

Conductivity Survey

Wolf Run Watershed Fayette County, Kentucky

Prepared for
Lexington-Fayette Urban County Government
Division of Environmental Quality

Revision 1, July 20, 2012

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I. INTRODUCTION

This report summarizes survey results for specific conductance or conductivity in the Wolf Run watershed. The survey was conducted under a Section 319(h) Nonpoint Source Implementation Program Cooperative Agreement (#C9994861-09) awarded by the Commonwealth of Kentucky, Energy and Environment Cabinet, Department for Environmental Protection, Division of Water (KDOW) to Lexington-Fayette Urban County Government (LFUCG) based on an approved work plan. The survey was conducted by the volunteer group, Friends of Wolf Run (FOWR), according to the pre-approved *Quality Assurance Project Plan* (QAPP, Third Rock 2011).

Conductivity was recently listed as a cause of impairment to Wolf Run according to KDOW's 2010 303(d) list of Surface Waters (KDOW 2010). Conductivity is a measure of water's ability to conduct an electric current, and it indicates the concentration of dissolved ions in the water. Rapid changes in the conductivity of a waterbody can indicate groundwater input, catchment geology, or pollution. Kentucky has not established a regulatory limit for conductivity in the Bluegrass Region. In order to provide a point of comparison for data evaluation, LFUCG uses a non-regulatory reference point of 500 $\mu\text{S}/\text{cm}$ for conductivity. Historic records from South Elkhorn Creek at Fort Spring, located downstream of Wolf Run, show conductivity levels ranging from 200 to 400 $\mu\text{S}/\text{cm}$ under various flow conditions (Hendrickson 1964). Historic groundwater records from the Lexington Group geologic unit show conductivity ranging from 307 $\mu\text{S}/\text{cm}$ to 3010 $\mu\text{S}/\text{cm}$ with the limestone chemical weathering byproducts calcium and magnesium bicarbonates providing the most abundant contributions to the conductivity levels (Hendrickson 1964).

A comprehensive survey of conductivity under low to medium stream flow conditions gives a

snapshot of conditions in the watershed indicating possible locations for pollution for further analysis and remediation. Although specific conductance or conductivity had been analyzed in several studies and in volunteer surveys in the watershed, a comprehensive survey performed under established quality control criteria under low to medium flow conditions had not been conducted. The objective of this study was to perform measurements for the entire watershed during a short window of time during low to medium flow conditions.

II. METHODS

The Wolf Run conductivity survey was conducted by volunteers trained in the methods established by the KDOW approved QAPP. Eight individuals, including Water Quality Sampling Students from Bluegrass Community and Technical College Environmental Science Technology Program (BCTC ESTP), and community volunteers were trained on September 15, 2011 at BCTC. An attendance log for the training event is included in Appendix A. The training was conducted by BCTC staff and individuals listed on the Kentucky Watershed Watch Sampler Registry (see Appendix A). Training included proper calibration and measurements using conductivity meters, GPS units, and thermometers; proper data recording; and sampling coordination.

According to QAPP specifications, the survey was to be performed when flow measurements at the USGS gage at the mouth of Wolf Run (Old Frankfort Pike) were between 0.5 and 5 cubic feet per second (cfs). The FOWR Sampling Coordinator, Ken Cooke, monitored the USGS gage and notified the sampling teams when conditions were appropriate. In order to limit the temporal variations in the conductivity levels, efforts were to be made to conduct the entire survey within a one-week period unless delayed by a precipitation event. Per QAPP

specifications, if the sampling was interrupted by a precipitation event, the FOWR Sampling Coordinator was to reschedule the remaining sampling a minimum of 72 hours after the precipitation had ceased and the flow returned to less than five cfs at the Old Frankfort Pike gage.

The watershed was divided into 24 stream segments as shown in Exhibit 1, page 3, and

summarized in Table 1 below. Streams and tributaries were measured at approximately 100-foot intervals where water was present. Each volunteer team was equipped with a GPS unit, digital camera, conductivity meter, thermometer, and field datasheets; each team was assigned one or more segments to survey.

TABLE 1 – CONDUCTIVITY SURVEY STREAM SEGMENTS

Segment ID	Stream	Stream Segment
1A	Wolf Run	Mouth to Old Frankfort Pike
1B	Wolf Run	Old Frankfort Pike to New Circle Rd
1C	Wolf Run	New Circle Rd to Cambridge Dr
1D	Wolf Run	Cambridge Dr to Versailles Rd
1E	Wolf Run	Versailles Rd to Appomattox Rd
1F	Wolf Run	Appomattox Rd to Faircrest Dr
1G	Wolf Run	Faircrest Dr to Lafayette Pkwy
1H	Wolf Run	Lafayette Pkwy to railroad tracks north of Southland Dr
1J	Wolf Run	Railroad tracks to Nicholasville Rd
2A	McConnell Branch	Wolf Run to Preston's Cave Spring
2B	McConnell Branch	McConnell Springs Branch through Stormwater Structure
3A	Vaughn's Branch	Wolf Run to Oxford Circle
3B	Vaughn's Branch	Oxford Circle to Versailles Rd
3C	Vaughn's Branch	Versailles Rd to Summerville Rd/Golf Course Fence
3D	Vaughn's Branch	Picadome Golf Course
3E	Vaughn's Branch	Picadome Golf Course Fence to Gibson Ave Culvert
3F	Vaughn's Branch	Simpson Ave to railroad tracks
4A	Big Elm Tributary	Sinkhole on Picadome Golf Course to Harrodsburg Rd
4B	Big Elm Tributary	Harrodsburg Rd to railroad tracks via Bob-O-Link Dr
4C	Big Elm Tributary	Nicholasville Rd to behind Central Baptist Hospital
5A	Cardinal Run	Wolf Run to Versailles Rd
5B	Cardinal Run	Versailles Rd to End of Chinquapin Ln
6	Gardenside Tributary	Upstream of Parkers Mill Rd
7	Unnamed Tributary	Wolf Run under Alexandria Dr and Old Frankfort Pike to pond

Before and after monitoring activities on a given day, the volunteers calibrated conductivity meters and recorded results on the field datasheet along with the meter identification number for traceability purposes. Volunteers surveyed from downstream to upstream within each reach, so as not to contaminate the measurement (NOTE: datasheets in Appendix B are incorrectly indicate

the survey was conducted in the opposite direction). At approximately 100-ft intervals, the volunteers recorded the time of measurement, latitude and longitude (NAD83 decimal degrees), conductivity, temperature, and additional observations (including anomalous conditions), as applicable. Photographs were taken to document unusual conditions.



Datasheets and photos were to be submitted to the FOWR Sampling Coordinator for compilation into a Microsoft Excel database. The data was then to be submitted to Third Rock Consultants, LLC (Third Rock) for quality review and analysis.

III. RESULTS

The conductivity survey was conducted at 373 sites on eight days from September 17, 2011 to October 11, 2011 as indicated in Table 2. Each

stream segment was surveyed within a single day. All segments were sampled except for Segment 4B, which was dry during the sampling period, and Segment 7, which was not surveyed due to access concerns. Raw datasheets for each stream segment are shown in Appendix B and in the spreadsheet database shown in Appendix C.

TABLE 2 – CONDUCTIVITY SURVEY DATES AND SAMPLERS BY STREAM SEGMENT

Segment ID	Stream	Sampling Date	Sampler	Number of Observations
1A	Wolf Run	September 17	JF & JD	18
1B	Wolf Run	September 17	JF & JD	21
1C	Wolf Run	October 11	KC	24
1D	Wolf Run	September 18	BR	22
1E	Wolf Run	September 17	WH & BB	19
1F	Wolf Run	October 10	BE	40
1G	Wolf Run	September 24	CJ & LC	31
1H	Wolf Run	October 4	GM & TY	8
1J	Wolf Run	October 4	GM & TY	10
2A	McConnell Branch	October 4	BR, JA & PC	27
2B	McConnell Branch	October 5	LT	17
3A	Vaughn's Branch	October 4	BR & JA	29
3B	Vaughn's Branch	September 18	BR	9
3C	Vaughn's Branch	October 10	KC	14
3D	Vaughn's Branch	October 4	ND & AB	10
3E	Vaughn's Branch	October 4	ND & AB	7
3F	Vaughn's Branch	October 4	KC	1
4A	Big Elm Tributary	October 10	KC	2
4B	Big Elm Tributary	Not sampled - Dry	-	-
4C	Big Elm Tributary	October 11	BR	13
5A	Cardinal Run	October 9	AS & SM	14
5B	Cardinal Run	October 10	KC & BH	28
6	Gardenside Tributary	October 11	KC	8
7	Unnamed Tributary	Not sampled - Access	-	-

Figure 1, page 6, shows the discharge measurements at the USGS gage on Wolf Run at Old Frankfort Pike (03289193) for the sampling period with the sampling date for each segment indicated. Sampling was initially conducted on

September 17 during flow conditions of 5.3 cfs, slightly above the QAPP specified levels (five cfs); however, these levels are comparable with medium to low flow discharges for the watershed. According to the weather reports from the KLEX

airport station¹ precipitation was recorded on four days within the sampling period including September 19 (0.92 inch), 21 (0.27 inch), 23 (0.21 inch), and 26 (0.92 inch). Segment 1G was sampled on September 24 under higher flow conditions (approximately eight cfs at the USGS gage) than the rest of the segments since dry conditions were observed during flows below five cfs at the USGS gage. On September 26, 0.92 inch of precipitation delayed sampling until October 4. All remaining sampling was conducted within a one-week period. All sampling was conducted at flow levels above one cfs at the gage.

Exhibit 2, page 7, shows the conductivity levels at the 373 sites measured during the survey and Exhibit 3, page 8, indicates the measured temperatures. Typographical errors were noted in the site location coordinates at the following sites: 1G at 11:34 AM, 3C at 1:01PM, 3B at 4:54 PM, and all sites on segments 3D and 3E. For locations in which a typographical error was noted, the sites were located on the exhibits by comparison to other sites in the reach and by the relative coordinate positioning. Thus, all exhibits accurately reflect the data collected.

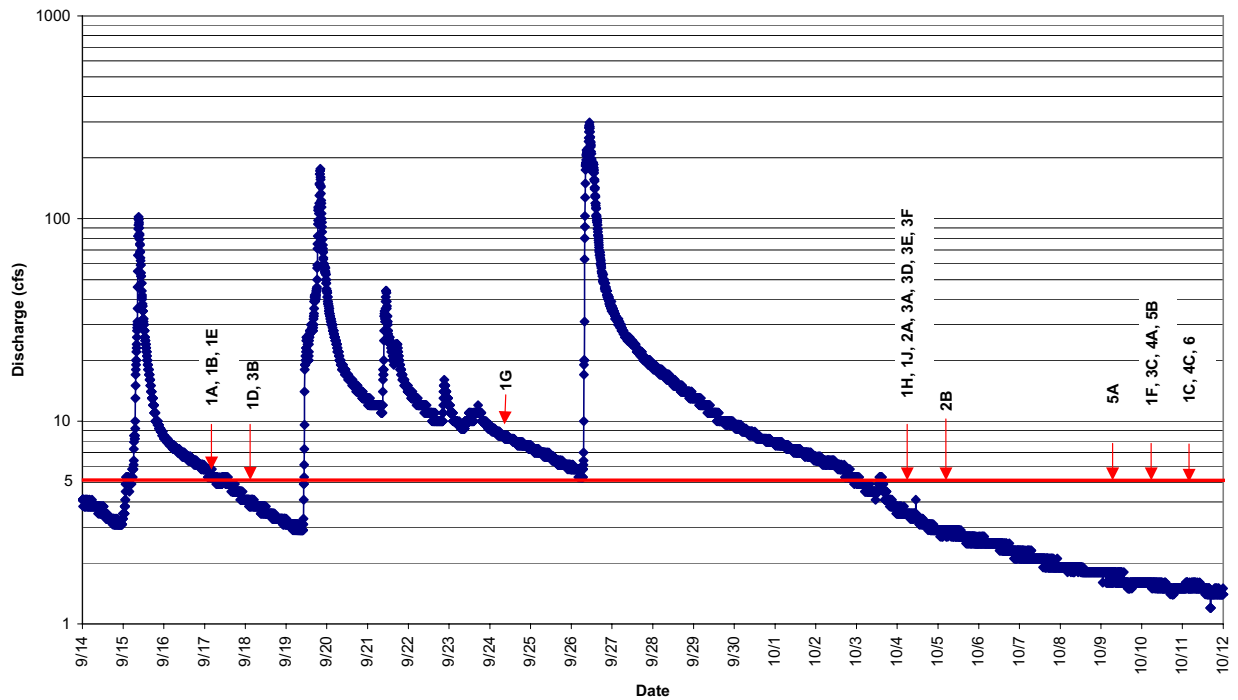
All conductivity measurements were recorded on meters that calibrated with a range of 99% to 104% of the known value, indicating the measurements are of acceptable quality for the project objectives. Abnormal conditions were recorded at several locations during the survey as indicated on Exhibits 2 and 3 (callout notes). Ponded or standing water was measured in segments 1G (Wolf Run), 3D (Vaughn's Branch) and 4A (Big Elm Tributary). An oily sheen was noted on one segment of Wolf Run (1G). Segment 4C (Big Elm Tributary) was noted to be filled with fresh grass and flows to be minimal.

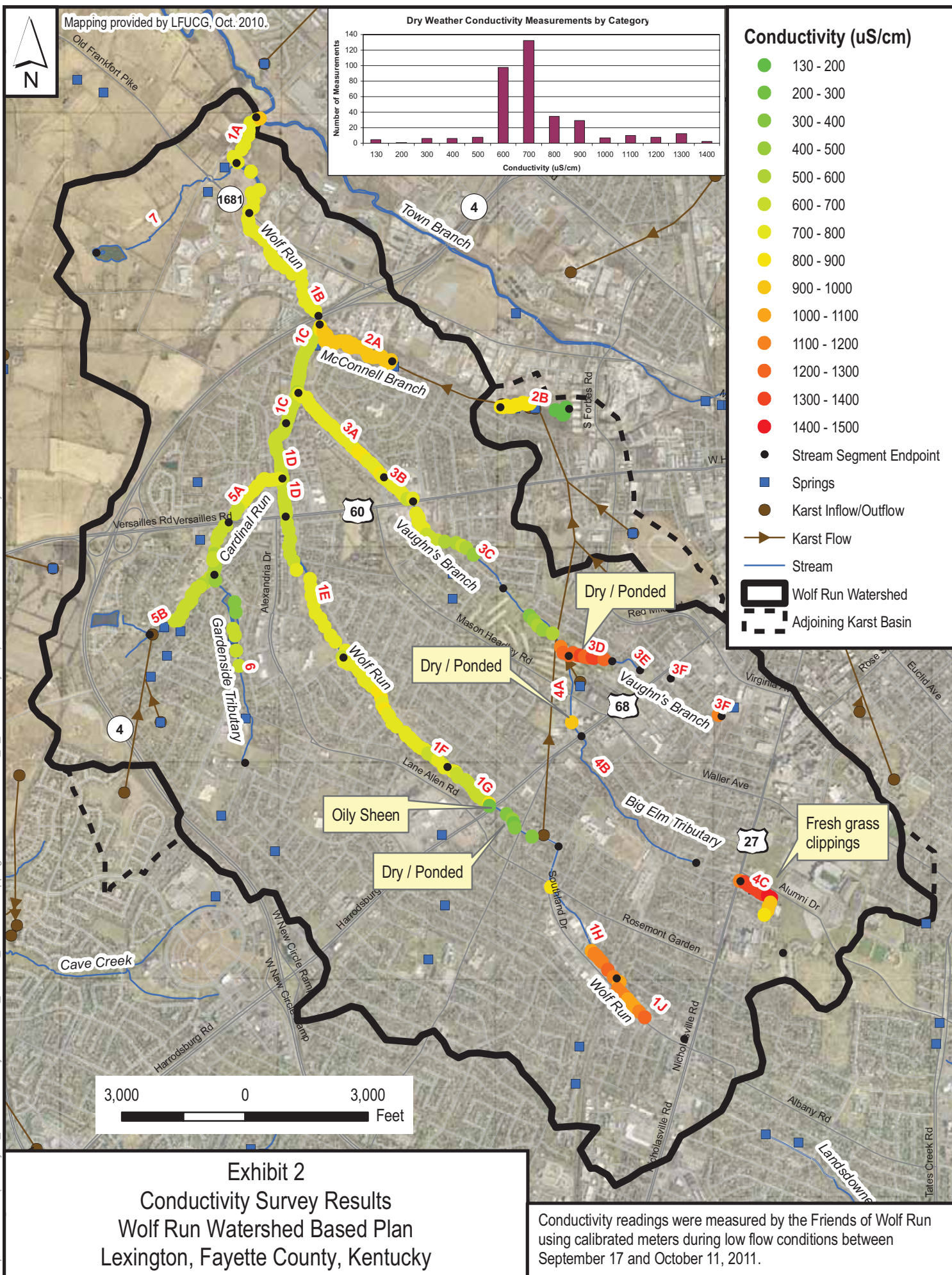
The results for each segment are summarized in Table 3, page 9. Based on the short timeframe over which the sampling data was collected, the survey provides a "snapshot" of conductivity levels for the Wolf Run watershed. Conductivity measurements ranged from 130 $\mu\text{S}/\text{cm}$ to 1440 $\mu\text{S}/\text{cm}$ with an average of 763 $\mu\text{S}/\text{cm}$. The water temperature ranged from 13°C to 28°C with an average temperature of 17.3°C. In general the highest conductivity levels were located in the headwaters of the watershed with the conductivity at the mouth of the watershed measuring 720 $\mu\text{S}/\text{cm}$. Because of the differences between the dates of sampling for various segments, conclusions should not be drawn from changes in conductivity from one segment to another except for general trend purposes.

The highest conductivity level (1440 $\mu\text{S}/\text{cm}$) was measured on the Big Elm Tributary at Alumni Drive and University Drive (4C) just downstream of a concrete pipe. The conductivity levels increase in conjunction with a drop in temperature of 1.1°C from upstream to downstream, suggesting that this outfall is a large source of conductivity. The Big Elm tributary was dry downstream in segments further downstream (4A and 4B) except for one location near Saint Joseph's Hospital, which was ponded, where the conductivity was 970 $\mu\text{S}/\text{cm}$. Under normal conditions, all flow enters the karst basin at the sinkhole on Picadome Golf Course and emerges at McConnell Springs.

¹ <http://www.wunderground.com>

**FIGURE 1 – STREAM FLOW AT USGS GAGE WOLF RUN AT OLD FRANKFORT PIKE (03289193)
DURING SAMPLING PERIOD**





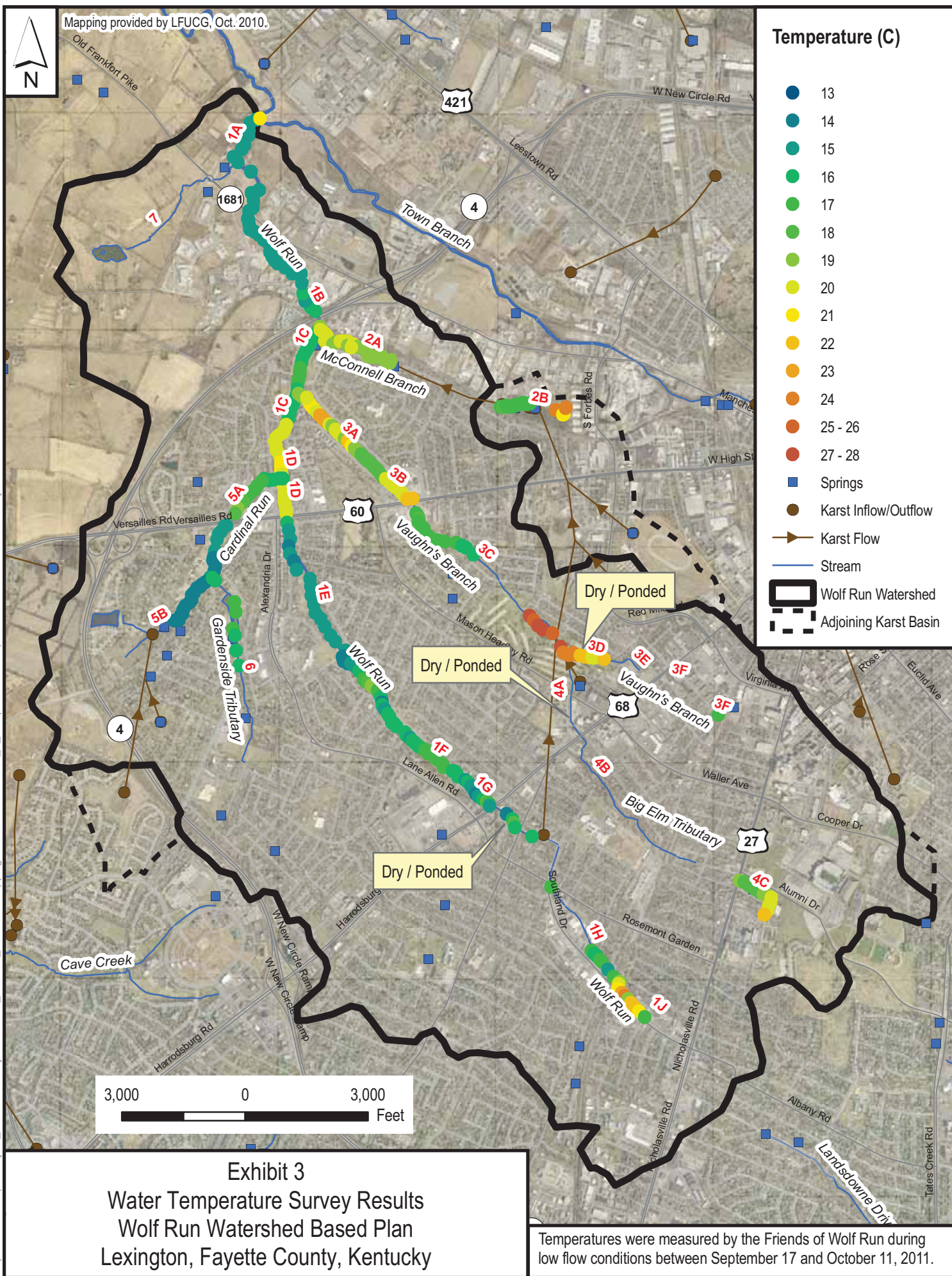


TABLE 3 – CONDUCTIVITY AND TEMPERATURE BY STREAM SEGMENT

Segment	Stream	Conductivity (µS/cm)			Temperature (deg C)		
		Min	Average	Max	Min	Average	Max
1A	Wolf Run	720	731	920	14.8	15.2	20.1
1B	Wolf Run	720	735	750	14.8	15.0	15.2
1C	Wolf Run	600	630	670	15.5	15.9	16.5
1D	Wolf Run	660	664	670	20.0	20.1	20.6
1E	Wolf Run	620	701	740	13.0	14.8	16.0
1F	Wolf Run	650	746	820	14.0	16.0	19.0
1G	Wolf Run	280	585	810	14.0	15.8	18.0
1H	Wolf Run	860	1124	1270	14.5	16.4	17.0
1J	Wolf Run	1040	1111	1280	17.0	20.7	24.0
2A	McConnell Branch	870	924	940	18.3	19.0	20.0
2B	McConnell Branch	130	655	870	16.3	18.2	23.7
3A	Vaughn's Branch	750	789	820	17.8	19.3	22.2
3B	Vaughn's Branch	700	712	730	20.0	20.2	21.1
3C	Vaughn's Branch	420	661	740	16.0	16.6	17.5
3D	Vaughn's Branch	380	814	1280	24.0	26.1	28.0
3E	Vaughn's Branch	1290	1306	1320	20.0	21.7	24.0
3F	Vaughn's Branch	1180	1180	1180	17.0	17.0	17.0
4A	Big Elm Tributary	970	970	970	Not measured		
4C	Big Elm Tributary	900	1237	1440	17.8	18.8	21.1
5A	Cardinal Run	700	710	720	16.0	17.0	19.0
5B	Cardinal Run	570	620	670	13.5	14.1	14.5
6	Gardenside Tributary	360	541	670	16.0	16.3	17.0
Overall		130	764	1440	13.0	17.3	28.0

The second highest conductivity levels were found in Vaughn's Branch upstream of the karst lineament that flows to McConnell Springs (3D/3E/3F). At the outfall between Simpson Avenue and the CSX railroad (3F), the conductivity was 1180 µS/cm and the temperature 17.0°C, but was dry in downstream segments. Water was pooled in Vaughn's Branch on the Picadome Golf Course with highest temperatures recorded in that segment ranging from 20.0°C to 28.0°C. The conductivity level gradually decreased from 1300 µS/cm at

the most upstream location on 3E to 1150 µS/cm at the karst lineament. It then drastically decreased to levels between 380 µS/cm and 510 µS/cm, some of the lowest levels recorded. This large drop in conductivity should be investigated further.

Measurements on Vaughn's Branch resumed near Pine Meadow Road (3C) with conductivity levels of 420 µS/cm and gradually increased to 740 µS/cm over the reach as temperatures decreased from 17.0°C to 16.0°C.

Over the segments 3B and 3A of Vaughn's Branch, conductivity levels remained relatively constant ranging between 700 $\mu\text{S}/\text{cm}$ and 820 $\mu\text{S}/\text{cm}$ but several jumps in temperature, most likely due to the number of outfalls in the area, signal additional source contributions before the confluence of Vaughn's Branch and Wolf Run.

Cardinal Run (5A and 5B) had average conductivity levels, ranging from 570 $\mu\text{S}/\text{cm}$ to 720 $\mu\text{S}/\text{cm}$, but the headwaters were the coldest of any segment with all measurements below 15.0°C. The Gardenside tributary (6) had some of the lowest conductivity levels at the Cross Keys Pond where levels ranged from 360 $\mu\text{S}/\text{cm}$ to 390 $\mu\text{S}/\text{cm}$ with temperatures measuring 16.5°C.

As with Vaughn's Branch and the Big Elm tributary, the headwaters of Wolf Run also had high conductivity levels. On the reach along Southland Drive between Rambler Road and Cherry Bark Drive (1H and 1J), the conductivity ranged from 860 $\mu\text{S}/\text{cm}$ to 1280 $\mu\text{S}/\text{cm}$. The temperature was variable over this reach as well, ranging from 14.5°C to 24.0°C. The high conductivity levels and range of temperatures are a result of the large number of parking lots and stormwater outfalls over this reach.

Wolf Run was largely dry upstream of the Southland Drive karst swallet, but flow resumed just downstream of it. Conductivity levels over this reach were low (280 $\mu\text{S}/\text{cm}$ to 410 $\mu\text{S}/\text{cm}$) between Harrodsburg Road and Lone Oak Drive (1G), but an increase from 300 $\mu\text{S}/\text{cm}$ to 810 $\mu\text{S}/\text{cm}$ was recorded just downstream of Harrodsburg Road. An oily sheen was noted on the water at this location as well as an increase in temperature from 15.0°C to 18.0°C over the reach. This source of increased temperature and conductivity should be further investigated.

Further downstream on Wolf Run (1A-1F), some temperature fluxes due to spring contributions

and the lowest temperature measurement at the man-made dam just upstream on Roanoke Drive (1E) were notable, but otherwise the conductivity levels and temperature remained relatively constant.

The lowest conductivity levels in the watershed were measured on Segment 2B at the Stormwater Pond constructed by LFUCG upstream of McConnell Springs. Water temperatures were relatively high at this location, ranging from 20.1°C to 23.7°C, which was expected since the water was ponded. As might be expected based on the high conductivity levels measured in the headwaters which drain into its karst basin, McConnell Springs (2B) had elevated conductivity levels from 860 $\mu\text{S}/\text{cm}$ to 870 $\mu\text{S}/\text{cm}$. However, downstream of Preston's Cave (2A), levels increased to a range from 870 $\mu\text{S}/\text{cm}$ to 940 $\mu\text{S}/\text{cm}$. While the difference in the levels may be due to sampling on different days (2B was sampled on October 5, 2A on October 4), the difference may also indicate possible inputs into the karst system between the two locations.

University of Kentucky Water Quality Investigations

In an effort independent of this study, the University of Kentucky, located in the headwaters of the Vaughn's Branch and Big Elm Tributary watersheds, has conducted extensive investigations to determine the source of the high conductivity levels from sources within their MS4 area. In a *Water Quality Investigation Report* dated November 3, 2011, the University explains their findings to date related to the "Simpson Avenue Outfall" and the "WR-1 Outfall" which relates to the high conductivity levels noted in segments 3F and 4C, respectively, in this study.

For the "Simpson Avenue Outfall," investigations indicated that a potential source for the high conductivity levels include non-university related sources such as runoff from South Limestone

and commercial gas stations, as well as University related sources. The University indicated that much of the contribution may be due to natural sources, including a suspected historic stream flowing under Seaton Center, groundwater infiltration into the stormsewer system, and several springs with high conductivity levels. However, the investigations identified a leaking cooling tower and greenhouse cooling equipment as contributing sources as well. The leaking cooling tower water was redirected into the sanitary sewer system in mid-October 2011 and the University is preparing short and long-term retrofitting plans to prohibit the discharge of non-contact cooling water originating from the greenhouses. Thus, one source of conductivity has been removed from the watershed and further work is ongoing by the University to determine other sources.

For the “WR-1 Outfall,” the dominant source of the high conductivity levels was traced up to two natural springs (called “Parking Lot Spring” and “Detention Basin Spring” in the investigation) that are located in the detention basin upstream of the pipe outfall noted in Segment 4C of this report. The University also noted a pipe near the mouth of segment 4C that was discharging high levels of conductivity and a small dry-weather discharge from Shawneetown Apartments with high *E. coli* levels (potentially indicating a sanitary waste source). The University plans to continue investigations of these sources.

IV. CONCLUSIONS & RECOMMENDATIONS

As a result of this survey, a comprehensive “snapshot” of low flow, dry weather conductivity levels in the Wolf Run watershed has emerged. This survey should form the basis of more detailed investigations into hot spot areas and be an aid to focus remediation efforts on the largest sources of conductivity in the watershed. The lowest conductivity levels measured were from the recently completed LFUCG Stormwater Pond

at McConnell Springs, demonstrating that low levels are achievable in the watershed through best management practices.

Several areas have been identified for further investigation or remediation as a result of this survey, including:

High Conductivity Levels:

- Big Elm Tributary upstream on Nicholasville Road (4C)
- Vaughn’s Branch headwaters (Segments 3D, 3E, and 3F)
- Wolf Run Headwaters along Southland Drive (1H and 1J)

Changes in Conductivity:

- Oily sheen and increase in conductivity on Wolf Run just downstream of Harrodsburg Road (1G).
- Increase from McConnell Springs (2B) to Preston’s Cave (2A)
- Drop in conductivity on Picadome Golf Course (3E to 3D)

Additional monitoring should be conducted at these locations to indicate whether these problems are temporal or long-term in nature. Investigations into the root causes should be initiated in order to provide the most effective remediation. The University of Kentucky’s water quality investigations provide a model for investigations in other areas of the watershed. The investigations into the “Simpson Avenue Outfall” and “WR-1 Outfall” have revealed several sources that may be further investigated by LFUCG to determine the source and nature. Findings should be incorporated into the Wolf Run watershed based plan.

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2011.

APPENDICES

APPENDIX A – TRAINING EVENT ATTENDANCE LOG

Conductivity STUDY TRAINING

9/15/2011 BTC

Name	Cell Phone For Study	Email
1. SHAFTER MCKNIGHT	(859) 229-5069	SM.MCKNIGHT467@yahoo.com
2. Grant Mutersbaugh	(859) 979-1261	gmutersb@yahoo.com
3. TRAVIS YEARSLEY	(859) 494-7200	TRAVISyearsley@yahoo.com
4. John Neppesey		J.Neppesey@jcsigul52.com
5. Joseph Frederick	(859) 340-0412	jfrederick0029@KCTCS.EDU
6. Nate Doty	(859) 221-2906	Nldoty38@yahoo.com
7. Anne Simpson	(859) 576-7216	asimpsonp088@Kctcs.edu
8. JAMIE ANDERSON	(859) 285-4354	abithbatty78@YAHOO.COM
Teams - Brad & Patrick Nate & Alex Anne Shafter Travis - Grant John - Joe	Jamie & Brad	

Kentucky Watershed Watch Data Management

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[Add Event](#)
[Register Non-Associate](#)
[Reports](#)
[Change Password](#)
[Logout](#)

Associate Search

Assoc. Id:

First Name:	Last Name:	Organization:
Address:	P.O. Box:	City:
State:	Zip:	Phone:
Basin:	Coordinators: 439-Wolf Run	Role:
Equipment:	Chemical Year:	

Associate	Name	Address	P.O.Box	Basin	Status
3712	Brandon Bell	1509 Port Royal Drive Lexington, KY 40504		KRWW	Active
2617	Kevin Campbell	763 Allendale Drive Lexington, KY 40503		KRWW	Inactive
1904	Lisa Collins	2344 Harrodsburg Road Lexington, KY 40503		KRWW	Active
84	Ken Cooke	639 Cardinal Lane Lexington, KY 40503		KRWW	Active
3666	John Dempsey	1910 Pershing Road Lexington, KY 40504		KRWW	Active
2781	Jack Dickey	1523 Versailles Road Lexington, KY 40504		KRWW	Active
622	Bob Edwards	1930 Natchez Trail Lexington, KY 40504		KRWW	Active
3618	Mark Felice		P.O. Box 13428 Lexington, KY 40503	KRWW	Active
2644	Brenda Franey	3475 Lyons Drive Lexington, KY 40513		KRWW	Inactive
3690	Robert Garnham	2340 Lonan Court Lexington, KY 40511		KRWW	Active
3517	Keith Harding	416 Rebmann Lane Lexington, KY 40504		KRWW	Active
3375	Wendy Havens	1509 Port Royal Drive Lexington, KY 40504		KRWW	Active
3140	Bruce Hutcheson	1135 Athenia Drive Lexington, KY 40509		KRWW	Active
1905	Curtis Jones	2344 Harrodsburg Road Lexington, KY 40503		KRWW	Active
2786	Judy Mahaffey	1624 Alexandria Dr # 1 Lexington, KY 40504		KRWW	Active
2856	Will Overbeck	1509 Pine Meadow Court Lexington, KY 40504		KRWW	Active
3515	David Price	310 Lisle Industrial Ave Lexington, KY 40511		KRWW	Active
3759	Brad Redmon	3061 Tuscaloosa Lane Lexington, KY 40515		KRWW	Active
3563	Michele Tatum	1710 Hawthorne Lane Lexington, KY 40505		KRWW	Active
3518	Laurie Thomas	416 Rebmann Lane Lexington, KY 40504		KRWW	Active
2843	Russ Turpin	11 Deepwood Drive Lexington, KY 40505		KRWW	Active
461	Jean Watts	639 Cardinal Lane Lexington, KY 40503		KRWW	Active
2789	Danita Whelan	2019 Rainbow Road Lexington, KY 40503		KRWW	Inactive
3516	Andrew Whittle	416 Rebmann Lane Lexington, KY 40504		KRWW	Active

If you have questions, please contact
Jo Ann Palmer at
JoAnn.Palmer@ky.gov
1.800.928.0045 EXT: 4939

APPENDIX B – DATASHEETS

Conductivity Survey Field Datasheet

General Info:

Stream Name Wolf Run Segment ID 1A
 Date 17 Sep 2011 Sampler Name Joseph Frederick
Town Deputy Cond Meter ID _____

Measurements to be made at least 100
ft apart in each segment starting
upstream and working downstream.

Calibration:

Known Value 1410 744 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1410 $\mu\text{S/cm}$
 Known Value 1438 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1410 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDDD	Longitude W DD.DDDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 0855	N38.06733	W084.55429	730	14.9°	
2 0858	N38.06756	W084.55396	740	14.9°	
3 0900	N38.06803	W084.55394	740	14.9°	
4 0904	N38.06853	W084.55411	740	15°	
5 0909	N38.06874	W084.55344	740	14.9°	
6 0912	N38.06887	W084.55344	730	14.9°	
7 0915	N38.06900	W084.55344	730	14.9°	
8 0918	N38.06913	W084.55344	730	14.9°	
9 0921	N38.06926	W084.55344	730	15°	
10 0925	N38.06939	W084.55344	730	14.9°	
11 0928	N38.06952	W084.55344	730	14.9°	
12 0932	N38.06965	W084.55344	730	14.9°	
13 0935	N38.06978	W084.55344	730	15°	
14 0938	N38.06991	W084.55344	730	15°	
15 0941	N38.06994	W084.55344	730	14.9°	
16 0944	N38.06997	W084.55344	730	14.9°	
17 0948	N38.07000	W084.55344	720	14.8°	
18 0951	N38.07003	W084.55344	920	20.1°	① Intersection Wolf Run & Town Branch
19					
20					

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name Wolf Run Segment ID 1B

Date 17 Sep 2011 Sampler Name Tosha Anderson

Cond Meter ID

Calibration:

Known Value 1410 744 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1410 $\mu\text{S/cm}$

Known Value 1438 $\mu\text{S/cm}$ Initial Calibration 1438 $\mu\text{S/cm}$ Final Calibration 1438 $\mu\text{S/cm}$

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 0735	N38.06068	W084.54869	720	15.0	
2 0741	N38.06065	W084.54864	720	15.2	
3 0743	N38.06091	W084.54907	720	15.1	
4 0748	N38.06129	W084.54952	730	15.0	
5 0754	N38.06181	W084.54971	730	15.1	
6 0800	N38.06251	W084.54980	730	15.0	
7 0804	N38.06313	W084.54988	750	15.0	
8 0808	N38.06314	W084.55061	740	14.9	
9 0811	N38.06355	W084.55122	740	14.9	
10 0813	N38.06382	W084.55185	740	14.9	
11 0816	N38.06405	W084.55212	740	15.0	
12 0818	N38.06432	W084.55233	740	15.0	
13 0821	N38.06460	W084.55251	740	15.0	
14 0828	N38.06512	W084.55260	740	14.8	
15 0832	N38.06540	W084.55304	740	14.9	
16 0835	N38.06573	W084.55347	740	14.9	
17 0840	N38.06597	W084.55386	740	15.0	
18 0843	N38.06609	W084.55423	730	15.0	
19 0846	N38.06647	W084.55429	730	14.9	
20 0849	N38.06674	W084.55435	740	15.0	

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name Wolf Run Segment ID 1B Cond Meter ID _____
 Date 17 Sep 2011 Sampler Name Joseph Ennis K. J. Murphy
 Calibration: Known Value 1410 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1410 $\mu\text{S/cm}$
 Known Value 1438 $\mu\text{S/cm}$ Initial Calibration _____ $\mu\text{S/cm}$ Final Calibration _____ $\mu\text{S/cm}$

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 0852	N 38.06680	W 084.55442	740	15.0	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name

Wolf Run Segment ID

1C

Date

10/11/11 Sampler Name

Ken Cook Cond Meter ID

K408-08

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value

714 $\mu\text{S/cm}$

Initial Calibration

Final Calibration

$\mu\text{S/cm}$

$\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N D D . D D D D D D	Longitude W D D . D D D D D D	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 12:01 PM	38.054392	-84.548357	610	15.5	GPS Accuracy 16 feet
2 12:03 PM	38.058999	84.548720	610	15.5	
3 12:05	38.058745	84.548853	610	15.5	
4 12:08	38.05847	84.549038	620	15.5	
5 12:11	38.058191	84.549214	620	15.5	
6 12:13	38.057951	84.549433	630	15.5	
7 12:14	38.057705	84.549601	640	16	
8 12:16	38.057468	84.549735	640	16	
9 12:18	38.057163	84.549819	670	16	
10 12:21	38.056813	84.549907	670	16.5	
11 12:24	38.056601	84.549965	670	16.5	
12 12:26	38.056361	84.549960	660	16.5	
13 12:29	38.056153	84.550032	660	16.5	
14 12:31	38.055905	84.550088	650	16.5	
15 12:32	38.055707	84.550139	640	16.5	
16 12:33	38.055398	84.550138	610	16	
17 12:38	38.055197	84.550143	600	16	Confluence of Vaughan's Br
18 12:40	38.054930	84.550263	610	16	
19 12:41	38.054714	84.550363	610	15.5	
20 12:42	38.054458	84.550478	610	15.5	

Additional Notes:

21 12:43	38.054236	84.550595	610	15.5	
12:45	38.053937	84.550753	610	15.5	
12:47	38.053730	84.550800	610	15.5	
12:50	38.053417	84.550925	640	15.5	

Conductivity Survey Field Datasheet

General Info:

Stream Name Wolf Run Segment ID 1D ATC
 Date 9-18-11 Sampler Name Brad Redman Cond Meter ID 5111352470

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value 1408 1438 714 μS/cm Initial Calibration 1410 μS/cm Final Calibration 1410 μS/cm

Time (Indicate AM or PM)	Latitude N DD.DDDDDD	Longitude W DD.DDDDDD	Conductivity (μS/cm)	Temperature (°C)	Additional Comments
1 2:10 PM	38.053600	84.551090	670	68 °F	
2 2:15	38.052730	84.551180	670	68	
3 2:19	38.052470	84.551370	670	68	
4 2:23	38.052300	84.551660	660	68	
5 2:29	38.052130	84.551940	670	68	picture taken of drain pipe
6 2:34	38.051880	84.552040	660	68	
7 2:39	38.051580	84.551960	660	68	picture taken of drain pipe
8 2:44	38.051300	84.551910	660	68	
9 2:48	38.051080	84.551700	660	68	
10 2:51	38.050760	84.551560	670	68	
11 2:54	38.050500	84.551540	660	69	
12 2:59	38.050220	84.551510	660	69	
13 3:03	38.049940	84.551510	670	69	
14 3:06	38.049680	84.551450	660	68	
15 3:10	38.049350	84.551350	660	68	
16 3:13	38.048940	84.551350	660	68	
17 3:16	38.048600	84.551220	670	68	
18 3:22	38.048240	84.551220	660	68	
19 3:26	38.047920	84.551220	660	68	
20 3:29	BR 38.04784	84.551150	660	68	

Additional Notes: Picture taken at exposed sewer line crossing the creek at N-38.050430 W-84.551610.

Conductivity Survey Field Datasheet

General Info:

Stream Name Wolf Run Segment ID 1D
 Date 9-18-11 Sampler Name Brad Redmon

Calibration:

Known Value 714 $\mu\text{S/cm}$ Initial Calibration
 Known Value 1408 $\mu\text{S/cm}$ Initial Calibration

Measurements to be made at least 100
 ft apart in each segment starting
 upstream and working downstream.

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 3:33	38.047326	84.55109	670	68	
2 3:36	38.047640	84.55106	670	68	
3					
4					
5					
6					
7					
8					
9					
10					
11					
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Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name Wolf Run Segment ID 1E
 Date 9-17-11 Sampler Name W. Havens Cond Meter ID K03-21
B. Bell

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value 714 $\mu\text{S/cm}$ Initial Calibration 710 $\mu\text{S/cm}$ Final Calibration 720 $\mu\text{S/cm}$
 Known Value 1438 $\mu\text{S/cm}$ Initial Calibration 710 $\mu\text{S/cm}$ Final Calibration 720 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Picture Numbers	Additional Comments Even = looking downstream Odd = upstream
1 1:40 pm	38.0446441	84.550970	620	16	DSCN 2858 - 2859	→ Versailles Rd end
2 1:44	38.045930	84.550840	640	15	DSCN 2860 - 2861	
3 1:48	38.045350	84.550690	660	15	DSCN 2862 - 2863	
4 1:52	38.044860	84.550830	660	14	DSCN 2864 - 2865	
5 1:56	38.044360	84.550730	670	15	DSCN 2866 - 2867	
6 2:01	38.043880	84.550430	690	14	DSCN 2868 - 2869	
7 2:04	38.043290	84.550170	710	15	DSCN 2870 - 2871	
8 2:09	38.043290	84.550170	710	13	DSCN 2872 - 2873	
9 2:13	38.042680	84.549040	720	15	DSCN 2874 - 2875	
10 2:17	38.042170	84.548970	720	15	DSCN 2876 - 2877	
11 2:21	38.041560	84.548910	730	15	DSCN 2878 - 2879	
12 2:24	38.040970	84.548720	730	15	DSCN 2880 - 2881	
13 2:28	38.040390	84.548580	720	15	DSCN 2882 - 2883	→ behind house with new drain storm sewer
14 2:31	38.040020	84.548100	710	15	DSCN 2884 - 2885	
15 2:34	38.039490	84.547760	740	15	DSCN 2886 - 2887	→ Shopping carts
16 2:40	38.038890	84.547260	720	15	DSCN 2888 - 2889	
17 2:43	38.038490	84.546850	730	15	DSCN 2890 - 2891	
18 2:46	38.037890	84.546000	720	15	DSCN 2892 - 2893	
19 2:49	38.037500	84.546120	720	14	DSCN 2894 - 2895	→ bridge at Approx. 100 ft
20						

Additional Notes: taking right fork at Roanoke

lot of debris and major sand bars at Versailles Rd

Conductivity Survey Field Datasheet

General Info:

Stream Name

Wolf Run Segment ID

1F-1

Date

10/10/2011 Sampler Name

Bob Edwards

Cond Meter ID

N3TA

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value

714 $\mu\text{S/cm}$

Initial Calibration

1418 $\mu\text{S/cm}$

Final Calibration

1420 $\mu\text{S/cm}$

Known Value

1418 $\mu\text{S/cm}$

Initial Calibration

1420 $\mu\text{S/cm}$

Final Calibration

1450 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDDD	Longitude W DD.DDDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1:15 pm	38.03743	-84.54625	650	14.0	Appomattox Bridge upper
1:22 pm	38.03716	-84.54616	740	14.0	Above Trash Barrier
1:29 pm	38.03700	-84.54577	740	14.0	Sewer pipe #1
1:36 pm	38.03702	-84.54554	740	14.5	Below 2nd Foot bridge
1:41 pm	38.03694	-84.54542	740	14.5	Below Sewer pipe #2
1:46 pm	38.03673	-84.54502	750	14.5	Below Sewer Pipe #3 odors.
1:50 pm	38.03657	-84.54489	750	14.5	Sewer pipe #4
1:56 pm	38.03652	-84.54484	750	16.0	Below sewer pipe #5
2:01 pm	38.03645	-84.54466	750	16.0	Near Lower Corner TC (Heron)
2:05 pm	38.03596	-84.54446	750	16.5	Adjacent to Holly Springs
2:11 pm	38.03585	-84.54430	750	17.0	Below Big Evergreen on Park
2:16 pm	38.03576	-84.54410	750	18.0	Adjacent Big Oak Holly Springs Gile
2:21 pm	38.03553	-84.54377	730	19.0	Open Pool, lots of Algae
2:26 pm	38.03536	-84.54344	800	19.0	Adjacent to basketball court
2:32 pm	38.03520	-84.54327	820	16.5	Below Gardenside Park Bridge
2:38 pm	38.03470	-84.54296	820	14.5	Above Concrete Drain
2:44 pm	38.03472	-84.54290	810	15.5	Begin wire/Rock Enclosure
2:48 pm	38.03439	-84.54288	800	14.0	
2:53 pm	38.03423	-84.54287	790	15.5	Telephone wire hanging down
2:58 pm	38.03397	-84.54267	810	15.0	Corner 2nd wire/Rock Enclosure

Additional Notes:

Saw Heron

Salmonander

38.03474

Conductivity Survey Field Datasheet

General Info:

Stream Name

Wolf Run

Segment ID

1F-2

Date

10/10/2011

Sampler Name

Bob Edwards

Cond Meter ID

N39A

Calibration:

Known Value

714 $\mu\text{S/cm}$

Initial Calibration

1418 $\mu\text{S/cm}$

Final Calibration

1450 $\mu\text{S/cm}$

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
3:03 PM	38.03362	-84.54238	800	16.0	Mankole on Concrete Dune
3:11 PM	38.03347	-84.54225	750	16.0	Beacon Hill Bridge Lower side
3:17 PM	38.03306	-84.54205	750	16.0	Big Tree & Rock Ledge
3:22 PM	38.03302	-84.54192	760	16.0	Wire Fence In Creek
3:25 PM	38.03299	-84.54188	760	16.0	
3:26 PM	38.03285	-84.54164	750	16.0	
3:30	38.03236	-84.540932	740	16.0	
3:32	38.032215	-84.540820	745	16.0	
3:34	38.032029	-84.540494	720	15.0	
3:36	38.031850	-84.540365	740	15.5	
3:38	38.031715	-84.540072	730	16.0	
	38.031506	-84.539826	720	15.5	
3:42	38.031367	-84.539539	710	16.5	
	38.031240	-84.539229	710	17.0	
	38.031016	-84.538966	700	17.0	
3:56	38.030827	-84.538765	700	17.0	
4:17	38.030705	-84.538372	690	18.0	
	38.030578	-84.538125	710	17.0	
4:22	38.030276	-84.537705	760	16.5	
4:26	38.030082	-84.537619	730	17.0	

Springs Branch 7:30 15.0

Additional Notes:

Wolf Run 1028 18.0

Conductivity Survey Field Datasheet

General Info:

Stream Name Wdf Run Segment ID 1G-1
 Date 9-24-11 Sampler Name Carli's Jones Cond Meter ID M454-01
 Calibration: Lisa Collins

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Known Value 714 $\mu\text{S/cm}$ Initial Calibration 720 $\mu\text{S/cm}$ Final Calibration 720 $\mu\text{S/cm}$
 Known Value 1438 $\mu\text{S/cm}$ Initial Calibration 720 $\mu\text{S/cm}$ Final Calibration 720 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 11:34 AM	N 38.02313	W 84.53141	710	16	
2 11:42	N 38.02306	W 84.53167	720	16	
3 11:45	N 38.02297	W 84.53166	720	16	
4 11:47	N 38.02964	W 84.53153	650	16	
5 11:50	N 38.02245	W 84.53142	680	16	
6 11:54	N 38.02453	W 84.53142	690	15	
7					
8 11:57	N 38.02416	W 84.53560	680	16	
9 12:05	N 38.02882	W 84.53532	640	15	
10 12:08	N 38.02855	W 84.53507	650	15	
11 12:10	N 38.02829	W 84.53491	660	14	
12 12:14	N 38.02812	W 84.53469	660	15	
13 12:22	N 38.02794	W 84.53432	660	15	
14 12:24	N 38.02776	W 84.53399	670	18	
15 12:27	N 38.02767	W 84.53379	810	17	
16 12:30	N 38.02751	W 84.53374	under underpass dry	15	near Harrodsburg Rd oil sheen in water
17 12:38	N 38.02751	W 84.53374	300	15	Conductivity
18 12:41	N 38.02751	W 84.53374	dry below McDonalds		
19 12:43	N 38.02686	W 84.53236	dry		
20 12:46	N 38.02695	W 84.53228	340	14	

Additional Notes: tuken

photo @ 12:13 38.02798 / 84.53432 tree blockage
 then 38.02794 / 84.53432

Conductivity Survey Field Datasheet

General Info:

Stream Name Wolf Run Segment ID 1G-2

Date 9-24-11 Sampler Name Curtis Jones

Calibration:

Known Value 714 µS/cm Initial Calibration 720 µS/cm

Known Value 1438 µS/cm Initial Calibration 720 µS/cm

Cond Meter ID M454-01

Wolf Collins

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity (µS/cm)	Temperature (°C)	Additional Comments
1 12:49	38.02661	84.53179	410	16	
2 12:53	38.02663	84.53171	280	18	
3 12:56	38.02604	84.53159	400	16	
4 12:59	38.02594	84.53135	dry		
5 12:01	38.02580	84.53085	dry		
6 02	38.02554	84.53055	dry		
7 03	38.02544	84.53012	360	16	
8 06	38.02550	84.52968	dry		
9 07	38.02545	84.52930	dry		
10 09	38.02527	84.52890	dry		
11 10	38.02512	84.52846	dry		
12 11	38.02485	84.52803	dry		
13					
14					
15					
16					
17					
18					
19					
20					

Additional Notes:

1-H
2-5

Conductivity Survey Field Datasheet

General Info:

Stream Name Wolf Run Segment ID 14/13

Date 10/4/2011 Sampler Name Grant Travis Cond Meter ID _____

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value 714 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1410 $\mu\text{S/cm}$

Known Value 1408 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1410 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$) TEMP. SUB.	Additional Comments
1 16:03	38.02208	084.52852	860	17.0	Junction Southland & Rosement
2 16:23	38.01780	084.52506	1040	17.0	
3 16:28	38.01761	084.52483	1130	16.00	
4 16:30	38.01747	084.52463	1150	16.0	
5 16:32	38.01720	084.52435	1180	17.0	
6 16:35	38.01705	084.52418	1200	17.0	
7 16:41	38.01653	084.52367	1270	14.5	STS Tire
8 16:48	38.01605	084.52319	1648 ^{gm} 1160	16.5	Railway Tunnel
9 16:56	38.01572	084.52267	1050	19.0	
10 17:04	38.01558	084.52276	1060	19.5	
11 17:07	38.01524	084.52284	1180	20.5	
12 17:12	38.01498	084.52248	1120	23.0	
13 17:14	38.01478	084.52226	1140	24.0	
14 17:16	38.01455	084.52197	1080	19.0	Don Wilson Music
15 17:19	38.01431	084.52172	1050	22.0	
16 17:21	38.01404	084.52140	1040	22.00	
17 17:24	38.01374	084.52103	1110	21.0	Republican Party of Fayette Co
18 17:27	38.01336	084.52055	1280	17.0	
19					
20					

H
J

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name McConnell Branch Segment ID 2A
 Date 10/4/2011 Sampler Name Brad Robinson

Cond Meter ID 5/N/135-2870

Calibration:

Known Value 714 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1450 $\mu\text{S/cm}$
 Known Value 1438 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1450 $\mu\text{S/cm}$

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 2:50 PM	38.059600	84.548230	870	66.0 F	at Mouth
2 2:54	38.059390	84.548210	890	67.0 F	
3 2:59	38.059240	84.547980	910	67.0 F	
4 3:02	38.059060	84.547700	910	67	
5 3:05	38.058830	84.547560	910	67	
6 3:08	38.058650	84.547440	910	67	
7 3:12	38.058450	84.547490	920	68	
8 3:15	38.058410	84.547130	920	66	
9 3:19	38.058550	84.546850	930	66	
10 3:23	38.058630	84.546620	920	67	
11 3:26	38.058610	84.546200	930	67	
12 3:29	38.058590	84.545950	930	67	
13 3:33	38.058320	84.545890	930	66	
14 3:37	38.058220	84.545590	930	67	
15 3:40	38.058440	84.545430	930	67	
16 3:44	38.058240	84.545110	930	66	
17 3:47	38.058210	84.544810	930	66	
18 3:50	38.058140	84.544460	930	66	
19 3:53	38.057890	84.544300	920	66	
20 3:57	38.057640	84.544140	930	66	

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name McConnel Brook Segment ID 2A BCTC
 Date 10/4/2011 Sampler Name BR, JAPC Cond Meter ID S/N: 1352870

Calibration:

Known Value 714 $\mu\text{S/cm}$ Initial Calibration 1408 $\mu\text{S/cm}$ Final Calibration 1450 $\mu\text{S/cm}$
 Known Value 1438 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1450 $\mu\text{S/cm}$

Measurements to be made at least 100
ft apart in each segment starting
upstream and working downstream.

	Time (Indicate AM or PM)	Latitude N DD.DDDDDD	Longitude W DD.DDDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1	4:01 PM	38.057560	84.543750	930	66.0 F	
2	4:04	38.057540	84.543410	930	65	
3	4:07	38.057610	84.543610	940	65	
4	4:10	38.057350	84.542760	940	65	
5	4:14	38.057200	84.542610	940	65	
6	4:17	38.057180	84.542300	940	65	
7	4:20	38.057360	84.542200	940	65	at cave mouth
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Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name McCormell Branch Segment ID ZB
 Date 10/5/11 Sampler Name Laurie Thomas Cond Meter ID EC Tester

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value 714 $\mu\text{S/cm}$ Initial Calibration 720 $\mu\text{S/cm}$ Final Calibration 710 $\mu\text{S/cm}$
 Known Value 1438 $\mu\text{S/cm}$ Initial Calibration 1438 $\mu\text{S/cm}$ Final Calibration 1438 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 1:09 pm	38° 03.255	84° 31.976	860	16.7	Final sink portion of stream (low flow no turbidity)
2 1:14 pm	38° 03.254	84° 31.963	870	16.5 17.5	
3 1:19	38° 03.260	84° 31.946	870	16.6	
4 1:24	38° 03.256	84° 31.932	870	16.6	
5 1:31	38° 03.256	84° 31.916	870	16.5	
6 1:35	38° 03.259	84° 31.908	870	16.5	
7 1:42	38° 03.263	84° 31.895	870	16.4	
8 1:47	38° 03.264	84° 31.888	870	16.3	Boils section of stream
9 1:52	38° 03.270	84° 31.860	870	16.3	Crag or fissure betw. Boils & Blue hole
10 1:57	38° 03.269	84° 31.848	870	16.4	end of Blue hole portion of stream
11 2:03 pm	38° 03.266	84° 31.841	870	16.3	
12 2:08	38° 03.269	84° 31.826	870	16.6	Blue hole spring
13 2:30 pm	38° 03.243	84° 31.695	130	23.3	stormwater wetland pond end portion - M4
14 2:36	38° 03.225	84° 31.659	130	20.8	beginning of pond - M4
15 2:39 pm	38° 03.226	84° 31.652	130	20.1	forbay M3 of stormwater wetland
16 2:44 pm	38° 03.253	84° 31.642	150	23.7	forbay M2
17 2:47 pm	38° 03.251	84° 31.643	160	23.1	forbay M1
18					
19					
20					

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name Vaughns Branch Segment ID 3A BLT
 Date 10/4/2011 Sampler Name Brad Robinson Cond Meter ID S/N: 1352870
 Calibration: Jamie Anderson

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Known Value 714 $\mu\text{S/cm}$ Initial Calibration 140 $\mu\text{S/cm}$ Final Calibration 1470 $\mu\text{S/cm}$
 Known Value 1408 $\mu\text{S/cm}$ Initial Calibration 140 $\mu\text{S/cm}$ Final Calibration 1470 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$) or $^{\circ}\text{F}$	Additional Comments
1 5:45 PM	38.055100	84.55060	770	66 $^{\circ}\text{F}$	
2 5:48	38.054900	84.549730	780	66	
3 5:50	38.054810	84.549350	780	67	
4 5:53	38.054530	84.549190	780	67	
5 5:56	38.054290	84.549010	780	69	
6 6:00	38.054100	84.548770	790	69	
7 6:03	38.053880	84.548530	780	67	
8 6:06	38.053630	84.548220	760	72	
9 6:11	38.05343	84.547950	760	72	
10 6:14	38.053220	84.547710	750	72	
11 6:17	38.053040	84.547440	770	70	
12 6:20	38.052940	84.547180	780	68	
13 6:22	38.052670	84.546910	780	66	
14 6:25	38.052440	84.546620	790	67	
15 6:29	38.052270	84.546390	790	67	
16 6:32	38.052090	84.546130	800	68	
17 6:34	38.051910	84.545850	790	65	
18 6:38	38.051610	84.545550	800	70	
19 6:41	38.051430	84.545270	800	69	
20 6:43	38.051210	84.545010	820	66	

Additional Notes:

Flow was very low, even ponded at times, which contributed to the wide variability in temperature.

Conductivity Survey Field Datasheet

General Info:

Stream Name Vashons Branch Segment ID 3A BC TC
 Date 10/14/2011 Sampler Name Brad Redman Cond Meter ID S/N: 1352870
 Calibration: Jamie Anderson

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Known Value 1408 1438 714 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1470 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 6:47 PM	38.057030	84.544700	810	65	
2 6:50	38.050800	84.544400	810	64	
3 6:53	38.050590	84.544180	800	64	
4 6:56	38.050440	84.543870	800	64	
5 6:58	38.050220	84.543620	800	64	
6 7:01	38.050000	84.543370	800	64	
7 7:03	38.049740	84.543130	810	64	
8 7:05	38.049540	84.542910	800	64	
9 7:08	38.049380	84.542590	790	64	
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Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name Vaughn's Branch Segment ID 3B BTC
 Date 9-18-11 Sampler Name Brad Rehman Cond Meter ID 5171352870

Measurements to be made at least 100
ft apart in each segment starting
upstream and working downstream.

Calibration:

Known Value 714 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1410 $\mu\text{S/cm}$
 Known Value 1438 $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1410 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDDD	Longitude W DD.DDDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 4:30 PM	38.044400	84.542620	710	68.9	
2 4:34	38.044230	84.542360	710	68	
3 4:38	38.044940	84.542070	710	68	
4 4:41	38.048820	84.541740	720	68	
5 4:44	38.048670	84.541490	710	68	
6 4:47	38.048460	84.541270	710	68	
7 4:50	38.048220	84.541030	710	68	
8 4:54	38.048070	84.540700	700	70	
9 4:57	38.048090	84.540340	730	70	
10					
11					
12					
13					
14					
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Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name Vaucluse Br Segment ID 3C
 Date 10/10/11 Sampler Name Ken Cook Cond Meter ID K03-08

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value 744 ~~μS/cm~~ Initial Calibration 1420 ~~μS/cm~~ Final Calibration 1460 ~~μS/cm~~
 Known Value 1413 ~~μS/cm~~ Initial Calibration 1420 ~~μS/cm~~ Final Calibration 1460 ~~μS/cm~~

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity (μS/cm)	Temperature (°C)	Additional Comments
1 12:27 PM	38.047101	84.540037	740	17	
2	38.047101	84.540037			
3 12:33 PM	38.046872	84.539882	740	17	
4 12:38	38.046729	84.539815	740	17.5	
5 12:41	38.046536	84.539861	740	17	
6 12:46	38.046285	84.539620	740	17	
7 12:52	38.046094	84.539375	740	17	
8 12:55	38.045660	84.539135	650	16.5	
9 12:59 PM	38.045497	84.538858	670	16.5	
10 1:01 PM	38.045358	84.538226	680	16.5	
11 1:04 PM	38.045196	84.537602	580	16.5	
12 1:06 PM	38.045127	84.536621	600	16.5	
13 1:09 PM	38.044945	84.536161	610	16	
14 1:12 PM	38.044805	84.535804	600	16	
15 1:16 PM	38.044328	84.535167	420	16	
16					
17					
18					
19					
20					

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name

Virginia's Branch

Segment ID

3D + 3E

Date

10-04-2011

Sampler Name

Wade Doty

Cond Meter ID

BCTC

Calibration:

Known Value

714 $\mu\text{S/cm}$

Initial Calibration

1410 $\mu\text{S/cm}$

Final Calibration

1410 $\mu\text{S/cm}$

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Time (Indicate AM or PM)	Latitude N DD.DDDDDD	Longitude W DD.DDDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 4:15 PM	38.02.516	084.31.946	380	28.0C	still water
2 4:16 PM	38.02.486	084.31.912	4180	25.0C	still water
3 4:17 PM	38.02.451	084.31.877	560	28.0C	still water
4 4:18 PM	38.02.424	084.31.834	460	28.0C	still water
5 4:19 PM	38.02.400	084.31.752	510	26.0C	still water
6 4:20	38.02.356	084.31.710			No water
7 4:21	38.02.309	084.31.681	1150	28.0C	still water
8 4:22	38.02.270	084.31.660	1240	24.0C	still water
9 4:23	38.02.253	084.31.612	1750	24.0C	where flowing water stops
10 4:24	38.02.267	084.31.517	1280	24.0C	
11 4:25	38.02.255	084.31.542	1240	24.0C	
12 4:26	38.02.256	084.31.517	1320	22.0C	
13 4:27	38.02.243	084.31.481	1300	22.0C	
14 4:28	38.02.236	084.31.441	1300	22.0C	
15 4:29	38.02.241	084.31.413	1310	20.0C	
16 4:30	38.02.235	084.31.343	1520	20.0C	
17 4:31	38.02.228	084.31.313	1500	22.0C	
18					
19					
20					

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name

Vaughn's Br Segment ID

3 F

Date

10/4/2011 Sampler Name

Ken Cooke Cond Meter ID

103-08

Calibration:

Known Value

714 $\mu\text{S/cm}$ Initial Calibration

1418 $\mu\text{S/cm}$ Final Calibration

Known Value

1418 $\mu\text{S/cm}$ Initial Calibration

1420 $\mu\text{S/cm}$ Final Calibration

Time (Indicate AM or PM)	Latitude N DD.DDDDDD	Longitude W DD.DDDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 12:56	38.033647	-81.54367	1180	17	Segment only 108 Feet
2					long
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name

Segment ID

Date

Sampler Name

Cond Meter ID

K03-08

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value

Initial Calibration

Known Value

Initial Calibration

Final Calibration

Final Calibration

µS/cm

µS/cm

Time
(Indicate AM or PM)

Latitude

Longitude

Conductivity
(µS/cm)

Temperature
(°C)

Additional Comments

1	11:46	N DD.DDDDDD	38.035423-84.526610	980	Dry	Ponded
2	11:50	38.033110	-84.526797			
3						
4						
5						
6						
7						
8						
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18						
19						
20						

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name B. g. ELM Segment ID 4C Bea EL Testr
 Date 10/11/2011 Sampler Name Brad Robinson Cond Meter ID S/N: 1352470

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value 1408 714 1438 Initial Calibration 1410 Final Calibration 1420
 Known Value 1408 714 1438 Initial Calibration 1410 Final Calibration 1420

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity (μ S/cm)	Temperature ($^{\circ}$ C)	Additional Comments
1 9:25 AM	38.022520	84.572530	1200	18.3	
2 9:27	38.022430	84.572150	1310	17.4	
3 9:30	38.022250	84.571740	1320	17.8	
4 9:33	38.022080	84.571440	1360	17.8	
5 9:35	38.021950	84.571120	1380	17.8	
6 9:37	38.021770	84.570800	1390	17.8	
7 9:40	38.021630	84.570490	1390	14.9	
8 9:42	38.021530	84.570150	1440	18.9	
9 9:45	38.021390	84.569830	1430	20.0	@ Storm water outfall
10 9:48	38.021090	84.569400	970	14.4	
11 9:51	38.020790	84.569070	990	14.4	
12 9:53	38.020530	84.568660	1000	20.0	
13 9:56	38.020250	84.568410	900	21.1	
14					
15					
16					
17					
18					
19					
20					

Additional Notes:

After storm water outfall flows were minimal & was full of fresh cut grass

Conductivity Survey Field Datasheet

General Info:

Stream Name CARDINAL RUN Segment ID 5A 1380238 148-01
 Date OCTOBER 9 Sampler Name ANNE SIMPSON / SAAFTER MEKNIGHT Cond Meter ID _____
 Calibration: 2011 Initial Calibration 714 $\mu\text{S/cm}$ Final Calibration _____ $\mu\text{S/cm}$
 Known Value _____ $\mu\text{S/cm}$ Initial Calibration 1410 $\mu\text{S/cm}$ Final Calibration 1400 $\mu\text{S/cm}$
 Known Value 1408 $\mu\text{S/cm}$

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Time (Indicate AM or PM)	Latitude N DD.DDDDDD	Longitude W DD.DDDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 3:06 PM	38.04946	84.55134	700	16	CONFLUENCE POINT
2 3:19 PM	38.04940	84.55167	720	16	
3 3:27 PM	38.04932	84.55213	720	16	PARKING LOT STORM H ₂ O DRAIN
4 3:33 PM	38.04929	84.55252	710	16	ALEXANDRIA DRIVE BRIDGE
5 3:38 PM	38.04937	84.55292	720	16	OVERFLOW PIPE
6 3:47 PM	38.04924	84.55312	710	17	CREEK TURNS SW AT THIS POINT
7 3:54 PM	38.04887	84.55353	710	17	BEYOND POINT DRIVE BRIDGE
8 4:00 PM	38.04860	84.55382	710	17	BETWEEN PT. 7 & PT. 8
9 4:06 PM	38.04841	84.55411	710	17	
10 4:13 PM	38.04811	84.55443	710	17	DEEPER WATER IN THIS SECTION
11 4:18 PM	38.04785	84.55463	710	18	
12 4:24 PM	38.04765	84.55492	710	18	
13 4:30 PM	38.04739	84.55516	700	19	SHALLOW WATER DUCKS!!
14 4:37 PM	38.04702	84.55540	700	18	VERSAILLES ROAD BRIDGE
15					
16					
17					
18					
19					
20					

Additional Notes:

ARRIVAL TIME: 2:55 PM DEPARTURE TIME: 5:05 PM
 GPS UNIT: EST-16
 WEATHER CONDITIONS: SUNNY OUTDOOR AIR TEMPERATURE IN MID 70s

Conductivity Survey Field Datasheet

General Info:

Stream Name Candina L Rn Segment ID 5B
 Date 10/10/11 Sampler Name Ken Cooke Cond Meter ID K03-08

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value 714 $\mu\text{S/cm}$ Initial Calibration 1420 $\mu\text{S/cm}$ Final Calibration 1420 $\mu\text{S/cm}$
 Known Value 1413 $\mu\text{S/cm}$ Initial Calibration 1420 $\mu\text{S/cm}$ Final Calibration 1420 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDDD	Longitude W DD.DDDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 1:00	38.046236	84.556117	650	14.5	
2 2:02	38.046170	84.556283	650	14.5	
3 2:04	38.045785	84.556620	650	14.5	
4 2:06	38.045643	84.556768	660	14.5	
5 2:06	38.045282	84.556935	670	14.5	
6 2:08	38.044997	84.557030	640	14.5	
7 2:10	38.044548	84.557087	620	14.5	
8 2:12	38.044343	84.557113	570	14.5	
9 2:14	38.044046	84.557213	620	14	Tributary 670
10 2:19	38.043852	84.557133	590	14	Accuracy 16' GPS
11 2:21	38.043493	84.557040	590	14	
12 2:22	38.043184	84.557147	590	14	
13 2:24	38.042889	84.557252	610	14	Gardenside Trk 540
14 2:27	38.042741	84.557503	620	14.5	
15 2:30	38.042443	84.557868	610	14	
16 2:35	38.042276	84.558191	600	14	
17 2:39	38.042140	84.558347	610	14	
18 2:42	38.042022	84.558596	610	14	
19 2:45	38.041727	84.558846	610	14	
20 2:50	38.041567	84.559065	620	14	

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name Cardinal Run Segment ID 53
 Date 10/10/11 Sampler Name Bruce Horvath Cond Meter ID K03-08

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value 714 $\mu\text{S/cm}$ Initial Calibration 1413 $\mu\text{S/cm}$ Final Calibration 1420 $\mu\text{S/cm}$
 Known Value 1413 $\mu\text{S/cm}$ Initial Calibration 1420 $\mu\text{S/cm}$ Final Calibration 1430 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDD	Longitude W DD.DDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 2:36	38.041219	84.559053	620	14	
2 2:38	38.041027	84.559276	620	14	
3 2:45	38.040843	84.559571	620	14	
4 2:46	38.040553	84.559789	620	14	
5 2:47	38.040316	84.559803	620	14	
6 2:48	38.040173	84.559916	620	14	
7 2:49	38.039863	84.560114	620	13.5	
8 2:52	38.039836	84.560499	620	13.5	
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Additional Notes:

Conductivity Survey Field Datasheet

General Info:

Stream Name

Gardenside Rd

Segment ID

10/11/11

Date

Ken Cooke

Sampler Name

Cond Meter ID

KY03-08

Measurements to be made at least 100 ft apart in each segment starting upstream and working downstream.

Calibration:

Known Value

714 $\mu\text{S/cm}$

Initial Calibration

Final Calibration

Known Value

1410 $\mu\text{S/cm}$

Initial Calibration

Final Calibration

1410 $\mu\text{S/cm}$

1410 $\mu\text{S/cm}$

Time (Indicate AM or PM)	Latitude N DD.DDDDDD	Longitude W DD.DDDDDD	Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Additional Comments
1 1:36 PM	38.042709	84.557275	520	16	
2 1:38	38.042549	84.557057	460	16	
3 1:46	38.041087	84.555403	390	16.5	Cross Keys Pond
4 1:51	38.040450	84.555289	360	16.5	
5 1:57	38.039318	84.555526	640	17	Frogs
6 1:59	38.038871	84.555363	650	16	
7 2:08 PM	38.037870	84.555227			
8 2:08 PM	38.037847	84.555256	640	16	
9 2:13 PM	38.036848	84.555006	670	16	Frogs
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Additional Notes:

APPENDIX C – DATASHEETS AND SPREADSHEETS

Appendix C:
Conductivity Survey of Wolf Run: Database

Segment	Sampler Int	Date	Time	Latitude	Longitude	Cond (uS/cm)	Temp (°C)	Calibration: Known Value (uS/cm)	Initial Calibration (uS/cm)	Final Calibration (uS/cm)	Comments
1A	JF & JD	9/17/2011	8:55 AM	38.067330	-84.554290	730	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:00 AM	38.068030	-84.553940	740	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:04 AM	38.068530	-84.554110	740	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:09 AM	38.068740	-84.553440	740	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:12 AM	NO SAT	NO SAT	730	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:15 AM	NO SAT	NO SAT	730	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:18 AM	38.069960	-84.554150	730	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:21 AM	NO SAT	NO SAT	730	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:25 AM	38.070590	-84.555260	730	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:28 AM	38.070950	-84.555640	730	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:32 AM	38.071450	-84.554930	730	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:35 AM	38.071760	-84.554720	730	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:38 AM	38.072380	-84.554370	730	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:41 AM	38.072720	-84.554330	730	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:44 AM	38.073250	-84.554210	730	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:48 AM	38.073470	-84.553690	720	14.8	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	9:51 AM	38.073530	-84.553390	920	20.1	1410	1410	1410	Intersection Wolf Run and Town Branch; USGS gage at 5.3 cfs during measurement
1A	JF & JD	9/17/2011	8:58 AM	38.067560	-84.553960	740	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	7:35 AM	38.060680	-84.548690	720	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	7:41 AM	38.060650	-84.548640	720	15.2	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	7:43 AM	38.060910	-84.549070	720	15.1	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	7:49 AM	38.061290	-84.549520	730	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	7:54 AM	38.061810	-84.549710	730	15.1	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:00 AM	38.062510	-84.549800	730	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:04 AM	38.063130	-84.549880	750	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:08 AM	38.063130	-84.550610	740	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:11 AM	38.063550	-84.551220	740	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:13 AM	38.063820	-84.551850	740	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:16 AM	38.064050	-84.552120	740	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:18 AM	38.064320	-84.552330	740	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:21 AM	38.064600	-84.552510	740	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:28 AM	38.065120	-84.552800	740	14.8	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:32 AM	38.065400	-84.553040	740	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:35 AM	38.065730	-84.553470	740	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:40 AM	38.065970	-84.553860	740	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:43 AM	38.066090	-84.554230	730	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:46 AM	38.066470	-84.554290	730	14.9	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:49 AM	38.066740	-84.554350	740	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1B	JF & JD	9/17/2011	8:52 AM	38.066800	-84.554420	740	15.0	1410	1410	1410	USGS gage at 5.3 cfs during measurement
1C	KC	10/11/2011	12:01 PM	38.059392	-84.548357	610	15.5	1413	1410	1410	GPS accuracy 16 feet
1C	KC	10/11/2011	12:03 PM	38.058999	-84.548720	610	15.5	1413	1410	1410	
1C	KC	10/11/2011	12:05 PM	38.058745	-84.548853	610	15.5	1413	1410	1410	
1C	KC	10/11/2011	12:08 PM	38.058417	-84.549038	620	15.5	1413	1410	1410	
1C	KC	10/11/2011	12:11 PM	38.058191	-84.549214	620	15.5	1413	1410	1410	
1C	KC	10/11/2011	12:13 PM	38.057951	-84.549433	630	15.5	1413	1410	1410	
1C	KC	10/11/2011	12:14 PM	38.057705	-84.549601	640	16.0	1413	1410	1410	

Appendix C:
Conductivity Survey of Wolf Run: Database

Segment	Sampler Int'l	Date	Time	Latitude	Longitude	Cond (uS/cm)	Temp (°C)	Calibration: Known Value (uS/cm)	Initial Calibration (uS/cm)	Final Calibration (uS/cm)	Comments
1C	KC	10/11/2011	12:16 PM	38.057468	-84.549735	640	16.0	1413	1410	1410	
1C	KC	10/11/2011	12:18 PM	38.057163	-84.549819	670	16.0	1413	1410	1410	
1C	KC	10/11/2011	12:21 PM	38.056813	-84.549907	670	16.5	1413	1410	1410	
1C	KC	10/11/2011	12:24 PM	38.056601	-84.549965	670	16.5	1413	1410	1410	
1C	KC	10/11/2011	12:26 PM	38.056361	-84.549960	660	16.5	1413	1410	1410	
1C	KC	10/11/2011	12:27 PM	38.056153	-84.550032	660	16.5	1413	1410	1410	
1C	KC	10/11/2011	12:31 PM	38.055905	-84.550088	650	16.5	1413	1410	1410	
1C	KC	10/11/2011	12:32 PM	38.055707	-84.550139	640	16.5	1413	1410	1410	
1C	KC	10/11/2011	12:33 PM	38.055398	-84.550138	610	16.0	1413	1410	1410	
1C	KC	10/11/2011	12:38 PM	38.055197	-84.550143	600	16.0	1413	1410	1410	
1C	KC	10/11/2011	12:40 PM	38.054930	-84.550263	610	16.0	1413	1410	1410	
1C	KC	10/11/2011	12:41 PM	38.054714	-84.550363	610	15.5	1413	1410	1410	
1C	KC	10/11/2011	12:42 PM	38.054458	-84.550478	610	15.5	1413	1410	1410	
1C	KC	10/11/2011	12:43 PM	38.054236	-84.550595	610	15.5	1413	1410	1410	
1C	KC	10/11/2011	12:45 PM	38.053937	-84.550753	610	15.5	1413	1410	1410	
1C	KC	10/11/2011	12:47 PM	38.053730	-84.550800	610	15.5	1413	1410	1410	
1C	KC	10/11/2011	12:50 PM	38.053417	-84.550925	640	15.5	1413	1410	1410	
1D	BR	9/18/2011	2:10 PM	38.053000	-84.551090	670	20.0	1408	1410	1410	
1D	BR	9/18/2011	2:15 PM	38.052730	-84.551180	670	20.0	1408	1410	1410	
1D	BR	9/18/2011	2:19 PM	38.052470	-84.551370	670	20.0	1408	1410	1410	
1D	BR	9/18/2011	2:23 PM	38.052300	-84.551660	660	20.0	1408	1410	1410	
1D	BR	9/18/2011	2:28 PM	38.052130	-84.551940	670	20.0	1408	1410	1410	
1D	BR	9/18/2011	2:34 PM	38.051880	-84.552040	660	20.0	1408	1410	1410	
1D	BR	9/18/2011	2:39 PM	38.051580	-84.551960	660	20.0	1408	1410	1410	
1D	BR	9/18/2011	2:44 PM	38.051300	-84.551910	660	20.0	1408	1410	1410	
1D	BR	9/18/2011	2:48 PM	38.051080	-84.551700	660	20.0	1408	1410	1410	
1D	BR	9/18/2011	2:51 PM	38.050760	-84.551560	670	20.0	1408	1410	1410	
1D	BR	9/18/2011	2:54 PM	38.050500	-84.551540	660	20.6	1408	1410	1410	
1D	BR	9/18/2011	2:59 PM	38.050220	-84.551510	660	20.6	1408	1410	1410	
1D	BR	9/18/2011	3:03 PM	38.049940	-84.551510	670	20.6	1408	1410	1410	
1D	BR	9/18/2011	3:06 PM	38.049680	-84.551450	660	20.0	1408	1410	1410	
1D	BR	9/18/2011	3:10 PM	38.049350	-84.551360	660	20.0	1408	1410	1410	
1D	BR	9/18/2011	3:13 PM	38.048990	-84.551350	660	20.0	1408	1410	1410	
1D	BR	9/18/2011	3:16 PM	38.048600	-84.551220	670	20.0	1408	1410	1410	
1D	BR	9/18/2011	3:22 PM	38.048240	-84.551220	660	20.0	1408	1410	1410	
1D	BR	9/18/2011	3:26 PM	38.047920	-84.551220	660	20.0	1408	1410	1410	
1D	BR	9/18/2011	3:29 PM	38.047640	-84.551150	660	20.0	1408	1410	1410	
1D	BR	9/18/2011	3:33 PM	38.047320	-84.551090	670	20.0	1408	1410	1410	
1D	BR	9/18/2011	3:36 PM	38.047040	-84.551060	670	20.0	1408	1410	1410	
1E	WH & BB	9/17/2011	1:40 PM	38.046441	-84.550970	620	16.0	714	710	720	Versailles Rd. end
1E	WH & BB	9/17/2011	1:48 PM	38.045350	-84.550690	660	15.0	714	710	720	
1E	WH & BB	9/17/2011	1:52 PM	38.044860	-84.550830	660	14.0	714	710	720	
1E	WH & BB	9/17/2011	1:56 PM	38.044360	-84.550730	670	15.0	714	710	720	
1E	WH & BB	9/17/2011	2:01 PM	38.043880	-84.550430	690	14.0	714	710	720	
1E	WH & BB	9/17/2011	2:04 PM	38.043290	-84.550170	710	15.0	714	710	720	
1E	WH & BB	9/17/2011	2:09 PM			710	13.0	714	710	720	

Appendix C:
Conductivity Survey of Wolf Run: Database

Segment	Sampler Int'l	Date	Time	Latitude	Longitude	Cond (uS/cm)	Temp (°C)	Calibration: Known Value (uS/cm)	Initial Calibration (uS/cm)	Final Calibration (uS/cm)	Comments
1E	WH & BB	9/17/2011	2:13 PM	38.042680	-84.549040	720	15.0	714	710	720	
1E	WH & BB	9/17/2011	2:17 PM	38.042170	-84.548970	720	15.0	714	710	720	
1E	WH & BB	9/17/2011	2:21 PM	38.041560	-84.548910	730	15.0	714	710	720	
1E	WH & BB	9/17/2011	2:24 PM	38.040970	-84.548720	730	15.0	714	710	720	
1E	WH & BB	9/17/2011	2:28 PM	38.040390	-84.548580	720	15.0	714	710	720	Behind house with new drain Storm Sewer
1E	WH & BB	9/17/2011	2:31 PM	38.040020	-84.548100	710	15.0	714	710	720	
1E	WH & BB	9/17/2011	2:34 PM	38.039490	-84.547760	740	15.0	714	710	720	
1E	WH & BB	9/17/2011	2:40 PM	38.038890	-84.547260	720	15.0	714	710	720	
1E	WH & BB	9/17/2011	2:43 PM	38.038490	-84.546850	730	15.0	714	710	720	
1E	WH & BB	9/17/2011	2:46 PM	38.037890	-84.546000	720	15.0	714	710	720	
1E	WH & BB	9/17/2011	2:49 PM	38.037500	-84.546120	720	14.0	714	710	720	Bridge at Appomattox
1E	WH & BB	9/17/2011	1:44PM	38.045930	-84.550840	640	15.0	714	710	720	
1F	BE	10/10/2011	1:15 PM	38.037430	-84.546250	650	14.0	1418	1420	1450	
1F	BE	10/10/2011	1:22 PM	38.037160	-84.546160	740	14.0	1418	1420	1450	
1F	BE	10/10/2011	1:29 PM	38.037000	-84.545770	740	14.0	1418	1420	1450	
1F	BE	10/10/2011	1:36 PM	38.037020	-84.545540	740	14.5	1418	1420	1450	
1F	BE	10/10/2011	1:41 PM	38.036940	-84.545420	740	14.5	1418	1420	1450	
1F	BE	10/10/2011	1:46 PM	38.036730	-84.545020	750	14.5	1418	1420	1450	
1F	BE	10/10/2011	1:50 PM	38.036570	-84.544870	750	14.5	1418	1420	1450	
1F	BE	10/10/2011	1:56 PM	38.036520	-84.544840	750	16.0	1418	1420	1450	
1F	BE	10/10/2011	2:01 PM	38.036450	-84.544660	750	16.0	1418	1420	1450	
1F	BE	10/10/2011	2:05 PM	38.035960	-84.544460	750	16.5	1418	1420	1450	
1F	BE	10/10/2011	2:11 PM	38.035860	-84.544300	750	17.0	1418	1420	1450	
1F	BE	10/10/2011	2:16 PM	38.035760	-84.544100	750	18.0	1418	1420	1450	
1F	BE	10/10/2011	2:21 PM	38.035530	-84.543770	730	19.0	1418	1420	1450	
1F	BE	10/10/2011	2:26 PM	38.035360	-84.543440	800	19.0	1418	1420	1450	
1F	BE	10/10/2011	2:32 PM	38.035200	-84.543270	820	16.5	1418	1420	1450	
1F	BE	10/10/2011	2:38 PM	38.034740	-84.542960	820	14.5	1418	1420	1450	
1F	BE	10/10/2011	2:44 PM	38.034720	-84.542980	810	15.5	1418	1420	1450	
1F	BE	10/10/2011	2:48 PM	38.034390	-84.542880	800	14.0	1418	1420	1450	
1F	BE	10/10/2011	2:53 PM	38.034230	-84.542870	790	15.5	1418	1420	1450	
1F	BE	10/10/2011	2:58 PM	38.033970	-84.542670	810	15.0	1418	1420	1450	
1F	BE	10/10/2011	3:03 PM	38.033620	-84.542380	800	16.0	1418	1420	1450	
1F	BE	10/10/2011	3:11 PM	38.033470	-84.542250	750	16.0	1418	1420	1450	
1F	BE	10/10/2011	3:17 PM	38.033060	-84.542050	750	16.0	1418	1420	1450	
1F	BE	10/10/2011	3:22 PM	38.033020	-84.541920	760	16.0	1418	1420	1450	
1F	BE	10/10/2011	3:25 PM	38.032990	-84.541880	760	16.0	1418	1420	1450	
1F	BE	10/10/2011	3:28 PM	38.038250	-84.541640	750	16.0	1418	1420	1450	
1F	BE	10/10/2011	3:30 PM	38.032389	-84.540332	740	16.0	1418	1420	1450	
1F	BE	10/10/2011	3:32 PM	38.032215	-84.540827	745	16.0	1418	1420	1450	
1F	BE	10/10/2011	3:34 PM	38.032029	-84.540494	720	15.0	1418	1420	1450	
1F	BE	10/10/2011	3:36 PM	38.031850	-84.540305	740	15.5	1418	1420	1450	
1F	BE	10/10/2011	3:38 PM	38.031715	-84.540072	730	16.0	1418	1420	1450	
1F	BE	10/10/2011	3:42 PM	38.031363	-84.539539	710	16.5	1418	1420	1450	
1F	BE	10/10/2011	3:56 PM	38.030821	-84.538465	700	17.0	1418	1420	1450	
1F	BE	10/10/2011	4:17 PM	38.030705	-84.538372	690	18.0	1418	1420	1450	

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Segment	Sampler Int'l	Date	Time	Latitude	Longitude	Cond (uS/cm)	Temp (°C)	Calibration: Known Value (uS/cm)	Initial Calibration (uS/cm)	Final Calibration (uS/cm)	Comments
1F	BE	10/10/2011	4:23 PM	38.030276	-84.537705	700	16.5	1418	1420	1450	
1F	BE	10/10/2011	4:26 PM	38.030082	-84.537619	730	17.0	1418	1420	1450	
1F	BE	10/10/2011		38.031506	-84.539826	720	15.5	1418	1420	1450	
1F	BE	10/10/2011		38.031240	-84.539224	710	17.0	1418	1420	1450	
1F	BE	10/10/2011		38.031016	-84.538966	700	17.0	1418	1420	1450	
1F	BE	10/10/2011		38.030578	-84.538125	710	17.0	1418	1420	1450	
1G	CJ & LC	9/24/2011	11:34 AM	38.023130	-84.421410	710	16.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	11:42 AM	38.023000	-84.536670	720	16.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	11:45 AM	38.029770	-84.536660	720	16.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	11:47 AM	38.029640	-84.536530	650	16.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	11:50 AM	38.029450	-84.536420	680	16.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	11:54 AM	38.029230	-84.535800	690	15.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	11:57 AM	38.029100	-84.535600	680	16.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:05 PM	38.028820	-84.535320	640	15.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:08 PM	38.028550	-84.535070	650	15.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:10 PM	38.028290	-84.534910	660	14.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:14 PM	38.028120	-84.534690	660	15.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:22 PM	38.027940	-84.534320	660	16.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:24 PM	38.027760	-84.533990	670	18.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:27 PM	38.027670	-84.533790	810	17.0	714	720	720	Oil sheen on water. USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:30 PM	38.027510	-84.533740			714	720	720	DRY; USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:38 PM	38.027510	-84.533740	300	15.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:41 PM	38.027510	-84.533740			714	720	720	DRY; USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:43 PM	38.026860	-84.532360			714	720	720	DRY; USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:46 PM	38.026950	-84.532280	340	14.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:49 PM	38.026610	-84.531790	410	16.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:53 PM	38.026340	-84.531710	280	18.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:56 PM	38.026040	-84.531590	400	16.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	12:59 PM	38.025940	-84.531350			714	720	720	DRY; USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	1:01 PM	38.025800	-84.530850			714	720	720	DRY; USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	1:02 PM	38.025540	-84.530550			714	720	720	DRY; USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	1:03 PM	38.025440	-84.530120	360	16.0	714	720	720	USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	1:06 PM	38.025500	-84.529680			714	720	720	DRY; USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	1:07 PM	38.025450	-84.529300			714	720	720	DRY; USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	1:09 PM	38.025270	-84.528900			714	720	720	DRY; USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	1:10 PM	38.025120	-84.528460			714	720	720	DRY; USGS gage at 8 cfs during measurement
1G	CJ & LC	9/24/2011	1:11 PM	38.024850	-84.528030			714	720	720	DRY; USGS gage at 8 cfs during measurement
1H	G & TY	10/4/2011	4:03 PM	38.022080	-84.528520	860	17.0	1408	1410	N/A	Junction Southland & Rosemont
1H	G & TY	10/4/2011	4:23 PM	38.017800	-84.525060	1040	17.0	1408	1410	N/A	
1H	G & TY	10/4/2011	4:28 PM	38.017610	-84.524630	1130	16.0	1408	1410	N/A	
1H	G & TY	10/4/2011	4:30 PM	38.017470	-84.524630	1150	16.0	1408	1410	N/A	
1H	G & TY	10/4/2011	4:32 PM	38.017200	-84.524350	1180	17.0	1408	1410	N/A	
1H	G & TY	10/4/2011	4:35 PM	38.017050	-84.524180	1200	17.0	1408	1410	N/A	
1H	G & TY	10/4/2011	4:41 PM	38.016530	-84.523670	1270	14.5	1408	1410	N/A	S&S Tire
1H	G & TY	10/4/2011	4:48 PM	38.016050	-84.523190	1160	16.5	1408	1410	N/A	Railway Tunnel
1J	G & TY	10/4/2011	4:56 PM	38.015720	-84.522670	1050	19.0	1408	1410	N/A	

Appendix C:
Conductivity Survey of Wolf Run: Database

Segment	Sampler Int'l	Date	Time	Latitude	Longitude	Cond (uS/cm)	Temp (°C)	Calibration: Known Value (uS/cm)	Initial Calibration (uS/cm)	Final Calibration (uS/cm)	Comments
1J	G & TY	10/4/2011	5:04 PM	38.015580	-84.522760	1060	19.5	1408	1410	N/A	
1J	G & TY	10/4/2011	5:07 PM	38.015240	-84.522840	1180	20.5	1408	1410	N/A	
1J	G & TY	10/4/2011	5:12 PM	38.014980	-84.522480	1120	23.0	1408	1410	N/A	
1J	G & TY	10/4/2011	5:14 PM	38.014780	-84.522260	1140	24.0	1408	1410	N/A	
1J	G & TY	10/4/2011	5:16 PM	38.014550	-84.521970	1080	19.0	1408	1410	N/A	Don Wilson Music
1J	G & TY	10/4/2011	5:19 PM	38.014310	-84.521720	1050	22.0	1408	1410	N/A	
1J	G & TY	10/4/2011	5:21 PM	38.014040	-84.521400	1040	22.0	1408	1410	N/A	
1J	G & TY	10/4/2011	5:24 PM	38.013740	-84.521030	1110	21.0	1408	1410	N/A	Republican Party of Fayette Co.
1J	G & TY	10/4/2011	5:27 PM	38.013360	-84.520550	1280	17.0	1408	1410	N/A	
2A	BR, JA & PC	10/4/2011	2:50 PM	38.059600	-84.548230	870	18.9	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	2:54 PM	38.059390	-84.548210	890	19.4	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	2:59 PM	38.059240	-84.547980	910	19.4	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:02 PM	38.059060	-84.547700	910	19.4	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:05 PM	38.058830	-84.547560	910	19.4	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:08 PM	38.058650	-84.547840	910	19.4	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:12 PM	38.058450	-84.547490	920	20.0	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:15 PM	38.058410	-84.547130	920	18.9	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:19 PM	38.058550	-84.546850	930	18.9	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:23 PM	38.058630	-84.546520	920	19.4	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:28 PM	38.058610	-84.546200	930	19.4	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:29 PM	38.058590	-84.545850	930	19.4	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:33 PM	38.058320	-84.545880	930	18.9	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:40 PM	38.058440	-84.545430	930	19.4	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:44 PM	38.058240	-84.545110	930	18.9	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:47 PM	38.058210	-84.544810	930	18.9	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:50 PM	38.058140	-84.544460	930	18.9	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:53 PM	38.057890	-84.544300	930	18.9	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:57 PM	38.057640	-84.544140	930	18.9	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	4:01 PM	38.057560	-84.543750	930	18.9	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	4:04 PM	38.057590	-84.543410	930	18.3	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	4:07 PM	38.057610	-84.543010	940	18.3	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	4:10 PM	38.057350	-84.542760	940	18.3	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	4:14 PM	38.057200	-84.542610	940	18.3	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	4:17 PM	38.057180	-84.542300	940	18.3	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	4:20 PM	38.057360	-84.542200	940	18.3	1408	1410	1450	
2A	BR, JA & PC	10/4/2011	3:37 PM	38.058220	-84.545590	930	19.4	1408	1410	1450	
2B	LT	10/5/2011	1:09 PM	38.054250	-84.532933	860	16.7	714	720	710	Final sink portion of stream
2B	LT	10/5/2011	1:14 PM	38.054233	-84.532716	870	17.5	714	720	710	
2B	LT	10/5/2011	1:19 PM	38.054333	-84.532433	870	16.6	714	720	710	
2B	LT	10/5/2011	1:24 PM	38.054266	-84.532200	870	16.6	714	720	710	
2B	LT	10/5/2011	1:31 PM	38.054266	-84.531933	870	16.5	714	720	710	
2B	LT	10/5/2011	1:35 PM	38.054316	-84.531800	870	16.5	714	720	710	
2B	LT	10/5/2011	1:42 PM	38.054383	-84.531583	870	16.4	714	720	710	
2B	LT	10/5/2011	1:47 PM	38.054400	-84.531466	870	16.3	714	720	710	Boils section of stream
2B	LT	10/5/2011	1:52 PM	38.054533	-84.531000	870	16.3	714	720	710	Crag or fissure between Boils and Blue hole
2B	LT	10/5/2011	1:57 PM	38.054483	-84.530800	870	16.4	714	720	710	end of Blue hole portion

Appendix C:
Conductivity Survey of Wolf Run: Database

Segment	Sampler Int'l	Date	Time	Latitude	Longitude	Cond (uS/cm)	Temp (°C)	Calibration: Known Value (uS/cm)	Initial Calibration (uS/cm)	Final Calibration (uS/cm)	Comments
2B	LT	10/5/2011	2:03 PM	38.054433	-84.530683	870	16.3	714	720	710	
2B	LT	10/5/2011	2:08 PM	38.054483	-84.530433	870	16.6	714	720	710	Blue hole spring
2B	LT	10/5/2011	2:30 PM	38.054050	-84.528250	130	23.3	714	720	710	Storm water wetland pond end portion - M4
2B	LT	10/5/2011	2:36 PM	38.053750	-84.527650	130	20.8	714	720	710	beginning of pond - M4
2B	LT	10/5/2011	2:39 PM	38.053766	-84.527533	130	20.1	714	720	710	forbay M3 of storm water wetland
2B	LT	10/5/2011	2:44 PM	38.054216	-84.527366	150	23.7	714	720	710	forbay M2
2B	LT	10/5/2011	2:47 PM	38.054183	-84.527383	160	23.1	714	720	710	forbay M1
3A	BR & JA	10/4/2011	5:45 PM	38.055100	-84.550060	770	18.9	1408	1410	1470	
3A	BR & JA	10/4/2011	5:48 PM	38.054900	-84.549730	780	18.9	1408	1410	1470	
3A	BR & JA	10/4/2011	5:53 PM	38.054530	-84.549190	780	19.4	1408	1410	1470	
3A	BR & JA	10/4/2011	5:56 PM	38.054290	-84.549010	780	20.3	1408	1410	1470	
3A	BR & JA	10/4/2011	6:00 PM	38.054100	-84.548770	790	20.6	1408	1410	1470	
3A	BR & JA	10/4/2011	6:03 PM	38.053880	-84.548530	780	19.4	1408	1410	1470	
3A	BR & JA	10/4/2011	6:06 PM	38.053630	-84.548220	760	22.2	1408	1410	1470	
3A	BR & JA	10/4/2011	6:11 PM	38.053430	-84.547950	760	22.2	1408	1410	1470	
3A	BR & JA	10/4/2011	6:14 PM	38.053220	-84.547710	750	22.2	1408	1410	1470	
3A	BR & JA	10/4/2011	6:17 PM	38.053040	-84.547440	770	20.0	1408	1410	1470	
3A	BR & JA	10/4/2011	6:20 PM	38.052940	-84.547180	780	18.9	1408	1410	1470	
3A	BR & JA	10/4/2011	6:22 PM	38.052670	-84.546910	780	19.4	1408	1410	1470	
3A	BR & JA	10/4/2011	6:25 PM	38.052440	-84.546620	790	19.4	1408	1410	1470	
3A	BR & JA	10/4/2011	6:29 PM	38.052270	-84.546390	790	20.0	1408	1410	1470	
3A	BR & JA	10/4/2011	6:32 PM	38.052090	-84.546130	800	18.3	1408	1410	1470	
3A	BR & JA	10/4/2011	6:34 PM	38.051910	-84.545850	790	21.1	1408	1410	1470	
3A	BR & JA	10/4/2011	6:38 PM	38.051610	-84.545550	800	20.6	1408	1410	1470	
3A	BR & JA	10/4/2011	6:41 PM	38.051430	-84.545270	800	18.9	1408	1410	1470	
3A	BR & JA	10/4/2011	6:43 PM	38.051210	-84.545010	820	18.3	1408	1410	1470	
3A	BR & JA	10/4/2011	6:47 PM	38.051030	-84.544700	810	17.8	1408	1410	1470	
3A	BR & JA	10/4/2011	6:50 PM	38.050800	-84.544400	810	17.8	1408	1410	1470	
3A	BR & JA	10/4/2011	6:53 PM	38.050590	-84.544180	800	17.8	1408	1410	1470	
3A	BR & JA	10/4/2011	6:56 PM	38.050440	-84.543870	800	17.8	1408	1410	1470	
3A	BR & JA	10/4/2011	6:58 PM	38.050220	-84.543620	800	17.8	1408	1410	1470	
3A	BR & JA	10/4/2011	7:01 PM	38.050000	-84.543370	800	17.8	1408	1410	1470	
3A	BR & JA	10/4/2011	7:03 PM	38.049740	-84.543130	810	17.8	1408	1410	1470	
3A	BR & JA	10/4/2011	7:05 PM	38.049540	-84.542910	800	17.8	1408	1410	1470	
3A	BR & JA	10/4/2011	7:08 PM	38.049380	-84.542590	790	17.8	1408	1410	1470	
3A	BR & JA	10/4/2011	5:50 PM	38.054810	-84.549350	780	19.4	1408	1410	1470	
3B	BR	9/18/2011	4:30 PM	38.049400	-84.542620	710	20.0	1408	1410	1410	
3B	BR	9/18/2011	4:34 PM	38.049230	-84.542360	710	20.0	1408	1410	1410	
3B	BR	9/18/2011	4:38 PM	38.048990	-84.542070	710	20.0	1408	1410	1410	
3B	BR	9/18/2011	4:41 PM	38.048820	-84.541740	720	20.0	1408	1410	1410	
3B	BR	9/18/2011	4:44 PM	38.048670	-84.541490	710	20.0	1408	1410	1410	
3B	BR	9/18/2011	4:47 PM	38.048460	-84.541270	710	20.0	1408	1410	1410	
3B	BR	9/18/2011	4:50 PM	38.048220	-84.541030	710	20.0	1408	1410	1410	
3B	BR	9/18/2011	4:54 PM	38.048070	-84.550700	700	21.1	1408	1410	1410	
3B	BR	9/18/2011	4:57 PM	38.048090	-84.540340	730	21.1	1408	1410	1410	
3C	KC	10/10/2011	12:27 PM	38.047101	-84.540037	740	17.0	1413	1420	1460	

Appendix C:
Conductivity Survey of Wolf Run: Database

Segment	Sampler Int'l	Date	Time	Latitude	Longitude	Cond (uS/cm)	Temp (°C)	Calibration: Known Value (uS/cm)	Initial Calibration (uS/cm)	Final Calibration (uS/cm)	Comments
3C	KC	10/10/2011	12:33 PM	38.046872	-84.539882	740	17.0	1413	1420	1460	
3C	KC	10/10/2011	12:38 PM	38.046729	-84.539815	740	17.5	1413	1420	1460	
3C	KC	10/10/2011	12:41 PM	38.046536	-84.539861	740	17.0	1413	1420	1460	
3C	KC	10/10/2011	12:46 PM	38.046285	-84.539620	740	17.0	1413	1420	1460	
3C	KC	10/10/2011	12:52 PM	38.046094	-84.539375	740	17.0	1413	1420	1460	
3C	KC	10/10/2011	12:55 PM	38.045660	-84.539135	650	16.5	1413	1420	1460	
3C	KC	10/10/2011	12:59 PM	38.045497	-84.538858	670	16.5	1413	1420	1460	
3C	KC	10/10/2011	1:01 PM	38.055258	-84.538226	680	16.5	1413	1420	1460	
3C	KC	10/10/2011	1:04 PM	38.045196	-84.537602	580	16.5	1413	1420	1460	
3C	KC	10/10/2011	1:06 PM	38.045127	-84.536621	600	16.5	1413	1420	1460	
3C	KC	10/10/2011	1:09 PM	38.044946	-84.536161	610	16.0	1413	1420	1460	
3C	KC	10/10/2011	1:12 PM	38.044805	-84.535804	600	16.0	1413	1420	1460	
3C	KC	10/10/2011	1:16 PM	38.044328	-84.535167	420	16.0	1413	1420	1460	
3D	ND & AB	10/4/2011	4:15 PM	38.025160	-84.319460	380	28.0	1408	1410	N/A	Ponded
3D	ND & AB	10/4/2011	4:16 PM	38.024860	-84.319120	480	25.0	1408	1410	N/A	Ponded
3D	ND & AB	10/4/2011	4:17 PM	38.024510	-84.318770	580	28.0	1408	1410	N/A	Ponded
3D	ND & AB	10/4/2011	4:18 PM	38.024240	-84.318340	460	28.0	1408	1410	N/A	Ponded
3D	ND & AB	10/4/2011	4:19 PM	38.024000	-84.317520	510	26.0	1408	1410	N/A	Ponded
3D	ND & AB	10/4/2011	4:20 PM	38.023560	-84.317100			1408	1410	N/A	Dry
3D	ND & AB	10/4/2011	4:21 PM	38.023090	-84.316810	1150	28.0	1408	1410	N/A	Ponded
3D	ND & AB	10/4/2011	4:22 PM	38.022700	-84.316600	1240	24.0	1408	1410	N/A	Ponded
3D	ND & AB	10/4/2011	4:23 PM	38.022530	-84.316120	1250	24.0	1408	1410	N/A	Where flowing water stops
3D	ND & AB	10/4/2011	4:24 PM	38.022670	-84.315770	1280	24.0	1408	1410	N/A	
3E	ND & AB	10/4/2011	4:25 PM	38.022550	-84.315420	1290	24.0	1408	1410	N/A	
3E	ND & AB	10/4/2011	4:26 PM	38.022500	-84.315170	1320	22.0	1408	1410	N/A	
3E	ND & AB	10/4/2011	4:27 PM	38.022430	-84.314810	1300	22.0	1408	1410	N/A	
3E	ND & AB	10/4/2011	4:28 PM	38.022380	-84.314410	1300	22.0	1408	1410	N/A	
3E	ND & AB	10/4/2011	4:29 PM	38.022340	-84.314130	1310	20.0	1408	1410	N/A	
3E	ND & AB	10/4/2011	4:30 PM	38.022350	-84.313990	1320	20.0	1408	1410	N/A	
3E	ND & AB	10/4/2011	4:31 PM	38.022280	-84.313130	1300	22.0	1408	1410	N/A	
3F	KC	10/4/2011	12:56 PM	38.033647	-84.514367	1180	17.0	1413	1420	1460	Segment only 138 feet long
4A	KC	10/10/2011	11:46 AM	38.035423	-84.526610	DRY	DRY	1413	1420	1450	DRY
4A	KC	10/10/2011	11:50 AM	38.033110	-84.526797	970		1413	1420	1450	PONDED
4C	BR	10/11/2011	9:25 AM	38.022520	-84.512530	1200	18.3	1408	1410	1420	
4C	BR	10/11/2011	9:27 AM	38.022430	-84.512150	1310	17.8	1408	1410	1420	
4C	BR	10/11/2011	9:30 AM	38.022250	-84.511790	1320	17.8	1408	1410	1420	
4C	BR	10/11/2011	9:33 AM	38.022080	-84.511440	1360	17.8	1408	1410	1420	
4C	BR	10/11/2011	9:35 AM	38.021950	-84.511120	1380	17.8	1408	1410	1420	
4C	BR	10/11/2011	9:37 AM	38.021770	-84.510800	1390	17.8	1408	1410	1420	
4C	BR	10/11/2011	9:40 AM	38.021630	-84.510490	1390	18.9	1408	1410	1420	
4C	BR	10/11/2011	9:42 AM	38.021530	-84.510150	1440	18.9	1408	1410	1420	at Storm water outfall pool
4C	BR	10/11/2011	9:45 AM	38.021390	-84.509830	1430	20.0	1408	1410	1420	
4C	BR	10/11/2011	9:48 AM	38.021080	-84.509900	970	19.4	1408	1410	1420	Flows minimal/full of fresh cut grass
4C	BR	10/11/2011	9:51 AM	38.020790	-84.510070	990	19.4	1408	1410	1420	Flows minimal/full of fresh cut grass
4C	BR	10/11/2011	9:53 AM	38.020530	-84.510160	1000	20.0	1408	1410	1420	Flows minimal/full of fresh cut grass
4C	BR	10/11/2011	9:56 AM	38.020250	-84.510410	900	21.1	1408	1410	1420	Flows minimal/full of fresh cut grass

Appendix C:
Conductivity Survey of Wolf Run: Database

Segment	Sampler Int	Date	Time	Latitude	Longitude	Cond (uS/cm)	Temp (°C)	Calibration: Known Value (uS/cm)	Initial Calibration (uS/cm)	Final Calibration (uS/cm)	Comments
5A	AS & SM	10/9/2011	3:06 PM	38.049400	-84.551340	700	16.0	1408	1410	1400	
5A	AS & SM	10/9/2011	3:19 PM	38.049400	-84.551670	720	16.0	1408	1410	1400	
5A	AS & SM	10/9/2011	3:27 PM	38.049320	-84.552130	720	16.0	1408	1410	1400	
5A	AS & SM	10/9/2011	3:33 PM	38.049290	-84.552520	710	16.0	1408	1410	1400	
5A	AS & SM	10/9/2011	3:38 PM	38.049370	-84.552920	720	16.0	1408	1410	1400	
5A	AS & SM	10/9/2011	3:47 PM	38.049240	-84.553120	710	17.0	1408	1410	1400	
5A	AS & SM	10/9/2011	3:54 PM	38.048870	-84.553530	710	17.0	1408	1410	1400	
5A	AS & SM	10/9/2011	4:00 PM	38.048600	-84.553820	710	17.0	1408	1410	1400	
5A	AS & SM	10/9/2011	4:06 PM	38.048410	-84.554110	710	17.0	1408	1410	1400	
5A	AS & SM	10/9/2011	4:13 PM	38.048110	-84.554430	710	17.0	1408	1410	1400	
5A	AS & SM	10/9/2011	4:18 PM	38.047850	-84.554630	710	18.0	1408	1410	1400	
5A	AS & SM	10/9/2011	4:24 PM	38.047650	-84.554920	710	18.0	1408	1410	1400	
5A	AS & SM	10/9/2011	4:30 PM	38.047390	-84.555160	700	19.0	1408	1410	1400	
5A	AS & SM	10/9/2011	4:37 PM	38.047020	-84.555400	700	18.0	1408	1410	1400	
5B	KC	10/10/2011	2:00 PM	38.046236	-84.556117	650	14.5	1413	1420	1420	
5B	KC	10/10/2011	2:02 PM	38.046170	-84.556283	650	14.5	1413	1420	1420	
5B	KC	10/10/2011	2:04 PM	38.045785	-84.556620	650	14.5	1413	1420	1420	
5B	KC	10/10/2011	2:05 PM	38.045643	-84.556768	660	14.5	1413	1420	1420	
5B	KC	10/10/2011	2:06 PM	38.045282	-84.556935	670	14.5	1413	1420	1420	
5B	KC	10/10/2011	2:08 PM	38.044997	-84.557030	640	14.5	1413	1420	1420	
5B	KC	10/10/2011	2:10 PM	38.044548	-84.557087	620	14.5	1413	1420	1420	
5B	KC	10/10/2011	2:12 PM	38.044343	-84.557113	570	14.5	1413	1420	1420	
5B	KC	10/10/2011	2:14 PM	38.044046	-84.557213	620	14.0	1413	1420	1420	Tributary 670 conductivity
5B	KC	10/10/2011	2:19 PM	38.043852	-84.557133	590	14.0	1413	1420	1420	GPS accuracy 16 feet
5B	KC	10/10/2011	2:21 PM	38.043493	-84.557040	590	14.0	1413	1420	1420	
5B	KC	10/10/2011	2:22 PM	38.043184	-84.557147	590	14.0	1413	1420	1420	
5B	KC	10/10/2011	2:24 PM	38.043889	-84.557252	610	14.0	1413	1420	1420	Gardenside Tributary 540 conductivity
5B	KC	10/10/2011	2:27 PM	38.042744	-84.557503	620	14.5	1413	1420	1420	
5B	KC	10/10/2011	2:30 PM	38.042443	-84.557868	610	14.0	1413	1420	1420	
5B	KC	10/10/2011	2:35 PM	38.042276	-84.558191	600	14.0	1413	1420	1420	
5B	BH	10/10/2011	2:36 PM	38.041219	-84.559053	620	14.0	1413	1420	1420	
5B	KC	10/10/2011	2:37 PM	38.042140	-84.558347	610	14.0	1413	1420	1420	
5B	BH	10/10/2011	2:38 PM	38.041027	-84.559276	620	14.0	1413	1420	1420	
5B	KC	10/10/2011	2:42 PM	38.042012	-84.558596	610	14.0	1413	1420	1420	
5B	KC	10/10/2011	2:45 PM	38.041727	-84.558946	610	14.0	1413	1420	1420	
5B	BH	10/10/2011	2:45 PM	38.040843	-84.559571	620	14.0	1413	1420	1420	
5B	BH	10/10/2011	2:46 PM	38.040553	-84.559789	620	14.0	1413	1420	1420	
5B	BH	10/10/2011	2:47 PM	38.040316	-84.559803	620	14.0	1413	1420	1420	
5B	BH	10/10/2011	2:48 PM	38.040173	-84.559996	620	14.0	1413	1420	1420	
5B	BH	10/10/2011	2:49 PM	38.039863	-84.560114	620	13.5	1413	1420	1420	
5B	KC	10/10/2011	2:50 PM	38.041567	-84.559065	620	14.0	1413	1420	1420	
5B	BH	10/10/2011	2:52 PM	38.039836	-84.560499	620	13.5	1413	1420	1420	
6A	KC	10/11/2011	1:36 PM	38.042709	-84.557275	520	16.0	1413	1410	1410	
6A	KC	10/11/2011	1:38 PM	38.042549	-84.557057	460	16.0	1413	1410	1410	
6A	KC	10/11/2011	1:46 PM	38.041087	-84.555403	390	16.5	1413	1410	1410	Cross Keys Pond
6A	KC	10/11/2011	1:51 PM	38.040450	-84.555289	360	16.5	1413	1410	1410	Cross Keys Pond

Appendix C:
Conductivity Survey of Wolf Run: Database

Segment	Sampler Int	Date	Time	Latitude	Longitude	Cond (uS/cm)	Temp (°C)	Calibration: Known Value (uS/cm)	Initial Calibration (uS/cm)	Final Calibration (uS/cm)	Comments
6A	KC	10/11/2011	1:57 PM	38.039318	-84.555526	640	17.0	1413	1410	1410	Frogs
6A	KC	10/11/2011	1:59 PM	38.038871	-84.555363	650	16.0	1413	1410	1410	
6A	KC	10/11/2011	2:08 PM	38.037847	-84.555256	640	16.0	1413	1410	1410	
6A	KC	10/11/2011	2:13 PM	38.036848	-84.555006	670	16.0	1413	1410	1410	Frogs