

# REPORT ON CITY OF SPOKANE DRINKING WATER FOR 2009

Reported by  
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The City of Spokane's water is of very high quality. The City runs many different tests at varying intervals to confirm that the City's drinking water meets Washington State and Federal EPA drinking water quality standards.

A comprehensive list of the substances the City has tested for is in Appendix II. The City drinking water supply, to date, has consistently met Federal standards. This report summarizes, by contaminant group, the drinking water monitoring conducted during 2009, with historical

context. The discussion that follows is meant to provide consumers and other interested parties some insight into what analytical tests have been conducted and, in some cases, substances that have been detected. The State and Federal Maximum Contaminant Level (MCL) information is provided as a risk benchmark.

This report also summarizes the quantity of water the City used in 2009 and documents some indicators to show the progress in meeting the conservation goals adopted by the City in its Water Stewardship Strategic Plan.

## 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://www.epa.gov/safewater/agua.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.

The final pages (appendices) of this report summarize the most recent analytical testing. Appendix III summarizes the testing that was completed during 2009, 2008, and 2007. Appendix IV through X summarizes the analytical results for recent and historical testing. The following narrative and attachments summarize and explain recent results in more detail. **Appendix XI 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 are (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 this Aquifer contains a large volume of water, many factors play into the volume of water in the Spokane River and complicate 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 this 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

([http://www.idwr.idaho.gov/WaterInformation/projects/svvp/PDFs/svvp\\_MOA\\_10-26-07.pdf](http://www.idwr.idaho.gov/WaterInformation/projects/svvp/PDFs/svvp_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.

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 U.S. Environmental Protection Agency’s Safe Drinking Water Hotline at (800) 426-4791, or you can access additional information at EPA websites: [www.epa.gov/safewater/dwhealth.html](http://www.epa.gov/safewater/dwhealth.html) and/or [www.epa.gov/safewater/wot/index.html](http://www.epa.gov/safewater/wot/index.html)

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. Further information concerning the EPA drinking water regulations and children may be accessed at <http://www.epa.gov/safewater/kids/kidshealth/index.html> (Para ver información adicional, visite al: [www.epa.gov/safewater/agua/losninos.html](http://www.epa.gov/safewater/agua/losninos.html) )

For further information regarding the City of Spokane’s drinking water or related issues:

City of Spokane Water Department	509-625-7800	<a href="http://www.spokanewater.org/">www.spokanewater.org/</a>
City of Spokane-Environmental Programs	509-625-6570	<a href="http://www.greenspokane.org/">http://www.greenspokane.org/</a>
Spokane County - Water Resources	509-477-6024	<a href="http://www.spokanecounty.org/wqmp/">www.spokanecounty.org/wqmp/</a>
Spokane Regional Health District – Environmental Health Div.	509-324-1560	<a href="http://www.srhd.org/services/environment.asp">http://www.srhd.org/services/environment.asp</a>
Washington State Department of Health - Eastern Regional Office (Drinking Water)	509-329-2100	<a href="http://www.doh.wa.gov/ehp/dw/default.htm">www.doh.wa.gov/ehp/dw/default.htm</a>
Washington State Department of Ecology – Eastern Regional Office	509-329-3400	<a href="http://www.ecy.wa.gov/">www.ecy.wa.gov/</a>
U.S. EPA Safe Drinking Water Hotline	1-800-426-4791	<a href="http://www.epa.gov/safewater/hotline/index.html">www.epa.gov/safewater/hotline/index.html</a>

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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: http://www.microsoft.com/downloads/details.aspx?FamilyID=3657ce88-7cfa-457a-9aec-f4f827f20cac&displaylang=en

# 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 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 during a timeframe through 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 a period of indoor water use typically and 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 of indoor use and 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 goals for this period are the most ambitious.

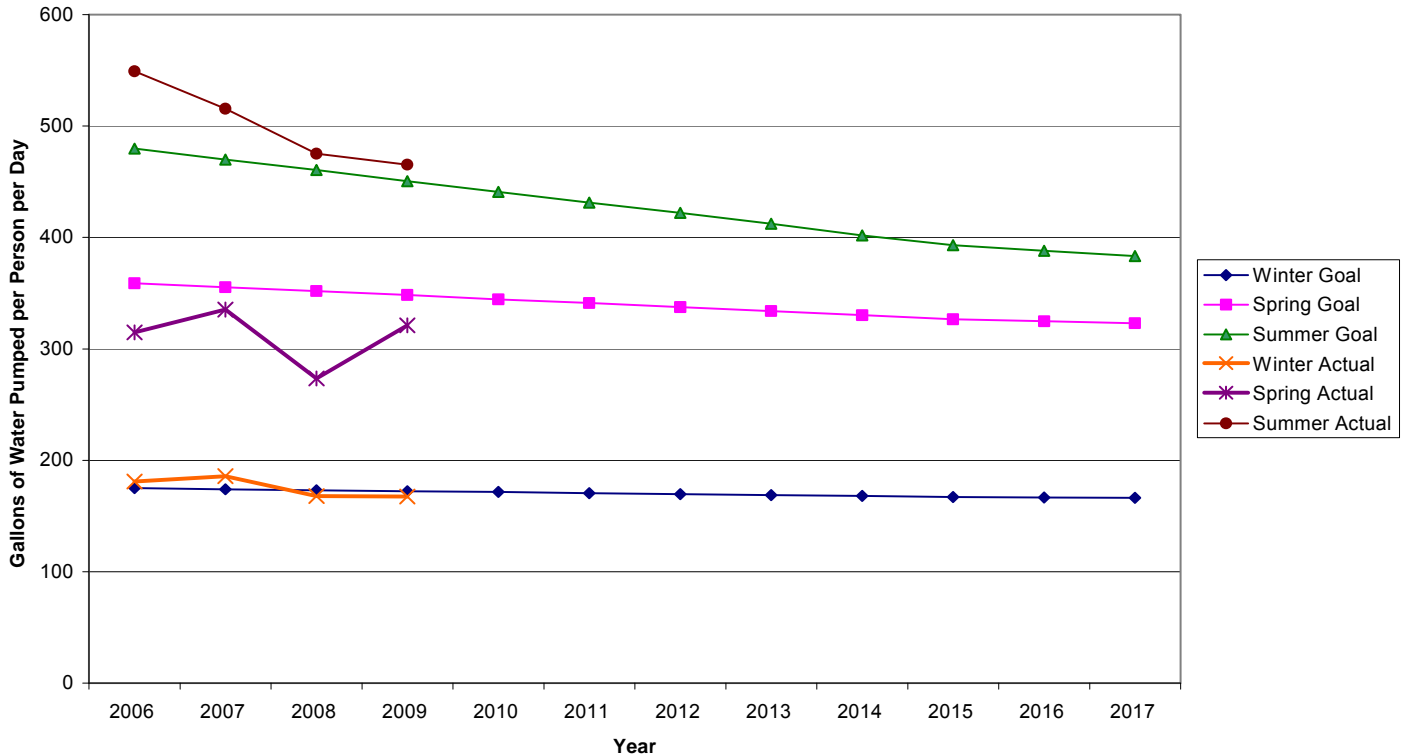
The detailed source water pumping totals versus the adopted Water Stewardship Goals are in Appendix I. The following table and graphs illustrates this information for 2009;

WATER YEAR period	2009 pumpage (1,000 gallons)		
	Total	Goal	Result
Oct. (2008) through Mar.(2009) (winter)	6,618,666	6,810,000	-2.8%
Apr. through Jun. (spring)	6,439,647	6,890,000	-7.8%
Jul. through Sept. (summer)	9,202,243	8,910,000	3.3%
sum of seasonal totals	22,170,556		

This table shows the difference between the Goal and the Use as a percentage. A positive value equals exceedances of the goal. Total pumpage for these periods for 2001 - 2009 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 2009, specifically for the timeframe of July – September 2009.** The following graph demonstrates the total pumpage vs. goals for each season for 2006 thru 2009.

**Daily per Person Water Pumpage by Conservation Goal Period based on Projected Water Service Area Population**



**In 2009 the City met the conservation goal for the winter period of October 2008 through March 2009.** This was the second straight 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 2009.**

To date, the City has not met its goal for July through September, including 2009. Note that the rate of water use reduction is most ambitious during this season. **Although the City did not meet its goal for July through September in 2009, the graph demonstrates slight continued improvement.**

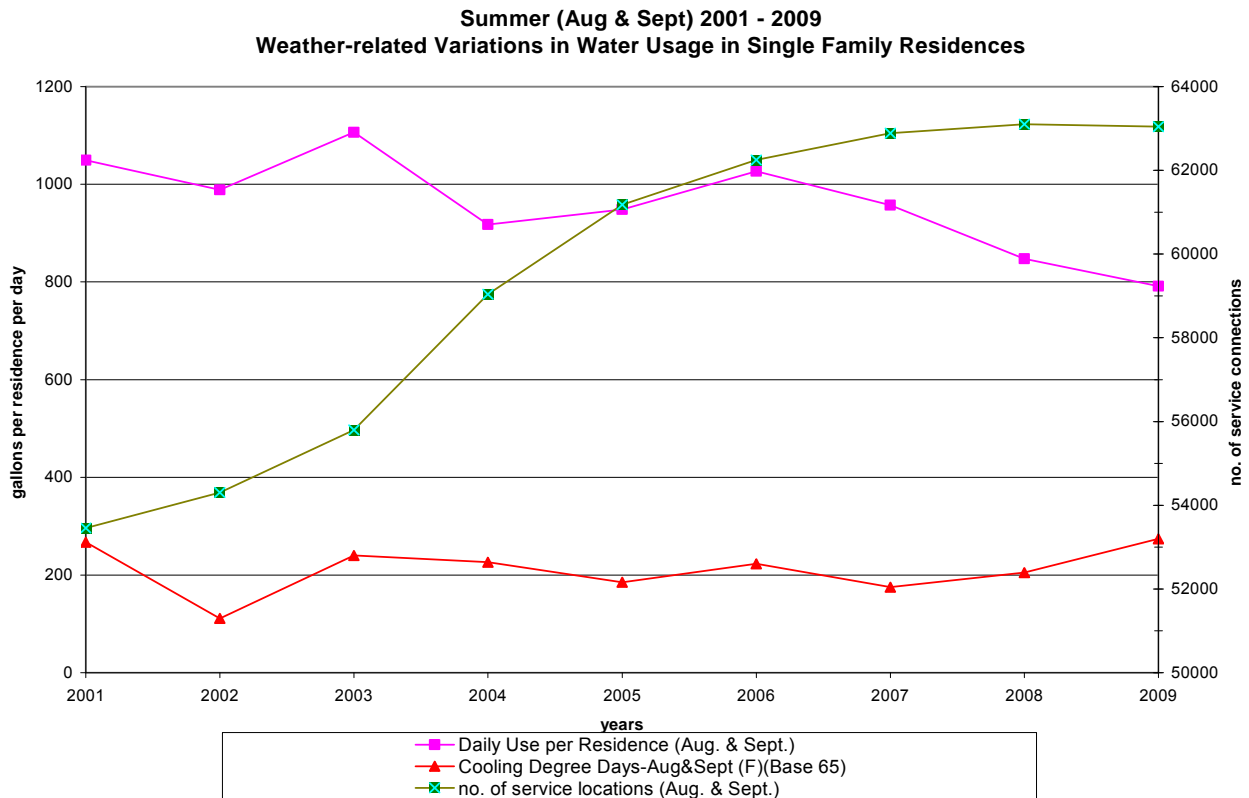
It is important to note that the commitment taken on by the City is based on per capita usage and the actual population served in 2009 is not immediately known. However, an indicator of population would be the number of single family residences served. Following is a table giving number of single family residences over the last eight years. Please note

that the number of residences is typically lower in the winter because some local residents go south for the winter, and then such residences are not counted as “connections.”

	<i>no. of service locations (Jan. &amp; Feb.)</i>	<i>no. of service locations (Aug. &amp; Sept.)</i>
2001	52,327	53,456
2002	53,572	54,304
2003	54,940	55,799
2004	56,442	59,042
2005	57,894	61,178
2006	59,674	62,248
2007	61,068	62,886
2008	61,065	63,102
2009	61,504	63,042

The number of single-family residences decreased in 2009 by -0.10% (Aug-Sept) over 2008. This modest decrease, probably resulting from the economic conditions during 2009, is in contrast to the 1.28% per capita increase anticipated in the Water Stewardship Strategic Plan.

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 2001-2009:



The preceding graph compares water usage of single family residences with temperature (i.e. cooling degree days). The summer of 2009 had more cooling degrees days (was hotter) than the previous seven years but continued the downward trend in summertime water use of single family residences. The city had an outdoor water conservation educational program that could account for this continued downward trend which countered the previous trend of increased water use in higher cooling degree summers such as 2001 and 2003.

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

	<i>Single family residence</i>	
	<i>Gallons used per day, January &amp; February</i>	<i>Gallons used per day August &amp; September</i>
2001	239	1032
2002	226	972
2003	206	1088
2004	221	903
2005	177	933
2006	204	1010
2007	199	941
2008 *	133	834
2009	148	778

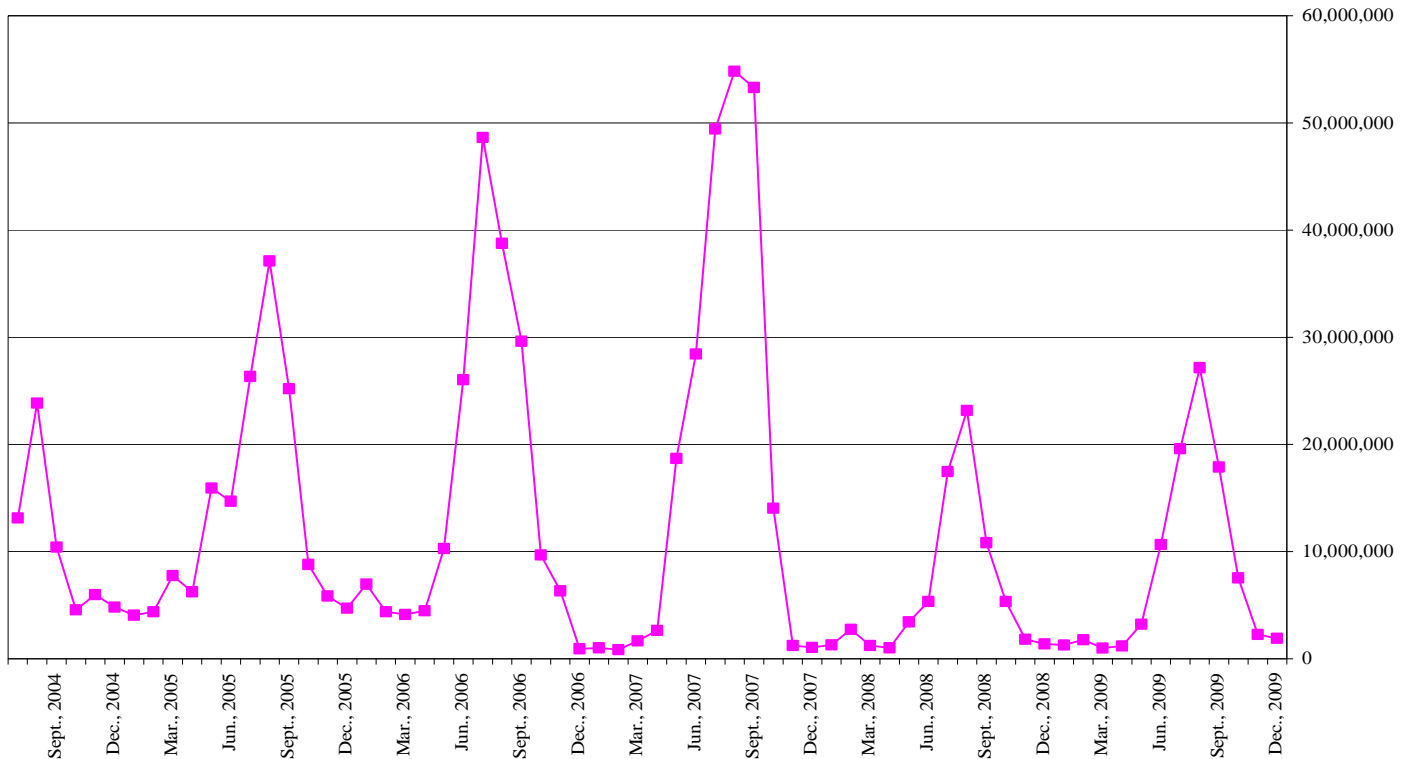
\* heavy winter weather during Feb. prevented meter reading on the north side. However, usage was comparable on the south side, so northside estimates are fairly accurate.

In 2008 there was an unanticipated reduction in demand from water purveyors, particularly on the West Plains. The water demand increased in 2009 but was still below historical levels. Following is a table with 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 %

This is a graph displaying the total gallons per month wholesaled to water purveyors outside the City’s water service area:

**Total Intertie Water Demand, gallons per month**



## MEANS

The City of Spokane has instituted several programs to achieve conservation goals. 2009 rebate programs encouraged conservation to meet the conservation goals. The indoor conservation program, coordinated with Spokane County provided 720 \$100 rebates for WaterSense high efficiency toilets and Energy Star clothes washers. Each single family residential household was allowed up to two toilets and one clothes washer. The outdoor rebate program gave a \$100 credit for removing at least 1000 square feet of maintained healthy lawn. 23 lawn replacements with reduced water demand landscape, such as permeable hardscape, xeriscape, hardy drought or heat tolerant plants or vegetable gardens were made. To help encourage indoor water conservation the City distributed 1,800 conservation kits comprising a low flow shower head and low flow faucet aerators for the kitchen and bathroom. In addition to the rebate programs the City of Spokane continued its many public education events. These included sponsoring the water conservation night at the Spokane Chiefs hockey and participating in the Spokane Indians baseball event. With other bi-state governments and agencies the city provided drought tolerant grass and flower seed packets to the public. The City funded a regional multimedia campaign to encourage summer outdoor water conservation. The waste water and water utilities furnished water conservation improvements at City Hall, Cannon Hill Park and Fire Station Eleven.

For further information check these three websites: [EPA-WaterSense Program](http://www.epa.gov/watersense/) (<http://www.epa.gov/watersense/>) [H2OUSE-Watersaver Home](http://www.h2ouse.net/) (<http://www.h2ouse.net/>) and the City of Spokane Water Stewardship Program, at <http://www.greenspokane.org/stewardship/index.html>.

## DISTRIBUTION SYSTEM LEAKAGE (DSL)

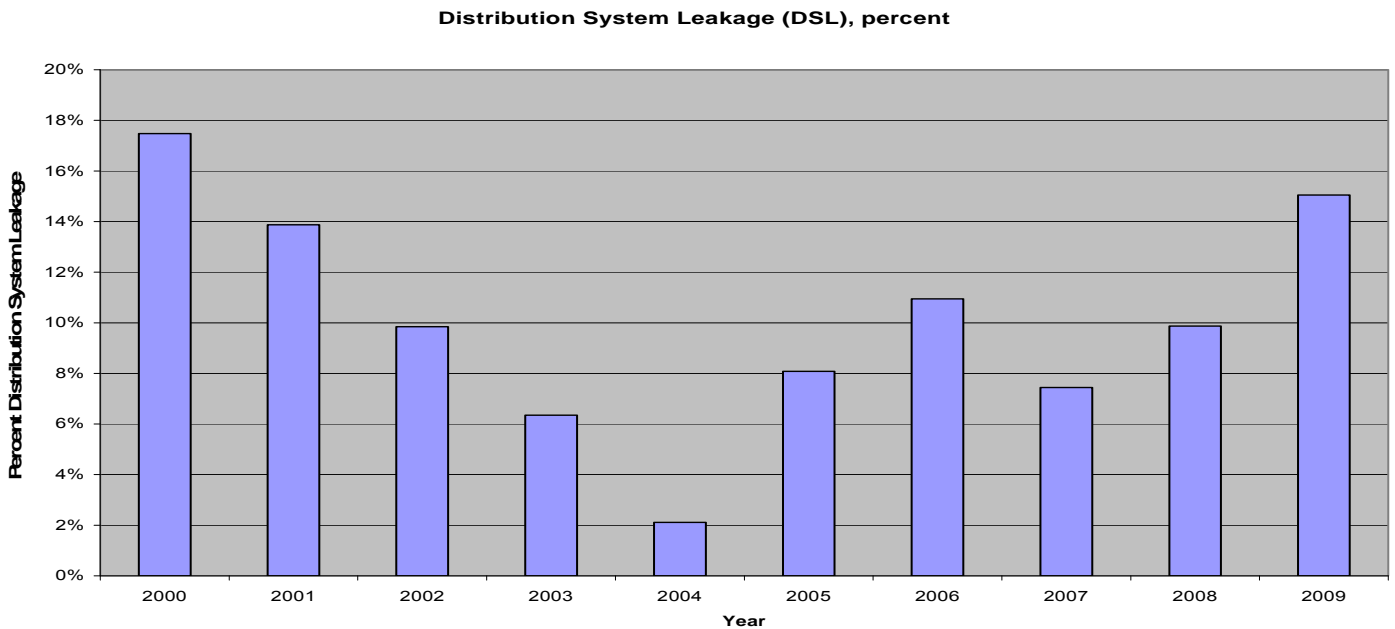
The Water Use Efficiency Rule requires the calculation of system water loss (leakage). Prior to this calculation, water systems are also required to install service meters on all direct service connections<sup>1</sup> before January 22, 2017. The City of Spokane has had a long-standing policy of metering 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, fire-fighting, 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. 1. The volume and percent DSL for the last three years are as follows:

	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>Average</i>
DSL, percent	7.4	9.9	15.0%	10.8 %
DSL, volume (gallons x 1000)	1,708,120	2,094,593	3,371,258	2,391,324

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%<sup>2</sup>. **The DSL for the City of Spokane Water System is 10.8 %, which does not meet the standard.** This year's Distribution System Leakage is substantially different from previous years. This marked increase is a result of the City's work to more accurately measure the gallons produced and the gallons delivered to our customers. 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 2002-2009:



<sup>1</sup> WAC 246-290-820(2)(a)

<sup>2</sup> WAC 246-290-820(1)(b)(i)



## Quality Drinking Water An Invaluable Community Resource

### INORGANICS

The City typically has a Washington State Department of Ecology certified lab run a full drinking water inorganics analysis once every three years on each of our sources. 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 effective date for compliance with the new Maximum Contaminant Level (MCL) of 10 ppb was in 2006. **The arsenic readings in 2009 at the Nevada, Parkwater and Ray Street Wells were 2.77 ppb, 3.24 ppb and 5.13 ppb respectively.** For city drinking water, this arsenic result from Ray Street Well represents the highest result to date. A 2007 result from Well Electric (4.92 ppb) was the previous high.

City 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.

Reported detections of arsenic by drinking water certified laboratories are a fairly recent occurrence for the City (first in 2001) and are primarily a result of improved laboratory reporting limits. All source wells were sampled 2 to 3 times at this improved reporting limit during the period 2001-2005. The results ranged from less than the detection limit of 1 ppb to 4.49 ppb.

The EPA had set the MCL for arsenic at 50 ppb in 1975. The new MCL for arsenic was published in a Final Rule on January 22, 2001, and it set the MCL for arsenic at 10 ppb, effective 2006. The Maximum Contaminant Level Goal (MCLG) continues to be zero. After the publication of the Final Rule, the EPA initiated review of the standard for arsenic to reassess the balance between the cost to water utilities of removing arsenic from drinking water and the medical/social costs for the portion left unremoved. The EPA announced on October 31, 2001, its decision to move forward in implementing the standard for drinking water at 10 ppb.

Further information concerning health impact issues, regulatory requirements, and compliance costs for water utilities/water customers can be found at [www.epa.gov/safewater/arsenic/index.html](http://www.epa.gov/safewater/arsenic/index.html) and [www.doh.wa.gov/ehp/dw/fact\\_sheets/Arsenic\\_in\\_Drinking\\_Water\\_questions.htm](http://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 City Water Department no longer has any asbestos-containing (AC) pipe in service. Historically, only a small portion (one third of one percent) of the City's water distribution system east of Havana and south of Trent was comprised of asbestos-cement pipe. The asbestos-containing

(AC) pipe had been in service for many decades. The City Water Department Yardley Project replaced 13,603 feet of asbestos-cement pipe.

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.

## IRON

**The iron results for 2009 at the Nevada, Parkwater and Ray Street wells were below the detection limit (< 0.060 mg/L).**

In 2007, there was a detection of iron (0.23 mg/L) in a duplicate sampling for Well Electric, which was attributable to interference in the analysis<sup>3</sup>.

There was an iron result from the Nevada St. Well on July 29, 2003, of 0.497 mg/L. This exceeded the Secondary MCL of 0.3 mg/L. Secondary Drinking Water Standards are standards based on factors other than health effects. As such, these regulated contaminants may cause cosmetic effects or aesthetic effects in drinking water. It was determined that the exceedance was caused by a temporary dislodging of substrate (i.e. sand and silt) from the bottom of the well. Repeat sampling in October was < 0.1, which is more typical of aquifer background concentrations.

## NITRATE-NITROGEN

The Ray St. Well continues to be monitored quarterly for Nitrate-N. **In 2009, the highest certified lab quarterly result for the Ray St. Well was 3.60 mg/L.** The result from a duplicate sample analyzed by the Riverside Park Water Reclamation Facility (RPWRF) Laboratory was 3.92 mg/L. The quarterly results for Ray St. Well for 2009 are as follows:

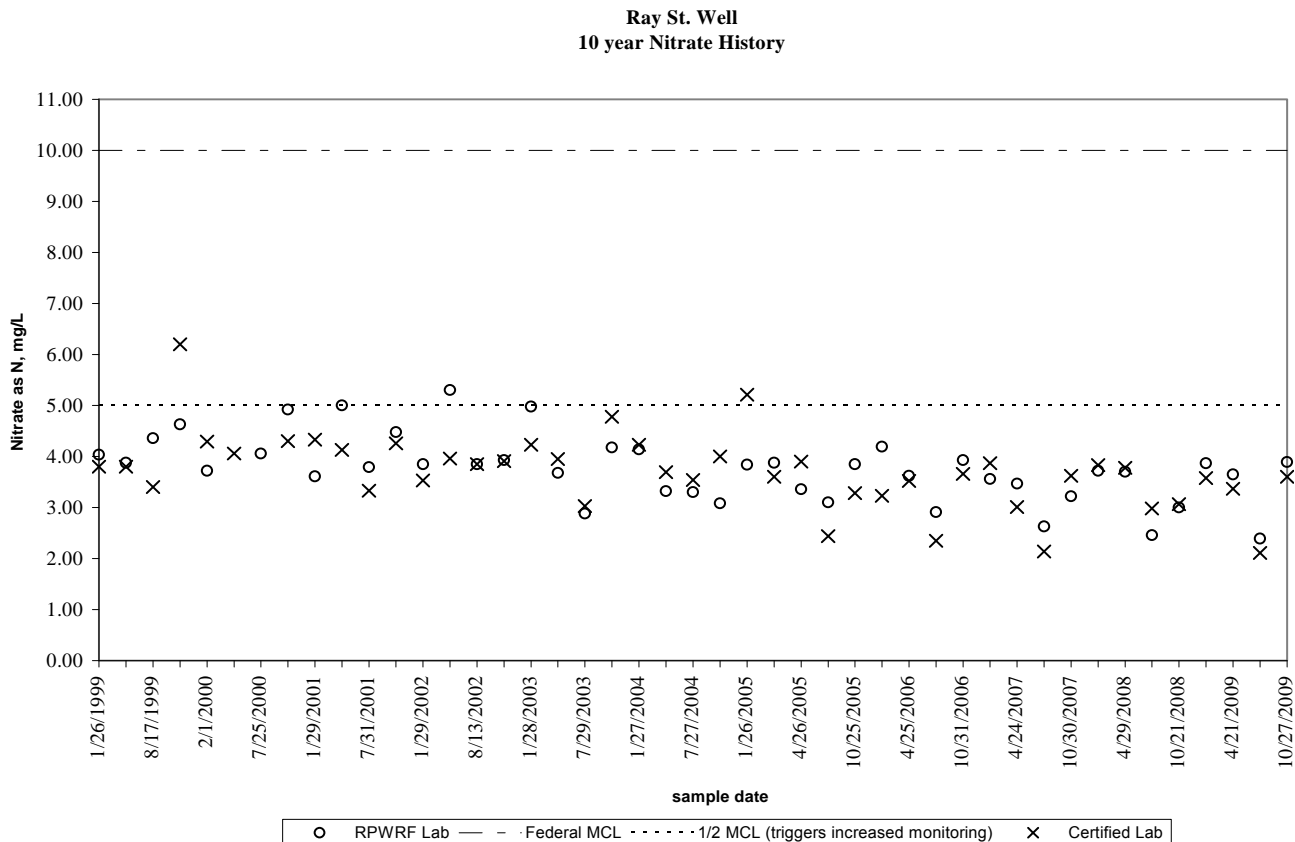
<i>Sample Date</i>	<i>Certified Laboratory Result - Nitrate-N, mg/L</i>	<i>RPWRF Laboratory Result – Nitrate+Nitrite-N, mg/L</i>
27-January-2009	3.58	3.87
20-April-2009	3.37	3.66
28-July-2009	2.11	2.41
27-October-2009	3.60	3.92

In July 1997, October 1999, and January 2005 the nitrate-nitrogen levels in the Ray Street Well were reported by a certified lab as exceeding half the MCL, 5.23, 6.2, and 5.21 mg/L, respectively.

<sup>3</sup> The laboratory used Inductively Coupled Plasma-Mass Spectroscopy. Argon Oxide, an inherent contaminant because Argon is the plasma for the method, interferes with the Iron result making it incorrectly positive. The laboratory stated that it was not allowed to correct for this interference.

The historical data for this well reflects a slow trending from less than 1 mg/L in the 1950s to typically 5 mg/L or less currently, and demonstrates that, while elevated compared to other city wells, the nitrate nitrogen level at Ray Street Well appears to have peaked and is still within allowable standards.

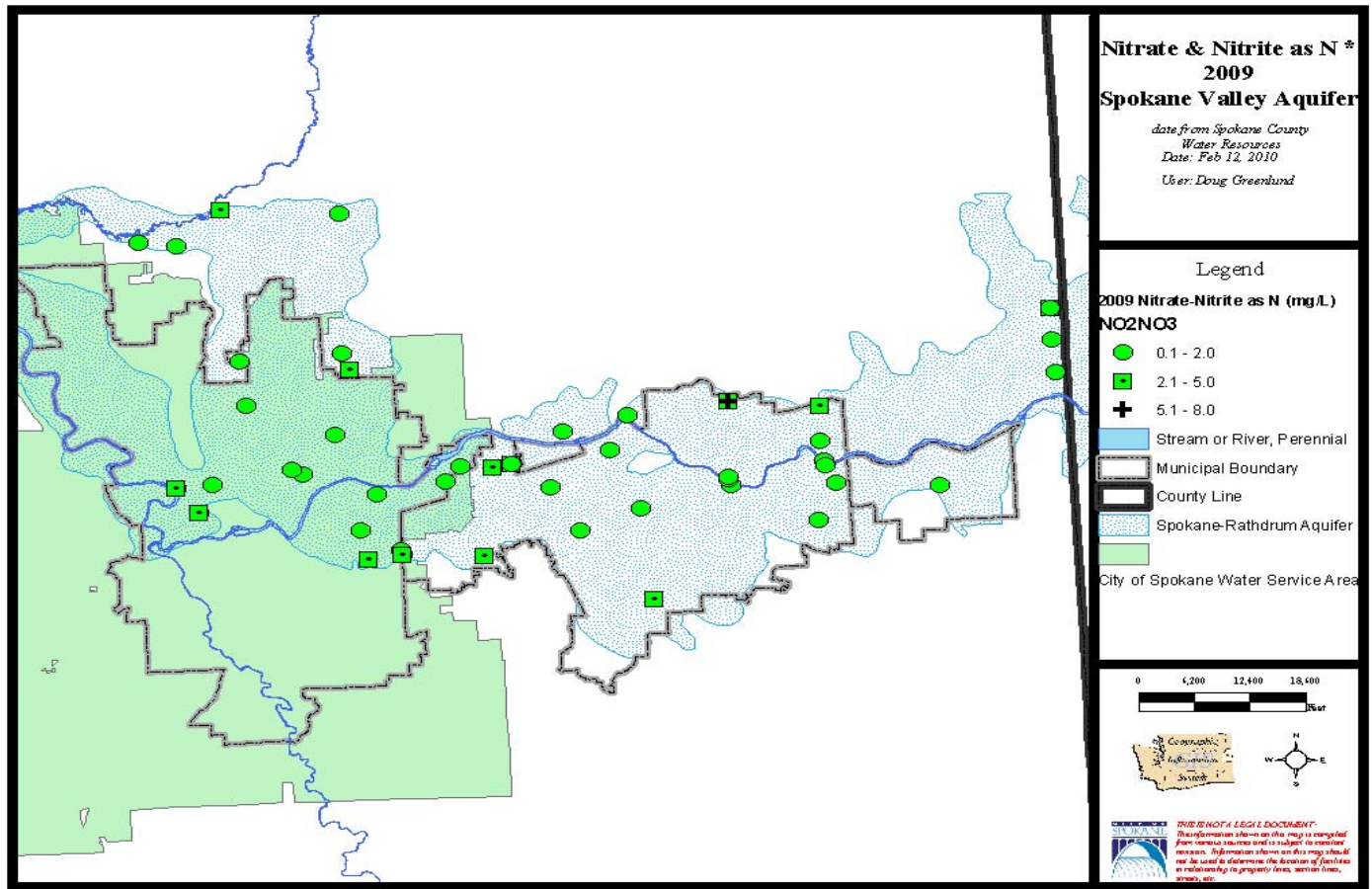
The results for the most recent ten years of testing for nitrate-nitrogen at the Ray Street Well, from certified labs and from the City Wastewater Laboratory, are presented in the following graph. As you will note from the graph, the trend for nitrate-nitrogen at the Ray Street Well has remained constant to slightly declining for a number of years.



**All other City sources average 1.21 mg/L for 2009, less than a fifth of the MCL for nitrate-nitrogen.** The 2009 results for the other City source wells are as follows:

<i>Source Well</i>	<i>Certified Laboratory Result - Nitrate-N, mg/L</i>	<i>RPWRF Laboratory Result - Nitrate+Nitrite-N, mg/L</i>
Well Electric	1.51	1.66
Parkwater	1.47	1.60
Hoffman	1.44	1.46
Grace	0.86	0.94
Nevada	0.96	1.24
Central	1.02	1.11

The following map depicts the results of monitoring wells sampled during 2009 by the Spokane County Water Resources Program. The results are for nitrate+nitrite as nitrogen from monitoring wells, 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 third year in a row, 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.



When present in excess of the MCL, nitrate in drinking water can cause a serious blood disorder (methemoglobinemia), usually in infants. Infants under one year of age should not drink water exceeding the drinking water standard (MCL) of 10 parts per million (ppm) of nitrate expressed as nitrogen. Although no health-based standards exist for adult exposures, the following people may be at risk:

- Individuals with reduced gastric acidity.
- Individuals with a hereditary lack of methemoglobin reductase.
- Women who are pregnant.

For further information concerning nitrate in drinking water and the potential health issues, you can access the EPA website at <http://www.epa.gov/safewater/contaminants/basicinformation/nitrate.html> or the Washington State Dept. of Health website at [www.doh.wa.gov/ehp/dw/Publications/331-214\\_2-21-07.pdf](http://www.doh.wa.gov/ehp/dw/Publications/331-214_2-21-07.pdf) (Para ver información adicional, visite al; [www.doh.wa.gov/ehp/dw/Publications/331-214\\_spanish\\_3-7-07.pdf](http://www.doh.wa.gov/ehp/dw/Publications/331-214_spanish_3-7-07.pdf))

## LEAD - COPPER

**Lead and Copper testing of sources and at-risk residences were conducted in 2009. The highest reading of lead in a home was 8.06 ppb. The maximum reading for copper was 167 ppb. These results for lead and copper continue to be substantially less than the 15 ppb Action Level for lead and the 1300 ppb 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.” Source water is also analyzed for lead and copper concurrent with the in-home testing. **The maximum concentration in 2009 source water testing for lead was 0.3 ppb and for copper was 5.63 ppb.**

In 1992, the City completed the initial phase of testing for compliance with the Lead - Copper Rule. The City’s eight well stations and 100 “at-risk” household taps were twice checked for lead and copper. Lead was not detected in the source water at or above two parts per billion. Copper levels in the source water were below 20 ppb with the exception of one reading at 30 ppb. The federal government has a 0 ppb Maximum Contaminant Level Goal (MCLG) for lead and a 1300 ppb MCLG for copper.

Homes at risk (homes with lead soldered copper plumbing and/or those with lead alloy service lines running from the street to the home) were determined before testing. In addition to 1992, in 1995, 1996, 1997, 2000, 2003, 2006, and 2009 50 at-risk homes were checked each summer. Fewer than 10% of at-risk homes had levels in excess of 8 ppb of lead and 200 ppb of copper. These levels were below the Federal 90th percentile action levels of 15 and 1300 ppb respectively. Federal regulations require that 90% of the tested homes be below these levels. The highest readings detected in homes were 71 ppb for lead and 540 ppb for copper.

City records indicate that some 981 homes built during World War II 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. The Spokane Water Dept., in 2000, notified the then current owners of homes with water service lines made of lead alloy and extended an offer to replace the lead pipe, if the homeowner would pay the replacement cost from the property line into the house. 156 homeowners requested their water service line be replaced. The City has completed work at all 156 sites, replacing the service pipe up to the property line. It was not anticipated, but no lead pipe was found on any homeowner’s side of the water service. Additionally, the Water Dept. has been replacing the City lead-alloy services when in-home testing results exceeded Action Limits and when water line work was already being conducted. Currently, 581 lead alloy connections remain in service.

Testing on water left sitting in lead-containing pipes for at least 6 hours clearly demonstrates the fact that some lead moves into the water. We encourage 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 and copper in drinking water, you can access the Washington Dept. of Health website at [www.doh.wa.gov/ehp/dw/Programs/lead.htm](http://www.doh.wa.gov/ehp/dw/Programs/lead.htm) and [www.doh.wa.gov/ehp/dw/fact\\_sheets/copper\\_in\\_drinking\\_water.htm](http://www.doh.wa.gov/ehp/dw/fact_sheets/copper_in_drinking_water.htm).

## PHOSPHORUS

Previous versions of this report typically focused on monitoring results for contaminants and how they related to drinking water regulations. 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.

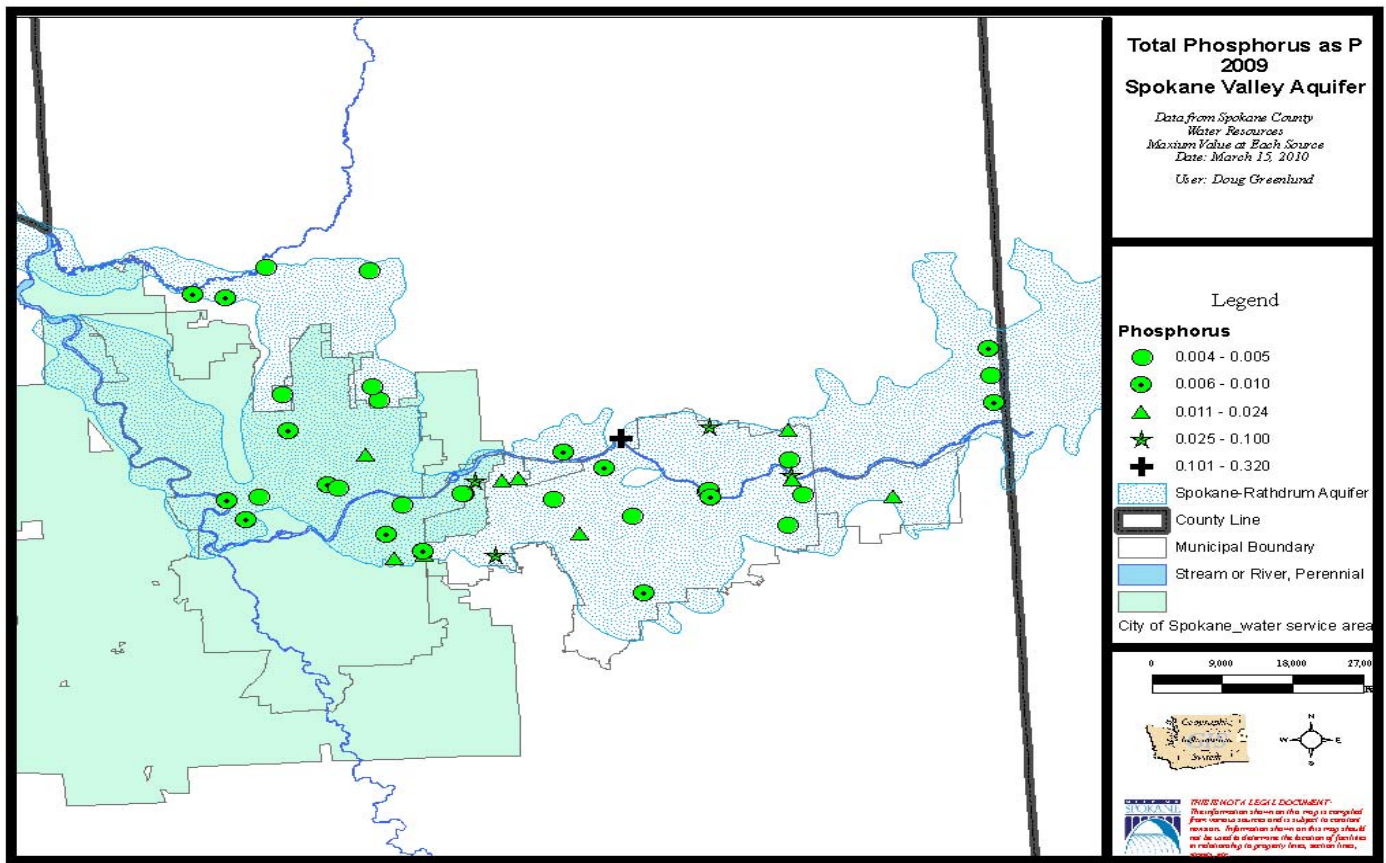
In July 2009, groundwater samples from the City source wells were analyzed by the City RPWRF Laboratory. **Similar to Nitrate concentrations, most City wells have fairly low concentrations, typically close to the detection limit of 0.005 mg/L. Ray St. Well was sampled four quarters, and the greatest result was .027mg/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 benchmark of the river to have a concentration limit of 0.010 mg/L in the critical summer season.

<i>Location</i>	<i>Date Sampled</i>	<i>PO4-P, mg/L *</i>	<i>Location</i>	<i>Date Sampled</i>	<i>PO4-P, mg/L *</i>
Electric	7/28/2009	0.006	Central	7/28/2009	<0.005
Parkwater	7/28/2009	0.012	Ray Street	1/27/2009	0.024
Nevada	7/28/2009	0.005	Ray Street	4/21/2009	0.027
Grace	7/28/2009	<0.005	Ray Street	7/28/2009	0.026
Hoffman	7/28/2009	<0.005	Ray Street	10/27/2009	0.019

\*Note: Method Detection Limit for these results is 0.005 mg/L

During 2009, the Spokane County Water Resources Program took over 200 samples for Total Phosphorus (including duplicate samples at several locations). Of that number, 13 exceeded 0.025 mg/L. Following is a map demonstrating the distribution of Total Phosphorus results on the Washington side of the Spokane Valley-Rathdrum Prairie Aquifer;



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 number 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 0.050 – 0.100 mg/L. In the regional context of 0.010 mg/L, as a standard, this continues to be cause for some concern.

## RADIONUCLIDES & RADON

### RADIONUCLIDES

In 2009 the City of Spokane sampled the Grace, Parkwater and Ray St. wells for Radium 228. The results were **1.9 pCi/L, 1.1 pCi/L and 1.3 pCi/L respectively**. The Washington Dept. of Health required the City of Spokane to monitor for Radium 228 (a beta particle emitter) in two different seasons at each source water well station during the timeframe 2005-2007. The Water Dept. chose to conduct this monitoring during 2005. Because the Radium 228 results from Parkwater Wells were greater than the other results, the Washington Dept. of Health requested that we sample Parkwater for two additional quarters in 2007. The results (including 2009 results, highlighted) are as follows:

<i>Well</i>	<i>Sample Date</i>	<i>Radium 228 , pCi/L</i>	<i>Sample Date</i>	<i>Radium 228 , pCi/L</i>
Central	04/26/2005	0.12	7/26/2005	0.32
Grace	10/25/2005	0.29	7/26/2005	0.07
Hoffman	10/25/2005	< 0.5	7/26/2005	0.29
Nevada	04/26/2005	0.08	7/26/2005	0.11
Parkwater	04/26/2005	0.1	7/26/2005	1.30
Ray St.	04/26/2005	0.21	7/26/2005	0.37
Well Electric	04/26/2005	0.34	7/26/2005	0.4
Parkwater	04/24/2007	0.63	10/30/2007	1.41
<b>Grace</b>	<b>04/21/2009</b>	<b>1.9</b>		
<b>Parkwater</b>	<b>04/21/2009</b>	<b>1.1</b>		
<b>Ray St</b>	<b>04/21/2009</b>	<b>1.3</b>		

The following table summarizes the initial “grandfathered” Gross Alpha particle activity data:

<i>Well</i>	<i>Sample Date</i>	<i>Gross Alpha , pCi/L</i>	<i>Well</i>	<i>Sample Date</i>	<i>Gross Alpha , pCi/L</i>
Baxter *	Jul-25-2000	< 3	Nevada	Jul-29-2003	1.53
Central	Jul-29-2003	< 1.25	Parkwater	Jul-29-2003	2.61
Grace	Jul-25-2000	< 3	Ray St.	Jul-29-2003	1.36
Hoffman	Jul-25-2000	< 3	Well Electric	Jul-29-2003	1.84

\* decommissioned in 2003

The Radionuclide Rule finalized in 2000 requires the City to report on Gross Alpha, Combined Radium 226 and Radium 228, Uranium and Beta particle and photon emitters. The Gross Alpha Particle activity levels are reported in the table above. The City of Spokane will be testing for Gross Alpha particle in 2010. The Radionuclide Rule allows Gross Alpha results to be used in lieu of Radium 226 if the particle activity is below 5 pCi/L. 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 3pCi/L so the City has not tested for Radium 226 or Uranium. Beta particle and photon emitter testing is only required of a few vulnerable water systems. The City has not been required to test for Beta Particle and Photon Radioactivity. When Gross Alpha testing is completed in 2010 combined Radium 226/228 will be reported.

The Federal MCL for Gross Alpha particle activity is 15 pCi/L. The MCL for Gross Beta particle activity and photon emitters is 4 millirems per year (this is a measure of exposure and has been interpreted as the equivalent of 50 pCi/L). The MCL for uranium is 30µg/L. The Federal MCL for Radium 226 and Radium 228 (combined) is 5 pCi/L.

## RADON

The Water Dept. monitored its source wells for Radon in 2008, the results are as follows:

<i>Well</i>	<i>Sample Date</i>	<i>Radon , pCi/L</i>	<i>Sample Date</i>	<i>Radon , pCi/L</i>
Central	4/29/2008	534	7/29/2008	468
Grace	7/29/2008	284	10/21/2008	440
Hoffman	8/4/2008	488	10/21/2008	467
Nevada	4/29/2008	426	7/29/2008	473
Parkwater	4/29/2008	534	7/29/2008	534
Ray St.	4/29/2008	503	7/29/2008	452
Well Electric	4/29/2008	402	7/29/2008	212

Quarterly readings of radon at the Parkwater Well averaged 475 pCi/L in 1993 and 436 in 1997. Other City sources, with the exception of the Grace Well, were checked in 1992 for radon and results ranged from 210 to 510 with a mean of 392 pCi/L. The City sampled the drinking water wells during 1999 and 2000 to characterize radon concentrations. These radon concentrations, averaged for each well, ranged from 261 pCi/L (Hoffman Well) to 438 pCi/L (Central Well). The radon concentrations found in the 2005 sampling event, averaged for each well, ranged from 495 pCi/L (Central Well) to 517 pCi/L (Parkwater Well).

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. In preparing for this report (March 2010), a review of the Unified Agenda of Federal Regulatory and Deregulatory Actions shows the status of the radon regulation final action "To Be Determined". For more information on the status of this rule you can go to <http://www.reginfo.gov/public/do/eAgendaViewRule?pubId=200910&RIN=2040-AA94>

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/safewater/radon/qa1.html](http://www.epa.gov/safewater/radon/qa1.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](http://www.epa.gov/radon/index.html) or call the Radon Hotline at 1-800-SOS-RADON [ 1-800-767-7236 ]. An EPA publication entitled "A Citizen's Guide to Radon" can be downloaded from [www.epa.gov/radon/pubs/citguide.html](http://www.epa.gov/radon/pubs/citguide.html).

# ORGANICS

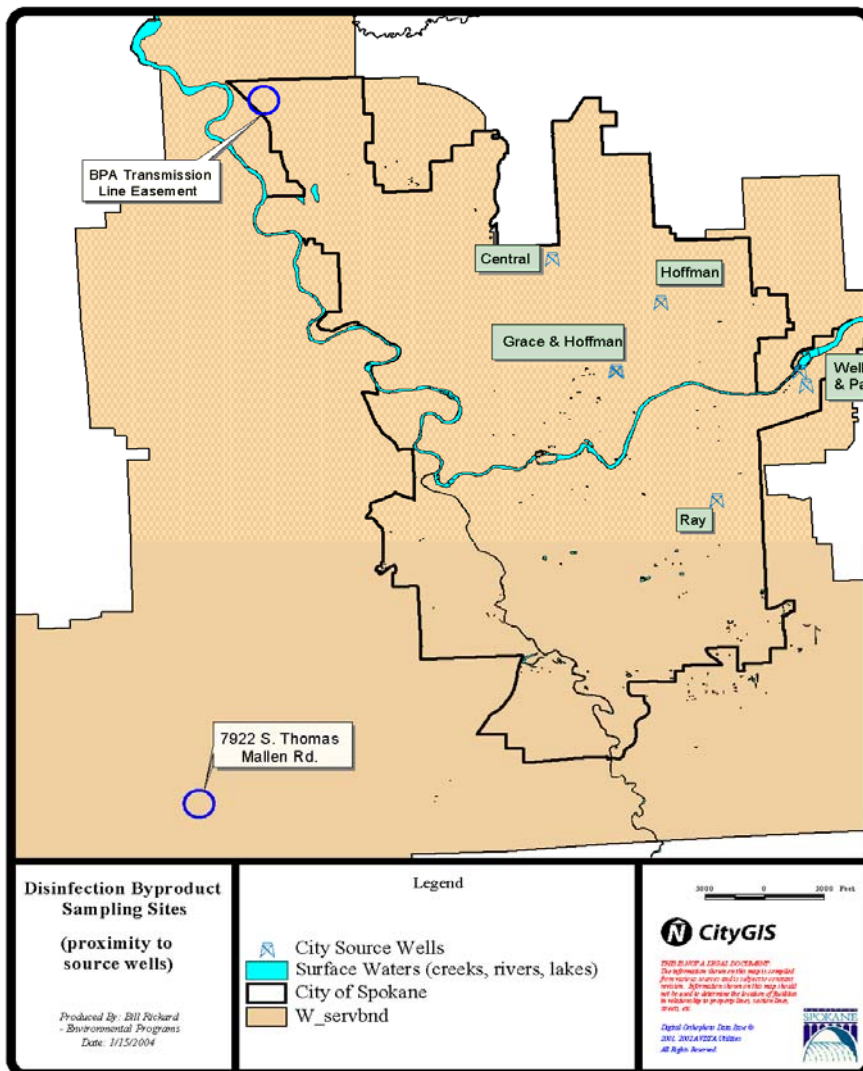
## DISINFECTION BY-PRODUCTS – DISTRIBUTION SYSTEM

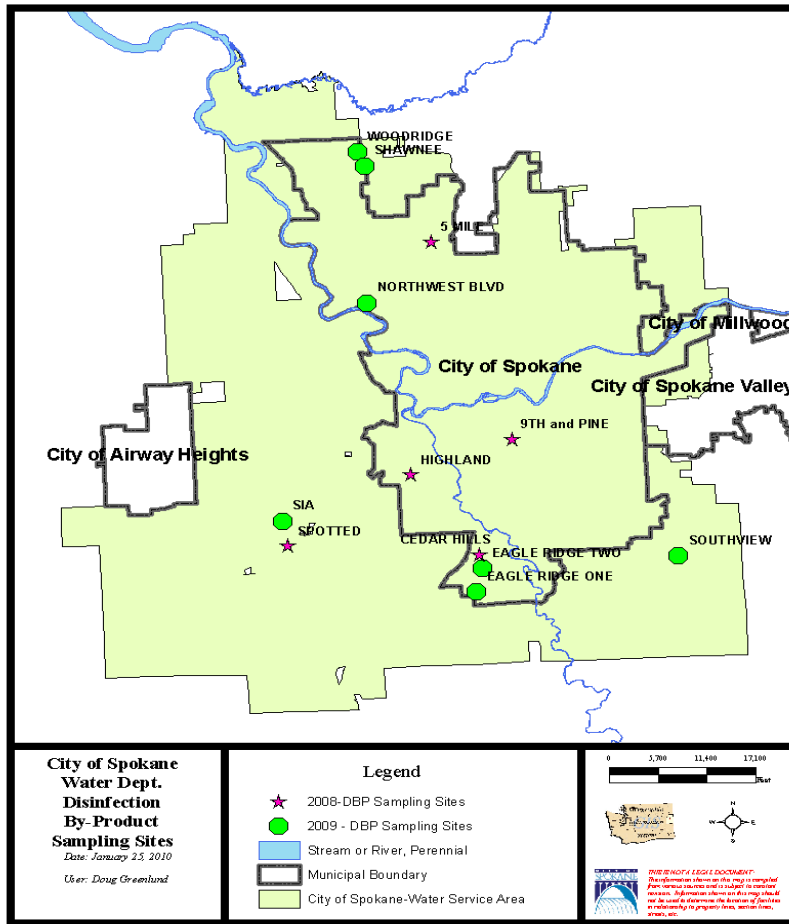
The maximum value during 2009 compliance monitoring of the distribution system for Total Trihalomethanes (TTHM) was 4.29 ppb and for Haloacetic Acids (HAA5) was no detection. This is well below the Federal MCLs and only detected at the extreme end of the distribution system. The 2004 and 2005 results (Appendix V) were used to determine the requirements for the City’s water system to comply with the Stage 2 Disinfection By-Products Rule, which became final in January 2006.

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. The 1998 ICR testing for the sum of Haloacetic Acids (HAA5) and for Trihalomethanes (TTHM) resulted in maximums of 5.8 ppb and 3.5 ppb, respectively. The federal MCL is 80 ppb for total Trihalomethanes and 60 ppb for the sum of five Haloacetic acids.

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, therefore 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 shows the relative positions of these sampling locations.





The City submitted a certification stating that the early monitoring data was less than half the MCL for these contaminants, and the City will develop a monitoring plan to take effect in 2012. Starting in 2007, and continuing during 2008 and 2009, the City Water Department performed assessment monitoring to determine the potential for disinfection by-products to be formed during the detention period in the distribution system. The DBP assessment sampling sites (see map, left) were selected from the existing Coliform sampling sites. In addition to the ongoing compliance monitoring, other locations have been identified throughout the distribution system for further monitoring to be continued in 2010. These results will be used to determine the future Phase 2 sampling sites.

The following table has results from the 2008 and 2009 DBP assessment monitoring:

Sampling date	February 12, 2008			July 15, 2008		
	Chlorine residual, mg/L	TTHM, µg/L	HAA5, µg/L	Chlorine residual, mg/L	TTHM, µg/L	HAA5, µg/L
9 <sup>th</sup> and Pine	0.31	< 0.5	< 1	0.34	< 0.5	< 1
5-Mile	0.40	0.61	< 1	0.32	< 0.5	< 1
Spotted Rd.	0.29	< 0.5	< 1	0.34	< 0.5	< 1
Highland	0.30	< 0.5	< 1	0.33	< 0.5	< 1
Cedar Hills	0.32	1.24	< 1	0.34	< 0.5	< 1
Sampling date	January 14, 2009			August 13, 2009		
	Chlorine residual, mg/L	TTHM, µg/L	HAA5, µg/L	Chlorine residual, mg/L	TTHM, µg/L	HAA5, µg/L
Eagle Ridge I (HAA5)	0.18	n/a	< 1	0.28	n/a	< 1
Eagle Ridge II (TTHM)	0.20	1.42	n/a	0.23	1.34	n/a
NW Boulevard	0.23	< 0.5	< 1	0.29	< 0.5	< 1
Shawnee (HAA5)	0.20	n/a	< 1	0.28	n/a	< 1
Southview	0.15	2.26	< 1	0.23	2.55	< 1
SIA	0.21	< 0.5	< 1	0.31	< 0.5	< 1
Woodridge (TTHM)	0.15	1.66	n/a	0.25	< 0.5	n/a

n/a=not applicable.

During 1998, the City of Spokane completed Information Collection Rule testing. This federal testing and reporting program was aimed at identifying source water contaminants that are treatable with disinfectants, identifying types of disinfectants being used, identifying resulting disinfection by-products produced, and identifying the quantity of these by-products reaching consumers. The testing locations and a summary of the 1998 results are located in Appendix VII. On October 7, 1997, the EPA agreed that City source water testing had demonstrated there was little in the aquifer water to remove and agreed that additional studies on means of treatment before disinfection were unwarranted.

### MtBE (Methyl tert-Butyl Ether)

**Parkwater and Ray Street wells were monitored for MtBE in 2009 in conjunction with the regularly scheduled Volatile Organic Compounds (VOC) monitoring. There were no detections at a detection limit of 0.5 µg/L.** In addition to regularly scheduled monitoring events, Grace and Nevada Well Stations were sampled monthly from August, 2007 to August, 2008 for VOC, and there were no detections of MtBE.

The EPA does not currently regulate MtBE, but it was placed on the Contaminant Candidate List (CCL) [www.epa.gov/OGWDW/ccl/cclfs.html](http://www.epa.gov/OGWDW/ccl/cclfs.html) (and subsequently on the UCMR-Round 1 List 1). As such, the City of Spokane sampled MtBE under the UCMR in 2002 & 2003. There were no detections in 8 samples (see Appendix VIII).

In 2006, Parkwater, Nevada, and Ray well stations were monitored for MtBE, with no detections. In 2000, the Hoffman and Ray Wells were tested for MtBE, with no detections. In 1999, the City tested for MtBE at the Central and Nevada wells in the 1<sup>st</sup> quarter and Well Electric and Parkwater in the 4<sup>th</sup> quarter. There were no detections in any of the four samples, with the detection limit of 0.5 ppb. Also in 1999, Spokane County tested 10 aquifer monitoring wells for MtBE. The dedicated monitoring wells were selected for their proximity to large above-ground fuel storage facilities. Again, there were no detections in any of these samples, with a detection limit of 0.5 ppb.

MtBE has been used in gasoline across the nation since the 1970s, first as a replacement for lead and then as an oxygenation source and/or an octane booster (in premium fuel blends). Further information concerning the uses of MtBE can be found on the EPA website [www.epa.gov/mtbe/](http://www.epa.gov/mtbe/). Many parts of the country with requirements for oxygenated automobile fuel have experienced MtBE contamination in local groundwater supplies as a result of leaking above-ground and underground fuel tanks and/or fuel spills. The requirement for winter oxygenation has been eliminated in Spokane County. Historically ethanol (ethyl alcohol) was the commonly used oxygenate in our area. Consequently, the local risk of MtBE contamination is considered to be low.

There is currently a drinking water advisory for MtBE [www.epa.gov/OST/drinking/mtbe.html](http://www.epa.gov/OST/drinking/mtbe.html). This Advisory recommends a range of 40 µg/L or less based on potential taste and odor consumer acceptance. 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/safewater/mtbe.html](http://www.epa.gov/safewater/mtbe.html).

### OTHER VOLATILE ORGANICS

Appendix VI contains the history of ORGANIC CHEMICAL DETECTIONS summary 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 I: "TESTS RUN ON CITY OF SPOKANE WATER."

**During 2009, Parkwater and Ray Street Well Stations were monitored for Volatile Organic Compounds (VOC). There were no detections.**

An unusual incident occurred on July 23, 2007. A fully involved structure fire occurred at the Whitley Fuel facility at 2733 N. Pittsburg. Due to the volumes of petroleum fuel in on-site tanks and tanker trucks, and the fire-fighting foam used in the incident, there was concern that related contaminants might travel to groundwater. The Grace and Nevada wells are west of this location, and the City groundwater model indicated that it was unlikely that contamination would reach these wells, but could not rule out the potential chance and anticipated a 7 to 10 month time of travel to these wells. Investigation at the fire scene indicated that there was little likelihood that contaminants reached groundwater, but weekly monitoring at Grace and Nevada was initiated. County sampling at a nearby sentinel monitoring well on August 21, 2007 resulted in a detection for Diesel-range Total Petroleum Hydrocarbon at 0.130 mg/L. Sampling for Volatile Organic Compounds (including Tentatively Identified Compounds) and Diesel-range Total Petroleum Hydrocarbons were conducted at Grace and Nevada wells on an approximately weekly basis from July 31, 2007, to September 26, 2007. The sampling frequency was decreased to monthly from October through August 2008. There have been no detections at Grace and Nevada Wells and no further detections at the sentinel monitoring well.

The VOC monitoring conducted on July 27, 2004, at Hoffman Well included a detection (3.09 ppb) of Tetrachloroethene (aka Perchloroethylene or "Perc"). City staff conducted an investigation of the immediate vicinity (the Well Station property and adjacent neighboring properties). Interviews with Water Dept. staff revealed that routine maintenance of the production pump motor using a commercial solvent with the sole ingredient being Tetrachloroethene occurred just prior to sampling. Standard Operating Procedures were changed so this product would no longer be used inside a well station. Additional sampling was conducted on September 1, 2004, and on October 26, 2004. Both results were less than detection limits. The State Dept. of Health agreed that this excursion did not represent a legitimate characterization of drinking water. The two monitoring events in 2005 at Hoffman concluded four quarters of voluntary monitoring, with no detections of VOC contaminants.

Historically, Central, Grace, Nevada, and Ray well stations have had detections (not exceedances) of regulated volatile organic compounds, other than Trihalomethanes. 1,1,1-Trichloroethane and Tetrachloroethene were detected more than 5 years ago. These detections were well below the MCLs. During 1998, Trichlorofluoromethane (aka Freon 11) was detected at the Hoffman and Grace wells in the July testing. The concentrations were 1.1 and 0.6 ppb, respectively. This volatile compound is not regulated under Federal Drinking Water regulations. These concentrations are well below the Washington State Advisory level (SAL) of 1300 ppb. There was no previous detection of this compound, and there have not been detections in subsequent testing.

On July 25, 2000, the Hoffman Well was sampled for VOCs, and the test results showed a detection for dichloromethane of 1.50 ppb. The MCL is 5 ppb and the MCLG is zero. The laboratory was contacted, and the laboratory blank (an analytical sample that is expected to be free of contamination) also had a detection for dichloromethane with a concentration of 4.06 ppb. As this compound is a common laboratory contaminant and present in the blank at over twice the sample result, the Dept. of Health concurred with our assessment that this does not characterize an actual detection in the source water.

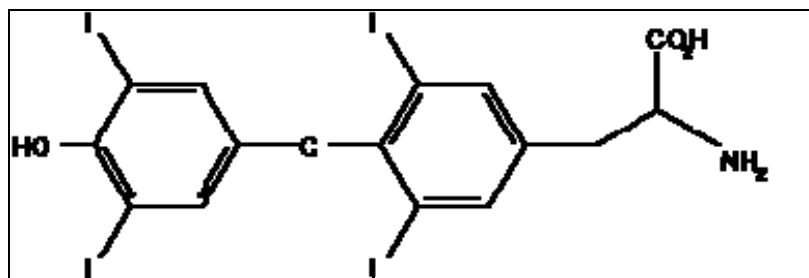
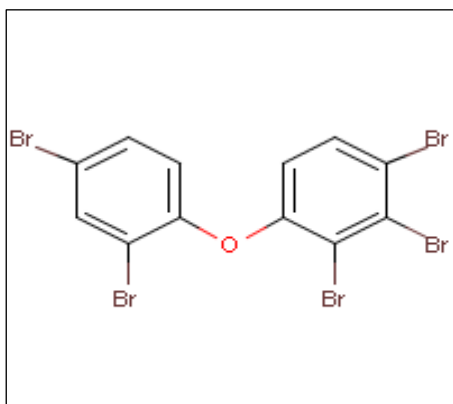
Trihalomethanes (THMs, chloroform, bromoform, bromodichloromethane, dibromochloromethane) are one group of volatile organic, disinfection by-products. That is to say, they can originate from chemical interactions between a disinfectant (chlorine gas in the City's system) and any organic matter present in the raw water. **There were no detections of THM in source water monitoring for 2009**, and the most recent detection in source water was in 2000 when the Hoffman result for total THM was 1.92 ppb. This is well below the new MCL of 80 ppb, which was effective December 1998. Testing results for Trihalomethane, Total Trihalomethane, and Maximum Total Trihalomethane Potential are included in Appendix VI.

Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems and may have an increased risk of getting cancer. In February 1998, a California Department of Health Services study linking Trihalomethanes to spontaneous miscarriages was widely reported. The study levels were 75 ppb Total Trihalomethanes and 18 ppb Bromodichloromethane. The maximum historical City readings for comparison were 8.5 ppb and 1.7 ppb respectively.

## PBDE (Polybrominated diphenyl ethers)

Ecology and Wash. Dept. of Health jointly published *Washington State Polybrominated Diphenyl Ether (PBDE) Chemical Action Plan: Interim Plan on Dec. 31, 2004*. Given concern about this seemingly ubiquitous family of compounds, the Water Dept. conducted investigative monitoring for PBDE.

Polybrominated diphenyl ethers (PBDEs) are a class of additive brominated flame retardants used in a variety of plastics and foams. The PBDE class includes 209 different theoretical forms of the PBDE molecule, called congeners. The illustrations below show the structural similarity between a congener of PBDE, and a thyroid hormone (thyroxine). The similarities in structure may indicate the potential health effects of PBDE. However, actual health effects in humans are not clear at this time.



Right figure: thyroxine – Wikipedia online encyclopedia

Left figure: PBDE 85-copyright U.S. Library of Medicine

The results of one sample (note: results are in parts per trillion) obtained from Well Electric are as follows:

PBDE congeners	Congener abbr.	Results, ng/L
2,4,4'-Tribromo diphenyl ether (ng/L)	BDE-17	< 0.1
2,2',4,4'-Tetrabromo diphenyl ether (ng/L)	BDE-47	0.36
2,2',4,4',5-Pentabromo diphenyl ether (ng/L)	BDE-99	< 0.1
2,2',4,4',6-Pentabromo diphenyl ether (ng/L)	BDE-100	0.5
2,2',4,4',5,5'-Hexabromo diphenyl ether (ng/L)	BDE-153	< 0.1
2,2',4,4',5,6'-Hexabromo diphenyl ether (ng/L)	BDE-154	< 0.1
2,2',3,4,4',5,6-Heptabromo diphenyl ether (ng/L)	BDE-181	< 0.1
Decabromo diphenyl ether	BDE-209	< 0.1

Drinking water is believed to be a very minor source for the estimated daily exposure from all sources (i.e. water, food, air, etc.). Note that further sampling for four PBDE congeners will occur in the UCMR Round 2 (further discussion on page 24). Also note that during 2007, the Governor of Washington signed into law, a limited prohibition of PBDE in Washington (2007-ESHB-1024). For further information, refer to the *Washington State Polybrominated Diphenyl Ether (PBDE) Chemical Action Plan: Final Plan (Jan. 19, 2006)* at [www.ecy.wa.gov/pubs/0507048.pdf](http://www.ecy.wa.gov/pubs/0507048.pdf). For further information concerning PBDE and EPA activities go to [www.epa.gov/oppt/pbde/](http://www.epa.gov/oppt/pbde/)

## SYNTHETIC ORGANICS

**In 2009, Nevada, Parkwater, Ray Street and Well Electric wells were sampled (twice each) for Synthetic Organic Chemicals (SOC). There were no detections.**

In 2006, the October sampling at Well Electric detected Di-Methyl Phthalate at 0.70 ppb (detection limit is 0.4 ppb). The compound is a common laboratory contaminant and is not regulated (i.e. there is no MCL). Because of the low concentration, and no detection on resampling in December, State Department of Health agreed that this did not characterize the source water quality.

Appendix VI contains the historical results for ORGANIC CHEMICALS, including the SOC results. Some of the compounds in the Unregulated Contaminant Monitoring Rule (UCMR) are also in the SOC testing, so the UCMR testing was conducted with SOC testing during 2003.

The City started testing for SOCs in the wells in 1994, with additional tests in 1995, 1997, 1998, and 1999. This testing includes pesticides, herbicides, PCBs, and phthalates. In the first two quarters of 1994, Parkwater testing detected Di(2-ethylhexyl) Phthalate twice (0.3 & 0.2 ppb). Di(2-ethylhexyl) Adipate was detected once (2.1 ppb) at Parkwater and again in 1997 at Hoffman (0.7 ppb). The MCLs for these compounds are 6 ppb, and 400 ppb respectively. Di(2-ethylhexyl) Phthalate has a MCLG of zero. These two compounds are associated with synthetic rubber and plastic, which are common in labs and industry.

Other than the following exceptions the results have all been non-detect. The first exception has to do with those detections listed in the paragraph above. The second exception has to do with a detection of Di-n-Butylphthalate which showed up at low levels in all of the samples taken in August of 1997. This compound, which is currently an unregulated SOC, was also detected in the laboratory blank. The fact it was found in the blank supports the idea that it showed up as a result of laboratory contamination and was never in the sampled water.

## UNREGULATED CONTAMINANT MONITORING – Round 1, List 1

The reauthorization of the Safe Drinking Water Act in 1996 resulted in changes to the EPA Unregulated Contaminant Monitoring Regulations (UCMR). Pursuant to these promulgated rules, the City of Spokane participated in UCMR Round 1 during 2002-2003, as required.

The List 1 contaminants were sampled two times at source wells, except Well Electric which we sampled four times (due to its proximity to the Spokane River). **There were no List 1 detections.** List 2 was for those contaminants for which methods had to be developed (Spokane was randomly selected to test for one micro-organism, see page 27). The sampling schedule and results summary are found in Appendix VIII.

Further information concerning the UCMR testing can be found at: [www.epa.gov/safewater/ucmr.html](http://www.epa.gov/safewater/ucmr.html)

## UNREGULATED CONTAMINANT MONITORING – Round 2

The Unregulated Contaminant Monitoring Rule 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. Further information on Round 2 testing, including the specific contaminants, can be found at the EPA UCMR Rd2 website; <http://www.epa.gov/safewater/ucmr/ucmr2/basicinformation.html>

The City of Spokane Water System, given its size, is required to conduct Assessment Monitoring (List 1) for 10 chemicals and Screening Survey (List 2) for 15 contaminants during a 12-month period during January 2008 through December 2010. In July of 2009, the City of Spokane sampled all of the well sites for the chemicals on both lists. **There were no detections of any of the 25 contaminants on Lists 1 and 2.** The Unregulated Contaminant Monitoring Rule also required the City to test for the 5 nitrosamine compounds in list 2 contaminants at the maximum residence time location. **There were no detections of these contaminants at the BPA easement.** (See page 18 for a discussion on the sampling location.) In 2005 the City had previously sampled for four of the list 1 chemicals (see page 22). They were tested at the part per trillion (ppt) level while the current UCMR testing has method detection limits at the part per billion (ppb) level. Appendix X contains the UCMR 2 List 1 and List 2 chemicals and the test results. The second round of testing to complete the UCMR requirements will be conducted in 2010.

### XENOBIOTICS – Emerging Contaminants

In recent years there has been growing concern throughout the nation about organic compounds that are present in our environment, but are not typically thought of as contaminants. The compounds may be present in surface waters, and less likely in groundwater. These compounds are typically not in concentrations that would be acutely toxic, but may have chronic impacts, particularly as interference to the human endocrine system. Chemicals of this kind have had significant impacts on aquatic species.



During 2008, the Water Department conducted investigative monitoring for a broad spectrum of these compounds that are pharmaceuticals and personal care products (PPCPs), and sterols and hormones. A complete list of the compounds is found in Appendix II (page 33). The samples from Grace and Parkwater wells were analyzed by EPA Methods 1694 (Pharmaceuticals and Personal Care Products by HPLC/MS/MS) and 1698 (Steroids and Hormones by HRGC/HRMS). **Of 103 compounds in the laboratory analysis, there were no detections.**

Further information about these emerging contaminants can be found at the EPA website; [www.epa.gov/ppcp/](http://www.epa.gov/ppcp/).

## MICROBIOLOGICAL CONTAMINANTS

### COLIFORM BACTERIA - SOURCE

The City of Spokane well station raw source water 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 has increased the testing frequency. **In 2009, out of 74 tests for coliform bacteria in the City Source Water Wells, there were 0 detections of total coliform positive results and 0 detections of fecal coliform positive results.**

Out of 384 tests over the 5-year period from 2005 through 2009, 5 positive total coliform results were found. The greatest concentration detected was 39.7 colonies per 100 mL for total coliform bacteria (Grace, Jul-25-2006).

## HETEROTROPHIC PLATE COUNT BACTERIA – SOURCE

**In 2009, out of 74 Heterotrophic Plate Count (HPC) tests, there were 33 positive results. The greatest concentration was 68 colonies per milliliter of sample.** HPC tests were conducted 376 times over the 5-year period from 2005 through 2009 on raw source water. There have been 193 positive 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*”<sup>4</sup>. The maximum detection during this five-year period 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. Historically, the City Water System scheduled 122 samples per month. The Water Department anticipates having greater than 220,000 customers in the near future. This change of population tier<sup>5</sup> 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 2009, the City Water Dept. had 1,990 coliform bacteria samples analyzed, an increase from 1,960 in 2008 and 1,883 in 2007. In 2009 there were no positive coliform bacteria results in the distribution system.** The Maximum Contaminant Level is that no more than 5% of the total coliform bacteria tests can be positive per month. In 2008, the greatest number of positive results was 0 in 178 samples. This is 0.0 % of the results, well below the MCL.

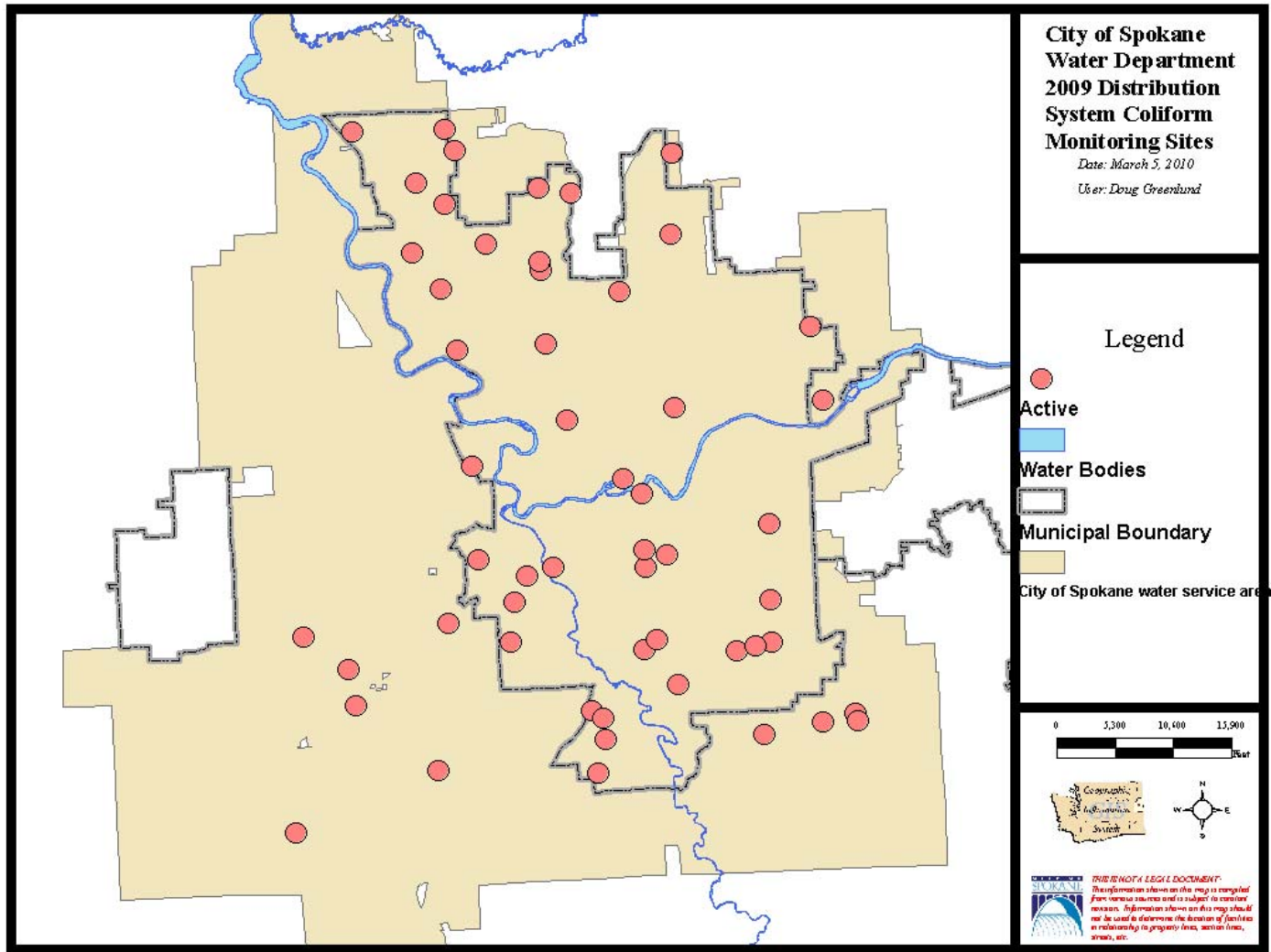
On October 17, 2005 there was one E. coli present result, but subsequent re-sampling (resampling of the site, plus one sample each immediately up and down “stream” from the site) was negative, so the result was not confirmed.

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 2009, 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:

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<sup>4</sup> Ref. WAC 246-290-451 (3)(c)

<sup>5</sup> 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.

## AEROMONAS BACTERIA – DISTRIBUTION SYSTEM

The UCMR Round1 - List 2 candidates were sampled by a small, EPA randomly chosen group of water systems. One group of water systems tested for the chemical candidates and a separate group of water systems tested for the microbiological candidate. The City of Spokane was one of the water systems randomly chosen to test for the microbe, which was *Aeromonas sp.*, with analysis conducted using EPA method 1605.

**There were no detections of *Aeromonas ssp.* in this sampling.**

The List 2 testing for *Aeromonas sp.* was conducted during 2003. Three sampling sites were identified in the distribution system for each sampling event. Three samples (one from each location) were taken from these predetermined locations in the distribution system. These points were chosen based on: 1) an average chlorine residual, 2) a “dead-end” point where the chlorine residual has had its lowest concentration, and 3) the longest (furthest away) residence time in the system. The mid-point sample location (average residual) was set at Fire Station #3 at 1713 W. Indiana. The lowest residual sampling point was selected to be at the Shawnee Water Tank in the distant northwest corner of Spokane. The longest residence time was set at a business located on the West Plains, west of the City.

There were six sampling events during the year, including three of the events during the summer months (July, August, September). Appendix VIII summarizes the sampling schedule and results.

Further information concerning the *Aeromonas sp.* can be found in an EPA report at:

<http://www.epa.gov/waterscience/criteria/humanhealth/microbial/aeromonas-200603.pdf>

## PROTOZOA

A number of cities and towns throughout the country in past recent years have experienced problems with *Giardia* and/or *Cryptosporidium* getting into the distribution systems. Most times, problems with these parasitic organisms 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.**

In December of 1994 and March of 1995, the City of Spokane tested for the presence of *Giardia* and *Cryptosporidium* at the Well Electric Station. Well Electric sits nearer the Spokane River than other sources. **These microorganisms were not detected.** Again in June and September of 1995, similar tests were run and Microscopic Particle Analysis was added. **This testing revealed none of the microorganisms of concern,** nor were other “surface water indicators” seen.

In 1997, the City was formally notified by the State that two City wells were built and located such that a potential to draw river contaminants into the wells might exist. As a result of further testing, a determination was made that Baxter (a former seasonal source, which no longer exists) was not considered to be under the influence of surface water. Well Electric (a permanent source) was determined to be hydraulically connected to the River and further monitoring was conducted through June of 2003 to determine if Well Electric was under the influence of the River. That is to say, to determine if contaminants would move from the river to the source well.

**In a letter dated February 11, 2004, the Department of Health stated that Well Electric would be classified as groundwater for regulatory monitoring and compliance purposes,** providing that the provisions in the City’s operational plan are followed. The operational plan has two main components: first, a requirement to maintain an increased level of disinfection at Well Electric, and second, a plan to avoid using Well Electric when it has the potential of being under the influence of the Spokane River, which can occur during river high flow events. The City, in consultation with the Washington Dept. of Health, will continue to evaluate the impact of this hydraulic connection.

During 2001, 2002, & 2003, the City Water Department conducted its investigation of this hydraulic connection. Monitoring was conducted at Nevada, Ray St., Parkwater and Well Electric well stations for Microscopic Particle Analysis (MPA). This testing procedure involves pumping large volumes of water through a filter media. This filter media is sent to a laboratory where the media is washed to remove the solid material filtered out of the water. This solid material is concentrated to a volume suitable for observation with a microscope. The observed solid material is counted and identified. A risk value is assigned to the particle information. The risk value corresponds to the probability that the source water is under the influence of surface water (Spokane River).

The following table summarizes the MPA results for this 3-year period:

<i>Well Station</i>	<i>Total # of tests</i>	<i># of low risk (result less than 9)</i>	<i># of moderate risk (result 10 to 19)</i>	<i># of high risk (result 20 and greater)</i>
<i>2001</i>				
Nevada St. Well	7	7	0	0
Ray St. Well	6	6	0	0
Parkwater Well	14	11	3	0
Well Electric (#4 & #5)	30	29	1	0
<i>2002</i>				
Nevada St. Well	1	1	0	0
Parkwater Well	2	2	0	0
Well Electric (#4 & #5)	22	19	3	0
<i>2003</i>				
Well Electric (#4 & #5)	6	6	0	0

People who become ill as a result of consuming Giardia and/or Cryptosporidium typically recover after suffering severe bouts of diarrhea. However, 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 Center for Disease Control and Prevention at: [www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/default.htm](http://www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/default.htm) (Cryptosporidium) and [www.cdc.gov/ncidod/dpd/parasites/giardiasis/default.htm](http://www.cdc.gov/ncidod/dpd/parasites/giardiasis/default.htm) (Giardia) and the EPA website at <http://www.epa.gov/safewater/consumer/pdf/crypto.pdf> (Para ver información adicional, visite al; [www.epa.gov/safewater/agua/crypto.html](http://www.epa.gov/safewater/agua/crypto.html) ).

## VIRUSES

During 2006, the Water Dept. conducted an investigative sampling for coliphage viruses. The 2006 report detailed the sampling to date and out of 20 results, there was one “presence” result for Host: E. coli Famp (15597) detected at the Grace Well Station (May 3, 2006). **The study concluded in January 2007; out of 4 results (bringing the study total to 24 results) there were no additional detections.** Sampling information (including the January 2007 results) is located in Appendix IX.

Coliphage viruses live in coliform bacteria hosts and their presence in groundwater may be an indication of fecal contamination. Ten samples from five wells were submitted and each sample was tested using Method 1601 qualitative (presence/absence, two-step enrichment procedure) for two types;

- E. coli F<sub>amp</sub> for male-specific coliphage and,
- E. coli CN-13 for somatic coliphage.

Some cities and other utilities have done virus testing as part of their Information Collection Rule requirements. Results of their testing, as well as recent research studies, demonstrate that viruses react differently than bacteria to deactivation

from environmental effects or disinfection treatment. This information should provide valuable insight into what viral concerns we should have and into what testing methods are best used.

Environmental Programs is not aware of any other testing having been done, to date, for viruses in Spokane-Rathdrum Prairie Aquifer water.

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://www.epa.gov/safewater/agua.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 protection 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: [www.epa.gov/safewater/dwhealth.html](http://www.epa.gov/safewater/dwhealth.html) or [www.epa.gov/safewater/hfacts.html](http://www.epa.gov/safewater/hfacts.html)

## 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 2008, the City conducted 14 tests from 7 source wells for Radon-222. The single highest result was 534 pCi/L, the lowest was 212 pCi/L, and the mean average was 444 pCi/L.

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/iaq/radon](http://www.epa.gov/iaq/radon).

Arsenic: The arsenic readings in 2009 at the Nevada, Parkwater and Ray Street Wells were 2.77 ppb, 3.24 ppb and 5.13 ppb respectively. The Maximum Contaminant Level (MCL) for Arsenic is 10 ppb. The arsenic result from Ray Street Well exceeds half of the MCL.

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 <http://www.epa.gov/safewater/arsenic/index.html>.

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 or at [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

## 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  
City Hall (808 W. Spokane Falls Blvd., Spokane, WA).

**Appendix I - Water Use Efficiency compliance data**

10-Mar-2009

**Distribution System Leakage (DSL)**

	2009	2008	2007	2006	2005	2004	2003	2002
Service Meter Reading-Single Family, cu.ft.	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	1,190,542,300
Service Meter Reading-Multi Family, cu.ft.	315,618,069	409,792,300	472,555,248	461,200,784	421,588,600	412,155,800	419,161,800	391,183,100
Service Meter Reading-Commercial/Industrial, cu.ft.	563,865,863	744,076,700	831,283,552	836,985,600	797,205,000	892,540,700	777,286,200	746,383,800
Service Meter Reading-Government, cu.ft.	219,667,715	212,251,200	275,573,144	275,364,760	268,069,400	270,143,600	268,998,700	237,110,500
Emergency Interties, cu.ft.	**	**	**	**	29,600	23,490,900	17,600	95,300
Wholesale Amount Sold, cu.ft.	12,833,300	10,046,300	29,756,900	21,344,300	13,107,300	9,443,600	9,983,100	11,400,200
Non-Revenue Accounted for Water, cu.ft. (estimate) *	142,296,791	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000
<b>Total Authorized Consumption, cu.ft. *</b>	<b>2,544,312,538</b>	<b>2,557,147,700</b>	<b>2,839,434,524</b>	<b>2,825,956,996</b>	<b>2,614,928,300</b>	<b>2,828,810,400</b>	<b>2,741,400,000</b>	<b>2,604,715,200</b>
<b>Total Authorized Consumption (gal. X1000) (AC) *</b>	<b>19,031,458</b>	<b>19,127,465</b>	<b>21,238,970</b>	<b>21,138,158</b>	<b>19,559,664</b>	<b>21,159,502</b>	<b>20,505,672</b>	<b>19,483,270</b>
<b>Total Production (gal. X1000) (TP)</b>	<b>22,402,716</b>	<b>21,222,058</b>	<b>22,947,090</b>	<b>23,735,049</b>	<b>21,278,719</b>	<b>21,615,890</b>	<b>21,896,539</b>	<b>21,611,161</b>
<b>Distribution System Leakage (DSL), volume (gal. X1000)</b>	<b>3,371,258</b>	<b>2,094,593</b>	<b>1,708,120</b>	<b>2,596,891</b>	<b>1,719,055</b>	<b>456,388</b>	<b>1,390,867</b>	<b>2,127,891</b>
<b>Distribution System Leakage (DSL), percent</b>	<b>15.0%</b>	<b>9.9%</b>	<b>7.4%</b>	<b>10.9%</b>	<b>8.1%</b>	<b>2.1%</b>	<b>6.4%</b>	<b>9.8%</b>

\* 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.

\*\* Emergency intertie volumes are combined with Wholesale Amount sold

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.

**Method for calculating the Distribution System Leakage (DSL)**

**Calculating Percent DSL**

To calculate percent DSL, use the following equation:

$$\text{Percent DSL} = [(TP - AC) / (TP)] \times 100$$

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:

$$\text{Volume DSL} = TP - AC$$

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.)	2009	2008	2007	2006	2005	2004	2003	2002
	<b>pumpage (1,000 gallons)</b>							
<b>Total - Oct. (prev. yr.)through Mar.</b>	6,618,666	6,551,023	7,161,742	6,884,687	6,305,328	6,743,044	6,095,091	6,703,595
<b>Total - Apr. through Jun.</b>	6,439,647	5,340,540	6,463,462	5,991,545	5,105,476	6,347,928	5,869,848	6,170,680
<b>Total - Jul. through Sept.</b>	9,202,243	9,277,452	9,936,735	10,451,223	9,695,077	8,737,566	9,596,914	9,125,815
<b>Total - sum of seasonal totals</b>	22,170,556	21,168,810	23,561,939	23,327,455	21,105,881	21,828,538	21,561,853	22,000,090
<b>Goal - Oct. (prev. yr.) through Mar.</b>	6,810,000	6,760,000	6,710,000	6,660,000				
<b>Goal - Apr. through Jun.</b>	6,890,000	6,870,000	6,850,000	6,830,000				
<b>Goal - Jul. through Sept.</b>	8,910,000	8,990,000	9,060,000	9,130,000				
<b>Difference between Goal &amp; Use as a percentage (positive value equal exceedance of goal)</b>								
<b>Result - Oct. (prev. yr.) through Mar.</b>	-2.8%	-3.1%	6.7%	3.4%				
<b>Result - Apr. through Jun.</b>	-7.8%	-22.3%	-5.6%	-12.3%				
<b>Result - Jul. through Sept.</b>	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.)
2001	Jan. & Feb.	737,689,236	52327	243	
2001	Aug. & Sept.	3,366,209,314	53456	1050	
2002	Jan. & Feb.	715,365,868	53572	230	
2002	Aug. & Sept.	3,220,431,185	54304	988	1.59%
2003	Jan. & Feb.	667,869,802	54940	210	
2003	Aug. & Sept.	3,704,900,330	55799	1107	2.75%
2004	Jan. & Feb.	748,304,094	56442	229	
2004	Aug. & Sept.	3,251,317,504	59042	918	5.81%
2005	Jan. & Feb.	605,279,543	57894	180	
2005	Aug. & Sept.	3,481,452,709	61178	948	3.62%
2006	Jan. & Feb.	718,319,925	59674	208	
2006	Aug. & Sept.	3,836,625,555	62248	1027	1.75%
2007	Jan. & Feb.	716,276,995	61068	202	
2007	Aug. & Sept.	3,611,246,760	62886	957	1.02%
2008	Jan. & Feb.	487,161,928	61065	135	
2008 *	Aug. & Sept.	3,209,282,032	63102	848	0.34%
2009	Jan. & Feb.	536,578,223	61,504	150	
2009	Aug. & Sept.	2,993,295,163	63,042	791	-0.10%
Avg. percent change of service locations (Aug. & Sept.) 2006-2007					1.38%

\* heavy winter weather during Feb. 2008 resulted in estimating north side accounts at 12 units. Assessing the remaining meters for this period and relating to the next round of meter reading, this appears to be accurate.

## Appendix II - Tests Run on City of Spokane Water

23-Feb-2010

### FIELD TESTS

- \* Chlorine Demand
- \* Chlorine, Free Residual
- Chlorine, Total Residual
- Conductivity
- Hardness
- pH
- Temperature
- Turbidity

### RADIONUCLIDES

- \* Alpha emitters (gross)
- \* Beta/photon emitters (gross)
- \* Radon 222
- Radium 228

### MICROBES

#### BACTERIA

- Total Coliform - Before & After Treatment
- Fecal Coliform - Before & After Treatment
- Heterotrophic Plate Count - Raw water
- \* \* \* Aeromonas sp.

#### PROTOZOA

- \* Cryptosporidium
- \* Giardia
- \* Microscopic Particle Analysis

#### VIRUS

- \* Coliphage, Male Specific and -
- \* Somatic: EPA meth. 1601

### GENERAL INORGANICS

- \* Asbestos
- Color
- Conductivity
- 1 Hardness, Calcium
- 1 Hardness, Magnesium
- Hardness, Total
- Total Alkalinity
- Total Dissolved Solids
- Turbidity
- \* UV254

### INORGANIC IONS

- Ammonia Nitrogen
- \* Bromide
- Chloride
- Cyanide
- Fluoride
- Nitrate Nitrogen
- Nitrite Nitrogen
- 1 Phosphorus
- 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
- 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
- 2 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

## Appendix II (continued)

### GENERAL ORGANICS

- \* Total Organic Carbon
- \* Total Organic Halides
  
- Maximum Total Trihalomethane Potential (MTTP)
  
- MTTP - Bromodichloromethane
- MTTP - Bromoform
- MTTP - Chloroform
- MTTP - Dibromochloromethane ether, Methyl tert-Butyl (MtBE)
- 2 Benzene, Nitro
- 2 toluene, 2,6-Dinitro-
- 2 DCPA Acid Mono-acid degradate
- 2 DCPA Acid Di-Acid degradate
- 2 Perchlorate
- 2 Acetochlor
- Polybrominated Diphenyl ether (PBDE)  
- (limited list of congeners)

### 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-

#### OTHER DISINFECTION BY-PRODUCTS

- acetic Acid, Bromochloro-
- \* Hydrate, Chloral
- \* nitrile, Bromochloroaceto-
- \* nitrile, Dibromoaceto-
- \* nitrile, Dichloroaceto-
- \* nitrile, Trichloroaceto-
- \* pictrin, Chloro-
- \* propanone, 1,1,1-Trichloro-
- \* propanone, 1,1-Dichloro-

### SYNTHETIC ORGANICS

- 2-Chloronaphthalene
- 2-Methylnaphthalene
- 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, Dibenz(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
- Caffeine
- 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
- Heptachlor Epoxide "A"
- Heptachlor Epoxide "B"
- Hexachloroethane
- Hexazinone
- Hydrate, Chloral
- 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
- Parathion
- 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, 4-Nitro-
- 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
- Prometryn
- Propachlor
- propane, Dibromochloro- ( DBCP )
- Pyrene
- pyrene, Benzo a-
- Pyrene, Indeno(1,2,3,c,d)
- Safrole
- Simazine
- T, 2,4,5-
- Terbacil
- Terbuphos
- Thiobencarb
- 2 toluene, 2,4-Dinitro-
- Toxaphene
- TP, 2,4,5-
- Trifluralin
- Vernolate

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

2 - conducted during 2002-2003 for the Unregulated Contaminant Monitoring Rule.

## Appendix II (continued)

### XENOBIOTICS (screening at Parkwater & Grace, 2008)

#### METHOD 1694: PHARMACEUTICALS AND PERSONAL CARE PRODUCTS BY

\* HPLC/MS/MS

##### List 1

(Acid extraction, positive ESI)

Acetaminophen  
Ampicillin 1  
Azithromycin  
Caffeine  
Carbadox  
Carbamazepine  
Cefotaxime  
Ciprofloxacin  
Clarithromycin  
Clinafloxacin  
Cloxacillin  
Codeine  
Cotinine  
Dehydronifedipine  
Digoxigenin  
Digoxin  
Diltiazem  
1,7-Dimethylxanthine  
Diphenhydramine  
Enrofloxacin  
Erythromycin hydrate  
Flumequine  
Fluoxetine  
Lincomycin  
Lomefloxacin  
Miconazole  
Norfloxacin  
Norgestimate  
Ofloxacin  
Ormetoprim  
Oxacillin  
Oxolinic acid  
Penicillin G  
Penicillin V  
Roxithromycin  
Sarafloxacin  
Sulfachloropyridazine  
Sulfadiazine  
Sulfadimethoxine  
Sulfamerazine  
Sulfamethazine  
Sulfamethizole  
Sulfamethoxazole  
Sulfanilamide  
Sulfathiazole

Thiabendazole  
Trimethoprim  
Tylosin  
Virginiamycin

##### List 2

(Tetracyclines, positive ESI)  
Anhydrochlortetracycline (ACTC)  
Anhydrotetracycline (ATC)  
Chlortetracycline (CTC)  
Demeclocycline  
Doxycycline  
4-Epianhydrochlortetracycline (EACTC)  
4-Epianhydrotetracycline (EATC)  
4-Epichlortetracycline (ECTC)  
4-Epioxytetracycline (EOTC)  
4-Epitetracycline (ETC)  
Isochlortetracycline (ICTC)  
Minocycline  
Oxytetracycline (OTC)  
Tetracycline (TC)

##### List 3

(Acid extraction, negative ESI)  
Gemfibrozil  
Ibuprofen  
Naproxen  
Triclocarban  
Triclosan  
Warfarin

##### List 4

(Base extraction, positive ESI)  
Albuterol  
Cimetidine  
Metformin  
Ranitidine

#### METHOD 1698: STEROIDS AND HORMONES

\* BY HRGC/HRMS

##### Native Analyte

Desogestrel  
17a-Estradiol  
Estrone  
Androstenone  
Androstenedione  
Equilin  
17b-Estradiol  
Testosterone  
Equilenin  
Mestranol  
Norethindrone  
17a-Dihydroequilin-bis  
Progesterone  
17a-Ethynyl-Estradiol  
Norgestrel  
Estril-tris  
Coprostanol  
Epicoprostanol  
Cholesterol  
Cholestanol  
Desmosterol  
Ergosterol  
Campesterol  
Stigmasterol  
b-Sitosterol  
b-Stigmastanol  
b-Estradiol-3-Benzoate

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

2 - conducted during 2002-2003 for the Unregulated Contaminant Monitoring Rule.

**Appendix II (continued)**

**Unregulated Contaminant Monitoring Rule - Round 2 (UCMR 2)**

*List 1 Contaminants*

Dimethoate  
Terbufos sulfone  
BDE-47  
BDE-99  
HBB  
BDE-153  
BDE-100  
1,3-dinitrobenzene  
2,4,6-trinitrotoluene (TNT)  
RDX

*List 2 Contaminants*

Acetochlor  
Alachlor  
Metolachlor  
Acetochlor ethane sulfonic acid (ESA)  
Acetochlor oxanilic acid (OA)  
Alachlor ethane sulfonic acid (ESA)  
Alachlor oxanilic acid (OA)  
Metolachlor ethane sulfonic acid (ESA)  
Metolachlor oxanilic acid (OA)  
N-nitroso-diethylamine (NDEA)  
N-nitroso-dimethylamine (NDMA)  
N-nitroso-di-n-butylamine (NDBA)  
N-nitroso-di-n-propylamine (NDPA)  
N-nitroso-methylethylamine (NMEA)  
N-nitroso-pyrrolidine (NPYR)

Appendix III - Annual Testing Summary - Tests Run on City of Spokane Water						24-Feb-2010		
2009 DRINKING WATER SOURCE - COMPLETED QUARTERLY MONITORING								
	SOURCE #	8	6	5	1	3	4	2
	WELL	CENTRAL	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	WELL ELECTRIC
<b>BACTERIA</b>								
COLIFORM - RAW SOURCE *								
Total Coliform - number of samples per year / greatest result		9 / <1	7 / <1	3 / <1	11 / <1	12 / <1	7 / <1	23 / <1
Fecal Coliform - number of samples per year / greatest result		9 / <1	7 / <1	3 / <1	11 / <1	12 / <1	7 / <1	23 / <1
HETEROTROPHIC PLATE COUNT - RAW SOURCE *								
number of samples per year / greatest result value		7 / 27	7 / 12	3 / 76	11 / 1	12 / 1	7 / 81	23 / 2
* All operating wells are typically sampled once per month								
<b>INORGANIC</b>								
FULL LIST- CERTIFIED LAB (phase II & V included)	3rd Qtr - Jul				completed-see App. IV	completed-see App. IV	completed-see App. IV	
NITRATE								
	1st Qtr - Jan						3.58	
	2nd Qtr - May						3.37	
	3rd Qtr - Jul	1.02	0.86	1.44	0.96	1.47	2.11	1.51
	4th Qtr - Oct						3.60	
NITRATE + NITRITE - RPWRF LAB								
	1st Qtr - Jan						3.87	
	2nd Qtr - May						3.66	
	3rd Qtr - Jul	1.11	0.94	1.46	1.24	1.60	2.41	1.66
	4th Qtr - Oct						3.92	
<b>ORGANIC</b>								
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL (Br,Cl,DiBr,DiCl)	3rd Qtr - Jul	<0.5,4.71,1.03,1.82	<0.5,9.08,1.91,3.83	<0.5,7.04,1.51,3.31	<0.5,4.20,1.39,2.53	<0.5,4.83,1.77,2.63	<0.5,5.03,2.13,3.23	<0.5,3.58,0.98,1.90
VOLATILES								
(including TRIHALOMETHANES)	1st Qtr - Jan						no detections	
	2nd Qtr - May						no detections	
	3rd Qtr - Jul							
	4th Qtr - Oct							
SYNTHETIC ORGANICS (515.1, 525.2, 531.1)								
	2nd Qtr - May				no detections			
	3rd Qtr - Jul				no detections	no detections	no detections	no detections
	4th Qtr - Oct					no detections	no detections	no detections
UCMR Stage 2 List 1 and 2								
	3rd Qtr - Jul	no detections	no detections	no detections	no detections	no detections	no detections	no detections
<b>RADIOACTIVE CONTAMINANTS</b>								
Radium 228 pCi/L	2nd Qtr - Apr		1.9			1.1	1.3	
UNITS ARE AS REPORTED, ppb FOR ORGANICS, ppm FOR INORGANICS, except where noted.								

Appendix III - Annual Testing Summary - Tests Run on City of Spokane Water						24-Feb-2010		
2008 DRINKING WATER SOURCE - COMPLETED QUARTERLY MONITORING								
	SOURCE #	8	6	5	1	3	4	2
	WELL	CENTRAL	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	WELL ELECTRIC
<b>BACTERIA</b>								
COLIFORM - RAW SOURCE *								
Total Coliform - number of samples per year / greatest result		7 / <1	7 / <1	4 / <1	7 / <1	12 / <1	9 / <1	36 / <1
Fecal Coliform - number of samples per year / greatest result		7 / <1	7 / <1	4 / <1	7 / <1	12 / <1	9 / <1	36 / <1
HETEROTROPHIC PLATE COUNT - RAW SOURCE *								
number of samples per year / greatest result value		7 / 8	7 / 2	3 / 42.5	7 / 1	12 / 1	9 / 101	32 / 2
* All operating wells are typically sampled once per month								
<b>INORGANIC</b>								
FULL LIST- CERTIFIED LAB (phase II & V included)	3rd Qtr - Jul		completed-see App. IV	completed-see App. IV				
NITRATE								
	1st Qtr - Jan						3.83	
	2nd Qtr - May						3.78	
	3rd Qtr - Jul	1.06	0.818	1.70	1.05	2.03	2.98	1.86
	4th Qtr - Oct						3.07	
NITRATE + NITRITE - RPWRF LAB								
	1st Qtr - Jan						3.72	
	2nd Qtr - May						3.70	
	3rd Qtr - Jul	0.892	0.676	1.80	0.902	1.76	2.46	1.61
	4th Qtr - Oct						3.00	
<b>ORGANIC</b>								
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL (Br,Cl,DiBr,DiCl)	3rd Qtr - Aug	< 0.5,3.22,< 0.5,0.83	< 0.5,7.82,1.75,2.98	< 0.5,4.01,1.06,1.68	< 0.5,5.19,1.48,2.54	< 0.5,4.13,1.06,1.62	0.59,5.29,2.37,2.93	< 0.5,4.35,0.96,1.51
VOLATILES (including TRIHALOMETHANES)								
	1st Qtr - Jan	no detections	no detections *		no detections			
	2nd Qtr - May		no detections *					
	3rd Qtr - Jul		no detections *	no detections				
	4th Qtr - Oct							
SYNTHETIC ORGANICS (515.1, 525.2, 531.1)								
	3rd Qtr - Jul	no detections	no detections	no detections				
	4th Qtr - Oct	no detections	no detections	no detections				
<b>RADIOACTIVE CONTAMINANTS</b>								
Radon								
	2nd Qtr - Apr	534	winterized	winterized	426	534	503	402
	3rd Qtr - Jul	468	284	488	473	534	452	212
	4th Qtr - Oct		440	467				
UNITS ARE AS REPORTED, ppb FOR ORGANICS, ppm FOR INORGANICS, except where noted.				* Grace was sampled each month, Jan. - Aug, and analyzed for VOC and NW TPH-Dx, re: Whitley Fire				

Appendix III - Annual Testing Summary - Tests Run on City of Spokane Water						24-Feb-2010			
2007 DRINKING WATER SOURCE - COMPLETED QUARTERLY MONITORING									
	SOURCE #	8	6	5	1	3	4	2	
	WELL	CENTRAL	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	WELL ELECTRIC	
<b>BACTERIA</b>									
COLIFORM - RAW SOURCE *									
	Total Coliform - number of samples per year / greatest result	11 / <1	8 / <1	7 / <1	11 / <1	15 / <1	9 / <1	31 / 2	
	Fecal Coliform - number of samples per year / greatest result	11 / <1	8 / <1	7 / <1	11 / <1	15 / <1	9 / <1	31 / <1	
HETEROTROPHIC PLATE COUNT - RAW SOURCE *									
	number of samples per year / greatest result value	11 / 4.5	8 / 5	7 / 84.5	11 / 1.5	15 / 2	9 / 347	31 / 1	
* All operating wells are typically sampled once per month									
<b>INORGANIC</b>									
	FULL LIST- CERTIFIED LAB (phase II & V included)	3rd Qtr - Jul	completed-see App. IV					completed-see App. IV	
	NITRATE	1st Qtr - Jan					3.87		
		2nd Qtr - May					3.01		
		3rd Qtr - Jul	1.00	0.95	1.27	0.98	1.07	2.14	1.37
		4th Qtr - Oct					3.62		
	NITRATE + NITRITE - RPWRF LAB	1st Qtr - Jan					3.56		
		2nd Qtr - May	1.11	1.02	1.65	1.07	1.23	3.47	1.58
		3rd Qtr - Jul					2.63		
		4th Qtr - Oct					3.22		
<b>ORGANIC</b>									
	MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL (Br,Cl,DiBr,DiCl)	3rd Qtr - Aug	< 0.5, 3.37, 0.52, 0.96	<0.5,4.81, 1.00, 1.94	, 0.5, 4.15, 0.80, 1.50	< 0.5, 3.59, 0.84, 1.62	< 0.5, 3.11, 0.68, 1.22	< 0.5, 5.24, 2.08, 3.20	< 0.5, 4.41, 0.77, 1.63
	VOLATILES (including TRIHALOMETHANES)	1st Qtr - Jan							
		2nd Qtr - May							
		3rd Qtr - Jul		no detections					
		4th Qtr - Oct			no detections *				
<b>VIRAL INVESTIGATION</b>									
	EPA meth. 1601 - Famp (p/a, Host: E. coli. 15597)	1st Qtr - Jan				absent		absent	
	EPA meth. 1601 - CN13 (p/a, Host: E. coli. 15597)	1st Qtr - Jan				absent		absent	
<b>RADIOACTIVE CONTAMINANTS</b>									
	Radium 228	2nd Qtr - Apr 24					0.63		
	2 samplings more than 90 days apart	4th Qtr - Oct 30					1.41		
UNITS ARE AS REPORTED, ppb FOR ORGANICS, ppm FOR INORGANICS, except where noted.				* laboratory completed only part of VOC, resampled in 2008					

Appendix IV - Drinking Water Inorganics Summary

Appendix IV

CITY OF SPOKANE

reported 17-Feb-2009

DRINKING WATER INORGANICS SUMMARY

MOST RECENT WELL STATION MONITORING ANALYTICAL RESULTS

CERTIFIED LABORATORIES

WELL STATION	CENTRAL	ELECTRIC	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	Maximum Contaminant Levels		CURRENT DATA SUMMARY			
								MCL's**	Goals MCLG's	MEAN	MAX	MIN	COUNT
SAMPLING DATE	31-Jul-2007	31-Jul-2007	29-Jul-2008	29-Jul-2008	28-Jul-2009	28-Jul-2009	28-Jul-2009						
LABORATORY	Test Am (County)	Test Am (County)	County (SVL)	County (SVL)	County (SVL)	County (SVL)	County (SVL)						
ALKALINITY			87.5	139	103	150	148		unregulated	126	150	87.5	5
HARDNESS (as CaCO3)	134	138	91.4	154	99.3	155	150			132	155	91.4	7
CONDUCTIVITY (µmos/cm)	255	278	100	160	219	329	339	700 t		240	339	100	7
TURBIDITY (NTU)	0.153	0.117	< 1.0	< 1.0	< 0.100	0.125	0.100	1 t		0.07	0.153	0.1	7
COLOR (color units)	< 5.00	< 5.0	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	15 s		0.000	0.000	< 5.00	7
CHLORIDE	4.06	4.33	3.81	5.77	4.11	5.92	10.1	250 s		5.44	10.1	3.81	7
TOT. DISSOLVED SOLIDS	152	161	100	160	121	191	191	500 t		154	191	100	7
MAGNESIUM			8.01	16.9	8.98	16.8	12.9		unregulated	12.7	16.9	8.01	5
CALCIUM			23.4	33.9	25	34.2	38.6		unregulated	31.0	38.6	23.4	5
ORTHO-PHOSPHATE			< 0.01	< 0.01	< 0.010	< 0.010	0.02		unregulated	0.004	0.02	< 0.010	5
AMMONIA			0.036	< 0.030	< 0.030	< 0.030	< 0.030		unregulated	0.007	0.036	0.036	5
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	0.151	< 0.100	< 0.100	< 0.100	< 0.100	2 s	4		0.151	< 0.100	7
NITRATE (NO3-N)	1.00	1.37	0.83	1.70	0.96	1.47	2.11	10	10	1	2.11	0.83	7
NITRITE (NO2-N)	< 0.200	< 0.200	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	1	1		< 0.050	< 0.050	7
SULPHATE	12.07	11.2	7.83	14.8	9.1	16.6	12.7	250 s	400	12.0	16.6	7.8	7
ALUMINUM			< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	s - 0.05 - 0.2 mg/L **			< 0.080	< 0.020	5
ANTIMONY	< 0.00100	< 0.00100	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	0.006	0.006		< 0.00300	< 0.001	7
ARSENIC	0.00358	0.00492	0.00310	0.00299	0.00277	0.00324	0.00513	0.010	0	0.0037	0.00513	< 0.0010	7
BARIUM	0.0247	0.0226	0.0167	0.0306	0.0189	0.0273	0.0418	2	2	0.0261	0.0418	0.0167	7
BERYLLIUM	< 0.000800	< 0.000800	< 0.00200	< 0.00200	< 0.0008	< 0.0008	< 0.0008	0.004	0.004		< 0.00200	< 0.0008	7
CADMIUM	< 0.00200	< 0.00200	< 0.000200	< 0.000200	< 0.0002	< 0.0002	< 0.0002	0.005	0.005		< 0.002	< 0.000200	7
CHROMIUM	< 0.00850	< 0.00850	< 0.0060	< 0.0060	< 0.0060	< 0.0060	< 0.0060	0.1	0.1		< 0.0060	< 0.0060	7
COPPER	< 0.00745	< 0.00745	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	TT	1.3		< 0.010	< 0.010	7
IRON	< 0.0200	< 0.0200	< 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	< 0.0100	< 0.010	< 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	< 0.0300	< 0.03000	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.1 ***	0.1 ***		< 0.010	< 0.010	7
SELENIUM	< 0.00500	< 0.00500	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	0.05	0.05		< 0.00300	< 0.00300	7
SILVER	< 0.0100	< 0.0100	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.1 s			< 0.0050	< 0.0050	7
SODIUM	3.05	3.81	2.67	4.40	2.58	3.81	6.19			3.8	6.19	2.58	7
THALLIUM	< 0.000400	< 0.000400	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	0.002	0.0005		< 0.00100	< 0.000400	7
ZINC	0.0159	< 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, but is also on the Drinking Water Contaminant Candidate List

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

**Appendix V - Disinfection Byproducts - Distribution System**

**Distribution System Sampling for Disinfection Byproducts**

Location	Reported										MAXIMUM CONTAMINANT LEVELS (MCL)
	Mallen Tank Date	Mallen Tank Date	BPA Transmission Easement	BPA Transmission Easement	Mallen Tank Date	Mallen Tank Date	BPA Transmission Easement	BPA Transmission Easement	Mallen Tank Date	Mallen Tank Date	
Organics Lab	North Creek	North Creek	North Creek	North Creek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Total Chlorine Residual, mg/L	0.21	0.28	0.23	0.02	0.21	0.14	0.35	0.04	0.27	0.15	
TRihalOMETHANES, results micrograms/L											
Chloroform	< 0.5	< 0.5	< 0.5	<b>1.2</b>	< 0.5	<b>0.5</b>	< 0.5	<b>0.7</b>	< 0.5	< 0.5	
Bromodichloromethane	<b>0.5</b>	< 0.5	< 0.5	<b>1.5</b>	<b>0.6</b>	<b>0.9</b>	< 0.5	<b>1.0</b>	< 0.5	< 0.5	
Dibromochloromethane	<b>0.6</b>	<b>0.5</b>	< 0.5	<b>1.3</b>	<b>0.6</b>	<b>0.9</b>	< 0.5	<b>1.5</b>	< 0.5	< 0.5	
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<b>0.8</b>	< 0.5	< 0.5	
TOTAL TRIHALOMETHANES	<b>1.1</b>	<b>0.5</b>	< 2.0	<b>4.0</b>	<b>1.2</b>	<b>2.3</b>	< 2.0	<b>4.0</b>	< 2.0	< 2.0	80
HALOACETIC ACIDS (HAA5), results micrograms/L											
Chloroacetic acid	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	
Bromoacetic acid	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	
Di-Chloroacetic acid	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	
Tri-Chloroacetic acid\	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	
Di-Bromoacetic acid	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	
TOTAL HAA (5)	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6	< 6	< 6	< 6	60
Chloro,bromoacetic acid	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	

Results are in µg/L (ppb) except where otherwise noted  
 \* State Unregulated

## Distribution System Sampling for Disinfection Byproducts

Location Date Organics Lab	BPA	BPA	Mallen Tank 30-Jan-2007 Anatek	Mallen Tank 24-Apr-2007 Anatek	BPA Trans	BPA Trans	Mallen Tank 29-Jan-2008 Anatek	Mallen Tank 29-Apr-2008 Anatek	BPA Trans	BPA Trans	MAXIMUM CONTAMINANT LEVELS (MCL)
	Transmission Easement 25-Jul-06 Anatek	Transmission Easement 31-Oct-06 Anatek			Easement 31-Jul-2007 Anatek	Easement 30-Oct-2007 Anatek			Easement 29-Jul-2008 Anatek	Easement 21-Oct-2008 Anatek	
Total Chlorine Residual, mg/L	0.29	0.23	0.19	0.23	0.31		0.20	0.24	0.23	0.19	
TRIHALOMETHANES, results micrograms/L											
Chloroform	< 0.5	<b>1.1</b>	< 0.5	<b>1.3</b>	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Bromodichloromethane	< 0.5	<b>1.4</b>	<b>0.6</b>	<b>0.5</b>	< 0.5	<b>0.8</b>	< 0.5	< 0.5	< 0.5	<b>0.86</b>	
Dibromochloromethane	< 0.5	<b>1.2</b>	<b>0.8</b>	<b>0.7</b>	< 0.5	<b>1.1</b>	<b>0.63</b>	< 0.5	< 0.5	<b>1.03</b>	
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<b>0.5</b>	< 0.5	< 0.5	< 0.5	< 0.5	
TOTAL TRIHALOMETHANES	< 2.0	<b>3.7</b>	<b>1.4</b>	<b>2.5</b>	< 0.5	<b>2.4</b>	<b>0.63</b>	< 0.5	< 0.5	<b>1.89</b>	80
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)	< 6	< 6	< 6.0	< 6.0	< 6.0	< 6.0	< 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

## Distribution System Sampling for Disinfection Byproducts

Location	Mallen Tank	Mallen Tank	BPA Trans Easement	BPA Trans Easement	MAXIMUM CONTAMINANT LEVELS (MCL)
Date	27-Jan-09	21-Apr-2009	28-Jul-2009	27-Oct-2009	
Organics Lab	Anatek	Anatek	Anatek	Anatek	
Total Chlorine Residual, mg/L	0.26	0.25	0.27	0.11	
TRIHALOMETHANES, results micrograms/L					
Chloroform	< 0.5	< 0.5	< 0.5	<b>0.9</b>	
Bromodichloromethane	< 0.5	<b>0.52</b>	< 0.5	<b>1.3</b>	
Dibromochloromethane	< 0.5	<b>0.74</b>	< 0.5	<b>1.49</b>	
Bromoform	< 0.5	< 0.5	< 0.5	<b>0.6</b>	
TOTAL TRIHALOMETHANES	< 2.0	<b>1.26</b>	< 0.5	<b>4.29</b>	80
HALOACETIC ACIDS (HAA5), results micrograms/L					
Chloroacetic acid	< 2	< 2	< 2	< 2	
Bromoacetic acid	< 1	< 1	< 1	< 1	
Di-Chloroacetic acid	< 1	< 1	< 1	< 1	
Tri-Chloroacetic acid\	< 1	< 1	< 1	< 1	
Di-Bromoacetic acid	< 1	< 1	< 1	< 1	
TOTAL HAA (5)	< 1	< 1	< 1	< 1	60
Chloro,bromoacetic acid *	< 1	< 1	< 1	< 1	

Results are in µg/L (ppb) except where otherwise noted

\* State Unregulated

## --- Baxter was decommissioned during 2002. ---

WELL STATION	BAXTER													MAXIMUM CONTAMINANT LEVELS	
	30-Aug-89	12-Nov-91	28-Jul-92	06-Oct-92	27-Jul-93	26-Jul-94	25-Jul-95	25-Jul-95	30-Jul-96	19-Aug-97	27-Aug-97	21-Jul-98	18-Nov-98	25-Jul-2000	
DATE	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	IEL	IEL	Coffey	MWL	Laucks	Laucks	Laucks	Anatek	
Organics Lab															
Organics Note:															
Sampled by:	R. Butts		R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts		R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL															
Bromoform		1.4	0.6		0.8	< 0.5	0.7		< 0.5		0.35	< 0.5		0.6	
Chloroform		3.1	6.0		4.7	5.6	22.6		10.0		7.8	5.9		10.6	
Dibromochloromethane		2.7	2.4		1.4	1.5	0.7		< 0.5		2.6	0.8		1.9	
Bromodichloromethane		2.7	4.0		1.7	2.8	5.7		< 0.5		4.3	1.1		2.6	
TOTAL		9.9	13.0		9.0	10.0	29.7		10		15.05	7.8		15.7	none
TRihalOMETHANES															
Bromoform	0.6		< 0.5	< 0.5				0.7				< 0.5			
Chloroform	3.0		< 0.5	< 0.5				2.5				< 0.5			
Dibromochloromethane	1.2		0.5	0.6				< 0.5				< 0.5			
Bromodichloromethane	1.1		< 0.5	0.5				1.7				< 0.5			
TOTAL TRIHALOMETHANES	5.9		0.5	1.1				4.9				< 0.5			100.0
VOLATILE ORGANICS															
1,1,1-Trichloroethane	< 0.5		< 0.5	< 0.5				< 0.5				< 0.5			200.0
Tetrachloroethene	< 0.5		< 0.5	< 0.5				< 0.5				< 0.5			5.0
1,3-Dichloropropane	< 0.5		< 0.5	< 0.5				< 0.5				< 0.5			none
SYNTHETIC ORGANICS															
Di (2-ethylhexyl) Adipate								< 0.6		< 0.6		< 1.3	< 1.3	< 1.3	400.0
Di (2-ethylhexyl) Phthalate								< 0.6		< 0.6		< 1.3	< 1.3	< 1.3	6.0
Di-n-Butylphthalate								< 1.3		< 0.6*		< 0.6	< 0.6	< 0.4	none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

\* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

WELL STATION	CENTRAL															MAXIMUM CONTAMINANT LEVELS
DATE	07-Mar-88	25-Sep-89	15-Jan-90	09-Apr-90	13-Aug-90	29-Oct-90	24-Jul-91	12-Nov-91	11-Feb-92	04-May-92	28-Jul-92	28-Oct-92	27-Jan-93	27-Apr-93	27-Jul-93	
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	
Organics Note:																
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts		R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform								< 0.5			< 0.5					
Chloroform								1.6			10.2					2.7
Dibromochloromethane								0.7			1.4					0.5
Bromodichloromethane								1.0			3.5					0.7
TOTAL								3.3			15.1					4.0
TRIHALOMETHANES																
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Chloroform	< 0.5	< 0.5	< 0.5	1.0	1.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Dibromochloromethane	0.6	< 0.5	0.6	< 0.5	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Bromodichloromethane	< 0.5	< 0.5	< 0.5	0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
TOTAL TRIHALOMETHANES	0.6	< 2.0	0.6	1.5	2.7	< 2.0	< 2.0	0.5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5	< 0.5	0.7	0.8	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	200
Tetrachloroethene	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	5
1,3-Dichloropropane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	none
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate																400
Di (2-ethylhexyl) Phthalate																6
Di-n-Butylphthalate																none

WELL STATION	CENTRAL (CONTINUED)															MAXIMUM CONTAMINANT LEVELS
DATE	26-Jul-94	10-Aug-94	31-Jan-95	25-Jul-95	25-Jul-95	14-May-96	30-Jul-96	06-May-97	19-Aug-97	27-Aug-97	05-May-98	27-Apr-99	03-Aug-99	25-Apr-00	31-Jul-01	
Organics Lab	WADOH	IEL	IEL	IEL	IEL	Coffey	Coffey	Coffey	MWL	Laucks	Laucks	Laucks/Anatek	Anatek	County(NCA)	Anatek	
Organics Note:																
Sampled by:	R. Butts	R. Butts	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform	< 0.5			< 0.5			< 0.5			0.6	21-Jul-98			< 0.5	< 0.5	< 0.5
Chloroform	4.0			6.2			9.3			5.5	4.5			2.8	7.0	14.6
Dibromochloromethane	0.8			< 0.5			< 0.5			0.6	< 0.5			0.5	0.9	< 0.5
Bromodichloromethane	1.5			2.2			< 0.5			2.3	0.5			1.1	1.4	1.0
TOTAL	6.3			8.4			9.3			9.0	5.0			4.4	9.3	15.6
TRIHALOMETHANES																
Bromoform		< 0.5			0.9	< 0.5		< 0.5			< 0.5	< 0.5			< 0.5	
Chloroform		1.0			1.1	< 0.5		< 0.5			< 0.5	< 0.5			< 0.5	
Dibromochloromethane		< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5			< 0.5	
Bromodichloromethane		0.8			1.0	< 0.5		< 0.5			< 0.5	< 0.5			< 0.5	
TOTAL TRIHALOMETHANES		1.8			3.0	< 2.0		< 2.0			< 2.0	< 2.0			< 2.0	80
VOLATILE ORGANICS																
1,1,1-Trichloroethane		< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5			< 0.5	200
Tetrachloroethene		< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5			< 0.5	5
1,3-Dichloropropane		< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5			< 0.5	none
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate			< 0.6					< 0.3	< 0.6			< 1.3	< 1.3			400
Di (2-ethylhexyl) Phthalate			< 0.6					< 1.2	< 0.6			< 1.3	< 1.3			6
Di-n-Butylphthalate			< 1.3						< 0.6*			< 0.4	< 0.4			none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

\* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

WELL STATION	CENTRAL								Reported	25-Feb-10	MAXIMUM CONTAMINANT LEVELS
DATE	13-Aug-02	29-Jul-03	27-Jul-04	2005	2006	31-Jul-07	29-Jul-08	2009			
Organics Lab	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek			
Organics Note:											
Sampled by:	R. Butts	Wisely	Cribbins	Woodfill	Casci	Graf/Rickard	Graf/Rickard	Rickard			
<b>MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL</b>											
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5			
Chloroform	2.9	3.0	5.3	4.3	4.8	3.4	3.22	4.71			
Dibromochloromethane	0.5	0.5	0.6	0.6	< 0.5	0.5	< 0.5	1.03			
Bromodichloromethane	1.2	1.2	1.4	1.3	0.9	1.0	0.8	1.82			
TOTAL	4.6	4.7	7.3	6.2	5.7	4.9	4.05	7.56			none
<b>TRihalOMETHANES</b>											
Bromoform	January-02			01-Feb-05				29-Jan-08			
Chloroform	< 0.5			< 0.5				< 0.5			
Dibromochloromethane	< 0.5			< 0.5				< 0.5			
Bromodichloromethane	< 0.5			< 0.5				< 0.5			
TOTAL TRIHALOMETHANES	< 2.0			< 2.0				< 2.0			80
<b>VOLATILE ORGANICS</b>											
1,1,1-Trichloroethane				01-Feb-05				29-Jan-08			
Tetrachloroethene	< 0.5			< 0.5				< 0.5			200
1,3-Dichloropropane	< 0.5			< 0.5				< 0.5			5
											none
<b>SYNTHETIC ORGANICS</b>											
Di (2-ethylhexyl) Adipate	Aug.&Nov.			7/26 + 10/25				7/29 & 10/21			
Di (2-ethylhexyl) Phthalate	< 1.3			< 1.3				< 1.3			400
Di-n-Butylphthalate	< 1.3			< 1.3				< 1.3			6
	< 0.4			< 0.4				< 0.4			none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

\* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

WELL STATION	GRACE															MAXIMUM CONTAMINANT LEVELS
DATE	31-May-88	30-Aug-89	13-Aug-90	29-Oct-90	24-Jul-91	12-Nov-91	28-Jul-92	27-Jul-93	26-Jul-94	10-Aug-94	31-Jan-95	25-Jul-95	25-Jul-95	30-Jul-96	07-Aug-96	
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	IEL	IEL	IEL	IEL	Coffey	Coffey Resample	
Organics Note:																
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform						< 0.5	< 0.5		< 0.5			0.7		< 0.5		
Chloroform						4.8	12.8	9.3	6.0			22.9		11.0		
Dibromochloromethane						1.8	1.2	0.9	0.9			< 0.5		< 0.5		
Bromodichloromethane						2.6	3.2	2.2	2.0			4.0		< 0.5		
TOTAL						9.2	17.2	12.0	9.0			27.6		11.0		none
TRIHALOMETHANES																
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5			< 0.5		< 0.5	
Chloroform	0.7	< 0.5	1.0	< 0.5	0.5	1.5	< 0.5	0.6		0.9			0.8		< 0.5	
Dibromochloromethane	0.7	0.9	0.7	0.5	< 0.5	1.0	< 0.5	0.5		< 0.5			< 0.5		< 0.5	
Bromodichloromethane	0.5	0.7	0.8	< 0.5	0.5	1.0	< 0.5	0.5		1.0			0.8		< 0.5	
TOTAL TRIHALOMETHANES	1.9	1.6	2.5	0.5	1.0	3.5	< 2.0	1.6		1.9			1.6		< 2.0	80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5	200
Tetrachloroethene	1.0	1.0	0.7	0.7	0.6	0.6	0.5	< 0.5		< 0.5			0.7		< 0.5	5
1,3-Dichloropropane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5	none
Trichlorofluoromethane (Freon 11)																
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate													< 0.6			400
Di (2-ethylhexyl) Phthalate													< 0.6			6
Di-n-Butylphthalate													< 1.3			none

WELL STATION	GRACE (CONTINUED)															MAXIMUM CONTAMINANT LEVELS
DATE	29-Jul-97	27-Aug-97	07-Oct-97	21-Jul-98	18-Aug-98	01-Sep-98	27-Oct-98	18-Nov-98	29-Jun-99	03-Aug-99	25-Apr-00	25-Jul-00	24-Oct-00	31-Jul-01	13-Aug-02	
Organics Lab	Laucks	Laucks	MWL	Laucks/MWL	MWL	Laucks	Laucks	Anatek	Laucks/NCA	County(NCA)	County(NCA)	County(NCA)	Anatek	Anatek	Anatek	
Organics Note:			Resample													
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform		0.4		< 0.5						< 0.5		< 0.5		< 0.5	< 0.5	
Chloroform		5.8		6.6						7.1		9.7		18.6	8.6	
Dibromochloromethane		1.7		< 0.5						0.8		1.2		< 0.5	3.6	
Bromodichloromethane		2.7		0.7						2.4		2.0		1.2	5.7	
TOTAL		10.6		7.3						10.4		12.9		19.8	19.0	none
TRIHALOMETHANES																
Bromoform	< 0.5			< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5		
Chloroform	< 0.5			< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5		
Dibromochloromethane	< 0.5			< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5		
Bromodichloromethane	< 0.5			< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5		
TOTAL TRIHALOMETHANES	< 2			< 2		< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2		80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5			< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5		200
Tetrachloroethene	< 0.5			< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5		5
1,3-Dichloropropane	< 0.5			< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5		none
Trichlorofluoromethane (Freon 11)				0.60		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5		
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate			< 0.6	< 1.3	< 1.3			< 1.3	< 1.3			< 1.3	< 1.3		< 1.3	400
Di (2-ethylhexyl) Phthalate			< 0.6	< 1.3	< 1.3			< 1.3	< 1.3			< 1.3	< 1.3		< 1.3	6
Di-n-Butylphthalate			< 0.6	< 0.6	< 0.6			< 0.6	< 0.4			< 0.4	< 0.4		< 0.4	none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

WELL STATION	GRACE							Reported	25-Feb-10	MAXIMUM CONTAMINANT LEVELS
DATE	29-Jul-03	27-Jul-04	2005	2006	2007 *	2008 *	2009			
Organics Lab	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek			
Organics Note:										
Sampled by:	Wisely	Cribbins	Woodfill	Casci	Graf/Rickard	Graf/Rickard	Rickard			
<b>MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL</b>										
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5			
Chloroform	5.4	8.3	5.8	8.0	4.81	3.22	9.08			
Dibromochloromethane	1.2	1.1	1.1	1.2	1.00	< 0.5	1.91			
Bromodichloromethane	2.6	2.3	2.2	2.4	1.94	0.8	3.83			
TOTAL	9.2	11.7	9.1	11.7	7.75	4.05	14.8			none
<b>TRIHALOMETHANES</b>										
Bromoform		< 0.5			< 0.5	< 0.5				
Chloroform		< 0.5			< 0.5	< 0.5				
Dibromochloromethane		< 0.5			< 0.5	< 0.5				
Bromodichloromethane		< 0.5			< 0.5	< 0.5				
TOTAL TRIHALOMETHANES		< 2			< 2	< 2				80
<b>VOLATILE ORGANICS</b>										
1,1,1-Trichloroethane		< 0.5			< 0.5	< 0.5				200
Tetrachloroethene		< 0.5			< 0.5	< 0.5				5
1,3-Dichloropropane		< 0.5			< 0.5	< 0.5				none
Trichlorofluoromethane (Freon 11)		< 0.5			< 0.5	< 0.5				
<b>SYNTHETIC ORGANICS</b>										
Di (2-ethylhexyl) Adipate	Jul-03		7/26 + 10/25			7/29 & 10/21				400
Di (2-ethylhexyl) Phthalate	< 1.3		< 1.3			< 1.3				6
Di-n-Butylphthalate	< 1.3		< 1.3			< 1.3				none
Di-n-Butylphthalate	< 0.4		< 0.4			< 0.4				

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

\* Following a fire on July 23, 2007 at a nearby fuel storage facility, monthly VOC and TPH-Dx monitoring was initiated at Grace and Nevada well station until Aug. 2008. There were no detections.

Appendix VI - Organics Summary - Source Water

WELL STATION	HOFFMAN															MAXIMUM CONTAMINANT LEVELS
DATE	31-May-88	30-Aug-89	12-Nov-91	28-Jul-92	27-Jul-93	15-Aug-94	25-Jul-95	25-Jul-95	30-Jul-96	19-Aug-97	27-Aug-97	21-Jul-98	18-Aug-98	01-Sep-98	27-Oct-98	
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	IEL/WADOH	IEL	IEL	Coffey	MWL	Laucks	Laucks/MWL	MWL			
Organics Note:						SOC's by IEL for State										
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform			0.7	< 0.5	0.6	0.6		0.7	< 0.5		0.3	< 0.5				
Chloroform			18.7	15.4	4.6	6.3		18.4	11.0		9.2	17				
Dibromochloromethane			1.8	1.2	0.9	1.2		0.5	< 0.5		1.0	0.96				
Bromodichloromethane			2.7	3.1	1.1	1.6		4.5	< 0.5		2.1	1.5				
TOTAL			23.9	19.7	7.2	10.0		24.1	11.0		12.6	19.46				none
TRIHALOMETHANES																
Bromoform	< 0.5	< 0.5		< 0.5				0.8				< 0.5		< 0.5	< 0.5	
Chloroform	1.7	< 0.5		8.5				4.4				1.6		1.0	2.0	
Dibromochloromethane	0.9	0.8		< 0.5				< 0.5				< 0.5		< 0.5	< 0.5	
Bromodichloromethane	< 0.5	0.6		< 0.5				1.1				< 0.5		< 0.5	< 0.5	
TOTAL TRIHALOMETHANES	2.6	1.4		8.5				6.3				1.6		1.0	2.0	80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5	< 0.5		< 0.5				< 0.5				< 0.5		< 0.5	< 0.5	200
Tetrachloroethene	< 0.5	< 0.5		< 0.5				< 0.5				< 0.5		< 0.5	< 0.5	5
1,3-Dichloropropane	< 0.5	< 0.5		< 0.5				< 0.5				< 0.5		< 0.5	< 0.5	none
Trichlorofluoromethane (Freon 11)												1.1		< 0.5	< 0.5	
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate								< 0.6			< 0.6			< 1.3		400
Di (2-ethylhexyl) Phthalate								< 0.6			0.7			< 1.3		6
Di-n-Butylphthalate											< 0.6*			< 0.6		none
WELL STATION	HOFFMAN (CONTINUED)															MAXIMUM CONTAMINANT LEVELS
DATE	18-Nov-98	29-Jun-99	03-Aug-99	25-Jul-2000	24-Oct-2000	31-Jul-2001	13-Aug-02	29-Jul-2003	27-Jul-04	1-Sep-2004	26-Oct-2004	2005	2006	2007	2008	
Organics Lab	MWL	Laucks	County (NCA)	County (NCA)	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Organics Note:																
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	Wisely	Cribbins	Cribbins	Cribbins	Woodfill	Casci	Graf/Rickard	Graf/Rickard	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform			< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5			26-Jul-05	25-Jul-06	31-Jul-07	04-Aug-08	
Chloroform			4.9	9.1		18.5	4.8	5.9	7.0			< 0.5	< 0.5	< 0.5	< 0.5	
Dibromochloromethane			0.7	1.0		0.6	1.1	1.4	1.1			1.4	0.8	0.80	1.06	
Bromodichloromethane			1.6	1.6		1.0	2.1	2.8	2.0			2.8	1.4	1.50	1.68	
TOTAL			7.2	11.7		20.1	8.0	10.1	10.1			11.9	8.3	6.45	6.75	none
TRIHALOMETHANES																
Bromoform		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5			7/26 + 10/25		30-Oct-07	04-Aug-08	
Chloroform		0.54	0.555	1.92		< 0.5			< 0.5			< 0.5	< 0.5	< 0.5	< 0.5	
Dibromochloromethane		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5			< 0.5	< 0.5	< 0.5	< 0.5	
Bromodichloromethane		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5			< 0.5	< 0.5	< 0.5	< 0.5	
TOTAL TRIHALOMETHANES		0.54	0.56	1.92		< 2.0			< 2.0			< 2.0	< 2.0	< 2.0	< 2.0	80
VOLATILE ORGANICS																
1,1,1-Trichloroethane		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5			7/26 + 10/25		30-Oct-07	04-Aug-08	200
Tetrachloroethene		< 0.5	< 0.5	< 0.5		< 0.5			3.09***	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	5
1,3-Dichloropropane		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5			< 0.5	< 0.5	resample 2008	< 0.5	none
Trichlorofluoromethane (Freon 11)		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5			< 0.5	< 0.5	resample 2008	< 0.5	
Dichloromethane (Methylene Chloride, Freon 30)				1.5**		< 0.5			< 0.5			< 0.5	< 0.5	< 0.5	< 0.5	
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate	< 1.3	< 1.3		< 1.3	< 1.3		< 1.3	< 1.3	< 1.3			7/26 + 10/25		7/29 & 10/21		400
Di (2-ethylhexyl) Phthalate	< 1.3	< 1.3		< 1.3	< 1.3		< 1.3	< 1.3	< 1.3			< 1.3		< 1.3		6
Di-n-Butylphthalate	< 0.6	< 0.4		< 0.4	< 0.4		< 0.4	< 0.4	< 0.4			< 0.4		< 0.4		none

## WELL STATION

## HOFFMAN (CONTINUED)

MAXIMUM

DATE 2009  
 Organics Lab Anatek  
 Organics Note:  
 Sampled by: Rickard

CONTAMINANT  
LEVELS

MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL 28-Jul-09  
 Bromoform < 0.5  
 Chloroform 7.04  
 Dibromochloromethane 1.51  
 Bromodichloromethane 3.13  
 TOTAL 11.7

none

TRIHALOMETHANES  
 Bromoform  
 Chloroform  
 Dibromochloromethane  
 Bromodichloromethane  
 TOTAL TRIHALOMETHANES

80

VOLATILE ORGANICS  
 1,1,1-Trichloroethane  
 Tetrachloroethene  
 1,3-Dichloropropane  
 Trichlorofluoromethane (Freon 11)  
 Dichloromethane (Methylene Chloride, Freon 30)

200

5

none

SYNTHETIC ORGANICS  
 Di (2-ethylhexyl) Adipate  
 Di (2-ethylhexyl) Phthalate  
 Di-n-Butylphthalate

400

6

none

ALL RESULTS ARE REPORTED IN  $\mu\text{g/L}$  (i.e. parts per billion)

\* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

\*\* Dichloromethane was detected. This is a common laboratory contaminant and the laboratory blank had over twice this concentration. WA Dept. of Health concurred with our assessment that the sample is assumed to have been contaminated

\*\*\* On routine maintenance of the production pump motor a commercial solvent was used on the date of sampling, with the sole ingredient being Perc.

The State Dept. of Health agreed with the Water Dept. that this excursion did not represent a legitimate characterization of drinking water. The solvent is no longer used and subsequent quarterly tests have had no detections.

**Appendix VI - Organics Summary - Source Water**

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WELL STATION	NEVADA															Reported	25-Feb-10	MAXIMUM CONTAMINANT LEVELS
DATE	7-Mar-1988	31-May-1988	12-Apr-1989	30-Aug-1989	15-Jan-1990	9-Apr-1990	13-Aug-1990	29-Oct-1990	24-Jul-1991	12-Nov-1991	11-Feb-1992	4-May-1992	28-Jul-1992	28-Oct-1992	16-Feb-1993			
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	
Organics Note:																		
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																		
Bromoform																		
Chloroform																		
Dibromochloromethane																		
Bromodichloromethane																		
TOTAL																	none	
TRISHALOMETHANES																		
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Chloroform	< 0.5	0.5	< 0.5	< 0.5	0.7	0.70	0.6	0.5	< 0.5	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Dibromochloromethane	< 0.5	0.8	0.6	0.8	0.9	0.6	0.5	< 0.5	< 0.5	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Bromodichloromethane	< 0.5	0.6	< 0.5	0.5	0.7	0.60	< 0.5	< 0.5	0.5	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
TOTAL TRIHALOMETHANES	< 2.0	1.9	0.60	1.3	2.3	1.90	1.1	0.5	0.5	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	80	
VOLATILE ORGANICS																		
1,1,1-Trichloroethane	< 0.5	< 0.5	< 0.5	< 0.5	0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	200.0
Tetrachloroethene	0.6	1.0	1.1	0.8	1.1	1.0	0.6	0.7	< 0.5	0.7	< 0.5	< 0.5	< 0.5	0.6	0.6		5.0	
1,3-Dichloropropane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	none	
SYNTHETIC ORGANICS																		
Di (2-ethylhexyl) Adipate																		400.0
Di (2-ethylhexyl) Phthalate																		6.0
Di-n-Butylphthalate																		none

WELL STATION	NEVADA (CONTINUED)															MAXIMUM CONTAMINANT LEVELS		
DATE	27-Apr-1993	27-Jul-1993	26-Jul-1994	10-Aug-1994	31-Jan-1995	25-Jul-1995	25-Jul-1995	14-May-1996	30-Jul-1996	6-May-1997	19-Aug-1997	27-Aug-1997	28-Apr-1998	1-Sep-1998	27-Apr-99			
Organics Lab	WADOH	WADOH	WADOH	IEL	IEL	IEL	IEL	Coffey	Coffey	Coffey	MWL	Laucks	Laucks	Laucks	Laucks/Anatek			
Organics Note:																		
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																		
Bromoform			< 0.5			< 0.5				< 0.5			0.5	< 0.5				
Chloroform		7.6	4.9			19.0				9.0			4.7	5.5				
Dibromochloromethane		0.9	0.8			< 0.5				< 0.5			1.7	< 0.5				
Bromodichloromethane		2.0	1.8			3.9				< 0.5			2.6	0.7				
TOTAL		11.0	8.0			22.9				9.0			9.5	6.18				
TRISHALOMETHANES																		
Bromoform	< 0.5			< 0.5				< 0.5	< 0.5				< 0.5	< 0.5	< 0.5			
Chloroform	< 0.5			1.50				0.80	< 0.5	< 0.5			< 0.5	< 0.5	< 0.5			
Dibromochloromethane	< 0.5			< 0.5				< 0.5	< 0.5	< 0.5			< 0.5	< 0.5	< 0.5			
Bromodichloromethane	< 0.5			1.00				0.80	< 0.5	< 0.5			< 0.5	< 0.5	< 0.5			
TOTAL TRIHALOMETHANES	< 2.0			2.50				1.60	< 2	< 2			< 0.5	< 0.5	< 0.5		80	
VOLATILE ORGANICS																		
1,1,1-Trichloroethane	< 0.5			< 0.5				< 0.5	< 0.5				< 0.5	< 0.5	< 0.5			200.0
Tetrachloroethene	0.5			< 0.5				0.5	< 0.5	< 0.5			< 0.5	< 0.5	< 0.5			5.0
1,3-Dichloropropane	< 0.5			< 0.5				< 0.5	< 0.5	< 0.5			< 0.5	< 0.5	< 0.5			none
SYNTHETIC ORGANICS																		
Di (2-ethylhexyl) Adipate						< 0.6				< 0.4	< 0.6				< 1.3			400.0
Di (2-ethylhexyl) Phthalate						< 0.6				< 1.8	< 0.6				< 1.3			6.0
Di-n-Butylphthalate						< 1.3					< 0.6*				< 0.4			none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)  
 \* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

WELL STATION	NEVADA (CONTINUED)										Reported	25-Feb-10	MAXIMUM CONTAMINANT LEVELS
DATE	2000	2001	2002	2003	2004	2005	2006	2007 *	2008 *	2009			
Organics Lab	County (NCA)	County (NCA)	County (NCA)	Anatek	03-Jan-00	Anatek	Anatek	Anatek	Anatek	Anatek			
Organics Note:													
Sampled by:				Cribbins	Woodfill	Woodfill	Casci	Graf/Rickard	Graf/Rickard	Rickard			
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL				29-Jul-03	27-Jul-04		25-Jul-06	31-Jul-07	29-Jul-08	28-Jul-09			
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5			
Chloroform	9.7	1.4	5.5	6.0	7.8	8.5	2.1	3.59	5.19	4.20			
Dibromochloromethane	1.2	< 0.5	1.6	1.2	1.0	1.8	0.9	0.84	1.48	1.39			
Bromodichloromethane	2.0	0.5	2.9	2.4	2.0	2.8	1.3	1.62	2.54	2.53			
TOTAL	10.8	1.9	10.0	9.6	10.8	13.1	4.3	6.05	9.21	8.12			none
TRIHALOMETHANES				06-May-03			25-Apr-06	*	*				
Bromoform	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5				
Chloroform	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5				
Dibromochloromethane	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5				
Bromodichloromethane	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5				
TOTAL TRIHALOMETHANES	< 2.0			< 2.0			< 2.0	< 2.0	< 2.0				80
VOLATILE ORGANICS	25-Apr-00			06-May-03			25-Apr-06	*	*				
1,1,1-Trichloroethane	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5				200.0
Tetrachloroethene	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5				5.0
1,3-Dichloropropane	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5				none
SYNTHETIC ORGANICS				4/29 & 7/29			4/25 + 7/25			4/21 & 7/28			
Di (2-ethylhexyl) Adipate				< 1.3			< 1.3			< 1.3			400.0
Di (2-ethylhexyl) Phthalate				< 1.3			< 1.3			< 1.3			6.0
Di-n-Butylphthalate				< 0.4			< 0.4			< 0.4			none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

\* Following a fire on July 23, 2007 at a nearby fuel storage facility, monthly VOC and TPH-Dx monitoring was initiated at Grace and Nevada well station until Aug. 2008. There were no detections.

WELL STATION	PARKWATER														MAXIMUM CONTAMINANT LEVELS
DATE	07-Mar-88	30-Aug-89	12-Nov-91	28-Jul-92	06-Oct-92	27-Jan-93	27-Apr-93	27-Jul-93	25-Jan-94	26-Apr-94	26-Jul-94	26-Jul-94	01-Nov-94	25-Jul-95	
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	IEL	IEL	WADOH	IEL	IEL	IEL	
Organics Note:															
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL															
Bromoform			< 0.5	< 0.5								< 0.5			< 0.5
Chloroform			4.4	2.6				3.4				4.6			28.1
Dibromochloromethane			1.1	0.9				0.5				0.8			0.5
Bromodichloromethane			2.0	1.5				0.8				1.6			5.4
TOTAL			7.5	5.0				5.0				7.0			34.0
TRIHALOMETHANES															
Bromoform	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							
Chloroform	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							
Dibromochloromethane	< 0.5	0.6		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							
Bromodichloromethane	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							
TOTAL TRIHALOMETHANES	< 2.0	0.6		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0							80
VOLATILE ORGANICS															
1,1,1-Trichloroethane	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							200
Tetrachloroethene	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							5
1,3-Dichloropropane	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							none
SYNTHETIC ORGANICS															
Di (2-ethylhexyl) Adipate									< 0.2	2.1		< 0.6	< 0.6		400
Di (2-ethylhexyl) Phthalate									0.3	0.2		< 0.6	< 0.6		6
Di-n-Butylphthalate															none

WELL STATION	PARKWATER (CONTINUED)														MAXIMUM CONTAMINANT LEVELS
DATE	30-Jul-1996	7-Aug-1996	6-May-1997	19-Aug-1997	27-Aug-1997	3-Aug-1999	22-Dec-1999	25-Jul-2000	31-Jul-2001	13-Aug-02	29-Jul-2003	27-Jul-04	2005	2006	31-Jul-07
Organics Lab	Coffey	Coffey	Coffey	MWL	Laucks	NCA/Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek
Organics Note:		Resample													
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	Wisely	Cribbins	Woodfill	Casci	Graf/Rickard
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL															
Bromoform	< 0.5				0.4	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	8.9				3.6	4.3		10.1	17.3	3.6	3.7	8.1	6.6	6.6	3.11
Dibromochloromethane	< 0.5				1.1	0.7		1.0	< 0.5	0.7	0.6	0.8	1.0	0.7	0.68
Bromodichloromethane	< 0.5				2.1	1.6		1.6	1.2	1.5	1.4	1.8	2.0	1.4	1.22
TOTAL	8.9				7.2	6.6		12.7	18.5	5.8	5.7	10.7	9.6	8.8	5.01
TRIHALOMETHANES															
Bromoform		< 0.5				< 0.5	< 0.5				6-May-2003			25-Apr-2006	
Chloroform		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5	
Dibromochloromethane		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5	
Bromodichloromethane		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5	
TOTAL TRIHALOMETHANES		< 2.0				< 2.0	< 2.0				< 2.0			< 2.0	80
VOLATILE ORGANICS															
1,1,1-Trichloroethane		< 0.5				< 0.5	< 0.5				< 0.5			25-Apr-06	200
Tetrachloroethene		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5	5
1,3-Dichloropropane		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5	none
SYNTHETIC ORGANICS															
Di (2-ethylhexyl) Adipate			< 0.25	< 0.6		Aug & Oct 1999	< 1.3				Jul & Oct 2003			7/25 + 10/31	400
Di (2-ethylhexyl) Phthalate			< 0.9	< 0.6			< 1.3				< 1.3			< 1.3	6
Di-n-Butylphthalate				< 0.6*			< 0.4				< 0.4			< 0.4	none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

\* Di-n-Butylphthalate was detected at very low levels in a number of samples, but also in the laboratory blank during this test round.

WELL STATION

PARKWATER

Reported

24-Feb-10

MAXIMUM  
CONTAMINANT  
LEVELS

DATE 2008 28-Jul-09  
 Organics Lab Anatek Anatek  
 Organics Note:  
 Sampled by: Graf/Rickard Rickard

MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL

Bromoform < 0.5 < 0.5  
 Chloroform 4.13 4.83  
 Dibromochloromethane 1.06 1.77  
 Bromodichloromethane 1.62 2.63  
 TOTAL 6.81 9.23

none

TRIHALOMETHANES

21-Apr-09

Bromoform < 0.5  
 Chloroform < 0.5  
 Dibromochloromethane < 0.5  
 Bromodichloromethane < 0.5  
 TOTAL TRIHALOMETHANES < 2.0

80

VOLATILE ORGANICS

1,1,1-Trichloroethane < 0.5  
 Tetrachloroethene < 0.5  
 1,3-Dichloropropane < 0.5

200

5

none

SYNTHETIC ORGANICS

7/28 + 10/27

Di (2-ethylhexyl) Adipate < 1.3  
 Di (2-ethylhexyl) Phthalate < 1.3  
 Di-n-Butylphthalate < 0.4

400

6

none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

WELL STATION	RAY															MAXIMUM CONTAMINANT LEVELS	
DATE	7-Mar-1988	30-Aug-1989	12-Nov-1991	28-Jul-1992	6-Oct-1992	27-Jan-1993	11-May-1993	27-Jul-1993	19-Oct-1993	25-Jan-1994	26-Apr-1994	26-Jul-1994	10-Aug-1994	1-Nov-1994	31-Jan-1995		
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	IEL	IEL	IEL		
Organics Note:							RETAKED FOR 3/27/93										
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts		
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																	
Bromoform			1.9	0.7				0.8				< 0.5					
Chloroform			3.7	7.4				6.5				7.7					
Dibromochloromethane			2.8	2.9				2.7				2.7					
Bromodichloromethane			2.9	4.6				3.9				4.7					
TOTAL			11.3	15.6				14.0				15.0				none	
TRISHALOMETHANES																	
Bromoform	< 0.5	1.0		0.5	< 0.5	< 0.5	< 0.5	0.7	< 0.5	< 0.5	1.0		< 0.5	< 0.5	< 0.5		
Chloroform	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.7	< 0.5	0.5		< 0.5	< 0.5	0.8		
Dibromochloromethane	0.9	1.6		1.0	0.6	0.5	0.7	1.0	1.3	< 0.5	0.7		< 0.5	0.5	1.6		
Bromodichloromethane	< 0.5	0.8		0.6	< 0.5	< 0.5	< 0.5	0.6	0.9	< 0.5	1.3		< 0.5	< 0.5	1.4		
TOTAL TRIHALOMETHANES	0.9	3.4		2.1	0.6	0.5	0.7	2.3	2.9	< 2.0	3.5		< 2.0	0.5	3.8	80	
VOLATILE ORGANICS																	
1,1,1-Trichloroethane	< 0.5	< 0.5		0.6	< 0.5	< 0.5	0.5	1.2	1.0	< 0.5	< 0.5		< 0.5	< 0.5	2.2	200	
Tetrachloroethene	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	5	
1,3-Dichloropropane	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	none	
SYNTHETIC ORGANICS																	
Di (2-ethylhexyl) Adipate																< 0.6	400
Di (2-ethylhexyl) Phthalate																< 0.6	6
Di-n-Butylphthalate																< 1.3	none

WELL STATION	RAY (CONTINUED)															MAXIMUM CONTAMINANT LEVELS
DATE	2-May-1995	25-Jul-1995	25-Jul-1995	30-Jan-1996	30-Jul-1996	28-Jan-1997	6-May-1997	19-Aug-1997	27-Aug-1997	23-Mar-1998	26-Jan-1999	3-Aug-1999	26-Oct-1999	1-Feb-2000	25-Jul-2000	
Organics Lab	IEL	IEL	IEL	IEL	Coffey	Coffey	Coffey	MWL	Laucks	Laucks	Laucks	Anatek	Anatek	County(NCA)	Anatek	
Organics Note:																
Sampled by:	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts	Roy Butts	Roy Butts	Roy Butts	Roy Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform			0.8		< 0.5				1.2	1.1		< 0.5			1.3	
Chloroform			39.3		10.0				13.0	11.0		6.2			11.0	
Dibromochloromethane			1.1		< 0.5				5.3	3.1		2.0			3.4	
Bromodichloromethane			8.2		< 0.5				8.2	4.7		3.6			4.1	
TOTAL			49.4		10.0				27.7	19.9		11.8			19.8	none
TRISHALOMETHANES																
Bromoform	1.2	1.0		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		
Chloroform	< 0.5	0.8		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		
Dibromochloromethane	< 0.5	< 0.5		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		
Bromodichloromethane	0.9	0.8		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		
TOTAL TRIHALOMETHANES	2.1	2.6		< 2.0		< 2.0				< 2.0	< 2.0			< 2.0		80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	1.6	< 0.5		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		200
Tetrachloroethene	< 0.5	< 0.5		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		5
1,3-Dichloropropane	< 0.5	< 0.5		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		none
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate								< 0.3	< 0.6			< 1.3	< 1.3			400
Di (2-ethylhexyl) Phthalate								< 1.1	< 0.6			< 1.3	< 1.3			6
Di-n-Butylphthalate								< 0.6*				< 0.4	< 0.4			none

\* Di-n-Butylphthalate was detected at very low levels in a number of samples, but also in the laboratory blank during this test round.

WELL STATION	RAY										Reported	25-Feb-10	MAXIMUM CONTAMINANT LEVELS
DATE	31-Jul-2001	13-Aug-02	29-Jul-2003	2004	2005	2006	2007	2008	2009				
Organics Lab	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek			
Organics Note:													
Sampled by:	R. Butts	R. Butts	Wisely	Cribbins	Woodfill	Casci	Graf/Rickard	Graf/Rickard	Rickard				
<b>MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL</b>													
Bromoform	< 0.5	< 0.5	< 0.5	0.8	< 0.5	0.9	< 0.5	0.59	< 0.5				
Chloroform	16.0	8.6	6.1	11.9	7.3	8.4	5.2	5.29	5.03				
Dibromochloromethane	1.0	3.6	2.1	2.5	2.3	2.3	2.1	2.37	2.13				
Bromodichloromethane	1.9	5.7	3.9	4.1	3.5	3.3	3.2	2.93	3.23				
TOTAL	18.9	19.0	12.1	19.3	13.1	14.9	10.5	11.2	10.4				none
<b>TRISUBSTITUTED HALOMETHANES</b>													
Bromoform	< 0.5		< 0.5			< 0.5		< 0.5					
Chloroform	< 0.5		< 0.5			< 0.5		< 0.5					
Dibromochloromethane	< 0.5		< 0.5			< 0.5		< 0.5					
Bromodichloromethane	< 0.5		< 0.5			< 0.5		< 0.5					
TOTAL TRIHALOMETHANES	< 2.0		< 2.0			< 2.0		< 2.0					80
<b>VOLATILE ORGANICS</b>													
1,1,1-Trichloroethane	< 0.5		< 0.5			< 0.5		< 0.5					200
Tetrachloroethene	< 0.5		< 0.5			< 0.5		< 0.5					5
1,3-Dichloropropane	< 0.5		< 0.5			< 0.5		< 0.5					none
<b>SYNTHETIC ORGANICS</b>													
Di (2-ethylhexyl) Adipate			Jul & Oct 2003			7/25 + 10/31		7/28 + 10/27					400
Di (2-ethylhexyl) Phthalate			< 1.3			< 1.3		< 1.3					6
Di-n-Butylphthalate			< 1.3			< 1.3		< 1.3					none
			< 0.4			< 0.4		< 0.4					none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

WELL STATION	WELL ELECTRIC															MAXIMUM CONTAMINANT LEVELS
DATE	31-May-88	30-Aug-89	12-Nov-91	28-Jul-92	27-Jul-93	19-Oct-93	26-Jul-94	31-Jan-95	25-Jul-95	30-Jul-96	07-Aug-96	19-Aug-97	27-Aug-97	18-Aug-98	18-Nov-98	
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	IEL	IEL	Coffey	Coffey	MWL	Laucks	MWL	Anatek	
Organics Note:											Resample					
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL														21-Jul-98		
Bromoform			< 0.5	< 0.5			< 0.5		< 0.5	< 0.5			0.4	< 0.5		
Chloroform			11.8	11.1	4.2		6.2		15.0	10.0			5.0	6.6		
Dibromochloromethane			1.6	1.1	0.7		1.0		< 0.5	< 0.5			1.4	0.8		
Bromodichloromethane			3.7	3.0	1.3		2.3		3.2	< 0.5			2.3	1.3		
TOTAL			17.1	15.2	6.0		10.0		18.2	10.0			9.1	8.7		none
TRIHALOMETHANES																
Bromoform	< 0.5	< 0.5		< 0.5			< 0.5						< 0.5			
Chloroform	0.5	0.9		< 0.5			< 0.5						< 0.5			
Dibromochloromethane	0.8	0.7		< 0.5			0.7						< 0.5			
Bromodichloromethane	0.7	0.6		< 0.5			0.6						< 0.5			
TOTAL TRIHALOMETHANES	2.0	2.2		< 2.0			1.3						< 2.0			80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5	< 0.5		< 0.5			< 0.5						< 0.5			200
Tetrachloroethene	< 0.5	< 0.5		< 0.5			< 0.5						< 0.5			5
1,3-Dichloropropane	< 0.5	< 0.5		< 0.5			< 0.5						< 0.5			none
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate								< 0.6				< 0.6		< 1.3	< 1.3	400
Di (2-ethylhexyl) Phthalate								< 0.6				< 0.6		< 1.3	< 1.3	6
Di-n-Butylphthalate								< 1.3				< 0.6*		< 0.6	< 0.4	none

WELL STATION	WELL ELECTRIC (CONTINUED)														MAXIMUM CONTAMINANT LEVELS
DATE	03-Aug-99	26-Oct-99	22-Dec-99	25-Jul-00	31-Jul-01	13-Aug-02	29-Jul-2003	27-Jul-04	2005	2006	2007	2008	2009		
Organics Lab	County (NCA)	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek		
Organics Note:															
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	Wisely	Cribbins	Woodfill	Casci	Graf/Rickard	Graf/Rickard	Rickard		
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL									26-Jul-05	25-Jul-06	25-Jul-07	29-Jul-08	28-Jul-09		
Bromoform	< 0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.9	< 0.5	< 0.5	< 0.5		
Chloroform	5.3			11.6	10.2	7.0	6.5	9.4	8.6	8.4	4.41	4.35	3.58		
Dibromochloromethane	0.8			1.1	< 0.5	1.2	1.0	1.0	1.0	2.3	0.77	0.96	0.98		
Bromodichloromethane	2.2			1.9	0.9	2.6	2.5	2.1	2.4	3.3	1.63	1.51	1.90		
TOTAL	8.3			14.6	11.1	10.8	10.0	12.5	12.0	14.9	6.81	6.82	6.46	none	
TRIHALOMETHANES									6-May-2003	25-Jul-2006					
Bromoform	< 0.5			< 0.5					< 0.5	< 0.5					
Chloroform	< 0.5			< 0.5					< 0.5	< 0.5					
Dibromochloromethane	< 0.5			< 0.5					< 0.5	< 0.5					
Bromodichloromethane	< 0.5			< 0.5					< 0.5	< 0.5					
TOTAL TRIHALOMETHANES	< 2.0			< 2.0					< 2.0	< 2.0				80	
VOLATILE ORGANICS															
1,1,1-Trichloroethane	< 0.5			< 0.5					< 0.5	< 0.5				200	
Tetrachloroethene	< 0.5			< 0.5					< 0.5	< 0.5				5	
1,3-Dichloropropane	< 0.5			< 0.5					< 0.5	< 0.5				none	
SYNTHETIC ORGANICS															
Di (2-ethylhexyl) Adipate	< 1.3	< 1.3					Jul 29 & Oct 21		< 1.3	Jul & Oct 2006		7/28 & 10/27		400	
Di (2-ethylhexyl) Phthalate	< 1.3	< 1.3							< 1.3					6	
Di-n-Butylphthalate	< 0.4	< 0.4							< 0.4					none	
Di-methyl Phthalate										0.70 **				non-regulated	

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

\* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

\*\* detected in 10/31/2006 sampling. No detection in re-sample and considered to be a laboratory contamination.

## Appendix VII - Information Collection Rule - Sampling Sites

Site # 1 - Raw Source Water from Parkwater Station

Site # 8 - Treated (chlorinated) Water sampled at the Parkwater Station

Site # 9 - Treated (chlorinated) Water held to simulate residence time of Site #50 (1-2 hrs)

Site # 50 - Water sampled in distribution system - 1923 N. Waterworks Rd.

Site # 51 - Water sampled in distribution system - Fire Stn. #3, 1713 N. Ash

Site # 52 - Water sampled in distribution system - Fire Stn. #4, 8 S. Adams

Site # 55 - Water sampled in distribution system - Jensen Distribution Services - Aero Road (West Plains area)

Raw water prior to any treatment or distribution

sampled at the source just following treatment by chlorination

newly treated water held in a container to simulate a short residence time

in the distribution system (similar to residence time at site # 50)

approximately 1-2 hour residence time in distribution system

approximately midway in the main distribution system

approximately midway in the main distribution system

sample point to represent the extreme distance (longest residence time)

of the distribution system

## Appendix VII - Information Collection Rule - 1998 Sampling Results

SITE >		# 01		# 08		# 09		# 50		# 51		# 52		# 55	
TEST	UNITS	No. of tests	max. conc.	No. of tests	max. conc.	No. of tests	max. conc.	No. of tests	max. conc.	No. of tests	max. conc.	No. of tests	max. conc.	No. of tests	max. conc.
UV-254	cm - 1	12	0.01	12	0.009										
NH3-	mg/L	12	< 0.3												
Bromide	mg/L	12	< 0.3												
Alkalinity	mg CaCO3/L	12	160	13	160	4	160	4	150	4	160	4	150	3	140
Calcium Hardness	mg CaCO3/L	12	110	13	95	4	94	4	95	4	92	4	90	3	88
Total Hardness	mg CaCO3/L	12	190	13	170	4	170	4	170	4	160	4	160	3	140
TOC	mg/L	12	< 0.7	11	< 0.7										
TOX	ug Cl-/L	4	< 50	5	51	4	< 50	4	< 50	4	< 50	4	< 50	3	< 50
Chloroform	ug/L			5	< 1.0	4	< 1.0	3	< 1.0	3	< 1.0	3	< 1.0	2	< 1.0
Trichloroacetonitrile	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Dichloroacetonitrile	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Bromodichloromethane	ug/L			4	< 1.0	3	< 1.0	3	< 1.0	3	< 1.0	3	< 1.0	2	1.5
1,1-Dichloro-2-propanone	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Chloropicrin	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Dibromochloromethane	ug/L			5	< 1.0	4	< 1.0	3	< 1.0	3	< 1.0	3	1.0	2	2.0
Bromochloroacetonitrile	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
1,1,1-Trichloro-2-propanone	ug/L			5	< 0.5	4	0.7	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Bromoform	ug/L			5	1.3	4	< 1.0	3	< 1.0	3	1.5	3	1.8	2	< 1.0
Dibromoacetonitrile	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Monochloroacetic Acid	ug/L			4	< 2.0	4	< 2.0	4	< 2.0	4	3.5	4	< 2.0	3	5.8
Monobromoacetic Acid	ug/L			4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	3	< 1.0
Dichloroacetic Acid	ug/L			4	< 1.0	4	1.2	4	< 1.0	4	< 1.0	4	< 1.0	3	< 1.0
Trichloroacetic Acid	ug/L			4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	3	< 1.0
Bromochloroacetic Acid	ug/L			4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	3	< 1.0
Dibromoacetic Acid	ug/L			4	< 1.0	4	< 1.0	4	1.0	4	< 1.0	4	< 1.0	3	< 1.0
Chloral Hydrate	ug/L			4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5	3	< 0.5

**Appendix VIII - Unregulated Contaminant Monitoring Rule - Round 1 (UCMR 1)**

<i>List 1 Contaminants</i>	2,4 - dinitrotoluene	EPTC	Nitrobenzene	Perchlorate
	2,6 - dinitrotoluene	Molinate	MtBE	Terbacil
	Acetochlor	4,4' - DDE	DCPA, mono & di acid degradate	
<i>List 2 Contaminants *</i>	1,2-diphenylhydrazine	2-methyl-phenol	2,4-dichlorophenol	2,4-dinitrophenol
	2,4,6-trichlorophenol	Diazinon	Disulfoton	Diuron
	Fonofos	Linuron	Nitrobenzene	
	Prometon	Terbufos	Aeromonas spp. *	

*List 1 Monitoring Sites* Treated Source Water from All Well Stations

*List 2 Monitoring Sites* MD - Fire Station #3 - 1713 W. Indiana      mid-point representation of the residual disinfectant in the distribution system  
 LD - Shawnee Tank      monitoring point representative of the lowest residual disinfectant in the distribution system  
 MR - Fairways Golf Course      the most distal point in the distribution system representing the maximum residence time in the distribution system

**UCMR 1 - sampling results**

List 1	2002 - 3rd qtr		2002 - 4th qtr		2003 - 1st qtr		2003 - 2nd qtr			2003 - 3rd qtr		2003 - 4th qtr	
	AUG 2002	NOV 2002	JAN 2003	FEB 2003	APR 2003	5/1 TO 7/31 MAY 2003	JUN 2003	JULY 2003	AUG 2003	SEPT 2003	OCT 2003	DEC 2003	
CENTRAL		no detection				no detection							
GRACE						no detection		no detection			no detection		
HOFFMAN												no detection	
NEVADA						no detection					no detection		
PARKWATER		no detection				no detection							
RAY		no detection				no detection							
WELL ELECTRIC	no detection	no detection		no detection		no detection							
<b>List 2 - Aeromonas spp. only *</b>													
MD - FIRE STATION #3			< 0.2		< 0.2			< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
LD - SHAWNEE TANK			< 0.2		< 0.2			< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
MR - FAIRWAYS GOLF COURSE			< 0.2		< 0.2			< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	

\* The City of Spokane was selected to sample and test for the microbial contaminant only.  
 \*\* For much of the United States east of the Rocky Mountains, many studies have shown the season of greatest vulnerability for contaminant occurrence is the late-spring, early-summer runoff-recharge period. (EPA 815-R-99-007, Tech. Bkgrd Info for UCMR)

Appendix IX - Viral Investigation											Reported	5-Feb-2007	
WELL	Source water	Nevada	Parkwater	Grace	Nevada	Ray St.	Parkwater	Well Electric	Grace	Grace	Well Electric	Well Electric	Nevada
	DATE TIME	3-May-2006 9:30	3-May-2006 8:45	3-May-2006 9:15:00	25-Jul-06 8:35:00	25-Jul-06 9:15:00	25-Jul-06 10:40:00	25-Jul-06 10:00	15-Aug-06 10:30	31-Oct-06 10:20	31-Oct-06	30-Jan-07 10:15	30-Jan-07 8:40
WATER	ELEVA.(FT)	1880.8	1897.6	1879.4	1870.9	1878	1883.4	1893.1	1871.5	1875.1	1895.6	1883.9	1895.9
	GPM.WELL	10215	0	8650	3035	6700	6850	8750	8000	8030	8400	3880	8750
	GPM.FIELD	20215	0	8650	21700	11700	34000	8750	8000	8030	8400	3880	8750
FIELD	CI.RES.F	-		-	0.24	0.3			0.2	0.21	0.36	0.20	
	COND.F	247	355	240	259	358	358	306	209	271	296	258	314
	pH.F	8.37	7.9	8.4	7.66	7.59	7.71	7.67	7.97	7.67	7.66	7.76	7.79
	TEMP(C).F	12.0	10.5	12.0	15.5	12.5	11	11.5	10.5	11	10.5	12.0	11.0
	TURB.F	0.21	0.1	0.11	0.22	0.15	0.42	0.19	0.27	0.21	0.13	0.11	0.17
	BACT.LAB	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD
	BBY	Casci	Casci	Casci	Casci	Casci	Casci	Casci	Casci	Casci	Casci	Graf	Graf
	COLIFORM, FECAL,Raw Source Water	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	COLIFORM, TOTAL, Raw Source Water	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	3	1	< 1	< 1
	HETEROTR OPHIC PLATE COUNT, Raw Source Water	1	1	1	2	9	2	1	0.5	0.5	1	1	1
Viral Investigation	EPA meth. 1601 - Famp (p/a, Host: E. coli 15597)	absent	absent	present	absent	absent	absent	absent	absent	absent	absent	absent	absent
	EPA meth. 1601 - CN13 (p/a, Host: E. coli 15597)	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent

**Appendix X - Unregulated Contaminant Monitoring Rule - Round 2 (UCMR 2)**

2/17/2010

<i>List 1 Contaminants</i>	Dimethoate	BDE-99	BDE-100	RDX
	Terbufos sulfone	HBB	1,3-dinitrobenzene	
	BDE-47	BDE-153	2,4,6-trinitrotoluene (TNT)	
<i>List 2 Contaminants</i>	Acetochlor	Acetochlor oxanilic acid (OA)	Metolachlor oxanilic acid (OA)	N-nitroso-di-n-propylamine (NDPA)
	Alachlor	Alachlor ethane sulfonic acid (ESA)	N-nitroso-diethylamine (NDEA)	N-nitroso-methylethylamine (NMEA)
	Metolachlor	Alachlor oxanilic acid (OA)	N-nitroso-dimethylamine (NDMA)	N-nitroso-pyrrolidine (NPYR)
	Acetochlor ethane sulfonic acid (ESA)	Metolachlor ethane sulfonic acid (ESA)	N-nitroso-di-n-butylamine (NDBA)	

*List 1 Monitoring Sites* Treated Source Water from All Well Stations

*List 2 Monitoring Sites* Treated Source Water from All Well Stations  
 For nitrosamines, the sampling locations are both the well stations and a maximum residence time in the distribution system (MR) point(s) associated with the well stations.

**UCMR 2 - sampling results**

<b>List 1 And List 2</b>	July	August	September	October	November	December	January	February	March	April	May	June
	2009	2009	2009	2009	2009	2009	2010	2010	2010	2010	2010	2010
CENTRAL	no detection											
GRACE	no detection											
HOFFMAN	no detection											
NEVADA	no detection											
PARKWATER	no detection											
RAY	no detection											
WELL ELECTRIC	no detection											
BPA Easment *	no detection											

\* tested for nitrosamines only

\*\* For much of the United States east of the Rocky Mountains, many studies have shown the season of greatest vulnerability for contaminant occurrence is the late-spring, early-summer runoff-recharge period. (EPA 815-R-99-007, Tech. Bkgrd Info for UCMR)

**CONTAMINANTS FOUND IN DRINKING WATER TESTING IN 2009  
CITY OF SPOKANE, WATER & HYDROELECTRIC SERVICES**

Data presented, if not from 2009, 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)	5.1	2.2	10	12	10	0	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Nitrate	mg/L	(a)	3.60	0.86	10	10	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Radium 228 ( b ) ( e )	pCi/L	1.43	1.9	0.07	18	19	5	0	Decay of natural and man-made 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]	µg/L	2.78	4.29	1.26	2	4	80	0	By-product of drinking water chlorination
		date sampled	90th Percentile (d)	Number of Sites exceeding AL	Number Positive Samples	Number of Samples			
Copper ( c )	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 ( c )	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) MCL for combined Radium 226 and Radium 228 is 5 pCi/L. Radium 228 monitored all sources in 2005, Parkwater only in 2007, Grace, Parkwater, Ray St. in 2009
- (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) Gross Alpha Testing will occur in 2010

**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  
mrem/yr = millirems per year (a measure of radiation absorbed by the body)  
TT = Treatment Technique = A required process intended to reduce the level of a contaminant in drinking water.  
<= - less than or equal to