2007	2006	2005	2004	2003
					pumpage (1,000 gallons)				
Total - Oct. (prev. yr.)through Mar.	6,454,442	6,778,277	6,618,666	6,551,023	7,161,742	6,884,687	6,305,328	6,743,044	6,095,091
Total - Apr. through Jun.	4,655,473	5,241,226	6,439,647	5,340,540	6,463,462	5,991,545	5,105,476	6,347,928	5,869,848
Total - Jul. through Sept.	9,450,578	8,938,048	9,202,243	9,277,452	9,936,735	10,451,223	9,695,077	8,737,566	9,596,914
Total - sum of seasonal totals	20,560,493	20,957,551	22,170,556	21,168,810	23,561,939	23,327,455	21,105,881	21,828,538	21,561,853
Goal - Oct. (prev. yr.) through Mar.	6,920,000	6,870,000	6,810,000	6,760,000	6,710,000	6,660,000			
Goal - Apr. through Jun.	6,920,000	6,900,000	6,890,000	6,870,000	6,850,000	6,830,000			
Goal - Jul. through Sept.	8,750,000	8,830,000	8,910,000	8,990,000	9,060,000	9,130,000			
Difference between Goal & Use as a percentage (positive value equal exceedance of goal)									
Result - Oct. (prev. yr.) through Mar.	-6.73%	-1.3%	-2.8%	-3.1%	6.7%	3.4%			
Result - Apr. through Jun.	-32.72%	-24.0%	-7.8%	-22.3%	-5.6%	-12.3%			
Result - Jul. through Sept.	8.01%	1.2%	3.3%	3.2%	9.7%	14.5%			

Single Family Residences, total volume billed (entire service area) (Source - Utility Billing)

year	begin date	gallons (total)	no. of service locations	gal per service location	% change of service locations (Aug. & Sept.)
2002	Jan. & Feb.	661,658,308	57,239	199	
2002	Aug. & Sept.	3,349,808,500	58,418	956	
2003	Jan. & Feb.	621,954,490	57,238	187	
2003	Aug. & Sept.	3,739,564,671	58,747	1061	0.56%
2004	Jan. & Feb.	718,183,965	57,978	214	
2004	Aug. & Sept.	3,297,148,096	59,259	927	0.87%
2005	Jan. & Feb.	604,612,888	58,403	178	
2005	Aug. & Sept.	2,940,177,049	59,914	818	1.11%
2006	Jan. & Feb.	709,090,289	59,231	206	
2006	Aug. & Sept.	3,392,957,337	60,883	929	1.62%
2007	Jan. & Feb.	610,421,856	59,881	176	
2007	Aug. & Sept.	3,610,435,980	61,459	979	0.95%
2008 *	Jan. & Feb.	605,478,234	60,435	170	
2008	Aug. & Sept.	3,158,038,235	61,581	855	0.20%
2009	Jan. & Feb.	655,566,618	60,683	186	
2009	Aug. & Sept.	3,183,286,496	61,585	861	0.01%
2010	Jan. & Feb.	597,449,771	60,608	170	
2010	Aug. & Sept.	2,809,319,289	61,810	758	0.37%
2011	Jan. & Feb.	622,672,473	60,492	177	
2011	Aug. & Sept.	2,693,465,720	61,671	728	-0.22%
			Avg. percent change of service		0.71%

* Heavy winter weather during Feb. 2008 resulted in estimating north side

	Appendix II - Annual Testing Summary - Tests Run on City of Spokane Water						21-Feb-2012		
	2011 DRINKING WATER SOURCE - COMPLETED QUARTERLY MONITORING								
		SOURCE #	8	6	5	1	3	4	2
		WELL	CENTRAL	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	WELL ELECTRIC
BACTERIA									
	COLIFORM - RAW SOURCE *								
	Total Coliform -number of samples per year / greatest result		10 / <1	9 / <1	3 / <1	10 / <1	11 / <1	12 / <1	33 / <1
	Fecal Coliform - number of samples per year / greatest result		10 / <1	9 / <1	3 / <1	10 / <1	11 / <1	12 / <1	33 / <1
	HETEROTROPHIC PLATE COUNT - RAW SOURCE *		10 / <1	9 / <1	3 / 806 **	10 / <1	12 / 2	12 / 1	24 / 10
	number of samples per year / greatest result value								
	* All operating wells are typically sampled once per month								
	** This result occurred when the well was not in production, and does not characterize source water. The greatest HPC count in production was 24.								
INORGANIC									
	FULL LIST- CERTIFIED LAB (phase II & V included)	3rd Qtr - Jul		completed-see App. III	completed-see App. III				
	NITRATE	1st Qtr - Jan						3.33	
		2nd Qtr - April						3.24	
		3rd Qtr - Jul	0.897	0.766	2.48	0.952	1.56	2.54	1.54
		4th Qtr - Oct						3.22	
	NITRATE + NITRITE - RPWRF LAB	1st Qtr - Jan						3.53	
		2nd Qtr - April						3.21	
		3rd Qtr - Jul	0.464	0.241	1.76	0.409	0.950	1.76	0.823
		4th Qtr - Oct						3.24	
ORGANIC									
	VOLATILES	1st Qtr - Jan	no detections						
	(including TRIHALOMETHANES)	2nd Qtr - April							
		3rd Qtr - Jul		no detections	no detections	no detections			
		4th Qtr - Oct							
	SYNTHETIC ORGANICS (515.1, 525.2, 531.1)	2nd Qtr - April							
		3rd Qtr - Jul	no detections	no detections	no detections				
		4th Qtr - Oct	no detections	no detections	no detections				
RADIOACTIVE CONTAMINANTS									
	Radium 228 - pCi/L, Gross Alpha - pCi/L	2nd Qtr - April					2.51,< 1.0	0.95, 1.77	
	UNITS ARE AS REPORTED, ppb FOR ORGANICS, ppm FOR INORGANICS, except where noted.								

CITY OF SPOKANE 21-Feb-2012

DRINKING WATER INORGANICS SUMMARY

MOST RECENT WELL STATION MONITORING ANALYTICAL RESULTS

CERTIFIED 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	27-Jul-2010	27-Jul-2010	26-Jul-2011	26-Jul-2011	28-Jul-2009	28-Jul-2009	28-Jul-2009						
LABORATORY	County (SVL)	County (SVL)	County (SVL)	County (SVL)	County (SVL)	County (SVL)	County (SVL)						
ALKALINITY	114	122	86.8	149	103	150	148	unregulated		125	150	86.8	7
HARDNESS (as CaCO3)	124	131	88.7	155	99.3	155	150	unregulated		129	155	88.7	7
CONDUCTIVITY (µmos/cm)	257	278	203	379	219	329	339	700 t		286	379	203	7
TURBIDITY (NTU)	< 0.100	< 0.100	0.899	2.48	< 0.100	0.125	0.100	1 t		0.51	2.48	0.1	7
COLOR (color units)	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	15 s		0.000	< 5.00	< 5.00	7
CHLORIDE	3.19	3.8	3.83	10.4	4.11	5.92	10.1	250 s		5.91	10.4	3.19	7
TOT. DISSOLVED SOLIDS	143	155	113	215	121	191	191	500 t		161	215	113	7
MAGNESIUM	14	13.6	7.79	18.1	8.98	16.8	12.9	unregulated		13.2	18.1	7.79	7
CALCIUM	26.7	30.2	22.7	32.3	25	34.2	38.6	unregulated		30.0	38.6	22.7	7
ORTHO-PHOSPHATE	0.02	< 0.01	< 0.01	< 0.01	< 0.010	< 0.010	0.02	unregulated		0.006	0.02	< 0.010	7
AMMONIA	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	unregulated		0.000	0.000	0.000	7
CYANIDE	< 0.0100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	0.0106	0.2	0.2		0.011	< 0.0100	7
FLUORIDE	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	2 s	4		< 0.100	< 0.100	7
NITRATE (NO3-N)	0.95	1.41	0.77	2.48	0.96	1.47	2.11	10	10	1	2.48	0.766	7
NITRITE (NO2-N)	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	1	1		< 0.050	< 0.050	7
SULPHATE	12	10.8	6.66	14.9	9.1	16.6	12.7	250 s	400	11.8	16.6	6.7	7
ALUMINUM	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	0.05 - 0.2 mg/L * *			< 0.080	< 0.020	7
ANTIMONY	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	0.006	0.006		< 0.00300	< 0.001	7
ARSENIC	0.00324	0.00422	0.00260	0.0023	0.00277	0.00324	0.00513	0.010	0	0.0034	0.00513	0.0023	7
BARIUM	0.0249	0.0216	0.0165	0.0315	0.0189	0.0273	0.0418	2	2	0.0261	0.0418	0.0165	7
BERYLLIUM	< 0.000800	< 0.000800	< 0.000800	< 0.000800	< 0.0008	< 0.0008	< 0.0008	0.004	0.004		< 0.00200	< 0.0008	7
CADMIUM	< 0.00200	< 0.00200	< 0.00020	< 0.000200	< 0.0002	< 0.0002	< 0.0002	0.005	0.005		< 0.002	< 0.000200	7
CHROMIUM	< 0.0060	< 0.0060	< 0.0060	< 0.0060	< 0.0060	< 0.0060	< 0.0060	0.1	0.1		< 0.0060	< 0.0060	7
COPPER	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	TT	1.3		< 0.010	< 0.010	7
IRON	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	0.3 s			< 0.060	< 0.060	7
LEAD	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	TT	0		< 0.001	< 0.001	7
MANGANESE	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	0.05 s			< 0.0040	< 0.0040	7
MERCURY	< 0.000200	< 0.000200	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	0.002	0.002		< 0.00020	< 0.00020	7
NICKEL	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.1 * * *	0.1 * * *		< 0.010	< 0.010	7
SELENIUM	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	0.05	0.05		< 0.00300	< 0.00300	7
SILVER	< 0.0050	< 0.0100	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.1 s			< 0.0050	< 0.0050	7
SODIUM	3.05	3.95	2.62	4.54	2.58	3.81	6.19	unregulated		3.8	6.19	2.58	7
THALLIUM	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	0.002	0.0005		< 0.00100	< 0.000400	7
ZINC	0.0151	< 0.0100	< 0.0100	< 0.0100	< 0.010	< 0.010	< 0.010	5 s			0.0159	< 0.010	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

CONTAMINANTS FOUND IN DRINKING WATER TESTING IN 2011

CITY OF SPOKANE, WATER & HYDROELECTRIC SERVICES

Data presented, if not from 2011, 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)**	**2.6**	**2.3**	**2**	**2**	**10**	**0**	**Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes**
Nitrate	mg/L	**(a)**	**3.33**	**0.77**	**10**	**10**	**10**	**10**	**Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits**
Gross Alpha	pCi/L	**(a)**	**1.8**	**< 1.0**	**1**	**2**	**15**	**0**	**Erosion of natural deposits**
Combined Radium 226 and 228 (b)	pCi/L	**(a)**	**3.0**	**1.8**	**2**	**2**	**5**	**0**	**Erosion of natural deposits**

DISTRIBUTION SYSTEM TESTING CONTAMINANT	Units	Highest Average	Detected Maximum	Detected min.	Number Positive Samples	Number of Samples	MCL	MCLG	MAJOR SOURCES
Disinfection Byproducts - TTHMs [Total Trihalomethanes] (c)	µg/L	**3.32**	**5.35**	**1.28**	**4**	**4**	**80**	**0**	**By-product of drinking water chlorination**

		date sampled	90th Percentile (e)	Number of Sites exceeding AL	Number Positive Samples	Number of Samples	MCL	MCLG	
Copper (d)	mg/L	**Jul-09**	**0.10**	**0**	**56**	**56**	**TT, AL= 1.3**	**1.3**	**Corrosion of household plumbing systems; Erosion of natural deposits: Leaching from wood preservatives**
Lead (d)	µg/L	**Jul-09**	**5.70**	**0**	**56**	**56**	**TT, AL= 15**	**0**	**Corrosion of household plumbing systems; Erosion of natural deposits**

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.

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.
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)
µg/L = micrograms per Liter = parts per billion
mg/L =milligrams per Liter = parts per million
TT = Treatment Technique = A required process intended to reduce the level of a contaminant in drinking water.
ND = None Detected
< less than