Laboratory Results

Sample Water Sample ID No.: **WW-28**
Sample Date: April 14, 2010
SampleType: Domestic drinking water

Laboratory Analyses Performed:

Ammonia, Nitrogen and Nitrate	Pesticides and Herbicides
Pathogens	Trace Organics
General Chemistry	Veterinary Pharmaceuticals
Hormones	Wastewater Pharmaceuticals
Metals	Nitrogen Isotopes
Perchlorate	Sulfur hexafluoride (SF_6) Age Dating

Chemical	Result[a]	Units	Laboratory Detection Limit	Drinking Water Standards	
				MCL[b]	SMCL[c]
Nitrogen Compounds					
Nitrate (NO_3)	**71.2**	**mg/L**	**0.05**	**10**	
Ammonia (NH_3+NH_4) as N	Not Detected	mg/L	0.3		
Nitrate+Nitrite (NO_3+NO_2) as N	**76**	**mg/L**	**2.5**	**10**	
Total Kjeldahl Nitrogen	Not Detected	mg/L	5.1		
Pathogens					
Escherichia coli	Not Detected	#/100 mL	1	See Footnote[d]	
Fecal Coliform	Not Detected	#/100 mL	1	0.0[e]	
Total Coliform	Not Detected	#/100 mL	1	5% (per	
General Chemistry					
Alkalinity as CaCO3	237	mg/L	5		
Bromide	1.36	mg/L	0.2		
Chloride	130	mg/L	3		250
Fluoride	0.574	mg/L	0.04	4.0	2.0
Phosphorus, total	0.0367	mg/L	0.02		
Sulfate	386	mg/L	15		250
Hormones[f]					
17-a-estradiol	Not Detected	ug/L	0.00021		
17-a-ethynyl-estradiol	Not Detected	ug/L	0.00016		
17-b-estradiol	Not Detected	ug/L	0.00014		
Estriol	Not Detected	ug/L	0.00022		
Estrone	Not Detected	ug/L	0.00021		
Hormones[f]					
11-Keto Testosterone	Not Detected	ug/L	0.002		
17a-Hydroxyprogesterone	Not Detected	ug/L	0.002		
17alpha-trenbolone	Not Detected	ug/L	0.002		
17beta-estradiol	Not Detected	ug/L	0.002		
17beta-trenbolone	Not Detected	ug/L	0.002		
4-Androstenedione	Not Detected	ug/L	0.002		
a-Estradiol	Not Detected	ug/L	0.002		
Androstanedienedione	Not Detected	ug/L	0.002		

Chemical	Result[a]	Units	Laboratory Detection Limit	Drinking Water Standards	
				MCL[b]	SMCL[c]
Androsterone	Not Detected	ug/L	0.002		
a-Zearalanol	Not Detected	ug/L	0.002		
a-Zearalenol	Not Detected	ug/L	0.002		
b-Zearalanol	Not Detected	ug/L	0.002		
b-Zearalenol	Not Detected	ug/L	0.002		
Epitestosterone	Not Detected	ug/L	0.002		
Estriol	Not Detected	ug/L	0.002		
Estrone	Not Detected	ug/L	0.002		
Ethynyl Estradiol	Not Detected	ug/L	0.002		
Melengesterol Acetate	Not Detected	ug/L	0.002		
Progesterone	Not Detected	ug/L	0.002		
Testosterone	Not Detected	ug/L	0.002		
Metals					
Arsenic	Not Detected	ug/L	45	10	
Barium	89.6	ug/L	1	2000	
Cadmium	Not Detected	ug/L	3	5.0	
Calcium	238000	ug/L	30		
Chromium	Not Detected	ug/L	10	100	
Copper	Not Detected	ug/L	5	1300	1000
Iron	Not Detected	ug/L	20		300
Lead	Not Detected	ug/L	25	15	
Magnesium	85000	ug/L	50		
Manganese	Not Detected	ug/L	2		50
Mercury	Not Detected	ug/L	0.05	2.0	
Potassium	4790	ug/L	700		
Selenium	72	ug/L	50	50	
Silver	Not Detected	ug/L	10		100
Sodium	53800	ug/L	100		
Zinc	26.3	ug/L	5		5000
Perchlorate					
Perchlorate	4.69	ug/L	0.003	See Footnote[g]	
Pesticides/ Herbicides					
2,3,4,5-Tetrachlorophenol	Not Detected	ug/L	0.19		
2,3,4,6-Tetrachlorophenol	Not Detected	ug/L	0.097		
2,4,5-T	Not Detected	ug/L	0.48		
2,4,5-Trichlorophenol	Not Detected	ug/L	0.19		
2,4,6-Trichlorophenol	Not Detected	ug/L	0.48		
2,4-D	Not Detected	ug/L	0.48	70.0	
2,4-DB	Not Detected	ug/L	0.097		
3,5-Dichlorobenzoic acid	Not Detected	ug/L	0.097		
4-Nitrophenol	Not Detected	ug/L	0.48		
Acifluorfen	Not Detected	ug/L	0.48		
Alachlor	Not Detected	ug/L	0.1	2.0	
Atrazine	Not Detected	ug/L	0.1	3.0	
Azinphos-methyl	Not Detected	ug/L	0.1		
Bentazon	Not Detected	ug/L	0.097		

Chemical	Result[a]	Units	Laboratory Detection Limit	Drinking Water Standards	
				MCL[b]	SMCL[c]
Benzonitrile, 2,6-dichloro-	Not Detected	ug/L	0.1		
Bromoxynil	Not Detected	ug/L	0.097		
Chloramben	Not Detected	ug/L	0.19		
Chlorpyrifos, Ethyl	Not Detected	ug/L	0.1		
Clopyralid	Not Detected	ug/L	0.97		
DACTHAL-DCPA	Not Detected	ug/L	0.48		
Diazinon	Not Detected	ug/L	0.1		
Dicamba	Not Detected	ug/L	0.097		
Dichlorprop	Not Detected	ug/L	0.48		
Diclofop, Methyl	Not Detected	ug/L	0.097		
Dinoseb	Not Detected	ug/L	0.48	7.0	
Diuron	Not Detected	ug/L	0.1		
Endosulfan I	Not Detected	ug/L	0.1		
Endosulfan II	Not Detected	ug/L	0.1		
Endosulfan Sulfate	Not Detected	ug/L	0.1		
Fenhexamid	Not Detected	ug/L	0.97		
Fenpropathrin	Not Detected	ug/L	0.1		
Imidan	Not Detected	ug/L	0.19		
Ioxynil	Not Detected	ug/L	0.097		
Kresoxim-methyl	Not Detected	ug/L	0.1		
MCPA	Not Detected	ug/L	0.19		
MCPP	Not Detected	ug/L	0.097		
Metribuzin	Not Detected	ug/L	0.1		
Myclobutanil	Not Detected	ug/L	0.1		
Oxyfluorfen	Not Detected	ug/L	0.1		
Pendimethalin	Not Detected	ug/L	0.1		
Pentachlorophenol	Not Detected	ug/L	0.097	1.0	
Picloram	Not Detected	ug/L	0.97	500	
Propargite	Not Detected	ug/L	0.1		
Silvex	Not Detected	ug/L	0.19	50	
Simazine	Not Detected	ug/L	0.1	4.0	
SURFLAN	Not Detected	ug/L	1.9		
Terbacil	Not Detected	ug/L	1.9		
Trichlorpyr	Not Detected	ug/L	0.097		
Triflumizole	Not Detected	ug/L	0.39		
Trifluralin	Not Detected	ug/L	0.1		
Trace Organics					
1,4-dichlorobenzene	Not Detected	ug/L	0.2		
1-methylnaphthalene	Not Detected	ug/L	0.2		
2,2',4,4'-tetrabromodiphenyl ether	Not Detected	ug/L	0.3		
2,6-dimethylnaphthalene	Not Detected	ug/L	0.2		
2-methylnaphthalene	Not Detected	ug/L	0.2		
3,4-dichlorophenyl isocyanate	Not Detected	ug/L	1.6		
3-beta-coprostanol	Not Detected	ug/L	1.6		
3-methyl-1h-indole (skatol)	Not Detected	ug/L	0.2		
3-tert-butyl-4-hydroxyanisole (bha)	Not Detected	ug/L	0.2		

Chemical	Result[a]	Units	Laboratory Detection Limit	Drinking Water Standards	
				MCL[b]	SMCL[c]
4-cumylphenol	Not Detected	ug/L	0.2		
4-n-octylphenol	Not Detected	ug/L	0.2		
4-nonylphenol monoethoxylate - total (np1eo)	Not Detected	ug/L	1.6		
4-octylphenol diethoxylate (op2eo)	Not Detected	ug/L	0.5		
4-octylphenol monoethoxylate (op1eo)	Not Detected	ug/L	1		
4-tert-octylphenol	Not Detected	ug/L	0.4		
5-methyl-1h-benzotriazole	Not Detected	ug/L	1.6		
acetophenone	Not Detected	ug/L	0.4		
acetyl-hexamethyl-tetrahydro-naphthalene (ahtn)	Not Detected	ug/L	0.2		
anthracene	Not Detected	ug/L	0.2		
anthraquinone	Not Detected	ug/L	0.2		
atrazine	Not Detected	ug/L	0.2	3.0	
benz[a]pyrene	Not Detected	ug/L	0.2	0.2	
benzophenone	Not Detected	ug/L	0.2		
beta-sitosterol	Not Detected	ug/L	1.6		
beta-stigmastanol	Not Detected	ug/L	1.7		
bis-(2-ethylhexyl) phthalate (dehp)	Not Detected	ug/L	2		
bisphenol a	Not Detected	ug/L	0.4		
bromacil	Not Detected	ug/L	0.8		
bromoform	Not Detected	ug/L	0.2	80	
caffeine	Not Detected	ug/L	0.2		
camphor	Not Detected	ug/L	0.2		
carbaryl	Not Detected	ug/L	0.2		
carbazole	Not Detected	ug/L	0.2		
chlorpyrifos	Not Detected	ug/L	0.2		
cholesterol	Not Detected	ug/L	1.6		
cotinine	Not Detected	ug/L	0.8		
diazinon	Not Detected	ug/L	0.2		
dichlorvos	Not Detected	ug/L	0.2		
diethoxynonylphenols- total (np2eo)	Not Detected	ug/L	3.2		
diethyl phthalate	Not Detected	ug/L	0.2		
d-limonene	Not Detected	ug/L	0.2		
fluoranthene	Not Detected	ug/L	0.2		
hexahydrohexamethyl cyclopentabenzopyran (hhcb)	Not Detected	ug/L	0.2		
indole	Not Detected	ug/L	0.2		
isoborneol	Not Detected	ug/L	0.2		
isophorone	Not Detected	ug/L	0.2		
isopropylbenzene (cumene)	Not Detected	ug/L	0.2		
isoquinoline	Not Detected	ug/L	0.2		
menthol	Not Detected	ug/L	0.2		
metalaxyl	Not Detected	ug/L	0.2		
methyl salicylate	Not Detected	ug/L	0.2		

Chemical	Result[a]	Units	Laboratory Detection Limit	Drinking Water Standards	
				MCL[b]	SMCL[c]
metolachlor	Not Detected	ug/L	0.2		
n,n-diethyl-meta-toluamide (deet)	Not Detected	ug/L	0.2		
naphthalene	Not Detected	ug/L	0.2		
para-nonylphenol total	Not Detected	ug/L	1.6		
p-cresol	Not Detected	ug/L	0.2		
pentachlorophenol	Not Detected	ug/L	1.6	1.0	
phenanthrene	Not Detected	ug/L	0.2		
phenol	Not Detected	ug/L	0.2		
prometon	Not Detected	ug/L	0.2		
pyrene	Not Detected	ug/L	0.2		
tetrachloroethylene	Not Detected	ug/L	0.4	5.0	
tri(2-butoxyethyl) phosphate	Not Detected	ug/L	0.2		
tri(2-chloroethyl) phosphate	Not Detected	ug/L	0.2		
tri(dichloroisopropyl) phosphate	Not Detected	ug/L	0.2		
tributyl phosphate	Not Detected	ug/L	0.2		
triclosan	Not Detected	ug/L	0.2		
triethyl citrate (ethyl citrate)	Not Detected	ug/L	0.2		
triphenyl phosphate	Not Detected	ug/L	0.2		
Veterinary Pharmaceuticals					
Chlortetracycline(total)	Not Detected	ug/L	0.02		
Erythromycin	Not Detected	ug/L	0.02		
Lincomycin	Not Detected	ug/L	0.02		
Monensin	Not Detected	ug/L	0.02		
Oxytetracycline	Not Detected	ug/L	0.02		
Ractopamine	Not Detected	ug/L	0.02		
Sulfachloropyridazine	Not Detected	ug/L	0.02		
Sulfadimethoxine	Not Detected	ug/L	0.02		
Sulfamerazine	Not Detected	ug/L	0.02		
Sulfamethazine	Not Detected	ug/L	0.02		
Sulfamethazole	Not Detected	ug/L	0.02		
Sulfamethoxazole	Not Detected	ug/L	0.02		
Sulfathiazole	Not Detected	ug/L	0.02		
Tetracyline	Not Detected	ug/L	0.02		
Tiamulin	Not Detected	ug/L	0.02		
Tylosin	Not Detected	ug/L	0.02		
Virginiamycin	Not Detected	ug/L	0.02		
Wastewater Pharmaceuticals					
Acetaminophen	Not Detected	ug/L	0.2		
Amphetamine	Not Detected	ug/L	0.2		
Azithromycin	Not Detected	ug/L	0.2		
Caffeine	Not Detected	ug/L	0.2		
Carbamazepine	Not Detected	ug/L	0.2		
Cotinine	Not Detected	ug/L	0.2		
DEET	Not Detected	ug/L	0.2		
Diphenhydramine	Not Detected	ug/L	0.2		
Ibuprofen	Not Detected	ug/L	0.2		

Chemical	Result[a]	Units	Laboratory Detection Limit	Drinking Water Standards	
				MCL[b]	SMCL[c]
Methamphetamine	Not Detected	ug/L	0.2		
Naproxen	Not Detected	ug/L	0.2		
Paraxanthine	Not Detected	ug/L	0.2		
Thiabendazole	Not Detected	ug/L	0.2		
Triclosan	Not Detected	ug/L	0.2		
Nitrogen Isotopes					
Nitrate (NO_3) as N	69.6	*(mg/L)*	0.1		
δ15N-NO_3	5.36	*(‰)*	NR		
Ammonia (NH_4) as N	0.4	*(mg/L)*	0.1		
δ15N-NH_4	NM	*(‰)*	NM		
δ18O-NO_3	44.41	‰ SMOW	NR		
Age Dating					
Piston Flow Model SF6 Recharge Age	Overvalue[h]	years	1970[i]		

Laboratory Results

Notes, Abbreviations and Units

Notes

Shading indicates that the chemical was detected above the MCL.

Footnotes

[a]The Results column shows a numeric value for the concentration of the chemical if the chemical was detected in the sample. The term "Not Detected" means that the chemical was not detected in the sample above the laboratory detection limit. The term "Result Not Usable" indicates that there were quality assurance or quality control problems with the laboratory analysis of that chemical and there are no results to report.

[b]Maximum contaminant levels (MCLs) are the highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards.

[c]National Secondary Drinking Water Regulations (or secondary maximum contaminant levels [SMCLs]) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards.

[d]Any fecal coliform-positive repeat sample or *E. coli* -positive repeat sample, or any total coliform-positive repeat sample following a fecal coliform-positive routine sample constitutes a violation of the MCL for total coliforms. For purposes of the public notification requirements, this is a violation that may pose an acute risk to health.

[e]No more than 5.0% samples total coliform-positive in a month. Every sample that has total coliforms must be analyzed for fecal coliforms; no fecal coliforms are allowed.

[f]Five hormones (17-a-estradiol, 17-a-ethynyl-estradiol,17-b-estradiol, Estriol, and Estrone) were analyzed by two laboratories. The detection limits for these chemicals were different at each laboratory.

[g]EPA does not have a MCL level for perchlorate. The human health based standard calculated under Washington State Model Toxics Control Act (MTCA) Cleanup Levels and Risk Calculation (CLARC) tool using Method B is 11ug/L.

[h]Over Value: These samples contained more SF6 than can be explained by equilibrium with modern air. Aquifer materials in volcanic areas such as the basalts under the Yakima Valley are known to host naturally-occurring SF6. No anthropogenic source of SF6 is known in the area of the Dairy Cluster.

[i]The SF6 recharge dating limit is around 1970.

Abbreviations

MCL - Maximum Contaminant Level

MTCA - Model Toxics Control Act

ND - Analysis not done

NM - Insufficient nitrate to complete analysis

NR - Not relevant. The result is a calculated value.

SMCL - Secondary Maximum Contaminant Level

SMOW - standard mean of ocean water

TNTC - Too numerous to count

δ15N-NO3 = Nitrogen isotopes of nitrate. Ratio of the nitrogen isotopes 15N and 14N in a specific sample using nitrate compared to a standard of known composition of 15N and 14N. This expressed as the parts per thousand (‰).

δ15N-HN4 = Nitrogen isotopes of ammonia. Ratio of the nitrogen isotopes 15N and 14N in a specific sample using ammonia compared to a standard of known composition of 15N and 14N. This expressed as the parts per thousand (‰).

δ180-NO3 = Oxygen isotopes of nitrate. Ratio of the oxygen isotopes 180 and 160 in a specific sample using nitrate compared to a standard of known composition of 180 and 160. This expressed as the parts per thousand (‰) standard mean of ocean water.

Units

CFU/100 ml = colony forming unit per 100 milliliters

MPN/100 ml = most probable number per 100 milliliters

ug/L = micrograms per liter

mg/L = milligrams per liter

‰ = parts per thousand difference from the atmospheric standard

Data Qualifiers

< = less than

J = The analyte was positively identified. The associated numerical value is an estimate.

R = The data are unusable for all purposes.