

Appendix A Sampling and Analysis Plan for Site Specific Sampling
Green Valley / Monrovia Frederick County, Maryland

Sampling and Analysis Plan for Site Specific Sampling Green Valley / Monrovia Frederick County, Maryland

1. INTRODUCTION

This sampling plan was developed by the Maryland Department of the Environment (MDE) for use specifically by the Frederick County Health Department (FCHD) and the MDE for additional investigation into the reported occurrences of lead and hexavalent chromium in specific domestic supply wells in the Green Valley / Monrovia area of Frederick County, Maryland. By following the protocols, users of the resultant data will be assured of data quality and consistency in collection techniques.

These protocols were developed to provide sampling results that will be able to reasonably distinguish lead contributions as a result of the groundwater (i.e. flushed sample) versus components of the private water supply system (i.e. first draw sample). The first draw sample would represent the potential contribution of lead in the water as a result of the household plumbing system that a user might be exposed to. Potential lead contributions in such a sample could include the groundwater, the submersible pump, the pitless adapter, the pressure tank, the piping, auxiliary treatment systems, faucets, and the solder used to connect these components. The flushed sample would be based on a purge of the plumbing system as detailed in Section 5.2, and should be a representative groundwater sample. Even with this purge, there is potential for the sample to not be fully representative of the groundwater. This could be due to specific features of the plumbing system (e.g. larger pressure tank, pump limitations). Additionally, volatile organic compounds (VOCs), pH, temperature, and oxidation-reduction potential (ORP) will be collected to further characterize the water at each sampling location.

Based upon specific sampling results presented to the MDE and FCHD by others, samples will be collected from each house that was reported to have a total or dissolved lead level at or above the 15 parts per billion (ppb) lead action level and the six homes with granulated carbon treatment systems maintained under the MDE Oil Control Program case. The samples will be analyzed for a combination of VOCs, total lead, total chromium, dissolved lead, dissolved chromium, and hexavalent chromium. Prior to sampling, an informational letter will be sent to the property owner that explains the reason for the sampling, how the samples will be collected, and how the results will be presented to them.

Based upon the results from this sampling event, the MDE and the FCHD will consider the need for further sampling. All sampling results will be presented to the property owner along with any specific precautions to be taken. Once all results have been received and the MDE and FCHD have reviewed and discussed the results, additional information will be shared with the community.

2. SAMPLE ANALYSIS

2.1 Analytical Samples

- 48 standard samples, 1 field blank sample, and 3 duplicate samples will be collected. Additionally, Trip Blanks will be collected as needed (only analyzed for VOCs).
- All samples will be analyzed for:
 - Total Lead and Chromium by US EPA Method 200.8
 - Dissolved Lead and Chromium by US EPA Method 200.8
 - Hexavalent Chromium by US EPA Method 218.7
 - VOCs by US EPA Method 524.2
- **Total Lead and Chromium** – First draw samples will be collected in unpreserved 1-liter polyethylene bottles. Flushed samples will be collected in unpreserved 250-milliliter (mL) polyethylene bottles. The samples will be placed in a cooler with ice packs to chill to 4°C immediately upon collection. One bottle for each water sample is required for the laboratory. Both total lead and total chromium will be analyzed from the same bottle. The sample bottles will be preserved with nitric acid (HNO₃) upon submittal to the laboratory
- **Dissolved Lead and Chromium** – Samples will be collected in 250-mL polyethylene bottles. The initial sample collection vessel will **not** be preserved. The sample will be filtered in the field with a 0.45 µm pore size filter. Once filtered, the sample will be poured from the underserved vessel into the 250-mL bottle that has been preserved with HNO₃. Once full, the bottle will be capped and lightly shaken to mix in the acid. The samples will be placed in a cooler with ice packs to chill to 4°C immediately upon collection. One bottle for each water sample is required for the laboratory. Both dissolved lead and dissolved chromium will be analyzed from the same bottle.
- **Hexavalent Chromium** – Unfiltered samples will be collected in 125-mL HDPE bottles. The sample bottles will be pre-preserved with ammonium sulfate ((NH₄)₂SO₄) and ammonium hydroxide (NH₄OH). Once full, the bottle will be capped and lightly shaken to mix in the preservatives. The samples will be placed in a cooler with ice packs to chill to 4°C immediately upon collection. One bottle for each water sample is required for the laboratory.
- **VOCs** – Unfiltered samples will be collected in two 40-mL glass vials. The sample vials will be pre-preserved with hydrochloric acid (HCl). The vials must be carefully filled to just below the top of the vial, and then the cap is to be partially filled. The sample portion in the cap is to be carefully poured into the glass vial in order to create a raised meniscus. The cap is then secured onto the vial and the vial is inverted and lightly tapped to determine the presence of any air bubbles. If air bubbles are present, then the cap is to be carefully removed and an additional amount of water is to be carefully added to the vial. Repeat the procedure as need to ensure there are no substantial (greater than a small pea) air bubbles in the vial. The samples will be protected from breakage and placed in a cooler with ice packs to chill to 4°C immediately upon collection.

2.2 Water Quality Parameters

- pH/temperature/ORP readings will be collected at each sampling location after the analytical samples are collected.
- A clean container will be filled with water and an instant read pH/temperature/ORP meter will be used to collect a measurement.

2.3 Resources

- FCHD will be responsible for mailing request to sample letters.
- FCHD will be responsible for coordination with property owners, MDE's contractor, Chesapeake Geo Sciences (CGS), and FCHD staff for the collection of samples.
- CGS will contract with the laboratories. Enviro-Chem will be used for the inorganic and hexavalent chromium analyses and Phase Separation Science will be used for the VOC analyses. A Level II Data Deliverable will be provided by each laboratory.

Enviro-Chem Laboratories, Inc.
47 Loveton Circle, Suite K
Sparks, Maryland 21152
410-472-1112

Phase Separation Science, Inc.
6630 Baltimore National Pike, Suite 104A
Baltimore, MD 21228
410-747-8770

- FCHD will be present during the sample collections and will document the sample collections.
- CGS will provide all sampling and field equipment; will collect all samples; and will transport all samples to the laboratory.
- Samples will be analyzed using standard turn around times provided they do not exceed 10 business days.

3. SAMPLE LOCATIONS

See Sampling Plan Table (attached).

4. SAMPLE IDENTIFICATION

4.1 Standard Samples

Standard Samples will be labeled using the following convention: [address]-[sample type]. As an example, the first draw sample from 11711 Serene Court will be labeled as 11711Serene-FirstDraw, and the flushed sample from the same address will be labeled as 11711Serene-Flushed.

4.2 Quality Assurance / Quality Control Samples

The field blank sample can be labeled using any one of the addresses sampled that day with a “FB” added to the end of the address. As an example, the field blank could be labeled as 11711Serene-FB.

The duplicate samples will be labeled using the standard sample name and adding “DB” to the end of the address. As an example, if a duplicate sample were to be collected from the 11711Serene-Flushed sample, then the duplicate sample would be labeled as 11711Serene-FlushedDB.

The trip blank samples will be labeled as T-1, T-2, etc.

5. FIELD METHODS AND PROCEDURES

5.1 Sampling Supplies and Equipment

- Provided by laboratory / CGS
 - Pre-preserved bottles
 - Un-preserved bottles
 - Labels for bottles
 - Inorganic-free blank water
 - Chain of custodies (COCs)
 - Cooler and ice packs
 - Instant read pH/temperature/ORP probe
 - Calibration of the pH/temperature/ORP meter shall be done in accordance with the manufacturer’s specifications
 - Clean container for pH/temperature/ORP measurements
 - Indelible pen for filling out labels
 - Powder free nitrile gloves (latex can be used, however some experience an allergic reaction to latex)
 - 0.45 µm filters, tubing, and vacuum hand pump for field filtering dissolved samples
- Provided by FCHD
 - Field form for documentation of sampling
 - Digital camera

5.2 Sampling Procedures

- Secure necessary equipment and bottleware
- Make appointments to sample each house
- Record notes on the location of sampling as discussed in the documentation section.
- Ask the property owner if they are aware of any water quantity issues with their well. If there are issues noted, document those issues and discuss with the MDE about changes to the protocols.
- Ask the property owner about any water treatment systems they may have on their water system (e.g., sediment filtration, carbon filtration, water softener) and record that

information on the field form. Document other information as discussed in the field documentation section.

5.2.1 First Draw Sample

- To be collected from the **kitchen sink**
- Confirm there has been no water usage for a minimum of 6 hours at any point within the house (including toilet flushes) and record this in the field form. If less than six hours has elapsed since the last water use, document type of use (how long, from which tap/toilet, etc.).
- Put a fresh pair of gloves on prior to handling the bottles
- Properly label the bottles for the particular collection point and the analysis
- Open the bottle to collect the **total lead / chromium sample first** and position the mouth of the bottle beneath the kitchen faucet and proceed to turn on the faucet using cold water
- Do not fully open the faucet to minimize the risk of overfilling the bottles or dropping the bottles; water stream should not be turbulent
- Do not overfill the bottles as the preservatives may be lost
- Once filled to near the top of the bottle, turn off the faucet
- Secure the lid on the bottle and lightly shake to mix the preservative and sample
- Repeat for the **dissolved lead / chromium** sample. **NOTE** – This sample is to be collected into an **un-preserved** bottle and then field filtered.
- Repeat for the **hexavalent chromium** sample.
- Repeat for the **VOC** sample.
- Record the sample time (same sample time for all analyses) on the bottle and field form
- Fill the clean container with water and measure pH/temperature/ORP
- Record pH/temperature/ORP readings on the field form
- Place the samples right side up in the cooler with ice packs and protect against breakage as needed

5.2.2 Flushed Sample

The plumbing system at each residence will be purged for 15 minutes prior to the collection of the flushed sample. Purging can be accomplished by running the water from a wide-open high-velocity spigot at a location where adequate drainage exists. FCHD personnel will confirm with the property owner that the selected purging spigot is operational and that the associated drain is functioning.

The order of preference for the location to perform the **purging** is as follows:

1. An operational spigot prior to the pressure tank and any water treatment.
2. A spigot after the pressure tank, but prior to any water treatment.
3. A bathtub faucet or other spigot (e.g. a wash sink in basement/laundry room) after the pressure tank and any water treatment.

The purging will be overseen by FCHD personnel to ensure that the purge water drains properly and to make any adjustments to prevent any overflow. The purge start and stop times will be recorded on the field form.

The order of preference for the flushed **sample collection** is as follows:

1. A spigot prior to the pressure tank and any water treatment.
 2. A spigot after the pressure tank, but prior to any water treatment.
 3. A bathtub faucet or other spigot (e.g. a wash sink in basement/laundry room) after the pressure tank and any water treatment.
- Following the plumbing system purge, have the property owner confirm that the preferred sample collection spigot is operational. Document on the field form.
 - Put a fresh pair of gloves on prior to handling the bottles
 - Open the preferred sample collection spigot and purge an additional gallon of water into the drain or into a bucket from the spigot. Record the times.
 - Note the time and prepare the bottles for collection
 - Properly label the bottles for the particular collection point and the analysis
 - Adjust the velocity of the water stream to minimize the risk of overfilling the bottles or dropping the bottles; water stream should not be turbulent
 - Position the mouth of the bottle beneath the spigot and proceed to fill the bottles in the same order and manner as described above
 - Record the sample time (same sample time for all analyses) on the bottle and field form
 - Fill the clean container with water and measure pH/temperature/ORP
 - Record pH/temperature/ORP readings on the field form
 - Place the samples right side up in the cooler with ice packs and protect against breakage as needed

6. DOCUMENTATION AND SHIPMENT

6.1 Field Form

Notes shall be recorded on a field form (attached) during each sampling event to include:

1. Date and time of arrival and departure
2. Project name and location
3. Sampler and any other individuals (note affiliation) present including the homeowner
4. Work to be performed
5. List of samples to be collected – to include sample number, date and time of sample, sampler name, sample location identifier, type of sample collected, and sample analyses
6. Equipment calibration results
7. Observations pertinent to the description of the overall site:
 - Record notes on the location of sampling.
 - Ask the property owner if they are aware of any water quantity issues with their well. If there are issues noted, document those issues and discuss with the MDE about changes to the protocols.
 - Ask the property owner about any water treatment systems they may have on their water system (e.g., sediment filtration, carbon filtration, water softener) and record that information in the field book.
 - Other items to note in the field book include: well tag number, age of the well, age of the well pump, construction of the well, depth of the well, well driller, well completion report, description of fixtures at sampling points (e.g. brass, chrome), when faucet was installed, manufacturer of the faucet, type of plumbing in the

house (e.g. copper, PVC, other plastic), location and types of water treatment devices, history of groundwater flow, taste and/or odor problems, etc.

8. Field notes must be signed and dated by the recorder.

6.2 Photographs

- If there are no objections from the homeowner, photo document the sampling points and other features of the plumbing system.

6.3 Chain of Custody

- Obtain a COC from the designated laboratory prior to performing field sampling.
- Samplers shall provide information on the COC were applicable, such as:
 - Sampler Name,
 - Project Name,
 - Project/Case #,
 - Sampler,
 - Sample ID,
 - Date collected,
 - Time sample collected,
 - Sample Matrix,
 - Number of containers, and
 - Analysis to be performed.
- CGS will sign in the next “Relinquished By” section upon delivery of sample to the laboratory.
- CGS will obtain a copy of the COC once the designated laboratory personnel fills out the “Received By” section on the COC.

6.4 Sample Shipment

All samples collected each day must be delivered to the laboratories on the same day or the next business-morning following the sampling date (in the case of late-evening/weekend sample collection). Samples will be properly refrigerated overnight and/or over the weekend and then re-packed in a properly iced cooler for transport to the laboratories.

7. QUALITY ASSURANCE AND QUALITY CONTROL

The following QA/QC samples will be collected as part of this investigation: one (1) field blank, three (3) duplicate samples, and one trip blank for each day during which site investigation samples are collected. Additionally, other parties may wish to collect split samples during the event and guidance is presented to accommodate such sample collection.

7.1 Field Blanks

1. Prior to performing on-site sampling, obtain blank water from the laboratory.
 - The blank water is to be stored in a contaminant free container.
 - Record all information concerning the blank water in the field book.
2. Once in the field, fill one pre-preserved sample bottle with the blank water.
3. The field blank sample should be labeled as previously discussed.
4. Record all pertinent information in the field book.

5. Store and transport field blanks in the same manner as the site investigation samples.
6. Maintain and document field blank possession in the COC.
7. Submit the field blanks with the site investigation samples to the laboratories for analyses.

7.2 Duplicate Samples

1. Duplicate samples will be collected at a frequency of one duplicate per 20 samples (3 for this investigation).
2. Once the samples for duplication are determined, collect the samples according to the appropriate procedure discussed above.
3. The duplicate samples should be labeled as previously discussed.
4. Record all pertinent information in the field book.
5. Store and transport duplicate samples in the same manner as the site investigation samples.
6. Maintain and document duplicate sample possession in the COC.
7. Submit the duplicate samples with the site investigation samples to the laboratories for analyses.

7.3 Split Samples

1. Split samples may be requested by other parties.
2. Upon notification of such a request, coordination between the FCHD, the requesting party(s), and the property owner must occur.
3. The party requesting to split samples must have their own bottleware and laboratory to analyze the samples. FCHD will not assist in the collection of a split sample other than to coordinate the sampling location and time, and to make available the sample matrix for sample collection under the same conditions for this event.
4. Once the sample(s) for splitting is determined, collect the sample according to the appropriate procedure discussed above, splitting the sample matrix between two like containers.
5. The samples should be noted in the field book as a split sample and the requesting party's sample information should also be noted (e.g. sample identification).

7.4 Trip Blanks

1. Prior to performing on-site sampling, obtain from the laboratory VOC trip blanks.
 - A minimum of one trip blank (two 40-mL vials) per day of sampling.
 - The containers are to be completely filled with the blank water (i.e. no air bubbles are to be present).
2. Trip blanks, as with all VOC samples, are to be preserved with hydrochloric acid (HCL) to a pH<2 and stored in an insulated container with ice at a temperature of 4°C.
3. Label and tag the containers as a trip blank sample and record all information on the COC.
4. Transport and store trip blanks in the same manner as the site investigation samples, but do not open the trip blanks.
5. Maintain and document trip blank possession in the COC sheet.
6. Submit the trip blanks with the site investigation samples to the appropriate laboratory for VOC analyses

Sampling and Analysis Plan for
 Site Specific Sampling
 Green Valley / Monrovia
 Frederick County, Maryland

Address	First Draw Sample	Flushed Sample	Field Blank	Duplicate	VOCs 524.2	Total Lead EPA 200.8	Total Chromium EPA 200.8	Dissolved Lead EPA 200.8	Dissolved Chromium EPA 200.8	Hexavalent Chromium EPA 218.7
11711 Serene Court	x				x	x	x	x	x	x
11712 Serene Court	x				x	x	x	x	x	x
11789 Thomas Spring Road	x				x	x	x	x	x	x
11894 Barley Court	x				x	x	x	x	x	x
4016 Middleton Drive	x				x	x	x	x	x	x
3740 Blueberry Court	x				x	x	x	x	x	x
3806 Greenridge Drive	x				x	x	x	x	x	x
3833 Greenridge Drive	x				x	x	x	x	x	x
3923 Rosewood Road	x				x	x	x	x	x	x
3933 Rosewood Road	x				x	x	x	x	x	x
3983 Farm Lane	x				x	x	x	x	x	x
3984A Farm Lane	x				x	x	x	x	x	x
3985 Farm Lane	x				x	x	x	x	x	x
3987 Farm Lane	x				x	x	x	x	x	x
3989 Farm Lane	x				x	x	x	x	x	x
3990 Farm Lane	x				x	x	x	x	x	x
3991 Farm Lane	x				x	x	x	x	x	x
3992 Farm Lane	x				x	x	x	x	x	x
3993 Farm Lane	x				x	x	x	x	x	x
3994 Farm Lane	x				x	x	x	x	x	x
3995 Farm Lane	x				x	x	x	x	x	x
3996 Farm Lane	x				x	x	x	x	x	x
3997 Farm Lane	x				x	x	x	x	x	x
3998 Rye Lane	x				x	x	x	x	x	x
11711 Serene Court		x			x	x	x	x	x	x
11712 Serene Court		x		x	x	x	x	x	x	x
11789 Thomas Spring Road		x			x	x	x	x	x	x
11894 Barley Court		x			x	x	x	x	x	x
4016 Middleton Drive		x			x	x	x	x	x	x
3740 Blueberry Court		x			x	x	x	x	x	x
3806 Greenridge Drive		x			x	x	x	x	x	x
3833 Greenridge Drive		x			x	x	x	x	x	x
3923 Rosewood Road		x			x	x	x	x	x	x
3933 Rosewood Road		x			x	x	x	x	x	x
3983 Farm Lane		x			x	x	x	x	x	x
3984A Farm Lane		x			x	x	x	x	x	x
3985 Farm Lane		x			x	x	x	x	x	x
3987 Farm Lane		x			x	x	x	x	x	x
3989 Farm Lane		x	x		x	x	x	x	x	x
3990 Farm Lane		x			x	x	x	x	x	x
3991 Farm Lane		x			x	x	x	x	x	x
3992 Farm Lane		x			x	x	x	x	x	x
3993 Farm Lane		x			x	x	x	x	x	x

**Sampling and Analysis Plan for
Site Specific Sampling
Green Valley / Monrovia
Frederick County, Maryland**

Address	First Draw Sample	Flushed Sample	Field Blank	Duplicate	VOCs 524.2	Total Lead EPA 200.8	Total Chromium EPA 200.8	Dissolved Lead EPA 200.8	Dissolved Chromium EPA 200.8	Hexavalent Chromium EPA 218.7
3994 Farm Lane		x		x	x	x	x	x	x	x
3995 Farm Lane		x			x	x	x	x	x	x
3996 Farm Lane		x			x	x	x	x	x	x
3997 Farm Lane		x			x	x	x	x	x	x
3998 Rye Lane		x		x	x	x	x	x	x	x
Trip Blanks					x					

Notes

Sample Count

Standard Samples	48
QA/QC Samples	4
Trip Blanks*	As needed
Total Samples	52

Bottle Count

VOCs*	105
Total Lead and Chromium (analyzed from the same bottle)	52
Dissolved Lead and Chromium (analyzed from the same bottle)	52
Hexavalent Chromium	52
TOTAL	261

Analysis Count

VOCs*	53
Total Lead	52
Total Chromium	52
Dissolved Lead	52
Dissolved Chromium	52
Hexavalent Chromium	52
Total Analyses	313

Bottle Requirements

	Type	Size	Quantity	Filtered	Preservative
VOCs	Glass	40-mL	2	No	Hydrochloric Acid (HCl)
Total Lead/Total Chromium (1st-Draw)	HDPE	1-Liter	1	No	Nitric Acid (HNO ₃). Samples will be preserved upon submittal to laboratory
Total Lead/Total Chromium (Flushed)	HDPE	250-mL	1	No	Nitric Acid (HNO ₃). Samples will be preserved upon submittal to laboratory
Dissolved Lead/Dissolved Chromium	HDPE	250-mL	1	Yes	Nitric Acid (HNO ₃). Bottles will be pre-preserved by the laboratory.
Hexavalent Chromium	HDPE	125-mL	1	No	Ammonium sulfate ((NH ₄) ₂ SO ₄) and ammonium hydroxide (NH ₄ OH)

* Trip blank samples are only analyzed for VOCs. They are to be collected once per day of sample collection

PROPERTY OWNER QUESTIONNAIRE
Site Specific Sampling
Green Valley / Monrovia
Frederick County, Maryland

Sampling Appointment Setup

Property Address _____
 Property Owner _____
 Date owner called to set appointment _____
 Name of person calling to set appointment _____
 Date and time of sampling appointment _____

Can be filled out by FCHD staff prior to or during the sampling appointment. Can be filled out with FCHD records or through interview with the property owner, or both. Confirm answers as necessary at the property.

How many wells do you have supplying your house? _____
 What is the well tag number(s)? _____
 Age of the well _____
 Casing depth of the well _____
 Total depth of the well _____
 Well driller _____
 Well completion report available? (attach copy if yes) _____
 When was your well pump last replaced? _____

Do you have any concerns with the amount of water your well provides?	yes	no
Has your well ever run dry?	yes	no
Do you have any taste and/or odor problems with your water?	yes	no

How old is your house? _____
 Has the plumbing ever been remodeled/replaced? yes no
 If yes, when? _____

What type of piping do you currently have in your house? (circle one) copper pvc other _____

What is the brand of the faucet in your kitchen? _____
 What material is the faucet made of? _____
 Do you know how old the faucet is? _____

Do you have a pressure tank?	yes	no
If yes, where is it located?	_____	

What is the size or model/maker of your pressure tank? _____

Do you have a water sediment filter?	yes	no
Do you have U.V. light?	yes	no
Do you have a carbon filtration water system?	yes	no
Do you have any other treatment devices on your water system?	yes	no

 If yes, what kind? _____
 Where are the treatment devices located? _____

PROPERTY OWNER QUESTIONNAIRE
Site Specific Sampling
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Do you have a spigot or tap to take a water sample near your pressure tank?	yes	no
If yes, where is it located?		
Is there a drain for the flushed water to run to and is that drain operational?	yes	no
Do you have a mop sink we can take a water sample from?	yes	no
Do you have a bathtub we can take a water sample from?	yes	no
Do you have your water regularly sampled?	yes	no
If yes, when was the last sample collection?		
If yes, will you provide copies of the sample results?	yes	no
Have you made any recent changes to your water system based on sample results (e.g. installed a treatment device)?	yes	no
Other comments.		

Signatures

To the best of my knowledge, the above information is accurate.

FCHD

Name _____ Signature _____ Date _____

Property Owner

Name _____ Signature _____ Date _____

May we take pictures of your plumbing and faucets? initial _____ yes no

**FIELD SAMPLING FORM
Site Specific Sampling
Green Valley / Monrovia
Frederick County, Maryland**

Sampling Appointment Setup

Property Address _____
 Property Owner _____
 Date owner called to set appointment _____
 Name of person calling to set appointment _____
 Date and time of sampling appointment _____
 Phone number to call in case of changes _____

At Sampling Appointment

Date _____
 Arrival time _____
 Departure Time _____
 FCHD Staff _____
 CGS Staff _____
 Property Owner _____
 Other (affiliation) _____

Sample Locations and IDs

Sample Type	Sample ID	Location	Sample Time	Check to indicate sample collection				Enter reading		
				Total Lead / Chromium	Dissolved Lead / Chromium	Hexavalent Chromium	VOCs	pH	Temperature	ORP
First Draw		Kitchen Sink								
Flushed*										
Duplicate										

First Draw Sample

Any water use in last 6 hours? _____
 If yes, describe use (e.g. how long, from which tap/toilet) _____

Flushed Sample - Circle One

Prior to sample collection, purge plumbing system for 15 minutes from a wide-open spigot into functioning drain in the residence. Purge an additional gallon of water from the selected sample collection spigot into drain or bucket prior to filling sample bottles.

* The order of preference for this sample collection is as follows:

1. A spigot prior to the pressure tank and any water treatment.
2. A spigot after the pressure tank, but prior to any water treatment.
3. A bathtub faucet or other higher velocity spigot (e.g. a wash sink in basement/laundry room) after the pressure tank and any water treatment.

If 1 or 2, has the property owner confirmed that the spigot is operational? _____

Purge time begin _____ Additional gallon purged from selected sample collection spigot? _____
 Purge time end _____

Dissolved Analysis Samples

Samples filtered?
 First Draw _____
 Flushed _____

Equipment Calibration

Provide notes on calibration including standards used and results of calibration

pH _____
 ORP _____

Signatures

To the best of my knowledge, the above information is accurate.

FCHD
 Name _____ Signature _____ Date _____

CGS
 Name _____ Signature _____ Date _____

I certify that the above listed individuals were at my property to collect water samples and that I observed the samples collected from the locations noted above.

Property Owner
 Name _____ Signature _____ Date _____