OLVER INCORPORATED *Consulting Engineers and Applied Scientists*

March 19, 2009

Mr. Steve Carroll
City Engineer
City of Covington
City Hall
333 West Locust Street
Covington, VA 24426

Re: City of Covington-Potts Creek Water Testing;
Olver Project Number 12371.05

Dear Steve:

Enclosed for your review and use are the laboratory analyses reports that depict the results the analyses of the Potts Creek water sample collected on January 15, 2009. Also enclosed is a table that provides a summary of the parameters analyzed, the current maximum contaminant levels, and the results of the analyses.

These analyses were performed by the Virginia Department of General Services Division of Consolidated Laboratory Services (DCLS) laboratory in Richmond. The parameters included for this monitoring were selected to give a general indication of the quality of water for use in potential drinking water applications, including bottled water. The parameter groups were based on typical public drinking water supply monitoring suites and included:

1. Inorganics including nitrite and nitrate
2. Metals
3. Coliform bacteria
4. Volatile organics
5. Total organic carbon
6. Semi-volatile organics
7. Carbamates (pesticides)
8. Chlorophenoxy herbicides
9. PCBs
10. Radiologicals

Other parameter groups such as disinfection by-products (trihalomethanes, haloacetic acids, perchlorate, chlorate) were not included since the water is not currently chlorinated for disinfection while specific microorganisms (*Cryptosporidium* and *Giardia*) and other parameters not expected in this source (fumigants and diquat) were not included as this analyses focused on those constituents typically associated with initial water quality determinations. Additional analyses can be performed for these and other parameters if a more comprehensive characterization is desired.

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Blacksburg, VA 24060

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In general, these analyses indicate the Potts Creek water to be of high quality. As indicated in the summary table, all of the parameters except Total Coliform bacteria and *E. coli* (a type of coliform bacteria) were below the current Maximum Contaminant Levels (MCL) for the Primary and Secondary Drinking Water Standards. It is not unusual for coliform bacteria to be present in surface waters such as Potts Creek; these originate from a variety of sources including wildlife and agricultural operations within the drainage area. As is typically required for surface water sources, the water from Potts Creek would need to be disinfected prior to use as drinking water. Attached for your review is a reference guide that provides general information regarding the Coliform Rule for public water supplies.

The results of the metals analyses indicate that most metals were less than the method detection limit (not detected) and well below the respective MCL values. All organic parameters included in these analyses were not detected.

The corrosivity tests (Corrosion Index and Langliers Index) indicate that the water is moderately corrosive; this appears to be the result of the pH and the low hardness alkalinity and dissolved solids. Moderately corrosive waters may have a tendency to react with metals in household plumbing with a resulting metallic taste and staining of fixtures. I've enclosed documentation about the corrosivity indices that explains the results. I would not expect this to be an issue for a bottles water operation since the water typically does not have the opportunity to remain in piping for extended periods that may occur in households.

I remain available to discuss this monitoring and these results with you at your convenience. As always, please do not hesitate to contact me should you have any questions on the table or supporting materials.

Sincerely,

OLVER INCORPORATED

Lawrence

R. Lawrence Hoffman
Director of Environmental Services

RLH/egl

Enclosures

City of Covington
Potts Creek Monitoring Summary
Date of Collection: 1/15/09

Parameter	Water Quality Standard	Monitoring Result
Arsenic	0.010 mg/L (PMCL[1]) 0 mg/L (MCLG[2])	<0.002 mg/L
Barium	2 mg/L (PMCL)	<0.20 mg/L
Cadmium	0.005 mg/L (PMCL)	<0.002 mg/L
Chromium	0.1 mg/L (PMCL)	<0.01 mg/L
Lead	0.015 mg/L (Action Level) 0 mg/L(MCLG)	<0.002 mg/L
Mercury	0.002 mg/L (PMCL)	<0.002 mg/L
Sodium	N/A[3]	<5.0 mg/L
Nickel	0.1 mg/L (PMCL)	<0.01 mg/L
Thallium	0.002 mg/L (PMCL) 0.0005 mg/L (MCLG)	<0.002 mg/L
Antimony	0.006 mg/L (PMCL)	<0.002 mg/L
Beryllium	0.004 mg/L (PMCL)	<0.002 mg/L
Selenium	0.05 mg/L (PMCL)	<0.01 mg/L
Aluminum	0.05-0.20 mg/L (SMCL[4])	0.074 mg/L
Iron	0.3 mg/L (SMCL)	<0.20 mg/L
Copper	1.3 mg/L (Action Level)	<0.20 mg/L
Manganese	0.05 mg/L (SMCL)	0.037 mg/L
Zinc	5 mg/L (SMCL)	<0.20 mg/L
Total Coliform	See Coliform Rule 0 MPN (MCLG)	387.3 MPN/100 mL
Fecal Coliform	See Coliform Rule 0 MPN (MCLG)	5.2 MPN/100 mL
Alkalinity-Total	N/A	29.1 mg/L
Ammonia	N/A	<0.04 mg/L
Chloride	250 mg/L (SMCL)	<5 mg/L
Sulfate	250 mg/L (SMCL)	8.07 mg/L
Color	15 PCU (SMCL)	5 PCU
Turbidity	N/A	2 NTU
Conductivity	N/A	104 µmhos/cm
Total Dissolved Solids	500 mg/L (SMCL)	44 mg/L
Volatile Dissolved Solids	N/A	12 mg/L
Fixed Dissolved Solids	N/A	32 mg/L
Residue-Total Filterable	N/A	44 mg/L
Corrosion Index	N/A	9.175 AGGR (Aggressive)
Langlier Index	N/A	-2.820 LANG (Moderate Corrosion)
Alkalinity-bicarbonate	N/A	29.1 mg/L
Alkalinity-carbonate	N/A	<1 mg/L
Sulfide	N/A	<0.03 mg/L

City of Covington
Potts Creek Monitoring Summary
Date of Collection: 1/15/09

Parameter	Water Quality Standard	Monitoring Result
Calcium hardness	N/A	34.0 mg/L
Hardness-Total	N/A	46 mg/L
Orthophosphorus-P	N/A	<0.05 mg/L
Fluoride	4.0 mg/L (PMCL)	<0.20 mg/L
Silica	N/A	5.0 mg/L
Nitrate/Nitrite-Total	10 mg/L (PMCL)	0.23 mg/L
Total Organic Carbon	N/A	1.6 mg/L
Dichlorodifluoromethane	N/A	<0.0005 mg/L
Methyl Chloride	N/A	<0.0005 mg/L
Vinyl Chloride	0.002 mg/L (PMCL) 0 mg/L (MCLG)	<0.0005 mg/L
Methyl Bromide	N/A	<0.0005 mg/L
Chloroethane	N/A	<0.0005 mg/L
Trichlorofluoromethane	N/A	<0.0005 mg/L
1,1-Dichloroethene	0.007 mg/L (PMCL)	<0.0005 mg/L
Methylene Chloride	N/A	<0.0005 mg/L
Trans-1,2-Dichloroethene	0.1 mg/L (PMCL)	<0.0005 mg/L
1,2-Dichloroethane	0.005 mg/L (PMCL) 0 mg/L (MCLG)	<0.0005 mg/L
Cis-1,2-Dichloroethene	0.07 mg/L (PMCL)	<0.0005 mg/L
Chloroform	N/A	<0.0005 mg/L
1,1,1-Trichloroethane	0.2 mg/L (PMCL)	<0.0005 mg/L
Carbon Tetrachloride	0.005 mg/L (PMCL)	<0.0005 mg/L
1,2-Dicholroethane	0.005 mg/L (PMCL)	<0.0005 mg/L
Trichloroethene	0.005 mg/L (PMCL) 0 mg/L (MCLG)	<0.0005 mg/L
1,2-Dichloropropane	0.005 mg/L (PMCL) 0 mg/L (MCLG)	<0.0005 mg/L
Dibromomethane	N/A	<0.0005 mg/L
Dichloromethane	0.005 mg/L (PMCL) 0 mg/L (MCLG)	<0.0005 mg/L
Bromodichloromethane	N/A	<0.0005 mg/L
Cis-1,3-Dichloropropene	N/A	<0.0005 mg/L
Trans-1,3-Dichloropropene	N/A	<0.0005 mg/L
1,1,2-Trichloroethane	0.005 mg/L (PMCL)	<0.0005 mg/L
Tetrachloroethylene	0.005 mg/L (PMCL) 0 mg/L (MCLG)	<0.0005 mg/L
Dibromochloromethane	N/A	<0.0005 mg/L
Chlorobenzene	0.1 mg/L (PMCL)	<0.0005 mg/L
1,1,1,2-Tetrachloroethane	N/A	<0.0005 mg/L
Bromoform	N/A	<0.0005 mg/L
1,1,2,2-Tetrachloroethane	N/A	<0.0005 mg/L
2-Chlorotoluene (o)	N/A	<0.0005 mg/L

City of Covington
Potts Creek Monitoring Summary
Date of Collection: 1/15/09

Parameter	Water Quality Standard	Monitoring Result
4-Chlorotoluene (p)	N/A	<0.0005 mg/L
m-Dichlorobenzene	N/A	<0.0005 mg/L
p-dichlorobenzene	0.075 mg/L (PMCL)	<0.0005 mg/L
o-dichlorobenzene	0.6 mg/L (PMCL)	<0.0005 mg/L
1,2,4-Trichlorobenzene	0.07 mg/L (PMCL)	<0.0005 mg/L
1,2,3-Trichlorobenzene	N/A	<0.0005 mg/L
Benzene	0.005 mg/L (PMCL) 0 mg/L (MCLG)	<0.0005 mg/L
Toluene	1 mg/L (PMCL) 0 mg/L (MCLG)	<0.0005 mg/L
Ethylbenzene	0.7 mg/L (PMCL)	<0.0005 mg/L
Isopropylbenzene	N/A	<0.0005 mg/L
n-Propylbenzene	N/A	<0.0005 mg/L
t-Butylbenzene	N/A	<0.0005 mg/L
s-Butylbenzene	N/A	<0.0005 mg/L
Naphthalene	N/A	<0.0005 mg/L
Bromochloromethane	N/A	<0.0005 mg/L
n-Butylbenzene	N/A	<0.0005 mg/L
1,2-Dibromo-3-chloropropane	0.0002 mg/L (PMCL) 0 mg/L (MCLG)	<0.0005 mg/L
1,2-Dibromoethane	N/A	<0.0005 mg/L
1,3-Dichloropropane	N/A	<0.0005 mg/L
2,2-Dichloropropane	N/A	<0.0005 mg/L
1,1-Dichloropropane	N/A	<0.0005 mg/L
Hexachlorobutadiene	N/A	<0.0005 mg/L
4-Isopropyltoluene	N/A	<0.0005 mg/L
Styrene	0.1 mg/L (PMCL)	<0.0005 mg/L
1,2,3-Trichloropropane	N/A	<0.0005 mg/L
1,2,4-Trimethylbenzene	N/A	<0.0005 mg/L
1,3,5-Trimethylbenzene	N/A	<0.0005 mg/L
Total Xylenes	10 mg/L (PMCL)	<0.0005 mg/L
Methyl t-butyl ether (MTBE)	N/A	<0.0005 mg/L
Bromobenzene	N/A	<0.0005 mg/L
2,4,5-TP (Silvex)	0.05 mg/L (PMCL)	<0.0005 mg/L
2,4-D	0.07 mg/L (PMCL)	<0.0005 mg/L
Dalapon	0.2 mg/L (PMCL)	<0.003 mg/L
Dicamba	0.2 mg/L (PMCL)	<0.0005 mg/L
Dinoseb	0.007 mg/L (PMCL)	<0.0005 mg/L
Pentachlorophenol	0.001 mg/L (PMCL)	<0.0001 mg/L
Picloram	0.5 mg/L (PMCL)	<0.0005 mg/L
Chlordane	0.002 mg/L (PMCL) 0 mg/L (MCLG)	<0.0002 mg/L

City of Covington
Potts Creek Monitoring Summary
Date of Collection: 1/15/09

Parameter	Water Quality Standard	Monitoring Result
Polychlorinated Biphenyls	0.0005 mg/L (PMCL) 0 mg/L (MCLG)	<0.0002 mg/L
Di(2-exylhexyl)phthalate	0.006 mg/L (PMCL) 0 mg/L (MCLG)	<0.002 mg/L
Di(2-exylhexyl)adipate	0.4 mg/L (PMCL)	<0.001 mg/L
Benzo(a)pyrene	0.0002 mg/L (PMCL) 0 mg/L (MCLG)	<0.0001 mg/L
Toxaphene	0.003 mg/L (PMCL) 0 mg/L (MCLG)	<0.001 mg/L
Alachlor	0.002 mg/L (PMCL) 0 mg/L (MCLG)	<0.0001 mg/L
Aldrin	N/A	<0.0001 mg/L
Atrazine	0.003 mg/L (PMCL)	<0.0005 mg/L
Lasso	0.002 mg/L (PMCL)	<0.0001 mg/L
Butachlor	N/A	<0.0001 mg/L
Dieldrin	N/A	<0.0001 mg/L
Endrin	0.002 mg/L (PMCL)	<0.0001 mg/L
BHC-Gamma	0.0002 mg/L (PMCL)	<0.00005 mg/L
Hexachlorocyclopentadiene	0.05 mg/L (PMCL)	<0.0005 mg/L
Heptachlor	0.0004 mg/L (PMCL) 0 mg/L (MCLG)	<0.00005 mg/L
Heptachlor epoxide	0.0002 mg/L (PMCL) 0 mg/L (MCLG)	<0.0001 mg/L
Hexachlorobenzene	0.001 mg/L (PMCL)	<0.0001 mg/L
Lindane	0.0002 mg/L (PMCL)	<0.00005 mg/L
Methoxychlor	0.04 mg/L (PMCL)	<0.0005 mg/L
Metribuzin	0.2 mg/L (PMCL)	<0.0001 mg/L
Methoxychlor	0.04 mg/L (PMCL)	<0.0005 mg/L
Propachlor	0.9 mg/L (PMCL)	<0.0001 mg/L
Simazine	0.004 mg/L (PMCL)	<0.0005 mg/L
Aldicarb	0.003 mg/L (PMCL)	<0.002 mg/L
Aldicarb Sulfone	0.002 mg/L (PMCL)	<0.002 mg/L
Aldicarb Sulfoxide	0.004 mg/L (PMCL)	<0.002 mg/L
Carbaryl	0.7 mg/L (PMCL)	<0.002 mg/L
Carbofuran	0.04 mg/L (PMCL) 0 mg/L (MCLG)	<0.002 mg/L
3-Hydroxycarbofuran	N/A	<0.002 mg/L
Methomyl	0.2 mg/L (PMCL)	<0.002 mg/L
Oxamyl	0.2 mg/L (PMCL)	<0.002 mg/L
Gross Alpha	15 pCi/L (PMCL) 0 pCi/L (MCLG)	0.3 pCi/L
Gross Beta	4 millirems/yr (PMCL) 0 millirems/yr (MCLG)	1.2 pCi/L

City of Covington
Potts Creek Monitoring Summary
Date of Collection: 1/15/09

Parameter	Water Quality Standard	Monitoring Result
Radium- 228	5 pCi/L (PMCL) 0 pCi/L (MCLG)	0.4 pCi/L

Notes:

1. PMCL means Primary Drinking Water Standard Maximum Contaminant Limit;
2. MCLG means Maximum Contaminant Level Goal. The MCLG is equal to the PMCL or SMCL unless otherwise indicated;
3. N/A indicates a Maximum Contaminant Level has not been established for the parameter;
4. SMCL means Secondary Drinking Water Standard Maximum Contaminant Limit.

United States Environmental Protection Agency | Office of Water (4606) | EPA 816-F-01-035 November 2001 www.epa.gov/safewater

EPA

Total Coliform Rule: A Quick Reference Guide

Overview of the Rule

Title	Total Coliform Rule (TCR) 54 FR 27544-27568, June 29, 1989, Vol. 54, No. 124[1]
Purpose	Improve public health protection by reducing fecal pathogens to minimal levels through control of total coliform bacteria, including fecal coliforms and *Escherichia coli (E. coli)*.
General Description	Establishes a maximum contaminant level (MCL) based on the presence or absence of total coliforms, modifies monitoring requirements including testing for fecal coliforms or *E. coli*, requires use of a sample siting plan, and also requires sanitary surveys for systems collecting fewer than five samples per month.
Utilities Covered	The TCR applies to all public water systems.

Public Health Benefits

Implementation of the TCR has resulted in . . .	▸ Reduction in risk of illness from disease causing organisms associated with sewage or animal wastes. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and associated headaches and fatigue.

What are the Major Provisions?

ROUTINE Sampling Requirements

- Total coliform samples must be collected at sites which are representative of water quality throughout the distribution system according to a written sample siting plan subject to state review and revision.
- Samples must be collected at regular time intervals throughout the month except groundwater systems serving 4,900 persons or fewer may collect them on the same day.
- Monthly sampling requirements are based on population served (see table on next page for the minimum sampling frequency).
- A reduced monitoring frequency may be available for systems serving 1,000 persons or fewer and using only ground water if a sanitary survey within the past 5 years shows the system is free of sanitary defects (the frequency may be no less than 1 sample/quarter for community and 1 sample/year for non-community systems).
- Each total coliform-positive routine sample must be tested for the presence of fecal coliforms or *E. coli*.
- If any routine sample is total coliform-positive, repeat samples are required.

REPEAT Sampling Requirements

- Within 24 hours of learning of a total coliform-positive ROUTINE sample result, at least 3 REPEAT samples must be collected and analyzed for total coliforms:
  - One REPEAT sample must be collected from the same tap as the original sample.
  - One REPEAT sample must be collected within five service connections upstream.
  - One REPEAT sample must be collected within five service connections downstream.
  - Systems that collect 1 ROUTINE sample per month or fewer must collect a 4th REPEAT sample.
- If any REPEAT sample is total coliform-positive:
  - The system must analyze that total coliform-positive culture for fecal coliforms or *E.coli*.
  - The system must collect another set of REPEAT samples, as before, unless the MCL has been violated and the system has notified the state.

Additional ROUTINE Sample Requirements

- A positive ROUTINE or REPEAT total coliform result requires a minimum of five ROUTINE samples be collected the following month the system provides water to the public unless waived by the state.

[1] The June 1989 Rule was revised as follows: Corrections and Technical Amendments, 6/19/90 and Partial Stay of Certain Provisions (Variance Criteria) 56 FR 1556-1557, Vol 56, No 10.

Note: The TCR is currently undergoing the 6 year review process and may be subject to change.

Public Water System ROUTINE Monitoring Frequencies

Population	Minimum Samples/ Month	Population	Minimum Samples/ Month	Population	Minimum Samples/ Month
25-1,000*	1	21,501-25,000	25	450,001-600,000	210
1,001-2,500	2	25,001-33,000	30	600,001-780,000	240
2,501-3,300	3	33,001-41,000	40	780,001-970,000	270
3,301-4,100	4	41,001-50,000	50	970,001-1,230,000	300
4,101-4,900	5	50,001-59,000	60	1,230,001-1,520,000	330
4,901-5,800	6	59,001-70,000	70	1,520,001-1,850,000	360
5,801-6,700	7	70,001-83,000	80	1,850,001-2,270,000	390
6,701-7,600	8	83,001-96,000	90	2,270,001-3,020,000	420
7,601-8,500	9	96,001-130,000	100	3,020,001-3,960,000	450
8,501-12,900	10	130,001-220,000	120	≥3,960,001	480
12,901-17,200	15	220,001-320,000	150		
17,201-21,500	20	320,001-450,000	180		

*Includes PWSs which have at least 15 service connections, but serve <25 people.

What are the Other Provisions?

Systems collecting fewer than 5 ROUTINE samples per month . . .	Must have a sanitary survey every 5 years (or every 10 years if it is a non-community water system using protected and disinfected ground water).**
Systems using surface water or ground water under the direct influence of surface water (GWUDI) and meeting filtration avoidance criteria . . .	Must collect and have analyzed one coliform sample each day the turbidity of the source water exceeds 1 NTU. This sample must be collected from a tap near the first service connection.

** As per the IESWTR, states must conduct sanitary surveys for community surface water and GWUDI systems in this category every 3 years (unless reduced by the state based on outstanding performance).

How is Compliance Determined?

- Compliance is based on the presence or absence of total coliforms.
- Compliance is determined each calendar month the system serves water to the public (or each calendar month that sampling occurs for systems on reduced monitoring).
- The results of ROUTINE and REPEAT samples are used to calculate compliance.

A Monthly MCL Violation is Triggered if:

A system collecting fewer than 40 samples per month . . .	Has greater than 1 ROUTINE/REPEAT sample per month which is total coliform-positive.
A system collecting at least 40 samples per month . . .	Has greater than 5.0 percent of the ROUTINE/REPEAT samples in a month total coliform-positive.

An Acute MCL Violation is Triggered if:

Any public water system . . .	Has any fecal coliform- or *E. coli*-positive REPEAT sample *or* has a fecal coliform- or *E. coli*-positive ROUTINE sample followed by a total coliform-positive REPEAT sample.

What are the Public Notification and Reporting Requirements?

For a Monthly MCL Violation	▸ The violation must be reported to the state no later than the end of the next business day after the system learns of the violation. ▸ The public must be notified within 14 days.[2]
For an Acute MCL Violation	▸ The violation must be reported to the state no later than the end of the next business day after the system learns of the violation. ▸ The public must be notified within 72 hours.[2]
Systems with ROUTINE or REPEAT samples that are fecal coliform- or *E. coli*-positive . . .	Must notify the state by the end of the day they are notified of the result or by the end of the next business day if the state office is already closed.

For additional information on the TCR

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA web site at www.epa.gov/safewater/mdbp/mdbp.html; or contact your state drinking water representative.

[2] The revised Public Notification Rule will extend the period allowed for public notice of monthly violations to 30 days and shorten the period for acute violations to 24 hours. These revisions are effective for all systems by May 6, 2002 and are detailed in 40 CFR Subpart Q.

Corrosivity Index -Langelier Saturation Index

The Langelier Saturation Index is a means of evaluating water quality data to determine if the water has a tendency to form a chemical scale.. In order to use this index, the following laboratory analysis is needed: pH, conductivity, total dissolved solids, alkalinity, and total hardness.

In manipulating the data, the actual pH of the water is compared to the theoretical pH (pHs) based on the chemical analysis. The Saturation Index =

$$SI = pH - pHs$$

The Saturation Index is typically either negative or positive and rarely 0. A Saturation Index of zero indicates that the water is "balanced" and is **less likely not to cause scale formation.** A negative SI suggest that the water is would be undersaturated with respect to carbonate equilibrium and the water may be more likely to have a greater corrosive potential.

A corrosive water can react with the household plumbing and metal fixtures resulting in the deterioration of the pipes and increased metal content of the water. This reaction could result in aesthetic problems, such as bitter water and stains around basins/sinks, and in many cases elevated levels of toxic metals. A positive SI suggests that water may be scale forming. The scale, typically a carbonate residue, could clog or reduce the flow in pipes, cause buildup on hot water heaters, impart an alkali taste to the water, reduce the efficiency of the water heaters, and cause other aesthetic problems. Table 1 presents a typical range of SI that may be encountered in a drinking water and a description of the nature of the water and general recommendations regarding treatment.

Table 1.
SI Values and Recommended Treatment
Recommendations Based on Professional Observation -
In most cases additional testing or evaluation is needed to rule out other
forms of corrosion (MIC - microbiological induced corrosion, Galvanic Corrosion, etc)

Saturation Index	Description	General Recommendation
- 5	Severe Corrosion	Treatment Recommended
- 4	Severe Corrosion	Treatment Recommended
- 3	Moderate Corrosion	Treatment Recommended
- 2	Moderate Corrosion	Treatment May Be Needed
-1	Mild Corrosion	Treatment May Be Needed
-0.5	None- Mild Corrosion	Probably No Treatment
0	Near Balanced	No Treatment
0.5	Some Faint Coating	Probably No Treatment
1	Mild Scale Coating	Treatment May Be Needed
2	Mild to Moderate Coatings	Treatment May Be Needed
3	Moderate Scale Forming	Treatment Advisable
4	Severe Scale Forming	Treatment Advisable

Source:

http://www.water-research.net/corrosion.htm

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department Of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

February 13, 2009

LIMS ID: 1745346

Lexington Regional Office
131 Walker Street,
Lexington, VA24450-2431

Region: 2
Process Lab:
RICHMOND

PWS OWNER
POTTS CREEK-CITY OF COVINGTON
1116 S MAIN ST

BLACKSBURG,VA 24060

PWSID	SOURCE
7200306	

FIELD DATA ITEMS:

Date Receive	01/20/2009	Sampling Date	01/15/2009	Collected By	JARED
Order Number	90022058	Source ID		VDH Sample Type	HANNAH
Fluoride		Category	CH	PB CU	
Chemist		Compliance	N	Original Lims Number	
F Method		Sample Location	POTTS CREEK		

CONTAMINANT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
2066	3-Hydroxycarbofuran			< 2.0 ppb	02/13/2009	LGREEN
2047	Aldicarb			< 2.0 ppb	02/13/2009	LGREEN
2044	Aldicarb Sulfone			< 2.0 ppb	02/13/2009	LGREEN
2043	Aldicarb sulfoxide			< 2.0 ppb	02/13/2009	LGREEN
2021	Carbaryl			< 2.0 ppb	02/13/2009	LGREEN
2046	Carbofuran			< 2.0 ppb	02/13/2009	LGREEN
2022	Methomyl			< 2.0 ppb	02/13/2009	LGREEN
2036	Oxamyl			< 2.0 ppb	02/13/2009	LGREEN

APPROVED BY: PLOGAN DATE APPROVED: 02/13/2009

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department Of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

February 04, 2009

LIMS ID: 1745347

Lexington Regional Office
131 Walker Street,
Lexington, VA24450-2431

Region: 2

Process Lab:
RICHMOND

PWS OWNER
POTTS CREEK-CITY OF COVINGTON
1116 S MAIN ST

BLACKSBURG,VA 24060

PWSID	SOURCE
7200306	

FIELD DATA ITEMS:

Date Receive	01/20/2009	Sampling Date	01/15/2009	Collected By	JARED
Order Number	90022058	Source ID	.	VDH Sample Type	HANNAH
Fluoride		Category	CH	PB CU	
Chemist		Compliance	N	Original Lims Number	
F Method		Sample Location	POTTS CREEK		

CONTAMINANT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
2110	2,4,5-TP (Silvex)			< 0.5 ppb	01/30/2009	WHENDERSON
2105	2,4-D			< 0.5 ppb	01/30/2009	WHENDERSON
2031	Dalapon			< 3 ppb	01/30/2009	WHENDERSON
2440	Dicamba			< 0.50 ppb	01/30/2009	WHENDERSON
2041	Dinoseb			< 0.5 ppb	01/30/2009	WHENDERSON
2326	Pentachlorophenol			< 0.10 ppb	01/30/2009	WHENDERSON
2040	Picloram			< 0.5 ppb	01/30/2009	WHENDERSON

APPROVED BY: TPAYNE DATE APPROVED: 02/04/2009

WATER QUALITY REPORT

10 February 2009

1745348

COMMONWEALTH OF VIRGINIA

Department of General Services

DIVISION OF CONSOLIDATED LABORATORY SERVICES

MAIL TO:

Office of Drinking Water, Lexington
131 Walker St
Lexington, VA 24450

REGION:2

PWS OWNER	PWSID	SOURCE
POTTS CREEK-CITY OF COVINGTO **1116 S MAIN ST** **BLACKSBURG, VA 24060**	**7200306**	

DATE RECEIVED: 20-Jan-2009
ORDER NUMBER: 3
FLUORIDE:
CHEMIST:
F METHOD:

SAMPLING DATE: 15-Jan-2009
SOURCE ID: .
CATEGORY: CH
COMPLIANCE: N
SAMP LOC: **POTTS CREEK**

COLLECTED BY: **JARED HANNAH**
VDH SAMPLE TYPE: **SP**
PB/CU:
ORIGINAL LIMS NUMBER:
LAST WATER USE:

CONT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
1928	Alkalinity - Bicarbonate			29.1 mg/l	01/23/2009	DDOUGLAS
1929	Alkalinity - Carbonate			< 1 mg/l	01/23/2009	DDOUGLAS
1927	Alkalinity (Total)			29.1 mg/l	01/23/2009	DDOUGLAS
1003	Ammonia			< 0.04 mg/l	01/21/2009	RMUSTAK
1914	Calcium Hardness			34 mg/l	02/04/2009	JOWEN
1017	Chloride		250.0	< 5 mg/l	01/20/2009	RMUSTAK
1905	Color - PCU		15	5 PCU	01/20/2009	RLEWIS
	HOLD TIME EXCEEDED, INVALID FOR SDWA COMPLIANCE REPORTING					
1910	Corrosion Index			9.175 AGGR	02/02/2009	CMORTON
1059	Fixed Dissolved Solids (500°C)		500	32 mg/l	01/21/2009	LDELEON
1025	Fluoride			< 0.20 mg/l	01/27/2009	DDOUGLAS
1915	Hardness - Total			46 mg/l	02/04/2009	JOWEN
1997	Langlier Index 15°C			-2.820 LANG	02/02/2009	CMORTON
1044	Ortho Phosphate as P			< 0.05 mg/l	01/21/2009	RMUSTAK
	Sample received out of hold time.					
1925	pH		8.5	6.18	01/23/2009	DDOUGLAS
	HOLD TIME EXCEEDED, INVALID FOR SDWA COMPLIANCE REPORTING					
1049	Silica			5.0 mg/l	01/20/2009	RRAJKARNIKAR
1064	Specific Conductance			104 µmhos/cm	01/22/2009	LMOY
1055	Sulfate		250.0	8.07 mg/l	01/20/2009	RMUSTAK
1027	Sulfide			< 0.03 mg/l	01/23/2009	CMORTON
1930	RESIDUE, TOTAL FILTERABLE (DRIED AT 180C), MG/L		500	44 mg/l	01/21/2009	LDELEON
0100	Turbidity			2 NTU	01/20/2009	JOWEN
1058	Volatile Dissolved Solids (500°C)		500	12 mg/l	01/21/2009	LDELEON

APPROVED BY:CMORTON

DATE APPROVED: 10-Feb-2009

WQRNR

INORGANIC

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department Of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

February 10, 2009

LIMS ID: 1745349

Lexington Regional Office
131 Walker Street,
Lexington, VA24450-2431

Region: 2
Process Lab:
RICHMOND

PWS OWNER
POTTS CREEK-CITY OF COVINGTON
1116 S MAIN ST

BLACKSBURG,VA 24060

PWSID **7200306** SOURCE

FIELD DATA ITEMS:

Date Receive	01/20/2009	Sampling Date	01/15/2009	Collected By	JARED
Order Number	90022058	Source ID	.	VDH Sample Type	HANNAH SP
Fluoride		Category	CH	PB CU	
Chemist		Compliance	N	Original Lims Number	
F Method		Sample Location	POTTS CREK		

CONTAMINANT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
1005	Arsenic			< 0.002 ppm	02/02/2009	JARNOLD
1010	Barium	2		< 0.20 ppm	02/02/2009	JARNOLD
1015	Cadmium	.005		< 0.002 ppm	02/02/2009	JARNOLD
1020	Chromium	.1		< 0.01 ppm	02/02/2009	JARNOLD
1030	Lead	.015		< 0.002 ppm	02/02/2009	JARNOLD
1035	Mercury	0.002		< 0.0002 ppm	02/02/2009	JARNOLD
1045	Selenium	.05		< 0.01 ppm	02/02/2009	JARNOLD
1002	Aluminum			.074 ppm	02/02/2009	JARNOLD
1028	Iron		.3	< 0.20 ppm	02/02/2009	JARNOLD
1032	Manganese		0.05	.037 ppm	02/02/2009	JARNOLD
1095	Zinc		5	< 0.20 ppm	02/02/2009	JARNOLD
1022	Copper		1.3	< 0.20 ppm	02/02/2009	JARNOLD
1052	Sodium			< 5.0 ppm	02/02/2009	JARNOLD
1036	Nickel	.1		< 0.01 ppm	02/02/2009	JARNOLD
1085	Thallium	.002		< 0.002 ppm	02/02/2009	JARNOLD
1074	Antimony	.006		< 0.002 ppm	02/02/2009	JARNOLD
1075	Beryllium	.004		< 0.002 ppm	02/02/2009	JARNOLD

APPROVED BY: MMOUER DATE APPROVED: 02/10/2009 1 WQR

METALS

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department Of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

January 27, 2009

LIMS ID: 1745350

Lexington Regional Office
131 Walker Street,
Lexington, VA24450-2431

Region: 2
Process Lab:
RICHMOND

PWS OWNER
POTTS CREEK-CITY OF COVINGTON
1116 S MAIN ST

BLACKSBURG,VA 24060

PWSID	SOURCE
7200306	

FIELD DATA ITEMS:

Date Receive	01/20/2009	Sampling Date	01/15/2009	Collected By	JARED
Order Number	90022058	Source ID	.	VDH Sample Type	HANNAH
Fluoride		Category	CH	PB CU	
Chemist		Compliance	N	Original Lims Number	
F Method		Sample Location	POTTS CREEK		

CONTAMINANT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
1038	Nitrate+Nitrite as N	10		0.23 mg/l	01/23/2009	ESTEEN

APPROVED BY: BDAVIS1 DATE APPROVED: 01/27/2009 4 WQR

INORGANIC

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department Of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

February 26, 2009

LIMS ID: 1745351

Lexington Regional Office
131 Walker Street,
Lexington, VA24450-2431

Region: 2
Process Lab:
RICHMOND

PWS OWNER
POTTS CREEK-CITY OF COVINGTON
1116 S MAIN ST

BLACKSBURG,VA 24060

PWSID	SOURCE
7200306	

FIELD DATA ITEMS:

Date Receive	01/20/2009	Sampling Date	01/15/2009	Collected By	JARED
Order Number	90022058	Source ID	.	VDH Sample Type	HANNAH
Fluoride		Category	CH	PB CU	
Chemist		Compliance	N	Original Lims Number	
F Method		Sample Location	POTTS CREEK		

CONTAMINANT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
4002	Gross Alpha			0.3 pCi/L +- 0.2 pCi/L	02/26/2009	AANGELOFF
4100	Gross Beta			1.2 pCi/L +- 0.7 pCi/L	02/26/2009	AANGELOFF
4030	Radium-228			0.4 pCi/L +- 0.6 pCi/L	02/26/2009	AANGELOFF

APPROVED BY: SLACY DATE APPROVED: 02/26/2009 1 WQR

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department Of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

February 10, 2009

LIMS ID: 1745352

Lexington Regional Office
131 Walker Street,
Lexington, VA24450-2431

Region: 2
Process Lab:
RICHMOND

PWS OWNER
POTTS CREEK-CITY OF COVINGTON
1116 S MAIN ST

BLACKSBURG,VA 24060

PWSID	SOURCE
7200306	

FIELD DATA ITEMS:

Date Receive	01/20/2009	Sampling Date	01/15/2009	Collected By	JARED
Order Number	90022058	Source ID		VDH Sample Type	HANNAH
Fluoride		Category	CH	PB CU	
Chemist		Compliance	N	Original Lims Number	
F Method		Sample Location	POTTS CREEK		

CONTAMINANT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
2051	Alachlor			< 0.1 ppb	02/05/2009	LGREEN
2356	Aldrin			< 0.10 ppb	02/05/2009	LGREEN
2050	Atrazine			< 0.5 ppb	02/05/2009	LGREEN
2076	Butachlor			< 0.1 ppb	02/05/2009	LGREEN
2959	Chlordane			< 0.2 ppb	02/05/2009	LGREEN
2070	Dieldrin			< 0.10 ppb	02/05/2009	LGREEN
2005	Endrin			< 0.10 ppb	02/05/2009	LGREEN
2065	Heptachlor			< 0.05 ppb	02/05/2009	LGREEN
2067	Heptachlor epoxide			< 0.10 ppb	02/05/2009	LGREEN
2274	Hexachlorobenzene			< 0.1 ppb	02/05/2009	LGREEN
2042	Hexachlorocyclopentadiene			< 0.5 ppb	02/05/2009	LGREEN
2010	Lindane			< 0.05 ppb	02/05/2009	LGREEN
2015	Methoxychlor			< 0.1 ppb	02/05/2009	LGREEN
2045	Metolachlor			< 0.5 ppb	02/05/2009	LGREEN
2383	PCB's			< 0.2 ppb	02/05/2009	LGREEN
2595	Metribuzin			< 0.1 ppb	02/05/2009	LGREEN
2077	Propachlor			< 0.10 ppb	02/05/2009	LGREEN
2037	Simazine			< 0.50 ppb	02/05/2009	LGREEN
2039	Di(2-ethylhexyl)phthalate			< 2.0 ppb	02/05/2009	LGREEN
2035	Di(2-ethylhexyl)adipate			< 1.0 ppb	02/05/2009	LGREEN
1925	pH (acid preservative check)			7 PH	02/05/2009	LGREEN
NOTE: P1						
2306	Benzo[a]pyrene			< 0.10 ppb	02/05/2009	LGREEN
2020	Toxaphene			< 1.000 ppb	02/05/2009	LGREEN

APPROVED BY: PLOGAN DATE APPROVED: 02/10/2009

Department of General Services
Division of Consolidated Laboratory Services
600 North 5th Street
Richmond, Virginia 23219

Cover Sheet

DATE:	3/17/09
TO:	Stephanie
FAX #:	540-552-5577
FROM:	Lovis Baker
FAX #:	804-786-4270

Number of pages including cover sheet: 2
If you have any questions, please call: 804-648-4480 ext.

COMMENTS:

Check one:

Original will be sent	Yes [ ]	No [ ]
Respond	Yes (ASAP) [ ]	No [ ]

Div. of Consolidated Laboratory Services - RICHMOND
600 North 5th ST
Richmond VA 23219
Process Lab # 000090

BACTERIOLOGICAL ANALYSIS RESULTS

PWSID #: 7200306
Sample #: 1745353
Collector: JARED HANNAH
Sample Type: D
Residual Chlorine: NF mg/l
Location: ; Facility: POTTS CREEK
Test: Total Coliform by Quanti-Tray, MPN; Results: 387.3 MPN/100 ML
Test: E. Coli by Quanti-Tray, MPN; Results: 5.2 MPN/100 ML

Date Collected: 15 Jan 2009 14:20
Date Received: 16 Jan 2009 09:28
Date Started: 16-Jan-2009 10:10
Date Reported: 20 Jan 2009 13:25

POTTS CREEK-CITY OF COVINGTON
1116 S MAIN ST
BLACKSBURG, VA 24060

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department Of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

February 05, 2009

LIMS ID: 1745354

Lexington Regional Office
131 Walker Street,
Lexington, VA24450-2431

Region: 2
Process Lab:
RICHMOND

PWS OWNER
POTTS CREEK-CITY OF COVINGTON
1116 S MAIN ST

BLACKSBURG,VA 24060

PWSID	SOURCE
7200306	

FIELD DATA ITEMS:

Date Receive	01/20/2009	Sampling Date	01/15/2009	Collected By	JMH
Order Number	90022058	Source ID	.	VDH Sample Type	SP
Fluoride		Category	CH	PB CU	
Chemist		Compliance	N	Original Lims Number	
F Method		Sample Location	POTTS CREEK		

CONTAMINANT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
2920	Total Organic Carbon			1.6 mg/l	01/30/2009	RROWSHAN

APPROVED BY: BDAVIS1 DATE APPROVED: 02/05/2009 6 WQR

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department Of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

January 27, 2009

LIMS ID: 1745355

Lexington Regional Office
131 Walker Street,
Lexington, VA24450-2431

Region: 2
Process Lab:
RICHMOND

PWS OWNER
POTTS CREEK-CITY OF COVINGTON
1116 S MAIN ST

BLACKSBURG,VA 24060

PWSID	SOURCE
7200306	

FIELD DATA ITEMS:

Date Receive	01/20/2009	Sampling Date	01/15/2009	Collected By	JARED HANNAH
Order Number	90022058	Source ID	.	VDH Sample Type	SP
Fluoride		Category	CH	PB CU	
Chemist		Compliance	N	Original Lims Number	
F Method		Sample Location	POTTS CREEK		

CONTAMINANT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
2212	Dichlorodifluoromethane			< 0.5 ppb	01/23/2009	GJACKSON
2210	Methyl Chloride (Chloromethane)			< 0.5 ppb	01/23/2009	GJACKSON
2976	Vinyl Chloride			< 0.5 ppb	01/23/2009	GJACKSON
2214	Methyl Bromide (Bromomethane)			< 0.5 ppb	01/23/2009	GJACKSON
2216	Chloroethane			< 0.5 ppb	01/23/2009	GJACKSON
2218	Trichlorofluoromethane			< 0.5 ppb	01/23/2009	GJACKSON
2977	1,1-Dichloroethene			< 0.5 ppb	01/23/2009	GJACKSON
2964	Dichloromethane (Methylene Chloride)			< 0.5 ppb	01/23/2009	GJACKSON
2979	trans-1,2-Dichloroethene			< 0.5 ppb	01/23/2009	GJACKSON
2978	1,1-Dichloroethane			< 0.5 ppb	01/23/2009	GJACKSON
2380	cis-1,2-Dichloroethene			< 0.5 ppb	01/23/2009	GJACKSON
2941	Chloroform			< 0.5 ppb	01/23/2009	GJACKSON
2981	1,1,1-Trichloroethane			< 0.5 ppb	01/23/2009	GJACKSON
2982	Carbon Tetrachloride			< 0.5 ppb	01/23/2009	GJACKSON
2980	1,2-Dichloroethane			< 0.5 ppb	01/23/2009	GJACKSON
2984	Trichloroethene			< 0.5 ppb	01/23/2009	GJACKSON
2983	1,2-Dichloropropane			< 0.5 ppb	01/23/2009	GJACKSON
2408	Dibromomethane			< 0.5 ppb	01/23/2009	GJACKSON
2943	Bromodichloromethane			< 0.5 ppb	01/23/2009	GJACKSON
2228	cis-1,3-Dichloropropene			< 0.5 ppb	01/23/2009	GJACKSON
2224	trans-1,3-Dichloropropene			< 0.5 ppb	01/23/2009	GJACKSON
2985	1,1,2-Trichloroethane			< 0.5 ppb	01/23/2009	GJACKSON
2987	Tetrachloroethylene (Perchloroethylene)			< 0.5 ppb	01/23/2009	GJACKSON
2944	Dibromochloromethane			< 0.5 ppb	01/23/2009	GJACKSON
2989	Chlorobenzene			< 0.5 ppb	01/23/2009	GJACKSON
2986	1,1,1,2-Tetrachloroethane			< 0.5 ppb	01/23/2009	GJACKSON
2942	Bromoform			< 0.5 ppb	01/23/2009	GJACKSON
2988	1,1,2,2-Tetrachloroethane			< 0.5 ppb	01/23/2009	GJACKSON

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department Of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

January 27, 2009

LIMS ID: 1745355

01/20/2009 01/15/2009 JARED HANNAH

CONTAMINANT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
2965	o-Chlorotoluene (2-Chlorotoluene)			< 0.5 ppb	01/23/2009	GJACKSON
2966	p-Chlorotoluene (4-Chlorotoluene)			< 0.5 ppb	01/23/2009	GJACKSON
2967	m-Dichlorobenzene (1,3-Dichlorobenzene)			< 0.5 ppb	01/23/2009	GJACKSON
2969	p-Dichlorobenzene			< 0.5 ppb	01/23/2009	GJACKSON
2968	o-Dichlorobenzene			< 0.5 ppb	01/23/2009	GJACKSON
2378	1,2,4-Trichlorobenzene			< 0.5 ppb	01/23/2009	GJACKSON
2420	1,2,3-Trichlorobenzene			< 0.5 ppb	01/23/2009	GJACKSON
2990	Benzene			< 0.5 ppb	01/23/2009	GJACKSON
2991	Toluene			< 0.5 ppb	01/23/2009	GJACKSON
2992	Ethylbenzene			< 0.5 ppb	01/23/2009	GJACKSON
2994	Isopropylbenzene			< 0.5 ppb	01/23/2009	GJACKSON
2998	n-Propylbenzene			< 0.5 ppb	01/23/2009	GJACKSON
2426	t-Butylbenzene			< 0.5 ppb	01/23/2009	GJACKSON
2428	s-Butylbenzene			< 0.5 ppb	01/23/2009	GJACKSON
2248	Naphthalene			< 0.5 ppb	01/23/2009	GJACKSON
2430	Bromochloromethane			< 0.5 ppb	01/23/2009	GJACKSON
2422	n-Butylbenzene			< 0.5 ppb	01/23/2009	GJACKSON
2931	1,2-Dibromo-3-chloropropane (DBCP)			< 0.5 ppb	01/23/2009	GJACKSON
2946	1,2-Dibromoethane (EDB)			< 0.5 ppb	01/23/2009	GJACKSON
2412	1,3-Dichloropropane			< 0.5 ppb	01/23/2009	GJACKSON
2416	2,2-Dichloropropane			< 0.5 ppb	01/23/2009	GJACKSON
2410	1,1-Dichloropropene			< 0.5 ppb	01/23/2009	GJACKSON
2246	Hexachlorobutadiene			< 0.5 ppb	01/23/2009	GJACKSON
2030	4-Isopropyltoluene			< 0.5 ppb	01/23/2009	GJACKSON
2996	Styrene			< 0.5 ppb	01/23/2009	GJACKSON
2414	1,2,3-Trichloropropane			< 0.5 ppb	01/23/2009	GJACKSON
2418	1,2,4-Trimethylbenzene			< 0.5 ppb	01/23/2009	GJACKSON
2424	1,3,5-Trimethylbenzene			< 0.5 ppb	01/23/2009	GJACKSON
1925 NOTE: P1	pH			3.5 PH	01/23/2009	GJACKSON
2955	Total Xylenes			< 0.5 ppb	01/23/2009	GJACKSON
2251	Methyl t-butyl ether (MTBE)			< 5.0 ppb	01/23/2009	GJACKSON
2993	Bromobenzene			< 0.5 ppb	01/23/2009	GJACKSON

APPROVED BY: LGREEN DATE APPROVED: 01/27/2009 2 WQR

VOLATILES