2006 Lead and Copper Sampling Plan
District of Columbia Water and Sewer Authority
Department of Water Services
Division of Water Quality

Lead and Copper Site Selection Criteria

Lead and copper compliance samples taken over the past two semesters from The District of Columbia Water & Sewer Authority (WASA) showed 90th percentile levels below the EPA action level for both lead and copper. Since November 2004, WASA has implemented the Revised Interim OCCT Supplemental Water Quality Monitoring Plan and, in conjunction with the Corps of Engineers, has maintained the range of values set by EPA for the water quality parameters reflecting optimum corrosion control treatment during each of two consecutive six-month monitoring periods.

WASA will continue to monitor lead levels by collecting at least 100 samples over the next two, 6-month monitoring periods. WASA will attempt to collect an average of approximately 20 samples per month throughout the monitoring period using the list generated in Table 1.

WASA will collect samples from Tier 1 sites with at least ½ of the sites having full lead service lines. The homeowner, using the chain of custody form and instructions located in Appendix A, will collect the samples. First and second draw samples will be collected and analyzed for lead, copper and iron using EPA Method 200.8 at a certified lab (Washington Aqueduct). WASA will mail results to the homeowner along with lead advisory information (written in the letter) once lab reports are received from the certified lab. WASA will use its best efforts to provide customers with sampling results from their taps within 30 days of taking the sample and within three business days of receiving the results from the lab.

There are four standard letters located in Appendix B, one that will be mailed to the homeowner depending on the following conditions:

- Letter 1 – First and second draw below action level with a non-lead service line
- Letter 2 – First and/or second draw above action level with a non-lead service line
- Letter 3 – First and second draw below action level with lead, brass or unknown service line
- Letter 4 – First or second draw above action level with lead, brass or unknown service line

Since the addition of chloramine, WASA has never obtained a first or second draw copper sample above the action level. WASA will notify the customer in writing if a copper sample exceeds the action level.

Routine Monitoring List
Research conducted in 2004 indicated that customer lead service lines were the major contributor of lead concentrations in tap water. In order to accurately assess lead reduction for compliance monitoring, the revised routine monitoring list (Table 1) will contain at least 50% residential locations with full lead service lines. The remaining 50% will need to meet Tier 1 criteria as follows:

- A residential location that has a partial lead service line.
- A residential location that has a copper service line or a full lead service line replacement and had copper pipes with lead solder that was installed between January 1983 and March 1987.

Supplemental Monitoring List
There are 457 locations in the revised routine monitoring list. About 300 of these locations contain full lead service lines while the remainder of the list contains partial lead service lines.

Monitoring Strategy 2006
Past experience indicates that as much as 60 to 70 % of the customers will choose not to participate in any given monitoring period due to circumstances such as: the customer is out of town, there is a new owner of the residence, or lack of interest. The homes listed in Table 1 are listed in a sequential order of how they will be sampled. Priority was chosen by homes that were previously sampled in past compliance periods that still meet Tier 1 criteria as described above. The next group of locations will be homes that contain full lead service lines as of June 1, 2006. The final group will consist of homes with partial lead service lines.

One week prior to sampling, WASA will provide letters to the customer indicating that lead bottles will be dropped off at their doorstep with instructions on how to take samples (Appendix A). WASA will also attempt to contact customers by phone the evening before samples are dropped off to encourage sampling. WASA will attempt to sample sites in sequential order as listed in Table 1 until it has collected at least 100 samples that meet the Tier 1 criteria.

All sites will remain on the list until such time that the customer notifies WASA that they wish to be removed from the list or they no longer meet the Tier 1 criteria.

Sample Invalidation
WASA will request invalidation based on 40 CFR 141.86 (f):

- The laboratory establishes that improper analysis caused erroneous results
- The sample was taken from a site that did not meet Tier 1 criteria
- The sample container was damaged during transit.
- There is substantial reason to suspect that the sample was subject to tampering

Sample Rejection
WASA has developed standard operating procedures (SOPs) for collecting bottles and ensuring samples are taken properly by the customer. Section 3.6 describes when WASA will reject a sample from submission to the laboratory for analysis.

Reporting Format

The lead and copper routine monitoring will be submitted in written and electronic format. The report format will be in an access database report and also an Excel spreadsheet and will comply with 40 CFR 141.90.

Internal Standard Operating Procedures (SOPs)

WASA has developed an internal operations procedure (Appendix D) which provides details on dropping off samples, verifying locations meet Tier 1 criteria, verifying samples were collected properly, chain of custody forms were filled out properly, inputting of data into WASA's database, and QA/QC procedures.

Appendix A

Lead and Copper Customer Sample Instructions and Chain of Custody Form

D.C. WATER AND SEWER AUTHORITY
LEAD AND COPPER MONITORING PROGRAM

Thank you for participating in WASA's Lead and Copper Monitoring Program! Please read the following instructions on sample collection and recording information.

Part 1. Water Stagnation

1. Before you start stagnation, run cold water for 10 minutes.
2. Close tap.
3. Write the date and time that you closed the tap on the attached form.
4. **Do Not** use any water in the household for 6-8 hours.
5. Make sure your humidifier, icemaker, or sprinkler system is either turned off or not using water.

Part 2. Water Sampling

Please do not remove aerator from faucet.

The 1st and 2nd draw samples must be collected from the same cold-water kitchen faucet and within a few minutes of each other.

1. Use a kitchen cold-water faucet for all sampling. If you have a water treatment unit or filter attached to your plumbing system or faucet, please bypass the unit or remove the filter before sampling.

2. Open the faucet and immediately fill the first bottle to the top. When the bottle is full, tightly cap the sample bottle.

3. On the bottle label, fill out **Collect Date**, **Collect Time**, **Collector** (your name), **Address,** and circle **1st Draw**. Leave **Sample #** blank.

4. Run the cold-water faucet at a slow to moderate pace until the water turns cold. Then fill the 2nd bottle to the top and tightly cap the bottle.

5. On the bottle label, fill out **Collect Date**, **Collect Time**, **Collector** (your name), **Address,** and circle **2nd Draw**. Leave **Sample #** blank.

Part 3. Fill out the Form and Leave for WASA Pick-up

1. Note the Date and Time of sampling for both bottles on the attached form, answer all questions on form, and sign.

2. Leave samples and completed form on the front porch or where the kit was dropped off. WASA will pick up the samples on **Wednesday, May 3rd** (please call 202-612-3440, if you cannot provide the samples on Wednesday and would like an alternative pick-up day).

If you have any questions regarding these instructions Call (202) 612-3440 **or Email us at** waterquality@DCWASA.com **or write to D.C. Water And Sewer Authority – Department of Water Services, Water Quality Division, 3900 Donaldson Place, NW, Washington, D.C. 20016.**

CUSTOMER INFORMATION *Please change any incorrect information* Name_[Preprinted Name]_____ Address __[Preprinted Address]_____ Daytime phone #__[Preprinted Number] Email _____	)RATORY USE ONLY **Sample ID#**_____ **Sample Type: _D_ System: WASA** **Date/Time/Received By:**_____ **Premise #** [Preprinted Premise Number]

PLEASE COMPLETE:

Water last used: Date: _____ Time: _____

1st Draw Sample collection: Date: _____ Time: _____

2nd Draw Sample collection: Date: _____ Time: _____

Please verify the following by circling Yes or No:

- Was your home built after 1982? YES NO If yes, what date?_____
- Was the private portion of your service line replaced? YES NO If yes, what date?_____
- Have there been any major plumbing changes inside the house (pipes & fixtures) by the following dates:
    - Between January 1983 and March 1987? YES NO
    - After March 1987? YES NO
    - If Yes to either, please describe (e.g., replaced pipes and fixtures in kitchen) _____ _____

Conditions During Stagnation and Sampling - *Samples cannot be processed if the water was used during the stagnation period!*

- Were there any leaks in the plumbing (faucets, toilets)? YES NO
- Was there any other household usage during the 6-8 hour period? YES NO
- Were the following units using water during the stagnation period?
    - Ice maker YES NO N/A
    - Sprinkler system YES NO N/A
    - Humidifier YES NO N/A

- Do you have a water treatment unit or filter attached to your plumbing system or faucet? YES NO

  If yes, what is the filter's brand name/model#?
  _____

  If yes, was it bypassed before sampling? YES NO

I have read the above directions and taken both tap samples in accordance with these directions.

Signature:_____
Date:_____

SAMPLE PICK-UP DATE: Wednesday, May 3rd, 2006

Appendix B
Lead and Copper Monitoring
Participant Results – Letter

LETTER #1
Resident
Washington, DC, NE 20002

Dear Resident,

Thank you for participating in the Lead and Copper Tap Water Monitoring Program administered by the District of Columbia Water and Sewer Authority (WASA). The analysis of the samples collected from your home during the monitoring period of January through June 2006, is now complete.

Participant selection was made according to Environmental Protection Agency guidelines. Each participant selected was required to collect and provide two samples of water to WASA, within the sampling period. These samples were collected to determine how faucet fixtures, household pipes, service lines and solder contribute to the lead and copper levels in tap water. First draw samples are required by EPA and are designed to determine lead levels originating from your fixtures and in-house plumbing, while second draw samples (not required by EPA) indicate concentrations coming from your service line (the line from the main to the house). Our records indicate that your home does not contain a lead service line. If this is not correct, please contact WASA at the telephone number listed below.

The test results listed below indicate that the lead and copper concentrations of the tap water in your home are below the EPA action levels. The EPA action levels (AL) for lead and copper are 15 parts per billion (ppb) and 1300 ppb, respectively.

Sample Site	QUADRANT	Concentration Of Lead in ppb	Concentration Of Copper in ppb
1107 PARK ST.	NE	2ppb (1st draw)	39ppb (1st draw)
		1ppb (2nd draw)	7ppb (2nd draw)
EPA Action Level		15 ppb	1300 ppb

Although samples indicate lead and copper concentrations are below the action level, in order to maintain the highest water quality for consumption, WASA, recommends that you use cold tap water for drinking or cooking. Cold water obtained from the tap should be heated on the stove for hot beverages or cooking. If water has been stagnant in the line for more than 6 hours, flush water lines by running the cold water for 60 seconds prior to using the water from a faucet for drinking or cooking. Periodically, remove and clean the strainer/aerator device on your faucet to remove debris that has collected inside. If you are using a water filter cartridge, WASA recommends that you replace the cartridge routinely as recommended by the manufacturer.

Note: Boiling water does not reduce lead levels.

We appreciate your participation in the Lead and Copper Tap Water Monitoring Program. WASA is committed to making continuous improvements in our service to District residents and businesses. We look forward to your continued support of our monitoring and testing programs.

If you have additional questions or concerns, please call (**202) 612-3440** WASA, Water Quality Division or write to WASA, Water Quality Division, 3900 Donaldson Pl. NW, Washington, D.C. 20016 or visit us on the web at www.dcwasa.com.

Sincerely,

R. Giani

Richard Giani
Manager, Water Quality Division

LETTER #2

Resident
Washington, DC, NE 20002

Dear Resident,

Thank you for participating in the Lead and Copper Tap Water Monitoring Program administered by the District of Columbia Water and Sewer Authority (WASA). The analysis of the samples collected from your home during the monitoring period January through June 2006, is now complete.

Participant selection was made according to Environmental Protection Agency guidelines. Each participant selected was required to collect and provide two samples of water to WASA, within the sampling period. These samples were collected to determine how faucet fixtures, household pipes, service lines and solder contribute to the lead and copper levels in tap water. First draw samples are required by EPA and are designed to determine lead levels originating from your fixtures and in-house plumbing, while second draw samples (not required by EPA) indicate concentrations coming from your service line (the line from the main to the house).

The monitoring tests reveal that the lead concentration of the tap water in your home is above the EPA action level. The EPA action level (AL) for lead in the drinking water is 15 parts per billion (ppb). However, test results of the copper samples collected from your home are below the EPA action level for copper of 1300 ppb. The test results for the samples collected from your home are as follows:

Sample Site	QUADRANT	Concentration Of Lead in ppb	Concentration Of Copper in ppb
1107 PARK ST.	NE	22ppb (1st draw)	9ppb (1st draw)
		21ppb (2nd draw)	7ppb (2nd draw)
EPA Action Level		15 ppb	1300 ppb

According to our records, your home does not have a lead service line. If this is not correct, please contact WASA at the number listed below. In order to maintain the highest water quality for consumption, WASA, recommends that you use cold tap water for drinking or cooking as hot water may contain higher concentrations of lead. Cold water obtained from the tap should be heated on the stove for hot beverages or cooking. If water has been stagnant in the line for more than 6 hours, flush water lines by running the cold water for 60 seconds prior to using the water from a faucet for drinking or cooking. Periodically, remove and clean the strainer/aerator device on your faucet to remove debris that has collected inside. If you are using a water filter cartridge, WASA recommends that you replace the cartridge routinely as recommended by the manufacturer.

Note: Boiling water does not reduce lead levels.

We appreciate your participation in the Lead and Copper Tap Water Monitoring Program. WASA is committed to making continuous improvements in our service to District residents and businesses. We look forward to your continued support of our monitoring and testing programs.

If you have additional questions or concerns, please call (**202) 612-3440** WASA, Water Quality Division or write to WASA, Water Quality Division, 3900 Donaldson Pl. NW, Washington, D.C. 20016 or visit us on the web at www.dcwasa.com.

Sincerely,

R. Giani

Richard Giani
Manager, Water Quality Division

LETTER #3

Resident
Washington, DC, NE 20002

Dear Resident,

Thank you for participating in the Lead and Copper Tap Water Monitoring Program administered by the District of Columbia Water and Sewer Authority (WASA). The analysis of the samples collected from your home during the monitoring period of January through June 2006, are now complete.

Participant selection was made according to Environmental Protection Agency guidelines. Each participant selected was required to collect and provide two samples of water to WASA, within the sampling period. These samples were collected to determine how faucet fixtures, household pipes, service lines and solder contribute to the lead and copper levels in tap water. First draw samples are required by EPA and are designed to determine lead levels originating from your fixtures and in-house plumbing, while second draw samples indicate concentrations coming from your service line (the line from the main to the house).

The test results listed below indicate that the lead and copper concentrations of the tap water in your home are below the EPA action levels. The EPA action levels (AL) for lead and copper are 15 parts per billion (ppb) and 1300 ppb, respectively.

Sample Site	QUADRANT	Concentration Of Lead in ppb	Concentration Of Copper in ppb
909 HAMLIN ST	NE	12 ppb (1st draw)	107ppb (1st draw)
		5 ppb (2nd draw)	1ppb (2nd draw)
EPA Action Level		15 ppb	1300 ppb

According to our records, your home has a lead service line. If this is not correct, please contact WASA at the telephone number listed below. Samples from your home indicate your lead and copper concentrations are below the action level. However, in order to maintain the highest water quality for consumption, WASA, recommends that you use cold tap water for drinking or cooking purposes. Cold water obtained from the tap should be heated on the stove for hot beverages or cooking. If water has been stagnant in the line for more than 6 hours, flush water lines by running the cold water for 60 seconds prior to using the water from a faucet for drinking or cooking. Periodically, remove and clean the strainer/aerator device on your faucet to remove debris that has collected inside. If you are using a water filter cartridge, WASA recommends that you replace the cartridge routinely as recommended by the manufacturer.

Note: Boiling water does not reduce lead levels.

We appreciate your participation in the Lead and Copper Tap Water Monitoring Program. WASA is committed to making continuous improvements in our service to District residents and businesses. We look forward to your continued support of our monitoring and testing programs.

If you have additional questions or concerns, please call (**202) 612-3440** WASA, Water Quality Division or write to WASA, Water Quality Division, 3900 Donaldson Pl. NW, Washington, D.C. 20016 or visit us on the web at www.dcwasa.com.

Sincerely,

R. Giani

Richard Giani
Manager, Water Quality Division

LETTER #4

Resident
Washington, DC, NE 20002

Dear Resident,

Thank you for participating in the Lead and Copper Tap Water Monitoring Program administered by the District of Columbia Water and Sewer Authority (WASA). The analysis of the samples collected from your home during the monitoring period of January through December 2006, are now complete.

Participant selection was made according to Environmental Protection Agency guidelines. Each participant selected was required to collect and provide two samples of water to WASA, within the sampling period. These samples were collected to determine how faucet fixtures, household pipes, service lines and solder contribute to the lead and copper levels in tap water. First draw samples are required by EPA and are designed to determine lead levels originating from your fixtures and in-house plumbing, while second draw samples indicate concentrations coming from your service line (the line from the main to the house).

The monitoring tests reveal that the lead concentration of the tap water in your home is above the EPA action level. The EPA action level (AL) for lead in the drinking water is 15 parts per billion (ppb). However, test results of the copper samples collected from your home are below the EPA action level for copper of 1300 ppb. The test results for the samples collected from your home are as follows:

Sample Site	QUADRANT	Concentration Of Lead in ppb	Concentration Of Copper in ppb
909 HAMLIN ST	NE	63ppb (1st draw)	107ppb (1st draw)
		17ppb (2nd draw)	1ppb (2nd draw)
EPA Action Level		15 ppb	1300 ppb

According to our records, your home has a lead service line. If this is not correct, please contact WASA at the telephone number listed below. For homes with lead service lines that have first or second draw samples above the action level, WASA recommends the following:

- **Use cold tap water for drinking or cooking, as hot tap water could contain higher levels of lead. Cold water should be heated on the stove for hot beverages or cooking.**

- **Flush water lines by running the cold water tap for 60 seconds prior to using the water from a faucet for drinking or cooking.**

- **Periodically, remove and clean the strainer/aerator device on your faucet, to remove debris that collects inside.**

- **If you are using a water filter cartridge, WASA recommends that you replace the cartridge routinely, as recommended by the manufacturer.**

Note: Boiling water does not reduce lead levels.

WASA in consultation with George Washington University recommends residents of the District who have known or suspected lead water service lines and have recently exceeded the lead action level should drink either filtered tap water or bottle water if under the age of six or pregnant. It is also recommended to not use unfiltered tap water to prepare infant formula or concentrated juices until concerns regarding the lead levels in the home have been resolved.

The District of Columbia Department of Health (DC DOH) provides information on how to have children and pregnant women screened for blood lead levels. The DC DOH can be reached by calling (202) 535-2626 or by visiting its Web site www.dchealth.dc.gov If you have additional concerns about a child's health, please contact his or her pediatrician.

If you are purchasing a treatment device to reduce lead levels at your tap, choose a treatment device (i.e. filtration pitchers or tap filters) that will be used after potentially lead-leaching plumbing components. **These devices must be installed, operated and maintained according to manufacturer instructions.** Be sure to purchase a treatment device certified by an independent testing organization, such as NSF International. You can search the NSF International website for certified drinking water treatment devices by visiting:

www.nsf.org/Certified/DWTU

Please be advised that neither EPA nor WASA certifies or endorses specific home drinking water treatment devices.

DC WASA is responsible for supplying drinking water to the residents of the District of Columbia. There is not a problem with lead in drinking water as it leaves the treatment plant; the problem arises when the water causes corrosion inside the lead service lines and in homes with lead in their plumbing.

We appreciate your participation in the Lead and Copper Tap Water Monitoring Program. WASA is committed to making continuous improvements in our service to District residents and businesses. We look forward to your continued support of our monitoring and testing programs.

If you have additional questions or concerns, please call (**202) 612-3440** WASA, Water Quality Division or write to WASA, Water Quality Division, 3900 Donaldson Pl. NW, Washington, D.C. 20016 or visit us on the web at www.dcwasa.com.

Sincerely,

R. Giani

Richard Giani
Manager, Water Quality Division

Appendix C
Lead and Copper Monitoring Lists

Appendix C - Table 1
Revised Lead and Copper Monitoring List for 2006

	Premise number	Address	Pipe Material	Past Participant
1	3126961	1104 TRINIDAD AVE NE	Lead	Y
2	3126922	1145 OATES ST NE	Lead	Y
3	3111849	119 16TH ST NE	Lead	Y
4	3029286	1214 SHEPHERD ST NW	Lead	Y
5	3032866	1262 COLUMBIA RD NW	Lead	Y
6	3000706	1319 21st ST NW	Lead	Y
7	3087203	1319 POTOMAC AVE SE	Lead	Y
8	3122464	1324 N CAROLINA AVE NE	Lead	Y
9	3049333	1353 JEFFERSON ST NW	Lead	Y
10	3047187	1400 FLORAL ST NW	Lead	Y
11	3048291	1407 MONTAGUE ST NW	Lead	Y
12	3078536	1420 S ST SE	Lead	Y
13	3078538	1424 S ST SE	Lead	Y
14	3102850	143 UHLAND TER NE	Lead	Y
15	3002524	1451 S ST NW	Lead	Y
16	3001883	1612 V ST NW	Lead	Y
17	3075439	1626 E ST SE	Lead	Y
18	3029182	1635 WEBSTER ST NW	Lead	Y
19	3034000	1649 HARVARD ST NW	Lead	Y
20	3031559	1746 KENYON ST NW	Lead	Y
21	3009506	1802 35TH ST NW	Lead	Y
22	3106057	1808 KEARNEY ST NE	Lead	Y
23	3078580	1812 14TH ST SE	Lead	Y
24	3102875	1929 SUMMIT PL NE	Lead	Y
25	3034320	1937 BILTMORE ST NW	Lead	Y
26	3034575	1956 BILTMORE ST NW	Lead	Y
27	3034335	1971 BILTMORE ST NW	Lead	Y
28	3053897	2003 KLINGLE RD NW	Lead	Y
29	3009912	2007 37TH ST NW	Lead	Y
30	3031306	2007 KLINGLE RD NW	Lead	Y
31	3103066	2016 4TH ST NE	Lead	Y
32	3073894	202 11th St SE	Lead	Y
33	3124771	211 RANDOLPH PL NE	Lead	Y
34	3054725	2111 S ST NW	Lead	Y
35	3000567	2134 NEWPORT PL NW	Lead	Y
36	3000568	2136 NEWPORT PL NW	Lead	Y

37	3088216	2237 CHESTER ST SE	Lead	Y
38	3009763	2238 HALL PL NW	Lead	Y
39	3070102	225 MISSISSIPPI AVE SE	Lead	Y
40	3124875	228 V ST NE	Lead	Y
41	3103183	2418 3RD ST NE	Lead	Y
42	3080372	2435 33RD ST SE	Lead	Y
43	3007215	2702 P ST NW	Lead	Y
44	3103308	2823 5TH ST NE	Lead	Y
45	3107490	2830 BRENTWOOD RD NE	Lead	Y
46	3107836	2846 VISTA ST NE	Lead	Y
47	3088493	3009 7TH ST SE	Lead	Y
48	3026604	302 RITTENHOUSE ST NW	Lead	Y
49	3019046	311 ELM ST NW	Lead	Y
50	3035973	3218 MACOMB ST NW	Lead	Y
51	3037207	3218 MORRISON ST NW	Lead	Y
52	3122315	322 TENNESSEE AVE NE	Lead	Y
53	3070403	331 RALEIGH ST SE	Lead	Y
54	3035897	3408 LOWELL ST NW	Lead	Y
55	3036748	3412 GARRISON ST NW	Lead	Y
56	3041853	3424 PORTER ST NW	Lead	Y
57	3085729	3439 24TH ST SE	Lead	Y
58	3122309	349 TENNESSEE AVE NE	Lead	Y
59	3036614	3550 ALBEMARLE ST NW	Lead	Y
60	3041389	3601 WARREN ST NW	Lead	Y
61	3041931	3618 PORTER ST NW	Lead	Y
62	3020413	3634 WARDER ST NW	Lead	Y
63	3039312	3720 NORTHAMPTON ST NW	Lead	Y
64	3041121	3827 VEAZEY ST NW	Lead	Y
65	3028753	3908 13TH ST NW	Lead	Y
66	3040315	3973 HARRISON ST NW	Lead	Y
67	3040673	4111 INGOMAR ST NW	Lead	Y
68	3042399	4131 YUMA ST NW	Lead	Y
69	3042282	4230 FESSENDEN ST NW	Lead	Y
70	3041352	4305 38TH ST NW	Lead	Y
71	3042083	4307 CHESAPEAKE ST NW	Lead	Y
72	3028071	4325 IOWA AVE NW	Lead	Y
73	3044393	4326 FOREST LN NW	Lead	Y
74	3028070	4327 IOWA AVE NW	Lead	Y
75	3042812	4331 BRANDYWINE ST NW	Lead	Y
76	3075386	434 15TH ST SE	Lead	Y

77	3021575	4401 5TH ST NW	Lead	Y
78	3055262	4413 GREENWICH PKWY NW	Lead	Y
79	3028049	4507 13TH ST NW	Lead	Y
80	3027959	4518 14TH ST NW	Lead	Y
81	3058237	4609 30TH ST NW	Lead	Y
82	3110999	4616 HUNT PL NE	Lead	Y
83	3027893	4622 15TH ST NW	Lead	Y
84	3022580	4818 8TH ST NW	Lead	Y
85	3058539	4818 ILLINOIS AVE NW	Lead	Y
86	3051121	501 UPSHUR ST NW	Lead	Y
87	3022846	5121 ILLINOIS AVE NW	Lead	Y
88	3074700	514 13th St SE	Lead	Y
89	3023208	5229 7TH ST NW	Lead	Y
90	3023639	5318 9TH ST NW	Lead	Y
91	3074697	532 13TH ST SE	Lead	Y
92	3049474	5324 COLORADO AVE NW	Lead	Y
93	3039970	5405 39TH ST NW	Lead	Y
94	3045420	5717 SHERIER PL NW	Lead	Y
95	3086425	607 ATLANTIC ST SE	Lead	Y
96	3022956	608 Gallatin St NW	Lead	Y
97	3020170	618 OTIS PL NW	Lead	Y
98	3082280	704 ALABAMA AVE SE	Lead	Y
99	3082284	720 ALABAMA AVE SE	Lead	Y
100	3032050	720 PARK RD NW	Lead	Y
101	3097240	720 RHODE ISLAND AVE NE	Lead	Y
102	3128567	729 11TH ST NE	Lead	Y
103	3032387	747 GIRARD ST NW	Lead	Y
104	3032396	765 GIRARD ST NW	Lead	Y
105	3024389	805 LONGFELLOW ST NW	Lead	Y
106	3047077	811 BUTTERNUT ST NW	Lead	Y
107	3022018	821 BUCHANAN ST NW	Lead	Y
108	3127918	835 3RD ST NE	Lead	Y
109	3120433	909 HAMLIN ST NE	Lead	Y
110	3074919	926 14TH ST SE	Lead	Y
111	3099082	1008 MARYLAND AVE NE	Partial Lead	Y
112	3103497	1016 DOUGLAS ST NE	Partial Lead	Y
113	3099379	1115 PARK ST NE	Partial Lead	Y
114	3049889	1222 HAMILTON ST NW	Partial Lead	Y
115	3074086	1240 D ST SE	Partial Lead	Y
116	3094158	1241 JACKSON ST NE	Partial Lead	Y

117	3050798	1334 HEMLOCK ST NW	Partial Lead	Y
118	3087086	1341 Massachusetts Ave SE	Partial Lead	Y
119	3000747	1405 21ST ST NW	Partial Lead	Y
120	3076133	1701 INDEPENDENCE AVE SE	Partial Lead	Y
121	3031203	1814 MONROE ST NW	Partial Lead	Y
122	3031256	1815 MONROE ST NW	Partial Lead	Y
123	3101807	1825 L ST NE	Partial Lead	Y
124	3031244	1839 MONROE ST NW	Partial Lead	Y
125	3031242	1843 MONROE ST NW	Partial Lead	Y
126	3018911	1850 2ND ST NW	Partial Lead	Y
127	3031232	1863 MONROE ST NW	Partial Lead	Y
128	3102874	1931 SUMMIT PL NE	Partial Lead	Y
129	3021140	205 TAYLOR ST NW	Partial Lead	Y
130	3032719	2634 GEORGIA AVE NW	Partial Lead	Y
131	3035596	2823 28TH ST NW	Partial Lead	Y
132	3055102	3030 44TH ST NW	Partial Lead	Y
133	3100121	312 14TH ST NE	Partial Lead	Y
134	3035198	3202 38TH ST NW	Partial Lead	Y
135	3030694	3301 BROWN St NW	Partial Lead	Y
136	3100953	335 17TH PL NE	Partial Lead	Y
137	3041213	3809 ALTON PL NW	Partial Lead	Y
138	3020685	3913 8TH ST NW	Partial Lead	Y
139	3042773	4332 BRANDYWINE ST NW	Partial Lead	Y
140	3039888	5301 RENO RD NW	Partial Lead	Y
141	3039963	5404 39TH ST NW	Partial Lead	Y
142	3019999	545 PARK RD NW	Partial Lead	Y
143	3026522	6213 7TH ST NW	Partial Lead	Y
144	3117318	6413 KANSAS AVE NE	Partial Lead	Y
145	3111743	661 MARYLAND AVE NE	Partial Lead	Y
146	3023669	712 JEFFERSON ST NW	Partial Lead	Y
147	3022241	817 DECATUR ST NW	Partial Lead	Y
148	3022249	833 DECATUR ST NW	Partial Lead	Y
149	3029396	1003 Quebec Pl NW	Lead	N
150	3100293	101 14th St NE	Lead	N
151	3099025	1010 10th St NE	Lead	N
152	3128734	1013 I St NE	Lead	N
153	3121184	106 7TH ST NE	Lead	N
154	3098430	1111 3rd St NE	Lead	N
155	3110546	1112 50th St NE	Lead	N
156	3073850	1121 C St SE	Lead	N

157	3102674	1122 Oates St NE	Lead	N
158	3098424	1123 3rd St NE	Lead	N
159	3099387	1133 Park St NE	Lead	N
160	3121725	119 11th St NE	Lead	N
161	3074305	119 Kentucky Ave SE	Lead	N
162	3102133	1202 Staples St NE	Lead	N
163	3029443	1203 Quincy St NW	Lead	N
164	3049117	1204 Longfellow St NW	Lead	N
165	3102193	1207 Trinidad Ave NE	Lead	N
166	3092716	1211 Carrollsburg Pl SW	Lead	N
167	3121975	1212 E Capitol St NE	Lead	N
168	3049111	1216 Longfellow St NW	Lead	N
169	3102158	1217 Orren St NE	Lead	N
170	3049657	1220 Kennedy St NW	Lead	N
171	3081496	1221 Pleasant St SE	Lead	N
172	3027787	1222 Decatur St NW	Lead	N
173	3098523	1224 5th St NE	Lead	N
174	3032925	1224 Irving St NW	Lead	N
175	3112743	1231 17th St NE	Lead	N
176	3099351	1231 F St NE	Lead	N
177	3025494	125 Madison St NW	Lead	N
178	3104633	1301 Michigan Ave NE	Lead	N
179	3028546	1302 Randolph St NW	Lead	N
180	3047966	1311 Floral St NW	Lead	N
181	3088211	1312 V St SE	Lead	N
182	3079201	1313 T St SE	Lead	N
183	3104222	1315 FRANKLIN ST NE	Lead	N
184	3104411	1317 Otis St NE	Lead	N
185	3049905	1320 Delafield Pl NW	Lead	N
186	3028465	1330 Quincy St NW	Lead	N
187	3104275	1331 Irving St NE	Lead	N
188	3074764	1339 Ives Pl SE	Lead	N
189	3088201	1339 U St SE	Lead	N
190	3018501	134 Bryant St NW	Lead	N
191	3049237	1346 Madison St NW	Lead	N
192	3002833	1349 Wallach Pl NW	Lead	N
193	3048557	1351 Montague St NW	Lead	N
194	3081198	1354 W St SE	Lead	N
195	3100201	1357 C St NE	Lead	N
196	3049774	1365 Hamilton St NW	Lead	N

197	3047321	1371 Kalmia Rd NW	Lead	N
198	3074747	1371 Potomac Ave SE	Lead	N
199	3099975	1380 E ST NE	Lead	N
200	3122443	1387 N Carolina Ave NE	Lead	N
201	3008386	1409 35TH ST NW	Lead	N
202	3075060	1410 D St SE	Lead	N
203	3122338	1412 N Carolina Ave NE	Lead	N
204	3002494	1412 S St NW	Lead	N
205	3030408	1412 Shepherd St NW	Lead	N
206	3058794	1413 Whittier St NW	Lead	N
207	3002488	1424 S ST NW	Lead	N
208	3075194	1427 A St SE	Lead	N
209	3100921	1427 N CAROLINA AVE NE	Lead	N
210	3074936	1429 Ives Pl SE	Lead	N
211	3077908	1435 22nd St SE	Lead	N
212	3002478	1436 S St NW	Lead	N
213	3121925	144 Tennessee Ave NE	Lead	N
214	3125541	149 Todd Pl NE	Lead	N
215	3018597	150 W St NW	Lead	N
216	3028190	1506 ALLISON ST NW	Lead	N
217	3075405	1523 D St SE	Lead	N
218	3008808	1524 31st St NW	Lead	N
219	3100350	1525 D St NE	Lead	N
220	3120163	1533 Constitution Ave NE	Lead	N
221	3100760	1534 D St NE	Lead	N
222	3033890	1603 Hobart St NW	Lead	N
223	3087431	1603 Massachusetts Ave SE	Lead	N
224	3029160	1614 Allison St NW	Lead	N
225	3075735	1614 D St SE	Lead	N
226	3075328	1619 G St SE	Lead	N
227	3075991	1622 G St SE	Lead	N
228	3034043	1628 Argonne Pl NW	Lead	N
229	3088191	1656 U St SE	Lead	N
230	3101136	1671 Rosedale St NE	Lead	N
231	3103049	1705 2nd St NE	Lead	N
232	3006211	1706 NEW JERSEY AVE NW	Lead	N
233	3031603	1707 Irving St NW	Lead	N
234	3010855	1713 Seaton St NW	Lead	N
235	3087472	1714 Massachusetts Ave SE	Lead	N
236	3050063	1724 1st St NW	Lead	N

237	3001246	1728 SEATON ST NW	Lead	N
238	3031583	1747 Irving St NW	Lead	N
239	3031582	1749 Irving St NW	Lead	N
240	3033857	1804 Kenyon St NW	Lead	N
241	3031470	1811 Lamont St NW	Lead	N
242	3112720	1812 M St NE	Lead	N
243	3106027	1826 Jackson St NE	Lead	N
244	3033844	1830 Kenyon St NW	Lead	N
245	3087484	1836 Massachusetts Ave SE	Lead	N
246	3034294	1838 Calvert St NW	Lead	N
247	3075797	19 17th St SE	Lead	N
248	3034591	1908 Biltmore St NW	Lead	N
249	3106034	1920 Jackson St NE	Lead	N
250	3125503	1921 1st St NE	Lead	N
251	3121504	201 13th St NE	Lead	N
252	3124898	2010 3rd St NE	Lead	N
253	3025967	207 Quackenbos St NW	Lead	N
254	3103119	2107 2nd St NE	Lead	N
255	3054722	2110 S St NW	Lead	N
256	3081115	2118 14th St SE	Lead	N
257	3111786	216 17th St NE	Lead	N
258	3010160	2212 38th St NW	Lead	N
259	3002740	2214 14th St NW	Lead	N
260	3018683	2216 1st St NW	Lead	N
261	3130077	223 14th Pl NE	Lead	N
262	3071970	224 S Carolina Ave SE	Lead	N
263	3057169	224 Varnum St NW	Lead	N
264	3124103	226 12th Pl NE	Lead	N
265	3124779	228 Randolph Pl NE	Lead	N
266	3121478	229 Tennessee Ave NE	Lead	N
267	3097707	230 G St NE	Lead	N
268	3106796	2300 MONROE ST NE	Lead	N
269	3097777	231 K St NE	Lead	N
270	3025316	234 Longfellow St NW	Lead	N
271	3103178	2404 3rd St NE	Lead	N
272	3103161	2408 2nd St NE	Lead	N
273	3103215	2421 3rd St NE	Lead	N
274	3033568	2431 Ontario Rd NW	Lead	N
275	3033605	2519 Ontario Rd NW	Lead	N
276	3007308	2521 P St NW	Lead	N

277	3075088	256 15th St SE	Lead	N
278	3107330	2604 Rhode Island Ave NE	Lead	N
279	3034952	2724 36TH PL NW	Lead	N
280	3123349	2912 S DAKOTA AVE NE	Lead	N
281	3035102	2919 Bellevue Ter NW	Lead	N
282	3128151	300 E St NE	Lead	N
283	3103361	3001 7th St NE	Lead	N
284	3036169	3003 Porter St NW	Lead	N
285	3054131	3013 Sherman Ave NW	Lead	N
286	3107957	3014 Channing St NE	Lead	N
287	3036180	3059 Porter St NW	Lead	N
288	3007563	3069 Canal St NW	Lead	N
289	3035880	3105 34th St NW	Lead	N
290	3075154	313 16th St SE	Lead	N
291	3046345	313 Aspen St NW	Lead	N
292	3073087	317 9th St SE	Lead	N
293	3122109	317 Channing St NE	Lead	N
294	3023883	319 Ingraham St NW	Lead	N
295	3036190	3201 Porter St NW	Lead	N
296	3035196	3206 38th St NW	Lead	N
297	3107442	3211 Central Ave NE	Lead	N
298	3038872	3215 Mckinley St NW	Lead	N
299	3019733	3223 Georgia Ave NW	Lead	N
300	3035446	3232 Klingle Rd NW	Lead	N
301	3031787	3309 16th St NW	Lead	N
302	3021247	331 Upshur St NW	Lead	N
303	3038845	3336 Quesada St NW	Lead	N
304	3117544	336 Quackenbos St NE	Lead	N
305	3052583	339 Randolph St NW	Lead	N
306	3029968	3400 Holmead Pl NW	Lead	N
307	3103403	3416 9th St NE	Lead	N
308	3039602	3418 Oliver St NW	Lead	N
309	3075122	342 15th St SE	Lead	N
310	3039610	3427 Oliver St NW	Lead	N
311	3123540	3431 S Dakota Ave NE	Lead	N
312	3036376	3434 30th St NW	Lead	N
313	3041768	3520 35th St NW	Lead	N
314	3105458	3521 17th St NE	Lead	N
315	3019946	3526 Park Pl NW	Lead	N
316	3030559	3529 16th St NW	Lead	N

317	3041785	3530 Porter St NW	Lead	N
318	3053812	3531 16TH ST NW	Lead	N
319	3030480	3545 Hertford Pl NW	Lead	N
320	3029612	3665 13th St NW	Lead	N
321	3017815	37 R St NW	Lead	N
322	3041925	3700 Quebec St NW	Lead	N
323	3041919	3704 Porter St NW	Lead	N
324	3053584	3706 35th St NW	Lead	N
325	3010670	3709 S St NW	Lead	N
326	3040552	3710 Huntington St NW	Lead	N
327	3054973	3710 Massachusetts Ave NW	Lead	N
328	3041071	3712 Brandywine St NW	Lead	N
329	3053577	3721 Windom Pl NW	Lead	N
330	3020538	3811 5th St NW	Lead	N
331	3029267	3907 13th St NW	Lead	N
332	3010536	3912 Benton St NW	Lead	N
333	3020687	3917 8th St NW	Lead	N
334	3039789	3917 LIVINGSTON ST NW	Lead	N
335	3021066	4013 8th St NW	Lead	N
336	3127554	403 K St NE	Lead	N
337	3072073	409 S Carolina Ave SE	Lead	N
338	3023442	410 Farragut St NW	Lead	N
339	3021261	4105 5th St NW	Lead	N
340	3108722	4120 Grant St NE	Lead	N
341	3124209	416 7th St NE	Lead	N
342	3087147	417 15th St SE	Lead	N
343	3102977	42 Q St NE	Lead	N
344	3057003	4204 New Hampshire Ave NW	Lead	N
345	3113553	4206 10th St NE	Lead	N
346	3123490	4210 Clay St NE	Lead	N
347	3051191	4211 Illinois Ave NW	Lead	N
348	3041124	4215 39th St NW	Lead	N
349	3019855	424 Luray Pl NW	Lead	N
350	3074590	427 15th St SE	Lead	N
351	3042269	4304 Fessenden St NW	Lead	N
352	3023359	433 Hamilton St NW	Lead	N
353	3019863	439 Luray Pl NW	Lead	N
354	3044360	4409 Lowell St NW	Lead	N
355	3020469	441 Quincy St NW	Lead	N
356	3051284	4410 New Hampshire Ave NW	Lead	N

357	3051269	4411 Illinois Ave NW	Lead	N
358	3021623	4415 3rd St NW	Lead	N
359	3104746	4418 14th St NE	Lead	N
360	3114986	4419 14th St NE	Lead	N
361	3123201	4423 Kane Pl NE	Lead	N
362	3021630	4429 3rd St NW	Lead	N
363	3114991	4433 14th St NE	Lead	N
364	3044862	4456 Reservoir Rd NW	Lead	N
365	3019923	452 Newton Pl NW	Lead	N
366	3021675	4531 Georgia Ave NW	Lead	N
367	3058406	4550 30TH ST NW	Lead	N
368	3027899	4610 15th St NW	Lead	N
369	3021922	4613 9th St NW	Lead	N
370	3043835	4627 49th St NW	Lead	N
371	3050274	4700 Georgia Ave NW	Lead	N
372	3055284	4703 Macarthur Blvd NW	Lead	N
373	3022212	4711 9th St NW	Lead	N
374	3110720	4718 Sheriff Rd NE	Lead	N
375	3043082	4729 47TH ST NW	Lead	N
376	3058520	4821 Illinois Ave NW	Lead	N
377	3043613	4832 46th St NW	Lead	N
378	3058475	4842 KANSAS AVE NW	Lead	N
379	3022561	4906 9th St NW	Lead	N
380	3045865	4926 Glenbrook Rd NW	Lead	N
381	3024685	502 Oglethorpe St NW	Lead	N
382	3019360	506 Irving St NW	Lead	N
383	3049688	5105 14TH ST NW	Lead	N
384	3072020	517 4th St SE	Lead	N
385	3056836	518 Varnum St NW	Lead	N
386	3020427	519 Rock Crk Church Rd NW	Lead	N
387	3072109	525 6th St SE	Lead	N
388	3049643	5409 13th St NW	Lead	N
389	3024652	5817 7th St NW	Lead	N
390	3020431	605 ROCK CRK CHURCH RD NW	Lead	N
391	3017970	61 S St NW	Lead	N
392	3072466	610 G St SE	Lead	N
393	3127201	610 L ST NE	Lead	N
394	3052525	612 ROCK CRK CHURCH RD NW	Lead	N
395	3127313	617 M St NE	Lead	N
396	3113354	618 Evarts St NE	Lead	N

397	3113293	618 Franklin St NE	Lead	N
398	3099778	619 12th St NE	Lead	N
399	3024736	619 Oneida Pl NW	Lead	N
400	3127162	623 Morton Pl NE	Lead	N
401	3122972	630 15th St NE	Lead	N
402	3019775	631 Lamont St NW	Lead	N
403	3052513	636 ROCK CRK CHURCH RD NW	Lead	N
404	3023157	641 Gallatin St NW	Lead	N
405	3020641	701 Quincy St NW	Lead	N
406	3073488	702 9th St SE	Lead	N
407	3112078	721 16th St NE	Lead	N
408	3022586	728 FARRAGUT ST NW	Lead	N
409	3032501	743 Gresham Pl NW	Lead	N
410	3020365	744 Quebec Pl NW	Lead	N
411	3006880	75 P St NW	Lead	N
412	3032465	760 Gresham Pl NW	Lead	N
413	3032309	768 Irving St NW	Lead	N
414	3047496	7705 13th St NW	Lead	N
415	3022277	804 Delafield Pl NW	Lead	N
416	3006951	81 O St NW	Lead	N
417	3082314	810 Savannah St SE	Lead	N
418	3021694	812 Buchanan St NW	Lead	N
419	3032565	823 Euclid St NW	Lead	N
420	3022565	826 Emerson St NW	Lead	N
421	3032568	829 Euclid St NW	Lead	N
422	3022262	834 Delafield Pl NW	Lead	N
423	3017762	88 R St NW	Lead	N
424	3122831	905 Kent Pl NE	Lead	N
425	3022544	916 Farragut St NW	Lead	N
426	3022794	926 Hamilton St NW	Lead	N
427	3023647	927 Hamilton St NW	Lead	N
428	3049552	1207 Hamilton St NW	Partial Lead	N
429	3126989	1228 Florida Ave NE	Partial Lead	N
430	3049882	1236 HAMILTON ST NW	Partial Lead	N
431	3031926	1249 Kenyon St NW	Partial Lead	N
432	3050056	131 Randolph Pl NW	Partial Lead	N
433	3030013	1337 Newton St NW	Partial Lead	N
434	3047902	1353 Iris St NW	Partial Lead	N
435	3030279	1424 Perry Pl NW	Partial Lead	N
436	3104884	1505 Lawrence St NE	Partial Lead	N

437	3101781	1731 L St NE	Partial Lead	N
438	3076112	1736 Bay St SE	Partial Lead	N
439	3034188	1755 Lanier Pl NW	Partial Lead	N
440	3031410	1802 Kilbourne Pl NW	Partial Lead	N
441	3101830	1836 L St NE	Partial Lead	N
442	3057574	2928 33rd Pl NW	Partial Lead	N
443	3057941	3104 Hawthorne St NW	Partial Lead	N
444	3125297	32 Todd Pl NE	Partial Lead	N
445	3030763	3428 Brown St NW	Partial Lead	N
446	3019513	420 Kenyon St NW	Partial Lead	N
447	3127277	513 Florida Ave NE	Partial Lead	N
448	3091539	52 Galveston Pl SW	Partial Lead	N
449	3052497	522 Park Rd NW	Partial Lead	N
450	3052087	53 V St NW	Partial Lead	N
451	3058043	5304 Reno Rd NW	Partial Lead	N
452	3019336	605 Columbia Rd NW	Partial Lead	N
453	3019657	617 Kenyon St NW	Partial Lead	N
454	3032645	736 Fairmont St NW	Partial Lead	N
455	3047453	7721 14th St NW	Partial Lead	N
456	3032623	780 Fairmont St NW	Partial Lead	N
457	3022793	924 Hamilton St NW	Partial Lead	N

Appendix D
Lead and Copper Monitoring
Standard Operation Procedures (SOPs)

Lead and Copper Rule Sampling SOPs

1. Introduction

EPA Region III requires WASA to collect a minimum of 100 samples in each 2006 six-month monitoring period. WASA must obtain samples from customer homes with lead pipe or copper pipe with lead solder. The LCR defines service line and plumbing criteria that must be met for a home to be included in the 90th percentile compliance calculation. The following tiers categorize the criteria:

- Tier 1 consists of single-family structures that: (1) contain lead pipes, (2) copper pipes with lead solder installed between January 1983 and March 1987, and/or (3) served by lead service lines, including partial lead service lines.

- Tier 2 consists of building and multiple family residences that contain lead pipes or copper pipe with lead solder installed between January 1983 and March 1987, and/or are served by lead service lines.

- Tier 3 consists of single-family structures that contain copper pipes with lead solder installed prior to 1983.

EPA requires WASA to collect samples from all Tier 1 homes. Furthermore, EPA directed WASA to collect 50 percent from Tier 1 sites that contain lead pipes or copper pipes with lead solder and 50 percent of the samples from Tier 1 sites served by a full lead service line.

"In addition, any water system whose distribution system contains lead service lines shall draw 50 percent of the samples it collects during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and 50 percent of the samples from sites served by a lead service line. With respect to compliance with 40 CFR 141.86(a)(8), full lead service lines must be used to meet the requirement to have 50 % of the sample pool to be from lead service lines." (EPA letter to General Counsel, WASA, February 6, 2006)

2. Customer Participants

The Lead and Copper database (herein after referred to as "database") has a list of 148 routine participants who participated in previous lead and copper monitoring. 110 participants' homes have full lead service lines and 38 have partial lead. WQ randomly selected 279 additional full lead service line addresses and 30 partial lead lines from WASA's lead inventory to arrive at a sample set of 457 homes.

For sampling, WQ will prioritize the sample pool list according to the following:

1. The 148 routine participants.
2. Randomly selected addresses with full lead service lines.
3. Randomly selected addresses with partial lead service lines.

WQ will drop bottles at all Priority #1 addresses first, followed by #2 addresses, and so on.

The database has a check box to signify routine participant. The database manager will remove the check for those participants who do not want to participate and those who no longer meet the Tier 1 requirements.

3. Sample Collection Procedures

3.1 Pipe Material Verification

See Pipe Materials Verification QA/QC Procedures listed in Appendix E.

3.2 Customer Notification of Bottle Drop-Off

WQ will mail notification letters to participants 1 week prior to sample bottle drop-off and call customers one business day prior to drop-off.

3.3 Print Address List for Drop-off

At least two days prior to the scheduled drop-off, the database manager will print a list of the selected homes and chain of custody forms with the name, address, and phone number preprinted on the form. This list will be the tracking log for drop-off and collection activities. This person also prints Mapquest directions to each home for use in the field.

3.4 Drop-Off Bottles

The WQ fieldworker will be provided driving directions for each address and a list of the addresses. The fieldworker will conduct the following:

- Verify the directions match the address on the drop off list
- Drop bottles, chain of custody, and instruction form at given addresses.
- Document any necessary correspondence with customer, discrepancies in building information (e.g., customer names, building type, incorrect address), construction on or around premises, or other information on the tracking log.
- On the tracking log at Ft Reno, record date and initial each address where they dropped bottles.

The database manager will record the drop-off dates from the tracking log. In addition, the database manager will update any relevant information gathered in the field, such as building type, routine participant, and contact name. The WQ coordinator will file the tracking log.

If a customer indicates they have replaced the private side of the service line, WQ will contact the customer to verify the information and request documentation. WQ will send all information to the Lead Service Line Replacement Manager for update.

3.5. Sample Collection (Pick-up)

WQ fieldworkers will verify the following information before picking up samples from residence:

Bottles:

- Both bottles are full.
- Bottles have 1st and 2nd draw identified.

Chain-of-Custody or Bottles:

- Date and time stagnation started.
- Date and time of sample collection.
- Address on bottles matches address on chain of custody.

The WQ fieldworker **will not** collect samples from residence if any of the above information is not provided **or** stagnation time is outside of 6 to 18 hours.

When the customer does not complete the stagnation questions and does not supply contact information-

- If contact information was provided then the WQ fieldworker will pick up the bottles. Upon return to Ft Reno, WQ will contact the customer to obtain the necessary information. WQ will document the conversation with customer noting customer name, date, questions asked, and customer responses. WQ will then modify the chain of custody with the appropriate information.

- If contact information was not provided then the WQ fieldworker will not pick up the bottles and leave a note stating the information needed.

When bottles cannot be picked up, the WQ fieldworker will leave a notice describing the information needed or problem with the sample. The notice will instruct the customer to contact WQ to arrange a pick up once the information is completed. The WQ fieldworker will record date and initial each address on the tracking log where they picked up bottles.

3.6 Sampling QA/QC

The sampling coordinator and supervisor will review all bottles and chain of custody form to determine if the sample can be submitted to the laboratory for analysis. The reviewers will initial each chain of custody from acceptable samples. Acceptable samples must meet the following criteria (bottles, stagnation, and plumbing questions):

Bottles and Stagnation

- Bottles full and labeled as 1st draw and 2nd draw.
- 1st and 2nd draw collected from one inside tap.
- Bottles labeled with address (if not on label, then write on both bottles)
- Date and time of stagnation period recorded.
- Stagnation period must be between 6 and 18 hours.
- No leaks.
- No water usage during stagnation period.
- Ice maker, sprinkler system, or humidifier not using water (or N/A noted)
- No treatment filter or filter removed or bypassed for sampling.

Plumbing Questions

The following questions are listed on the Chain of Custody for all participants to complete:

1. Was your house was built after 1982? If so, what date?
2. Were any major plumbing changes conducted between January 1983 and March 1987?
3. After March 1987?
4. If Yes to either questions 2 or 3, please describe (replaced pipes and fixtures in the kitchen, replaced private portion of service line, etc.)

Samples from homes with "*full lead*" service lines – do not require answers to the plumbing questions. (WASA assumes no response means the customer does not know the information or they have not made changes).

- If the questions are not answered, WQ will submit the samples to the WA and attempt to contact the customer to obtain the information.

- If the answer to questions 2 or 3 is Yes and no description is provided—
    - WQ will submit samples to the WA and attempt to contact the customer to obtain the information.

Samples from homes with "*partial lead*" service lines – require answers to the plumbing questions.

- If the customer lists or indicates "private portion of service line" was replaced, then WQ will reject the sample and notify the Lead Service Line Replacement Program Manager.

- If the customer indicates the home was built after 1982 WQ will reject the sample because the private lead service line was required to be replaced during demolition and construction.

- Any changes noted for the inside-home plumbing do not change the Tier 1 status and WQ will submit samples for analysis.

Updating Chain of Custody Forms

When the information in the chain of custody form does not meet the required criteria, WQ will attempt to contact the customer to clarify the sampling procedures or plumbing status. WQ will document conversations with customer noting customer name, date, questions asked, and customer responses. WQ will then modify the chain of custody with the appropriate information and file with the chain of custody.

When information is missing on the chain of custody, but supplied on the bottles, WQ will transfer the information to the chain of custody, note the information came from the bottles, initial, and date.

3.7 Submit Samples to Laboratory

WQ will deliver all acceptable samples with chain of custody forms to Washington Aqueduct laboratory by the end of the sample event week.

- The WA will copy the forms and returns to WQ employee.
- The WQ coordinator will file copies of chain of custody forms at the water quality office.

4. Data Recording

4.1 Field data

From the tracking log (see Section 3.3), the database manager will enter bottle drop off date and note (checkbox in database) whether bottles were returned. From the Chain of Custody forms, the database manager will record the following:

- Whether the sample was rejected
- Updated contact information
- Answers to plumbing questions including private side pipe replacements

4.2 Laboratory Results

The WA e-mails the test results in two files—Excel summary file and pdf laboratory report. The pdf is the official report.

WASA will enter the following from the pdf into the database—

- Lead, copper, and iron results in mg/L for first and second draws
    - Rounded to three decimal points
    - For those reported < the detection limit, WQ will enter the detection limit as zero.
    - Non-detects will be entered as zero
    - In the EPA compliance report, the data will be noted as "zero may have been reported by the laboratory as non-detect or less than the detection limit".

- Date received from the WA

WASA will mail a letter to each customer describing their test results and any precautionary action recommended for the homeowner. These will be mailed to participants within 3 business days after receipt of data.

4.3 Database QA/QC

WQ will query the data to ensure no data are missing and data are accurate. At a minimum, WQ will conduct the following analyses for test results:

1. No blank test results for lead, iron, or copper for first and second draws.
2. From the database, count number of addresses with WA receive date. Compare to the WA Excel file and Chain of Custody forms. The three sources should agree.
3. For the recent batch, calculate and compare average, maximum, and 90^{th} percentiles from database and WA Excel file. Analyze all tests—lead, iron, or copper for first and second draws. (The average may differ slightly due to rounding).

The Water Quality supervisor or manager will review data analyses within 3 business days after receipt of data from WA.

5.0 Reports

5.1 Monthly Reports

By the 3^{rd} of each month, the WQ coordinator will submit an update of the LCR monitoring to the supervisor for distribution in the GM Report. The update should include the following lead data, at a minimum:

- 90^{th} percentiles of all 1^{st} draws and all 2^{nd} draws
- Number of samples submitted for analysis for the current semester

- Number of samples above the action level (15 ppb)

5.2 Water Quality Website

Following the end of each monitoring period, WQ will post the lead and copper results to the WQ website.

5.3 EPA Reports

WQ will submit the LCR compliance report to the Office of General Council within 14 days following receipt of data and by the end of the compliance period (i.e., the earlier of the two dates).

WQ will ensure reports are submitted to EPA within the first 10 days following the end of each applicable monitoring period. Reports will be submitted to EPA by certified mail (hard copy) and through e-mail.

Appendix E
Lead and Copper Monitoring
Pipe Material Verification QA/QC Procedures

LCR Sampling Quality Assurance Process

Creation Date: 5/25/2006
Revision Date: 6/9//2006

Background: The lead and copper rule currently requires the District of Columbia Water and Sewer Authority (WASA) to sample a minimum of 100 Tier 1 sites with at least ½ of the sites with full lead service lines for two consecutive semesters (January through June and July through December). The sampling of the 100 sites is evenly distributed over the course of the monitoring period. Our customers, using the form and instructions provided by WASA, collect these samples. First and second draw samples are collected and analyzed for lead, copper and iron using EPA Method 200.8 at a certified lab (Washington Aqueduct). WASA mails sample results to the customer along with lead advisory information once lab reports are received from the certified lab. WASA will provide the sampling results to customers within three business days from the receipt of the results from the laboratory.

Lead service line replacement activities and customer plumbing modifications may occur at any time during the monitoring period. WASA maintains a database with numerous quality assurance checks to ensure that all LCR Sample Set locations meet the tier 1 criteria when the locations are selected, sampled, analyzed and when their results are included in the LCR compliance calculation. Any site that no longer meets tier 1 criteria is removed from the LCR Sample Set, and noted in the LCR Compliance Monitoring Report. WASA submits a request to EPA to invalidate any sample that has been analyzed and subsequently determined to no longer meet the tier 1 criteria. Upon EPA approval, these invalidated samples results are included in the LCR Compliance Monitoring Report, but are not included in the compliance calculation.

Purpose: The LCR Sampling Quality Assurance process describes the various activities performed to ensure compliance and integrity related to Lead and Copper Rule sample location tier 1 status, test result tabulation and reporting.

LCR Sampling Quality Assurance Activities

Id	Activity	Description	Owner
1.	**LCR Sample Base Maintenance**	Water Quality has established a list of locations that formed the LCR Sample Set. Locations are removed from the LCR Sample Set based on customers' request to end participation, or the location no longer meets Tier 1 criteria due to lead service replacement activities by WASA or the customer. A list of locations removed from the LCR Sample Set is included in the LCR Compliance Monitoring Report. The 2006 LCR Sample Set currently consists of 457 locations that meet the criteria for Tier 1 sites.	Water Quality
2.	**LCR Sampling Data**	An LCR Indicator identifies the LCR Sample Set within the WASA Customer Information System (CIS) and Maximo database. The CIS application also serves as the authoritative source for service line composition. LCR sampling results and Chain of Custody information is stored in a separate database maintained by Water Quality.	Water Quality Customer Service DETS
3.	**LCR Tracking and Reporting**	**The Department of Engineering and Technical Services (DETS)** through its Lead Replacement Project Management group (LRPM) is responsible for processing and maintaining service line replacement activity from a variety of sources within WASA. This information includes lead service test pit and replacement activities as well as various other service line related maintenance activities. LRPM updates their files daily based on information returned from the field.	Water Services Customer Service DETS Water Quality

Id	Activity	Description	Owner
		Water Services (DWS) is responsible for identifying and reporting service line related maintenance activities that impact the LCR Sample set. Maximo serves as the tracking mechanism for DWS maintenance activities. Water Services is also responsible for providing LCR impacting activities to DETS for inclusion within their tracking database. When a lead service line is replaced by DWS a copy of the Maximo work order is sent to LRPM for inclusion in their replacement database. This information is then passed to Customer Services in addition to the contractor replacements on the bimonthly updates to ensure CIS record is updated. **Customer Service** is responsible for identification of changes in either public or private service line segment material as contained within the CIS Water Services screen. If the replacement was on a Sample Set Location then Customer Services notifies Water Quality to flag the change in the LCR database. **DETS** is responsible for entering new construction and renovation activities involving service line replacement (i.e. TAPs) as part of the permit process. This information is entered into the CIS Water Services and TAP screens as well as into Maximo. **Water Quality** is responsible for maintaining the LCR Sample Set and receiving updates from the other supporting organizations. A customer survey is provided along with the Chain of Custody form to customers who have been selected for water sampling. This survey is intended to solicit information from the customer concerning any known changes that may affect their water quality (e.g. service line replacement, major plumbing changes within the residence, etc). Water Quality is responsible for reviewing these surveys, identification of changes to the private segment of the service line, and communicating these premises to Customer Service for update of composition within the CIS application. The survey information may affect Tier 1/Tier 2 categorization.	

4.	**LRPM Quality Assurance**	DETS provides Customer Services with a bi-monthly update that consists of the *original* and *current* public and private state of the entire LCR sample set that reflects all known test pit and replacement activities. The update is processed against CIS to update inventory records. Any changes to the LCR Sample Set are sent to Water Quality to update the LCR database. Following is a description of the Quality Assurance activities performed by Customer Service on the LRPM update file provided to Water Quality. 1. The LRPM update file is reviewed to ensure that it contains all of the LCR Sample Set premises. 2. The Water Quality LCR sample set is reviewed to ensure that all of the LRPM updates have been applied correctly.	Customer Service QA **DETS**
5.	**Customer Services Assurance**	A report is executed on a bi-monthly basis that identifies *all* activities performed by Water Services and Sewer Services that may have an impact on the LCR sample set (e.g. Taps, etc). The source of this information is the Maximo database. This report is forwarded to Customer Services as a second check to ensure that any record changes to the LCR Sample Set are captured. Following is a description of the Quality Assurance activities performed by Customer Service on the Maximo report provided to Water Quality. 1. The Maximo report is reviewed to ensure that it contains all LCR sample	Customer Service QA Water Services Water Quality

		set premises. 2. The Water Quality LCR sample set is reviewed to ensure that all of the Maximo updates have been applied correctly. 3. Customer Service QA provides Water Quality with a bi-monthly update that consists of the *original* and *current* public and private *state* of the entire LCR sample set as contained within the CIS Water Services screen. This update *highlights* changes in composition since the last quality assurance-reporting period.	
6.	**Chain of Custody and Customer Survey Quality Assurance**	Customer Service QA is responsible for reviewing *all* customer surveys to verify that service line replacement changes have been identified and updated within the CIS application.	Customer Service QA
7.	**Water Testing Quality Assurance**	Water Quality is responsible for updating test results and survey information into the LCR database received from the Washington Aqueduct. Customer Service QA is responsible for reviewing all Washington Aqueduct Laboratory test results received by Water Quality to perform a second check that Water Quality updated the information correctly in the LCR database.	Water Quality Customer Service QA
8.	**EPA Report Audit**	Customer Service QA is responsible for reviewing the EPA Report published by Water Quality to ensure that the premises contained within the report meet tier 1 criteria. Exceptions are noted and targeted for removal from the report as appropriate. Customer Service QA is responsible for preparing a monthly LCR Sampling Quality Assurance report. This report will summarize QA processes and results for the previous month. This will ensure that the data is reviewed monthly and also rolled up for the semiannual or annual compliance filing. .	Customer Service QA

Glossary

(WASA)	District of Columbia Water and Sewer Authority
(LCR)	Lead and Copper Rule
(DETS)	Department of Engineering and Technical Services
(QA)	Quality Assurance
(LRPM)	Lead Replacement Project Management group
(CIS)	Customer Information System